

FORM

27

Rev 6/99

International



FOR OGCC USE ONLY

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax: (303)894-2109

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Soil Stockpile Remediation

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 10352

Name of Operator: CM Production LLC

Address: 600 17th Street, Suite 2800 South

City: Denver

State: CO Zip: 80202-5428

Contact Name and Telephone:

Mr. John Teff - Business Manager

No: 303.534.0199 Cell: 720.299.1101

Fax: 303.479.1318 johnt@cmproductionllc.com

API Number: N/A

County: Jackson (057)

Facility Name: Non-Facility: Soil Stockpile

Facility Number: 324634

Well Name: Nearest Well - Margaret Spaulding 14

Well Number:

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SW SE Section 28 T9N, R81W 6th P.M.

Latitude: 40.717432

Longitude: -106.49902

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc):

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Irrigated hay meadow, pasture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Fluetsch-Tiagos Association (Fh)

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Spring Gulch, Hell Creek, Wolfer Ditch

Nearest DNR permitted water well is in the NE 1/4 NE 1/4 Section 28 - Leroy C. Spaulding Receipt #0372441 Permit #180306

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

☒ Soils☐ Vegetation☐ Groundwater☐ Surface Water

Extent of Impact:

6,000 cubic yard stockpile

How Determined:

GPS coordinates on pile and visual height est.

REMEDIALTION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

The impacted soils were removed from an onsite pit and a pit at the Noffsinger lease to the south and were stockpiled on the Margaret Spaulding tank battery/produced water treatment facility. A crude oil spill occurred in December 2011 and the materials from that cleanup were also added to the stockpile along with other E&P wastes generated at the location.

Describe how source is to be removed:

The source has been removed and the resulting stockpile requires treatment to meet the COGCC Table 910-1 TPH concentration levels.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

CM Production retained TP Environmental & Pipeline Services to shred the soils and add a proprietary peroxide chemical solution sprayed onto the shredded soil to react with the petroleum hydrocarbons in the soil and reduce the TPH levels to below the COGCC Table 910-1 TPH Concentration Level of 500 milligrams per kilogram (mg/kg). The treatment process is described in greater detail in the attached letter.

Submit Page 2 with Page 1



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater has not been impacted. There are six groundwater monitoring wells on location that are used to assess groundwater conditions associated with the operation of the produced water treatment facility.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The COGCC gave verbal authorization to combine both soil stockpiles prior to the soil treatment to be performed by TP Environmental & Pipeline Solutions. The stockpile is located on the Margaret Spaulding central tank battery and produced water treatment facility. The area beneath the stockpiles will be graded back as necessary and will be either covered with gravel as part of the active facility footprint or will be re-seeded with native grasses/vegetation as approved by the surface owner. Noxious weeds will be controlled as a part of ongoing site maintenance.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

CM Production LLC collected a soil sample of the stockpiles in order to evaluate remediation options. Soil samples will be collected by TP Environmental & Pipeline Services to document the effectiveness of the soil treatment, and Olsson will collect replicate soil samples for data verification and validation on a frequency of at least one per 500 cubic yards of soil treated.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

The treated soils will be used to backfill the onsite excavation of one of the former produced water treatment pits located at the facility once analytical data is received documenting that it meets the COGCC Table 910-1 concentration level of 500 mg/kg for TPH ranges.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: _____ Date Site Investigation Completed: _____ Date Remediation Plan Submitted: _____
Remediation Start Date: 07/15/2013 Anticipated Completion Date: 7/31/2013 Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Mr. John Teff

Signed: _____

Title: Business Manager

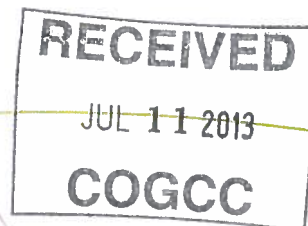
Date: 7/11/13

OGCC Approved: _____

Title: Env. Sup.

