

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
FACT SHEET

(pursuant to NAC 445A.236)

Permittee Name: US Department of the Army
Hawthorne Army Depot
Western Area Demilitarization Facility (WADF)
1 South Maine Avenue
Hawthorne, Nevada 89414

Permit Number: NV0021946

Location: The Hawthorne Army Depot Western Area Demilitarization Facility (WADF)
Northwest of Hawthorne, Mineral County, Nevada.

Outfalls 001-004

Latitude: 38° 35' 48"N.

Longitude: 118° 39' 31"W.

Outfall 005

Latitude: 38° 35' 34"N.

Longitude: 118° 39' 20"W.

Drinking Water Protection Area / Wellhead Protection Area:

The Hawthorne Army Depot Demilitarization Facility is not within a 6000' Drinking Water Protection Area (DWPA) around any public water supply well. The facility is not within a currently established Wellhead Protection Area (WHPA).

Corrective Actions Sites:

There are no Bureau of Corrective Actions remediation sites within one (1) mile of the subject facility.

General:

The United States Army Hawthorne Army Depot (Permittee) operates the Western Area Demilitarization Facility (WADF), located on the site of the depot, Hawthorne, Mineral County, Nevada. The WADF is located approximately 5 miles northwest of the town of Hawthorne, and approximately 2 miles east southeast of Walker Lake. Explosives contaminated wastewater is generated during the munitions destruction process. The contaminated water is treated chemically and physically using a chemical feed system, a flotation clarifier system, a multi-media filter and carbon adsorption columns. Chlorine is added to inhibit bacterial growth. Ultimate disposal of the treated water is to lined evaporation ponds. The two primary ponds, used alternately, are each 0.14 acre in area. Some treated water may be used for dust suppression on site. During extreme storm events, some overflow from the evaporation pond to Walker Lake, via an unnamed drainage ditch, a distance of approximately 1.5 miles, may occur. Six monitoring wells are installed to monitor groundwater quality adjacent to the ponds. No negative environmental impacts are anticipated as a result of the reissuance of this permit.

The wastewaters generated at this facility are of five types: domestic sewage effluent from the Demilitarization (DMIL) plant, boiler blow-down water, treated scrubber blow-down liquid, treated

Receiving Water Characteristics:

Discharges are to lined ponds. A minor discharge of treated process water to groundwater will be allowed for dust suppression on-site at Hawthorne Army Depot. During extreme storm events emergency discharge may occur from Outfall 004 to Walker Lake via an unnamed ditch. Walker Lake is a named water of the State of Nevada, for which beneficial uses include the following: Propagation of aquatic life; Propagation of wildlife; Recreation involving contact with the water; and Recreation not involving contact with the water. Beneficial uses and standards of water quality for Walker Lake are listed in Nevada Administrative Code (NAC) 445A.1693-1696. Species of major concern include the tui chub, Tahoe Sucker, and adult and juvenile Lahontan cutthroat trout. Additionally, Walker Lake is subject to limits on Total Ammonia as listed in NAC 445A.118. For purposes of determination of Total Ammonia limits, cold water fisheries conditions apply.

The groundwater at the site ranges from near surface to 22 feet below ground surface fluctuating in response to seasonal weather and Walker Lake elevations. Groundwater in the shallow aquifer is monitored via four (4) monitor wells, WADF-5 and WADF-10 through 12. Groundwater in the shallow aquifer is high in TDS, with an average TDS of 2571 mg/L. The pH reported for the monitor wells averages 7.27 Standard Units. No chemical species associated with munitions have been identified in the groundwater at the analytical reporting limits used. A confining clay layer, which is up to 30 feet thick, has been identified near Walker Lake. This clay layer is believed to restrict vertical ground water flow between the shallow aquifer and deeper water bearing strata below. Groundwater in the lower strata is reported to meet drinking water standards.

Limitations:

Each outfall has specific parameters that are monitored, and they are presented below by outfall number:

Outfall 001: The **influent discharges** shall be limited and monitored by the Permittee at the discharge to sewage stabilization pond 1A or 1B as specified below:

Table I.A.1: Outfall 001 Discharge Limitations and Monitoring Requirements

Parameter	Discharge Limitation		Monitoring Requirement	
	30 Day Average	Daily Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	0.009	0.020	Weekly	Meter
BOD ₅ (mg/l)	---	M&R	Monthly	Composite
BOD ₅ Pond Loading (lb/day)	4.9	---	Monthly	Calculation
TSS (mg/l)	---	M&R	Quarterly	Composite
Nitrate as N (mg/l)	---	M&R	Quarterly	Composite

BOD₅: 5 day Biochemical Oxygen Demand

TSS: Total Suspended Solids

as N: as Nitrogen

M&R: Monitor and Report

Outfall 002: Boiler Blow-down Water from Boiler Building 117-2, discharged via the sanitary sewer to the lined sewage stabilization and evaporation ponds for disposal, will be sampled prior to co-mingling with sewage. The discharge shall be limited and monitored as specified below:

