

# NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

## FACT SHEET

(pursuant to NAC 445A.236)

**Applicant:** Southern Nevada Water Authority  
P O Box 99955  
Las Vegas, NV 89193

**Permit Number:** NV0023736

**Facility Locations:** Moapa Valley Water District Water Treatment System  
Treating Southern Nevada Water Authority Well Water  
Logandale, Clark County, Nevada

**Discharge Outfalls:** coordinates located at Bowman Reservoir outfall and Muddy River outfall  
at Gubler Avenue, Logandale, Nevada:

Outfall 001: Bowman Reservoir: Latitude: 36° 37' 45" N  
Longitude: 114° 28' 56" W

Outfall 002: Muddy River at Gubler Avenue Latitude: 36° 35' 38" N  
Longitude: 114° 28' 36" W

**Drinking Water Protection:** The Bowman Reservoir discharge location is within the 6,000 foot but outside the 3000' Drinking Water Protection Area (DWPA) around the Moapa Valley Water District Logandale Well. This discharge location is not within the currently established Wellhead Protection Area (WHPA) capture zone for this well. The Muddy River discharge location is not within a DWPA or a currently established WHPA for any public water supply wells.

**Corrective Actions Sites:** There are no Bureau of Corrective Actions (BCA) sites within 1 mile of either Outfall location.

**General:** The Southern Nevada Water Authority (SNWA) is proposing to construct and operate a water transmission system from the Coyote Spring Valley MX-5 well site into the existing Moapa Valley Water District (MVWD) 3 million gallon reservoir in upper Moapa Valley. The groundwater pumped from Coyote Spring Valley will be disinfected and treated at the MX-5 well to reduce the naturally occurring arsenic concentrations to below the arsenic primary maximum contaminant level of 0.01 mg/L. Sludge from the treatment system is being dried in lined sludge drying beds under a separate zero discharge permit, NEV2009503. MVWD will use the groundwater as needed within its potable water distribution system. Water delivered under contract will be discharged from the MVWD system through a dechlorination facility operated by MVWD and into Bowman Reservoir (Reservoir). The Reservoir, privately owned and operated by Muddy Valley Irrigation Company (MVIC), will be operated at a level to provide irrigation water and adequate storage for SNWA purposes. The Reservoir is used for water storage for MVIC and will be used as an equalization basin for commingled water discharged from MVWD's potable distribution system. MVWD will construct a discharge pipeline and dechlorination facility at the junction of SR169 and the Wells Siding Diversion Channel for

discharging excess water from the MVWD potable water system into the Reservoir. A tap will be placed into the existing MVWD potable water pipeline along SR169 to divert excess water into the dechlorination facility. The dechlorination facility is designed to treat up to 9000 gpm. Contact time will be conducted in the 24-inch diameter, 1850-foot long discharge pipeline from the dechlorination facility to the Reservoir. Water from the Reservoir generally will be released at a constant rate into MVIC's irrigation system downstream of the Reservoir. Excess water in the irrigation system will be turned out into the Muddy River (River) at the Gubler Avenue outfall in Logandale, NV.

**Flow:** The application requested a maximum discharge flow rate to the Muddy River of 6500 gallons per minute (gpm), equivalent to 9.36 million gallons per day (MGD). Discharge flow rates to the Reservoir will fluctuate from 0-9000 gpm. Permit maximum discharge rate will be 6500 gpm (9.36 MGD) to the River and 9000 gpm (12.96 MGD) to Bowman Reservoir. Under the US EPA Non-Municipal Permit Ranking System, this proposed discharge has been determined to be a minor discharge. Fees have been assessed under the fee category "Other Discharges" greater than 10 MGD but less than 35 MGD.

**Receiving Water Characteristics:** The receiving waters are the Bowman Reservoir and the Muddy River.

Bowman Reservoir is a named water of the State of Nevada, for which beneficial uses include the following: Municipal and/or domestic supply, following complete treatment; Irrigation; Watering of livestock; Propagation of aquatic life; Propagation of wildlife; Recreation involving contact with the water; Recreation not involving contact with the water; and Industrial supply. Further, Bowman Reservoir is subject to limits on Total Ammonia as listed in NAC 445A.118. For purposes of determination of Total Ammonia limits, warm water fisheries conditions apply.

