

## COMPLIANCE EVALUATION REPORT

Nevada Division of Environmental Protection  
Bureau of Water Pollution Control

FACILITY PERMIT: Kerr-McGee Chemical LLC – NV0000078

FACILITY DESCRIPTION: Manufacturer of manganese dioxide, boron trichloride & boron

OUTFALLS: 001 – Stormwater & non-contact water to Las Vegas Wash  
002 – Stormwater & non-contact water to Las Vegas Wash  
003 – Stormwater to Las Vegas Wash

FACILITY LOCATION: 8000 West Lake Mead Drive  
BMI Complex, Henderson, Nevada  
Latitude: 36° 02' 32"N, Longitude: 115° 00' 17"W  
Elevation: 1,812 ft. above sea level

DATE OF INSPECTION: Tuesday, March 1, 2005

ATTENDEES: Mark Kaminski, P.E.  
Darrell Rasner, P.E.  
Dan Smeltzer  
Susan Crowley, Kerr-McGee

CURRENT DISCHARGE: 3/1/05 – 0 stormwater flow

PERMITTED QTY: M&R

DATE OF REPORT: April 4, 2005

## FACILITY OVERVIEW

Kerr-McGee operates an electrochemical manufacturing facility located in the Basic Management Incorporated (BMI) Industrial Complex. The facility currently manufactures manganese dioxide, boron trichloride and boron. In 1967, Kerr-McGee took over ammonium perchlorate production at this facility. Perchlorate was formerly manufactured in BMI Units #3, 4 and 5. Process leaks at these units and the discharge of wastewater to unlined evaporation ponds have contaminated the soil and groundwater at this site with perchlorate salt contamination.

Discharges covered by this permit include non-contact, once-through cooling water, stormwater runoff, and pipeline leakage from the Lake Mead water supply pipeline. The raw water supply line was installed in the 1940's at the BMI complex.

## DISCHARGE MONITORING REPORTS

The prior compliance inspection was held on 4/7/04. For that inspection, the DMR review was current through 1<sup>st</sup> quarter 2004. DMR results for 2<sup>nd</sup> through 4<sup>th</sup> quarters of 2004 are presented below in Tables 1-6. No discharge was made during that period from Outfall 003. Leaks and runoff occur intermittently. Discharge events are individually sampled over a 24-hr period. If two values are reported for one parameter in the tables below, separated by a /, the first value represents the numerical average. The second value represents the daily maximum for that month.

The discharge from Outfalls 001-002 consists of non-contact cooling water leaks and stormwater runoff. Over these three quarters, 12.4 million gallons of total water was discharged. The background level of perchlorate in the untreated raw water supply (Lake Mead) ranges from 6 to 24 ppb. Rainfall contains negligible perchlorate prior to ground contact. The facility reports perchlorate levels in their discharge ranging from tens of parts per billion to several parts per million. The perchlorate increase is likely from the leaching of perchlorate salt from the surrounding soil by either water leaks or runoff. The discharge from Outfalls 001 and 002 is monitored but not treated.

Table 1 – Outfall 001 (non-stormwater)

	<b>Flow (MGD)</b>	<b>pH (S.U.)</b>	<b>Max T (°C)</b>	<b>TDS (#/day)</b>	<b>ClO<sub>4</sub> (mg/l)</b>
Apr 04	.01 / .09	8.1 – 8.6	25 / 26	0.4 / 4	0.064 / .14
May 04	0	-	-	-	-
June 04	0	-	-	-	-
July 04	0	-	-	-	-
Aug 04	2.971 / 5.739	7.6 – 7.8	24	842 / 916	.014 / .23
Sep 04	0	-	-	-	-
Oct 04	0.04 / 0.1	8.2	17 / 19	21 / 59	0.06
Nov 04	0.004 / 0.004	8.0	17 / 18	13.8	0.27
Dec 04	0.136 / 0.62	7.9	16 / 17	< 0.01	0.18
2004 YTD				3.17 TONS	
Limits	M&R	6.5 – 9.0	33 / 37° C	1,000 #/day (175 TPY)	M&R

