



# STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Administrator

## FACT SHEET

(pursuant to NAC 445A.236)

**Applicant:** Las Vegas Valley Water District  
1001 S. Valley View Blvd.  
Las Vegas, NV 89153

**Permit Number:** NV0024104

**Facility Locations:** LVVWD/SNWA system-wide operational maintenance discharges include Las Vegas Valley and rural locations ranging from Coyote Springs and Moapa on the north side of the Valley, to Kyle Canyon, Blue Diamond, Jean, and Searchlight on the west side of the Valley (from north to south), to Laughlin at the south end of the Valley, and to Lake Mead and the Colorado River on the east side of the Valley, all in Clark County, Nevada.

**Discharge Outfalls:** 001: Las Vegas Wash via many stormdrain system outfalls & channels  
002: Lake Mead via several dry washes and shallow groundwater  
003: Colorado River via stormdrain system and dry washes  
004: Roach Dry Lake via shallow groundwater infiltration  
005: Piute Wash via shallow groundwater infiltration  
006: Muddy River via dry washes, Muddy Wash, Pahranaagat Wash  
007: Eldorado Dry Lake via shallow groundwater infiltration

**General:** The Permittee, Las Vegas Valley Water District (LVVWD)/Southern Nevada Water Authority (SNWA), owns and operates a system of drinking water treatment, supply and distribution facilities in Clark County, Nevada. The LVVWD currently operates and maintains the majority of the distribution systems, wells, and storage facilities of potable water in the Las Vegas Valley and rural areas such as Coyote Springs, Kyle Canyon, Blue Diamond, Jean, Searchlight, and Laughlin, Nevada. LVVWD operates approximately 36 reservoirs and tanks which store more than 900 million gallons of treated drinking water, 51 pumping stations, and 76 production wells capable of producing 200 million gallons per day (mgd). LVVWD also operates more than 4,230 miles of underground water pipelines in its water distribution system.

The SNWA currently treats Colorado River water and delivers potable water to Southern Nevada's municipal water providers, including the LVVWD, City of Henderson, North Las Vegas, Nellis AFB, and Boulder City. SNWA currently operates the Alfred Merritt Smith Water Treatment Facility (AMSWTF) next to Lake Mead, the River Mountains Water Treatment Facility (RMWTF) in Henderson, and the Big Bend Water District (BBWD) in

Laughlin. The AMSWTF currently treats up to 600 mgd of Lake Mead water and the RMWTF currently treats up to 300 mgd. The BBWD treats up to 15 mgd of Colorado River water. SNWA also operates more than 290 miles of major transmission pipelines, 28 pumping stations, and 10 reservoirs and tanks to distribute water to its water providers. The discharges are pertinent to the planned and unplanned operational maintenance and repair activities performed by LVVWD and SNWA throughout the water systems.

**System-wide Discharges:**

**Chlorinated discharges** (TRC  $\geq$  0.1 mg/l) result from either planned or unplanned maintenance activities on drinking water systems. For hyper-chlorinated discharges (TRC > 2.0 mg/l) dechlorination and sampling are required.

**Non-chlorinated discharges** (TRC < 0.1 mg/l) meet the State TRC limit and require no TRC dechlorination or monitoring.

**Unplanned water discharges** are the result of accidents or incidents that may pose an immediate risk to health, life, property or the environment. Unplanned releases cannot be scheduled or planned for in advance. These may include, but are not limited to, equipment failures and emergencies, water main breaks, leaks, reservoir and tank overflows, fire hydrant shearing, and emergency flushing activities.

**Planned water discharges** result from routine operational maintenance activities such as disinfection of mains, testing of fire hydrants, storage tank draining for maintenance, cleaning and lining of pipeline sections, equipment and facility flow testing, well tests, and routine flushing of distribution facilities and wells. Since the groundwater wells are typically used only during the summer and fall seasons, testing and flushing of the wells will occur predominantly during those periods or in preparation for such use in the spring each year. Discharge rates and duration ranges are estimated in Table 1. Discharges throughout the system may contain any combination of the discharge types and categories in Table 1.

