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**Annual GW Mon.
REPORTS**

DATE:

2007

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra

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March 19th, 2008

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**
Rice Operating Company – EME Vacuum System
Vacuum N-6-1 Junction Box, UL N Sec 6 T18S R35E
OCD Case Number 1R04709

Sent via E-mail and U.S. Certified Mail: Return Receipt No. 7007 0710 0003 0305 3910

Dear Mr. Hansen:

This letter summarizes the results of investigative work completed by Texerra from June, 2006 to the present, in accordance with the Investigation and Characterization Plan and a subsequent Corrective Action Plan, both of which were approved by NMOCD. This work evaluated the potential for groundwater contamination stemming from the operation of a former junction box, which was removed in 2004. A site location map is given in Figure 1.

Soils in the vicinity of the former junction box were found to be significantly impacted by chlorides, averaging approximately 996 ppm over the affected area (Figures 2 & 3). Although field soil vapor levels were detectable in some samples, laboratory analysis for BTEX was non-detectable.

Groundwater chloride concentrations in a near-source monitor well (MW-1) have had substantially elevated levels over the past several quarters (Figure 4), most recently measuring 15,400 ppm. Groundwater from up-gradient and down-gradient wells has exhibited chloride concentrations less than 50 ppm.

Rice initiated pumping of groundwater from the near-source monitor well (MW-1) in April of 2007 to determine the feasibility of reducing groundwater chloride mass in accordance with the OCD approved Corrective Action Plan (see Appendix). Rice subsequently installed a larger diameter (4 inch) solar pv powered recovery well (RW-1) 35 ft southeast (down gradient) from the former junction box (Figure 5). Approximately 2,000 bbls of chloride-impacted groundwater has been recovered since mid-October, 2007.

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Whereas the chloride concentration of the extracted groundwater has remained relatively constant over this period, oscillating around 4,000 +/- ppm (Figure 6), the chloride concentration in the near-source monitor well (MW-1) has dropped from 16,400 to 15,400 ppm (Figures 4 and 6). These data suggest that chlorides in the aquifer and from the capillary fringe below the junction box continue to diffuse into the groundwater, but that progress is being made in attenuating the source.

Rice therefore proposes to continue removing groundwater from the recovery well through the 2008 calendar year, in accord with the OCD approved Corrective Action Plan. Groundwater chlorides will continue to be monitored in the monitor wells and in the recovered groundwater. The data will be subsequently analyzed and reported to OCD in early 2009, along with a recommended path forward.

Rice further requests OCD concurrence to continue to proceed without invoking "Rule 19", as this will enable us to undertake these actions more quickly and without the administrative delays that Rule 19 would impose.

I look forward to your review of this report.

Thank you for your consideration.

Sincerely,



L. Peter Galusky, Jr. Ph.D.
Principal

Encl: Site maps, soil and groundwater data

Copy: Kristin Pope, Rice Operating Company



Figure 1 – Vacuum N-6-1 site location.

