Larson & Associates, Inc.
Environmental Consultants

June 11, 2015

VIA EMAIL: bradford.billings@state.nm.us

Oil Conservation Division
1220 South Street Francis Drive
Santa Fe, NM 87505
ATT: Brad Billings

Re: BTA Pardue 'C' 8808 JV-P Well #1 *Stipulated Order No. R-13218*

Dear Mr. Billings:
Larson & Associates, Inc. (LAI), on behalf of BTA Oil Producers, LLC (BTA), submits supplemental information in support of requesting closure of the Pardue 'C' groundwater remediation project. The remediation was performed for compliance with Stipulated Order & Settlement Agreement (Order) No. R-13218 (Case No. 14413). The Site is located in Unit N (SE/4, SW/4), Section 11, Township 23 South, Range 28 East NMPM, in Eddy County, New Mexico. The geodetic position is north 32° 18' 46.9" and west 104° 03' 43.5".

Regulatory History

On October 19, 2007, an OCD District 2 representative, while on location to witness a mechanical integrity test (MIT) of the salt water disposal (SWD) well, observed a buried line from the injection pump to a closed pit located east of the well. The OCD issued a Notice of Violation (NOV) that required BTA to clean up the Site and remove the buried line by January 22, 2008. On January 4, 2010, the SWD well was plugged and the final C-103 was submitted to the OCD. Between February 24, 2010 and April 15, 2010, LAI performed investigations to delineate soil and groundwater contamination including electromagnetic terrain conductivity (EM) surveys, installing borings and monitoring wells for collecting soil and groundwater samples. The investigation results were submitted to the OCD in two (2) reports titled, "*Preliminary Investigation Report, Pardue "C" 8808 JV-P Well #1", May 7, 2010" and "Final Investigation Report and Remediation Plan, Pardue "C" 8808 JV-P Well #*1, July 15, 2010". BTA has submitted annual reports to the OCD starting in 2011 and most recently 2014.

Past Uses of the Site

Drilling of the Pardue "C" 8808 JV-P Well #1 was completed on April 24, 1990, to total depth of about 6,114 feet. The well was converted into a SWD in 1991. A drilling pit was constructed east of well in the same location of the discharge pipe where BTA later performed soil remediation in connection with Stipulated Order No. R-13218 (Case No. 14413).

The use of an unlined drilling pit was a practice allowed by the OCD at the time the well was drilled. The pit was closed in accordance with regulations at that time.

Remediation

Between September 28 and October 25, 2010, LAI supervised excavation of approximately 10,840 cubic yards of soil and rock, including approximately 1,500 cubic yards of soil from the perimeter berm, for disposal at Lea Land Landfill located south of U.S. Highway 62/180 about 30 miles east of Carlsbad, New Mexico. Soil was excavated to about 5 feet bgs over an area measuring approximately 21,400 square feet (0.49 acres), about 10 feet bgs over an area measuring approximately 6,854 square feet (0.15 acres) and 15 feet bgs over an area measuring approximately 848 square feet (0.019 acres). An engineered cover consisting of a 20 mil thickness polyethylene and bentonite liner was installed in the bottom of the excavation. Three (3) monitoring wells (MW-12, MW-13 and MW-14) were plugged to facilitate installing the liner

In January 2011 a recovery well (RW-10) and monitoring well (MW-15) were installed near the down gradient (east) side of the Site. A groundwater allocation was obtained from a water right holder and approved by the New Mexico State Engineer. Groundwater remediation commenced on March 30, 2012, with groundwater recovery from RW-1. Groundwater recovery was enhanced by installing pumps and controls in monitoring wells MW-11 (RW-2) and MW-15 (RW-3), on December 7, 2012. The total amount of chloride removed from excavation is 82,719 pounds. The total amount of chloride removed from groundwater pumping is 1,154 pounds. The leased water allocation for pumping expired in December, 2014. BTA has remediated the site for minimum duration proposed and accepted by the OCD in the "*Final Investigation Report and Remediation Plan, Pardue "C" 8808 JV-P Well #*1, July 15, 2010".