Date: 7/12/13

Conditionally approved, however additional information may be required during the course of remediation.



July 9, 2013

Mr. Alex Fischer, P.G.
Western Colorado Environmental Supervisor
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

RE: Remediation of Crude Oil Impacted Soil Stockpiles at the Margaret Spaulding Central Tank Battery and Produced Water Treatment Facility, Jackson County, Colorado (Facility ID 324634) - Olsson Project # 013-1168

Dear Mr. Fischer:

CM Production LLC (CM Production) recently acquired the Lone Pine Gas Company assets in the Lone Pine field located approximately 10 miles west of Walden in Jackson County, Colorado. Stockpiled soils impacted with crude oil were identified during the environmental due diligence as a recognized environmental condition and it was recommended that these soils be either remediated on location or transported to a commercial disposal facility. The stockpiles were originally estimated to be between 2,000 cubic yards and 2,500 cubic yards; however, with the addition of impacted soil and vegetation from the December 2011, spill the soil stockpiles are now estimated to be closer to 6,000 cubic yards in total volume.

CM Production retained Olsson Associates (Olsson) to evaluate soil treatment and disposal options for the impacted soils. Olsson determined that the costs for loading, transporting, and disposing the soils at the nearest commercial landfill would be cost prohibitive and would result in a large volume of truck traffic transporting impacted materials through Walden or over Rabbit Ears pass into Steamboat Springs. Several onsite treatment options, such as thermal desorption, land farming, and bio-pile treating were evaluated, but were also determined to be less feasible.

Selected Stockpile Remedy

TP Environmental & Pipeline Services, Inc. (TP Environmental) of Oklahoma City, Oklahoma will provide the necessary labor and equipment to load and treat the impacted soils to meet the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 Concentration Levels.

Treatment of the impacted soil stockpile will be conducted using a ScreenMachine® 621T or similar soil shredder in conjunction with chemical oxidation treatment of the soil using a proprietary peroxide compound solution to mix with the impacted soil at two stages in the treatment process. TP Environmental will collect soil samples from the treated stockpiled soils following shredding and peroxide application to document effectiveness of the impacted soil treatment process. Soil will be loaded into the five cubic yard hopper of the ScreenMachine® 621T, where a set of conveyors will direct the soil to a series of rotating hammers which will pulverize/shred and break-up the soil into smaller particle sizes creating greater surface area, which enhances the degradation of the petroleum hydrocarbons once the proprietary chemical solution is applied.

As the material leaves the hammer mill, it will be sprayed with a five percent to eight percent hydrogen peroxide solution, which is a chemical oxidizer. The soil will then travel through a trommel, which provides additional aeration to the shredded/treated soil, as well as screens out any materials, such as rocks, concrete or vegetation, larger than 1-inch in diameter, which will then be deposited at the rear of the machine. The screened soil will be directed to another set of conveyors where the aerated material will be sprayed a second time with hydrogen peroxide before being placed in windrow stockpiles, which will be located onsite.

Sampling and Analysis Plan

TP Environmental will collect a grab soil sample from every 500 cubic yards of treated soil. The soil samples will be analyzed for total petroleum hydrocarbons (TPH) for gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) using an EPA modified Method 8015. The TPH ranges for the treated soils will be evaluated on expedited turn-around and if any TPH range exceeds 500 milligrams per kilogram (mg/kg), additional Table 910-1 parameter analyses will be requested depending on the TPH range(s) above the 500 mg/kg.

- If GRO is greater than 500 mg/kg: Benzene, Toluene, Ethylbenzenes, and Xylenes (BTEX) will be analyzed by EPA Method 8260;
- If DRO is greater than 500 mg/kg: The sample will be analyzed for BTEX and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270;
- If ORO is greater than 500 mg/kg: The sample will be analyzed for PAHs by EPA Method 8270; and
- If more than one TPH range exceeds the 500 mg/kg concentration level, additional Table 910-1 parameters will be analyzed.

