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October 29, 2012

EL DORADO
CHEMICAL COMPANY

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

Re: 3rd Quarter 2012 Activities Report, Outfalls 006 and 007 TRE
El Dorado Chemical Company
NPDES Permit # AR 00000752; AFIN 70-00040

Dear Ms. Barnett:

As required by the Storm Water Toxicity Reduction Evaluation (TRE) Plan for Outfalls 006 and 007 – rev 2.0 (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 July 1, 2012 through September 30, 2012 include:

1) Continued the baseline whole effluent toxicity (WET) testing and analytical chemistry on a monthly basis when discharge occurred. In addition to the current critical dilutions of 100 % effluent and the current 0.75 dilution series, the WET testing dilution series included the approved new critical dilutions for Outfall 006 and 007. These new critical dilutions are 22 % and 50 %, respectively. The new critical dilutions are based on those developed through 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_3-N), total dissolved solids (TDS), Cadmium (Cd), Lead (Pb), Zinc (Zn), and pH as they may relate to the WET;

3) Continued lime applications to increase alkalinity of watershed soils with the objective of increasing the buffering capacity of the watershed and to counteract the low pH of storm waters generated within the respective watersheds; and

4) Continued efforts to transfer flows out of Outfall 006 and 007 watersheds into the Outfall 001 wastewater treatment system.

Additional details of the completed activities are provided below.

Continued the Routine Baseline Toxicity Testing and Associated Analytical Chemistry

During this reporting period (July 1, 2012 through September 30, 2012), the routine WET tests were completed monthly at the first storm event of each month. Since the WET test reports have been or will be submitted to ADEQ under separate cover with the DMRs for the period, the full reports are not attached to this status report. The WET testing completed during the 3rd Quarter 2012 is summarized in the following table. Historical results for the previous TRE reporting periods are provided for comparison.

Date of test	Date of Sample collection	Storm event (inches)	Outfall 006			Outfall 007		
			Discharge MGD	NOEC % Effluent		Discharge MGD	NOEC % Effluent	
				Water flea	Fathead minnow		Water flea	Fathead minnow
July 25-27,2011	7/24/11	0.36	1.034	100	100	1.299	100	32
August 15-18, 2011	8/14/11	0.41	0.044	100	100	0.262	<32	<32
August 25-28, 2011	8/24/11	1.37	0.677	<22	100	0.608	<50	<32
Sept. 24-26,2011	9/23/11	0.73	0.073	75	100	0.365	<32	<32
Oct. 19-21, 2011	10/18/11	0.40	0.2598	100	100	0.9177	75	100
Nov. 9-11, 2011	11/8/11	0.45	0.5752	<32	32	1.299	<32	<32
Dec. 5-8, 2011	12/4/11	1.0	0.4007	NA**	100	0.7562	NA**	100
Dec.18-20, 2011	12/15/11	0.30	0.2598	22	NA	0.1797	<50	NA
Jan.10-12, 2012	1/9/2012	0.8	0.3257	100	100	0.4783	42	56
Feb. 4-6, 2012	2/4/2012	0.5	0.0224	75	100	0.0575	56	56
Mar. 9-12, 2012	3/8/2012	2.3	1.6610	100	100	4.369	100	100
April 3-5, 2012	4/2/2012	0.5	0.1512	100	100	0.2618	75	32
May 15, 2012*	NO DISCHARGE related to storm event							
June 13, 2012**	6/12/2012	0.7	0.0224	<100	<100	0.0575	<100	<100
July 11-13, 2012	7/10/2012	0.6	0.044	100	100	0.1797	<32	<32
August 19-21, 2012	8/18/2012	1.2	0.073	75	75	0.1797	<32	75
Sept. 9-11, 2012	9/08/2012	2.4	0.1512	100	100	0.1797	50	56

Shaded cells indicate the WET tests that passed at the 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.
*May 2012 discharge occurred through Outfall 007 resulting from fire control efforts after May 15, 2012 facility explosion, no WET test testing completed at direction of ADEQ.
** June 2012 Test: 100 % effluent was only test dilution due to limited organisms at testing facility,

Collectively, the WET tests completed on the discharge through Outfall 006 typically pass with a No Observed Effect Concentration (NOEC) of 100 % effluent (20 of 30 tests). The Outfall 006 WET tests have passed with a NOEC above 22 % (the new critical dilution) 87 % of the time (26 of 30 tests) since the TRE was initiated in July

2011. However, the Outfall 007 effluent passes WET testing at the new critical dilution (50 % effluent) in less than one-half of the WET tests completed since the TRE was initiated.

