



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

STEPHEN R. MAGUIN
Chief Engineer and General Manager

October 4, 2010

Mr. Paul Murphey
Division of Water Rights
State Water Resources Control Board
Post Office Box 2000
Sacramento, CA 95812

**Eagle Mountain Pumped Storage Project
Comments Regarding Draft Environmental Impact Report ("DEIR")
State Clearing House No. 2009011010**

Dear Mr. Murphey:

Thank you for this opportunity to provide comments on the Draft Environmental Impact Report ("DEIR") for the Eagle Mountain Pumped Storage Project ("Project"). The County Sanitation District No. 2 of Los Angeles County (the "District") urges the State Water Resources Control Board ("Board") not to certify the DEIR because it fails to consider many potentially significant environmental impacts of the Project and otherwise fails to meet the requirements of the California Environmental Quality Act ("CEQA," which includes Pub. Res. Code Sections 21000 through 21177), as discussed below.

The District is part of a confederation of 23 independent special districts (collectively, the "Districts") that provide environmentally sound, cost-effective wastewater and solid waste management facilities to approximately 5.7 million people in Los Angeles County. The Districts are governed by Boards of Directors consisting of the presiding officer of the governing body of each city within the Districts and the presiding officer of the Los Angeles County Board of Supervisors for unincorporated territories.

Due to a projected future shortfall in local solid waste disposal capacity, the Districts have been working with other public agencies to develop the means by which solid waste may be disposed of at sites outside of the Los Angeles metropolitan area. The Districts have taken the lead role in implementing a Waste-by-Rail System to provide long term disposal capacity to replace local landfills as they reach capacity and close.

One such remote landfill site is the Eagle Mountain Landfill (the "Landfill"). The Landfill is permitted to receive residual solid waste by rail from Southern California. The Landfill would place municipal solid waste in four canyons and the east, or lower pit of the Project. The District has entered into an agreement to purchase the Landfill for use as part of its Waste-by-Rail System. The District entered into this agreement with the current owners of the Landfill, Kaiser Eagle Mountain, LLC and Mine Reclamation, LLC (collectively, "Kaiser").

As generally described in the DEIR, the Project would use portions of the Landfill site to generate electricity as water flows from an upper reservoir through turbines to a lower reservoir when power demand is high and pumping it from the lower to upper reservoir when demand is low. There is no net increase in electricity, though the DEIR attempts to attribute many hypothetical and questionable “green” attributes to the Project.

The District is concerned that the DEIR seeks to substitute promises of conceptual future mitigation programs for actual identification and consideration of Project impacts or identification and consideration of specific mitigation measures that may be reviewed and commented upon by the public. Accordingly, the Project proponents, even at this late date, are unable to describe the Project’s most significant features, instead deferring design specifics and analysis of related environmental impacts until after certification of a final environmental impact report and approval of the Project. This effectively avoids public comment. In addition, the District is concerned that the DEIR fails to consider the actual impacts of the Project on the Landfill project, which is scheduled to take place at the same time and in many of the same locations as the Project, and upon the environment.¹

Under the DEIR, the Project is left largely undefined even as it is purportedly being analyzed. First, the DEIR lacks a sufficient description of the most critical baseline conditions at the site to permit any effective analysis of potential environmental impacts from the Project. Second, the DEIR states that Project proponents have not been physically present upon large portions of the proposed site. This means that their evaluation of environmental impacts is largely based upon tabletop or desktop studies based on the works of others that were not designed or intended for this Project’s purpose, or they have attempted to defer studies entirely until after approval. Thus, the DEIR does not include vital studies of the site geology, surface water and groundwater, and biology. These studies are essential for determining the environmental impacts related to a hydroelectric project. Undertaking these studies now could lead to starkly different conclusions of the environmental impacts associated with the Project design and permit important public comments on its related impacts.

Despite failing to properly establish an environmental setting, the Project proponents then propose mitigation measures for potential impacts that are unknown and categorize such potential impacts as “significant” or “not significant” even though, by DEIR admission, there is insufficient understanding or consideration of baseline conditions or actual potential impacts at this time. This artificial process denies the public, including public agencies, the ability to determine how the Project will be developed and to comment on the most critical potential environmental impacts or required mitigation measures resulting from the Project’s development. The result is entirely contrary to the intent behind CEQA: to allow the lead agency to **identify at the earliest possible time in the environmental review process**, potential significant effects of the Project and appropriate mitigation measures based on public comment. (CEQA Section 21003.1.)

The District believes that the defects in the DEIR are so significant that they can only be addressed adequately by a revised and recirculated DEIR (“RDEIR”).

1. The DEIR Fails to Sufficiently Analyze Existing Environmental Conditions at the Project Site

The environmental analysis in the DEIR fails to include sufficient detail about important existing natural features and conditions at the Project site. As discussed more fully below, the DEIR repeatedly ignores existing environmental conditions and indicates that studies of important site characteristics, like

¹ The DEIR incorrectly states that there will be no overlap with the Landfill. See Section 2 below. Further, the Landfill is more advanced in the entitlement process than the Project, though a recent legal decision may cause Kaiser to make minor supplemental changes to environmental documents and to introduce a BLM appraisal related to the value of exchange property.

geology or groundwater, will be studied at some time after certification of a final environmental impact report (“EIR”) and after the Project is licensed by the Federal Energy Regulatory Commission (“FERC”). This approach is contrary to established precedent. CEQA is designed to inform the decision-making process and to permit the lead agency to examine environmental impacts before the decision has been made to approve the Project. To do otherwise denies the public of any meaningful opportunity to learn and comment on potential environmental impacts related to the Project. The environmental analysis of the Project site is required to be addressed in the RDEIR, not at some later point.