**Table 1. System Discharge Types, Flow Ranges, Duration, Frequency and Purpose**

Discharge Type and Category Number			Flow Rate Range (gpm)	Typical Duration	Frequency and Purpose
Treated drinking water	1	P	100-73,000	<1-4 days	Frequent: pipeline flushing, tank maintenance, reservoir & forebay draining, main disinfection, hydrant flushing & testing, or meter testing
Raw water	2	P	1,000-25,500	<1-4 days	Infrequent: pipeline flushing, reservoir and forebay draining
Groundwater (deep aquifer)	3	P	500-9,000	<1-8 days	Infrequent: production well flushing and testing
Groundwater (shallow aquifer)	4	P	100-900	<1 day	Infrequent: automatic reservoir underdrain pumping
Miscellaneous dewatering	5	P	100-1,000	<1 day	Infrequent: automatic floor drain sump pumping and subsurface vault dewatering
Emergency discharges and upsets (treated or raw water)	6	U	Varies	<1 day	Infrequent: pipeline leaks, main breaks, and reservoir/forebay overflows, hydrant shearing, and emergency flushing activities

Notes: Discharge water categories may either be planned (P) or unplanned (U).

Discharge rates are estimated based on facility capacities and capabilities and worst-case failures. The systems may experience no discharge some days, while other days may have substantial and multiple discharges depending upon maintenance needs and emergencies.

Depending on the water quality and discharge water body standards, various Best Management Practices (BMPs), including treatment and monitoring, will be employed to ensure that water quality is not degraded, and dissipate energy and minimize erosion and sediment transport. If water contains sediments, then sediment barriers such as fiber rolls, gravel bags, and silt fences will be employed to contain sediments. All BMPs are implemented as expeditiously as possible during emergency events. All treated water releases and some raw water releases may contain residual chlorine. Planned releases containing total residual chlorine (TRC) greater than 2.0 mg/l will be de-chlorinated to the State Standard of 0.1 mg/l, prior to discharge to any surface water outfall, including the stormdrain system.

The majority of the discharges enter the Las Vegas Wash and Piute Wash (Washes), Lake Mead (Lake), and the Muddy River and Colorado River (Rivers) and/or their tributaries between the system discharge boundaries, through identified and unidentified outfalls. Major outfalls from system maintenance and potential emergency discharges to the Washes, Lake, Rivers, and dry lakes, are identified and listed below.

**West (Upstream) and East (Downstream) Extents of Potential Outfalls to the Las Vegas Wash:**

**001W: Latitude 36° 06' 39.20" N, Longitude 115° 01' 34.46" W**

**001E: Latitude 36° 06' 09.05" N, Longitude 114° 56' 04.75" W**

**North and South Extents of Potential Outfalls to Lake Mead:**

**002N: Latitude 36° 03' 44.34" N, Longitude 114° 48' 45.54" W**

**002S: Latitude 36° 01' 44.02" N, Longitude 114° 46' 54.10" W**

**North and South Extents of Potential Outfalls to the Colorado River below Davis Dam:**

**003N: Latitude 35° 10' 23.06" N, Longitude 114° 34' 14.43" W**

**003S: Latitude 35° 06' 54.03" N, Longitude 114° 38' 09.50" W**

**North and South Extents of Potential Outfalls to the Piute Wash, upstream of CA/NV Stateline:**

**004N: Latitude 35° 22' 08.43" N, Longitude 114° 49' 56.97" W**

**004S: Latitude 35° 13' 19.82" N, Longitude 114° 54' 23.44" W**

**North and South Extents of Potential Outfalls to Roach Dry Lake:**

**005N: Latitude 35° 44' 10.04" N, Longitude 115° 20' 27.83" W**

**005S: Latitude 35° 37' 22.57" N, Longitude 115° 22' 47.18" W**

**North and South Extents of Potential Outfalls to the Pahranaagat Wash, Muddy Wash, Muddy River:**

006N: Latitude 36° 49' 42.40" N, Longitude 114° 54' 03.30" W

006S: Latitude 36° 40' 03.76" N, Longitude 114° 39' 41.79" W

**North and South Extents of Potential Outfalls to Eldorado Dry Lake:**

007N: Latitude 35° 55' 00.29" N, Longitude 114° 54' 44.62" W

007S: Latitude 35° 47' 58.57" N, Longitude 115° 00' 58.88" W

Other discharges flow to established drainage-ways and may make their way to the Washes, Lake, Rivers, or dry lakes. In many cases, exact discharge points to the water bodies are unknown.