Muddy River is a named water of the State of Nevada, subject to water quality standards specific to NAC 445A.211 and 445A.118. Beneficial uses designated for Muddy River include: Irrigation; Watering of livestock; Propagation of aquatic life; Propagation of wildlife; Recreation involving contact with the water; Recreation not involving contact with the water; and Industrial supply. For purposes of determination of Total Ammonia limits, warm water fisheries conditions apply.

To ensure compliance with water quality standards, de facto mixing zones within Bowman Reservoir and Muddy River will be established.

**Proposed Effluent Limitations:** The proposed discharge shall be limited and monitored according to the following:

**Outfall 001: Bowman Reservoir**

Sampling Locations:

Flowmeter on discharge line into Bowman Reservoir (D1);

Stilling Basin at Discharge Point into Bowman Reservoir (D2);

In-line chlorine analyzer (D3);

Bowman Reservoir Sampling Point A (BA) (See Footnote a<sup>1</sup> below)

Bowman Reservoir Sampling Point B (BB) (See Footnote b<sup>1</sup> below)

**Table I.A.1: Discharge Limitations and Sampling Requirements, Outfall 001**

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	30-Day Average (Or Other)	Daily Maximum	Sampling Location	Monitoring Frequency	Sample Type
Flow (MGD)	M & R	12.96	D1	Continuous	Meter
pH (Standard Units)	---	6.5 to 9.0	D2	Monthly	Discrete
Dissolved Oxygen (mg/l)	---	M & R	D2	Monthly	Discrete
Fecal Coliform (No./100 ml)	500 <sup>1</sup>	1300	D2	Monthly	Discrete
E coli (No./100 ml)	126 <sup>1</sup>	298	D2	Monthly	Discrete
Total Phosphorus (mg/l)	---	0.30	D2	Monthly	Discrete
Total Dissolved Solids (mg/l)	---	723	D2	Monthly	Discrete
Total Nitrogen (mg/l)	1.3	1.8	D2	Monthly	Discrete
Fluoride <sup>2</sup> (mg/l)	---	2.6	D2	Monthly	Discrete
Boron <sup>2</sup> (mg/l)	---	0.75	D2	Monthly	Discrete
Arsenic (mg/l)	---	0.05	D2	Monthly	Discrete
Residual Chlorine (mg/l)	---	0.011	D3	Monthly	Discrete
Total Ammonia (mg/l)	M & R	M & R	D2	Monthly	Discrete
	Footnote 3A	Footnote 3B	BA, BB		
Temperature (°C)	---	34	D2	Monthly	Discrete
	M & R	M & R	BA, BB		
Change in Temperature (°C) ( $\Delta T = T_{BB} - T_{BA}$ )	---	≤ 3	---	Monthly	Calculate

gpm: gallons per minute  
 S.U.: standard pH units

MGD: Million gallons per day  
 mg/L: milligrams per liter

M&R: Monitor and Report

a<sup>1</sup>. Sampling Point BA will be in the reservoir immediately below the discharge apron.

b<sup>1</sup>. Sampling Point BB will be a moveable station in the reservoir 25 meters out from the discharge apron. The Permittee shall determine the GPS location of this sampling point and report monthly location..

1. Annual Geometric Mean
2. Total Recoverable

3. For each sample event, formula terms contained in A and B below shall have the following meaning: **pH and T are field measurements of facility discharge** taken at the same time and location as the water sample destined for the laboratory analysis of ammonia.

A. The chronic criteria of water quality with regard to the concentration of total ammonia are subject to the following:

- (a) The facility discharge Monthly chronic concentration of total ammonia, in milligrams of nitrogen per liter, shall be calculated by the NAC 445A.118 Table 2 chronic concentration by **value from table matrix of temperature and pH or by formula** for the 30-Day average for each discharge sample event as follows:

$$\left[ \frac{0.0577}{1 + 10^{7.688 - pH}} \right] + \left[ \frac{2.487}{1 + 10^{pH - 7.688}} \right] \times \text{MIN} [2.85, 1.45 \times 10^{0.028 \times (25 - T)}]$$

where : *MIN* = lesser of comma separated values; *T* = temp. Celsius deg.; *x* = multiply

- (b) The concentration of total ammonia, in milligrams of nitrogen per liter, expressed as a 30-day average must not exceed the applicable chronic criterion as calculated more than once every 3 years on average, and the highest 4-day average within the 30-day period must not exceed 2.5 times the applicable chronic criterion.