Further, the DEIR frequently states that certain mitigation measures will be implemented if any impacts are discovered after licensing the Project. Thus, the Project’s proponents seek to defer fact-based analysis of environmental impacts and mitigation measures until after it is too late for the public reviewing the DEIR to comment or actually understand the true impact of the Project. This is entirely inconsistent with CEQA’s requirements. (*See, e.g.*, California Code of Regulations, Title 14, Sections 15200 and 15126.4 [Chapter 3 of Title 14 is known as the “CEQA Guidelines”].) These mitigation measures need to be addressed instead in the RDEIR.

a. Section 3.1—Geology, Soils and Mineral Resources

Although this section has a subsection that purports to represent “Existing Conditions” as necessary to establish a baseline (Section 3.1.2), the discussion of geological conditions at the site includes no detailed physical examination focused on Project design, nor site-specific geological studies regarding conditions at the Project site. The discussions regarding ground subsidence, soil erosion, and landslides and mass movements do not sufficiently analyze existing site conditions (the DEIR expressly states future testing is required before any analysis can be completed). Instead, the Project proponents have attempted to use past studies performed for different purposes and markedly differing project design features and not perform their own studies at the site. The first of the “project design features” touted by the DEIR to be performed after certification of the EIR and once “site access is obtained,” is “Stage 1 Subsurface Investigations,” which will have the information necessary to “finalize project features.” These investigations are to be followed by Stage 2 investigations for final design, including the design of dams. (p. 3.1-29.) In addition, the DEIR proposes to perform “geologic mapping” to describe the stability of slopes within the mine pits where the reservoirs are going to be located after an EIR is certified. (*Id.*)

In other words, the Project’s proponents seek the lead agency’s certification through an EIR process without having validly obtained sufficient site access to perform basic geological investigations at the locations where they propose to locate large tunnels below the Landfill footprint, as well as reservoirs and dams and other massive infrastructure improvements. This data is critical in determining true baseline conditions for their project and is the most basic requirement of an environmental assessment. This stymies any attempt at public comment or understanding of the actual environmental impacts of these proposed improvements. It is therefore impossible for the Project’s proponents to assert that any impacts will be mitigated since neither the impacts nor the extent to which mitigation will be needed is known. For example, informed discussion of an “erosion control plan” like that proposed for mitigation of potential soil erosion at the site is meaningless without studies indicating where and under what site-specific conditions such erosion could occur and what measures will be necessary to prevent or mitigate it. This constitutes “deferred mitigation” which is clearly impermissible under CEQA. These studies and mitigation measures instead need to be addressed in the RDEIR.

b. Section 3.2—Surface Water

The DEIR fails to identify Eagle Creek as part of the Project’s environmental setting and fails to more significantly analyze the Project’s potential impacts upon the creek bed. Eagle Creek must be studied and the discussion of potential Project impacts upon this stream needs to be adequately detailed. A further discussion regarding defects in the DEIR with respect to Eagle Creek and Bald Eagle Creek is provided in Section 8a below.

Although the DEIR speculates that the Project-created surface waters may be impacted by sedimentation and metals as a result of former mining activities on site, it relies for mitigation of these impacts upon the “erosion plan,” which detrimentally lacks the pertinent information identified above, and “on-site studies of acid production potential,” which will be performed “when access is granted to Eagle Crest Energy Company” to collect samples. (p. 3.2-16.) Thus, by its own language, the DEIR acknowledges that the Project’s proponents do not have sufficient information to identify the Project’s potential impact upon water quality. Instead, studies regarding these potential impacts will be conducted after EIR certification and mitigation measures are to be adopted without public review or comment. This again constitutes deferred mitigation and does not address the important issue of water contamination by a Project involving the importation of massive quantities of water onto the Project site. These studies and mitigation measures need to be addressed instead in the RDEIR.

c. Section 3.3—Groundwater

The discussions of potential impacts and mitigation measures in this section are speculations based upon the proponent’s acknowledged limited information about existing conditions. The entire evaluation of potential impacts to groundwater is based upon a literature review and review of photographs rather than any actual field work at the Project site. (p. 3.3-19.) While the DEIR concedes that seepage may impact the amount of groundwater that will need to be pumped for the Project, estimates of this seepage are created without support from actual geological studies in the areas at the proposed reservoirs or tunnels, and are, therefore, not supported by substantial evidence. Recognizing this defect, the proponents propose in the DEIR to conduct a “detailed reconnaissance” of areas where leakage and seepage is expected to occur during the Project’s “final engineering design” as part of their seepage control efforts. Once again, disclosure of any meaningful information is deferred thereby avoiding any meaningful public review and comment. Proposing potential methods for limiting seepage from the Project is conjectural without sufficient geotechnical studies to determine the site’s characteristics. These seepage studies and any potential mitigation measures need to be addressed instead in the RDEIR. Seepage issues are discussed in greater detail in the comments on Technical Memorandum Section 12.5, later in this letter.

d. Sections 3.5 and 3.6—Biological Resources and Threatened and Endangered Species

The DEIR relies again upon delayed analysis and deferred mitigation with respect to the biological impacts of the Project rather than analysis of existing conditions. The Project’s proponents performed no onsite surveys of the mine pits that will become the reservoirs or other features of the Central Project Area. (p.3.5-32.) Instead, the proponents rely upon “pre-construction surveys” of plant and wildlife species, including endangered and threatened species like the desert tortoise, that will take place some time after the EIR is certified, the proponents obtain access, and the Project is licensed. (p. 3.6-24.) This short-circuits any discussion of the potential impacts of the Project on biological resources or any means to permit the public to provide reasoned comments. This makes the DEIR seriously flawed as an informational document and prevents it from fulfilling its function as required by CEQA. These studies and potential mitigation measures need to be addressed instead in the RDEIR.

In addition, the DEIR fails to establish either a baseline or ongoing monitoring and management program for dealing with ravens throughout construction, operation and maintenance of the project. In view of the potential attraction of ravens to the new bodies of water, and the likely deleterious effect of increased raven populations upon the threatened desert tortoise, these impacts need to be analyzed and considered in the RDEIR.

