

**NEVADA DIVISION OF ENVIRONMENTAL PROTECTION**  
**FACT SHEET**

(Pursuant to NAC 445A.236)

**Permittee Name:** Kennametal, Inc.  
347 N. Taylor St.  
Fallon, NV 89406

**Permit Number:** NEV92006

**Location:** Kennametal, Inc. Nevada Refinery  
1077 Lovelock Hwy, Fallon, NV 89406 (Churchill County)  
Evaporation Ponds:  
Latitude: 39° 37' 55" N, Longitude: 118° 47' 39" W  
Elevation: 3,967 feet Above Sea Level  
Township 20N, Range 28E, NW¼ Section 1

**Bureau of Corrective Actions Sites:** There is no remediation site managed by the Bureau of Corrective Actions, which is located within a one-mile radius of the Kennametal Refinery.

**Wellhead Protection Area:** The Kennametal Refinery is located outside the 6,000 ft Drinking Water Protection Area #4 (DWPA #4) for any public supply well and also not located within any delineated wellhead capture zone for a public supply well. The water supply for the refinery is piped in 10 miles from a supply well located just north of the Fallon city limits, since the local groundwater at the refinery site is saline and of poor quality for either process or potable usage.

**General:** Tungsten ore refining at the Kennametal Refinery, located 11 miles north of Fallon, commenced in the 1970s. On October 17, 1997, permitting of the wastewater discharge activity at the refinery transferred from the Bureau of Mining Regulation and Reclamation (BMRR) to the Bureau of Water Pollution Control (BWPC) upon determination that the refinery did not meet the regulatory definition of a mining operation. Kennametal imports all of its tungsten ore from U.S. mines located off-site of the 620-acre refinery site.

Treated process wastewater from the refinery (Outfall **001**) is recycled internally, reclaimed for dust abatement on the facility's dirt roads, landfill and stockpiles (Outfall **001A**), or discharged into four lined evaporation ponds (Outfall **001B**). The bulk (98%) of the facility's process wastewater is chemically neutralized filtrate from the Thermit (kiln) process. The Thermit process generates a tungsten carbide crystal mass, which is then leached with mineral acids (i.e., hydrochloric and sulfuric acid) to remove metallic impurities (e.g., iron, aluminum and manganese). The acidified leach liquor is lime neutralized to precipitate metallic solids, which are filtered and discharged onto an unlined filter cake stockpile regulated as a landfill by the Bureau of Waste Management (BWM). The Thermit waste slag is discharged onto an unlined slag stockpile, which is eventually recycled off-site by a steel manufacturing plant. The lesser (2%) portion of the facility's process wastewater is chemically neutralized acid-scrubber liquor wastewater, blow-down from the facility's boilers, cooling towers and R.O. (reverse osmosis) units, and pad wash down water from the floor drains (sumps). The process sump water is treated in an Oil-Water Separator (OWS) unit (Outfall **001C**) for Oil & Grease (O&G) removal, which may be generated during floor wash-down cleaning. The OWS effluent is not reclaimed for dust abatement and is discharged into the evaporation ponds.

The facility's original evaporation ponds, #1-3, pre-date the newest evaporation pond, #4, which was constructed later in 1992. During an October 30, 2006 site inspection, Kennametal representatives had indicated that ponds #1-3 were constructed with polypropylene (primary) and clay (secondary) liners (no detail is known on the polypropylene liner thickness). The polypropylene material was covered with 12-inches of compacted soil for UV and erosion protection. Pond #4 is of double-lined construction with an exposed 60-mil HDPE (primary) liner overlying 12-inches of compacted clay (secondary) liner. Total evaporation surface area in the four ponds is 4½ acres. Ponds #3-4 are equipped with spray barges for enhanced surface evaporative effect. Leak detection sumps are furnished in all four ponds, with ponds #1-2 sharing a common leak detection sump. In 2005, Kennametal, Inc. received approval from the BWPC to construct a fifth lined impoundment for storage of solid carbocoke waste from the refinery. The carbocoke waste impoundment incorporates an 80-mil HDPE primary liner on a prepared sub-grade pad. Above the primary liner is a leachate collection sump for monitoring any leachate collection over the HDPE liner caused by incident precipitation (average precipitation in this area is  $\leq 5$  in/yr). The carbocoke impoundment is relatively small measuring 30 feet by 40 feet at the bottom of the impoundment.

The two other permitted outfalls in this discharge permit are the Main and Change-House Septic Systems of 8,000 and 1,000 gallon capacities, respectively. The proposed permit conditions restrict wastewater disposal in the facility's two septic systems to non-process (sanitary or domestic) wastewater. Septic system effluent is disposed on-site via sub-surface leach fields.

