STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Water Quality Certification for

EAGLE CREST ENERGY COMPANY'S

EAGLE MOUNTAIN PUMPED STORAGE HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 13123

Source: Eagle Creek and Chuckwalla Valley Groundwater Basin

County: Riverside

WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE

EAGLE CREST ENERGY COMPANY'S

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WATER QUALITY CERTIFICATION

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Attachment A: Project Area Maps
Attachment B: Mitigation Monitoring and Reporting Plan
Attachment C: California Environmental Quality Act Findings and Statement of Overriding Considerations

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BY THE EXECUTIVE DIRECTOR:

1.0 Project Description

The Eagle Crest Energy Company (Applicant or Licensee) filed a License Application with the Federal Energy Regulatory Commission (FERC or Commission) to construct and operate the Eagle Mountain Pumped Storage Hydroelectric Project (Project). The Commission assigned Project Number 13123 to the Project.

The Project is located near the town of Eagle Mountain (approximately 12 miles northwest of the unincorporated town of Desert Center), in eastern Riverside County, California. Project area maps are contained in Attachment A, and made part of this water quality certification by reference. The Project footprint is up to 2,527 acres: 660 acres are located on federal lands managed by the Bureau of Land Management (BLM) and the remaining 1,867 acres on privately owned lands.

The Project is a pumped storage project. Pumped storage projects transfer water between two water bodies located at different elevations (e.g., an upper and lower reservoir) to store energy by pumping water from the lower water body to the upper water body during periods of low electricity demand, and then generate electricity by releasing water through turbines from the upper water body to the lower water body during periods of high electricity demand. The Commission considers pumped storage projects to be capable of providing a range of ancillary services to support the integration of renewable resources and allow for more reliable and efficient functioning of the electric grid.[1]

The Project will primarily use off-peak energy to pump water from a lower reservoir to an upper reservoir and generate energy during periods of high energy demand by transferring the water

[1] http://www.ferc.gov/industries/hydropower/gen-info/licensing/pump-storage.asp (last visited June 12, 2013)

from the upper reservoir to the lower reservoir through four reversible turbines. Two former iron ore mine pits that are part of the Eagle Mountain Mine form the reservoirs. The existing East Pit of the mine will form the Project's Lower Reservoir and the existing Central Pit of the mine will form the Project's Upper Reservoir. The elevation difference between the reservoirs will provide an average net head of 1,410 feet. The Project will have an installed capacity of 1,300 megawatts.

The Upper and Lower Reservoirs will be linked by subsurface tunnels to convey water through four reversible turbines housed in an underground powerhouse. Existing access roads within the former mining area will be improved to provide access for heavy machinery to the Project site during construction. Tunneling will be within the reservoir sites, and waste rock from tunnel boring will be used to meet construction needs such as road base for access roads, miscellaneous backfills for access roads and around structures, flood berms, and potentially for concrete in the dams. Any excess material will be placed in the reservoirs or in spoil areas from which fine tailings have been removed.

Data used for characterization of the Central Project Area, which includes the area where the reservoirs and powerhouse will be located, were drawn from previous reports and observations made during the 1992 to 1994 FERC licensing process (Eagle Mountain Pumped Storage Project, FERC Project No. 11080), during the development of the proposed Eagle Mountain Landfill (Landfill), and from geologic reports and technical literature prepared by others. The previous investigations were not intended to obtain data that would support design of a large hydroelectric development with dams, tunnels, and related structures. However, data are available to understand the site characteristics in sufficient detail to document the feasibility of constructing the Project, comply with analyses required by the California Environmental Quality Act (CEQA), and issue a water quality certification.

The Central Project Area includes privately owned land. The feasibility of the Project depends, in part, on the Applicant acquiring ownership or control of the Project site via a lease or easement. The Applicant has not been granted access to the Central Project Area by the current land owner. This water quality certification shall not be construed as granting permission for site access or commencement of any other activity outside the scope of this water quality certification.

Due to site access constraints, the Applicant will undertake detailed site investigations to support the final configuration and design of the Project after the FERC license is issued, access to the Central Project Area is obtained, and regulatory agencies grant approval for ground disturbing activities. These detailed investigations will be conducted in two phases, in part to validate the information, data, and results obtained using previous studies, as follows:

Phase I Site Investigations: Based on available information and the current Project configuration, the Applicant will conduct a limited pre-design field investigation program designed to confirm that basic Project feature locations are appropriate, and to provide basic design parameters for the final layout of the Project features. Phase I Site Investigations will, at a minimum, evaluate:

- Upper and Lower Reservoir site conditions;
- Hydraulic structures (inlet/outlet structures);
- Underground conditions for construction of tunnels, shafts, and powerhouse;
- Reservoir, brine pond, and tunnel seepage potential;
- Reservoir-triggered seismicity; and

- Water quality issues in the reservoirs and groundwater associated with ore-body contact.

Phase II Site Investigations: Using the results of the Phase I Site Investigations Report, and based on any design refinements developed during pre-design engineering, the Applicant will conduct additional explorations to support final design of the Project features. Phase II Site Investigations will be conducted, at a minimum, to determine:

- Compatibility of the Project with existing and proposed land uses within the Project area;
- Background groundwater levels and background groundwater quality;
- Project operations and permanent impact on the aquifer's storativity;
- Seepage and monitoring well network locations, well types, and well depths;
- Most suitable location and design for horizontal monitoring wells under the reservoir's liners;
- Mass wasting, landsliding, and slope stability issues related to loading and unloading the reservoirs;
- Use of geosynthetic liners as a seepage control measure for the reservoirs and the brine ponds;
- Aquifer hydraulic conditions; and
- Hydrocompaction and subsidence potentials.

Phase I and Phase II Site Investigations will be conducted in accordance with Technical Memorandum 12.1 of the Project's Final Environmental Impact Report (Final EIR), and as required by Condition 1 of this water quality certification. If the Phase I or Phase II Site Investigations identify issues that may have significant environmental impacts not addressed in the Final EIR, the Project's environmental review document may need to be revised to address any newly discovered potential impacts and satisfy CEQA requirements.

Groundwater from the Chuckwalla Valley Groundwater Basin will be used to initially fill the reservoirs and provide make-up water to offset evaporation losses. The Applicant will acquire land and attendant water rights to three properties in the Chuckwalla Valley where three new wells will be installed and connected to a central collection pipeline corridor prior to groundwater withdrawal. The water supply pipeline will be buried and extend approximately 15 miles from the wells to the Lower Reservoir. The pipeline corridor will parallel an existing power transmission line, but the existing disturbed area will need to be widened and will cross some small, typically dry, desert tributary washes.

The total water storage will be approximately 20,000 acre-feet (AF) in the Upper Reservoir and approximately 21,900 AF in the Lower Reservoir. To allow for operations of the pumped storage reservoirs, only one reservoir can be full at a time. Due to the configuration of the reservoirs and the location of the water inlets and outlets, some water will always remain in each reservoir and is considered dead storage. Seepage control measures will be applied to minimize seepage from the reservoirs. However, because some seepage is anticipated, a series of seepage interceptor wells will be constructed downgradient of the reservoirs to return the seepage volume to the reservoirs. The total water recovered by the seepage interceptor wells will be a combination of seepage and native groundwater. Because not all seepage can be captured by the seepage interceptor wells, reservoir seepage water quality shall be equal to or better than native groundwater quality beneath the reservoirs. Reservoir seepage water quality will be determined at the horizontal monitoring wells installed immediately below the liner at each reservoir.

Power will be supplied to and delivered from the Project by a double circuit 500 kilovolt transmission line. The power line will extend approximately 17 miles, from a new interconnection substation (Eastern Red Bluff Substation) located south of Highway 10, then extend north to parallel the water supply collection pipeline until reaching Kaiser Road, and then continue along an existing transmission line alignment to the Project switchyard.

2.0 Background

As part of the License Application and CEQA requirements, the Applicant conducted studies to assess the potential impact of the Project on the environment. The studies included assessment of the geology, hydrogeology, biology, cultural resources, visual resources, noise, air quality, and design and construction at the Project site and surrounding area (see Final EIR, Appendix C).

The State Water Resources Control Board (State Water Board) is the CEQA lead agency for the Project and independently prepared an EIR as described in Section 6.3 of this water quality certification. The Applicant has agreed to implement all measures identified in the Final EIR to minimize the Project's environmental impacts. All mitigation measures identified in Section 6 of the Final EIR are considered requirements of the Project for this water quality certification.

Measures that protect the beneficial uses of water resources form the basis of the conditions of this certification. Additionally, the conditions of this water quality certification are intended to address the range of possible environmental impacts that may result from Project construction and operation. Due to limited site access and the necessary use of previous studies to complete the environmental review, this water quality certification recognizes the need to develop more specific and detailed site information, and includes the required approval of subsequent reports to ensure conditions of the certification are met. The conditions of this water quality certification, in part, include additional studies required to refine measures intended to protect water quality and beneficial uses and reduce environmental impacts identified in the Final EIR.

2.1 Geology

Surface geology of the Eagle Mountain area generally consists of unconsolidated alluvial deposits. The alluvial deposits include sands, silts, gravels, and debris-flow deposits. The eastern edge of the Project site contains the most substantial alluvial deposits, which form a laterally extensive alluvial fan that extends and thickens to the east into the Chuckwalla Valley.

The Central Project Area occupies a portion of the Eagle Mountain Mine that contains a mineral-rich ore zone. Large-scale iron ore mining at the Eagle Mountain Mine was curtailed in 1983. However, the Eagle Mountain Mine has continued to ship rock, rock products, and stockpiled iron ore products over the years. Mining within Project boundaries will not be feasible during the FERC license term. However, the Project will not prevent access or mining activities outside the Project boundaries.

Iron is the most important ore found within the Central Project Area. The iron ore reserves are: magnetite mixed with pyrite; and magnetite and hematite with small amounts of pyrite. The mine facility began operations to extract iron ore from these deposits in 1948 and continued operations until 1983 when large-scale iron mining was suspended. Virtually all of the equipment and mining and processing facilities for large-scale iron ore mining are no longer in existence.

The Upper and Lower Reservoirs will be surface impoundments that will likely discharge to groundwater to some extent. Water quality in the reservoirs and groundwater must therefore be monitored. Reservoir water and groundwater quality could potentially be affected by contact with the existing ore body. If the ore contains metal sulfides, a natural oxidation process can increase the reservoirs' water acidity. As the water becomes more acidic, the capacity to dissolve other elements from the ore increases. In the event that acid production potential is found during the Phase I and II Site Investigations, the water treatment facility will be designed to be able to neutralize this acid. Metal leaching – when metals leach into contact water without acidification – must also be evaluated during the Phase I and II Site Investigations.

The water quality performance standard that shall be met will be maintenance of surface water quality in the reservoirs (monitored at horizontal wells immediately underneath the reservoirs' liner) and maintenance of groundwater quality in the aquifer beneath the reservoirs (monitored at the monitoring well network surrounding the reservoirs) at a level comparable to the source groundwater background values as required by the *Water Quality Control Plan for the Colorado River Basin – Region 7* (Colorado River Basin Plan) goals. With respect to groundwater quality objectives, the Colorado River Regional Water Quality Control Board's (Colorado River Regional Water Board) goal is to maintain the existing water quality of all non-degraded high quality groundwater basins.

2.2 Hydrogeology

The Chuckwalla Valley Groundwater Basin consists of about 900 feet of sand and gravel with a few discontinuous layers of silt and clay. The saturated sediments are about 650 feet thick near Desert Center. The approximate depth to groundwater in the area of the Project supply wells is approximately 225 to 250 feet below ground surface.

Based on the geologic conditions, aquifer characteristics and groundwater levels, the aquifer appears to be unconfined in the Upper Chuckwalla Valley from the Pinto Basin through the Desert Center area. In the central portion of the Chuckwalla Valley, east of Desert Center, the aquifer may be semi-confined to confined because of the accumulation of a thick clay layer.

The total storage capacity of the Chuckwalla Valley Groundwater Basin was estimated to be about 9.1 million AF (DWR, 1975). A later analysis estimates that there are 15 million AF of recoverable water in the Chuckwalla Valley Groundwater Basin (DWR, 1979). The Project, by itself, proposes to extract approximately 110,000 AF of groundwater over the 50-year FERC license. Not accounting for any natural recharge during that 50-year period, the amount proposed to be used by the Project is estimated to be less than one percent of the total amount of recoverable groundwater in storage in the Chuckwalla Valley Groundwater Basin.

Two groundwater-related issues associated with the Project are: 1) the potential effects of groundwater extraction on the Desert Center area due to the Project's initial filling of the reservoirs and replacement of annual losses from evaporation; and 2) the potential effects of seepage from the reservoirs on local groundwater, the Colorado River Aqueduct (CRA), and the proposed Landfill.

When the Eagle Mountain Mine was active between 1948 and about 1983, Kaiser[2] pumped groundwater from three wells in the Pinto Valley Groundwater Basin. Kaiser added four wells in the upper Chuckwalla Valley Groundwater Basin, starting in 1958, to supply additional water to the mine. Between 1965 and 1981 the groundwater pumping was relatively consistent and at rates sufficiently high to affect local groundwater elevations. Data from nearby wells show that there was approximately 15 feet of drawdown at the eastern edge of the Pinto Valley Groundwater Basin and up to 24 feet of drawdown in the upper Chuckwalla Valley Groundwater Basin between 1952 and 1981. Approximately 200,000 AF of groundwater was extracted for the mine operations during this 38-year period (1948-1985), about 180 percent of the amount the Project proposes to extract in the 50-year FERC license period.

During a six year period from 1981 through 1986, there was an increase in groundwater pumping near Desert Center due to increased agricultural use (primarily jojoba and asparagus) in the area. In 1986, groundwater pumping for agricultural use in the Chuckwalla Valley was approximately 20,800 acre-feet per year (AFY). Groundwater level data in the Desert Center area show that the local drawdown during the 1981-1986 period was approximately 130 feet. Elsewhere in the Chuckwalla Valley Groundwater Basin, during the same time period, groundwater levels increased and decreased locally, typically on the order of less than tens of feet, indicating the groundwater drawdown of 130 feet was a local pumping effect. As of 2007, irrigation for agriculture in the Desert Center area was estimated to be 6,400 AFY, and measurements showed a 4-foot rise from the 1981 groundwater levels (GEI Consultants, Inc., 2009a).