2. The DEIR Fails to Fully or Accurately Analyze the Project's Potential Impacts Upon and Incompatibility With the Landfill

As noted throughout the DEIR, the two projects will be physically located in many of the same areas and the Landfill may be displaced or interfered with by the Project. Nevertheless, the DEIR description and analysis of the substantial number of potential impacts to the Landfill is cursory as further addressed below.

As a preliminary matter, there is an unsubstantiated assumption made in the DEIR regarding timing of the two projects; that is, the Project will be implemented and completed in the Central Project area before the Landfill reaches that portion of the Project site. First, the DEIR fails to consider that the Project will be subject to many of the same delays as the Landfill in obtaining entitlements, because the Project faces organized opposition from not only the opponents of the Landfill, but also possibly from the Metropolitan Water District, the District and Kaiser. Second, the DEIR fails to consider the activities necessary to comply with any closure and post-closure requirements when the energy project is complete. Third, the DEIR did not consider that the District is likely to change the phasing of the Landfill based on engineering considerations. Fourth, the DEIR did not consider the Landfill capacity losses due to the Project infringement into the Landfill footprint, limiting fill height and flattening fill slopes with resulting impacts to the economic viability of the Landfill.

Moreover, the DEIR fails to address a myriad of obvious physical conflicts with various Landfill components. These conflicts exist regardless of whether the phasing of the Landfill is ever changed, or whether the Landfill is not operational until after the Project is completed. It is apparent that those who prepared the DEIR never consulted with Kaiser or the Districts regarding the compatibility of the two projects, or with the Districts regarding the environmental significance and public importance of the Landfill project. As will be apparent from the long list of material conflicts that are not addressed in the DEIR, the consultants did not engage an expert with sufficient or competent experience in landfill construction and operation. Therefore the Project's proponents failed to make a good faith effort to consider the Project's impacts upon the Landfill and the related environmental impacts.

a. Construction of the Project

The discussion of the construction of water connector tunnels (Section 2.4.4) does not consider the impact of the construction methods for the tunnels upon the surrounding geology. This is important to the Landfill, because the tunnels are to be located below the Landfill's liner.

While the tunnels to convey water from the upper reservoir to the underground powerhouse and from the powerhouse to the lower reservoir are to be constructed by using a tunnel boring machine ("TBM") or by drill and blast methods, the discussion fails to provide sufficient information by which the Districts or the public can determine the impact of either construction method on the Landfill. Without more extensive geotechnical studies by the proponents to determine potential environmental impacts of construction, selection of a construction method is essentially conjectural. Current published information suggests that either method would create significant constructability issues and could impact the Landfill.²

The area to be displaced by the lower reservoir conducting tunnel would appear to include materials with widely differing properties, such as hardness and the ability to withstand the stress-strain caused by the proposed construction methods. Site geology, weathering and soil horizons and linear features such as joints, fractures, and shears structurally impact the rocks and would affect the selection of TBM or the drill and blast methods and related environmental impacts. Further discussion in the RDEIR is needed of the site-specific

² "Durability Prediction: geological influences in hard rock drill and blast tunneling" International Journal of Earth Sciences, v.86, K. Thuro author and " Geological Parameter for Hard Rock Tunnel Boring" International Journal of Rock Mechanics and Mining Sciences and Geomechanics Abstracts, v. 23, Issue 5, 10/86, Movinkel, T; Johanmessen, O. authors.

factors included in the choice of either of these methods and potential impacts upon the Landfill and the environment that is located above the tunnels.

The discussion of ground subsidence impacts in connection with the Project in Section 3.1.3.3.2 fails to address potential impacts of subsidence from tunneling activities during construction and from seepage from the tunnels during operation. Further discussion is required in the RDEIR that addresses these potential adverse impacts upon the Landfill and the environment.

b. Existing and Proposed Land Uses—Facility Conflicts

Although the DEIR asserts that the Project could be operated in conjunction with the Landfill and that it includes modifications to the Project's layout to accommodate the Landfill, there is no information in the DEIR to gauge what these modifications will be or their potential environmental impacts. These modifications and potential impacts must be addressed in the RDEIR. Further, the DEIR ignores likely land use conflicts that will exist even with any purported modifications. To the extent that these incompatibilities can be determined given the limited disclosure of the Project's conceptual design in the DEIR, it is apparent that even more significant conflicts will be manifested during detailed design to be performed in the RDEIR. Unless a legitimate analysis of the conflict between the two projects is completed in the RDEIR, the public will be deprived of comment on undisclosed impacts on the Landfill and the environment.

In Riverside County's Specific Plan No. 305 for the Landfill, the container handling yard and attendant facilities, including equipment washing facilities, the intermodal rail yard, local waste receiving facilities, repair and maintenance facilities, are located immediately south of the Landfill Phase 3 fill area. The DEIR places a switchyard, reverse osmosis system, storage and administrative facilities in the same location. This area is limited in size and cannot accommodate these facilities for both projects. The RDEIR should address this conflict and the related environmental impacts.

The DEIR incorrectly shows the Landfill's rail yard in a different location on the east side of the east pit—more than six miles from the refuse area to be used in the first phase of the Landfill. This distance would substantially increase the Landfill truck cycle times for transporting the waste from the rail yard to the disposal site and would significantly impact the Landfill's economical viability. These conflicts need to be explored, in detail, in the RDEIR, and all related environmental impacts disclosed.

Although the DEIR describes the Project's proposed switchyard, storage warehouse and administration facilities as being located outside of the active Landfill area, their placement as shown in the DEIR would conflict with the Landfill rail yard. This would prevent the Landfill from being able to efficiently operate using rail haul—a key feature of the Landfill. The Project's proponents must either relocate their facilities in this area or address the impacts upon the Landfill of displacing the rail yard. Again, this issue must be fully vetted in the RDEIR, with all environmental impacts disclosed.

