1R - 427-87

Annual GW Mon. REPORTS

DATE:

2010

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December 22nd, 2010

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: **Annual Report: OCD Case Number: 1R427-87**
Rice Operating Company – EME SWD System
H-20 SWD (UL H Sec 20 T 20S R 37E)

Sent via Certified Mail w/ Return Receipt No. 7008 1140 0001 3068 8715

Mr. Hansen:

This letter summarizes progress made over the past year pursuant to the NMOCD approved Corrective Action Plan for this site. The site is an active SWD produced water disposal facility operated by Rice Operating Company (ROC) in the EME field, located approximately 4 miles south of Monument, New Mexico (Figure 1).

Over the course of 2010 we continued to operate two bio-sparge wells, (BSP-1 and BSP-2; Figures 2 & 3) to facilitate the natural attenuation of benzene previously found in the at-source monitor well (MW-1). We also continued to monitor up and down-gradient monitor wells for chlorides and petroleum hydrocarbons (BTEX). The results of this work may be summarized as follows:

1. Benzene concentrations in the at-source monitor well (MW-1) were rather erratic in 2010 but ended up from 0.017 ppm in November 2009 to 0.074 ppm in November 2010 (Figure 4). We do not believe that this represents an upward trend but will watch this closely during 2011. Groundwater chloride concentrations in the at-source monitor well (MW-1) were relatively stable, oscillating around an average value of 1,300 ppm during 2010.
2. Groundwater chloride concentrations in the up-gradient monitor well (MW-2) have continued their previous upward trend, rising from 1,200 to 1,340 over the course of 2010 (Figure 5). This indicates that the groundwater flowing onto and across the subject site from up-gradient has become increasingly contaminated with respect to chloride.
3. The monitor well (MW-3) most directly down-gradient from the subject site exhibited were also rather erratic in 2010 but ended substantially unchanged from 2,050 in November 2009 to 2,150 ppm in November 2010. Again, we do not believe that this represents an upward trend but will watch this closely during 2011.
4. The off-center, down-gradient monitor wells (MW-4 and MW-5) exhibited slight increases in groundwater chloride concentrations in comparison with late 2009 levels (Figure 5). We will watch these closely during 2011 to determine if this represents a sustained, upward trend.

During the course of 2011 we plan to continue the operation of the solar-powered bio-sparge system and to continue the quarterly monitoring of groundwater for chlorides and BTEX. Please note that we plan to submit subsequent annual reports for this project in the same time frame as other, by April 1st of the following year, unless NMOCD requests otherwise.

ROC is the service provider (agent) for the EME Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The EME SWD System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Please do not hesitate to contact either myself or Rice Operating Company if you have any questions or need additional information.

Sincerely,

L. Peter Galusky, Jr. Ph.D.

Copy: Rice Operating Company

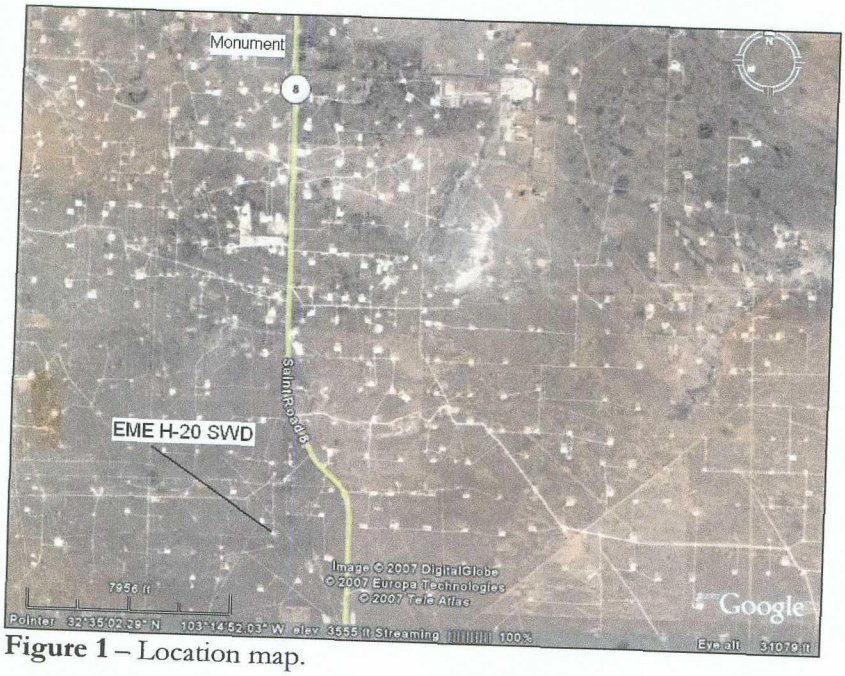

Figure 1 – Location map.