Table I.A.2: Outfall 002 Discharge Limitations and Monitoring Requirements

Parameter	Discharge Limitation		Monitoring Requirement	
	Quarterly Average	Daily Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	M&R	M&R	Weekly	Meter
TDS (mg/l)	M&R	M&R	Quarterly	Composite
Phosphorus as P (mg/l)	M&R	M&R	Quarterly	Composite

TDS: Total Dissolved Solids

M&R: Monitor and Report

Outfall 003: Treated “Red Water” from the Process Water Treatment Facility (Building 117-7), is discharged to a 116,000 gallon holding tank. Overflow from this tank is discharged via an industrial sewer to the sanitary sewer and subsequently to the lined sewage stabilization and evaporation ponds for disposal. Samples taken to monitor this Outfall will be collected prior to comingling with sewage. The discharge shall be limited and monitored by the Permittee as specified below:

Table I.A.3: Outfall 003 Discharge Limitations and Monitoring Requirements

Parameter	Discharge Limitation		Monitoring Requirement	
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	0.30	0.33	Weekly	Meter
TNT ¹ (mg/l)	M&R	M&R	Weekly	Discrete
RDX ¹ (mg/l)	M&R	M&R	Weekly	Discrete
Sum of TNT and RDX (mg/l)	2	5	Monthly	Calculate
TPH ² (mg/l)	10	15	Weekly	Discrete
TSS (mg/l)	20	30	Weekly	Discrete

M&R: Monitor and Report

TNT: 2,4,6-Trinitrotoluene

RDX: 1,3,5-Trinitroperhydro-1,3,5-triazine

TPH: Total Petroleum Hydrocarbons

TSS: Total Suspended Solids

1. Outfall 003 samples taken shall be analyzed for TNT and RDX using approved methods having lowest appropriate reporting limits.
2. TPH shall be the average of (3) discrete samples taken at 5 minute intervals, and analyzed separately.

Outfall 004: Discharge from the overflow weir of lined evaporation pond 3B to Walker Lake via an unnamed ditch is authorized during emergency storm event overflow conditions. Samples of this discharge shall be taken at the pond overflow weir, prior to discharge to the unnamed ditch. The discharge shall be limited and monitored by the Permittee as specified below:

Table I.A.4: Outfall 004 Discharge Limitations and Monitoring Requirements

Parameter	Discharge Limitation		Monitoring Requirement	
	30 Day Average	Daily Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	M&R	M&R	Each Event ¹	Estimate
Temperature (°C)	M&R	M&R	Each Event ¹	Discrete
pH (Standard Units)	---	6.5 to 9.7	Each Event ¹	Discrete
BOD ₅ (mg/l)	30	45	Each Event ¹	Discrete
Total Suspended Solids	30	45	Each Event ¹	Discrete
Phosphorus as P (mg/l)	M&R	0.82	Each Event ¹	Discrete
TPH ³ (mg/l)	M&R	1.0	Each Event ¹	Discrete
Nitrate as N (mg/l)	M&R	90	Each Event ¹	Discrete
Nitrite as N (mg/l)	M&R	0.06	Each Event ¹	Discrete
Total Ammonia as N (mg/l)	Footnote 4A	Footnote 4B	Each Event ¹	Discrete
TSS (mg/l)	M&R	25	Each Event ¹	Discrete
Chlorides (mg/l)	M&R	250	Each Event ¹	Discrete
E. coli (CFU or MPN/100 ml)	126	235	Each Event ¹	Discrete
TDS (mg/l)	M&R	500	Each Event ¹	Discrete
Total Organic Carbon (TOC) (mg/l)	M&R	35	Each Event ¹	Discrete
Chlorine Residual (mg/l)	M&R	0.1	Each Event ¹	Discrete

M&R = Monitor & Report

BOD₅ = 5-Day Biochemical Oxygen Demand

1. Samples shall be taken within one hour of the start of overflow during storm events.
2. In the event that this outfall is used, the Nevada Division of Environmental Protection shall be notified during the first occurring normal business hours at (775) 9485 or (888) 331-6337.
3. TPH shall be the average of (3) discrete samples, taken at 5 minute intervals and analyzed separately.
4. 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 **cold 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:

$$\left[\frac{0.275}{1 + 10^{7.204 - pH}} \right] + \left[\frac{39.0}{1 + 10^{pH - 7.204}} \right]$$

- (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 005: The Permittee is authorized to discharge minor amounts of treated process water from the treated water holding tank at Building 117-7 to groundwater via percolation for dust suppression. Samples collected for monitoring purposes shall be taken at the sample valve at the treated process water storage tank, prior to application. The discharge shall be limited and monitored by the Permittee as specified below:

Table I.A.5: Outfall 005 Discharge Limits and Monitoring Requirements

Parameter	Discharge Limitation	Monitoring Requirement	
	Monthly Average	Monitoring Frequency	Sample Type
Flow (MGD)	M&R	Continuous ¹	Discrete
TDS (mg/l)	M&R	Monthly	Discrete
TSS (mg/l)	M&R	Monthly	Discrete
Nitrate as N (mg/l)	M&R	Monthly	Discrete
Total Nitrogen (mg/l)	10	Monthly	Discrete
Chlorides (mg/l)	M&R	Monthly	Discrete
Phosphorus as P (mg/l)	M&R	Monthly	Discrete

1. A log shall be kept recording each truck load of water utilized for dust suppression, detailing the date,

- quantity, time, and place of application.
2. Waters used for dust suppression must not be hazardous or considered a hazardous waste by TCLP characterization.