2.2.1 Groundwater Supply Pumping Effects

Potential impacts to the Chuckwalla Valley Groundwater Basin from Project pumping were analyzed in 2009 and presented in a technical memorandum titled: *Eagle Mountain Pumped Storage Project – Groundwater Supply Pumping Effects* (GEI Consultants, Inc., 2009a). A water balance was created to assess the Project's basin-wide effects on groundwater and the cumulative effects on the perennial yield of the basin.

The water balance evaluates groundwater level changes during the Project period and predicts the time for the Chuckwalla Valley Groundwater Basin to recover to pre-Project levels. Results from the analyses show:

- Groundwater pumping to fill the reservoirs and operate the Project will create local drawdown areas near Project supply wells and could regionally lower groundwater levels basin-wide.
- The Project will use groundwater to fill the reservoirs and to make up for losses due to seepage and evaporation. Approximately 32,000 AF of water is needed to fill the reservoirs to full operating capacity, accounting for seepage and evaporation.
- During the initial fill, all three supply wells will be used. Based on analysis of the hydraulic characteristics of the Chuckwalla Valley Groundwater Basin, it is estimated that cumulatively the wells will pump approximately 6,000 gallons per minute (gpm). At this pumping rate it will take approximately 1.3 years to fill the reservoirs to

[2] In this document "Kaiser" refers to several companies that have filed for bankruptcy, merged or reorganized over the years. The Eagle Mountain Mine was bought by Kaiser Steel Corporation in 1944 with the Kaiser Eagle Mountain Mine operating from 1948 to 1983. Other more recent names for Kaiser interests in the Eagle Mountain area include Kaiser Ventures Inc., Kaiser Steel Corporation, and Kaiser Ventures LLC.

minimum operating capacity and approximately 4.1 years to fill the reservoirs to full operating capacity. These fill rates assume that the wells will be pumped for 24 hours a day from October through May when there is low power system demand, and 12 hours a day from June through September when there is high power demand. If monitoring indicates that groundwater is being drawn down faster than expected (see Final EIR, Table 3.3-8), pumping rates for the initial fill will be reduced and the initial fill period will be extended up to a maximum of six years.

- After the reservoirs are filled to full operating capacity, one or two of the supply wells will be used to make up for evaporation losses. Seepage interceptor wells will be used to make up for seepage losses, with water returned to the reservoirs. Preliminary estimates for reservoir losses due to seepage and evaporation during Project operation are presented in Table 1.

  The expected quantity of seepage through the Upper and Lower Reservoirs was evaluated by performing seepage analyses (details are presented in Section 2.2.2). The evaporation loss was calculated using a reservoir evaporation rate of 7.5 feet per year. Seepage and evaporation estimates are based on a preliminary analysis that will be supplemented with complete data and additional analyses, based on the Phase I and Phase II Site Investigations, which must be submitted to and approved by the Deputy Director for Water Rights (Deputy Director). If modified seepage and evaporation values are approved by the Deputy Director, the new values will supersede the estimates presented in the Final EIR and Table 1. The approved seepage values will be used as baseline conditions to monitor reservoir liner performance.

Table 1
Estimated Reservoir Losses due to Seepage and Evaporation during Project Operation

	Seepage Rate[3] (AFY)	Evaporation Rate[4] (AFY)
Upper Reservoir	689	908
Lower Reservoir	713	855
Total	1,402	1,763

- Drawdown effects resulting from pumping of the Project water supply wells and the amount of drawdown that could occur beneath the CRA were estimated using analytical methods described in the report titled *Groundwater Supply Pumping Effects* (GEI Consultants, Inc., 2009a). Due to the lack of groundwater level data, especially near the Project supply wells and CRA, analytical methods were used to estimate drawdown instead of a numerical groundwater model. The results were compared to drawdown that occurred as a result of Kaiser groundwater pumping in the upper Chuckwalla Valley Groundwater Basin over the 17-year period from 1965 to 1981 (average pumping rate of 2,208 gpm) and from agriculture pumping near Desert Center between 1981 and 1986 (average pumping rate of 10,702 gpm). Project water supply pumping, after the initial fill of the reservoirs, will be in the range of historic (from 1965 to 1986) pumping. Therefore, the potential impact of subsidence beneath the CRA is at less than significant levels because there was no documented

[3] Assuming an 8-foot thick liner using grouting and seepage blanket for the Upper Reservoir, and grouting, seepage blanket, and roller compacted concrete for the Lower Reservoir (GEI Consultants, Inc., 2009b). Actual seepage rates to be confirmed by water balance methods during Phase I and Phase II Site Investigations.
[4] Eagle Crest Energy Company, 2009

subsidence during historic pumping. The analysis indicates that groundwater pumping for the life of the Project would create 3.5 to 4.2 feet of drawdown in the groundwater levels beneath the CRA, which is less than the 9.4 to 18.7 feet of drawdown in groundwater levels beneath the CRA during the 17 years of pumping by Kaiser in the Chuckwalla Valley Groundwater Basin from 1965 to 1981.

- Hydraulic characteristics of the Chuckwalla Valley Groundwater Basin were estimated based on aquifer tests that were conducted in two wells near Desert Center and from data collected from three wells in the Eagle Mountain Mine area. Table 2 is a summary of the aquifer hydraulic characteristics of the Chuckwalla Valley Groundwater Basin based on the test data and assumed values that were incorporated into an analytical groundwater model that uses a Taylor series approximation of the Theis non-equilibrium well function (Theis, 1935).

Table 2
Summary of Aquifer Characteristics of Chuckwalla Valley Groundwater Basin

Source of Test Data	Storativity (unit less)[5]	Hydraulic Conductivity (feet/day)	Transmissivity (gallons per day/foot)	Saturated Aquifer Thickness (feet)
Well Log	Not Reported	101	64,000	85
Well Log	Not Reported	39	48,000	166
Well Log	Not Reported	44	57,000	175
Well Log	Not Reported	51	57,000	150
Pump Test	0.06	118	264,002	300
Pump Test	0.05	139	311,288	300
Values used for water supply modeling	0.05	125	280,000	300
Values used for seepage modeling	0.05	50	56,000	150

To reduce the impacts of groundwater pumping, the Project supply wells will be constructed to minimize overlapping cones of depression, and seepage interceptor wells will be installed to recover seepage and groundwater equal to the estimated seepage volume from the reservoirs, as established under Condition 7 of this water quality certification. Because not all seepage will be captured by the seepage interceptor wells, reservoir surface water quality and reservoir seepage water quality shall be higher or equal to native groundwater quality. Reservoir seepage water quality will be determined at the horizontal monitoring wells installed immediately below the liner at each reservoir. Groundwater and recovered seepage will be used to offset evaporative and seepage losses from the reservoirs.

2.2.1.1 Groundwater Modeling

Hydraulic data and groundwater level measurements were supplemented with the Taylor series approximation of the Theis non-equilibrium well function analytical model to assess pumping effects. Using the aquifer characteristics presented in Table 2, the analytical

[5] Storativity is a ratio of the volume of water that a permeable unit will absorb or expel from storage per unit surface area per unit change in head.

model was used to estimate drawdown from Project pumping. Use of the analytical approach correlated favorably, $R^2 = 0.994$, with the available groundwater level measurements (projections versus actual groundwater level measurement differences range from one to seven feet). Sensitivity analyses show that using lower hydraulic conductivities would predict less drawdown at a distance from the well, indicating that the model estimated maximum drawdown is a conservatively high estimate.

Project-Specific Results:

The analytical model was used to estimate the maximum drawdown from Project-only pumping at the end of 50 years[6]. Model results show maximum estimated drawdown from Project-only pumping at the following locations:

- Four feet beneath the CRA in the upper Chuckwalla Valley Groundwater Basin;
- Four feet beneath the CRA in the Orocopia Valley;
- Three feet at the mouth of the Pinto Valley Groundwater Basin;
- 50 feet at the Project supply wells near Desert Center; and
- 10 feet at a distance of one mile from the Project supply wells.

After the four-year initial fill of the reservoirs to full operating capacity, it will take approximately two years for water levels at the Project supply wells to rebound from 50 feet of drawdown to about 11 feet of pre-drawdown levels. After 50 years of Project operation, there will be approximately 14 feet of drawdown at the Project supply wells associated with the Project. Project use of groundwater by itself is not expected to result in drawdown of groundwater in excess of maximum historic levels.

Project and Non-Project Results:

The analytical model was also used to estimate cumulative effects of groundwater drawdown from Project and non-Project use. The analytical model evaluated Project use of groundwater, existing uses of the aquifer, and potential future uses of the groundwater proposed by solar energy generators and a proposed Landfill. Over a 50-year period, overall cumulative groundwater use will add about 3 to 10 feet of additional drawdown in pumping areas. Model results showed a maximum cumulative estimated drawdown in the following locations:

- 14 feet beneath the CRA in the upper Chuckwalla Valley Groundwater Basin;
- 9 feet beneath the CRA in the Orocopia Valley;
- 10 feet at the mouth of the Pinto Valley Groundwater Basin;
- 60 feet near the Project supply wells near Desert Center; and
- 10 feet at a distance of about 1.5 miles from the Project supply wells.

[6] A 50-year term license is sought by the Applicant. The Project is required to undergo a new environmental analysis prior to relicense or surrender of the license.

Analytical modeling results show that cumulative groundwater use will result in exceedance of the maximum historic drawdown in the following locations:

- CRA in the upper Chuckwalla Valley Groundwater Basin (seven feet below historic levels);
- CRA in the Orocopia Valley (six feet below historic levels); and
- Mouth of the Pinto Valley Groundwater Basin (one foot below historic levels).

The maximum depletion in storage from the Chuckwalla Valley Groundwater Basin, as a result of the Project, and existing and future uses, will be about 104,000 AF and is projected to occur approximately 33 years after starting the initial fill of the reservoirs. The maximum projected depletion in storage would be about one percent or less of the 9.1 to 15 million AF of groundwater in the basin estimated by DWR (DWR 1975 and DWR 1979).

There are about 150 feet of saturated alluvium in the upper Chuckwalla Valley Groundwater Basin. Cumulative impacts from Project and non-Project uses, conservatively assuming zero groundwater recharge, will lower groundwater levels by about 10 to 18 feet over a 50-year period, leaving over 130 feet of saturated alluvium to continue to supply water to the wells in the upper Chuckwalla Valley Groundwater Basin.

2.2.2 Reservoir Seepage Analyses

Potential seepage from the reservoirs was analyzed and presented in the Final EIR in two technical memorandums titled: *Eagle Mountain Pumped Storage Project – Seepage Analyses for Upper and Lower Reservoirs, prepared by GEI Consultants, Inc.* (GEI Consultants, Inc., 2009b), and *Eagle Mountain Pumped Storage Project – Seepage Recovery Assessment* (GEI Consultants, Inc., 2009c).

The expected quantity of seepage through the Upper and Lower Reservoirs was evaluated by performing seepage analyses using the SEEP/W module of the two dimensional, finite-element geotechnical engineering software GeoStudio 2007. Different input parameters were used in the model to review alternatives that could be used to reduce seepage from the Lower and Upper Reservoirs and to account for variable subsurface conditions of the two reservoirs. The Lower Reservoir will be partially situated on unconsolidated alluvium, whereas the Upper Reservoir will sit atop fractured bedrock. The estimates of hydraulic conductivity for the various geologic materials were developed based on the results of field permeability tests, laboratory permeability tests, correlations with published values based on material descriptions, and empirical correlations between grain size and permeability. These estimates are based on a small quantity of samples because the Applicant currently does not have access to the site. Seepage flow rates and gradients were estimated at both the Upper and Lower Reservoir sites using liner thicknesses of three, five, and eight feet at minimum and maximum water storage elevations.

Results of the seepage analyses found that:

- Upon filling of the Upper and Lower Reservoirs some seepage is expected. The seeping water could potentially result in ground subsidence near the CRA resulting from hydrocompaction of the sediments. The majority of the seepage from the reservoirs is anticipated to travel generally from west to east towards the Chuckwalla

Valley Groundwater Basin, similar to the existing groundwater conditions at the Project site (GEI Consultants, Inc., 2009b).

- Based on the seepage analyses and assuming no reservoir seepage reduction measures, the estimated annual average seepage volume from the Upper Reservoir is approximately 1,200 AF, and the estimated annual seepage volume from the Lower Reservoir is approximately 1,730 AF. The estimated annual seepage volume for the Lower Reservoir is about 44 percent or 530 AF more than the Upper Reservoir because the eastern wall of the Lower Reservoir primarily consists of alluvial sediments and debris flow deposits, which have significantly higher hydraulic conductivities.
- Grouting and a fine tailings liner in the Upper Reservoir of eight feet in thickness would reduce the average annual seepage volume by about 40 percent. The average reduction for the Upper Reservoir is estimated to be approximately 510 AF annually, with an eight-foot thick liner in place. Additional seepage measures may be needed for the Upper Reservoir and will be evaluated further as part of the Phase I and Phase II Site Investigations (Condition 1) and seepage management (Condition 7).
- The maximum reduction estimated for the Lower Reservoir was approximately three percent or 50 AF annually using a fine tailings liner only. The fine tailings liner thickness had minimal impact on the estimated reduction in annual seepage volume from the Lower Reservoir. The upper half of the east walls in the Lower Reservoir consists of an alluvium deposit that is too steep to support the fine tailings liner. Using an eight-foot thick liner composed of fine tailings, grouting rock fractures, and roller compacted concrete, as needed, would reduce the average annual seepage volume of the Lower Reservoir by approximately 1,020 AF. Additional seepage measures may be needed for the Lower Reservoir and will be evaluated further as part of the Phase I and Phase II Site Investigations (Condition 1) and seepage management (Condition 7).

2.2.2.1 Potential Impacts from Reservoir Seepage

Seepage from the reservoirs has the potential to affect groundwater quality, the CRA, and the liner of the proposed Landfill. The beneficial uses of groundwater identified for the Chuckwalla Valley Hydrologic Unit are: municipal supply and domestic supply (MUN); industrial service supply (IND); and agricultural supply (AGR). The Colorado River Regional Water Board water quality standards for groundwater apply to the Project's surface waters. The Colorado River Basin Plan states that whenever existing water is better than the quality established as objectives, such water quality shall be maintained. Table 3 shows the numeric standards for inorganic chemical constituents that apply to water designated for MUN use, as outlined in the Colorado River Basin Plan at the time of water quality certification issuance. Table 3 also contains preliminary background water quality near the proposed reservoirs location and Desert Center. The preliminary background groundwater quality currently exceeds the numeric MUN standards for some constituents. In cases where the preliminary background groundwater quality exceeds the numeric MUN standards, groundwater quality shall not be degraded. The background groundwater quality will be confirmed during the Phase II Site Investigations and prior to Project construction, as presented in Condition 1 of this water quality certification.

