



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET (Pursuant to NAC 445A.236)

Permittee Name: Desert Rose Golf Course

Permit Number: NEV87073

Location: Desert Rose Golf Course
5483 Club House Drive
Las Vegas, Clark County, Nevada 89142

Latitude: 36° 08' 15" North
Longitude: 115° 02' 55" West
Township 21 South, Range 62 East, Sections 4 and 9, M.D.B. &M.

Flow: 1.5 million gallons per day as a daily maximum

Drinking Water Protection: The Desert Rose Golf Course is not within a 6000 feet Drinking Water Protection Area (DWPA) around any public water supply well. The facility is not within a currently established Wellhead Protection Area (WHPA).

Bureau of Corrective Actions: The facility is not within one mile of any Bureau of Corrective Actions (BCA) remediation site.

General: Desert Rose Golf Course uses secondary treated and disinfected reclaimed wastewater supplied by the Clark County Water Reclamation District - Advanced Wastewater Treatment Plant (CCWRD-AWT, Permit NV0021261) to irrigate approximately 133-acres of turf grasses and landscaping. The turf consists primarily of bermuda grass, over-seeded with rye grass in the winter. A separate potable water system supplied by the Las Vegas Valley Water District is used to irrigate greens.

Treated effluent is delivered through an eight (8)-inch underground pipeline that discharges into a 6.0-million-gallon capacity storage pond, which subsequently supplies the reuse irrigation system. The pond is lined with 40-mil High Density Polyethylene (HDPE) synthetic liner. Construction specifications indicate the pond will contain local runoff from a 100-year, 24-hour storm event.

Use of treated effluent at Desert Rose Golf Course has been authorized since 1993. In 1994, three (3) groundwater monitoring wells (10G, 11G2, and 13T) were installed to complement data collected from the on-site deep production well, P3. At the time the additional wells were installed, a specific requirement to sample the new wells was not added to the

permit; therefore, monitoring data at these well locations is not available until the permit was renewed in 1999. Monitoring requirements issued in 1999 only required groundwater monitoring at three (3) locations, P3, 11G2, and 13T.

Irrigation using treated effluent is conducted in accordance with an Effluent Management Plan (EMP) submitted to, and approved by, the Nevada Division of Environmental Protection, Bureau of Water Pollution Control (BWPC).

Location of the Discharge: The golf course is configured around the confluence of the Las Vegas Wash and the Flamingo Wash, and is north-northwest of both, the Links of Las Vegas and Stallion Mountain golf courses. The course meanders through residential areas, bounded by South Nellis Boulevard to the east and Vegas Valley Drive along the most southeastern portion of the property. Discharge is strictly limited to areas within golf course property boundaries, and is further restricted in the existing permit such that, "Surface discharge to the Las Vegas Wash, the Flamingo Wash, or their tributaries is prohibited." This condition remains in the proposed permit for renewal.

Water Quality Limitations for Reuse Supplied by the Clark County Water Reclamation District - Advanced Wastewater Treatment Plant (CCWRD-AWT) Permit [NV0021261]:

BOD ₅ :	30 mg/l 30-day average; 45 mg/l 7-day average
TSS:	30 mg/l 30-day average; 45 mg/l 7-day average
Fecal Coliform (cfu, mpn ¹)	Log mean 200 cfu or mpn/100ml 30 day average
Total Nitrogen as N:	Monitor & Report mg/l 30-day average; Maximum value
Total Nitrate as N:	Monitor & Report mg/l 30-day average; Maximum value
pH	Between 6.0 and 9.0 SU

¹ mg/l = milligram per liter

cfu = colony forming unit

mpn = most probable number

Receiving Water Characteristics: Treated effluent discharges via reuse irrigation to groundwater. Groundwater is reportedly encountered at approximately 10-25 feet below grade surface (bgs). Groundwater at the golf course generally flows in an east-southeasterly direction toward the Las Vegas Wash and the Flamingo Wash. Groundwater discharge limitations are based, in part, on primary drinking water standards in order to protect groundwater resources.

Groundwater beneath the golf course has exhibited elevated concentrations of nitrate since monitoring under this permit began in 1993. It has been determined through groundwater studies and evaluation of discharge data that the elevated nitrogen concentrations are not likely the result of reuse irrigation. Monitoring of effluent nitrogen concentrations and reporting of nitrogen application (effluent and fertilizer) within the specifications of the Division approved Effluent Management Plan (EMP) to ensure that groundwater is not further affected by golf course activities, will continue in the renewed permit. Groundwater monitoring will also continue.