Supplemental Information

Chloride concentrations in soil samples from three (3) borings (BH-13, BH-14 and BH-15) that were drilled in the former pit area and completed as monitoring wells (MW-12, MW-13 and MW-14) were used to calculate the volume of chloride removed during soil excavation. About 10,840 cubic yards of material with an average chloride concentration of 3,500 mg/Kg was removed from the former pit location. Based on calculations presented in the attached document

the estimated volume of chloride removed from excavation and disposal is estimated at about 82,719 pounds. The collective volume of chloride removed during soil and groundwater remediation is estimated at 83,873 pounds.

Conclusions

According to the field pumper with knowledge of the facility the discharge line was not connected to the pump but an overflow leg to a water tank that was used on a few occasions during upsets or outages. It would appear that the drilling pit contributed a higher volume of chloride than the discharge line. BTA has worked in good faith to clean up the unauthorized discharge and remediated the drilling pit that was used according to OCD rules in affect when the well was drilled. The historic pit is located where the discharge occurred and where approximately 10,480 cubic yards of soil and rock were removed from the Site. In conclusion, BTA has remediated and monitored the site in compliance with OCD Stipulated Order & Settlement Agreement No. R-13218 and respectfully requests OCD to grant closure for the Site.

BTA will plug the monitoring and recovery wells according to New Mexico State Engineer requirements and provide the plugging reports in letter to OCD upon closure of the Site.

Respectfully Submitted,

Jeremy Cannady
jeremy@laenvironmental.com

Encl.

cc: Mike Bratcher – OCD District 2
Ben Grimes – BTA
Mark Larson

Attachments

"*Final Investigation Report and Remediation Plan, Pardue "C" 8808 JV-P Well #*1, July 15, 2010"

Figure 6 – Soil Excavation and Liner Area

Figure 15 – Chloride Concentration in Soil at 5 Feet BGS

Figure 16 – Chloride Concentration in Soil at 10 Feet BGS

Figure 17 – Chloride Concentration in Soil at 15 Feet BGS

Mass of Chloride Excavated from BTA Pardue 'C'