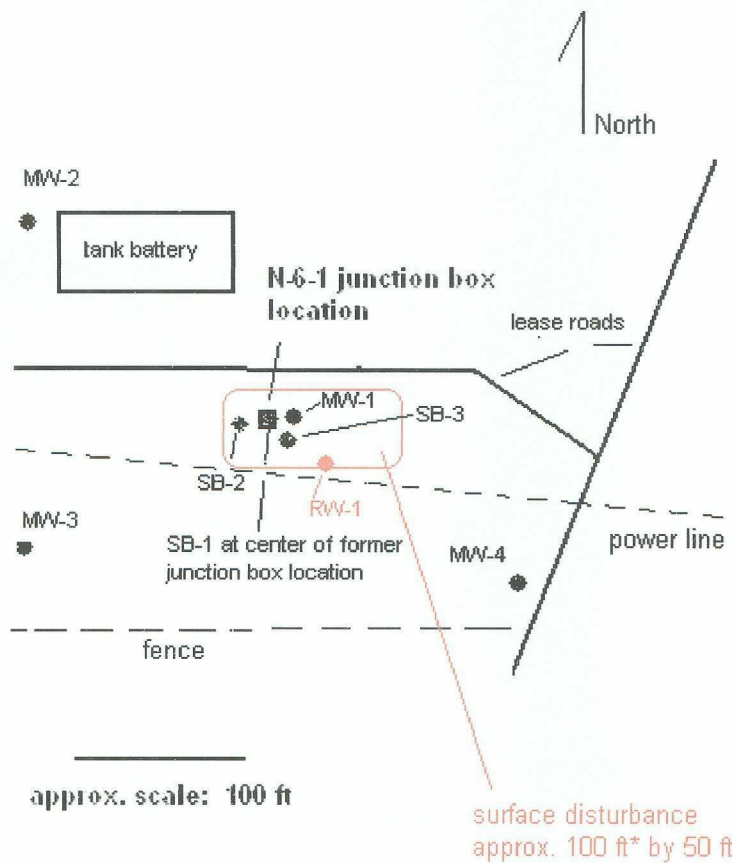


Figure 2 – Approximate locations of soil borings, monitor wells and recovery well

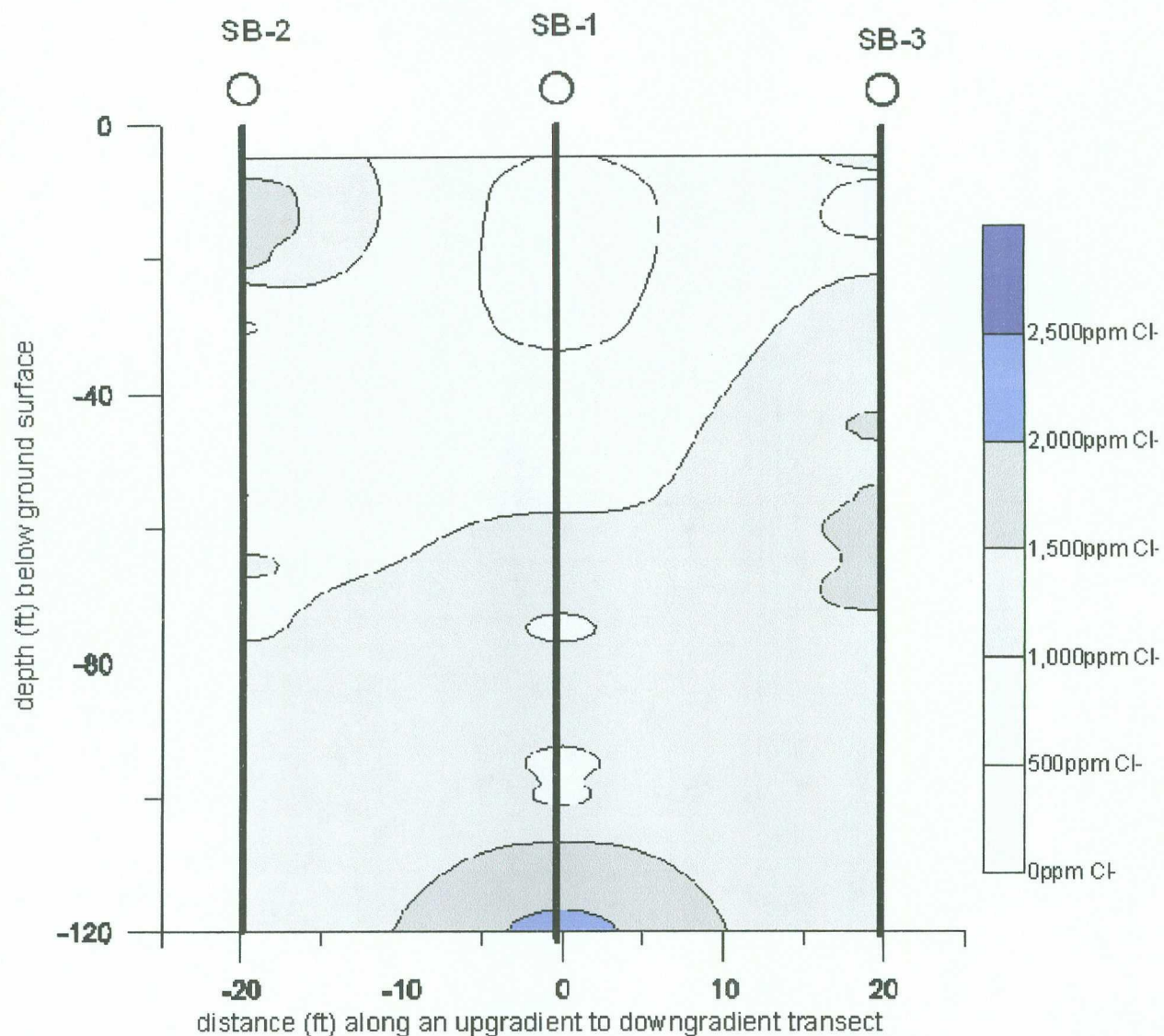


Figure 3 – Interpolated soil chloride concentrations (mg/kg) along an up gradient to down gradient transect across the release site.

