

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Applicant: Southern Nevada Water Authority
P O Box 99956
Las Vegas, NV 89153-9956

Permit Number: NV0023876

Facility Location: Demonstration Replacement Weir –SNWA 810K01C1
Lower Las Vegas Wash, ~ 3.5 miles upstream of Lake Mead
Clark County, Nevada
NE ¼ Section 28, T21S R63E
Weir coordinates located at top of weir at the centerline:
Latitude: 36° 05' 48.21511" N Longitude: 114° 56' 50.05705" W

Discharge Outfall: Coordinates located tentatively at the downstream edge of the weir apron:

Outfall 001D: Demonstration Replacement Weir Discharge Outfall:
Latitude: 36° 05' 51.14655" N Longitude: 114° 56' 46.78588" W

General: The Southern Nevada Water Authority (SNWA) is proposing to re-construct an existing erosion control structure, the Demonstration Replacement Weir, together with associated bank protection in the Lower Las Vegas Wash (Wash), in Clark County, Nevada. Due to increasing flows resulting from expanding upstream urbanization in the Las Vegas Valley, the Wash has undergone significant erosion resulting in the discharge of large volumes of sediment and intercepted shallow ground water into Lake Mead (Lake). Sediment transport studies completed by SNWA have shown that without the installation of the weirs the Wash channel could erode another 15 to 28 feet deeper with accompanying lateral bank erosion and additional interception of contaminated groundwater. To address the erosion problems a series of weirs is being constructed. This permit covers the construction of one of the 22 erosion control structures constructed and/or planned for construction in the 7.5 mile long reach of the Wash from the Clark County Reclamation District wastewater outlet to Lake Las Vegas. The Demonstration Weir will be constructed in a portion of the Wash where the channel bed has eroded and become incised to a depth of approximately 38 feet below the original floodplain. The incised channel width at the Demonstration Weir is approximately 300 feet. The configuration of this weir is similar to the design of weirs installed by the SNWA at seven other locations within the Wash. This weir will also be constructed as single stage, confined rock riprap structure. An upstream steel sheet pile seepage control wall located in the top of weir section and a similar wall located in the apron section of the weir will confine the riprap, reducing movement under high flood flows. The rock riprap will be placed on a three stage filter system placed to prevent fine grained foundation soils from eroding away.

The weir construction project will require surface water diversion and shallow groundwater dewatering. A major focus of water management during construction will be the discharge of groundwater containing perchlorate to the Wash, which flows to Lake Mead. Dewatering discharge to the Wash will be permitted to Outfall 001D, from December 1 through May 31 each year, but may be adjusted based on data collected weekly in Lake Mead. Data and request to dewater outside of the permitted timeframe

shall be approved by the Division. Dewatering will cease when a thermocline is established for two consecutive weeks at the drinking water intakes. Dewatering will commence when the Lake has de-stratified past 1000 ft amsl at the drinking water intakes. These evaluation criteria will be included in the Sampling & Analysis Plan.

Flow: The application requested a total dewatering discharge flow rate of 6,900 gallons per minute (gpm), equivalent to 9.94 million gallons per day (MGD). Actual dewatering flow rates will be determined by the Permittee, based upon the maximum perchlorate loading rate of 80 lbs/day, calculated as the aggregate sum of all Weir project discharges from all Outfalls. Permit total flow rate will be 6,900 gpm, but actual rates will be adjusted or cease entirely if necessary to stay within permitted discharge limitations.

Receiving Water Characteristics: The receiving water for the pumped groundwater is the Las Vegas Wash, tributary to Lake Mead. The Wash is the primary wastewater and stormwater drainage outlet for the Las Vegas Valley and surrounding watershed. Historic and current sampling of the project area Wash reach (LW4.95 and LW3.1) provides a record of perchlorate concentrations in the area of this weir project. These and other Wash stations will continue to be monitored and the data reported quarterly. Also, Lake Mead is presently sampled regularly in several locations and will continue to be sampled during these weir construction projects. The Colorado River, below Hoover Dam will continue to be sampled by SNWA and others.

Site Groundwater: Within the project area the elevation of the groundwater varies with location, but is generally quite shallow, approximately 10-40 feet below ground surface. The local groundwater flow is towards Lake Mead. Four shallow groundwater monitoring wells in the project area (LNDMW-1, LNDMW-2, WMW3.5-N, and WMW3.5-S) are sampled by SNWA on a monthly basis. Because the weir to be constructed under this permit is a single stage, confined rock riprap structure, the necessary dewatering is expected to be relatively shallow and will primarily intersect groundwater flows within the underlying Wash gravels that exhibit similar concentrations to the Wash flow concentrations. The application identified no public drinking water supply wells within 1 mile of the site. No wellhead protection area (WPA) has been designated for this area.