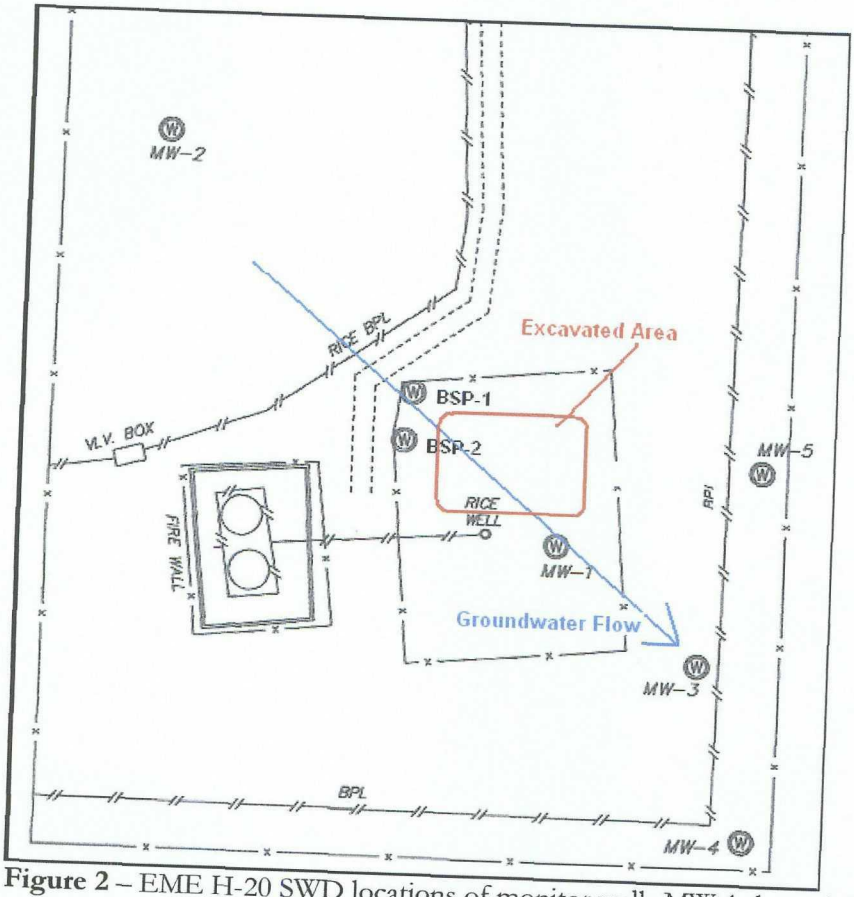

Figure 2 – EME H-20 SWD locations of monitor wells MW-1 through MW-5 and bio-sparge wells BSP-1 and BSP-2.

Figure 3a (above) – EME H-20 SWD solar powered bio-sparge system, view across system toward the southeast (in the direction of groundwater flow). **Figure 3b** (below) close-up view showing bio-sparge air injection wells looking toward the north.