Additionally, groundwater at the site is monitored and limited according to the following:

Groundwater Monitoring Wells: Monitor Wells: WDF-5 & WDF-14 up gradient and WDF-10, WDF-11 and WDF-12 downgradient shall be limited and monitored according to the following:

Parameter	Groundwater Limitation	Monitoring Requirement	
		Monitoring Frequency	Sample Type
Total Nitrogen as N (mg/l)	10	Quarterly	Discrete
Nitrate / Nitrite as N (mg/l)	M&R	Quarterly	Discrete
Chlorides (mg/l)	M&R	Quarterly	Discrete
Depth to Groundwater (feet)	M&R	Quarterly	Discrete
Groundwater Elevation (feet AMSL)	M&R	Quarterly	Discrete
TDS (mg/l)	M&R	Quarterly	Discrete
2,4-DNT (mg/l)	M&R	Annually ¹	Discrete
2,6-DNT (mg/l)	M&R	Annually ¹	Discrete
1, 3, 5-TNB (mg/L)	M&R	Annually ¹	Discrete
RDX ² (mg/l)	0.1	Annually ¹	Discrete
HMX (mg/l)	M&R	Annually ¹	Discrete
2,4,6-TNT ² (mg/l)	0.02	Annually ¹	Discrete
Ammonium Picrate (mg/l) (Yellow D)	M&R	Annually ¹	Discrete
Total Organic Carbon (mg/l)	M&R	Annually ¹	Discrete
Specific Conductivity (Siemens/cm) (at the well)	M&R	Annually ¹	Discrete
pH (Standard Units) (at the well)	M&R	Annually ¹	Discrete

1. Sample shall be taken using a PVC hand-operated pump or a peristaltic pump.
2. Groundwater samples taken shall be analyzed for TNT and RDX using approved methods having lowest appropriate reporting limits.

Procedures for Public Comment: The Notice of the Division's intent to reissue the permit authorizing the facility to discharge: to the lined ponds, groundwaters of the State (dust suppression), the unlined ditch, and to Walker Lake (Major catastrophic storm events only) subject to the conditions contained within the permit, is being sent to the **Mineral County Independent News** and the **Reno Gazette 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 30 days following the date of the publication of the public notice, by **March 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, 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 determined 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.

Proposed Determination: The Division has made the tentative determination to reissue the proposed permit for a five-year period.

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, 2011**, the Permittee shall submit for review analytical results for TNT (2,4,6-trinitrotoluene) and RDX (1,3,5-Trinitroperhydro-1,3,5-triazine) for all groundwater monitoring wells. The tests shall be completed using approved methods with appropriate reporting limits, as required in Parts I.B.1.b and I.B.1.f of the permit.
- c. **By MMM DD, 2011**, the Permittee shall submit an Operations and Maintenance (O&M) Manual, stamped by a professional engineer registered in the State of Nevada and prepared in accordance with applicable sections of WTS-2 *Minimum Information Required for an Operation and Maintenance Manual for a Wastewater Treatment Plant*, to the Division for review and approval at the following address:

**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**

- d. **By MMM DD, 2011**, as part of the O&M Manual, the Permittee shall submit for review and approval a revised Sampling and Analysis Plan, which will address flow and quality

monitoring for all Outfalls. The sampling plan shall include an accurate flow diagram of all streams contributing to the Outfalls, and shall include all sampling locations.

- e. **By MMM DD, 2011**, the Permittee shall submit for review and approval a plan and approvable schedule for implementation of repairs/replacement to pond liners, as recommended in the Farr West Engineering Report, March 2009.

Rationale for Permit Requirements: Monitoring is required to assess the level of treatment being provided and to ensure that Waters of the State are not degraded. Groundwater TNT and RDX limits are set in accordance with US EPA Drinking Water Equivalent Levels (DWELs) recommended in “2006 Edition of the Drinking Water Standards and Health Advisories”, protective of groundwater as a drinking water source.

National effluent guidelines have not been promulgated for this type of industrial discharger. Therefore, under the authority of Section 402 (a)(1) of the Clean Water Act, the EPA has developed a NPDES permit on a case-by-case basis. The Best Conventional Technology (BCT) and Best Available Technology economically achievable (BAT) have been established on the effective date of the permit. The limits have been developed using Best Professional Judgment (BPJ).

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