The chain-of-custody will indicate that the laboratory is to hold these analyses pending the expedited TPH results. A total of 12 soil samples will be collected and analyzed by TP Environmental's laboratory in Oklahoma. This frequency is based on one soil sample for every 500 cubic yards assuming the soil pile volume is 6,000 cubic yards. Additional soil samples will be collected as needed if the stockpile is determined to exceed 6,000 cubic yards.

Olsson will collect one grab soil sample for every 1,000 cubic yards from the treated soil stockpile and analyze those six soil samples for the COGCC Table 910-1 for organics in soil, inorganics in soil, and total metals concentrations in soils for the following specific analytes and test methods:

- TPH: GRO, DRO, and ORO by EPA Method 8260 and/or EPA modified Method 8015;
- BTEX by EPA Method 8260;
- PAH by EPA Method 8270;

- Total Metals Concentrations: arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc by EPA Methods 6010, 3060/7196, and 7470/74771;
- Electrical Conductivity by EPA 120.1;
- Sodium Adsorption Ratio (SAR) by USDA Handbook;
- pH by EPA Method EPA 150.1;

Olsson will discuss with TP Environmental their procedures and frequency for analyzing duplicate soil samples and will prepare a quality assurance project plan (QAPP) prior to beginning the work that will allow for data verification and validation. This letter establishes the basis and an outline of that QAPP.

These six soil samples will be collected by Olsson as follows:

- One soil duplicate to be sent to TP Environmental's laboratory for the TPH ranges GRO, DRO, and ORO, and held for additional analyses if TPH concentrations exceed 500 mg/kg;
- One replicate soil sample sent to a laboratory selected by CM Production and Olsson for analysis of GRO, DRO, and ORO. This sample will be submitted for laboratory analysis of BTEX, PAH, inorganic parameters, and total metal concentrations as required by Table 910-1;
- Four soil samples will be submitted for laboratory analysis of TPH ranges, BTEX, PAH, inorganic parameters, and total metal concentrations in soil as required by Table 910-1 to assess these parameters in the treated soil stockpile.
- Three soil samples from un-impacted areas away from the treatment plant and upgradient of the soil stockpiles will be submitted for analysis of total metal concentrations in soil to assess site specific background conditions. To the extent it is available, previous data collected on behalf of Lone Pine, the COGCC, or EPA will be used to compare with the site specific values as will published reports of these metals in soil in the United States to assess background soil levels.

A total of 18 soil samples will be analyzed for Table 910-1 organic constituents, and six soil samples will be analyzed for inorganic constituents from the treated stockpile. Olsson will request that TP Environmental collect one duplicate soil sample to be sent to their laboratory for the same analyses as the parent sample. Olsson will collect one replicate soil sample from the treated stockpile to be analyzed at a separate laboratory for GRO, DRO, and ORO. This will be a split soil sample with TP Environmental. Olsson will collect four discrete soil samples from the treated soil stockpile to be sent to a separate laboratory for analysis of the full Table 910-1 parameters to show that the concentration levels are met. Olsson will collect three background soil samples for evaluation of inorganic and total metal concentrations. The TP Environmental soil treatment process does not address elevated metal concentrations.

Olsson and CM Production will evaluate the need for additional soil samples or additional analyses for the other Table 910-1 parameters or to re-treat the stockpiled soil if test results

show that concentrations of one or more TPH range are above the 500 milligrams per kilogram (mg/kg) Table 910-1 TPH concentration level.

Remedy Applicability

TP Environmental's process was selected on the basis that it was able to treat the impacted soil onsite with minimal mobilization of equipment and supplies to the site and that the only offsite disposal required will be for the chemical containers. TP Environmental claims it can process up to 300 cubic yards of material per hour. However, the system can be run more slowly to ensure that the hydrocarbon impacts are in contact with the solution for enough time to breakdown the hydrocarbons in heavier soils. TP Environmental plans to process 900 cubic yards to 1,000 cubic yards per day which will allow the soils to be treated in a relatively short time frame, but also treat the soils at a rate to allow for the peroxide to efficiently react with the impacted soils.