Table 2 – Outfall 001 (stormwater)

	Flow (MGD)	pH (S.U.)	TSS (mg/l)	O&G (mg/l)	COD (mg/l)	NO <sub>3</sub> + NO <sub>2</sub> (mg/l)	NH <sub>3</sub> (mg/l)	P (mg/l)	TDS (mg/l)	ClO <sub>4</sub> (mg/l)
Apr 04	.08 / .134	9.3	800	6	150	1.3	0.44	1.1	270	0.25
May 04	0	-	-	-	-	-	-	-	-	-
June 04	.013	8.1	72	49	520	7.9	2.38	0.17	880	.05
July 04	0	-	-	-	-	-	-	-	-	-
Aug 04	0	-	-	-	-	-	-	-	-	-
Sep 04	0	-	-	-	-	-	-	-	-	-
Oct 04	.03 / .052	7.7 – 8	20 / 22	ND	57 / 68	1.4	ND	0.8 / 1.6	560 / 790	0.27 / 0.46
Nov 04	.06 / 0.16	8.3 – 9	30 / 40	ND	40 / 42	0.46 / 0.59	0.1 / 0.12	0.25 / 0.47	297 / 550	0.2
Dec 04	.34	9	ND	ND	43	1	0.37	0.14	200	0.52
Limits	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R

Table 3 – Outfall 002 (non-stormwater)

	Flow (MGD)	pH (S.U.)	Max T (°C)	TDS (#/day)	ClO <sub>4</sub> (mg/l)
Apr 04	0	-	-	-	-
May 04	< .001	7.6	25 / 27	0.7 / 2.7	0.22
June 04	0	-	-	-	-
July 04	0	-	-	-	-
Aug 04	.005 / .012	7.7 – 7.8	24	3.1 / 8.7	0.585 / 1.5
Sep 04	< .001	7.7	26	1	0.18
Oct 04	0	-	-	-	-
Nov 04	0.001	8	17 / 18	1.1	0.19
Dec 04	0	-	-	-	-
2004 YTD				.03 TONS	
Limits	M&R	6.5 – 9.0	33 / 37°C	1,000#/day (175 TPY)	M&R

Table 4 – Outfall 002 (stormwater)

	Flow (MGD)	pH (S.U.)	TSS (mg/l)	O&G (mg/l)	COD (mg/l)	NO <sub>3</sub> + NO <sub>2</sub> (mg/l)	NH <sub>3</sub> (mg/l)	P (mg/l)	TDS (mg/l)	ClO <sub>4</sub> (mg/l)
Apr 04	.003 / .004	7.5	72	5	100	0.84	0.97	0.34	400	1.3
May 04	0	-	-	-	-	-	-	-	-	-
Jun 04	.004	8.1	20	50	260	7.1	2.32	0.03	1,560	5.7
July 04	0	-	-	-	-	-	-	-	-	-
Aug 04	0	-	-	-	-	-	-	-	-	-
Sep 04	0	-	-	-	-	-	-	-	-	-
Oct 04	.006 / .011	7.7 – 8	18 / 24	ND	58 / 63	0.4 / 0.48	0.06	0.5	840 / 850	2.5 / 4.0
Nov 04	.019 / .039	7.5 – 8	94 / 220	2 / 6	51 / 78	1.5 / 3.3	0.3 / 0.59	0.53 / 0.86	2,743 / 6,390	1.4 / 3.0
Dec 04	.216 / 0.432	7.8 – 8	ND	ND	22	1.6	.11	.11	660	2
Limits	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R	M&R

Table 5 – Outfall 003 (stormwater)