Table 3
Colorado River Regional Water Board Numeric Standards for Inorganic Chemical Constituents for MUN Use Designation and Chuckwalla Valley Groundwater Quality

Inorganic Chemical Constituent	Basin Plan MCL** (mg/L)	Preliminary Background Groundwater Quality (Bedrock beneath Project)[1]		Preliminary Receiving Groundwater Quality (Alluvium in Upper Chuckwalla Valley)		Source Water to Fill Reservoirs (Near Proposed Project Wells)	
		Min	Max	Min	Max	Min	Max
Arsenic	0.01	<0.01	<0.01	0.0058*	0.024*	0.009*	0.025*
Barium	1.0	Unk	Unk	0.011	0.049	Unk	Unk
Cadmium	0.005	Unk	Unk	<0.0001	0.0002	Unk	Unk
Chromium (total)	0.05	0.02	0.98	<0.001	0.07	Unk	Unk
Fluoride	2.0	0.6*	5.1*	0.5	10	3.6*	12*
Lead	0.015	<0.01*	0.01*	<0.001	0.29	Unk	Unk
Mercury	0.002	Unk	Unk	<0.0002	<0.0002	Unk	Unk
Nitrate (as NO3)	45	0.2*	74*	<0.1	51	0.65*	14*
Nitrate+Nitrite (as N)	10	Unk	Unk	Unk	Unk	Unk	Unk
Selenium	0.005	Unk	Unk	<0.005	0.008	<0.5*	<0.5*
Silver	0.10	Unk	Unk	<0.010	<0.010	Unk	Unk
Total Dissolved Solids (TDS)	N/A	685*	1,170*	430	1,480	390*	925*
pH	N/A	7.7	8.1	6.6	8.6	7.1*	8.7*

Unk = Unknown
mg/L = Milligrams per Liter
N/A = Not Applicable (no MCL)
[1] Data provided from monitoring wells in the mining pits area. Background groundwater quality for water quality certification compliance will be determined once the Applicant has access to the Central Project Area and prior to Project construction.
* Indicates that there were less than four quarters of data.
** Colorado River Basin Plan, 2011.

Without reservoir seepage reduction measures and interceptor wells, it will take at least 15 years for the steady-state groundwater profile of the Lower Reservoir to fully develop. This estimate conservatively assumes a two-year filling period, a continually full Lower Reservoir, and the maximum estimated seepage volume is achieved from the Lower Reservoir. Under the same assumptions, the Upper Reservoir groundwater profile will take at least 50 years to reach steady-state conditions. Existing groundwater levels are estimated to be 1,000 feet below the lowest level of the Upper Reservoir and less than 100 feet below the lowest level of the Lower Reservoir.

Groundwater resource impacts will be addressed by implementation of Condition 5. Impacts associated with reservoir seepage will be addressed by implementation of Condition 7.

Background on the potential impacts to groundwater associated with each reservoir is presented below.

Lower Reservoir:

The numerical model MODFLOW was used to assess the effects of seepage from the Lower Reservoir on local groundwater levels. Based on the seepage analysis and geologic assessment of the Upper and Lower Reservoirs, the Lower Reservoir will have larger increases in groundwater elevations. Operation of the Project will allow only one reservoir to be full at any one time, but there will always be dead storage water left in each reservoir. To provide a conservatively high estimate of the potential impacts of seepage on the CRA facilities, the reservoir that will produce the most seepage while full (i.e., the Lower Reservoir) was evaluated.

Results of the MODFLOW model indicate that groundwater levels in the vicinity of the CRA would increase by up to three feet as a result of seepage from the Lower Reservoir if seepage volume is not recovered by interceptor wells. Because the estimated groundwater elevation is predicted to be approximately 450 feet below the ground surface in the vicinity of the CRA, no uplift forces are expected on the concrete lining of the CRA. The MODFLOW model considered that six seepage interceptor wells would be constructed east of the Lower Reservoir to recover seepage from the Lower Reservoir and return it to the Lower Reservoir. Condition 1 and Condition 7 of this water quality certification require additional assessment of potential seepage impacts.

Upper Reservoir:

A groundwater model was not developed to assess seepage from the Upper Reservoir because there is insufficient data available to develop a valid model.

A geologic assessment of the major faulting pattern was prepared to develop a preliminary seepage interceptor well network to recover the seepage from the Upper Reservoir. Seepage from the Upper Reservoir is anticipated to occur along joints, fractures, and faults that cross beneath the Upper Reservoir. Observations from two borings completed in the Upper Reservoir site vicinity suggest that water may be present in joints and fractures at various depths and that lower fractures are either dry or at lower heads. Seepage interceptor wells will be installed in the proximity of the major faults south of the Upper Reservoir and along the axis of Eagle Creek Canyon to recover seepage and provide secondary control to prevent groundwater levels from rising beneath the proposed Landfill.

The Project could be operating in conjunction with the neighboring proposed Landfill. The site for the proposed Landfill is east (downgradient) of the Upper Reservoir. In the case of consistently high water levels in the Upper Reservoir and efficient interconnectivity of bedrock fractures, there is the potential that seepage from the reservoir could encounter the lining of the proposed Landfill. However, with seepage control measures, groundwater levels resulting from seepage from the Upper Reservoir are estimated to rise to 125 feet below ground surface. If the Upper Reservoir is kept constantly full with no seepage control wells, groundwater levels are estimated to rise to 50 feet below ground surface. Potential impacts to the proposed Landfill, associated with reservoir seepage, will be addressed by implementation of Condition 7.

2.3 Biology

Four federal- or state-listed species are included in the list of special-status species that may occur or have been documented to occur in the Project vicinity. The federal- or state-listed species with the potential to be affected by Project activities include: Coachella Valley Milkvetch; American Peregrine Falcon; Gila Woodpecker; and Desert Tortoise. Federal-listed species are identified by the United States Fish and Wildlife Service (USFWS) and BLM. State listed species are identified by the California Department of Fish and Wildlife (CDFW, formerly known as the California Department of Fish and Game) and/or the California Native Plant Society.

Potential impacts to the four listed species are described in the Final EIR as follows:

- Coachella Valley Milkvetch. Based on site reconnaissance and literature review, this species is not expected to be located on-site, or in areas that will be affected by the Project. Therefore, it is highly unlikely that there would be any Project effects on the Coachella Valley Milkvetch. However, if found, this impact would be potentially significant. Project Design Feature (PDF) BIO-2, included in the Final EIR's Mitigation Monitoring and Reporting Plan (MMRP), is designed to ensure that no Coachella Valley Milkvetch will be disturbed. Per PDF BIO-2, if Coachella Valley Milkvetch is found, the Applicant will immediately notify and obtain guidance from CDFW on appropriate mitigation.

- American Peregrine Falcon. Based on site reconnaissance and literature review, this species is not expected to be located on-site or in areas affected by the Project. This species is not found in Riverside County, and has not been found during previous surveys of the Project area, including the Central Project Area. Therefore, it is highly unlikely that there would be any Project effects on the American Peregrine Falcon. However, if found on site, this impact would be potentially significant. PDF BIO-1, included in the Final EIR's MMRP, requires pre-construction surveys to verify that no American Peregrine Falcon will be disturbed. Per PDF BIO-1, if any American Peregrine Falcons are found, the Applicant will immediately notify and obtain guidance from CDFW on appropriate mitigation.

- Gila Woodpecker. Based on site reconnaissance and literature review, this species is not expected to be located on-site, in areas affected by the Project, or residential areas. Between the small residential areas (town of Eagle Mountain, town of Desert Center, and the community of Lake Tamarisk) and the Central Project Area is a broad area of inhospitable habitat. However, if found, this impact would be potentially significant. PDF BIO-1, included in the Final EIR's MMRP, requires pre-construction surveys to be conducted to ensure that no Gila Woodpecker will be disturbed. Per PDF BIO-1, if any Gila Woodpeckers are found, the Applicant will immediately notify and obtain guidance from CDFW on appropriate mitigation.

- Desert Tortoise. Desert Tortoise may be affected by Project construction, particularly along the proposed transmission corridor. The Project may adversely affect Desert Tortoise, and as such, this impact is potentially significant and subject to mitigation. Comprehensive Desert Tortoise surveys were conducted by the Applicant in early April of 2008, 2009, and 2010. Results of the surveys show that habitat for Desert Tortoise exists within the Project area. The recommendations and findings from the surveys are incorporated in seven mitigation measures (MM TE-1 through MM TE-7) identified in the Final EIR's MMRP. A Biological Opinion (BO) for the Desert Tortoise

was prepared by the USFWS, and CDFW issued a related Consistency Determination for the Project.

In addition to the four species listed above, the Final EIR evaluates the potential for the Project to increase the local raven population. If ravens increase in response to additional water resources at the Project, these ravens could forage in the Joshua Tree National Park (JTNP) or disperse into JTNP from enhanced reproductive opportunities. This impact is potentially significant and is addressed in MM TE-5 of the Final EIR's MMRP.

Couch's spadefoot toad was also identified as a species that could be affected by Project construction. During construction of all Project facilities, any ephemeral pools that develop in response to intense rainfall showers from early spring through fall shall be examined for larvae of the Couch's spadefoot toad. Construction activities will avoid disturbing or restricting flow to impoundments that could support Couch's spadefoot toad. If larvae are present, the pools shall be flagged and avoided by construction activities. Where pools cannot be avoided, new pools shall be constructed and larvae transplanted, as outlined in MM BIO-9 of the Final EIR's MMRP.

Implementation of Condition 2 of this water quality certification addresses impacts to biological resources.

3.0 Construction Activities

Construction activities fall into three general categories: (1) construction related to the generation of electrical power; (2) construction related to pollution prevention and control measures; and (3) other construction activities not described in (1) or (2). Each category is described further below.

3.1 Electrical Power Generation

Construction activities related to the generation of electrical power for the Project include: construction of three new wells for water supply; excavation for and installation of the water supply pipeline; construction of support pads and installation of the power transmission lines; construction of two dams in the Upper Reservoir; construction of spillways and discharge channels for both reservoirs; tunnel excavation for water conveyance between the two reservoirs including inlet structures; underground excavation for the powerhouse; construction of an on-site switchyard; construction of permanent access roads including road cuts and embankments; construction of Project offices and security lighting structures; and construction of an interconnection switchyard near Desert Center.

3.2 Pollution Prevention and Control Measures

Construction activities associated with pollution prevention and control measures include: installation of liners in the Upper and Lower Reservoirs; construction of seepage interceptor wells to recover and return seepage to the reservoirs; construction of a water treatment system to treat reservoir and seepage water to maintain water quality; a waste management system for storage of wastewater; potential modification of the Eagle Creek channel to increase capacity; installation of vertical and horizontal monitoring wells to measure groundwater levels and to monitor groundwater and seepage water quality; and installation of extensometers to measure ground subsidence.

3.3 Other

Other construction activities include minor construction such as fence installation and road maintenance that will occur over the life of the Project.

Construction in the Project area may impact wildlife that occupy or migrate through the Project area.

Implementation of Condition 2, Condition 3, and Condition 4 of this water quality certification addresses impacts associated with construction activities.

4.0 Control Measures and Environmental Mitigation

The following control measures and environmental mitigation will be implemented to ensure that there will be minimal impacts to the environment from Project activities.

4.1 Erosion Control

Erosion and sediment control measures will be implemented to minimize the erosion of soils in construction areas and prevent the off-site transport of sediment.

Three area types are defined for erosion and sedimentation control measures based on their similar characteristics and anticipated impacts: Area Type 1 represents locations and activities with a high potential for environmental impacts; Area Type 2, represents locations and activities with a moderate potential for environmental impacts; and Area Type 3, represents the lowest potential for environmental impacts. The different area types are shown on Figure 4 in the Erosion and Sedimentation Control Plan included in Section 12.2 of the Final EIR.

Area Type 1

Area Type 1 includes cleared and graded areas for minor cuts and fills of permanent features such as roads, power cable conduit trenches, the interconnection switchyard near Desert Center, and transmission tower pads.

This area type encompasses construction where Project facilities and above ground structures will remain after construction is finished. Most of these areas were impacted during previous mining activities on the Project site. Area Type 1 locations include:

- The staging, storage and administrative area, where a permanent office will remain after construction activities finish;
- The work around permanent access roads;
- The Project site switchyard and surrounding area, including east along the access road;
- Road cuts and embankments;
- Transmission tower pads along the power transmission line that will extend aboveground from the Project site switchyard approximately 17 miles south to the Eastern Red Bluff Substation, which is located south of Interstate 10 and about four miles east of Desert Center;
- The water treatment facility;
- The waste management and storage area for water treatment wastes;
- Lower Reservoir inlet/outlet structure;

- Upper Reservoir inlet/outlet structure;
- West and south saddle dams on the Upper Reservoir;
- Upper and Lower Reservoir spillways and discharge channels; and
- Eagle Creek channel improvements.

Material from the tunnel excavation will be used during construction of the proposed Project to the extent feasible. Tunnel material can be used for backfill, road base, rough grading, flood berms, and possibly as aggregate for roller compacted concrete in the dams. Any material from the tunnel excavation in excess of what is used in construction will be placed in the reservoirs or in areas from which fine tailings were removed. Any material removed from tunnel excavation shall be tested before being placed in the reservoirs and not contribute to water acidity or metal leaching. The Upper Reservoir will have 2,300 AF of dead storage volume, and the Lower Reservoir will have 4,300 AF of dead storage volume. A portion of this volume could be used for disposal of tunnel excavation spoil material as long as it does not interfere with performance of the reservoir intake and outlet works and will not impact water quality. The estimated quantity of material to be excavated is shown in Table 4.