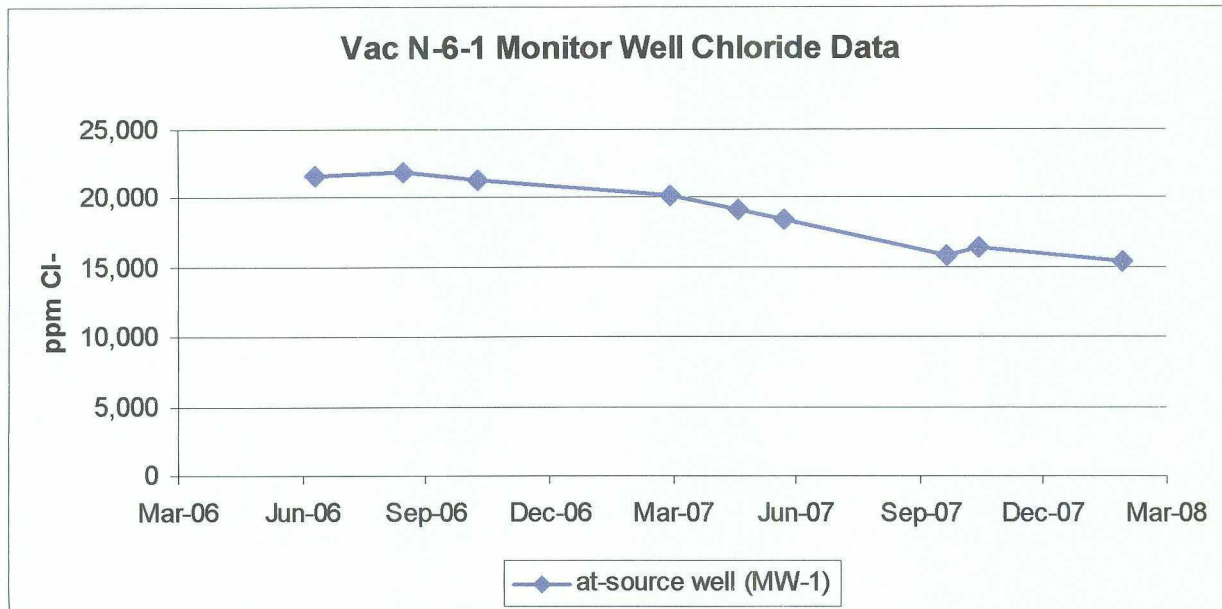


Figure 4 – Groundwater chloride concentrations in near-source monitor well since 2005.



Figure 5 – Photograph of solar-powered groundwater recovery system.

