

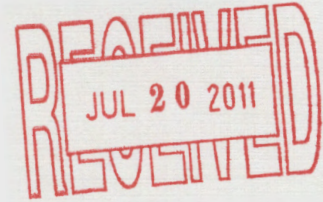
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July 19, 2011

EL DORADO

CHEMICAL COMPANY



Mary Barnett, Ecologist  
Water Division  
Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR. 72118-5317

Re: 2<sup>nd</sup> Qt 2011 Activities Report, Outfalls 006 and 007 TRE  
El Dorado Chemical Company  
NPDES Permit # AR 00000752; AFIN 70-00

Dear Ms. Barnett:

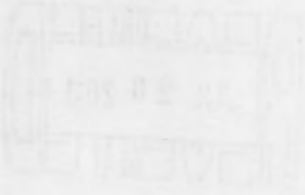
As required by the Storm Water Toxicity Reduction Evaluation (TRE) Plan for Outfalls 006 and 007 – rev2.0 (dated January 25, 2011) and in accordance with ADEQ's approval dated January 27, 2011, this letter provides the quarterly activities report.

TRE activities completed during the period from April 1, 2011 through June 30, 2011 include:

- 1) Continued the baseline whole effluent toxicity (WET) testing and analytical chemistry on a monthly basis when discharge occurred (there was no discharge during June 2011). The WET testing dilution series included the proposed new critical dilutions for Outfall 006 and 007, 22% and 50%, respectively. The proposed new critical dilutions are based on the site specific flow study submitted to, and approved by ADEQ;
- 2) Continued the assemblage and tracking of facility discharge data, including flow, total suspended solids (TSS), ammonia nitrogen (NH<sub>3</sub>-N), total dissolved solids (TDS), cadmium (Cd), Lead (Pb), Zinc (Zn), sulfate (SO<sub>4</sub>), and pH as they may relate to the WET; and
- 3) Completed treatment of watersheds using lime to increase soil acidity which results in low pH of storm waters discharged from the respective watersheds.

Additional details of the completed activities are provided below:

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## Continued the Routine Baseline Toxicity Testing and Associated Analytical Chemistry

During this reporting period (April and May 2011), the routine WET tests were completed monthly at the 1<sup>st</sup> storm event of each month. There was no discharge during the month of June 2011; therefore, there was no WET testing completed for June 2011. The monthly WET tests results are summarized in the following table:

Date of test	Outfall 006		Outfall 007	
	NOEC		NOEC	
	Water flea	Fathead minnow	Water flea	Fathead minnow
April 2011	56%	42%	<32%	<32%
May 2011	75%	56%	<32%	<32%
June 2011	NA	NA	NA	NA

Shaded cells indicate the WET tests that passed at the proposed new critical dilutions (006 at 22% and 007 at 50%) reflecting site runoff to the receiving stream as developed by the ADEQ approved flow study. NA= no discharge from 006 and 007 during June 2011.

### April 2011 Tests Results

The April WET test results were submitted to ADEQ along with the April DMR. The April 2011 tests demonstrated variable results. Both tests (Outfall 006 and 007) failed at the maximum exposure of 100% effluent, however, the No Observed Effect concentration (NOEC) was different between outfalls.

**Outfall 006.** Although the outfalls are adjacent sub-watersheds, Outfall 006 effluent passed all WET tests endpoints with NOEC concentrations greater than the proposed critical dilution of 22% percent effluent dilution. In contrast, Outfall 007 failed the WET tests during this reporting period with NOEC concentrations less than the proposed critical dilution (50% effluent).

The details of each of the WET tests were evaluated to determine if a potential cause for the test results could be identified. The preliminary assessment of the April WET tests analytical data indicate that elevated ammonia concentrations may have contributed to the demonstrated results.

**Outfall 007.** The analytical details of the Outfall 007 WET testing did not indicate a potential cause for the results of the April 2011 tests where the NOEC was less than 32% effluent.

### May 2011 WET Tests Results

The May WET test results were submitted to ADEQ along with the May DMR. Like the April 2011 tests, the Outfalls 006 and 007 May 2011 WET tests demonstrated distinctly different WET test signatures despite failing at the 100% effluent exposure.