Table 4
Estimated Quantity of Excavated Material During Project Construction

Feature	**Quantity of material (in-place volume)**
Tunnel Excavations	736,000 cubic yards (CY)
Underground Caverns	132,000 CY
Excavations and Benching for Intakes	673,000 CY
Total if Compacted	1,541,000 CY (approximately 955 AF)
Total (includes additional 15% volume for air voids)	1,772,000 CY (approximately 1,100 AF)

Area Type 2

Area Type 2 includes areas that will be cleared and graded (minor cuts and fills) to accommodate construction operations and access. These temporary use areas would be initially cleared of vegetation and would be re-vegetated after construction. The following areas are identified as Area Type 2:

- The area around the surge tank and shaft and above the powerhouse;
- The area where the transmission line daylights from the tunnel portal and along the overhead transmission line alignment to the switchyard;
- The water supply pipeline extending from wells in the Chuckwalla Valley approximately 15 miles northwest to the Lower Reservoir;
- The area around the water treatment facility supply pipeline from the Upper Reservoir to the water treatment facility site and staging area;
- The area around the water treatment facility pipeline to the waste disposal area;
- Any areas that contain washes, dry streams, or channels that intersect with proposed alignments and construction activities; and
- The areas adjacent to temporary access and construction roads, and temporary soil stockpiles.

Area Type 3

Area Type 3 includes locations for the Upper and Lower Reservoirs used for temporary stockpiling of construction materials and the monitoring and seepage interceptor wells. The following areas are identified as Area Type 3:

- The eastern portion of the Upper Reservoir;
- The western portion of the Lower Reservoir; and
- Construction areas for monitoring and seepage interceptor wells.

4.2 Pollution Prevention Management Practices

The Applicant will use appropriate management practices to: (1) stabilize soil and prevent erosion to retain sediment before it can travel into surface drainages; (2) limit or reduce potential pollutants at their sources; and (3) eliminate off-site discharge. Management practices commonly used to protect water quality for this type of construction project are presented in the Erosion and Sedimentation Control Plan, in Section 12.2 of the Final EIR.

4.2.1 Erosion and Sediment Control Management Practices

Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming suspended in runoff. Soil stabilization practices protect the surface by covering or binding soil particles. Construction operations for the Project will follow dust control guidelines that are defined in the protection, mitigation, and enhancement measures developed for air quality in the Final EIR. The Applicant will implement management practices for effective soil stabilization during and after construction, as required by Condition 3 of this water quality certification.

4.2.2 General Pollution Prevention Management Practices

The Applicant will implement general source control measures as described in Condition 4 of this water quality certification to prevent or minimize pollution.

4.3 Environmental Mitigation

Environmental mitigation measures are identified in the Final EIR for the Project. The Applicant, by letter to the State Water Board dated February 27, 2013, committed to implement all mitigation measures listed in the Final EIR, at the appropriate times, throughout the life of the Project. The Final EIR, CEQA Findings, and Statement of Overriding Considerations will be adopted concurrently with this final water quality certification. The CEQA Findings and Statement of Overriding Considerations will be included as Attachment C of this final water quality certification.

Prior to Project construction, Phase I and Phase II Site Investigations, as described in Condition 1 of this certification and Section 12.1 in Appendix C of the Final EIR, must be completed to confirm previous studies conducted in the Central Project Area. If the results from the Phase I and Phase II Site Investigations identify additional impacts not addressed in the Final EIR, Project activities will cease until appropriate mitigation measures are identified and incorporated into the Project. Any newly identified significant impacts will need to be analyzed in accordance with CEQA before the Project's final design is completed.

4.4 Surface Water Protection

No perennial streams occur within the Project boundary or Project drainage area. There are two main surface drainage features at the Project site: Eagle Creek and Bald Eagle Creek. Both creeks are ephemeral streams. They are generally dry throughout the year, except during large storm events that occur infrequently in the area. Eagle Creek is located on the southern edge of the Project site. Eagle Creek is currently diverted in two locations by embankments in the main channel that direct flood flows into the proposed Lower Reservoir site. These engineered embankments were constructed during active mining operations to provide flood protection to the Eagle Mountain town site. Bald Eagle Creek also drains into the proposed Lower Reservoir site. Additionally, the proposed reservoir sites receive incidental runoff and sheet flow from surrounding slopes in a limited watershed area within the historically mined lands. Both the Upper and Lower Reservoir sites are located in closed basins, with minimal drainage areas.

Once full, the Upper and Lower Reservoirs will become two large water bodies. The newly created surface water will be used for hydropower generation to improve interstate and intrastate grid operations. The conditions in this certification, along with the mitigation measures adopted by the Applicant will ensure that water quality of the reservoirs will be maintained consistent with the Colorado River Basin Plan.

With the Project, runoff from Eagle Creek will follow current drainage channels to discharge into the Lower Reservoir. Water from the reservoirs will be treated to maintain salinity levels, pH levels, and metal concentrations at or below the existing background groundwater quality levels. Background groundwater quality will be established before construction of the Project as described in Condition 7 of this water quality certification.

The CRA is located east of the proposed reservoirs. If unmanaged, seepage from the reservoirs could cause groundwater levels to rise in the sediments underlying the CRA and cause structural instability or subsidence. In order to protect the CRA, seepage from the reservoirs will be recovered via interceptor wells, which will be constructed and operated to maintain groundwater levels per Condition 7. The groundwater collected at the seepage interceptor wells will be returned to the reservoirs.

To prevent uncontrolled over-topping of the reservoirs, spillways will be installed in both reservoirs. The Upper Reservoir spillway is designed to discharge into the Eagle Creek channel, which drains into the Lower Reservoir. Engineering surveys will be performed to determine if the Eagle Creek channel needs to be modified to increase its capacity. If modifications to the Eagle Creek channel are necessary, a Lake and Streambed Alternation Agreement, pursuant to section 1602 of the Fish and Game Code, may be necessary. The overflow spillway will be located on the southeast rim of the Lower Reservoir and will discharge into a channel. The channel will cross Eagle Mountain Mine property and pass over the underground CRA. Channel characteristics are described in Section 12.9 of the Final EIR.

Flows will be discharged downgradient from the CRA and are expected to spread laterally at shallow depths over the alluvial fan.

Springs that are fed by groundwater in the Eagle Mountains (see Final EIR, Figure 3.3-1) are hydrologically disconnected from the aquifers of the Pinto Valley Groundwater Basin and the Chuckwalla Valley Groundwater Basin (United States Department of the Interior, NPS, 1994). The proposed Upper Reservoir operating level will be at a higher elevation than the Eagle Tank and Buzzard springs. The springs are located in the bedrock above the Pinto Valley Groundwater Basin and the Chuckwalla Valley Groundwater Basin. The spring water comes from joints and fractures in the rocks above the springs. There are two predominant fracture systems, as demonstrated by major faults in the area, which are oriented northeast-southwest and generally east-west (see Final EIR, Figures 3.3-3 and 3.3-18). Seasonal precipitation likely fills the fractures. None of the springs are documented as permanent, year round springs (SCS Engineers, 1990). Both springs are identified as Unlisted Springs in the Colorado River Basin Plan with the following site-specific use classifications: groundwater recharge; water contact recreation; non-contact water recreation; warm and/or cold freshwater habitat; wildlife habitat; and preservation of rare, threatened, or endangered species.

Buzzard spring is located 4.3 miles from the southern edge of the Upper Reservoir and 3.4 miles from the western tip of the Lower Reservoir. Bald Eagle Canyon is in between the reservoirs and Buzzard spring, at a lower elevation than the spring, so seepage from the reservoirs is not expected to affect Buzzard spring.

Eagle Tank spring is located more than three miles from the western edge of the proposed Upper Reservoir. It is unlikely that there are major geologic fractures connecting the Upper Reservoir to the Eagle Tank spring over the distance separating the two features.

Reservoir water quality could potentially be affected by contact with the ore body and tailings. The primary minerals found in the reservoir sites are magnetite and pyrite. Pyrite and other sulfide minerals can oxidize in the presence of oxygen and water, and form acidic water conditions in the reservoirs. As the water becomes more acidic, the capacity to dissolve other elements from the ore increases. Water contact with the ore body can lead to metals leaching into the water, even without acidic conditions. On-site studies during the Phase I Site Investigations will be conducted to determine the acid production potential from the ore body and tailings, and the potential for metal leaching, as required by Condition 1 of this water quality certification.

Reservoir Seepage Control Measures and Recovery

Seepage control measures will be constructed to limit seepage from the reservoirs. In addition to the installation of a fine tailings liner, the Applicant will consider seepage control measures such as geosynthetic liners, roller compacted concrete, soil cement treatment and grouting of faults, fractures, and joints.

Seepage interceptor wells will be constructed and used to control seepage from the reservoirs and maintain groundwater levels and quality. Seepage interceptor wells will be constructed in the downgradient direction of both the Upper and Lower Reservoirs. Groundwater quality monitoring will be conducted in the seepage interceptor wells, private neighboring wells whose owners voluntarily cooperate, and other monitoring wells to determine whether groundwater is being adversely impacted by Project operations.

Seepage control methods will be further investigated and refined using data from the Phase I and Phase II Site Investigations conducted after the Applicant gains full site access. Control methods will be identified to maintain seepage below the updated estimated seepage volumes developed based on the investigations. Such seepage control methods may include, but are not limited to, the following:

- Curtain grouting of the foundation beneath the Upper Reservoir dam's footprint and around the reservoir rim;
- Backfill concrete placement and/or slush grouting of the faults, fissures and cracks on the Upper Reservoir;
- Placement of low permeability materials, as technically feasible, over zones too large to be grouted in the Upper Reservoir and over areas of alluvium within the Lower Reservoir;
- Blanket the entire alluvial portion of the Lower Reservoir with stepped roller compacted concrete or soil cement overlay; and
- Seepage collection and monitoring systems positioned based on the results of the hydrogeologic analyses.

A Seepage Management Plan will be developed to describe the controls and monitoring that will be used to protect groundwater from reservoir seepage, as required by Condition 7 of this water quality certification.

Water Treatment

The water treatment facility will treat water drawn from the Upper Reservoir to maintain TDS in both reservoirs at roughly the same average salinity concentration as the background groundwater. Preliminary tests show that the background groundwater TDS is approximately 660 mg/L, based on available data for existing Chuckwalla Valley Groundwater Basin wells. Treated water will be discharged to the Lower Reservoir. Water treatment facilities are expected to remove approximately 2,500 tons of salts from the reservoirs each year. The facilities are expected to generate approximately 270 AF of brine per year. In addition to removing salts from the reservoirs, other contaminants (including nutrients and minerals), if present, would be removed. Depending on the constituents found in the dried brine, final disposal may require a facility approved to receive hazardous waste.

The water treatment technologies evaluated in the Final EIR consist of dissolved air flotation (DAF); automatic backwash screens; microfiltration (MF); and reverse osmosis (RO). If these technologies are not supplanted by more effective technologies prior to license issuance, the Applicant plans to incorporate these technologies in the design of the water treatment facility. DAF is a clarification process to treat water from the reservoirs for turbidity and suspended solids control. DAF removes algae, which could be a potential problem as it could foul turbines and pumps. The RO system will separate dissolved salts from Upper Reservoir water, producing finished (treated) water and brine. Finished water from the RO treatment plant would be returned to the Lower Reservoir. Brine from the treatment process will be discharged to brine ponds for evaporation, concentration and storage, and ultimate off-site disposal.

The Final EIR discloses impacts associated with waste management through the use of brine ponds managed as Class II surface impoundments.

Brine will be discharged to brine ponds for drying and storage. Brine will enter the brine ponds at a rate of approximately 170 gpm or 270 AFY. The total pond area will be approximately 56 acres or about 2.5 million square feet, excluding protective berms.

The initial design for the brine ponds includes six evaporation ponds, where brine salinity concentrations will vary, and five salt solidifying ponds. Each of the six evaporation ponds will cover approximately 8.2 acres, and each salt solidifying pond will cover approximately 1.3 acres. The brine will flow from one pond to another, with increasing salinity as evaporation of water occurs. Pond design includes berms with double liners to protect against seepage. A leachate collection and recovery system will be installed between the liners.

Over a period of approximately 10 years, the salt level in the ponds will increase and salts will be mechanically removed from the ponds unless state, regional or local rules direct otherwise. Based on the pond size and the salt balance, the estimated rate of salt build-up is on the order of 0.25 to 0.5 inches per year. Salts will be collected, removed and disposed of from the brine ponds on an as-needed basis (anticipated to be approximately every 10 years). After salt removal, brine pond liners will be inspected and repaired or replaced as needed.

A Water Treatment, Waste Management, Storage, and Disposal Plan will be developed as required in Condition 8 to identify the proposed manner for handling water treatment facility wastes, including solids from the DAF unit and brine resulting from RO.

5.0 Rationale for Water Quality Certification Conditions

The State Water Board: held two CEQA scoping meetings with interested parties prior to the development of the Draft EIR; publicly circulated a Draft EIR; received comments on the Draft EIR; responded to comments on the Draft EIR; released a Draft Final EIR; and reviewed and considered the Colorado River Basin Plan, the Commission's Final Environmental Impact Statement (EIS), and other information in the record. In addition, the State Water Board considered the existing water quality conditions and Project-related controllable factors, and developed conditions to ensure protection of the water quality and beneficial uses of the water bodies affected by the Project.

Measures that provide protection to beneficial uses of water resources form the basis for the conditions of this certification. Some conditions call for development of a plan subsequent to certification. This approach is necessary to ensure all Project-related impacts are addressed during the construction period and during operations for the life of the Project. These plans must be reviewed and approved by the Deputy Director prior to implementation unless otherwise noted. This water quality certification may also specify instances where other agencies are anticipated to exercise approval authority. The Deputy Director shall be notified when approval is sought from another agency for a plan, action or report.

The following describes the rationale used to develop most of the conditions in the water quality certification. The conditions for which additional rationale is not provided below (Conditions 10 – 35) are additional conditions commonly applicable to hydroelectric projects that, in this case, are necessary to ensure the protection of water quality standards over the term of the license and any annual extensions.

Rationale for Specific Water Quality Certification Conditions

Due to site access constraints, detailed site investigations have not been conducted at the Central Project Area, which includes both reservoir sites and the powerhouse location. Once site access is granted, Phase I and Phase II Site Investigations will be conducted to confirm that the basic Project feature locations are appropriate, confirm previous studies findings of the Central Project Area, and to provide parameters for the final layout and design of the Project. Implementation of Condition 1 will ensure that construction does not begin until Phase I and Phase II Site Investigations Reports confirm the location of Project features, the site geology, and the appropriateness of measures identified to control seepage and protect water quality. Condition 1 requires that the Phase I and Phase II Site Investigations Reports be submitted to the Deputy Director for review and approval prior to any construction activities.

Construction and daily operations of the Project may impact wildlife that occupy or migrate through the Project area. Implementation of Condition 2 will ensure wildlife protection from potential Project impacts.

