Delta
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September 18, 2006

Mr. Larry Johnson
New Mexico Oil Conservation Division
1625 N. French
Hobbs, New Mexico 88240

Subject: **Additional Assessment Workplan**
Halliburton/Baroid Mud Plant
401 East Avenue R
Lovington, Lea County, New Mexico

Dear Mr. Johnson:

Delta Environmental Consultants, Inc. (Delta) has prepared this workplan to outline the installation of one monitor well at the above-referenced site. The installation of the well is in response to the letter from the New Mexico Oil Conservation Division (NMOCD) to Halliburton Energy Services dated August 2, 2006. In that letter, the NMOCD requested one monitor well to be installed at least 250' to the east or west of the existing monitor wells to establish a triangulation to confirm the groundwater flow direction. It is proposed to install the well, as requested, approximately 250' east or west of and approximately between the existing MW-2 and MW-3. Halliburton is currently working with the adjacent landowners to obtain access to install the well. Once the site access issues are completed, the exact location (either to the east or the west of the existing wells) will be determined. The well will be developed, gauged, surveyed and sampled along with the existing on-site monitor wells.

If you have any questions or comments, please do not hesitate to contact me at 972/548-7760 or Mr. Jim McGinty of Halliburton at 281/575-4428.

Sincerely,
DELTA ENVIRONMENTAL CONSULTANTS, INC.

James Hodges
Project Manager

KLR/

cc: Jim McGinty (Halliburton Energy Services, Inc.)
Kristin Ruff, Delta

facility - fPAC0627738291
incident - nPAC0627738484 RPF 1057 (tank - not pit)
application - pPAC0627738651

Pit and Below-Grade Tank Closure Workplan
Halliburton/Baroid Mud Plant
401 East Avenue R
Lovington, Lea County, New Mexico

This workplan is intended to outline the procedures to be followed in order to close a pit and one below-grade mud tank at the site referenced above. The workplan follows pit and below-grade tank closure guidelines outlined in the New Mexico Oil Conservation Division's (OCD's) *Pit and Below-Grade Tank Guidelines* dated November 2004. In particular, this workplan describes the proposed installation of one monitor well to be installed either to the east or the west of the existing monitor wells (depending on site access) in accordance with the New Mexico Oil Conservation Division (NMOCD) letter dated August 2, 2006. The well is intended to establish a triangulation in conjunction with the existing monitor wells and determine a groundwater flow direction and gradient.

SITE HISTORY

The site is a former mud plant operated by Baroid, now part of by Halliburton Company. The mud plant has been inactive for approximately 20 years; however, the warehouse area of the site is currently in use. Site demolition activities identified several potential areas of concern (AOCs) on the mud plant portion of the property to the north of the warehouse. These included an unlined pit on the north side of the property, the former mud tank containment area with one former below grade tank, several areas where impacted surface soil was observed, and the former debris pile area on the north end of the property.

In April 2004, the contents of the mud tanks were removed, the mud tank containment area was razed, the tanks and debris from the site were removed, and some soil excavation (surface soil and the soil in the mud tank containment area) occurred. One sludge sample from the mud plant and one soil sample from the pit area were collected during the field activities. The sludge sample contained 6,820 milligrams per kilogram (mg/kg) total petroleum hydrocarbons (TPH) by EPA Method 418.1, and the sample from the pit area contained 24,200 mg/kg TPH. TCLP semi-volatile organic compounds (SVOCs) and TCLP RCRA Metals were below laboratory detection limits. TCLP volatile organic compounds (VOCs) were either below laboratory detection limits or below the Environmental Protection Agency's (EPA's) limit for each compound. Copies of the laboratory analytical reports are attached. The sludge and soil were removed and transported for off-site disposal at Sundance Services in Eunice, New Mexico. Excavation was not completed in the pit area at that time.

In July 2004, eight soil borings were advanced in the areas of concern. Soil sample results indicated impact near the former mud tank containment area and near the pit. Approximately 2,800 cubic yards of soil were removed from the pit area. Soil confirmation results indicated total petroleum hydrocarbons – diesel range organics (TPH-D) concentrations ranged from <5 milligrams per kilogram (mg/kg) to 13,000 mg/kg. Six of the eight soil confirmation samples exceeded the NMOCD action level of 1,000 mg/kg.

In September 2004, an estimated 3,000 cubic yards of soil were removed from the pit and former mud plant areas. Soil confirmation results indicate only one sample collected from the north wall of the mud plant excavation exceeded 1,000 mg/kg TPH-D. The samples with the two highest TPH-D results were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PAH), and TCLP metals. All results were below laboratory detection limits or State standards.

The excavations were backfilled in November 2004 after verbal approval from the OCD. At the request of the OCD, Halliburton sampled the backfill material for TPH and chlorides. The results indicated a chloride concentration in excess of the OCD target level. Halliburton re-sampled the backfill by collecting eleven soil samples and the results indicated that the average chloride concentration of the backfill was not above the OCD target level of 250 mg/kg. The results of the backfill samples were submitted to the OCD on September 13, 2005.