Proposed Limitations: Proposed limitations are designed to verify the constituent composition of effluent discharges and control application and operational parameters to preemptively protect groundwater conditions.

Effluent Monitoring

- a. Samples and/or measurements taken in compliance with the monitoring requirements specified below shall be collected:
 - i. At a flow meter accessible at the golf course and available for routine measurement; and
 - ii. After treatment and prior to distribution for reuse. Data may be obtained from the Clark County Water Reclamation District - Advanced Wastewater Treatment Plant to satisfy compliance and reporting requirements confirming effluent quality.
- b. Reclaimed water quality and use shall be limited and monitored, in accordance with the specifications in Table I.A.1.
- c. Fecal Coliform concentrations must be limited based on reuse categories specified in NAC 445A.276
- d. The supplier of the effluent may perform required analytical monitoring; however, the Permittee must report the analytical results to verify compliance with effluent reuse limitations in accordance with quarterly reporting requirements.
- e. The total annual nitrogen applied (lbs/acre/year) shall not be greater than the total annual nitrogen uptake (lbs/acre/year). Calculations and monitoring data shall use the **total nitrogen** in the applied wastewater (monitored by the treatment facility), total nitrogen from fertilizer applications, nitrogen uptake by crops or vegetation, evapotranspiration rate, precipitation rate, and fraction of applied nitrogen removed by denitrification and volatilization. Quarterly accounting of nitrogen load is required to more frequently evaluate the amount of nitrogen applied throughout the progression of a calendar year. Each quarter, the cumulative amount of total nitrogen applied shall be increased by the incremental amount of nitrogen applied during the reported quarter. Data provided in the fourth quarter annual report must demonstrate compliance with the annual nitrogen load allocated

Table I.A.1: Effluent Discharge Limitations

Parameters	Discharge Limitations		Monitoring Requirements	
	30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (mgd)	M&R	1.5	Continuous	Flow Meter
Fecal Coliform (CFU/100 mL)	2.2	23	Weekly	Discrete
Total Nitrogen as N (mg/L)	M&R	M&R	Weekly	Discrete
Total Nitrogen Applied (pounds/calendar year)	As specified in the EMP		Quarterly	Calculation (cumulative)

mgd: Million gallons per day
 CFU/100 mL: Colony forming units per 100 milliliters
 EMP: Effluent Management Plan

mg/L: Milligrams per liter
 as N: As nitrogen
 M&R: Monitor and Report

Groundwater Monitoring:

Discrete groundwater samples shall be collected to confirm the effective protection of groundwater under the established discharge conditions of this permit.

- a. Discrete samples shall be collected from all monitoring wells.
- b. Monitoring wells currently include: 10G, 11G2, 13T. All groundwater monitoring wells installed as a function of the permitted discharge shall be included in the monitoring program prescribed. Other wells that accurately reflect subsurface conditions and are sited so as to provide appropriate monitoring of the site may be substituted, with Division approval, for wells 10G, 11G2, 13T.
- c. Groundwater monitoring wells shall be conspicuously labeled, capped to prevent migration of surface contaminants to the groundwater, and **locked** to restrict access.
- d. The Permittee shall monitor all new and existing groundwater monitoring wells as specified in Table I.A.2.
- e. Wells shall be monitored in accordance with permit conditions and Effluent Management Plan (EMP) requirements. Should site conditions and/or operational activities require the installation of additional monitoring wells, all wells shall be incorporated into the required monitoring schedule. All subsequent monitoring wells proposed or required (designs and locations) shall be approved by the Division prior to installation and constructed in general accordance with “WTS-4: Monitoring Well Design Requirements” (NDEP, Revised 1996).
- f. Sampling frequency may be modified or reduced, in whole or in part, at the discretion of the Division, upon demonstration of groundwater concentrations or conditions which warrant or justify alternative monitoring schedules.