Construction and operation of the Project has a potential to impact surface waters unless appropriate management practices are used. Management actions during construction will control the discharge of stormwater runoff. Erosion control practices and sediment control practices will be implemented during construction and for the life of the Project to minimize erosion of soils and sediment transport to surface waters. Compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit; Order No. 2009-0009-DWQ and NPDES No. CAS000002, as amended by Order No. 2010-0014-DWQ, as amended by Order No. 2012-0006-DWQ), and implementation of the PDFs included in the Final EIR will minimize impacts to surface waters. Condition 3 addresses stormwater runoff impacts from construction and operation of the Project. Implementation of Condition 3 will ensure that erosion and sedimentation are minimized or avoided.

Construction and operation of the Project includes the use of materials, oils, fuels, and chemicals that have the potential to pollute water and the environment. Implementation of Condition 4 will minimize the opportunity for these pollutants to enter water and the environment.

The Project reservoirs will be filled, and water levels maintained, with groundwater extracted from the Chuckwalla Valley Groundwater Basin. Groundwater levels are expected to decline (albeit to a lesser extent than the average observed during the 1981 through 1986 period) due to Project operation, existing uses, and proposed projects. Without mitigation, Project operation poses a potentially significant impact to the CRA and existing private wells. A Groundwater Level Monitoring Plan is necessary to confirm that impacts of Project pumping will be mitigated to the maximum extent feasible and that groundwater resources will be maintained as described in Section 2.2.2.1 of this water quality certification. Pumping will be monitored throughout the life of the Project to evaluate the potential effects of hydrocompaction and subsidence on the CRA. Condition 5 addresses potential impacts to nearby supply wells and the CRA.

Although water for Project operations will be supplied by groundwater, surface water management actions are needed to control the discharge of stormwater runoff from the Project site, to manage the reservoirs and reservoir discharges, and to prevent impacts to the Chuckwalla Valley Groundwater Basin, perennial springs, and other water bodies in the Project area. Implementation of Condition 6 will ensure surface water quality is maintained similar to

background groundwater quality to prevent reservoir surface water discharges from degrading water-bodies in the Project area.

The Upper and Lower Reservoirs will be designed with engineered seepage control measures to minimize seepage losses. However, some seepage is expected from both the Upper and Lower Reservoirs. Reservoir water and seepage may be in contact with ore. To prevent groundwater quality degradation, seepage interceptor wells will be constructed around the perimeter of the reservoirs in the down-gradient direction to recover seepage volume and return it to the reservoirs. Horizontal wells under the reservoir, seepage interceptor wells, and down-gradient monitoring wells will be used to monitor and assess impacts to groundwater quality and levels. Condition 7 addresses seepage management and groundwater quality monitoring.

Water quality in the reservoirs will be maintained by an RO treatment plant or other water treatment method. Operation of the water treatment facility will generate waste. The Final EIR considered long-term on-site waste storage of liquid treatment wastes in brine ponds. To ensure proper facility layout and waste management, the Applicant will submit a Water Treatment, Waste Management, Storage, and Disposal Plan to the Deputy Director for approval prior to Project construction. Implementation of Condition 8 will ensure that treatment wastes are managed, stored, and disposed of appropriately.

The water quality certification requires Deputy Director approval of several studies and plans. The purpose of requiring additional studies and plans is to further assess site conditions and to address potential Project impacts. Due to the duration of a FERC license, and in order to ensure the Project will not cause environmental degradation, a Contingency Plan is needed to address unforeseen issues that may arise related to Project construction and operation. Condition 9 requires the Applicant to develop a Contingency Plan to ensure the Project can modify operations if water quality or beneficial uses are being degraded after implementation of the mitigation measures identified in the Final EIR, the MMRP, and other provisions of this water quality certification.

6.0 Regulatory Authority

The Federal Clean Water Act (33 U.S.C. §§ 1251-1387) was enacted “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” (33 U.S.C. § 1251(a).) Section 101 of the Clean Water Act (33 U.S.C. § 1251 (g)) requires federal agencies to “co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.”

Section 401 of the Clean Water Act (33 U.S.C. §1341) requires every applicant for a federal license or permit which may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirement of state law. Section 401 further provides that water quality certification conditions shall become conditions of any federal license or permit for the project. The State Water Board is the state agency responsible for such certification in California. (Wat. Code § 13160.) The State Water Board has delegated this function to its Executive Director by regulation. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)

6.1 State Water Board and Regional Water Quality Control Board Authority

The California Regional Water Quality Control Boards (Regional Water Boards) adopt, and the State Water Board and United States Environmental Protection Agency approves water quality control plans (basin plans) for each watershed basin in the State. These basin plans designate the beneficial uses of waters within each watershed basin, and water quality objectives designed to protect those beneficial uses. Section 303 of the Clean Water Act requires the states to develop and adopt water quality standards. (33 U.S.C. § 1313.) The beneficial uses together with the water quality objectives and implementation plans that are contained in the basin plans and state and federal anti-degradation requirements constitute California's water quality standards.

In accordance with section 13245 of the Water Code, the Colorado River Regional Water Board adopted the Colorado River Basin Plan on November 17, 1993. The Colorado River Basin Plan includes amendments adopted by the Colorado River Regional Water Board through December 2011. Chapter 2 of the Colorado River Basin Plan defines beneficial uses and water quality objectives for waters of the State in the region, including groundwater and surface waters as discussed below.

Water use for the Project will be primarily from groundwater, with incidental surface water inflow (from storm events) to the reservoirs. The beneficial uses of groundwater of the Chuckwalla Valley Hydrologic Unit (717.00) are: MUN; IND; and AGR. The Colorado River Basin Plan does not list beneficial uses for surface waters in the Chuckwalla Valley; however, in 1988, the State Water Board adopted Resolution No. 88-63 (SB 88-63), the Sources of Drinking Water Policy. SB 88-63 considers all surface and groundwater to be suitable, or potentially suitable, for municipal or domestic water supply and that such water should be so designated by the Regional Water Boards. Criteria were provided in SB 88-63 that could be used by the Regional Water Boards to exempt water bodies through the basin plan amendment process. These criteria included: (1) surface and groundwater with greater than 3,000 mg/L of TDS; (2) surface and groundwater that cannot be reasonably treated for domestic use; (3) groundwater sources with yields below 200 gallons per day; (4) surface water in systems designed or modified to convey wastewaters and/or runoff; and (5) groundwater regulated as geothermal sources.

In the Chuckwalla Valley Groundwater Basin, historic groundwater quality TDS concentrations only occasionally exceed 3,000 mg/L (see Final EIR, Table 3.3-3). None of the other exceptions would apply to the aquifer, reinforcing that the current municipal or domestic water supply classifications are generally appropriate. Therefore, the Colorado River Regional Water Board water quality objective to maintain the existing groundwater quality applies to the Project waters.

6.2 Water Quality Certification

The Applicant originally applied for water quality certification for the Project on September 26, 2008. On an annual basis since 2008, the Applicant has withdrawn and resubmitted its application on a timely basis. The State Water Board provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858 on December 17, 2008, and posted information describing the Project on the Division of Water Rights' (Division) website.

6.3 California Environmental Quality Act

The State Water Board reviewed the Applicant's application for water quality certification and the Draft EIR prepared by the Applicant's consultant. The State Water Board subjected the Draft EIR to its own review and analysis. The Draft, Draft Final and Final EIRs reflect the State Water Board's independent judgment pursuant to its Lead Agency status under CEQA [Public Resources Code §§21000-21178 and California Code of Regulations, title 14, sections15000-15387 (CEQA Guidelines)].

The State Water Board released a Draft EIR for the Project on July 23, 2010 (State Clearinghouse No. 2009011010), and accepted comments on the draft until October 7, 2010. The Draft EIR evaluated potential impacts from the Project to water supply; water quality; compatibility with the proposed Landfill, existing Eagle Mountain Mine, and other adjacent proposed projects; biological resources; cultural resources; air quality; and aesthetics. The State Water Board received comments on the Draft EIR from 19 parties. These included comments from four federal agencies; six state and local government agencies; three environmental organizations; one Native American Tribe; one private company; three private individuals, and the Applicant. The State Water Board considered all the comments in the development of the Final EIR and released responses to comments received on the Draft EIR on January 25, 2013.

The Final EIR identifies three unavoidable and significant impacts: (1) air quality during Project construction activities; (2) visual resources; and (3) cumulative impacts to groundwater resources due to Project pumping combined with groundwater use for other reasonably foreseeable projects in the region. For unavoidable and significant impacts, CEQA requires public agencies to prepare a statement of overriding considerations, which reflects the ultimate balancing of competing public objectives (including environmental, legal, technical, social, and economic factors) that the agency must consider before deciding to carry out or approve a project. The State Water Board also prepared CEQA Findings[7] as required pursuant to CEQA Guidelines sections 15091-15093, and a MMRP. All mitigation measures in the Final EIR are incorporated by reference. The MMRP is included as Attachment B of this final water quality certification. The Applicant has agreed to implement all measures identified in the Final EIR to minimize the Project's environmental impacts.

The State Water Board will file a Notice of Determination, pursuant to CEQA Guidelines section 15094, within five days of issuance of this water quality certification.

6.4 Federal Authority

After consultation with state and federal resource agencies, tribes, local governments, non-governmental agencies, the public, and upon approval of FERC, the Applicant chose to use the Traditional Licensing Process (TLP) for the licensing of the Project. The Applicant submitted an application for a preliminary permit for the Project to FERC on March 3, 2008. As part of the licensing process, FERC, in its federal Lead Agency capacity under the National Environmental Policy Act (NEPA), prepared an EIS [42 U.S.C. § 4321 *et seq*., the Council on Environmental Quality Regulations for Implementing NEPA (40 C.F.R. §§1500-1508)]. FERC released the Draft EIS on December 23, 2010, and issued the Final EIS on January 30, 2012.

[7] CEQA Findings are included as Attachment C of this final water quality certification.

ACCORDINGLY, BASED ON AN INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER RESOURCES CONTROL BOARD CERTIFIES THAT THE CONSTRUCTION AND OPERATION OF THE EAGLE MOUNTAIN PUMPED STORAGE HYDROELECTRIC PROJECT BY EAGLE CREST ENERGY COMPANY will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided the Licensee complies with the following terms and conditions during the Project activities certified herein.

7.0 Conditions

CONDITION 1. SITE INVESTIGATIONS

The purpose of the Phase I and Phase II Site Investigations is to confirm that basic Project feature locations are appropriate, provide basic design parameters for the final layout of Project features, and confirm previous Central Project Area studies used as part of the environmental review.

The Licensee shall follow procedures outlined in the Phase I and Phase II Site Investigations Plan in Section 12.1 of the Final EIR, unless an alternative plan or procedure is approved by the Deputy Director. The Licensee shall begin the Phase I Site Investigations within 60 days after the following three requirements are met: (1) the FERC license is granted; (2) site access is obtained; and (3) regulatory agencies grant approval for ground disturbing activities.

The Phase I Site Investigations shall include, but are not limited to:

- Detailed reconnaissance of the Upper and Lower Reservoir site conditions;
- Evaluation of geologic and geotechnical conditions at the locations of the reinforced concrete hydraulic structures (inlet/outlet structures);
- Evaluation of underground conditions affecting design and construction of water conveyance tunnels, access tunnels, shafts between tunnels, and the underground powerhouse;
- Detailed evaluation and description of reservoir, brine ponds, and tunnel seepage potentials;
- Detailed description of reservoir mapping and evaluation of reservoir-triggered seismicity;
- Evaluation of updated sensitive species surveys; and
- Evaluation of potential water quality impacts to the reservoirs and groundwater associated with ore-body contact.

Results of the Phase I Site Investigations shall be compiled in a report and submitted to the Deputy Director for review and approval. The Deputy Director may require modifications as part of the approval. Within 120 days of receiving the Phase I Site Investigations Report, the Deputy Director will either approve, deny, request additional information, require modifications or additional studies, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Phase I Site Investigations Report.

Following Deputy Director approval of the Phase I Site Investigations Report, and based on any design refinements developed during pre-design engineering, the Licensee shall develop a Phase II Site Investigations Plan. The Deputy Director may require modifications as part of the approval. The Licensee shall submit the Phase II Site Investigations Plan to the Deputy Director for review and approval. Within 60 days of receiving the Phase II Site Investigations Plan, the Deputy Director will either approve, deny, request additional information, require modifications or additional studies, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Phase II Site Investigations Plan. The Phase II Site Investigations shall not begin until the Phase II Site Investigations Plan is approved by the Deputy Director.

The Phase II Site Investigations shall, at a minimum:

- Ensure compatibility of the Project with existing and proposed land uses within the Project area;
- Confirm background groundwater levels and background groundwater quality as outlined in Condition 5 and Condition 7 of this water quality certification;
- Determine if Project operations will have a permanent impact on the Chuckwalla Valley Groundwater Basin storativity;
- Confirm seepage for both reservoirs;
- Determine monitoring well network locations, well types, and well depths;
- Identify the most suitable location for horizontal monitoring wells under the reservoirs and brine ponds;
- Evaluate mass wasting, landslide, and slope stability issues related to loading and unloading the reservoirs;
- Evaluate the use of geosynthetic liners as a seepage control measure for the reservoirs and the brine ponds;
- Assess whether the Chuckwalla Valley Groundwater Basin aquifers are confined or not;
- Determine if modifications to the Eagle Creek channel are required and describe the extent of earthwork required; and
- Assess hydrocompaction and subsidence potentials.

The Licensee shall consult with the Colorado River Regional Water Board and BLM during the monitoring well location determination to allow Project-specific wells to complement a comprehensive monitoring well network for the Chuckwalla Valley Groundwater Basin.

A Phase II Site Investigations Report, summarizing the comprehensive findings of the Phase I and Phase II Site Investigations, shall be submitted to the Deputy Director for review and approval before the final Project design is completed. Within 120 days of receiving the Phase II Site Investigations Report, the Deputy Director will either approve, deny, request additional information, require modifications or additional studies, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Phase II Site Investigations Report. The Deputy Director may require modifications as part of the approval.

The Licensee shall provide opportunity for public participation during the development of the Phase I and Phase II Site Investigations Reports. The Licensee shall conduct at least one public workshop following completion of each phase of the Site Investigations to inform interested parties of the results and obtain public comments. As part of the public workshop on the Phase I Site Investigations, the Licensee shall also solicit comments on the draft Phase II Site Investigations Plan. The Licensee shall review and, as appropriate, incorporate public comments as part of the Phase I and Phase II Site Investigations Reports prior to submitting the reports to the Deputy Director for review and approval. As part of the submittal to the Deputy Director, the Phase I and Phase II Site Investigations Reports shall include the comments made by the public, and a description of how the report addresses the public comment(s) or why the comment(s) was not addressed. The Licensee shall notify the Deputy Director, FERC, and interested parties at least 30 days in advance of any public workshops related to the Project.