Although there have been some WET test failures at the maximum dilution of 100% effluent, the WET tests results are not consistent as indicated by:

- the fathead minnow having passed 14 of 15 Outfall 006 WET tests;
- the water flea having passed 12 of 15 Outfall 006 WET tests;
- the fathead minnow having passed 7 of 15 Outfall 007 WET tests; and
- the water flea having passed 7 of 15 Outfall 007 WET tests.

Also, as indicated by the summary table above, efforts by the facility to improve quality of the storm water effluents through Outfall 006 and Outfall 007 has resulted in improved WET test performance when comparing the results of 2011 to 2012. As indicated by NOEC results, 2011 had a combined 11 failed WET tests in 6 months while 2012 has had nine failed WET tests in a nine month period.

A summary of the individual monthly WET tests results for Outfall 006 and Outfall 007 completed during the course of the 3rd Quarter 2012 is provided below. The WET tests completed during this reporting period consistently passed the approved new critical dilutions, passing all six Outfall 006 measured endpoints and three of the six Outfall 007 WET tests. The details of each of the WET tests were evaluated to determine if a potential cause for the test results could be identified. The review of the individual WET tests did not identify a consistent pattern of response or a direct cause for the reduced NOECs during this reporting period.

July 2012 WET Tests Results

The July 2012 WET tests were completed on discharge resulting from a 0.6 inch storm event on July 10, 2012. The flows measured at the time of sample collection (within 30 minutes of first discharge) were 0.04 mgd and 0.18 mgd through Outfall 006 and Outfall 007, respectively. The July 2012 WET testing passed two (2) of the four (4) monitored endpoints in the maximum exposure (100 % effluent), having passed both Outfall 006 WET tests but failing both the Outfall 007 WET tests. The July 2012 WET test results were submitted to ADEQ along with the July DMR.

Outfall 006. Outfall 006 effluent passed both tests in the 100 % exposure. The NOEC concentrations (100 % effluent) were greater than the approved new critical dilution of 22 % effluent. The July 2012 WET tests demonstrated improved WET test performance when compared to the results of the June WET test. The WET test analytical chemistry reported a pH of 6.7 su to 7.3 su, conductivity ranged from 1029 uS to 1100 uS, and the dissolved oxygen ranged from 7.7 mg/L to 8.4 mg/L. All these parameters were within typical ranges for the discharge.

Outfall 007. Outfall 007 effluent failed both tests in 100 % exposure. The NOEC concentrations were less than 32 % effluent. The July 2012 WET tests demonstrated reduced WET performance when compared to the results of the previous month.

The low dissolved oxygen demonstrated in previous WET test failures did not occur during the July 2012 WET testing, therefore dissolved oxygen levels did not seem to be an issue in the 3rd Quarter 2012 WET tests.

The conductivity was elevated in the July 2012 samples from both the Outfall 006 and the Outfall 007 watersheds. (Note: The lime application occurred within 24 hours prior to the storm event that generated the discharge and likely contributed to the elevated conductivity in both watersheds).

August 2012 WET Tests Results

The August 2012 WET tests were completed on discharges resulting from a 1.2 inch storm event on August 18, 2012. The flow measured at the time of sample collection (within 30 minutes of discharge) was 0.07 mgd and 0.18 mgd through Outfall 006 and Outfall 007, respectively. The August 2012 acute WET testing passed three (3) of four (4) of the monitored endpoints with a NOEC of 75 %. This surpassed the new approved critical dilution for both species in Outfall 006 and for the fathead minnow in Outfall 007 (failing only the Outfall 007 water flea exposure). The August 2012 WET test results were submitted to ADEQ along with the DMR for the period.

Outfall 006. Outfall 006 effluent passed both tests in the 75 % exposure. The NOEC concentration was greater than the approved critical dilution of 22 % effluent. The effects of lime treatment in the watershed during the 3rd Quarter 2012 were reflected in the pH of the storm runoff that ranged from 6.7 su to 7.3 su.

Outfall 007. Outfall 007 effluent passed the fathead minnow WET test in 75 % dilution. The NOEC concentration was greater than the pending approved new critical dilution of 50 % effluent. The effects of lime treatment in the watershed during the 3rd Quarter 2012 were reflected in the pH of the storm runoff that ranged from 6.1 su to 7.6 su as measured during the WET testing. The August fathead minnow WET tests demonstrated improved WET performance when compared to the results of the previous month. The water flea WET test failed with an NOEC of <32 % effluent.

The low dissolved oxygen demonstrated in previous WET test failures was not an issue with the 3rd Quarter 2012 WET tests. Therefore, dissolved oxygen levels did not present as an issue in the August 2012 WET tests.

