

**Engineering Evaluation/Cost Analysis Work Plan
Response to NDEP Comments Received May 23, 2016
Response to EPA Comments Received May 27, 2016**

EPA Comments

General: The EE/CA should use relevant information and “lessons learned” from recent local dewatering projects (i.e., Pabco Weir) to improve project planning.

Response: Information on lessons learned from recent dewatering projects were requested in a letter sent to the Southern Nevada Water Authority (SNWA) on June 9, 2016 and were discussed during a technical meeting on June 16, 2016. In attendance at this meeting were the Southern Nevada Water Authority (SNWA), Nevada Division of Environmental Protection - Bureau of Industrial Site Cleanup (NDEP-BISC), the Nevada Environmental Response Trust (NERT or the “Trust”), and Tetra Tech. The relevant information obtained at this meeting will be incorporated in the Engineering Evaluation/Cost Analysis (EE/CA).

Section 2.1, Field Data: It is not clear if groundwater contaminant data from only three wells (WMW6.55S, WMW6.15S, and WMW5.58SI) is sufficient for a project of this magnitude. The plan should consider evaluating existing groundwater data from additional wells to improve accuracy in estimating contaminant loading to the treatment system. Few wells exist near the planned Historic Lateral Weir, but historical (and possibly current) data is available in the area near the planned Sunrise Mountain Weir. Wells in the vicinity of PC-121, PC-86, PC119, PC-115R, and PC-96 may provide additional information to support contaminant loading estimates for the Sunrise Mountain Weir construction project.

Response: For the purpose of estimating contaminant loading to the treatment system, perchlorate data from a number of monitoring wells located upgradient and near the planned Sunrise Mountain Weir and Historic Lateral Weir will be considered. NERT completed groundwater sampling of the three wells (WMW6.55S, WMW6.15S, and WMW5.58S) located closest to the planned weirs in February 2016 to obtain data for evaluating treatment options and assist with future National Pollutant Discharge Elimination System (NPDES) permitting needs. NERT will evaluate all available groundwater data and determine if additional data are necessary to evaluate treatment technologies.

Section 2.2, SNWA Data: The apportionment of responsibility for groundwater treatment is unclear from this workplan. Will NERT be responsible for all project groundwater treatment, or only the NERT-specific contaminants? For example, if the dewatering effort produces excessive suspended solids (particulates), is the solids management the responsibility of NERT, or of SNWA? Will there be, for example, SNWA pre-treatment to remove suspended solids prior to groundwater treatment by NERT?

Response: The Finding and Order Requiring the EE/CA issued by the NDEP-BISC, to the Trust on April 12, 2016 (Order), specifically indicated the rationale for the Order is based upon the location of weir construction “*downstream from where the main perchlorate groundwater plume from the Nevada Environmental Response Trust (“NERT”) intersects the Las Vegas Wash*”, and that the contaminant of concern prompting the Order is perchlorate.

Based upon preliminary discussions with NDEP, Bureau of Water Pollution Control (NDEP-BWPC) and NDEP-BISC, this EE/CA will assume that the future NPDES permit will only require the treatment of perchlorate. Pre- or post-treatment of other parameters will only be included if necessary and required by NDEP-BWPC or the future NPDES permit. All required effort will be the responsibility of NERT.

Section 3.4.1, EE/CA Screening Criteria: This section indicates a planned maximum extraction rate of 2,000 gpm, but other information suggests a potential extraction rate of up to 12,000 gpm (if dewatering is conducted at both weir locations simultaneously). The engineering design considerations should include scalability (up or down) for both extraction rates and contaminant concentrations. A treatment system that is over-designed is not cost-effective, but one that is under-designed may incur additional cost and/or slow down weir construction if groundwater cannot be treated at a sufficient rate.

Response: SNWA has established a maximum dewatering rate of 6,900 gpm in its request for proposal for construction contractor bids. This maximum rate has been established for the both Sunrise Mountain and Historic Lateral Weirs. As such, the maximum flow that NERT must handle is 6,900 gpm. However, existing data suggest that the maximum dewatering rate at each weir should not exceed 2,000 gpm. NERT is in the process of evaluating the data provided by SNWA and will continue discussions with NDEP-BISC to ensure the objectives of the agencies are met.