The Landfill Phase 3 fill area and the rail yard are also planned within an area depicted in the DEIR as a 200-foot wide right of way for the Project transmission lines and towers. These lines also interfere with the overhead clearance necessary to operate the railroad and the rail yard for the Landfill. The DEIR assumption that the lines will already be constructed prior to the startup of the railroad for waste hauling is irrelevant because the construction and operation of these lines would interfere with the construction and operation of the Landfill's facilities, no matter when the lines are built. Therefore, these interferences must be fully considered in the RDEIR, as well as all related environmental impacts.

The water pipeline corridor selected in the DEIR is also within the transmission line alignment and will conflict with Landfill facilities and operations. The location of the corridor shown in the DEIR will reduce the size of the Phase 3 fill area and could jeopardize the stability of the fill in that area by reducing the buttress (or "toe") portion of the fill. These issues should have been considered in the DEIR. Also, the land use impacted by the water pipeline will not be merely "undeveloped desert" as described on page 3.9-30 of

the DEIR, but rather areas to be used for maintenance of the proposed Landfill access road, rail yard and supporting facilities as well as the Phase 3, 4 and 5 fill areas of the Landfill. Once more, these conflict issues should be fully vetted in the RDEIR and all related environmental impacts disclosed.

The DEIR representation that the reservoirs for the Project are located outside of those portions of the Landfill to be used for “waste disposal during Phases 1-4 of the Landfill operation” (p. 3-9.19) is incorrect. In fact, the upper reservoir’s dam overlaps a large portion of the Phase 1 fill area and is immediately up gradient from a large portion of that fill area. In addition, the proposed spillway and access road would displace a portion of that fill area to the east. The environmental and economic impacts of these potential modifications to the Landfill must be considered in the RDEIR.

Another significant potential impact essentially unaddressed in the DEIR is the impact on the Project upon the Landfill liner. DEIR Section 2.4.4 describes an upper pressure tunnel with a diameter of 29 feet that may or may not be fully lined with concrete. Despite the volume of water to be pumped through this tunnel no analysis has been performed about the significance of the potential loss of water through fractures and crevices of the bedrock from an unlined tunnel or the impact of this seepage upon the District’s ability to construct and operate a lined landfill above the tunnel. Unmitigated pore pressures from seepages could be potentially damaging and destructive to the Landfill liner system. This analysis needs to be performed, and any related environmental impacts discussed in the RDEIR.

The DEIR describes the migration of water from the upper reservoir adjacent the liner for the first phase fill area and the time it would take for the seepage to reach the liner, thus implying that such contact is inevitable. This ignores the regulatory requirements contained in Title 27 of the California Code of Regulations (§20240(c)) that mandates a minimum five-foot (5 ft.) separation above the highest anticipated elevation of ground water for site selection, design, construction, and operation of landfills. These regulations would prevent the development of the first phase of the Landfill if there were potential contact between the liner and groundwater. Therefore, the RDEIR must include an analysis of how the Project will maintain the minimum separation distance requirements set forth in Title 27 as well as a description of seepage prevention measures for the upper reservoir and the impacts of construction, operation and removal of those prevention systems. All related environmental impacts must be addressed in the RDEIR as well.

The potential impact of the Project upon the Landfill ability to obtain necessary regulatory approvals amid the construction and operation of the Project must be coherently discussed in the RDEIR. The Project provides for the location of a large body of water upgradient from and behind a lined Landfill slopes as well as subsurface tunnels beneath an operating Landfill. However, the DEIR does not discuss the impact of these tunnels upon the Landfill’s ability to meet the requirements of CCR Title 27. The location of these items in the same vicinity would significantly modify the geotechnical conditions on the site and would require new slope stability and subgrade analyses for the Landfill and new waste discharge requirements for operating the Landfill. The economic and environmental impacts of these facilities upon the Landfill, and its ability to maintain or obtain needed permits to operate must be considered in the RDEIR and all related environmental impacts disclosed. This analysis is critical to assess the Landfill viability if the Project were to go forward.

While the DEIR states that the Project will use the “fine tailings” on the site “not used by the Landfill,” the DEIR indicates the Project will use these tailings prior to the time that the Landfill begins operation. (p. 3.9-30.) This means that the tailings used would not be available for cover for the Landfill, and may cause the Landfill to obtain cover by some other means. The potential impacts of the Project’s use of tailings that would otherwise be used by the Landfill, and a potential shortage of fill for the Landfill, must be addressed in the RDEIR, with all related environmental impacts disclosed.

Another Project component requiring further analysis is the northern perimeter road to be used for operation and maintenance of the Project. During construction of the Landfill, this road would interfere with the excavation and construction of slopes and benches that are necessary to anchor and install liner for the fill areas for the second and third phases of the Landfill. During this operation, the northern perimeter road will

not be available, and the RDEIR must study alternative alignments for that road and their potential impacts upon the site and the Landfill as well as on the environment.

3. Groundwater Yield Impacts of the Project

The analysis and accounting of the groundwater balance for the Chuckwalla Valley Groundwater Basin fails to sufficiently explain the basis for its assumptions that the pumping effects of the Project will actually result in a water surplus by the end of the assumed 50-year operation period. This accounting is set forth in Table 3.3-8 (p. 3.3-22 and 3.3-23). The reason for the purported increase in inflow between 2014 and 2060, which prevents a net decrease in the water balance, is not quantified or even identified. The DEIR provides no support for the assumption that the water usage by the Chuckwalla and Ironwood State Prisons will be reduced by 30 percent in 2011 and, presumably, thereafter. In any event, this analysis appears to be incorrect, because the cumulative effects of the Project when combined with other existing and foreseeable projects are now purportedly set forth in the revised version of Table 5.5—added well after the start of the comment period. Instead of posting a cumulative increase of 87,000 acre feet during the 50-year period postulated for the Project, the revised table shows a cumulative decrease of almost 80,000 acre feet during the same period. This updated information, which is completely contrary to the information supplied in the DEIR, must be analyzed and the true environmental impacts associated with this deficit must be analyzed in the RDEIR.