**Measurement frequency** of once per 30-day (Monthly) is an acceptable indicator for evaluating total ammonia chronic criterion and may be used in reporting to demonstrate compliance of discharge event calculated limit. However, if a sample analysis exceeds the allowed calculated chronic limit in part (a), the **measurement frequency** must be increased to a minimum of 4 consecutive days within the 30-day period so that chronic criterion part (b) can be applied for determining permit compliance.

- B. The acute criteria for water quality with regard to the concentration of total ammonia are subject to the following:

- (a) The facility discharge Daily Maximum acute concentration of total ammonia, in milligrams of nitrogen per liter, for **warm water fisheries** shall be calculated by the NAC 445A.118 Table 1 acute concentration by **value from table matrix of pH and fishery water type or by formula** for the 1-hour average for each sample event as follows:

$$\left[ \frac{0.411}{1 + 10^{7.204 - pH}} \right] + \left[ \frac{58.4}{1 + 10^{pH - 7.204}} \right]$$

- (b) The concentration of total ammonia, in milligrams of nitrogen per liter, must not exceed the applicable acute criterion as calculated more than once every 3 years on average.

**Measurement frequency** for evaluating total ammonia acute criterion as daily maximum shall utilize the same **measurement frequency** required for that of evaluating the chronic criteria of water quality defined in A above. The total ammonia concentration determined by laboratory analysis for each sample event shall be compared to the same event's calculated acute criterion limit.

## Outfall 002: Muddy River, via the MVIC Distribution System

### Sampling Locations:

- Flowmeter on discharge line into Muddy River (D4);
- Temperature Sensor in discharge line to Muddy River (D5)
- Stilling Basin at Discharge Point into Muddy River (D6),
- Muddy River Sampling Point A (MA) (See Footnote a<sup>2</sup> below)
- Muddy River Sampling Point B (MB) (See Footnote b<sup>2</sup> below)

**Table I.A.2: Discharge Limitations and Sampling Requirements, Outfall 002**

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	30-Day Average (Or Other)	Daily Maximum	Sampling Location	Monitoring Frequency	Sample Type
Flow (MGD)	M & R	9.36	D4	Continuous	Meter
pH (Standard Units)	---	6.5 to 9.0	D6	Monthly	Discrete
Dissolved Oxygen (mg/l)	---	≥ 5.0	D6	Monthly	Discrete
Fecal Coliform (No./100 ml)	M & R <sup>1</sup>	M & R	D6	Monthly	Discrete
E coli (No./100 ml)	M & R <sup>1</sup>	M & R	D6	Monthly	Discrete
Total Phosphorus (mg/l)	---	M & R	D6	Monthly	Discrete
Total Dissolved Solids (mg/l)	---	M & R	D6	Monthly	Discrete
Fluoride <sup>2</sup> (mg/l)	---	M & R	D6	Monthly	Discrete
Boron <sup>2</sup> (mg/l)	---	M & R	D6	Monthly	Discrete
Arsenic (mg/l)	---	M & R	D6	Monthly	Discrete
Temperature (°C)	---	32	D5	Continuous	Instrument
		M & R	MA, MB		
Change in Temperature (°C) ( $\Delta T = T_{MB} - T_{MA}$ )	Seasonal Average (May-Sept, Oct-Apr) ≤ 2	---	---	Seasonal	Calculate
Total Ammonia as N (mg/l)	M & R	M & R	D6, MA, MB	Monthly	Discrete
Turbidity (NTU)	---	M & R	D6, MA, MB	Monthly	Discrete
Change in Turbidity (NTU) ( $\Delta N = N_{MB} - N_{MA}$ )	---	≤ 10	---	Monthly	Calculate
Alkalinity as CaCO <sub>3</sub> (mg/l)	---	M & R	D6, MA, MB	Monthly	Discrete
Change in Alkalinity <sup>3</sup> ( $\Delta A\% = [A_{MB} - A_{MA}] / A_{MA} * 100$ )	---	≤   ± 25	---	Monthly	Calculate

gpm: gallons per minute  
 S.U.: standard pH units

MGD: Million gallons per day  
 mg/L: milligrams per liter

M&R: Monitor and Report  
 NTU: Nephelometric Turbidity Units

- a<sup>2</sup> Sampling Point MA shall be established approximately 50 feet upstream of discharge channel. The Permittee shall determine the GPS location of this sampling point, and shall take all subsequent measurements and samples for this sampling point at this GPS location. Measurements shall be taken as near as possible to the centroid of the stream.
- b<sup>2</sup> Sampling Point MB shall be established 1000 feet downstream of the discharge channel. The Permittee shall determine the GPS location of this sampling point, and shall take all subsequent measurements and samples for this sampling point at this GPS location. Measurements shall be taken as near as possible to the centroid of the stream.
1. Annual Geometric Mean
  2. Total Recoverable
  3. The change in Alkalinity at the end of the mixing zone in the Muddy River may not increase or decrease

more than 25% from the ambient conditions observed at sampling point MA.