NDEP Comments

Section 2.1 Field Data.

1. What are the field data requirements by BWPC?

Response: As discussed in the EE/CA Work Plan, additional sample analyses to those specifically listed in the Work Plan may be added if necessary to support EE/CA development based upon discussion with the NDEP-BWPC regarding anticipated NPDES permit requirements. Based on NERT’s initial discussion with NDEP-BWPC, NPDES permit requirements will mirror the existing NERT permit and require that discharged waters be sampled for Biological Oxygen Demand, pH, Total Suspended Solids, Ammonia as N, Oil & Grease, perchlorate, Total Dissolved Solids, Total Inorganic Nitrogen, manganese, iron, selenium, and arsenic. These

analytes will be included in any additional baseline groundwater sampling conducted to support EE/CA development. Final determination of field data requirements for NPDES permitting will be conducted as part of the NPDES permitting process.

2. What has SNWA historically collected or reported?

Response: Data historically collected or reported by SNWA was requested as part of the June 9, 2016 Information Request Letter to SNWA and was discussed in the June 16, 2016 technical meeting. In connection with the ongoing NERT Remedial Investigation, Ramboll Environ (consultant to the Trust) collected groundwater samples from SNWA's wells WMW6.55S, WMW6.15S, and WMW5.58SI in February 2016 and analyzed for the following constituents listed below.

- Nitrate-NO₃
- Nitrite
- Perchlorate
- Sulfate
- Chlorate
- Chloride
- Sulfide (total)
- Aluminum
- Iron
- Lead
- Magnesium
- Manganese
- Mercury
- Nickel
- Potassium
- Sodium
- Antimony
- Arsenic
- Barium
- Boron
- Cadmium
- Carbon
- Chromium VI
- Chromium (total)
- Cobalt
- Copper
- Vanadium
- Zinc
- Calcium
- Orthophosphate (total) (As P)
- Total Alkalinity as CaCO₃
- Bicarbonate as HCO₃
- Suspended Solids
- Dissolved solids (total)
- Carbonate as CO₃
- Hydroxide
- Ammonia as N
- Phosphorous (total)
- Biochemical Oxygen Demand
- pH
- Total Kjeldahl Nitrogen
- HEM Oil/ Grease

3. Like to see selenium, phosphorous, chromium, and total dissolved solids in field data collected.

Response: These constituents will be analyzed in future groundwater sampling activities to support the EE/CA, if such additional groundwater sampling is required.

4. Field Parameters, NDEP wants to add ORP and Specific Conductivity to the field parameter data set.

Response: Oxidation Reduction Potential (ORP) and Specific Conductivity will be measured in future groundwater sampling activities to support the EE/CA, if such additional groundwater sampling is required.

Section 2.2 SNWA Data

1. Second dark bullet; include any historical perchlorate loading to LV Wash with the historical data requests.

Response: The data request to SNWA was expanded to include historic perchlorate loading to Las Vegas Wash. This data will be analyzed and summarized in the EE/CA.

2. Third hollow bullet; in addition to the groundwater extraction rate add a request for the average and peak flows extraction rate.

Response: The data request to SNWA was expanded to include average and peak flows extraction rates. This data will be analyzed and summarized in the EE/CA.

3. Third dark bullet: for the site-specific dewatering rate, obtain SNWA information and data they used in developing dewatering rates and also for the perchlorate mass discharge calculations.

Response: The data request to SNWA was expanded to include data SNWA used for development of proposed dewatering rates and perchlorate mass discharge calculations. This data will be analyzed and summarized in the EE/CA.

3.0 EE/CA Outline

Third dark bullet; 2,000 gpm, NERT should work with SNWA to determine the max rate. SNWA may be headed towards double simultaneous weir construction, for example the contractor may want 12,000 gpm to allow the contractor a quicker construction schedule, negotiate this rate with SNWA up-front.

Response: As discussed above, SNWA has set a limit of 6,900 gpm in the request for proposal limiting the maximum amount of dewatering that can occur during weir construction. However, existing data suggests that the maximum dewatering rate at each weir should not exceed 2,000 gpm. NERT is in the process of evaluating the data provided by SNWA and will design the treatment system as appropriate. NERT will review all data provided by SNWA and include the recommended maximum flow rate in the EE/CA.