The Licensee shall conduct public workshops and provide a public comment period before submitting the final Project design to the Deputy Director.

If Phase I and Phase II Site Investigations results indicate that there are site conditions that have not been evaluated previously and that could potentially have significant environmental impacts, additional analysis shall be performed to comply with CEQA, prior to completion of the Project's final design and construction.

CONDITION 2. WILDLIFE PROTECTION

The Licensee shall conduct sensitive species surveys, as described in the MMRP, after the following two requirements are met: (1) the FERC license is granted; and (2) site access is obtained. The Licensee shall modify sensitive species protective measures identified in Section 3.6 of the Final EIR based on this additional survey information. Any modifications to protection measures shall be developed in consultation with USFWS and CDFW and presented in a Wildlife Protection Plan. Results from the sensitive species surveys shall be included in the Wildlife Protection Plan. The Wildlife Protection Plan shall include an evaluation of potentially impacted species and habitat resulting from Project operations. The Wildlife Protection Plan shall be approved by the Deputy Director, after consultation with USFWS and CDFW, before starting construction. Within 60 days of receiving the Wildlife Protection Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Wildlife Protection Plan. The Deputy Director may require modifications as part of the approval. Construction activities shall not begin until the Wildlife Protection Plan is approved by the Deputy Director.

The Licensee shall provide opportunities for public participation as part of the sensitive species surveys. Following the sensitive species surveys, the Licensee shall conduct at least one public workshop to inform interested parties of the results and obtain public comments. The public workshop may be combined with the Phase I or Phase II Site Investigations workshops. The Licensee shall review and, as appropriate, incorporate public comments as part of the Wildlife Protection Plan prior to submitting the Wildlife Protection Plan to the Deputy Director for review and approval. As part of the submittal to the Deputy Director, the Wildlife Protection Plan shall include the comments made by the public, and a description of how the plan addresses the public comments or why the comments were not addressed. The Licensee shall notify the Deputy Director, FERC, and interested parties at least 30 days in advance of any public workshops related to the Project.

If the sensitive species surveys indicate that there are site conditions that have not been evaluated previously and that could potentially have significant environmental impacts, additional analysis shall be performed to comply with CEQA, prior to completion of the Project's final design and construction.

The Licensee shall avoid disturbance of impoundments and avoid restriction of surface flow to impoundments. Surveys in the Project area shall identify the presence of any artificial impoundment or ephemeral pools that could support Couch's spadefoot toad reproduction. Surveys shall be conducted in accordance with the Northern and Eastern Colorado Desert Coordinated Management Plan identified in Section 3.5 of the Final EIR. During construction of all Project facilities, any ephemeral pools that develop in response to intense rainfall showers from early spring through fall shall be examined for larvae of the Couch's spadefoot toad. Construction activities shall avoid disturbing or restricting flow to impoundments that could support Couch's spadefoot toad. If larvae are present, the pools shall be flagged and avoided by construction activities. Where pools cannot be avoided, new pools shall be constructed and larvae transplanted, as outlined in MM BIO-9 of the MMRP.

All mitigation measures contained in the Desert Tortoise Plan, as identified in the Final EIR, and all monitoring and reporting as required by the MMRP are hereby incorporated as conditions of this water quality certification. All mitigation measures contained in the Predator Monitoring and Control Plan, as identified in the Final EIR, and all monitoring and reporting as required by the MMRP are hereby incorporated as conditions of this water quality certification. The final Predator Monitoring and Control Plan shall be approved by the Deputy Director, after consultation with USFWS and CDFW, prior to initiation of ground-disturbing activities. Within 60 days of receiving the Predator Monitoring and Control Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Predator Monitoring and Control Plan. The Deputy Director may require modifications as part of the approval. The Licensee shall implement the approved Predator Monitoring and Control Plan throughout the life of the Project.

To reduce potential Project impacts to wildlife all mitigation measures relevant to wildlife contained in the Final EIR and incorporated into the MMRP are hereby incorporated as conditions of this water quality certification. Additional wildlife protection measures associated with fencing are outlined in Condition 3.

Notwithstanding any more specific conditions in this water quality certification, the Licensee shall comply with all survey, monitoring and mitigation measures contained in the USFWS BO for the Project.

CONDITION 3. CONSTRUCTION AND EROSION CONTROL

Prior to starting construction of the Project, the Licensee shall submit a request to the Deputy Director for concurrence that all the pre-construction plans and reports required by this water quality certification have been submitted and approved. Construction of the Project shall not commence until the Licensee has received Deputy Director concurrence that pre-construction requirements are satisfied.

The Licensee shall design, construct and maintain downstream drainage and water control structures and facilities to resist erosion and be of sufficient capacity and nature to safely divert a 100-year flood event or a sudden reservoir spill from the town of Eagle Mountain and any projects existing at the time of completion of construction of the Project.

The Licensee shall limit soil erosion through implementation of the Erosion and Sedimentation Control Plan, limiting surface disturbance to only those areas necessary for construction as required by California Code of Regulations, title 23, section 122.26. All erosion and sediment control measures including management practices in the Erosion and Sedimentation Control Plan, and the Revegetation Plan, as identified in the Final EIR, are hereby incorporated as conditions of this water quality certification. Additionally, all construction and geological mitigation measures contained in the Final EIR and monitoring and reporting of those measures as outlined in the MMRP are hereby incorporated as conditions of this water quality certification. The Project's Environmental Coordinator shall oversee implementation of the Erosion and Sedimentation Control Plan and the Revegetation Plan, and redesign, if needed, the best management practices described in Section 12.2 of the Final EIR.

Following the Phase I and Phase II Site Investigations required by Condition 1 of this certification, the Licensee shall revise the Erosion and Sedimentation Control Plan and the Revegetation Plan as needed and submit any revised plan(s) to the Deputy Director for review and approval. The Deputy Director may require modifications as part of approval. Within 90 days of receiving the Erosion and Sedimentation Control Plan and the Revegetation Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Erosion and Sedimentation Control Plan and the Revegetation Plan. The revised Erosion and Sedimentation Control Plan shall include an adaptive management strategy to minimize unforeseen impacts. The adaptive management strategy shall be developed in consultation with the Eagle Mountain Mine owner or operator, the proposed Landfill's owner or operator, and any other proposed projects adjacent to the Project, prior to submitting the revised Erosion and Sedimentation Control Plan to the Deputy Director for approval. The Licensee shall monitor, maintain, and report results annually, by March 1, to the Deputy Director of sediment measures used for the Project for the life of the Project.

Any material removed from tunnel excavation shall be tested before being placed in the reservoirs or disposed of on-site, to ensure the material will not contribute to water acidity, metal leaching, or water quality impairments. Testing results shall be submitted to the Deputy Director for review and approval before the materials can be used in the reservoirs or disposed of on-site. The Deputy Director may require modifications as part of the approval. Within 90 days of receiving the soils testing results, the Deputy Director will either approve, deny, request additional information, require modifications, request additional studies or testing, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the soils testing results.

The Licensee shall implement practices to control sediment for the life of the Project to prevent an increase of sediment in stormwater discharge and comply with the water quality objectives identified in Chapter 3 of the Colorado River Basin Plan (Revised December 2011), and amendments thereto.

The Licensee shall also implement the following management practices for effective temporary and final soil stabilization during construction and to preserve existing vegetation where required to prevent and minimize erosion:

Fencing

The Licensee shall install permanent security fences around the Upper and Lower Reservoirs, switchyard, brine ponds and any structure or area that may be dangerous to wildlife in the Project area prior to construction of these facilities. Fences should be constructed in a manner that excludes wildlife from the reservoirs. The fencing shall not contain dips or allow wildlife access to drinking water in any other manner.

All permanent fences shall be maintained in a fully functional condition for the life of the Project. All fences, including desert tortoise exclusion fences, shall be inspected monthly as well as immediately following all major rainfall events for the life of the Project. Any damage to the fences shall be repaired immediately. If immediate repair is not possible, the Licensee shall monitor the damaged area continuously for desert tortoise, in accordance with the wildlife protection plans required by Condition 2 of this water quality certification, until repairs are made. Where exclusion fencing is required, security gates should remain closed except during immediate passage.

Construction General Permit

The Licensee shall comply with the NPDES Construction General Permit, and amendments thereto, including development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The SWPPP must detail the management practices that will be implemented for the Project. The SWPPP must detail the inspection, documentation, implementation procedures for contingency plans and triggers for amending the SWPPP. During construction, the management practices shall be evaluated and, if further protective measures are necessary, the SWPPP shall be amended.

Inspections shall be conducted by the Licensee on a routine basis and after significant storm events in conformance with the SWPPP. Inspection reports shall be prepared to document the inspections. The reports shall include information on performance of the erosion control measures, damage to or deficiencies with installed control measures, needed maintenance or repair activities, monitoring information, and the degree of vegetation establishment. Reporting documents shall be kept on file with the SWPPP and construction records. A monitoring plan shall be incorporated into the SWPPP to ensure that stormwater is managed to control erosion.

The Licensee shall submit the SWPPP to the Deputy Director for review and approval. Within 60 days of receiving the SWPPP, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the SWPPP. The Deputy Director may require modifications as part of the approval. Project construction shall not start until the SWPPP is approved by the Deputy Director.

CONDITION 4. POLLUTION PREVENTION

The Licensee shall ensure the safe delivery, storage, and use of various construction materials, oils, fuels, and chemicals by following all relevant federal, state and local laws, regulations and ordinances. The Licensee shall consult with the Riverside County Office of Environmental Health and comply with local handling, planning, reporting and transport requirements for these materials and their waste products. The Licensee shall notify the Deputy Director and the Colorado River Regional Water Board's Executive Officer (Executive Officer) when hazardous

material or waste is discharged that could impact surface water or groundwater. If County or local-level guidance on waste management does not exist, the Licensee shall, at a minimum, implement the following:

- Spill prevention control measures shall be implemented to contain and cleanup spills and prevent material discharges outside the construction area.
- Solid waste management and hazardous waste management shall be implemented to minimize stormwater contact with waste materials and prevent waste discharges. The Licensee shall, at a minimum, inform the County, the Executive Officer, and any neighboring fire departments when hazardous material or hazardous waste is present or discharged.
- Non-hazardous solid wastes shall be stored in dumpsters throughout the Project site. Dumpster locations will change according to where construction activities are occurring. One dumpster shall always be located next to the contractor's office trailers and yard.
- Hazardous wastes shall be stored in a covered containment area in accordance with state and federal laws and local ordinances. Hazardous wastes shall be stored in appropriate and clearly marked containers. Hazardous wastes shall be segregated from other non-waste materials.
- Concrete waste shall be managed to reduce or eliminate stormwater contamination during construction activities. Concrete and rubble shall be stockpiled at least 20 feet from washes and channels and hauled away for off-site disposal when necessary.
- Trucks used to haul concrete may require occasional washouts. Rinse water may contain traces of residual concrete (e.g., Portland cement, aggregates, admixtures, and water). Concrete rinsate may only be discharged to land in compliance with local ordinances, the Colorado River Basin Plan, and statewide policies. Concrete trucks shall not washout within 20 feet of any watercourse. Excess concrete shall be broken up and used onsite as fill material or hauled away for off-site use or disposal.
- Sanitary and septic waste management shall be implemented throughout the Project area in accordance with state and local regulations and ordinances. Portable toilets shall be located throughout the Project site and maintained for the duration of the Project. The location of the toilets shall follow the construction activity throughout the site. The toilets shall always be positioned away from concentrated flow paths and heavy traffic flow to minimize the chance of accidental discharge.

CONDITION 5. GROUNDWATER SUPPLY

All Project supply wells shall be enrolled in the Groundwater Recordation Program through the Division.

Prior to the Phase II Site Investigations, the Licensee shall submit a Pre-Construction Groundwater Level Monitoring Plan to the Deputy Director for review and approval. The Pre-Construction Groundwater Level Monitoring Plan shall identify the sampling frequency, methods, and locations in order to establish the background groundwater levels for the Project area. Static groundwater levels shall be recorded at the supply wells in the Chuckwalla Valley Groundwater Basin, at the monitoring and seepage wells in the Central Project Area and surrounding area, and at neighboring private wells, as allowed by the well owners. Background groundwater levels shall be established based on a minimum of two years of data collected prior to initiation of reservoir filling. Monitoring should commence no later than during the Phase II Site Investigations described in Condition 1.

Within 90 days of receiving the Pre-Construction Groundwater Level Monitoring Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Pre-Construction Groundwater Level Monitoring Plan. The Deputy Director may require modifications as part of the approval.

Following the two years of groundwater level data collection that is required to establish background groundwater levels, the Licensee shall submit a Pre-Construction Groundwater Level Report to the Deputy Director for review and approval. Project construction, including, but not limited to groundwater pumping and reservoir filling shall not proceed until the Deputy Director approves the Pre-Construction Groundwater Level Report. The Pre-Construction Groundwater Level Report shall include: (1) data collected in accordance with the approved Pre-Construction Groundwater Level Monitoring Plan; (2) proposed background groundwater levels for the Project area; and (3) the Long Term Groundwater Level Monitoring Plan. The Licensee shall conduct at least one public workshop and provide a public comment period before submitting the Pre-Construction Groundwater Level Monitoring Report to the Deputy Director for approval. As part of the submittal to the Deputy Director, the Pre-Construction Groundwater Level Monitoring Report shall include the comments made by the public, and a description of how the report addresses the public comment(s) or why the comment(s) was not addressed.

Within 90 days of receiving the Pre-Construction Groundwater Level Report, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Pre-Construction Groundwater Level Report. The Deputy Director may require modifications as part of the approval. In approving the Pre-Construction Groundwater Level Monitoring Report, the Deputy Director will establish the background groundwater levels for the Project area. No groundwater pumping, other than for aquifer testing, shall commence until the Pre-Construction Groundwater Level Monitoring Report is approved by the Deputy Director.