Table I.A.2: Groundwater Monitoring

Parameters	Groundwater Limitations	Sample Locations	Monitoring Requirements	
			Measurement Frequency	Sample Type
Depth to Water (feet)	Monitor & Report	Each well	Quarterly	Discrete
Groundwater Elevation (amsl)	Monitor & Report	Each well	Quarterly	Discrete
Total Nitrogen as N (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Nitrate as N (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Total Dissolved Solids (mg/L)	Monitor & Report	Each well	Quarterly	Discrete
Chloride (mg/L)	Monitor & Report	Each well	Quarterly	Discrete

amsl: above mean sea level ft/ft: foot per foot (vertical to horizontal)
 mg/L: milligram per liter as N: as Nitrogen

Rationale:

Flow: Flow is limited by the volume of treated effluent requested for application, and as long as the nitrogen budgets presented in the approved EMP are observed and annually balanced, the flow rate or volume of water requested can be authorized.

Total Application Volume: This parameter is required to be recorded and reported because it is a variable that is used to calculate the total mass of nitrogen applied to the golf course on a quarterly basis, which is used to reconcile the annual nitrogen budget/balance.

Fecal Coliform: The concentration of fecal coliform in treated wastewater discharged for irrigation is restricted in accordance with NAC 445A.276 for a zero-distance buffer zone.

Total Nitrogen: The concentration of total nitrogen in treated wastewater used for irrigation is required for purposes of determining mass discharge to irrigated landscape areas. The nitrogen concentration in treated wastewater is a component of the calculation for monthly nitrogen mass application, which is ultimately used to reconcile annual nitrogen budgets.

The total nitrogen as nitrogen application rate and the annual nitrogen load (balance) are required per the EMP. The cumulative (allowable) total nitrogen applied is limited based on an average of published nitrogen uptake values for bermuda and rye grasses. The average value of 315 pounds per acre per year is similar to the value calculated in Appendix J of the EMP, Revision 1.3, March 28, 2000, representing the total annual nitrogen mass applied during 1999. Quarterly reconciliation of the nitrogen mass applied is required so that facility operators can assess and optimize irrigation practices to effectively manage and routinely demonstrate projected compliance with the annual nitrogen load (balance) limitation.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the permit upon issuance and the following schedule of compliance, including in said implementation and compliance, any additions or modifications the Administrator may make in approving the schedule of compliance.

- a. **Upon issuance of the permit,** the Permittee shall achieve compliance with all discharge limitations.
- b. **By MMM DD, 2011,** The Permittee shall provide documentation to the Division that notification has been made to the local water purveyor and the local health agency regarding the use of reclaimed wastewater for irrigation at the subject facility. The documentation shall describe the plan for complying with the cross-connection control requirements of the local water purveyor. This documentation shall be received prior to irrigation.
- c. **By MMM DD, 2011,** an updated EMP, prepared and stamped by a licensed professional engineer, shall be submitted to the Division for approval.
 - i. The EMP shall contain the information required to comply with this permit. Preparation of the EMP in accordance with *WTS-1B - Guidance Document*

for Effluent Management Plans for Reuse of Wastewater Effluent is recommended.

- ii. The EMP shall include operation and maintenance procedures for the use and operation of the irrigation systems, including storage ponds.
 - iii. Copies of documentation used for purposes of hazard notification to grounds keepers, contractors, or exposed personnel shall be included in the EMP.
 - iv. The EMP shall include a description of sampling and analysis procedures for monitoring requirements specified as a condition of this permit.
- d. Each quarter, the Permittee shall submit a document confirming adherence to the approved EMP. This document shall be signed, and shall contain the following certification.

"I certify that during each month of the previous quarterly reporting period, all operational procedures outlined in the approved Effluent Management Plan for this facility were adhered to."

- e. Schedule of compliance submittals and evidence of compliance documents must be submitted to:

**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 (renew) the proposed permit, under the provisions prescribed, for a 5-year period. Under NAC 445A.232, this permit is classified as a *Discharge of Treated Effluent for Irrigation - 1,000,000 gallons or more but less than 10,000,000 gallons daily.*

Procedures for Public Comment: Notice of the Division's intent to issue a permit authorizing the facility to discharge to groundwater of the State of Nevada, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review Journal** for publication. Notice is also 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 30 days following the date of the public notice, and must be postmarked, faxed, or e-mailed by 5:00 p.m. on **October 7, 2011**. The comment period can be extended at the discretion of the Administrator. 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 reason(s) why a hearing is warranted. Public hearings granted by the Division are 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: Michele R. Reid
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