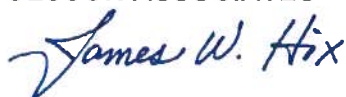
The treated soils will be stockpiled within a compacted, 'clean' earthen berm without apparent signs of staining or petroleum impacts pending receipt of the laboratory analytical results demonstrating that the soils meet the Table 910-1 organic compounds in soil concentration levels. TP Environmental also claims that it will re-run any material that does not meet the Table 910-1 concentration levels, and that they have not had to do this for past remediation projects.

The TP Environmental process does not treat elevated metal concentrations; however, it is expected that elevated metal concentrations are related to naturally occurring high background concentrations of certain metals in native soil and are not related to onsite activities.

In the event that material segregation is desired or additional aeration of the material is required, the 621T is equipped with a trammel that is six feet in diameter by 21 feet in length. TP Environmental also offers a more aggressive remedial option by equipping the 621T with an internal spray system that delivers various remedial additives/chemicals to assist with the remediation process and uses a proprietary solution to assist with the remediation of petroleum hydrocarbon. The proprietary solution is sprayed onto the shredded soil which is subsequently stockpiled pending laboratory analysis. Following laboratory confirmation that the treated soil has achieved cleanup standards, the treated soils will be used to backfill the onsite pit excavation.

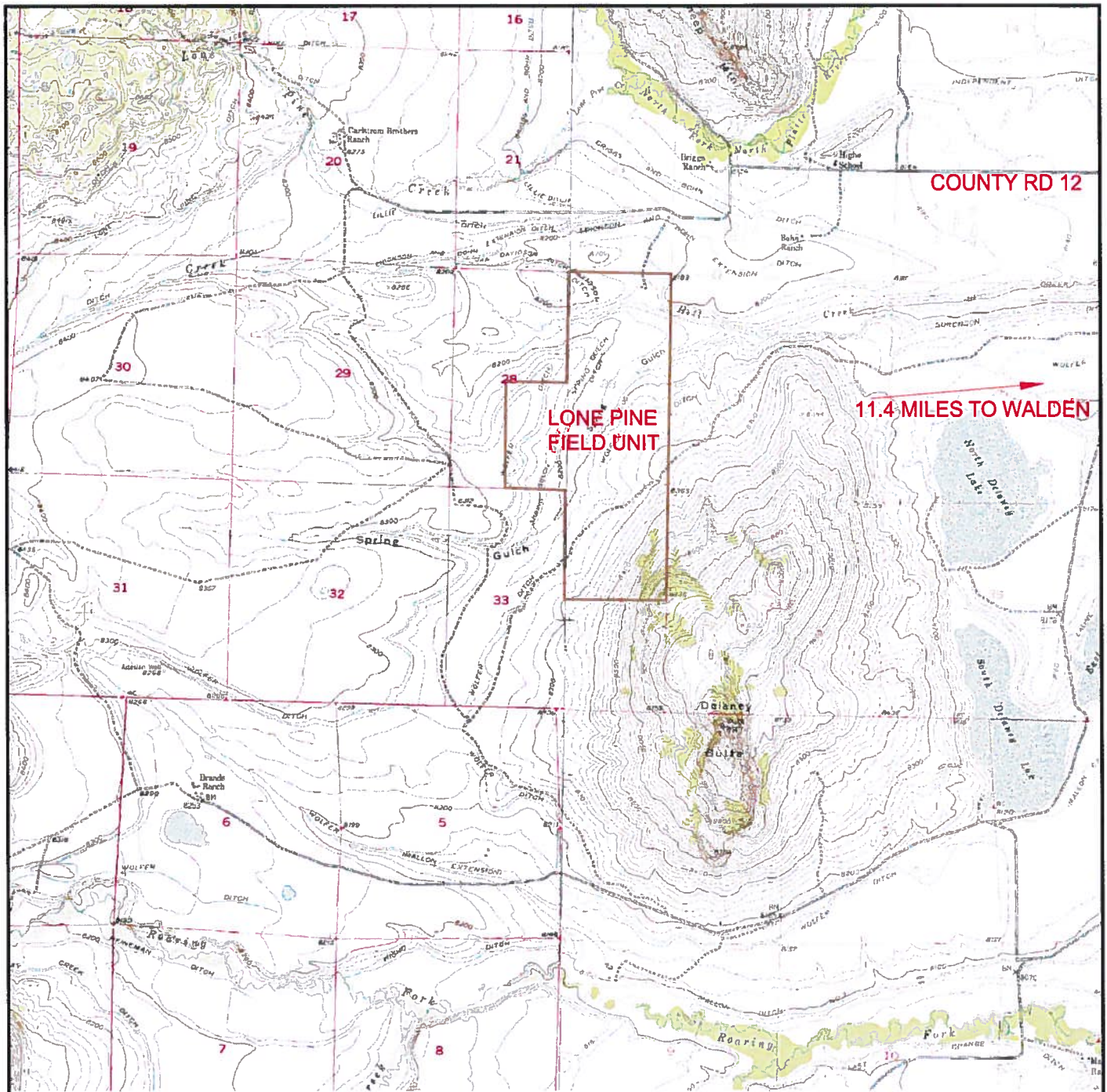
Sincerely,

OLSSON ASSOCIATES



James W. Hix
Senior Geologist

ATTACHMENTS



LOCATION MAP



0 1/4 1/2 1 MILES

PROJECT: 009-1153

DRAWN BY: SDS

DATE: 09.21.10

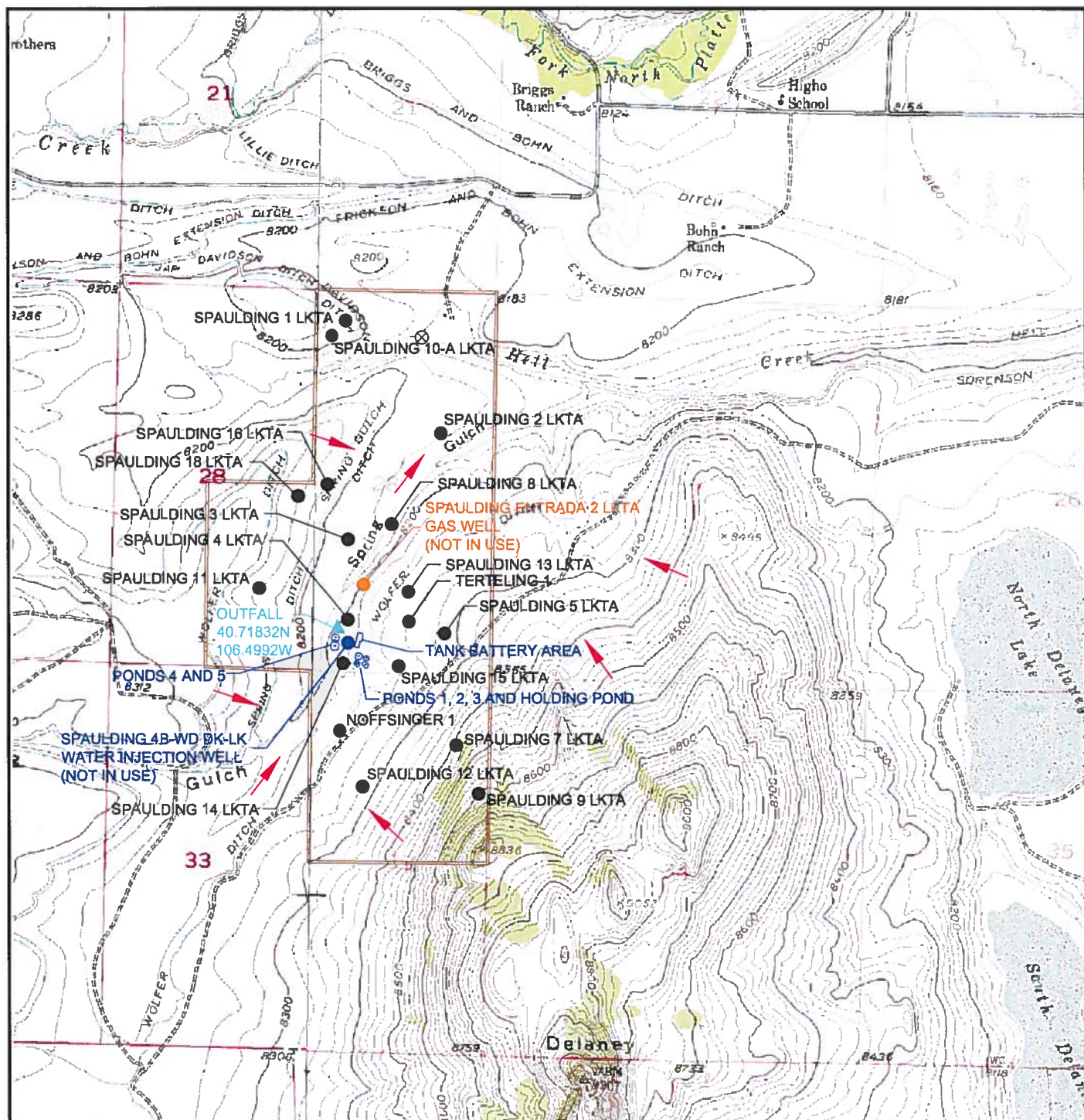
SITE LOCATION MAP
LONE PINE GAS, INC.
LONE PINE FIELD UNIT
SEC 28 AND 33, T9N, R81W
JACKSON COUNTY, COLORADO