The Long Term Groundwater Level Monitoring Plan shall identify the sampling frequency, methods, and locations in order to monitor groundwater levels over the term of the Project. At a minimum, the Long Term Groundwater Level Monitoring Plan shall be prepared to meet the following objectives and include the following provisions:

- Confirm that the Project pumping rate is maintained at or below the range of historic pumping (between 1965 and 1986) as presented in Appendix C, Section 12.4 of the Final EIR - *Groundwater Supply Pumping Effects* technical memorandum (GEI, 2009a). The Licensee shall track the pumping rate and duration associated with the Project supply wells and report the amount of water extracted quarterly. The groundwater monitoring network shall consist of both existing and new wells to assess changes in groundwater levels at: the Project supply wells; beneath the CRA in the upper Chuckwalla Valley Groundwater Basin and Orocopia Valley; at the mouth of Pinto Basin; and in areas east of the Project supply wells. Wells shall be monitored quarterly for groundwater level, water quality, and the amount of water extracted.

- Monitor for potential inelastic subsidence due to drawdown from Project pumping. The Licensee shall install and monitor extensometers: near the CRA, in the upper Chuckwalla Valley, and in the Orocopia Valley. Extensometer monitoring shall be recorded on a daily basis to evaluate natural elastic subsidence and rebound. Extensometer monitoring shall begin prior to Project groundwater pumping and continue until approved by the Deputy Director, at least two years after the initial reservoir fill is complete. The Long Term Groundwater Level Monitoring Plan must specify how the extensometers will measure subsidence, how many extensometers will be installed, and the locations of the extensometer installations with respect to the CRA, the proposed Landfill, and other critical structures.

- Track groundwater drawdown in the Chuckwalla Valley Groundwater Basin and comply with the maximum allowable changes presented in Section 3.3 of the Final EIR or as required by the Deputy Director.

Monitoring groundwater levels for the Project license term shall commence within 30 days of Deputy Director approval of the Long Term Groundwater Level Monitoring Plan.
A groundwater level monitoring network shall be installed, in accordance to the approved Phase II Site Investigations Report and the MMRP, to confirm that Project pumping will not cause groundwater to exceed historic drawdown levels. The groundwater level monitoring network will also be used to determine if Project pumping is affecting neighboring water production wells. Water production at wells operated on properties close to the Project supply wells could potentially be affected by Project pumping. The Long Term Groundwater Level Monitoring Plan shall include monthly monitoring of groundwater levels at the Project supply wells, Project monitoring wells, and neighboring production wells (if granted permission by the land owners) within a two-mile radius of the Project's supply wells during initial fill of the reservoirs and one-mile radius thereafter. Monitoring of neighboring production wells shall continue until no longer required by the Deputy Director, and at least four years after the initial reservoir fill is complete. Monitoring of groundwater level monitoring wells shall continue for the life of the Project. All monitoring conducted as part of the Long Term Groundwater Level Monitoring Plan shall be submitted to the State Water Board within 60 days after each sampling event and annually, by March 1, in a summary report. All water quality monitoring shall comply with requirements set forth in Code of Federal Regulations Title 40, Chapter I, Subchapter D, Part 136 (40 C.F.R. § 136). The Licensee shall submit the monitoring data and reports required by this water quality certification electronically in a format accepted by the State Water Board as described in Condition 11 of this water quality certification. The monitoring data and reports shall be made available to the public and all interested parties, including FERC and BLM.

Project pumping shall comply with the maximum drawdown levels outlined in Table 3.3-8 of the Final EIR, or as approved by the Deputy Director in the Long Term Groundwater Level Monitoring Plan. If monitoring indicates that Project operation has adversely affected existing neighboring production well water levels by increasing pumping depth by five feet or more from the background levels established prior to Project construction , the Licensee shall consult, within 30 days of obtaining the monitoring results, with the owner of the affected well, and State Water Board and Colorado River Regional Water Board staffs to develop a plan to mitigate impacts to nearby production well operation. Within 60 days of initiating consultation with the owner, the Licensee shall submit the production well mitigation plan to the Deputy Director for review and approval. The production well mitigation plan shall be implemented immediately following Deputy Director approval or 30 days after submittal, whichever is sooner. Mitigation actions that may be required include, but are not limited to, the following:

- Reduce or cease Project pumping from the Project supply wells;
- Replace pumps or modify pumping systems on affected wells;
- Deepen existing well(s);
- Construct a new well(s); and/or
- Compensate well owner(s) for increased pumping costs associated with the lower water table.

CONDITION 6. SURFACE WATER QUALITY

The Licensee shall maintain water quality in the Upper and Lower Reservoirs consistent with background groundwater quality. Background groundwater quality beneath each reservoir shall be determined during the Phase II Site Investigations (Condition 1), and following the Establishment of Background Groundwater Quality Conditions described in Condition 7. All water quality monitoring shall comply with requirements set forth in Code of Federal Regulation, title 40, section 136. Data to establish background groundwater quality shall be submitted to the Deputy Director as part of the Background Groundwater Quality Report (Condition 7). Seepage, waste discharges, and any controllable factors attributable to the Project, shall not cause or contribute to the degradation of the existing background groundwater quality.

The Licensee shall treat the water in the Upper and Lower Reservoirs to maintain salinity, trace mineral (metals) and acidity levels not to exceed the background concentrations established in the Background Groundwater Quality Report approved by the Deputy Director. To verify that water quality is maintained over the life of the Project, the Licensee shall submit a site-specific Monitoring and Reporting Plan for Surface Waters (Surface Waters MRP) to the Deputy Director for review and approval. Within 90 days of receiving the Surface Waters MRP, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Surface Waters MRP. The Surface Waters MRP shall be submitted after Phase I and Phase II Site Investigations are complete and must be approved prior to starting the initial fill of the reservoirs.

The Surface Waters MRP shall be implemented upon initiation of filling of the reservoirs. The Surface Waters MRP shall include a Detection Monitoring Program to detect seepage from the reservoirs. The Surface Waters MRP shall be coordinated with the plans required in Conditions 5 and 7. The Surface Waters MRP shall be coordinated with the Contingency Plan (Condition 9). The Surface Waters MRP shall identify corrective action that may be implemented if reservoir water quality or reservoir seepage does not meet the established background groundwater quality. To ensure seepage from the reservoirs does not cause or contribute to the degradation of the receiving groundwater throughout the life of the Project, the water quality in the reservoirs shall be maintained at a quality equivalent to or better than background groundwater quality as established in the Background Groundwater Quality Report[8] approved by the Deputy Director.

Results of all monitoring conducted as part of the Surface Waters MRP shall be submitted to the Deputy Director. The Licensee shall submit the monitoring data and reports required by this water quality certification electronically in a format accepted by the State Water Board as

[8] Additionally, in no instances shall seepage cause groundwater to: (1) exhibit a pH of less than 6.5 or greater than 8.5 pH units; or (2) acquire taste, odor, toxicity or color that creates nuisance or impairs beneficial use.

described in Condition 11 of this water quality certification. The monitoring data and reports shall be made available to the public and all interested parties, including FERC and BLM.

The Final EIR describes potential issues associated with surface water quality based on the mineralogy at the Project site and identifies measures to mitigate potential impacts. All surface water mitigation measures identified in Section 3.2 of the Final EIR are hereby incorporated as conditions of this water quality certification. All monitoring and reporting relevant to surface waters required by the MMRP are hereby incorporated as conditions of this water quality certification.

CONDITION 7. GROUNDWATER QUALITY MONITORING AND SEEPAGE MANAGEMENT

Seepage shall be minimized by partially or fully lining the reservoirs. Final design of the liner(s) shall include findings from the Phase I and Phase II Site Investigations (Condition 1). The Licensee shall construct all reservoir liners under the observation and supervision of a qualified third-party construction quality assurance (QA) firm. The QA firm shall be approved by the Deputy Director prior to starting construction. If any problems are discovered during the installation of the liners, the QA firm shall, within 30 days, provide a report to the Deputy Director, FERC, and the Licensee, on the issues discovered and recommended actions. The QA firm shall prepare a detailed construction report and file the report with the Deputy Director and FERC within 90 days of completing the liners construction.

The Licensee shall install seepage interceptor wells to recover seepage from the Upper and Lower Reservoirs. Seepage interceptor wells shall be constructed in the downgradient direction of both the Upper and Lower Reservoirs and reach existing groundwater levels. Seepage interceptor wells shall recover seepage and groundwater equal to the reservoirs seepage volume as confirmed during the Phase II Site Investigations (Condition 1).

Horizontal monitoring wells shall be installed immediately underneath the reservoirs and brine ponds liners to qualify the seepage, monitor groundwater quality, and allow for early detection of potential groundwater degradation. Seepage monitored at the horizontal monitoring wells shall exhibit pH, TDS, general minerals, and total metals comparable to the source groundwater background values. All water quality monitoring shall comply with requirements set forth in Code of Federal Regulation, title 40, section 136. Any exceedance of background groundwater quality values recorded at the monitoring wells shall be considered a violation of this water quality certification and shall be reported to the Deputy Director within 15 days of receipt of the sampling results[9]. The Licensee may perform two confirmation samplings within five working days after the initial detection to validate or invalidate the initial sampling results. Confirmation sampling results shall be reported to the Deputy Director within 15 days of receipt of the sampling results. Groundwater quality shall not exceed the values established in the Background Groundwater Quality Report approved by the Deputy Director.

The Licensee shall be required to monitor groundwater quality to establish background conditions and monitor for Project-related changes in these conditions over the life of the Project.

[9] Seepage and discharges from the reservoirs or the brine ponds shall not cause groundwater to: (1) exhibit a pH of less than 6.5 or greater than 8.5 pH units; or (2) acquire taste, odor, toxicity or color that causes nuisance or impairs beneficial uses.

Establishment of Background Groundwater Quality Conditions

Prior to the Phase II Site Investigations, the Licensee shall submit a Background Groundwater Quality Monitoring Plan to the Deputy Director for review and approval. Within 90 days of receiving the Background Groundwater Quality Monitoring Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Background Groundwater Quality Monitoring Plan. The Deputy Director may require modifications as part of the approval. The Background Groundwater Quality Monitoring Plan shall be implemented as part of or prior to the Phase II Site Investigations Plan, as outlined in Condition 1.

The Background Groundwater Quality Monitoring Plan shall identify the sampling frequency, constituents to be analyzed, and groundwater sampling locations in order to establish the background groundwater quality for the Project. Background groundwater quality shall be established for the supply wells in the Chuckwalla Valley Groundwater Basin, as well as the monitoring and seepage wells in the Central Project Area and surrounding area. Background groundwater quality shall be established based on a minimum of two years of data collected prior to initiation of reservoir filling.

Following the two years of data collection required above and as part of the Background Groundwater Quality Monitoring Plan, the Licensee shall submit the Background Groundwater Quality Report to the Deputy Director for review and approval. The Background Groundwater Quality Report shall include: (1) data collected in accordance with the approved Background Groundwater Quality Monitoring Plan; (2) proposed background groundwater quality concentrations for the Project; and (3) the Long Term Groundwater Quality Monitoring Plan. In addition to the requirements outlined in the Groundwater Monitoring for Project Term section below, the Long Term Groundwater Quality Monitoring Plan shall identify the sampling frequency, constituents to be analyzed, and groundwater sampling locations in order to monitor groundwater quality over the term of the Project. Within 90 days of receiving the Background Groundwater Quality Report, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Background Groundwater Quality Report. The Deputy Director may require modifications as part of approval. Deputy Director approval of the Background Groundwater Quality Report and Long Term Groundwater Quality Monitoring Plan shall establish the background groundwater quality for the Project.

Groundwater Monitoring for Project Term

The Licensee shall conduct groundwater monitoring for the life of the Project. At a minimum the Licensee shall monitor for groundwater levels, seepage volume, TDS, pH, general minerals, and total metals. The Licensee shall also monitor for additional constituents identified by the Deputy Director as part of approval of the Long Term Groundwater Quality Monitoring Plan. All water quality monitoring shall comply with requirements set forth in Code of Federal Regulation, title 40, section 136. Groundwater monitoring shall be conducted for the supply wells, seepage interceptor wells, vertical and horizontal monitoring wells, and neighboring wells to determine whether groundwater quality is being adversely impacted by Project operations. Groundwater monitoring shall commence prior to starting Project construction and be conducted quarterly thereafter until three years after the initial reservoir fill. Three years after initial reservoir fill, the Licensee may request approval from the Deputy Director to modify the frequency of groundwater monitoring to no less than annually. The Licensee shall provide supporting data and information to support any request to decrease the frequency of groundwater monitoring.

Groundwater data shall be provided to the Deputy Director within 60 days after each sampling event and annually, by March 1, in a summary report. The annual summary report shall provide: the status of groundwater; changes or trends in groundwater quality or levels when compared with previous years; and any recommendations for modification to the groundwater sampling program, including the need for new wells, or changes in sampling methods, sampling frequency or constituents sampled. Monitoring results shall be submitted electronically as required by Condition 11.

The Licensee shall maintain water quality in the reservoirs at approximately the same salinity and pH as the source groundwater.

The Licensee shall maintain existing groundwater conditions in compliance with the Colorado River Basin Plan. The Licensee shall comply with the Colorado River Regional Water Board's goal to maintain the existing water quality of all non-degraded high quality groundwater basins. Seepage and potential discharges from the Project are prohibited to cause or contribute to further degradation of groundwater quality or aquifer properties in the Chuckwalla Valley Groundwater Basin. The Deputy Director will assess and may require modification of the seepage interceptor well network, groundwater monitoring, and/or Project operations to ensure protection of groundwater resources.

Seepage Management

Following completion of the Phase I and Phase II Site Investigations described in Condition 1, and before final Project design, the Licensee shall submit a Seepage Management Plan to the Deputy Director for approval. Within 90 days of receiving the Seepage Management Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Seepage Management Plan. The Deputy Director may require modifications as part of approval. The seepage control measures identified in the approved Seepage Management Plan must be in place prior to filling the reservoirs.

The Seepage Management Plan shall include identification of zones where seepage is anticipated from the Upper and Lower Reservoirs, criteria for evaluating seepage management strategies, corrective actions to address potential liner failures due to seismicity, and an implementation strategy to minimize seepage to the greatest extent feasible. The Licensee shall evaluate the effectiveness of various methods to control seepage and to mitigate the effects of seepage as part of the Seepage Management Plan.