4. Design Level Site Investigation Plan—Technical Memorandum Section 12.1

The site investigation plan discussed in this memorandum requires more information about the geology of the Project site and the portions of the Project that underlie the Landfill. The proposed Phase 1 geotechnical investigation plan shows that only five borings are planned along a 9,000 foot tunnel alignment below the Landfill, or approximately one per 1,800-feet. The Landfill may eventually include up to 800 feet of refuse above that existing ground elevation. The RDEIR must explain how the geologic/geotechnical information generated from such widely spaced borings will permit the design and construction of tunnels that will not impact the Landfill located above. Also, this plan does not include borings at the bottom of the upper and lower reservoirs to assess the permeability of the subgrade. The Project's proponents must document the properties of the subgrade to determine the impacts of any seepage of the upper reservoir upon the Landfill and address how the Project would be compatible with the Landfill. Also, the Phase 1 program must include investigation of the impacts of the Project upon the static and seismic stability of the Landfill slopes. These studies cannot be deferred until after EIR certification if the true impacts of the Project are to be analyzed for public review at a meaningful time.

5. Seepage Analysis for Upper and Lower Reservoir—Technical Memorandum Section 12.5

This memorandum requires further analysis and explanation of its methodology and results in the RDEIR as described below.

a. Seepage Mitigation Assumptions

The plan to use mine tailings to help control seepage is inconsistent with site-specific observations of the properties of these tailings. Mine tailings in settling ponds at the Eagle Mountain Mine have been observed to be fine-grained and hydrophobic, meaning that they have dispersive properties that cause individual soil particles to pull apart when in contact with water. Thus, where the tailings are proposed as reservoir lining, erosion and vertical piping may result. This result demonstrates the folly of relying on the Project's proponent's expectation-based deferred maintenance conclusions throughout the DEIR, instead of relying on an actual baseline conditions. The RDEIR must address these adverse soil properties in connection with any plan to use the tailings for reservoir lining, including detailed geotechnical characterizations of the

actual existing material with emphasis upon, for example, whether these soils are sodic and dispersive. All related environmental impacts must be addressed in the RDEIR.

b. Seepage Analysis Modeling

(1) The DEIR analysis lacks important site-specific information

The seepage analysis is based on modeling specific groundwater conditions, such as the extent, depth and gradient of the piezometric groundwater surface along selected cross sections across the project site. The computer code SEEP/W was used in the analysis and appears to describe estimated saturated hydraulic conductivities (K_{sat}) for different subsurface earth materials between the reservoirs and the Colorado River Aqueduct, located to the east of the project site. Normally SEEP/W requires two unique input parameters in order to predict the subsurface distribution of moisture along cross sections. They include: (1) hydraulic conductivity functions and (2) volumetric moisture content functions that are typically derived through exotic laboratory testing and curve-fitting methodologies. DEIR Section 12.5 does not provide any information on whether and how these input parameters were developed for the models presented in the EIR. Instead, Section 12.5 suggests that the models were based exclusively on estimates of saturated hydraulic conductivity (K_{sat}) for the different subsurface earth materials between the reservoirs and the Colorado River Aqueduct. The RDEIR should address in detail the viability and technical feasibility of SEEP/W models to accurately predict seepage and groundwater distribution using only K_{sat} as input parameters and discuss all related environmental impacts.

(2) Further explanation of the DEIR modeling methodology is necessary

The SEEP/W modeling output provided in the DEIR does not include important model components and explanations, which must be included in the RDEIR. These items include:

- the finite element mesh architecture needs to be presented, including, but not limited to, the number of mesh elements/element nodes and the aspect ratio and geometry of mesh elements;
- any utilized nodal boundary conditions need to be defined in the text and their locations need to be located in the appropriate model cross sections;
- quantification of flux quantities and rates assigned to significant boundary nodes and an explanation of their quantities and any flux rates assigned to constant flux rate boundary nodes to reflect the regional groundwater flow;
- an explanation of how the models are being calibrated;
- an explanation of the color-contouring scheme in terms of seepage rates or water content distributions.

(3) Figure 6

The SEEP/W model output shown implies that near-surface seepage to the east of the upper reservoir will result from filling the reservoir. This implies that the proposed project conflicts with the Landfill because seepage water may be situated too close to the Landfill liner. The groundwater gradients calculated by the model on either side of the upper reservoir greatly differ from each other, and the differences must be explained in the RDEIR, along with any related environmental impacts.

(4) Figure 7

The SEEP/W model output shown also predicts that groundwater will be close to the ground surface once the lower reservoir is filled. As described previously, Title 27 specifies a minimum separation between landfill liners and groundwater. This conflict must be discussed and analyzed in the section of the RDEIR dealing with compatibility of the Project with the Landfill and any related environmental impacts noted.

(5) Figure 8

The SEEP/W model output suggests that filling the upper reservoir may cause groundwater to seep into drainage channels and Eagle Creek. The potential impacts of this seepage upon the Landfill and the potential impacts of a response to this condition by regulatory agencies, as well as any related environmental conditions, must be analyzed in the RDEIR.

(6) Figure 11

Figure 11 displays the modeling output representative of groundwater levels after filling a lower reservoir lined with mine tailings and roller-compacted concrete. The RDEIR needs to explain what boundary conditions were introduced into the model to reflect water seeping through the reservoir liner materials and to discuss any related environmental impacts.

(7) Clarification of the relationship between saturated hydraulic connectivity of bedrock and the seepage modeling. The DEIR discussions of this relationship require more information to assess potential environmental impacts of the Project upon the Landfill:

- Estimated Ksat values are based on limited published packer testing results, but packer testing alone may not yield accurate values. The Ksat of bedrock must be more definitively assessed in the RDEIR through pump testing that would provide regionally representative data on the hydraulic properties of bedrock.
- SEEP/W modeling using Ksat as the main input parameter should include sensitivity analyses of the effects of the bedrock fracturing, fracture densities, fracture infilling and cementation as well as aperture widths to be meaningful for public comment.
- The Ksat values of alluvial soils presented in the DEIR are based upon “empirical correlations between grain size and permeability”, which can only be considered rough approximations and may not provide a realistic picture of modeling of specific groundwater conditions. These values must be based on the results of pumping tests in the RDEIR.