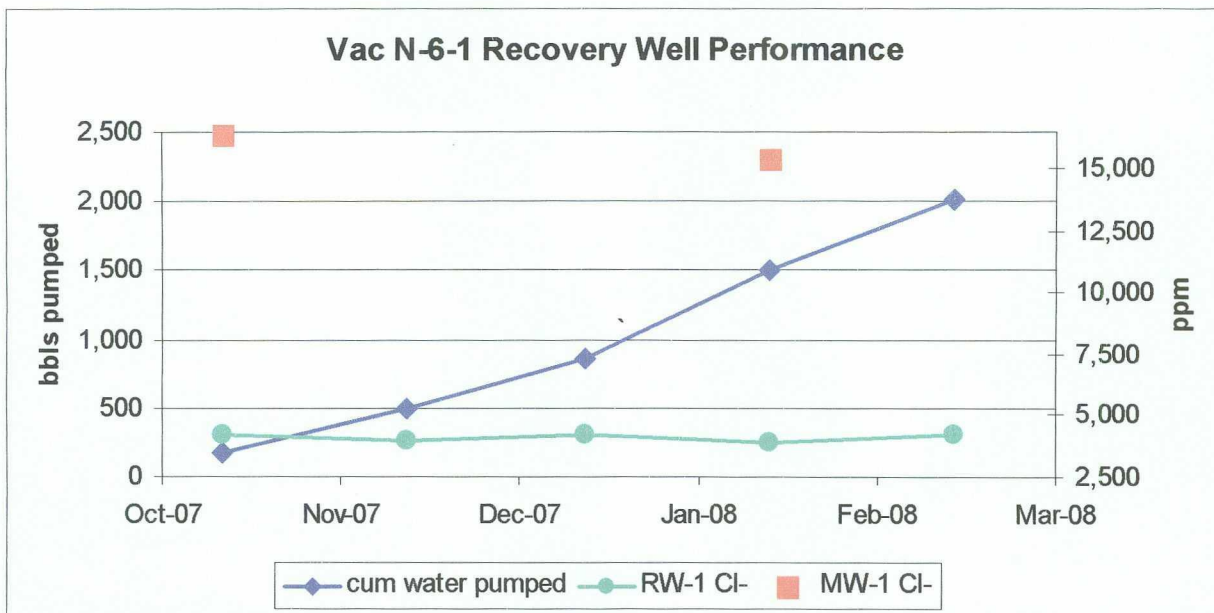


Figure 6 – Cumulative amount of groundwater recovered and chloride concentrations in the recovery well (RW-1) and in the near-source monitor well (MW-1).

Appendix - Executive Summary of OCD Approved Corrective Action Plan

Corrective Action Plan

Vacuum N-6-1 Junction Box and Release
Unit N, Sec 6, T18S, R35E
OCD Case Number 1R0479

Executive Summary

Field investigation of soils and groundwater during June of 2006 found that the impact of a release at N-6-1 has been on soils, surface vegetation and groundwater at the former junction box.

The elements of this Corrective Action Plan for this site encompass the following:

1. **Groundwater chloride removal and monitoring.** Groundwater will be evacuated from the monitor well (MW-1) at the site of the release to determine if limited pumping will remove groundwater highest in chlorides. We anticipate withdrawing as much water as the well will deliver over the course of (approximately) a few hours twice weekly for about a month. We will monitor groundwater chloride concentrations during each pumping event to determine if this effort is successful in substantially attenuating chloride levels, or if further pumping or another remedy seems warranted. All chloride-laden groundwater removed from the well will be handled according to regulations and protocols appropriate for oil field produced waters.
2. **Surface ecological restoration.** Soil samples will be taken at selected, representative locations in the vicinity of the former junction box to determine the extent of near-surface soil chloride contamination. These results will be used develop appropriate soil remedies, which may include soil amendments, watering, and the addition of clean soil where this is warranted. The re-establishment of native vegetation will serve to substantially enhance evapo-transpiration, and to thus limit the downward migration of water and chlorides.

The above work will be scheduled as soon as possible upon approval of this CAP by OCD. Data will be analyzed and a summary report prepared and submitted to OCD. The information thus gained from these efforts will be used to develop a final Corrective Action Plan, in consultation with OCD.

Appendix – OCD Approval of Corrective Action Plan

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Subject: 1R0425-01 - Vacuum SWD E-2 Site; 1R0425-03 - Vacuum SWD K-35-1; 1R0479 - Vacuum SWD N-6-1
Date: Wed, 21 Mar 2007 16:19:46 -0600
From: "Hansen, Edward J., ENMRD" <edwardj.hansen@state.nm.us>
To: "Carolyn Haynes" <chaynes@riceswd.com>, "Kristin Pope" <kpope@riceswd.com>
CC: "Price, Wayne, ENMRD" <wayne.price@state.nm.us>, "L. Peter Gabusky, Jr. P.E." <lpg@texerra.com>

Dear Ms. Haynes:

The New Mexico Oil Conservation Division (NMOCD) has reviewed your Corrective Action Plans (CAPs) (dated February 28, 2007, and March 2, 2007, and amended March 20, 2007) for the above referenced three sites. The NMOCD hereby approves the CAPs with the condition that the proposed corrective action be initiated by May 1, 2007, at each site. Also, Rice Operating Company must submit a monthly summary report(s) for each site. Upon review of the report(s), the NMOCD will determine if the submittal of an Abatement Plan will be required for any of the three sites.

Please be advised that NMOCD approval of these plans does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve the owner/operator of responsibility for compliance with any NMOCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

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