

# NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

## FACT SHEET

(pursuant to NAC 445A.236)

**Applicant:** Southern Nevada Water Authority (SNWA)  
P.O. Box 99956  
Las Vegas, NV 89153-9956

**Permit Number:** NV0023833

**Facility Locations:** 5 Upper Wash Weirs –SNWA 810V01C1  
Upper Las Vegas Wash, ~ 7.9-9.2 miles upstream of Lake Mead  
Clark County, Nevada Sections 23, 25 & 26 T21S R62E  
Weir coordinates at top of weirs at the centerlines, respectively:

<b>Ducks Unlimited (DU) Wetlands No. 1:</b>	Latitude: 36° 05' 42.67392" N Longitude: 115° 00' 41.93563" W
<b>Archery:</b>	Latitude: 36° 05' 33.68974" N Longitude: 115° 00' 13.78637" W
<b>Silver Bowl:</b>	Latitude: 36° 05' 39.39861" N Longitude: 115° 00' 28.62580" W
<b>Tropicana Outfall:</b>	Latitude: 36° 06' 02.18846" N Longitude: 115° 00' 59.12591" W
<b>D-14 Extension:</b>	Latitude: 36° 06' 08.94293" N Longitude: 115° 01' 03.32397" W

**Discharge Outfalls:** Coordinates located tentatively at the downstream edges of the weir aprons:

<b>Outfall 001W:</b> DU Wetlands No. 1:	Latitude: 36° 05' 41.54069" Longitude: 115° 00' 37.41021"
<b>Outfall 002A:</b> Archery:	Latitude: 36° 05' 32.75222" Longitude: 115° 00' 12.27925"
<b>Outfall 003S:</b> Silver Bowl:	Latitude: 36° 05' 39.28716" Longitude: 115° 00' 25.70503"
<b>Outfall 004T:</b> Tropicana Outfall:	Latitude: 36° 05' 59.48351" Longitude: 115° 00' 57.51482"
<b>Outfall 005E:</b> D-14 Extension:	Latitude: 36° 06' 07.37742" Longitude: 115° 01' 03.04003"

**General:** Due to increasing flows resulting from expanding upstream urbanization in the Las Vegas Valley, the Las Vegas Wash has undergone significant erosion resulting in the discharge of large volumes of sediment and intercepted shallow ground water into Lake Mead (Lake). To address the head-cutting erosion problems a series of weirs is being constructed. The Southern Nevada Water Authority (SNWA) is proposing to construct five additional erosion control structures: the Ducks

Unlimited (DU) Wetlands No. 1 Weir, Archery Weir, Silver Bowl Weir, Tropicana Outfall Weir and the D-14 Extension Weir, together with associated bank protection in the Upper Las Vegas Wash (Wash), in Clark County, Nevada. This permit covers the construction of 5 of 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 the confluence with Lake Las Vegas. The five weirs will be constructed in three phases: Phase I, 2010-2011: DU Wetlands No. 1 Weir; Phase II, 2011-2012: Archery Weir and Silver Bowl Weir; and, Phase III, 2012-2013: Tropicana Outfall Weir and D-14 Extension Weir. The weirs will be constructed in a portion of the Wash, from 7.9 to 9.2 miles upstream of the high water mark of Lake Mead, where the channel bed has eroded and become incised to a depth of between 10-30 feet below the original floodplain. The incised channel width ranges from approximately 30-100 feet. The configuration of these 5 weirs is similar to the design of weirs installed by the SNWA at 9 other locations within the Wash. The weirs will be constructed as single stage, confined rock riprap structures. An upstream steel sheet pile seepage control wall located in the top of each weir section and a similar wall located in the apron section of each 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 projects will require surface water diversion and shallow groundwater dewatering. A major focus of water management during construction will be the discharge of groundwater containing TDS and Selenium to the Wash, which flows to Lake Mead. Extracted groundwater will be diverted through settling tanks to remove sediment prior to discharge into the Wash. Because these weirs are planned for construction in a portion of the Wash that is upstream of the perchlorate groundwater plumes, low concentrations of perchlorate (1-15 µg/l) can be expected in the dewatering discharge. These small concentrations, in conjunction with the planned dewatering rates (6900 gpm) are expected to result in low mass loading to the Wash (typically expected to be less than 2 lbs per day from any single weir project). The aggregate of all weir construction dewatering discharges under this permit is limited to 5 lbs per day perchlorate loading to the Wash.

**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). The total flow rate is the sum of all outfalls, as measured at the end of the discharge pipes.

**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 several Wash reaches (LW10.75, LW8.85 and LW6.85) provides a record of perchlorate concentrations in the area of these 5 weir projects. 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. One shallow groundwater monitoring well (WMW 7.8N) is sampled by SNWA on a monthly basis. Because the five weirs to be constructed as part of this permit are single stage, confined rock riprap structures, 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 are three identified Bureau of Corrective Actions (BCA) remediation sites within a one-mile radius of the project discharge areas. These include: the AMPAC perchlorate remediation project where the leading edge of the perchlorate plume is approximately ¼ to ½ mile south (downstream) of the planned Archery Weir; the Tronox perchlorate remediation project where the leading edge of the perchlorate plume is approximately ¾ mile southeast (downstream) of the planned Archery Weir; and portions of the BMI site currently undergoing characterization and remediation of contaminated soils. The two down-gradient perchlorate plumes have on-going remediation. The BCA case officers have stated that the proposed weir construction projects, 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 groundwater and surface water quality sampling. Other sampling, monitoring and reporting required by other permits and operating practices will not be superseded by requirements under this permit. Informational surface water analyte and parameter information collected at non-discharge locations 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.