- The Ksat values used to model the proposed reservoir liner materials were derived from published laboratory testing data, but the DEIR does not state whether hydraulic loading conditions from repeated reservoir filling and emptying were considered. An RDEIR must explain what effective consolidation pressures were applied during laboratory testing to assure that the Ksat results for reservoir liner materials are realistic and representative of expected design conditions and whether these could have potential environmental impacts.
- An undesignated table in Section 12.5 lists an unreferenced “Chuckwalla Report” in support of Ksat values for alluvium near the model area. The RDEIR must explain how these Ksat values were developed and how representative these Ksat values are for alluvium in the region.
- Another undesignated table in Section 12.5 relates grain size distribution to Ksat values for alluvial soils, but the hydraulic conductivity of alluvium ought to be determined using laboratory or field-testing since the potential impacts of the Project upon the Landfill may be dependent upon the assumptions used. The results of this analysis should be included in the RDEIR.
- A third undesignated table in Section 12.5 lists Ksat values for mine tailing materials that were apparently determined using unspecified “field” and “lab” tests. The RDEIR must describe: (1) the number of samples considered or analyzed; (2) the meaning of “field test type”; (3) the effective consolidation back pressures that were applied in the laboratory during testing; and (4) whether the back pressures included were calculated considering reservoir loading and unloading, in order to provide the public with meaningful data.

Any changes in environmental impacts related to changes in the analysis should be discussed in the RDEIR.

(c) Further Information is Required About the Basis of Assumptions Made in the DEIR

The DEIR estimates the time required for development of “full seepage volumes”, “steady-state groundwater profiles” and “steady-state groundwater levels”. These estimates are provided to contrast predicted groundwater level increases to their impacts on the regional groundwater piezometric surface and the Colorado River Aqueduct. These estimates are unsupported by calculations or analysis. The RDEIR must substantiate all estimates of current seepage volumes and their impact upon groundwater levels with respect to the time during which the Project is to be performed and discuss all environmental impacts based on actual analysis.

The DEIR does not provide sufficient detail regarding the means by which seepage flow rates were calculated. The RDEIR must provide such detail, including discussions regarding the unit width of the geologic section, unit width seepage rates and water surface elevation average top widths, and must address any related environmental impacts. This discussion must also explain how these parameters relate to the equations used in the DEIR to quantify seepage flow rates. This actual analysis of seepage rates and projected

rates based on actual conditions is necessary for the public to adequately gauge the impact of seepage on the Landfill and the environment.

The DEIR, in discussing the possibility of hydrocompaction from seepage, describes a “worst-case” seepage condition in which groundwater rises to approximately 80 feet below the ground surface and concludes that groundwater will “not reach the near-surface zones where hydrocompaction would be most problematic”. However, the DEIR does not state, and the RDEIR must explain how groundwater rising to a depth of 80 feet is a “worst case” condition and at what depth and location the near-surface zones in the Project area are susceptible to hydrocompaction.

The RDEIR must provide detailed calculations to substantiate the estimated reduced seepage rates that the DEIR assumes will result from seepage mitigation measures described in the DEIR in order for the public to be able to meaningfully comment on the validity of these measures.

6. Seepage Recovery Estimate—Technical Memorandum Section 12.6

The underlying assumptions used in the modeling of seepage recovery included in this memorandum need to be clarified. A seepage recovery assessment is presented in the form of a groundwater flow model using the computer code MODFLOW and in a geologic evaluation of faults in the vicinity of the upper reservoir. The model domain is shown on Figure 7 of the memorandum. Although this figure suggests that the model encompasses an area of approximately 40,000 sq. ft., only about one third of the eastern modeling domain was actually utilized for modeling purposes. The model grid presented in the DEIR is unclear and suggests that the surface area of the model is more inclusive. The RDEIR must address this potential inconsistency and discuss any related environmental impacts if an inconsistency is corrected.

The DEIR briefly discusses the hydraulic conductivity values of alluvial deposits that were included in the model, but the values used appear to have been determined from investigations other than any done to develop the DEIR. Since this discussion appears to assume that higher hydraulic conductivity and storativity values apply for these locations than is justified by the discussion, the RDEIR should contain further information and analysis supporting the use of these hydraulic input parameters or adjust the parameters to a supportable level. Any environmental impacts arising from a corrected analysis should be provided.

The MODFLOW model is described as a “3-layer model” that represents geologic conditions beneath the lower reservoir. The lower two layers are represented to consist of clayey lakebed deposits and coarse-grained sediments, respectively—both of unknown thickness. No direct evidence is provided to support the assumption of the existence of sediments in the lowest layer. While the thicknesses and hydraulic conductivities of the lower two layers are concededly unknown, the DEIR assumes thicknesses and hydraulic conductivities for these layers without providing support for these assumptions. The DEIR analysis includes the assumption that the hydraulic conductivities of the lower two layers are so low that, according to the model, they represent an impermeable boundary for the upper layer. These assumptions need to be justified by facts and appropriate documentation in the RDEIR with a discussion of any related environmental impacts in order to permit informed public comment.

Although the DEIR discusses “seepage recovery” from the upper reservoir through a geologic evaluation of the “major faulting pattern” in the vicinity of the reservoir, the discussion fails to consider that faults may serve as hydraulic barriers and whether a clayey fault gouge is present, as well as the potential impact of these conditions on water transmissibility. The DEIR also does not discuss the effect of bedrock fracturing upon the transmission of reservoir seepage water. The RDEIR must contain a discussion of these potential impacts, along with an assessment of bedrock fracturing that includes, without limitation: fracture densities; preferred fracture orientations; fracture interconnectedness; fracture aperture widths; and fracture infilling. Also, the RDEIR must explore the possibility that faults may provide only limited flow pathways and that fractures may transmit the bulk of seepage water. These features could represent fatal flaws of the

Project. Otherwise, the public has not been adequately advised of the potential impact of seepage and related environmental impacts.