The conductivity continued to be elevated and may reflect the lime application in the watersheds which occurred within 24 hours prior to the discharge event. The range of conductivities measured were 1346 uS to 1535 uS.

September 2012 Test Results

The September 2012 WET tests were completed on discharges resulting from a 2.4 inch storm event on September 8, 2012. The flows measured at the time of sample collection (within 30 minutes of discharge) were 0.15 mgd and 0.18 mgd through Outfall 006 and Outfall 007, respectively. The September 2012 WET testing passed all four (4) of the monitored endpoints with NOECs surpassing the approved new critical dilutions for both Outfall 006 and Outfall 007. The September 2012 WET test results were submitted to ADEQ along with the DMR for the period.

Outfall 006. Outfall 006 effluent passed both tests in 100 % exposure. The NOEC concentration was greater than the approved new critical dilution of 22 % effluent. The September 2012 WET tests demonstrated improved WET performance when compared to the results of the previous month.

Outfall 007. Outfall 007 effluent passed the fathead minnow in 56 % dilution. The NOEC concentration was greater than the approved new critical dilution of 50 % effluent and passed the water flea endpoint with a 50 % NOEC, equal to the approved new critical dilution. The effects of lime treatment in the watershed during the 3rd Quarter 2012 were reflected in the pH of the storm runoff that ranged from 6.6 su to 7.4 su. The September 2012 Outfall 007 WET tests demonstrated both improved (water flea) and reduced (fathead minnow) WET performance when compared to the results of the previous month.

The low dissolved oxygen demonstrated in previous WET test failures was not an issue with the 3rd Quarter 2012 WET tests. The dissolved oxygen levels (7.9 mg/L to 8.4 mg/L) were not an issue in the August 2012 WET tests.

The conductivities measured during the September 2012 WET testing ranged from 3070 uS to 3470 uS. The conductivity continued to be elevated and may reflect the lime application in the watershed which occurred within 48 hours prior to the discharge event.

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.

There were 13 days with measurable storm events during the 3rd Quarter of 2012. The storm events ranged from 0.1 inch to 3.2 inches in a 24-hour period totaling 14.9 inches for the quarter. The frequency of discharges through the storm water outfalls during the

3rd Quarter of 2012 were increased when compared to the previous three month period. There was a minimum of four (4) discharge events during each month of the 3rd Quarter 2012.

In contrast, there were no measurable storm events during the month of May 2012 and one-quarter of the rain in the 2nd Quarter 2012 fell during a single event on April 15, 2012. The nine storm events during the 2nd Quarter 2012 resulted in a total of 7.9 inches of rainfall at the facility.

Treatment of Watershed Soils

The routine practice of monitoring the Outfall 006 and Outfall 007 storm water ditches after storm events as long as residual storm water is present in drainage ditches continues. Results of this monitoring have demonstrated that the pH of the residual storm waters in these drainage ditches are approximately 6 su.

In an attempt to increase the buffering capacity of soils in the watersheds, multiple applications of pelletized lime were applied during the 3rd Quarter of 2012. Pelletized lime continues to be applied to the watershed with the intent to stabilize pH fluctuation within a range of 1 su to 1.5 su. The increased conductivity as measured during the WET testing may be related to the lime application which occurred within 24-48 hours prior to the discharge events.

During the 3rd Quarter of 2012, there were a total of 24 lime applications (12 in the Outfall 006 watershed and 12 in the Outfall 007 watershed). Individual applications varied between one-half and one ton. A total of 8.5 tons were applied in the Outfall 006 watershed during the 3rd Quarter 2012 and 9 tons were applied in the Outfall 007 watershed.

Modifications to Watershed flows

For the past several years, EDCC has implemented measures to minimize surface runoff to Outfalls 006 and 007. Those measures have included construction of drainage swales, culverts and other means to reduce the drainage areas of those Outfalls and divert flow to the collection and treatment system that discharges through Outfall 001. These efforts have resulted in the continued improvement on the WET test performance as demonstrated in the summary table of the WET NOECs and as discussed above.
In addition, the modifications to the individual watersheds have reduced the volume of storm water discharged from each watershed on a per unit basis.

Future Activities

The WET test results during the 3rd Quarter 2012 demonstrated that the storm water discharge through Outfalls 006 and 007 meet and surpass the approved new critical dilutions for WET test compliance. However, in accordance with the TRE Plan, activities planned for the 4th Quarter 2012 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, EDCC will continue the assemblage of facility data, including the monitoring of routine storm water sources and discharge data with particular attention to facility conditions during the WET monitoring periods. Should the WET tests routinely fail (consecutive failures) at dilutions less than the new approved critical dilutions (i.e. 22 % for Outfall 006 and 50 % for Outfall 007), additional TRE efforts may 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

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