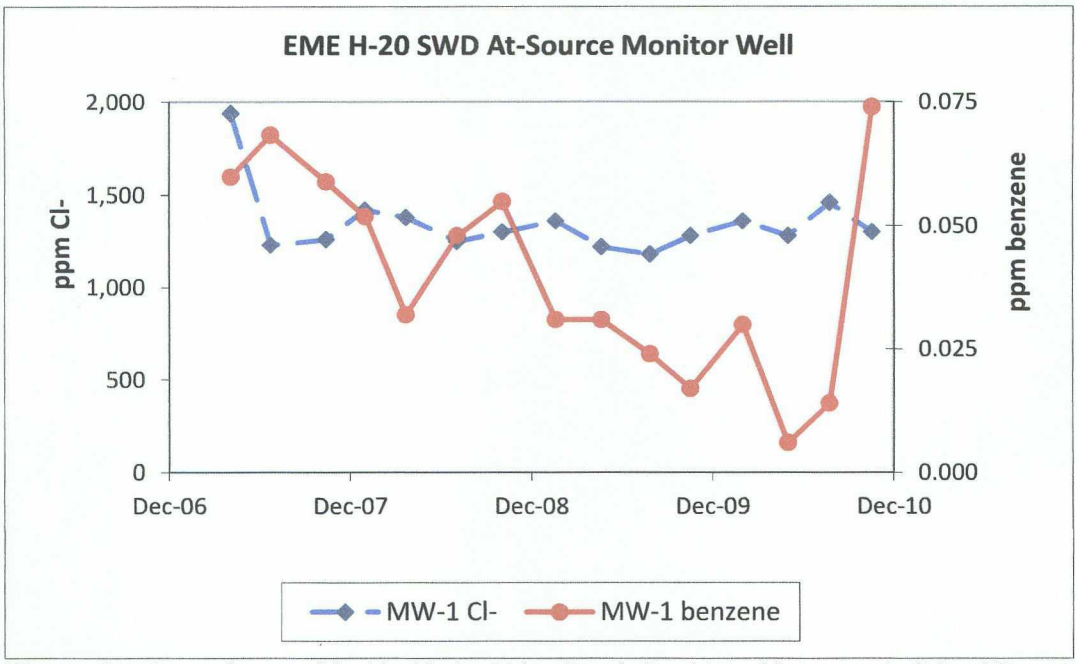

Figure 4 – Groundwater chloride (dashed blue line, left axis) and benzene (solid red line, right axis) concentrations in near-source monitor well (MW-1).

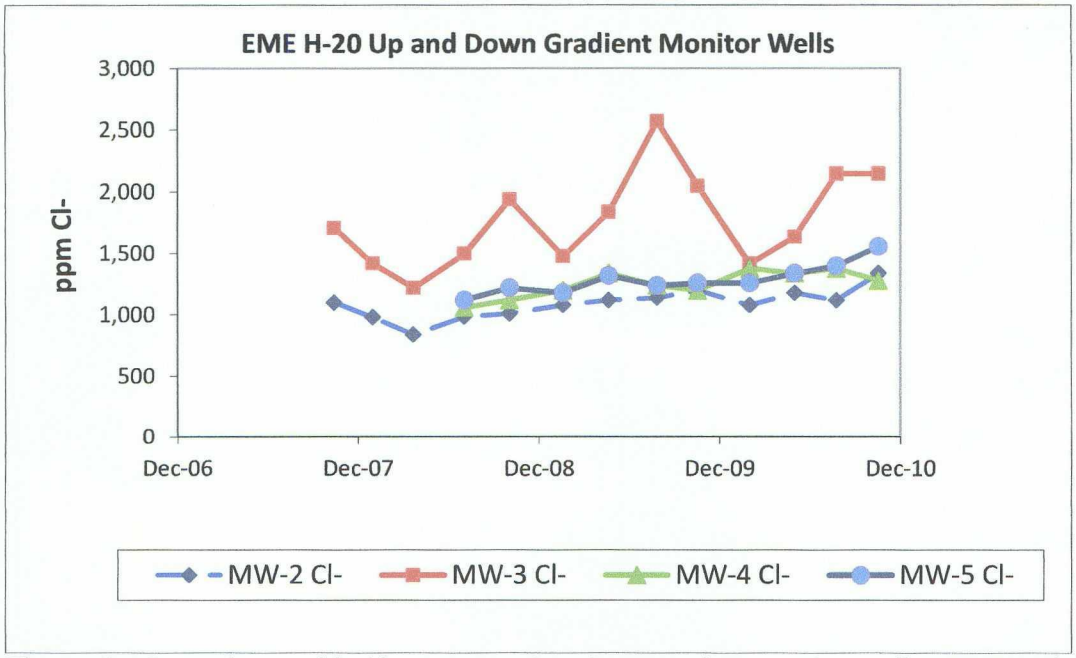

Figure 5 – Groundwater chloride concentrations in up-gradient monitor well (MW-2) and down-gradient monitor wells (MW-3, MW-4 and MW-5). See site map for monitor well location.