The memorandum (at page 9) states that the installation of seven or more seepage recovery wells along the southern perimeter of the upper reservoir, between the two reservoirs, and around the eastern perimeter of the lower reservoir will maintain water levels “below the elevation of the liner for the proposed Landfill operations.” It is stated that these water levels will be maintained if the wells are operated at an assumed pumping rate of 70 gallons per minute. The RDEIR needs to present an analysis showing that the wells will maintain the proper water level if operated at this pumping rate and that the wells will pump at this rate, or what will happen if the wells fail to meet this rate, along with all related environmental impacts.

7. Project Compatibility With the Landfill—Technical Memorandum Section 12.8

The RDEIR should consider potential preventative and mitigation measures to protect the cut and fill slopes of the first phase of the Landfill from breaches of the South Saddle Dam and the southern embankment of the upper reservoir. These facilities are located behind the cut slopes and above and upstream of the refuse fill in the first phase of the Landfill. Failure of either facility would risk failure of the Landfill liner slopes as well as exposure or washout of the refuse slopes. Further, the possibility of fire or explosion in the tunnels for the Project should be considered in the RDEIR as well as the potential impacts to the Landfill located above them should these events occur.

Given the proposed location of power generation and transmission facilities for the Project within tunnels located under the Landfill, the RDEIR also needs to present an analysis of the stress-strain behavior of the geologic materials located under the Landfill caused by the construction of the tunnels. The RDEIR also must assess the likelihood of loosening bedrock around the tunnels and sudden rock bursts, as well as mitigation measures to prevent any impacts upon the Landfill. All related environmental impacts should be noted.

Finally, in the event that the Project is abandoned for economic, environmental or other reasons, or after the Project term is completed, the RDEIR needs to discuss the Project proponents’ plan for decommissioning and closing the Project’s infrastructure such that there would be no related limitation on the development and operation of the Landfill. In addition, the RDEIR needs to describe the ongoing activities needed to maintain the decommissioned Project facilities throughout the operation, closure and postclosure maintenance period of the Landfill as required by Title 27 CCR Division 2 Chapter 3 Subchapter 5. This discussion should include the methods to be used to abandon and maintain abandonment of the tunnels, pumping plant, reservoirs and associated structures. The RDEIR should also describe the mechanism to provide financing for these activities so that the Landfill owners will not be required to incur these costs or any environmental impacts related to decommissioning and closure activities.

8. Project Drainage Plan and Reservoir Spillway Designs—Technical Memorandum Section 12.9

a. Drainage and Flood Events

The DEIR fails to discuss or quantify a number of assumptions regarding the capacity of existing drainage outlets to handle potential Project overflows or flooding as well as related environmental impacts. The RDEIR will need to consider and analyze all of the issues described below.

The DEIR does not address the existing channel capacity of Eagle Creek or Bald Eagle Creek—the two main surface drainage features at the site—or provide sufficient analysis of the impact of flood events on these channels, the Project, or the Landfill. Without this information, the impacts to the existing drainage systems cannot be assessed. For an adequate assessment, the RDEIR must also clearly disclose the means and

assumptions used for calculating peak discharges, inflow rates and freeboard from an over-pumping event during the Probable Maximum Flood ("PMF") as described on page 5 of the memorandum. It is not clear whether a staged storage relationship for the upper reservoir has been prepared. If so, the specific analysis should be provided. The same detailed information should be provided with respect to any staged discharge relationship calculated for the spillway. The public needs to know if the channels and dams and related improvements are properly sized and designed, and if not, their impacts on the environment.

Because the previously described information was either not disclosed or was not the product of actual analysis, the RDEIR must modify the modeling provided in the DEIR to determine the capacity of the existing drainage features (existing conditions) and the capacity of the Project to provide drainage of the nearby watershed and the Project. The DEIR states "[r]eleases from the Upper Reservoir will be smaller than the estimated 100-yr flow from the 7.3 square mile Eagle Creek watershed, indicating that the natural channel should have adequate capacity." (p. 6.) Without analysis to determine the existing capacity of the natural channel or an assessment of the 100-year storm flow, this is an unsubstantiated claim. The natural channel, downstream of the upper reservoir discharge, will have a flow from the 7.3 square mile watershed—a large watershed. And the Project proposes to contribute more stormwater, an estimated 2,060 cfs of reservoir discharge, to these existing conditions. In place of unsubstantiated claims, appropriate modeling software such as EPA's Storm Water Management Model (SWMM model) or the US Army Corps of Engineer's Watershed Modeling System (WMS model) should be used to determine the routed peak flow in the natural channel during the PMF and support any conclusions as to the impacts of the Project.

The DEIR also states that the lower reservoir could receive and can accommodate PMF flows from all 11.2 square miles of the nearby watershed (11,520 ac-ft) as long as the reservoir is empty during the flood peak flows. However, the DEIR has not analyzed a likely operating condition where the lower reservoir is full (17,700 acre-feet of operating volume) so any additional storm flow would require pumps operating at full capacity to keep up with the inflow. In view of the possibility that these conditions will be encountered, the following issues and related environmental impacts should be considered in the RDEIR:

- Assuming the pumps failed to function properly during a flood event, would a larger spillway will be required to handle this peak inflow?
- Wouldn't the PMF peak flow be a combination of 15,320 cfs and 6,900 cfs that could exceed the pump capacity at its peak?
- What is the "backup plan" for managing peak storm drainage into the lower reservoir for a PMF if the pumps fail or do not keep up with the predicted inflow, and how would these potential events impact the present design of the outflow spillway?