Corrective Actions Sites: There is one identified Bureau of Corrective Actions (BCA) remediation site within a one-mile radius of the project discharge areas. This is the City of Henderson closed landfill, located approximately ¼ mile up-gradient and topographically higher along the south bank of the Wash. The two up-gradient perchlorate plumes are a considerable distance from the Demonstration Weir (the leading edge of the perchlorate plume being remediated by AMPAC is approximately 3 miles upstream, and the leading edge of the perchlorate plume being remediated by Tronox is approximately 2 miles upstream). The BCA has indicated that the proposed weir construction project, as permitted by this permit, will not substantially impact the remediation projects or the perchlorate plumes.

Proposed Discharge Limitations, Sampling and Monitoring Requirements: Specific sampling requirements are listed below in Table I, including frequency and location of sampling. Informational surface water analyte and parameter information collected at non-discharge locations (Northshore Road; two designated locations within Lake Mead; and a Colorado River sampling location immediately below Hoover Dam) will be submitted to the Division under a separate reporting format than the quarterly DMRs submitted in compliance with Table I. The information will be reported quarterly via trend lines, graphs, charts and/or other methods. Additional requirements include notifying the Division if the Lake elevation

drops below 1060 feet above mean sea level (ft AMSL), and limiting the discharge to a maximum perchlorate mass load of 80 lbs/day, calculated as the aggregate sum of all Weir project discharges from all Outfalls.

Table I. Discharge Limitations, Sampling and Monitoring Requirements

Parameters & Units		Discharge Limitations	Sampling Locations	Monitoring Frequency	Monitoring Type
Flow ¹	gpm	6,900	001	Continuous	Flow meter
Dewatering Discharge Totals ¹	MGD	9.94	001	Continuous	Calculation
pH	S.U.	6.5 - 9.0	001	Daily ²	Discrete
Perchlorate ³	lbs/day	80 ³	001	Daily	Discrete
TDS ⁴	mg/l	M&R	001	Monthly	Discrete
Selenium ⁵	µg/l	M&R	001	Monthly	Discrete
TPH ⁶	mg/l	M&R	001	Event	Discrete

NOTES:

1. Monitor daily, and report quarterly, average daily flow rate and total daily discharge volume.
2. Monitor daily, and report quarterly, the minimum, maximum and 30-day average.
3. Calculate total daily perchlorate load from the total daily discharge; permit load limit is based on the aggregate sum of all Weir projects' discharges from all Outfalls.
4. Sample monthly, and report quarterly, the TDS concentration.
5. Sample monthly, and report quarterly, the total recoverable Se concentration.
6. Collect a background TPH sample prior to first discharge, and collect a sample in the event of a fuel leak/visible sheen. Use EPA Methods 8015B and 8260B, full range, C6-C40, purgeable and extractable. Report background analytical on first DMR. Report event-required analytical on quarterly DMR, following the quarter of the event that required sampling.

gpm: gallons per minute
 M&R: Monitor and Report
 lbs/day: pounds per day load
 mg/L: milligrams per liter
 TPH: Total Petroleum Hydrocarbons

MGD: Million gallons per day
 S.U.: standard pH units
 TDS: Total Dissolved Solids
 µg/l: micrograms per liter

Rationale for Permit Requirements: The Division has established the monitoring requirements in Table 1 above to ensure that the receiving water, Las Vegas Wash, and downstream, Lake Mead, and the Colorado River are not degraded appreciably as a result of project activities.

Flow: The rationale for the 30-day average discharge was explained in the Flow section of this fact sheet. Dewatering discharges will be limited to December 1 through May 31 each year, in order to limit the potential for lake stratification-induced perchlorate concentration increases. The project activities are projected to require two years. If perchlorate loading, calculated as the aggregate sum of all Weir project discharges from all Outfalls, increases above 80 lbs/day, dewatering activities will cease, or be reduced to prevent permit exceedances.

pH: 6.5 - 9.0, standard units. pH is required monitoring per NAC 445A.198 and NAC 445A.199.

Perchlorate: There is no standard to date in the Wash. Perchlorate concentrations in the Wash and in the shallow groundwater are due to sources upstream. Remediation is occurring at several key

locations to limit the perchlorate mass flux to the Wash. These remediation efforts were initiated in 1999 and are ongoing. Wash data show a declining amount of perchlorate present in the Wash surface water over time beginning in early 2000, through mid-2007, as measured at Northshore Road. Recent Wash data trends show perchlorate loading to the Wash in the range of 60-90 pounds per day from mid-2007 through current (mid-2010), as measured at Northshore Road. This permit will restrict the total increase in the perchlorate load to the Wash to a maximum of 80 pounds per day, calculated as the aggregate sum of all Weir project discharges from all Outfalls. The permit additionally restricts the dewatering discharge to a specified period (December 1 through May 31 each winter season), based on the times that the Lake is not stratified (see discharge timing discussion in General Section).

Additional sampling at multiple locations (Northshore Road, Lake Mead and below Hoover Dam) and analyses, is intended to monitor the total perchlorate load and assist in regulating the discharge. The perchlorate mass (at Northshore Road only) and concentration data (and other analyte and parameter data) generated from the above referenced locations will be submitted to the Division under a separate reporting format than the quarterly Discharge Monitoring Reports (DMRs) submitted in compliance with Table I. The separate reporting will be required as a quarterly submittal to the Division, and will be submitted both electronically and in hard copy. The submittal dates are April 28, July 28, October 28, and January 28 each year.