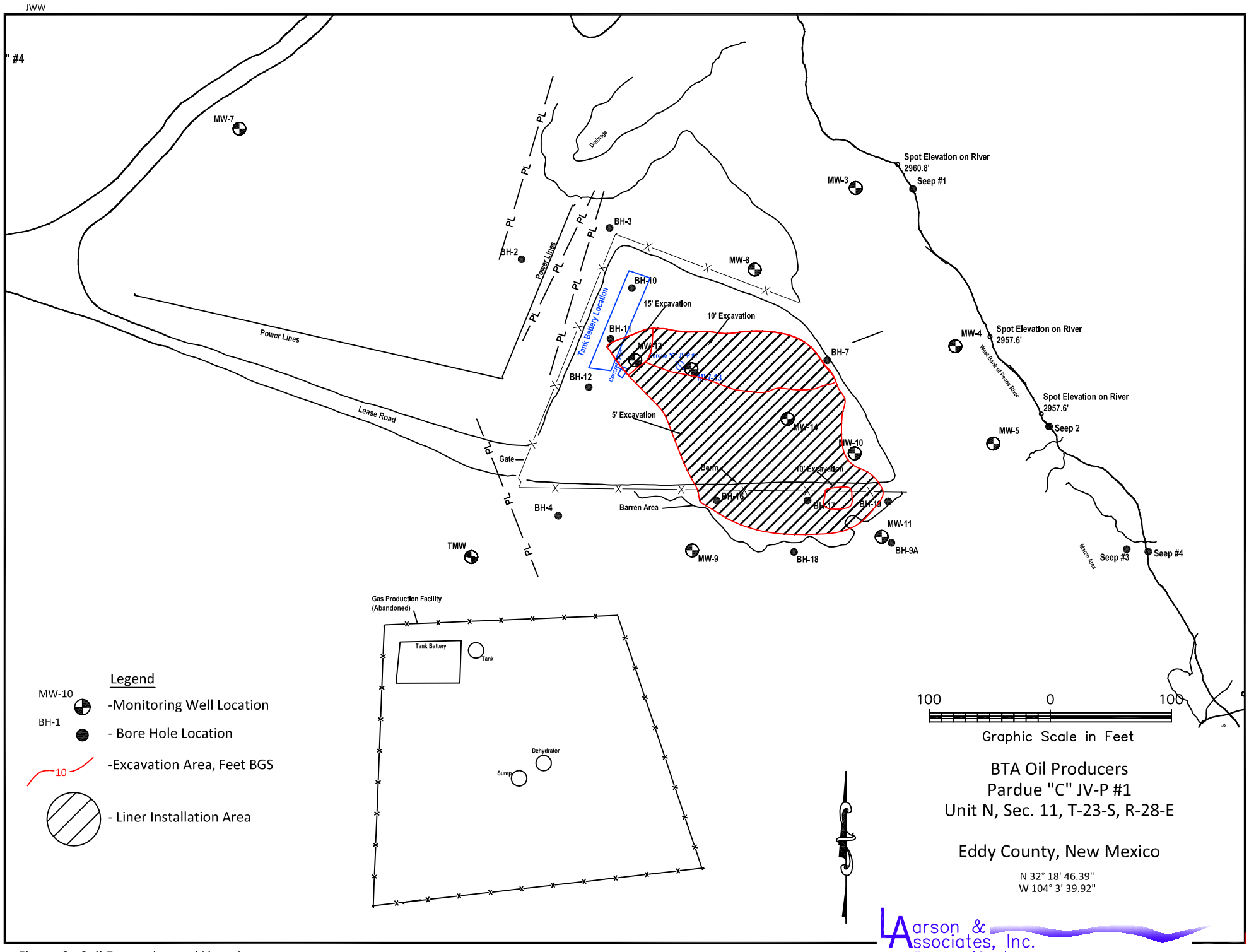

Figure 6 - Soil Excavation and Liner Area

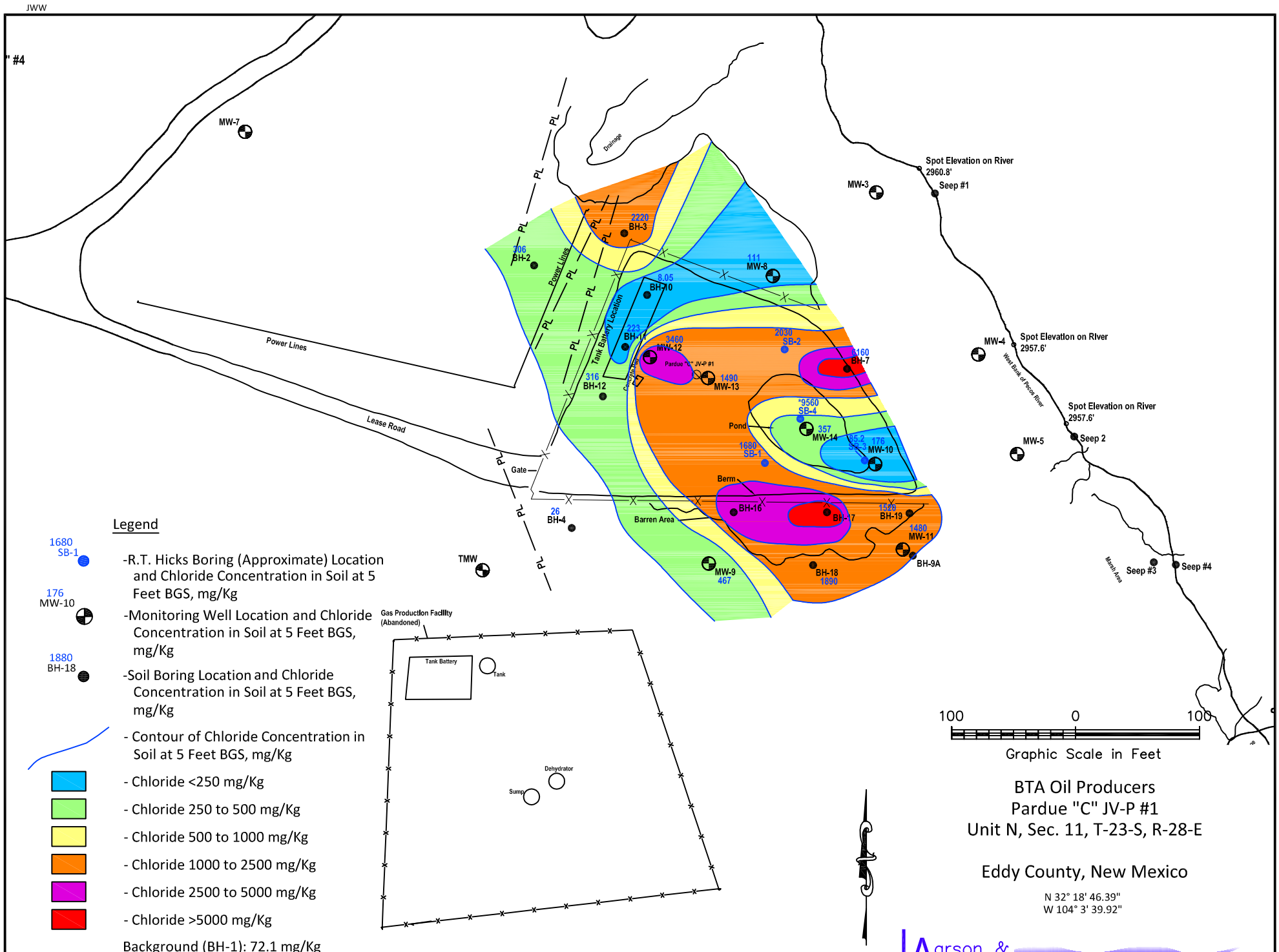

Figure 15 - Chloride Concentration in Soil at 5 Feet BGS

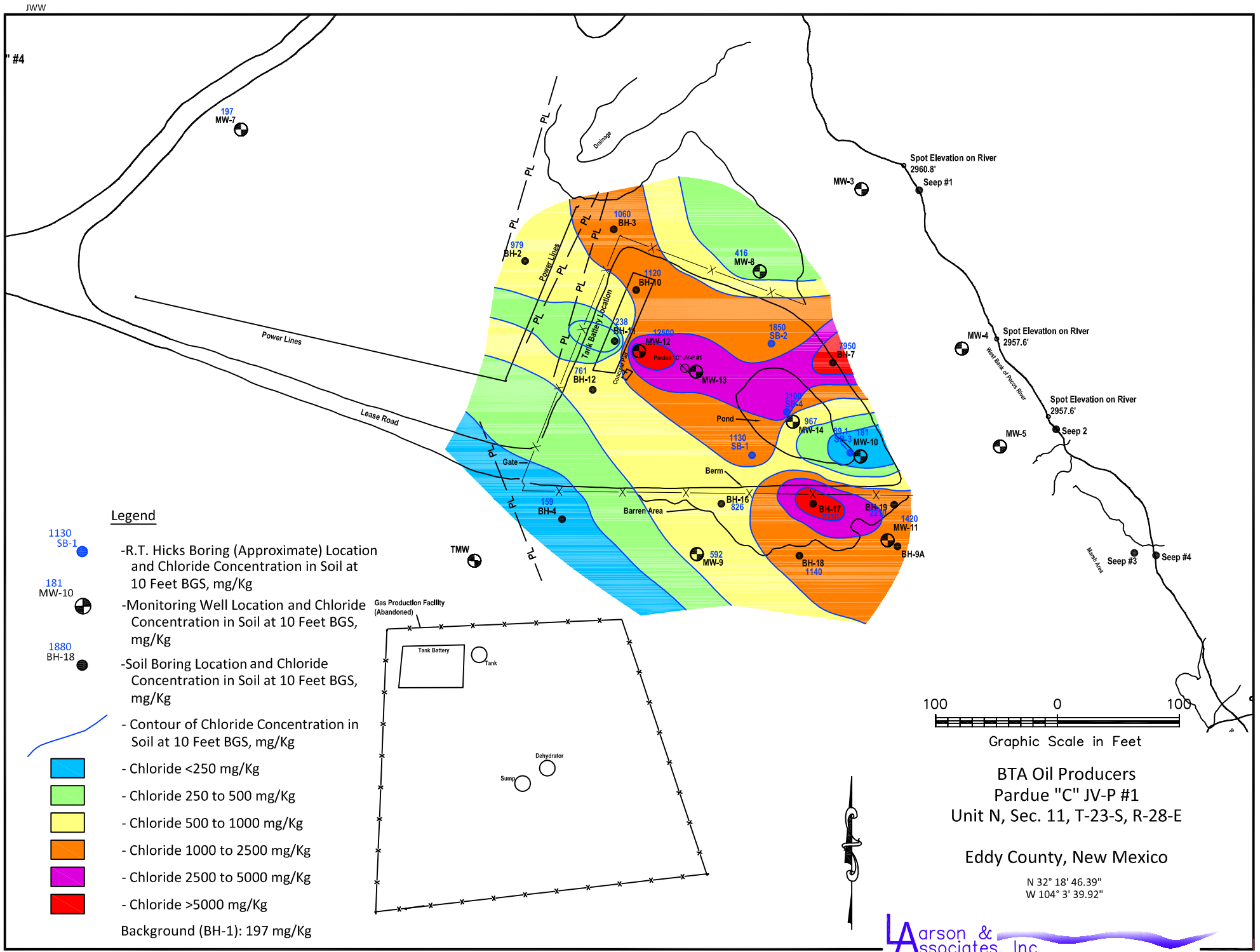

Figure 16 - Chloride Concentration in Soil at 10 Feet BGS

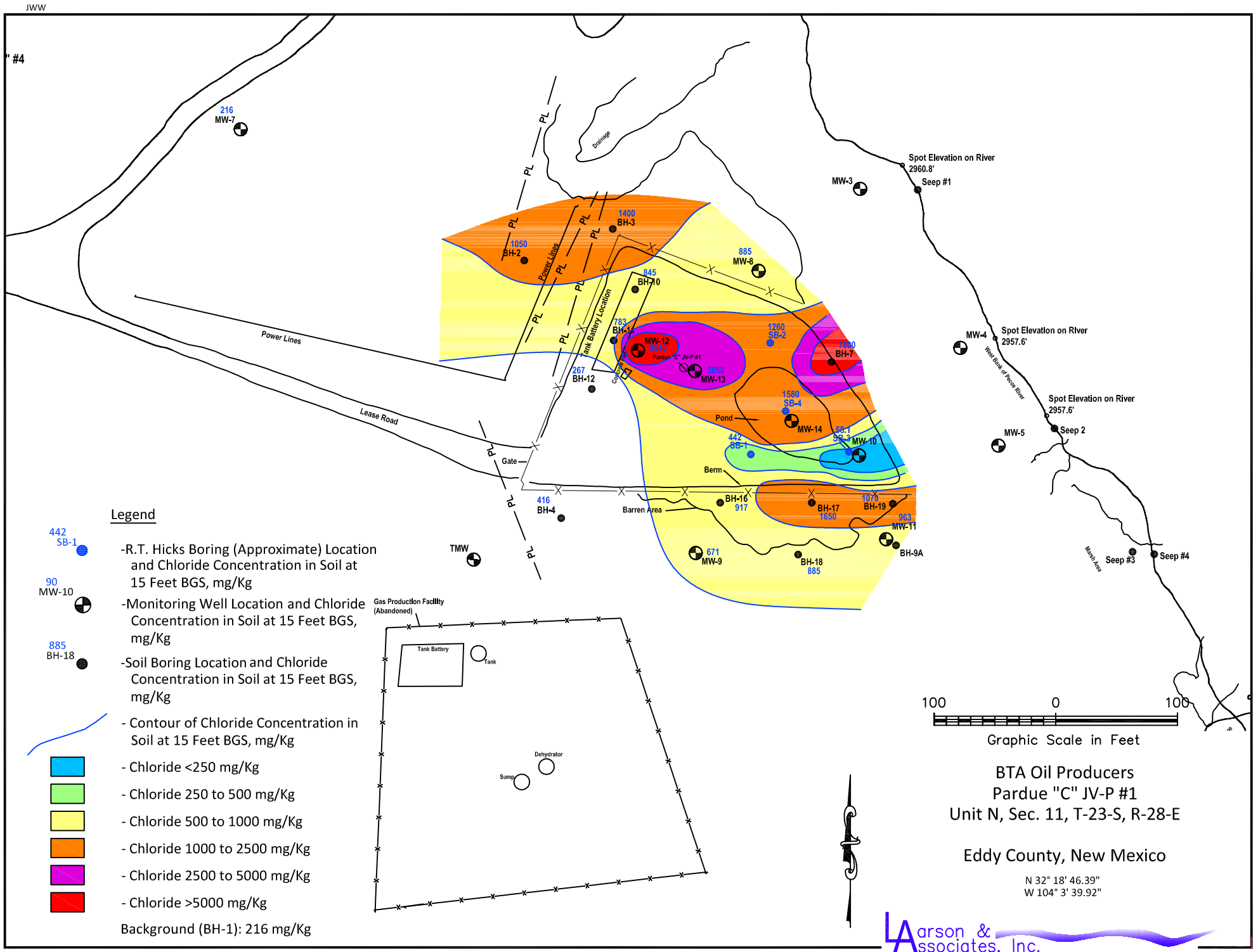

Figure 17 - Chloride Concentration in Soil at 15 Feet BGS