**Table I. Surface Water Discharge Limits and Sampling and Monitoring Requirements**

Parameters & Units		Discharge Limitations	Sampling Locations	Monitoring Frequency	Monitoring Type
Flow <sup>1</sup>	gpm	6,900	All Outfalls *	Continuous	Flow meter
Dewatering Discharge Totals <sup>1</sup>	MGD	9.94	All *	Continuous	Calculation
pH	S.U.	6.5 - 9.0	All *	Daily <sup>2</sup>	Discrete
TDS <sup>3</sup>	mg/l	M&R	All *	Monthly	Discrete
Selenium <sup>4</sup>	µg/l	M&R	All *	Monthly	Discrete
TPH <sup>5</sup>	mg/l	M&R	All *	Event	Discrete
Perchlorate <sup>6</sup>	lbs/day	5.0	All *	Daily/Weekly <sup>7</sup>	Discrete

**NOTES:**

- \* Sample and report from individual Outfalls 001W, 002A, 003S, 004T & 005E, and calculate the total from all Outfalls.
- 1. Monitor daily, and report quarterly, average daily flow rate and total daily discharge volume for each Outfall.
- 2. Monitor daily, and report quarterly, the minimum, maximum and 30-day average for each Outfall.
- 3. Sample monthly, and report quarterly, the TDS concentration, from each Outfall.
- 4. Sample monthly, and report quarterly, the total recoverable Se concentration, from each Outfall.
- 5. 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 quarterly DMR. Report event-required analytical on quarterly DMR, following the quarter of the event that required sampling.
- 6. Calculate total daily load from all Outfalls' daily discharges.
- 7. For the first week of dewatering discharge, sample and analyze for perchlorate concentration daily, convert to mass load, and report mass load results to NDEP within 24 hrs of receiving results; report results in writing quarterly.

- a) If the load does not exceed the limit during the first month, then the sampling frequency may be reduced to weekly.
- b) If the combined results of a sampling event exceed the limit, then the sampling frequency shall resume to daily.

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, tributary to Lake Mead and the Colorado River are not degraded appreciably as a result of project activities.

**Flow:** The rationale for the maximum discharge was explained in the Flow section.

**pH:** 6.5 - 9.0, standard units. The range is set per NAC 445A.198 and NAC 445A.199.

**TDS:** Monitor & Report. Sample and report monthly. Surface water quality data is collected monthly in the Wash at locations within (mile 8.85), and downstream of (mile 5.5) the project reach area. Upstream station data collected from 2007-2009 averaged 1360 mg/l, with a maximum concentration of 2700 mg/l. Downstream station data collected over the same time period averaged 1670 mg/l, with a maximum concentration of 2300 mg/l. 95% of the samples were below the 1900 mg/l standard set by NAC 445A.199 for Requirements to Maintain Existing Higher Quality (RMHQ), and the single value maximum was below the 3000 mg/l limit set for beneficial uses established in NAC 445A.198. Groundwater monitoring data collected over the last 4 months of 2009 shows TDS average and maximum concentrations of 1729 and 1801 mg/l, respectively. When comparing the project dewatering discharge flows (9.94 MGD) to mean Wash flows at Pabco Rd (58.2 MGD) the flow-weighted average concentration will be diluted to approximately 1/6 of the discharged groundwater concentration. Because the shallow groundwater with naturally occurring elevated TDS levels would flow to the Wash if not intercepted by the dewatering system, and because the flow-weighted average and maximum concentrations indicate no potential to exceed the RMHQ and beneficial use single value limit, no TDS discharge limits are established for the permit. Monitoring is required to ensure that the RMHQ limit continues to be met.

**Selenium:** Monitor & Report. Sample and report monthly. Surface water quality data is collected monthly in the Wash at station LW8.85 within the project area, and at station LW5.5 downstream of the project area. Upstream station data collected from 2007-2009 averaged 2.66 µg/l, with a maximum concentration of 3.7 µg/l. Downstream station data collected over the same time period averaged 3.48 µg/l, with a maximum concentration of 4.5 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 6.02 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 of 5.56 µg/l, 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. The requirement is to take a background sample and to sample in the event of equipment failure in the Wash or a noticeable sheen in the water. The presence of a sheen would primarily result from equipment leaks in or near the Wash.

**Perchlorate:** 5.0 lbs/day. The limit is set for the sum of all discharges from all weirs with concurrent dewatering permitted by this permit. There is no standard for perchlorate in the Wash. These limits are based on the cumulative effect of multiple weir projects in the Wash not producing an appreciable increase in perchlorate mass loading to Lake Mead and the Lower Colorado River. Perchlorate concentrations in the Wash and in shallow groundwater within the project vicinity are due to historic practices and through recycling of Lake water (with detectable concentrations of perchlorate) and through discharge from wastewater treatment facilities to the Wash at locations upstream of the project area. Remediation is occurring at several key locations to limit the perchlorate mass flux to the Wash. The area of these five weir projects is upstream of the identified perchlorate plumes, and no significant concentrations of perchlorate are expected in the groundwater for these weir construction projects. However, to ensure that the perchlorate mass loading is not substantially increased a monitoring, sampling and analysis plan (SAP) is required (see Table I.A. and notes).

**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 a particular weir, the Permittee shall submit to the Division, for review and approval, an updated **Surface Water Diversion and Dewatering Plan (SWDDP)** for the proposed shallow groundwater dewatering and surface water diversion activities. Before implementing changes to an approved SWDDP, 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 monitor the affects on water quality, from these specific weir construction projects. Before implementing changes to an approved SAP, the Permittee shall submit proposed changes to the Division for review and approval.

**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 this facility 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 6, 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