	Flow (MGD)	pH (S.U.)	SO <sub>4</sub> (mg/l)	TDS (mg/l)	ClO <sub>4</sub> (mg/l)	Mn (mg/l)
Apr 04	0	-	-	-	-	-
May 04	0	-	-	-	-	-
June 04	0	-	-	-	-	-
July 04	0	-	-	-	-	-
Aug 04	0	-	-	-	-	-
Sep 04	0	-	-	-	-	-
Oct 04	0	-	-	-	-	-
Nov 04	0	-	-	-	-	-
Dec 04	0	-	-	-	-	-
Limits	M&R	M&R	M&R	M&R	M&R	M&R

Table 6 – Flow Totals (2<sup>nd</sup> thru 4<sup>th</sup> quarters of 2004)

Outfall	Non-Storm Flow (1,000 gals)	Storm Flow (1,000 gals)	Total Flow (1,000 gals)
001	10,667	1,151	11,818
002	46	567	613
003	0	0	0

## FINDINGS OF WALKTHROUGH INSPECTION

Susan Crowley, Environmental Specialist escorted NDEP staff at the production facility and out to the Las Vegas Wash outfalls.

Outfall 001: This outfall collects non-contact, once-through cooling water, process water pipeline leaks and stormwater runoff from the area of Units #1-3, the west ½ of Unit #4 and the Administration Building. A section of water supply pipeline that was recently excavated to make repairs was pointed out near this outfall. The supply pipeline dates to the 1940's. Outfall 001 discharges through the Beta and Alpha ditches. An ultrasonic device measures flow. An ISCO unit collects composite samples. During this inspection, the weather was sunny and no stormwater was being discharged.



Fig. 1 – Supply Pipeline Excavation and Repair



Fig. 2 – Decommissioned Process Unit



Fig. 3 – Outfall 001 Manhole

Outfall 002: This outfall collects non-contact, once-through cooling water, process water pipeline leaks and stormwater runoff from the east ½ of Unit #4 and Units #5-6. Outfall 002 is located at the property line bordering Kerr-McGee and TIMET. Curbing and physical barriers separate the two facilities to avoid commingling flow. Outfall 002 discharges to the Beta ditch. An ultrasonic device measures flow. An ISCO unit collects composite samples.



Fig. 4 – Outfall 002 Manhole

Outfall 003: Outfall 003 is an earthen ditch designed to carry runoff from major storm events falling on the manganese dioxide tails storage area. Normally, incident precipitation infiltrates onto the manganese dioxide tails storage area. The tailings piles are bermed to contain most storm events. This outfall did not discharge runoff last year off the property according to the DMR reports. Stormwater samples must be obtained manually (discrete). Outfall 003 discharges to the Beta ditch.



Fig. 5 – Outfall 003 (earthen ditch)

Las Vegas Wash: After touring the Kerr-McGee BMI facility, we drove out to inspect the outfalls at the wash in Henderson. The first outfall (Fig. 6) discharges treated effluent from the perchlorate bioreactor facility at BMI. The second outfall (Fig. 7) carries flow from the Pittman Bypass Pipeline. This pipeline discharges non-contact, once-through cooling water, stormwater runoff, and pipeline leakage from the Pioneer Americas, TIMET and Kerr-McGee facilities at BMI.



Fig. 6 – Treated Perchlorate Effluent (Las Vegas Wash)



Fig. 7 – Pittman Bypass Pipeline (Las Vegas Wash)

### INSPECTION FINDINGS & RECOMMENDATIONS

1. Kerr-McGee needs to post Outfalls 001 and 002 on its property with “No Dumping Allowed” or similar advisory language.
2. NDEP recommends that Kerr-McGee or the BMI property manager post the outfalls in Figures 6-7 at the wash with language to advise the general public that the discharged water is non-potable.
3. The DMR data indicates an increase in the perchlorate level over the background concentration observed in the raw water supply and incident precipitation. Please prepare a mass balance for calendar year 2004, which estimates the lbs/yr of perchlorate discharged from Outfalls 001 and 002 for both stormwater and non-stormwater events.