Mass of Chloride excavated from Site

	15' Excavation	10' Large Section	10' Small Section	5' Excavation
Average chloride concentration at 5' (mg/kg) :	3,460	9,680	1,500	2,284
Average chloride concentration at 10' (mg/kg):	12,500	12,900	7,330	--
Average chloride concentration at 15' (mg/kg) :	9,840	--	--	--
Excavation Area (feet^2):	848	6,254	600	21,400
Soil excavated to a depth of 5' (feet^3) :	4,240	31,270	3,000	107,000
Soil excavated to a depth of 10' (feet^3) :	4,240	31,270	3,000	--
Soil excavated to a depth of 15' (feet^3) :	4,240	--	--	--
Approximate density of Soil (kg/feet^3):	34.54			
mg of Chloride removed to a depth of 5' :	506,715,616	10,455,036,944	155,430,000	8,439,498,419
mg of Chloride removed to a depth of 10' :	1,830,620,000	13,932,848,820	759,534,600	--
mg of Chloride removed to a depth of 15' :	1,441,064,064	--	--	--
lbs of Chloride removed to a depth of 5' :	1,117	23,049	343	18,606
lbs of Chloride removed to a depth of 10' :	4,036	30,717	1,674	--
lbs of Chloride removed to a depth of 15' :	3,177	--	--	--
Total Chloride Removed:	**82,719**	**lbs**		