**Flow:** The applicant requested a total maximum discharge flow rate of 34.99 million gallons per day (MGD). Actual flow rates will be determined by system operational maintenance needs, and emergencies. Total maximum daily flow rate from all system discharges, planned and unplanned, will be permitted at 34.99 MGD.

**Receiving Water Characteristics:** The receiving waters for the discharges include: the Las Vegas Wash, Lake Mead, the Colorado River, Piute Wash, the Muddy River, Roach Dry Lake and Eldorado Dry Lake, and numerous tributaries to those water bodies. The water quality/characteristics for each of the receiving water bodies vary depending on source waters. The water quality standards for each of the applicable water bodies/reaches will be applied to the applicable points of discharge.

**Site Groundwater:** Within the project area the elevation of the groundwater varies with location substantially, and generally is divided into three zones: shallow, middle and deep. The local groundwater flow is towards Lake Mead. Groundwater monitoring wells throughout the Valley are sampled by SNWA/LVVWD on a regular basis. There are multiple public drinking water supply wells throughout the Valley and water distribution system area; they are generally situated at 300 to 1,500 feet deep, and are protected by a layer of clay and fine-grained sediments throughout most of the Las Vegas Valley. Wells operated by LVVWD are also protected under a Wellhead Protection Program to ensure that groundwater supplies are safe from potential sources of contamination.

**Corrective Actions Sites:** There are numerous Bureau of Corrective Actions (BCA) remediation sites throughout the system-wide discharge areas. There are no anticipated effects to the remediation sites from the system-wide discharges.

**Proposed Discharge Limitations, Sampling and Monitoring Requirements:** Specific sampling requirements are listed below in Tables 2-6, including frequency and location of sampling. The Permittee is authorized to discharge treated water, raw water, and groundwater, to waters of the State from planned and unplanned operational maintenance activities related to the LVVWD/SNWA drinking water treatment, storage and delivery systems. Discharges shall be routed and handled to prevent water quality degradation, sediment transport and soil erosion to the extent practicable, in accordance with the plans and information submitted to NDEP. The most stringent of the water quality Requirements

to Maintain Higher Existing Quality (RMHQ), and Beneficial Use Standards specified in the NAC regulations for the specific water bodies, are applied, since there is no method for distinguishing in which reach/section some discharges may occur. For discharges to the Las Vegas Wash, the applicable standards are detailed in NAC 445A.198, 199, 200, and 201. For discharges to Lake Mead, the applicable standards are detailed in NAC 445A.194, 195, 196, and 197. For discharges to the Colorado River, between Hoover Dam and Davis Dam, the standards are specified in NAC 445A.193; and for discharges below Davis Dam the standards are specified in NAC 445A.192. For discharges to the Muddy River, the standards are specified in NAC 445A.209, 210, 211, and 212.

Table 2 outlines the system-wide discharges to be reported on DMR #1. Tables 3-6 detail four broad types of discharges: planned and unplanned, chlorinated and non-chlorinated, and list the required sampling parameters. The discharges, organized by discharge category (Table 1), are grouped into the primary discharge water quality characteristics: planned chlorinated discharges (Table 3 -DMR #2); unplanned chlorinated discharges (Table 4 -DMR #3); planned non-chlorinated discharges (Table 5 -DMR #4); and, unplanned non-chlorinated discharges (Table 6 -DMR #5). Table 7 contains the definitions and foot note explanations.

Discharge shall be limited and monitored by the Permittee as specified in Tables 2-6 below.