**Outfall 006.** Although all tests failed the acute WET test in the 100% effluent (the default critical dilution in the existing NPDES permit), the Outfall 006 effluents passed the WET test at the site specific critical dilution (22%) with a 75% NOEC for the water flea and a 56% NOEC for the fathead minnow. The May results reflected improved response when compared to the April WET test results.

**Outfall 007.** The Outfall 007 WET tests also failed at the 100% exposure and, unlike Outfall 006, failed to demonstrate improved performance when compared to the April WET test performance. A detailed assessment of the Outfall 007 May WET tests did identify a potential cause for the test failure as the reduced pH of the effluent.

Although the pH of the effluent measured 6.92su at the time of the discharge and sample collection (1510 hours on May 2, 2011), the pH reported for the effluent sample 24 hours later (1545 hours on May 3, 2011) at the WET testing lab was reduced to 4.2su. The pH drift is a common occurrence in samples collected for WET testing; however, the magnitude of the drift demonstrated in this instance is unique. It is possible that the change in the pH was a result of the soil/sediment in the storm water sample. The TSS of the sample (230mg/L), was high, indicating a large sediment/soil load in the storm water sample. This sediment/soil load continued to decrease the pH of the storm water sample after collection and as the sample was held for 24 hours until the pH was again measured in the WET testing lab. (Note: all measurements were made using meters routinely calibrated, so it is assumed that the measured pH values are accurate at the time the pH values were measured.)

Review of the analytical chemistry completed in conjunction with the Outfall 007 May WET tests indicates that the pH of the Outfall 007 effluent sample was reported to be 4.2 su upon arrival at the WET testing laboratory. The pH of the 007 effluent was sufficient to cause the measured WET test results. This was confirmed by the WET testing lab. A 50% effluent sample (the proposed critical dilution for Outfall 007) was pH adjusted to 7.5 su, and included in the WET test exposures. This pH adjusted exposure resulted in survival of 100% and 72.5%, for the fathead minnow and the water flea, respectively. Although the source/cause of the reduced pH has not been ascertained, future TRE activities will include source investigations to identify the source/cause and implement a corrective action.

### **Facility Discharge Data**

In addition to the routine WET testing, collection of additional facility information continues. This information includes, but is not limited to, facility operations, chemical use data, tracking of internal housekeeping records and documentation of activities within the individual outfall sub-basins.

### **Treatment of Watershed Soils**

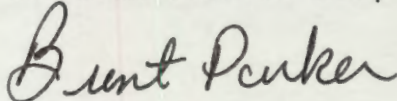
As a routine practice during the TRE, the Outfall 006 and Outfall 007 storm water ditches are checked two to three times per week after storm events as long as residual storm water is present in drainage ditches. Results of this monitoring have demonstrated that the pH of the residual storm waters in these drainage ditches are approximately 6 su. In response to the pH of the effluents as measured during March and April 2011, lime was applied with a broadcast spreader to the 006 and 007 watersheds during May and June 2011. The watersheds of 006 and 007 are approximately two to three acres. In an attempt to adjust the soil pH, 1.5 tons of pellet lime was applied to the watershed with the intent to raise the soil pH 1 to 1.5 su. This was a conservative application to ensure that the pH would not exceed the upper bounds of the pH limit (9.0 su) during a storm event discharge. Since there was no discharge in June, the success of the lime application has not yet been determined.

### **Future Activities**

Activities planned for the 3<sup>rd</sup> Qt 2011 include continuation of the routine monthly storm water WET testing, continued monitoring of effluent constituents, tracking of site storm data (duration and magnitude), and discharge volumes. In addition, the assemblage of facility data, including the monitoring of routine storm water discharge data with particular attention to facility conditions during the WET monitoring periods, will continue. Should the WET tests continue to fail at dilutions less than the proposed site specific critical dilutions (i.e., 22% for Outfall 006 and 56% for Outfall 007); additional TIE efforts will be implemented to identify the cause(s) of the WET test failures.

Please do not hesitate to contact me if you have any questions or require additional information regarding the implementation of the Outfall 006/007 TRE.

Respectfully submitted,  
El Dorado Chemical Company



Brent Parker

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