TDS: Monitor & Report. The shallow groundwater with naturally occurring elevated TDS levels would flow to the Wash, if it was not intercepted by the dewatering system. Therefore, the TDS standard is not applied to dewatering discharges in this area. This permit is for the interception and passage of groundwater and thus is exempted under the Colorado River Basin Salinity Control Forum's policy on groundwater interception.

Selenium: Monitor & Report. Sample and report monthly. Surface water quality data is collected monthly in the Wash at station LW4.95 upstream of the project area, and at station LW3.1 downstream of the project area. Upstream station data collected from 2008-2009 averaged 2.94 µg/l. Downstream station data collected over the same time period averaged 2.78 µg/l. All data was well below the 20 µg/l standard set by NAC 445A.144. Groundwater monitoring data collected over the last 4 months of 2009 shows Selenium average and maximum concentrations of 8.9 and 12 µg/l, respectively. Calculation of the flow-weighted average, using the maximum expected discharge flow, average Wash flow, and the maximum reported groundwater and Wash Selenium concentrations, results in an expected Selenium concentration in the Wash well below the 20 µg/l standard set in NAC 445A.144. Because the shallow groundwater with naturally occurring elevated Selenium levels would flow to the Wash if not intercepted by the dewatering system, and because the flow-weighted average and peak concentrations indicate no potential to exceed the standard, no Selenium discharge limits are established for the permit. Monitoring is required to ensure that the standard continues to be met.

TPH: 1.0 mg/L. Monitor & Report. The requirement is to take a background sample and to sample in the event of a noticeable sheen in the water. The presence of a sheen would primarily result from equipment leaks in or near the Wash. There is no need to sample on a regular basis, only in the event of equipment failure or other fuel leaks.

Lake Mead Water Surface Elevation: The lowest Lake WSEL projected by the Bureau of

Reclamation to occur within a 2-year projection period (December 2009-December 2011) is approximately 1060 ft AMSL. Modeling conducted by SNWA has shown that perchlorate concentrations will not increase appreciably within Lake Mead and Lower Colorado River system as a result of these discharges. This is a result of regulating the discharge to a six-month period during the winter season. The lowest Lake WSEL used in this model is 1060 ft AMSL. Discharge of perchlorate-bearing groundwater from weir dewatering is limited by a Lake WSEL of 1060 ft AMSL.

Nitrogen, Phosphorus & Metals: The dewatering of Wash-induced shallow groundwater consists of re-routing flows back to the Wash. Because there is no addition of these constituents to the Wash, no sampling is required.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which the Administrator may make in approving the schedule of compliance:

- The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- Within 90 days of the permit effective date (**MM DD, 2010**), or within forty-five (45) days after the Permittee issues a Limited Notice To Proceed (LNTP) to a contractor to construct the Demonstration Weir, whichever comes first, the Permittee shall submit to the Division, for review and approval, an updated **Dewatering Plan (Plan)** for the proposed shallow groundwater dewatering and discharge activities. Before implementing changes to an approved Plan, the Permittee shall submit proposed changes to the Division for review and approval.
- Within 30 days of the permit effective date (**MM DD, 2010**), the Permittee shall submit to the Division, for review and approval, a **Monitoring, Sampling and Analysis Plan (SAP)** that describes the sampling, analyses, monitoring and methodology that will be used to determine when the dewatering discharges are to commence or cease (this will be based on a minimum Lake WSEL of 1060 ft AMSL and on the temperature from the multi-parameter probe monitoring of Lake Mead sampling locations). The SAP shall summarize the sampling, analyses, monitoring, and data reporting to be conducted for the Northshore Road sampling location, two sampling locations in Lake Mead, and from the Colorado River at a position immediately below Hoover Dam (from the power generation deck). Before implementing changes to an approved SAP, the Permittee shall submit proposed changes to the Division for review and approval.
- Within 90 days of the permit effective date (**MM DD, 2010**), the Permittee shall submit to the Division, for review and approval, a report on the evaluation of water quality impacts of dewatering discharges into the Las Vegas Wash on downstream perchlorate concentrations.
- The Permittee shall submit a letter to the Division, if requesting to discharge outside of the permitted December 1-May 31 time frame, prior to discharge outside of the permitted time frame. The letter shall contain documentation from Lake Mead sampling that indicates the lake is not stratified.

Proposed Determination: The Division has made the tentative determination to issue the proposed permit

for a period of five (5) years.

Procedures for Public Comment: The Notice of the Division's intent to issue a NPDES permit authorizing the Permittee to discharge into the Las Vegas Wash for a five-year period, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review-Journal** for publication. The Notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **September 9, 2010 by 5:00 P.M.**

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Prepared by: Jeryl R. Gardner, P.E.
Date: August 2010