In April 2004, Halliburton resubmitted the monitor well installation and risk evaluation work plan and an additional C-144 form at the request of the OCD. After further discussions with the OCD, Halliburton submitted a revised work plan and C-144 form for review and approval. The work plan was verbally approved in September 2005 after receipt of the backfill sample results.

Three monitor wells were installed at the site on October 12, 2005. Only one groundwater sample (MW-3) exceeded the TPH-D standard established by the NMED TPH screening guidance. However, this sample was also analyzed for BTEX, RCRA Metals and PAHs and all of these COCs were below the Water Quality Control Commission (WQCC) drinking water standards. A risk evaluation determined that there is no potential threat to human health and/or the environment from COCs remaining in soil and those detected in groundwater at the site.

SCOPE OF WORK

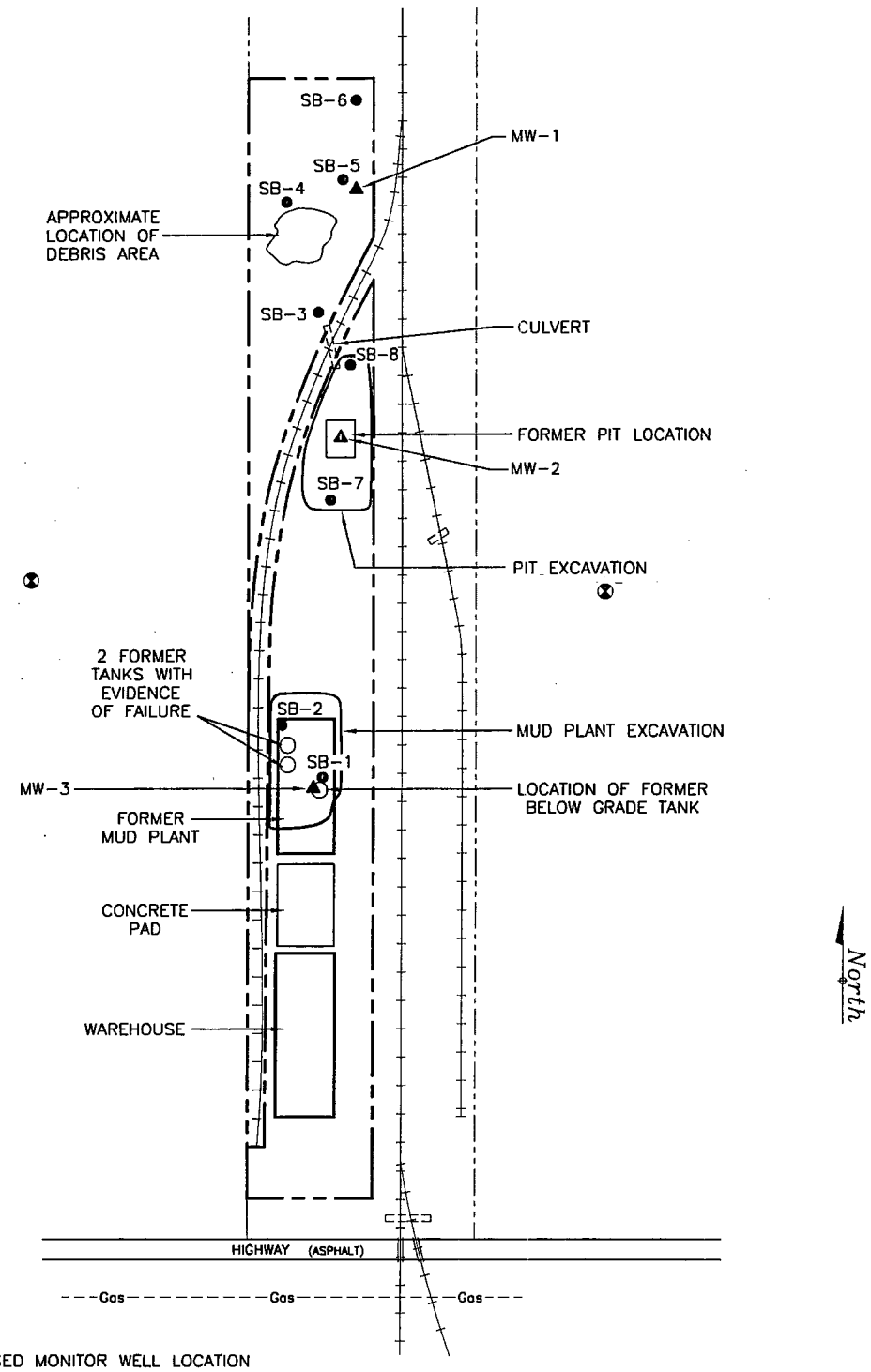
The following tasks are proposed to close out the pit and below-grade tank areas.