**Receiving Water Characteristics:** The permit regulates the four ponds and the carbocoke impoundment as total containment systems with zero discharge to the environment. In addition, effluent application for dust abatement is to be applied from a water truck at a rate not to cause any surface pools, runoff or anticipation of significant groundwater recharge. In all, seven (7) groundwater monitoring wells are reported. A 2004 Terracon groundwater monitoring well report denotes the wells' locations as: MW-1 (Evaporation Ponds), MW-2 & MW-5 (Up-Gradient), MW-3 (Abandoned), MW-4 (Main Leach Field), MW-6 (Filter Cake Stockpile), MW-7 (Bone Yard) and MW-8 (Slag Stockpile).

Monitoring well #4 (MW-4) is installed down gradient of the main leach field, and is the well most likely to observe impact from nitrate elevation from domestic effluent disposal. This well indicates current groundwater quality parameters of (the applicable drinking water standard denoted in parentheses): Total Dissolved Solids or TDS – 8,400 mg/l (1,000 mg/l), Sulfates or  $SO_4$  – 2,300 mg/l (500 mg/l), Chloride or Cl – 2,400 mg/l (400 mg/l), Nitrates or  $NO_3$  - < 2.5 mg/l (10 mg/l), Tungsten or W – 0.09 mg/l (Maximum Contaminant level or MCL for W is N/A or Not Applicable) and Depth to Groundwater or DTGW – 74 feet below ground surface.

In addition to the ponds' leak detection sumps, MW-1 is in use as a down-gradient monitoring well for the lined ponds. This well indicates current groundwater quality parameters of: TDS – 7,800 mg/l,  $SO_4$  – 2,700 mg/l, Cl – 2,000 mg/l,  $NO_3$  – Not Required, W – 0.08 mg/l and DTGW – 55.5 feet below ground surface.

The facility's up-gradient monitoring well, MW-5, located ½-mile away from the ponds and filter cake stockpile, also indicated saline groundwater quality of: TDS – 9,800 mg/l,  $SO_4$  – 2,700 mg/l, Cl – 2,700 mg/l,  $NO_3$  – Not Required, W – 0.03 mg/l and DTGW – 38 feet below ground surface.

The furthest down-gradient well, MW-8, located down-gradient of the slag stockpile, indicated: TDS – 3,300 mg/l and W – 0.55 mg/l. Although, the down-gradient tungsten level is somewhat (i.e., 0.52 mg/l increase) elevated over background level, at this time, no State or Federal drinking water standard for this metal (tungsten) exist. According to the Agency for Toxic Substances and Disease Registry ToxFAQs™, “No specific health effects have been associated with exposure to tungsten in humans”.

Clearly, the local groundwater monitored by the facility’s seven (7) monitoring wells is saline and of non-potable quality for domestic use (also for industrial use per Kennametal, Inc.) requirements. Elevated TDS in the background aquifer dictates import of all of the facility’s water supply from Fallon. Reverse osmosis is further used for employee potable demand since the Fallon background supply well is elevated for naturally occurring arsenic. The presumed groundwater flow gradient from the refinery site is towards the northwest and away from Fallon located 11 miles south of the refinery site.

**Flow:** The application requests no change to the existing total discharge flow limit of 80,000 gallons per day (GPD) on a 30-day average basis. This flow indicates the total flow discharged from the refinery into the ponds and water trucks, excluding the septic systems. Total flow averaged 23,125 gallons per day over the last five years. Daily maximum dust control flow is limited to 35,000 GPD based on accumulated loading into the water trucks. For this renewal, the Division removes the flow rate reporting and sampling requirements for the two septic systems and proposes instead a biennial (once every two years) monitoring of tank scum and sludge levels consistent with the Division’s policy for Large Capacity Septic Systems ( $\geq 5,000$  gallon capacity). Typically, scum and sludge level monitoring in a septic tank is performed by licensed septage hauler to determine a pumping schedule. The septic systems combined provide 9,000 gallons capacity, which is considered adequate for the 100-employee workforce at normal demand. The Uniform Plumbing Code (UPC) suggests workplace flows of 35 GPD/employee (industrial workers w/shower facilities) and 20 GPD/employee (administration area), respectively.

**DMR Notations:** Treated effluent applied for general dust control is to meet a pH range of between 6.0 and 11.0 S.U. (the pH level of the main supply well is already over 9.0 S.U.). The pH level is Monitor & Report (M&R) for the flow discharged into the ponds since this water is not reclaimed. The groundwater limit for domestic wastewater treatment systems is changed from Nitrate as N to Total Nitrogen as N (10 mg/l), monitored at MW-4 (MW-3 is abandoned). The Profile 1 Analysis includes the NDEP priority pollutant metals (heavy metals) and is requested annually for the refinery wastewater discharge and all seven wells. Tungsten is not included with the priority pollutants metals list in Profile 1 and is requested quarterly on the refinery wastewater flow and annually on the monitoring wells. The allowable (maximum) primary liner leakage rate of 50 gals/day-acre applies for the four lined evaporation ponds storing process wastewater. As of the last inspection three years ago, NDEP had noted dry leak detection sumps. The carbocoke impoundment stores a solid waste and any accumulated leachate (e.g., incident precipitation) from the collection sump is M&R (report gallons collected). The water surface area of the four wastewater ponds is: Ponds #1-2, 0.64 acre/ea; Pond #3, 1.25 acres; and Pond #4, 2.0 acres. The bottom basin surface area of the carbocoke impoundment is 1,200 ft<sup>2</sup> (0.03-acre).