**Table 2. Sum of all LVVWD/SNWA System Operational Maintenance Discharges -DMR #1**

System-Wide Discharge Parameters, Units & Categories			Discharge Limitations	Monitoring Frequency	Monitoring Type
Discharge Rate <sup>1</sup>	MGD	Σ (1-6)	34.99	Continuous, as discharge occurs	Flow meter, estimate, calculation
Total Volume <sup>1</sup>	MG		M&R		Estimate, calculation
Number of Events <sup>1</sup>	#		M&R	per discharge event	Calculation

**Table 3. Planned Chlorinated Discharges from: Main & Pipeline Flushing; Tank, Reservoir or Pond Draining and Overflows; and Meter Calibration & Testing -DMR #2**

Treated Water and Raw Water Discharge Parameters, Units & Categories			Discharge Limitations		Monitoring Requirements		
			Daily Max	30-Day Avg	Location (Outfall)	Frequency	Type
Discharge Rate <sup>1</sup>	MGD	1, 2, 5	M&R	M&R	All	Continuous	Flow meter, estimate, calculation
Total Volume <sup>1</sup>	MG		M&R	M&R			
Number of events <sup>1</sup>	#		M&R	M&R		per event	
TRC <sup>2</sup>	mg/l	1, 2	0.1	0.1	001, 002, 003, 006	per event	Discrete
Profile I <sup>3</sup>	mg/l	5	M&R	M&R	All	Annually, in 4 <sup>th</sup> quarter	Discrete

**Table 4. Un-Planned Chlorinated Discharges From: Pipeline Leaks; Main Breaks; and Reservoir & Other Overflows -DMR #3**

Parameters, Units & Categories	Discharge Limitations	Monitoring Requirements
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			Daily Max	30-Day Avg	Location (Outfall)	Frequency	Type
Discharge Rate <sup>1</sup>	MGD	6	M&R	M&R	All	Continuous, as discharge occurs	Flow meter, estimate, calculation
Total Volume <sup>1</sup>	MG		M&R	M&R			
Number of events <sup>1</sup>	#		M&R	M&R		per event	
TRC <sup>2</sup>	mg/l	6	M&R	M&R	001, 002, 003, 006	per event	Discrete

**Table 5. Planned Non-Chlorinated Discharges From: Pipe Flushing; Well Flushing; Production Well Testing; and Vault Dewatering -DMR #4**

Non-chlorinated Discharge Parameters, Units & Categories			Discharge Limitations		Monitoring Requirements		
			Daily Max	30-Day Avg	Location (Outfall)	Frequency	Type
Discharge Rate <sup>1</sup>	MGD	2, 3, 4, 5	M&R	M&R	All	Continuous, as discharge occurs	Flow meter, estimate, calculation
Total Volume <sup>1</sup>	MG		M&R	M&R			
Number of events <sup>1</sup>	#		M&R	M&R		per event	
Profile I <sup>3</sup>	µg/l	3	M&R	M&R	All	Annually, in 4 <sup>th</sup> quarter	Discrete
Attachment A Priority Pollutants <sup>4</sup>	µg/l	4,5	M&R	M&R	All	Annually, in 4 <sup>th</sup> quarter	Discrete

**Table 6. Un-Planned Non-Chlorinated Discharges - Pipeline Leaks, Main Breaks, Reservoir & Other Overflows -DMR #5**

Emergency Discharge Parameters, Units & Categories			Discharge Limitations		Monitoring Requirements		
			Daily Max	30-Day Avg	Location (Outfall)	Frequency	Type
Discharge Rate <sup>1</sup>	MGD	6	M&R	M&R	All	Continuous, as discharge occurs	Flow meter, estimate, calculation
Total Volume <sup>1</sup>	MG		M&R	M&R			
Number of events <sup>1</sup>	#		M&R	M&R		per event	

**Table 7. Table Definitions and Footnote Explanations**

Term/ Footnote	Table	Definitions/ Explanations
MGD	All	million gallons per day
M&R	All	Monitor and report
Σ	2	Summation symbol; sum of all discharge categories (treated water, raw water, deep groundwater, shallow groundwater, miscellaneous discharges and emergency discharges).
Footnote 1	All	Monitor daily on tracking logs, and record separately for each Table/DMR/Discharge Category. Table 2 requires the total of all discharges to be reported. For each DMR and discharge category, report maximum daily discharge in MGD, total volume for the reporting period, in MG, and the number of events, on quarterly DMR forms (one DMR for total system flow only and one DMR for each of the discharge categories).