The Seepage Management Plan shall evaluate the compatibility of the Project with operation of the proposed Landfill, CRA, the Eagle Mountain Mine, and other adjacent proposed projects. The Licensee shall conduct a detailed reconnaissance of the reservoir basins and connecting tunnel to identify zones where seepage would be expected to occur. These areas may have faults, fissures and cracks in the bedrock, and zones that have direct connection to the alluvial deposits of the Chuckwalla Valley. In the event that the proposed Landfill is permitted and constructed south of the Upper Reservoir, the Project shall be operated such that it will not cause pumped groundwater or seepage to encounter the proposed Landfill's liner and maintain the minimum separation distance requirements set forth in Title 27 of the California Code of Regulations (Cal. Code Regs., tit. 27 § 20240).

Deputy Director approval of the Seepage Management Plan shall establish updated seepage volumes, if necessary. The Seepage Management Plan shall include an adaptive management strategy that identifies measures to control seepage if monitoring indicates that further seepage controls are necessary to maintain the seepage volumes established by the Deputy Director (part of Phase I and Phase II Site Investigations), ensure separation from the proposed Landfill, or prevent impacts to the CRA.

The Seepage Management Plan's adaptive management strategy shall address, at a minimum, the following contingencies:

- Discovery of reservoir seepage water in the monitoring wells beyond the interceptor wells (operation of the interceptor well network requires modification);
- Discovery of an increase in seepage volume (liner failure);
- Discovery of changes in local groundwater quality that the Deputy Director determines could be associated with Project operations;
- Unexpected or mandated shut-down of interceptor wells; and
- Unexpected cessation of Project power generation extending longer than three days.

The Seepage Management Plan must identify corrective actions to eliminate reservoir seepage or fully recover seepage should monitoring indicate that operation of the Project is contributing to groundwater quality degradation. The Seepage Management Plan shall also include operation strategies aimed at seepage control when potential electrical power failures render the seepage interceptor wells inoperable.

The Seepage Management Plan shall include a detailed reconnaissance of the proposed reservoir sites. The Seepage Management Plan shall evaluate the Project site for seepage potential, identify seepage control measures and mechanisms to evaluate and assess seepage impacts, and establish performance objectives for seepage. Following the initial Deputy Director approval, the Seepage Management Plan shall be reviewed and updated by the Licensee no less than every two years. As part of the update, the Licensee shall summarize existing data, evaluate the effectiveness of the groundwater monitoring and seepage control methods, and make recommendations for future seepage management. Operation of the Project shall be compatible with surrounding projects and their permitting requirements. The updated Seepage Management Plan shall include a detailed evaluation of compatibility between the Project and surrounding projects that have been approved by federal, state, or local agencies. The updated Seepage Management Plan shall be submitted to the Deputy Director by February 15 of each reporting year for approval. Within 90 days of receiving the updated Seepage Management Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the updated Seepage Management Plan. The Licensee shall implement the approved updated Seepage Management Plan within 60 days of Deputy Director approval.

The Licensee shall conduct monitoring for seepage over the life of the Project. All monitoring conducted as part of the Seepage Management Plan shall be reported quarterly to the State Water Board and annually, by March 1, in a summary report. If necessary, the Deputy Director will prescribe operational changes to reduce the potential for uplift forces and hydrocompaction that could affect existing and planned facilities (e.g., the CRA and the proposed Landfill) and impacts to groundwater levels and quality. Reservoir and connecting tunnel seepage water quality must not degrade existing groundwater quality.

The Licensee shall limit seepage from the two Project reservoirs and connecting tunnel to the maximum extent possible, and shall not exceed the estimated average seepage volume determined in the Phase I and Phase II Site Investigations Reports unless approved by the Deputy Director. The Licensee shall use fine tailing liners, as described in section 2.2.3, and other seepage control measures identified in the Seepage Management Plan.

Seepage interceptor wells shall be operated to maintain target groundwater levels listed in Table 3.3-9 of the Final EIR, or as approved by the Deputy Director in the Pre-Construction and Long Term Groundwater Level Monitoring Plans (Condition 5), in areas where subsidence and hydrocompaction could potentially occur and adversely impact the CRA or other infrastructure. Groundwater levels monitored near the CRA shall be submitted annually, by March 1, to the Metropolitan Water District of Southern California (the owner of the CRA) for concurrence that operation of the Project will not exceed the maximum allowable movement of the CRA infrastructure. Groundwater level data can be used in updating and revising groundwater recharge and perennial yield estimates in the Chuckwalla Valley Groundwater Basin as new information is collected, analyzed, and reported. The Licensee shall submit the groundwater level data required by this water quality certification electronically in a format accepted by the State Water Board as described in Condition 11 of this water quality certification. The monitoring data and reports shall be made available to the public and all interested parties, including FERC and BLM.

The seepage interceptor well network shall return the recovered seepage to the reservoirs. To confirm that the seepage interceptor wells are working as designed, at a minimum, groundwater level and quality monitoring shall be conducted in the following areas:

- Upgradient and downgradient wells of reservoirs;
- At the brine ponds;
- Near the proposed Landfill;
- At residential and municipal production wells within a one-mile radius of the Central Project Area (if allowed by well owner) to ensure safe drinking water; and
- At the Project's seepage interceptor wells and monitoring wells, including monitoring wells near the CRA.

Groundwater level monitoring shall be conducted as required by Condition 5 of this water quality certification

All groundwater mitigation measures contained in the Final EIR and all monitoring and reporting required by the MMRP are hereby incorporated as conditions of this water quality certification.

CONDITION 8. WATER TREATMENT, WASTE MANAGEMENT, STORAGE, AND DISPOSAL

The Licensee shall comply with all state and local regulations for disposal of the water treatment waste. Prior to Project construction, the Licensee shall submit a Water Treatment, Waste Management, Storage, and Disposal Plan to the Deputy Director for review and approval. Within 120 days of receiving the Water Treatment, Waste Management, Storage, and Disposal Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Water Treatment, Waste Management, Storage, and

Disposal Plan. The Deputy Director may require modifications as part of the approval. Project construction shall not begin until the Water Treatment, Waste Management, Storage, and Disposal Plan is approved by the Deputy Director. The Licensee shall implement the Water Treatment, Waste Management, Storage, and Disposal Plan upon approval by the Deputy Director.

If, during the Phase I or Phase II Site Investigations, or at any time during the license period, it is determined that brine ponds are infeasible or the Licensee identifies a more effective, efficient or economical method of waste management, the Licensee may propose an alternate waste storage and disposal strategy. Any proposed waste management strategies will require approval from the Deputy Director prior to implementation and, if not already described in the Final EIR, will require additional environmental analysis under CEQA.

Brine ponds shall be managed as Class II surface impoundments, and brine pond operations must comply with all requirements for operation of Class II surface impoundments (California Code of Regulations, title 27, division 2, chapter 3, subchapter 3, article 1 – Class II Surface Impoundments). The brine ponds shall be constructed with double liners and a leachate control system following California Code of Regulations Title 27 requirements.

At a minimum, the Water Treatment, Waste Management, Storage, and Disposal Plan shall include the following:

- Description of how waste will be managed, stored, and disposed of in compliance with all applicable federal and state laws and local ordinances;
- Identification of the treatment technologies to be used to address constituents of concern identified during the Phase I and Phase II Site Investigations, if any;
- Full characterization of the anticipated waste stream(s) resulting from treatment;
- Disposal plan for brine salts if properties qualify them as hazardous waste
- Identification of the waste management methodology to be used (e.g., on-site long-term storage of liquid waste);
- Proposed method of waste storage (e.g., brine ponds);
- Anticipated duration of on-site waste storage;
- Proposed method of waste disposal;
- A schedule of implementation that includes operations and maintenance;
- Documentation of consultation with staffs from CDFW and USFWS during plan development to address wildlife concerns; and
- Documentation of consultation with staff from the Colorado River Regional Water Board to address compliance with California regulations (e.g., requirements for operation of a Class II surface impoundment, etc.).

CONDITION 9. CONTINGENCY PLAN

Final engineering cannot be completed until the Licensee obtains full access to the Project site and completes the Phase I and Phase II Site Investigations identified in the Final EIR and Condition 1 of this water quality certification, including relevant mitigation measures. A Contingency Plan shall be designed to cover actions the Licensee must take if it is determined that, based on Project operations, degradation of the underlying groundwater is occurring. The

Project's Contingency Plan shall include and be integrated with the relevant portions of the Project description and mitigation measures, including all specified performance standards. The Contingency Plan must cover how the Licensee will modify Project operations, or cease operations, if a threat to groundwater quality is encountered that cannot be adequately addressed through existing or additional operational mechanisms, as well as how groundwater will be restored to pre-Project conditions.

Prior to initiating the filling of the reservoirs, the Licensee shall submit a Contingency Plan to the Deputy Director for review and approval. Within 120 days of receiving the Contingency Plan, the Deputy Director will either approve, deny, request additional information, require modifications, or provide the Licensee with an update on the time necessary for State Water Board staff to complete review of the Contingency Plan. As part of Contingency Plan approval, the Deputy Director may require the Licensee to provide financial assurances necessary to implement the Contingency Plan and ensure restoration of groundwater to pre-Project conditions.

The following conditions also apply to the Project in order to protect water quality standards over the term of the Project's license and any annual extensions.

CONDITION 10 A copy of this water quality certification shall be provided to the contractor and all subcontractors conducting the work, and copies shall remain in their possession at the Project site. The Licensee shall be responsible for work conducted by its contractor or subcontractors.

CONDITION 11 Unless otherwise specified in this water quality certification or at the request of the State Water Board, data and/or reports must be submitted electronically in a format accepted by the State Water Board to facilitate the incorporation of this information into public reports and the State Water Board's water quality database systems in compliance with California Water Code section 13167.

CONDITION 12 Notwithstanding any more specific requirements in the conditions in this water quality certification, no construction shall commence until all necessary federal, state and local approvals are obtained.

CONDITION 13 The State Water Board reserves the authority to modify the conditions of this water quality certification to incorporate load allocations developed in a total maximum daily load approved by the State Water Board.

CONDITION 14 Notwithstanding any more specific conditions in this water quality certification, the Project shall be operated in a manner consistent with all applicable basin plans and policies for water quality control adopted or approved pursuant to the Porter Cologne Water Quality Act or section 303 of the Clean Water Act.

CONDITION 15 Project construction and operations shall not cause non-compliance of any federal, state, or local permit and/or license for permitted or existing neighboring projects.

CONDITION 16 The authorization to operate the Project pursuant to this water quality certification is conditioned upon payment of all applicable fees for review and processing of the application for water quality certification and administering the State's water quality certification program, including but not limited to the timely payment of any annual fees or similar charges that may be imposed by future statutes or regulations for the State's reasonable costs of a program to monitor and oversee compliance with conditions of water quality certification.

CONDITION 17 This water quality certification does not authorize any act which results in the take of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & Game Code §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531 - 1544). If a take will result from any act authorized under this water quality certification or water rights held by the Licensee, the Licensee shall obtain authorization for incidental take prior to any construction or operation of the Project. The Licensee shall be responsible for meeting all requirements of the state and federal Endangered Species Acts for the Project authorized under this water quality certification.

CONDITION 18 In the event of any violation or threatened violation of the conditions of this water quality certification, the violation or threatened violation shall be subject to any remedies, penalties, processes or sanctions as provided for under any State or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, processes or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this water quality certification.

CONDITION 19 This water quality certification is not intended and shall not be construed to apply to issuance of any FERC license or FERC license amendment other than the FERC license specifically identified in the Licensee's application for water quality certification.

CONDITION 20 The Licensee must submit any change to the Project, including Project operations, which would have a significant or material effect on the findings, conclusions, or conditions of this certification, to the Deputy Director for prior review and written approval. The Deputy Director may require additional CEQA analysis associated with the change. If such a change would also require submission to FERC, the change must first be approved by the Deputy Director.

CONDITION 21 In response to a suspected violation of any condition of this water quality certification, the State Water Board may require the holder of any federal permit or license subject to this water quality certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs of reports, shall bear a reasonable relationship to the need for reports and the benefits to be obtained from the reports (California Water Code, §§ 1051, 13165, 13267 and 13383). The State Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

CONDITION 22 In response to any violation of the conditions of this water quality certification, the State Water Board may add to or modify the conditions of this water quality certification as appropriate to ensure compliance in the future.

CONDITION 23 This water quality certification is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with section 3867).

CONDITION 24 The State Water Board reserves the authority to add to or modify the conditions of this water quality certification: (1) if monitoring results indicate that continued operation of the Project could violate water quality objectives or impair the beneficial uses of the Chuckwalla Valley Groundwater Basin; or (2) to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

CONDITION 25 Upon request, the Licensee shall provide State Water Board staff access to the Project site to document compliance with this water quality certification.

CONDITION 26 The State Water Board shall provide notice and an opportunity to be heard in exercising its authority to add or modify any of the conditions of this water quality certification.

CONDITION 27 Future changes in climate projected to occur during the license term may significantly alter the baseline assumptions used to develop the conditions in this water quality certification. The State Water Board reserves authority to modify or add conditions in this water quality certification to require additional monitoring and/or other measures, as needed, to verify that Project operations meet water quality objectives and protect beneficial uses.

CONDITION 28 The Deputy Director or State Water Board's approval authority includes the authority to withhold approval or to require modification of a proposal or plan prior to approval. The State Water Board may take enforcement action if the Licensee fails to provide or implement a required plan in a timely manner.

CONDITION 29 This water quality certification requires compliance with all applicable requirements of the Colorado River Basin Plan. The Licensee must notify the Deputy Director and the Executive Officer within 24 hours of any unauthorized discharge to surface waters.

CONDITION 30 Activities associated with operation or maintenance of the Project that threaten or potentially threaten water quality shall be subject to further review by the State Water Board and Colorado River Regional Water Board.

CONDITION 31 The State Water Board reserves authority to modify this water quality certification if monitoring results indicate that construction or operation of the Project would cause a violation of water quality objectives or impair the beneficial uses of the affected groundwater basins.

CONDITION 32 Deviation from any of the conditions of this water quality certification shall be reported immediately to the State Water Board and Colorado River Regional Water Board.

CONDITION 33 Notwithstanding any more specific condition in this certification, the Licensee must comply with the mitigation, monitoring, and reporting requirements in the MMRP.

CONDITION 34 Any requirement in this water quality certification that refers to an agency whose authorities and responsibilities are transferred to or subsumed by another state or federal agency, shall apply equally to the successor agency.

CONDITION 35 The Deputy Director shall be notified when approval is sought from another agency for a plan, action, or report related to this Project.

Thomas Howard
Executive Director

Date

Attachment A Project Area Maps
Attachment B Mitigation Monitoring and Reporting Plan
Attachment C CEQA Findings and Statement of Overriding Considerations

8.0 References

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