OLSSON
ASSOCIATES

4890 TABLE MOUNTAIN DRIVE
SUITE 200
GOLDEN, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE

1



LEGEND

- FLOW LINES
- BOUNDARY OF AREA SUBJECT TO APPLICATION
- LOCATION OF MARCH 2006 SPILL
- OIL WELL
- GAS WELL (NOT IN USE)
- WATER INJECTION WELL (NOT IN USE)



LOCATION MAP



0 1,000 2,000 4,000 FEET

PROJECT: 009-1153

DRAWN BY: SDS

DATE: 09.21.10

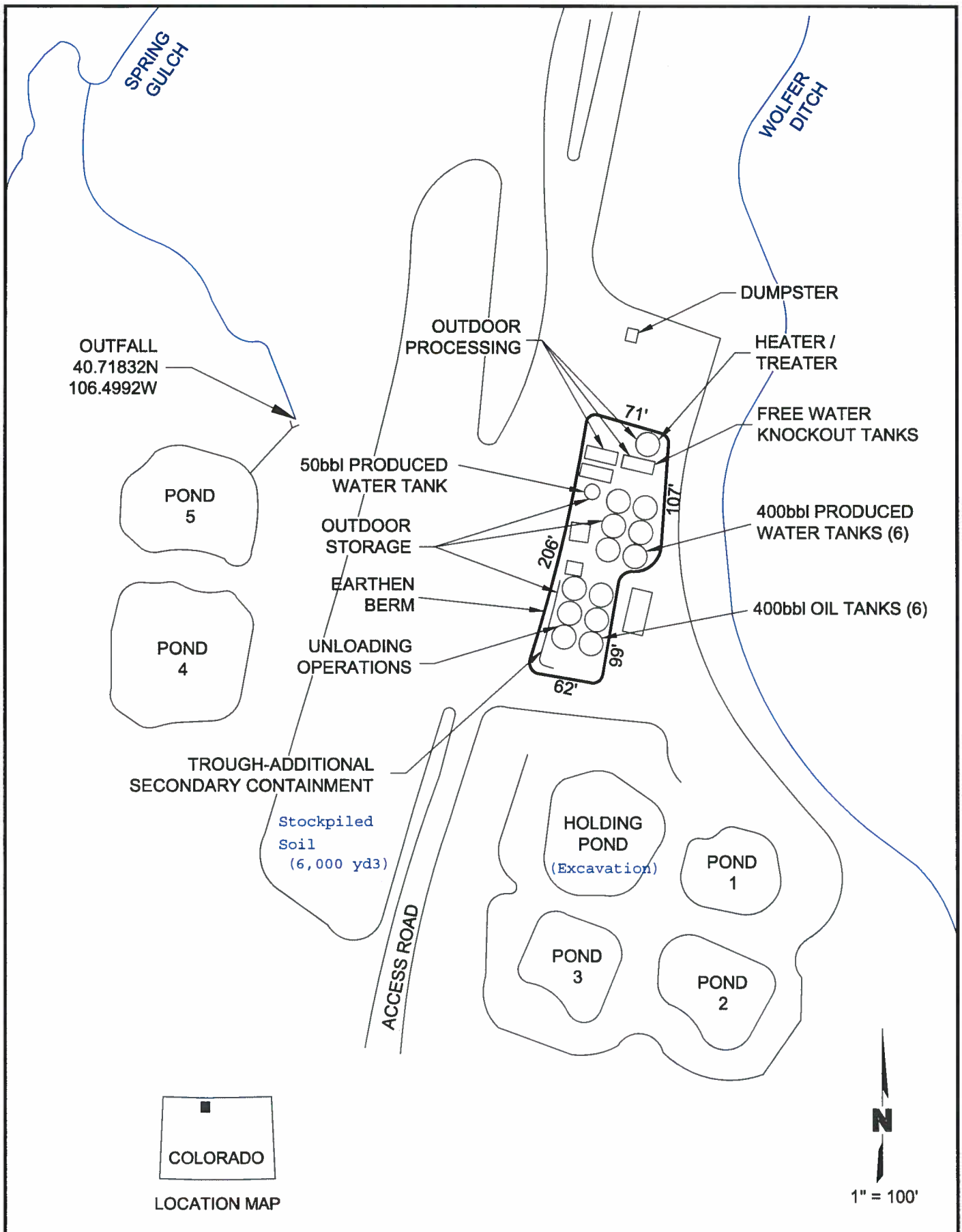
FACILITY DRAINAGE MAP
SHOWING WELL PADS
LONE PINE GAS, INC.
LONE PINE FIELD UNIT
JACKSON COUNTY, COLORADO

OLSSON
ASSOCIATES

4690 TABLE MOUNTAIN DRIVE
SUITE 200
GOLDEN, CO 80403
TEL 303.237.2072
FAX 303.237.2669

FIGURE

2



PROJECT: 009-1153

DRAWN BY: SDS

DATE: 09.21.10

CENTRAL TANK BATTERY AREA
LONE PINE GAS, INC.
LONE PINE FIELD UNIT
JACKSON COUNTY, COLORADO

OLSSON
ASSOCIATES

4680 TABLE MOUNTAIN DRIVE
SUITE 200
GOLDEN, CO 80403
TEL 303.237.2072
FAX 303.237.2669

FIGURE

3

TP ENVIRONMENTAL & PIPELINE SERVICES



Advanced Soil Remediation

You can GO GREEN and still reduce your liability and environmental cleanup costs!

TP has successfully remediated many soil types affected with a wide range of petroleum hydrocarbons including gasoline, diesel, condensate, and lube oil. Other chemicals of concern that have been addressed by TP have included chloride and amines.