		For emergency discharges (Cat 6) also report totals for each major outfall/water body (ie: LV Wash, Lake Mead, etc.)
TRC	3, 4	Total Residual Chlorine
mg/l	3,4,5	milligrams per liter
Footnote 2	3, 4	Total Residual Chlorine shall be monitored for treated water discharges and chlorinated raw water discharges. Dechlorination to $\leq 0.1$ mg/l is required for discharges with TRC > 2.0 mg/l. For discharges with TRC $\leq 2.0$ mg/l, dechlorination is not required, sampling at the surface water outfall is required, and the 0.1 mg/l limit is applied. M&R only results may be submitted from sampling conducted at the surface water outfall, or from the computerized control system.
Profile I	3	Nevada Profile I list of parameters
Footnote 3	3	Sample and analyze for all Profile I parameters once annually, in 4 <sup>th</sup> quarter. Metals shall be total, recoverable. For well tests and flushings, report once per sampling; <b>a minimum of three well discharges are required to be sampled and reported annually.</b> Report exceedances of individual MCLs or designated beneficial uses standards for a specific Outfall.
Attachment A	5	Priority Pollutants -full list, including organics and metals.
$\mu\text{g/l}$	5	micrograms per liter
Footnote 4	5	Sample and analyze once per discharge (not all underdrain pumping and vault dewatering discharges require Priority Pollutant sampling for each event/year; <b>a minimum of 10 underdrains and 10 vaults discharges are required to be sampled and reported annually</b> ). Track and report on Quarterly DMRs. Metals shall be total, recoverable.

**Rationale for Permit Requirements:** The Division has established the monitoring requirements in Tables 2-6 above to ensure that the receiving waters: Las Vegas Wash, Lake Mead, the Colorado River, the Muddy River, Piute Wash, and the dry lakes, are not degraded as a result of the system-wide discharges.

**Flow, Total Volume, and Number of Events:** The rationale for the daily maximum discharge was explained in the **General** and **Flow** sections of this fact sheet. The flow rate for each discharge event, total volume, and number of events must be tracked and reported per quarterly reporting period.

**Total Residual Chlorine (TRC):** 0.1 mg/l for planned discharges; M&R for emergency discharges. Sampling and analysis is required for all planned chlorinated discharges. The requirement is to sample for TRC once per discharge event. Sampling and analysis may be done by qualified personnel using a hand-held meter, or by a certified laboratory. Dechlorination, sampling and analysis are required for all planned hyper-chlorinated discharges (TRC  $\geq 2.0$  mg/l). Dechlorination is not required for planned or unplanned non-hyper-chlorinated discharges (TRC < 2.0 mg/l) due to the rapid volatilization of chlorine upon contact with air or solid surfaces. The reported concentration may be that observed by the control system, rather than a sample obtained at the discharge.

**Attachment A Priority Pollutant Parameters:** M&R. Sampling and analysis is required for well flushing and testing discharges, and sump and underdrain dewatering (a minimum of 3 wells are required to be sampled and reported annually; a minimum of 10 underdrains and 10 sub-surface vaults are required to be sampled annually). Metal analyses shall be total, recoverable.

**pH:** 6.5 - 9.0 standard units.

**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 shallow groundwater dewatering discharges. The category 4 discharges are for the interception and passage of groundwater and thus are exempted under the Colorado River Basin Salinity Control Forum's policy on groundwater interception.

**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, 2012**), the Permittee shall submit to the Division, for review and approval, an Operations and Maintenance (O&M) Manual. The O&M Manual shall include copies of the pertinent field instruction manuals for each discharge category, and locations of where the manuals will be kept, and who has responsibility for maintaining the logbooks, and records for DMR submittals.

**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 directly and indirectly to the Las Vegas Wash, Lake Mead, the Muddy River, Piute Wash, the Colorado River, Roach Dry Lake, and Eldorado Dry Lake, 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 **January 23, 2012 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: December, 2011