If a larger spillway is necessary based upon this analysis, the RDEIR also must consider all impacts of that spillway as well as the impacts that larger storm overflow from that spillway would cause to the downstream receiving channels, including, but not limited to erosion, redirection of the flowline and embankment destruction, and other impacts on the environment. Eagle Creek discharges sediment in the form of a large debris fan or cone in the vicinity of the Eagle Mountain town site and then forms many other channels further east that divert the largest storm flows. Also, the Colorado River aqueduct has numerous dikes along its right of way that funnel storm flows to specific crossing points before reentering existing downstream channels. The current Project plan sends drainage coming from the overflow channel downstream of the proposed spillway to one existing ephemeral channel with limited, if any, description of the existing capacity, potential impacts of anticipated discharge events (including but not limited to the 100 year design storm), or associated mitigation measures. Further discussion and analysis in the RDEIR is

necessary to determine the impacts associated with a major flood that diverts flow to this channel as well as the other downstream receiving channels mentioned above.

Since Eagle Creek has been diverted into the east pit, each rainfall event will carry silt and sediment into the reservoir. The RDEIR must discuss and analyze potential impacts of a high level of sediment carried by storm water entering the reservoir and coming in contact with the pump turbine for the Project, and all related environmental impacts.

b. Dam and Reservoir Designs

The DEIR's discussion of the technical and permitting criteria for the proposed South and West Saddle Dams is too vague, even for a conceptual project, to allow for adequate comment on the potential impacts to safety or the environment. Without adequate geotechnical investigations, the actual width, height, embedment depths or thickness of the dams cannot be designed or their potential impacts determined. The RDEIR should identify the dam analysis performed, how appropriate that analysis is given the seismic design requirements for the design and construction of dams under criteria established by the Department of Water Resources' Division of Safety of Dams ("DSOD"), and the related environmental conditions that arise out of meeting technical and permitting requirements.

The DEIR states that the "normal freeboard was assumed to be five feet between the normal high water level crest and the dam crest" for the South Saddle Dam. However, the memorandum provides no technical explanation as to how the "normal freeboard" was estimated or calculated. Because freeboard provides a safety factor for dam operation, responsible design and analysis requires consideration of the site conditions in establishing this parameter. Without site-specific data, the memorandum's discussion of this issue is inadequate. This data would impact crest heights, freeboard and material compositions for basic elements of dam and reservoir design. These design elements significantly influence embedment requirements, the choice of lining materials for interior slopes and operational constraints for the reservoir and dam. Since the analysis does not indicate that a one-spillway design adequately protects the dam, all of these issues must be discussed in the RDEIR, along with all related environmental impacts.

Wind patterns and the ability to harness the resultant energy from wind are frequently discussed in the DEIR. However, the DEIR should discuss potential impacts of wind on the design of the dam and reservoirs, particularly with regard to the determination of crest height, overtopping and the amount of freeboard necessary. Further, since wave run-up heights and wave overtopping discharges must be considered in determining the total crest height for a dam or reservoir, the RDEIR must provide sufficient analysis regarding these design and operational aspects and their influence on design parameters such as area of the influence of roughness, slope angle, berm heights, angle of wave attack, wave run-up and wave overtopping, while addressing all related environmental impacts.

The RDEIR must provide additional analysis regarding the applicability of deterministic and probabilistic calculations used to evaluate the dam and reservoir design and must assess:

- representative wave boundary conditions;
- technical properties such as those for required strength of foundation and side slope materials, particularly under oblique wave attack and wave overtopping;
- wave transmission at oblique wave attack, and;
- wave growth under extreme winds.

The DEIR states that roller-compacted concrete ("RCC") will be used to construct the dams with a membrane liner and foundation grouting to control seepage. However, the DEIR does not establish the compatibility of RCC with materials to construct the foundation and side slopes but instead states that this analysis will be deferred for later study or investigation. However, this choice of materials could have significant environmental impacts. For example, if on-site materials are to be used, compatibility test trials and laboratory analyses are essential to determine the design mixes and compatibility. If off-site materials are proposed, the source and environmental constraints, such as importation of off-site materials, need to be addressed. Also, more detailed analysis is necessary regarding the specific choice of the membrane liner. Given the construction area of the dams and reservoirs, membrane material compatibility requires careful design, such as the inclusion of anchor trenches to prevent uplift and pullout and these factors affect Project economics and environmental consequences. This is just one example of many potential impacts that should be addressed in the RDEIR. Therefore, a compatibility review and further discussion of the membrane liner and all related environmental impacts will be necessary in the RDEIR.

Although the memorandum briefly mentions foundation grouting to control seepage, no site-specific information is provided to demonstrate that this construction method would be successful. The various existing geologic structural features could significantly influence the content of grouting programs and grout design and thereby cause related environmental impacts. The existing structural geology is complex, and includes several synclines, faults and stratigraphic complexities. There are many potential environmental constraints and potential impacts to depths of excavation embedment, grouting programs and related design parameters that should be addressed in the RDEIR and made available for public review and comment.

9. Brine Ponds May Generate Hazardous Waste

The DEIR discusses concentration of naturally occurring harmful elements such as arsenic in the evaporation brine ponds, including the need to remove the accumulated salts every ten years. However, in Section 3.16 Hazards and Hazardous Materials, the DEIR does not assess, or even mention, the management of these potentially hazardous waste salts. This should be addressed in the RDEIR and made available for public review and comment.

We appreciate this opportunity to comment on the DEIR. The District is concerned about the inadequate discussion and analysis of the Project's design and operation, the failure of the DEIR to address many base line environmental conditions, as well as the inadequate evaluation of the Project's potential significant impacts on the environment and the Landfill. Should you have any questions regarding this letter, please contact Theresa Dodge at (562) 908-4288, extension 2599.

Very truly yours,

Stephen R. Maguin



Grace R. Chan

Assistant Chief Engineer and
Assistant General Manager

GRC:TDD:mh