**Rationale for Permit Requirements:** The Division has established the permit limits and monitoring requirements in the Tables above to ensure that the receiving waters, Bowman Reservoir and the Muddy River, water quality standards are not exceeded as a result of project activities, per NAC 445A.126 –Bowman Reservoir and NAC 445A.211 –Muddy River at Overton. The most stringent of the water quality standards will be applied at the discharge point into Bowman Reservoir. The Division has deemed that this practice will be most protective of the water quality of both Bowman Reservoir and the Muddy River.

*Flow:* The rationale for the flow limitations have been set at the request of the applicant. Treatment facilities and control structures have been designed based upon the requested flows.

*pH, Dissolved Oxygen, E-Coli Coliform, Fecal Coliform, Total Nitrogen, Total Phosphorus, Fluoride, Boron, and Arsenic :* These parameters are set at the limits listed in Nevada Administrative Code.

*Residual Chlorine:* The limit of 0.011 mg/l residual chlorine is the chronic freshwater exposure aquatic life water quality criteria listed in the EPA “National Recommended Water Quality Criteria” (2006).

*Total Dissolved Solids:* Total Dissolved Solids are limited in accordance with the salinity standard listed in NAC 445A.143 and referenced in NAC 445A.211. The limit on this discharge is set at the salinity standard for the closest downstream Colorado River control point (Hoover Dam). This permit limit will not contribute appreciably to the salinity load of the Colorado River.

*Total Ammonia:* Total Ammonia in the discharge is limited according to water quality standards listed in NAC 445A.118 for warm water fisheries. The total ammonia limit for warmer water is more restrictive than that for colder water. This limit is protective of populations of aquatic life, including early life stages.

**Mixing Zone Calculations:**

A mixing zone will be established in the Muddy River and Bowman Reservoir for the following parameters:

*Temperature:* Single value temperature and change in temperature ( $\Delta T$ ) limits for this Outfall have been set at the Beneficial Use standards listed in Nevada Administrative Code. To accommodate the naturally wide swings in temperature, compliance criteria for the Muddy River have been set using seasonal averages. Because Bowman Reservoir is an effluent-dominated water body this compliance criteria do not apply, and compliance will be determined using a monthly monitoring frequency.

*Alkalinity:* Per NAC 445A.211, discharges to the Muddy River may not change the River alkalinity more than 25% from the ambient conditions. Permit limits are set to reflect this water quality standard.

*Turbidity:* Per NAC 445A.211, discharges to the Muddy River may not increase the River ambient turbidity by more than 10 NTU. Permit limits are set to reflect this water quality

standard.

**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:

- a. The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- b. **By MMM DD, 2010**, the Permittee shall submit to the Division the GPS locations for Sampling Points BB, MA and MB.
- c. **By MMM DD, 2010**, the Permittee shall submit for review and approval an Operations and Maintenance Manual, prepared in accordance with the Division's WTS-2 guidance: *Minimum Information Required for an Operations and Maintenance Manual*, and stamped by a Professional Engineer registered in the State of Nevada. In particular, the draft document must establish appropriate calculation methods for determination of the seasonal average for temperature. The draft and final approved manual shall be submitted to both the following addresses:

**Division of Environmental Protection  
Bureau of Water Pollution Control - Las Vegas  
2030 E. Flamingo Rd, Suite 230  
Las Vegas, NV 89119-0837**

**Department of Conservation and Natural Resources  
Division of Environmental Protection  
Bureau of Water Pollution Control  
ATTN Compliance Coordinator  
901 S. Stewart Street, Suite 4001  
Carson City, Nevada 89701**

**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 discharge for a five-year period, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review-Journal** and the **Moapa Valley Progress** 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 **May 7, 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., and Janine O. Hartley, P.E.  
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