**Proposed Effluent Limitations and Special Conditions:****Table 1: Discharge Limitations**

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
<b>001</b> – Total Flow, GPD	80,000	M&R	Continuous	Flow Meters
<b>001A</b> – Reuse Flow, GPD	M&R	35,000	Each Load	Volume loaded into Water Trucks
<b>001</b> – Total Flow, Profile 1 Analysis	M&R (All Parameters)		Annually (4 <sup>th</sup> Quarter)	Discrete
<b>001</b> – Total Flow, Tungsten (mg/l)	M&R		Quarterly	Discrete
<b>001A</b> – Reuse Flow, pH (S.U.)	Within 6.0 to 11.0		Monthly	Discrete
<b>001B</b> – Pond In-Flow, pH (S.U.)	M&R		Monthly	Discrete
<b>001C</b> – Oil Water Separator (OWS) Flow, Oil & Grease (mg/l)	M&R		Quarterly	Discrete
Ponds #1-4, Freeboard (feet)	≥ 2.0		Monthly	Pressure Transducer
Ponds #1-4, Primary Liner Leakage Rate (gal/day-acre)	≤ 50		Monthly	Field Measurement
Carbocoke Impoundment, Leachate Accumulation Rate (gallons accumulated)	M&R		Monthly	Field Measurement

1. **001** – Total wastewater flow discharged into the ponds and/or water trucks.
2. **001A** – Wastewater flow discharged for dust abatement (reuse).
3. **001B** – Wastewater flow discharged into the ponds for evaporation.
4. **001C** – OWS effluent discharged into the ponds for evaporation.

**Table 2: Groundwater Monitoring (MW-1, MW-2, & MW-4 through MW-8)**

PARAMETER	GROUNDWATER LIMITATIONS		MONITORING REQUIREMENTS	
	Sample Location	Daily Maximum	Daily Maximum	Sample Type
TDS, mg/L	Each Well	M&R	Quarterly	Discrete
Chlorides, mg/L	Each Well	M&R	Quarterly	Discrete
Nitrate as N, mg/L	MW-4	M&R	Quarterly	Discrete
Total Nitrogen as N, mg/L	MW-4	10.0	Quarterly	Discrete
Depth to Groundwater, ft	Each Well	M&R	Quarterly	Field Measurement
Tungsten, mg/l	Each Well	M&R	Annually (4 <sup>th</sup> Quarter)	Discrete
Profile 1 Analysis	Each Well	M&R	Annually (4 <sup>th</sup> Quarter)	Discrete

**Table 3: Septic System Requirements**

OUTFALL	DESCRIPTION	INSPECTION FREQUENCY
Main Septic	8,000 gallon capacity	Biennially (LCSS Form)
Change House Septic	1,000 gallon capacity	Biennially (LCSS Form)

**Schedule of Compliance (SOC):** The Permittee shall submit the following items to the Division for review and approval (**all compliance deliverables shall be addressed to the attention of the Compliance Coordinator, Bureau of Water Pollution Control**). For the permit renewal, two SOC compliance items are requested. First, the facility is requested to update its O&M Manual in accordance with NDEP guidance document WTS-2 (e.g., to update on the carbocoke impoundment). Second, the age of the pond liners (e.g., 17 yrs – Pond #4 and older for Ponds #1-3) indicates the need for an engineer's evaluation and sludge depth buildup analysis to determine the remaining lifespan for sludge (salt) storage. Previous data from Kennametal, Inc. suggested a solids accumulation rate of up to 3/4-inch per year in the ponds.

- Within ninety (90) days of the date of permit issuance (renewal), the Permittee shall provide an updated copy of the Operations & Maintenance (O&M) Manual, prepared following the guidelines in the Division's WTS-2 guidance document: *Minimum Information Required for an Operation and Maintenance Manual for a Wastewater Treatment Plant*.

- Within one hundred and eighty (180) days of the permit issuance date, the Permittee shall submit an engineer's (Nevada P.E.) inspection report documenting the liner condition for the four evaporation ponds. This report shall include a measurement of the sludge (solids) accumulation in the four ponds to determine their useful operating lifespan.

**Procedures for Public Comment:** The Notice of the Division's intent to issue (renew) the proposed water pollution control discharge permit for a period of five (5) years, subject to the conditions contained within the permit is being sent to the **Lahontan Valley News** and **Reno Gazette-Journal** newspapers for publication. The notice is also being electronically mailed to interested persons on our public notification mailing list. Anyone wishing to comment on the proposed permit can do so in writing within a period of thirty (30) calendar days of 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 **Monday, November 9, 2009, by 5:00 P.M. PST.**

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.

**Proposed Determination:** The Division has made the tentative determination to issue (renew) the proposed water pollution control discharge permit to Kennametal, Inc. for a period of five (5) years.

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