One monitor well will be installed approximately 250 feet either to the east or the west and roughly between the existing MW-2 and MW-3. The exact location (either to the west or the east of the existing wells) of the proposed well will be determined once site access issues with the adjacent landowners are secured. The proposed monitor well location is shown on Figure 1. Soil samples will not be collected. The monitor well will be 2-inch in diameter, constructed in compliance with OCD guidelines, and screened across the water table and completed flush with the existing ground surface.

The north-side top-of-casing elevation will be surveyed relative to an arbitrary benchmark. Depth to ground water measurements from the new well and the existing wells will be collected using a product/water interface probe. The new well will be developed by surging and bailing with a dedicated disposable bailer until all fines are removed and pH and specific conductance have stabilized. The three existing wells will be purged of a minimum of three well volumes and allowed to stabilize. Purged water will be stored in 55-gallon drums pending disposal characterization. Ground water samples will be collected from each monitor well according to OCD protocol and submitted for analysis of TPH – gasoline range organics (TPH-G), TPH-D and TPH-oil range organics (TPH-O) by EPA Method 8015M, and BTEX by EPA Method 8021B. Additionally, the sample with the highest TPH and BTEX results will be analyzed for PAH by EPA Method 8270 and RCRA Metals.

A report summarizing the results of the ground water sampling will be prepared. The report will focus on confirmation of plume delineation and evaluating the risk from remaining chemicals of concern (COCs) at the site compared to the OCD's cleanup levels, the New Mexico Water WQCC standards, and EPA's and/or NMED's risk guidelines to determine the next appropriate course of action. The report will include: a summary of the well installation activities; maps

showing the location of the site including existing and former structures and sampling points; a soil boring/monitor well installation diagram; ground water tables; site photographs; and a risk evaluation of the data. The report will be submitted to the OCD approximately six weeks after completion of the monitor well installation.



LEGEND

- PROPOSED MONITOR WELL LOCATION (ONLY ONE WILL BE INSTALLED, TO BE DETERMINED ONCE SITE ACCESS ISSUES ARE COMPLETED)
- MONITOR WELL LOCATION
- SOIL BORING LOCATION
- PROPERTY BOUNDARY
- RAILROAD SPUR
- Gas GAS LINE

0 150

SCALE IN FEET

FIGURE 1
SITE MAP
HALLIBURTON/BAROID MUD PLANT
LOVINGTON, NEW MEXICO

PROJECT NO.	PREPARED BY	DRAWN BY
F004-004	JH	DD
DATE	REVIEWED BY	FILE NAME
9/19/06		F004-004

Delta Environmental Consultants, Inc.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
March 12, 2004

For drilling and production facilities, submit to appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe office

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☒

Type of action: Registration of a pit or below-grade tank ☐ Closure of a pit AND below-grade tank ☒

Operator: Halliburton Energy Services Contact Name: James McGinty Telephone: 281-575-4428 e-mail address: james.mcginty@halliburton.com

Address: 401 East Avenue R, Lovington, New Mexico

Facility or well name: Halliburton/Baroid Mud Plant API #: Unknown U/L or Qtr/Qtr SE1/4, SW1/4 Sec 10 T16S R36E

County: Lea Latitude N 32 degree, 55.836' Longitude W 103 degree, 20.679' NAD: 1927 ☐ 1983 ☒ Surface Owner Federal ☐ State ☐ Private ☒ Indian ☐

Pit	Below-grade tank	
Type: Drilling ☐ Production ☐ Disposal ☒ Workover ☐ Emergency ☐ Lined ☐ Unlined ☒ Liner type: Synthetic ☐ Thickness _____mil Clay ☐ N/A Volume: Unknown bbl	Volume: 500 bbl Type of fluid: drilling mud Construction material: steel Double-walled, with leak detection? Yes ☐ If not, explain why not. Tank was only partially (~7 feet) below grade	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) Estimated at 40 feet	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) (0 points)
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes No	(20 points) (0 points)
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.) Ditch is present approximately 400 feet north of the site	Less than 200 feet 200 feet or more, but less than 1000 feet 1000 feet or more	(20 points) (10 points) (0 points)
	Ranking Score (Total Points)	30 points

If this is a pit closure: (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: onsite ☐ offsite ☒ If offsite, name of facility: Sundance Services, Eunice, NM. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☒ Yes ☐ If yes, show depth below ground surface N/A ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Date: _____

Printed Name/Title James McGinty, Senior Environmental Specialist Signature _____

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval:

Date: 7-14-04

Printed Name/Title L.W. Johnson Enviro. Engr. Signature L. Johnson

Approved w/following conditions : 1) Remediation plan will be submitted for OCD approval before 9-6-04 and 2) Plan implemented within 60 days of OCD approval.