TP utilizes a ScreenMachine® 621T to accomplish soil remediation. Depending on soil conditions, the 621T can process up to 300 yards of material per hour. In the event material segregation is desired or additional aeration of the material is required, the 621T is equipped with a 6' diameter 21' long trommel.

TP has taken the additional step in offering a more aggressive remedial option by equipping the 621T with an internal spray system capable of delivering various remedial additives/chemicals to assist with the remediation process. TP utilizes a proprietary solution to assist with the remediation of petroleum hydrocarbon or salt impacted material. The proprietary solution is sprayed onto the shredded soil which is subsequently stockpiled pending laboratory analysis.

No Impacted Materials Leave the Site.

For more information visit our website or give us a call

TPEnviro.com • 877.886.5176

GO GREEN!

Other TPEnviro Services Offered

- ADVANCED SOIL REMEDIATION - SOIL SHREDDING AND TREATING
- 24/7 EMERGENCY RESPONSE, SPILL MANAGEMENT, AND CLEANUP SERVICES
- EARTH MOVING AND CONSTRUCTION SERVICES
- REGULATORY COMPLIANCE AND LITIGATION SUPPORT
- WASTE CHARACTERIZATION
- PIPELINE AND UTILITY RIGHT-OF-WAY SERVICES
- LANDFARM DESIGN, CONSTRUCTION, AND OPERATION
- CONSTRUCTION MANAGEMENT AND GENERAL CONTRACTING
- UNDERGROUND STORAGE TANK MANAGEMENT AND REMOVAL
- ENGINEERING DESIGN, SYSTEM INSTALLATION, AND OPERATION

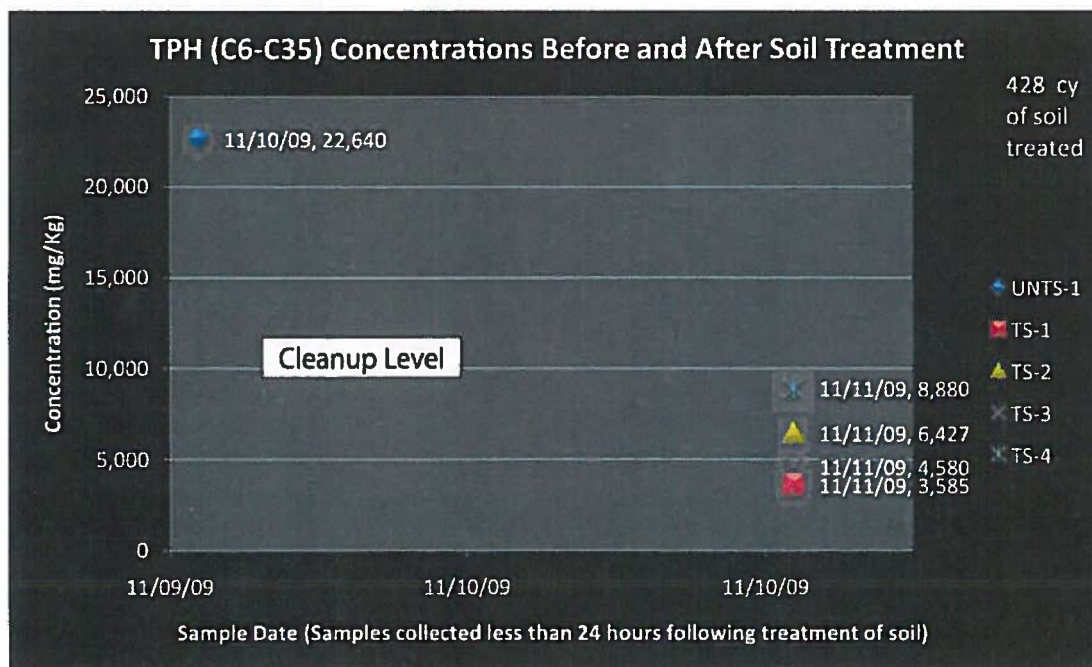
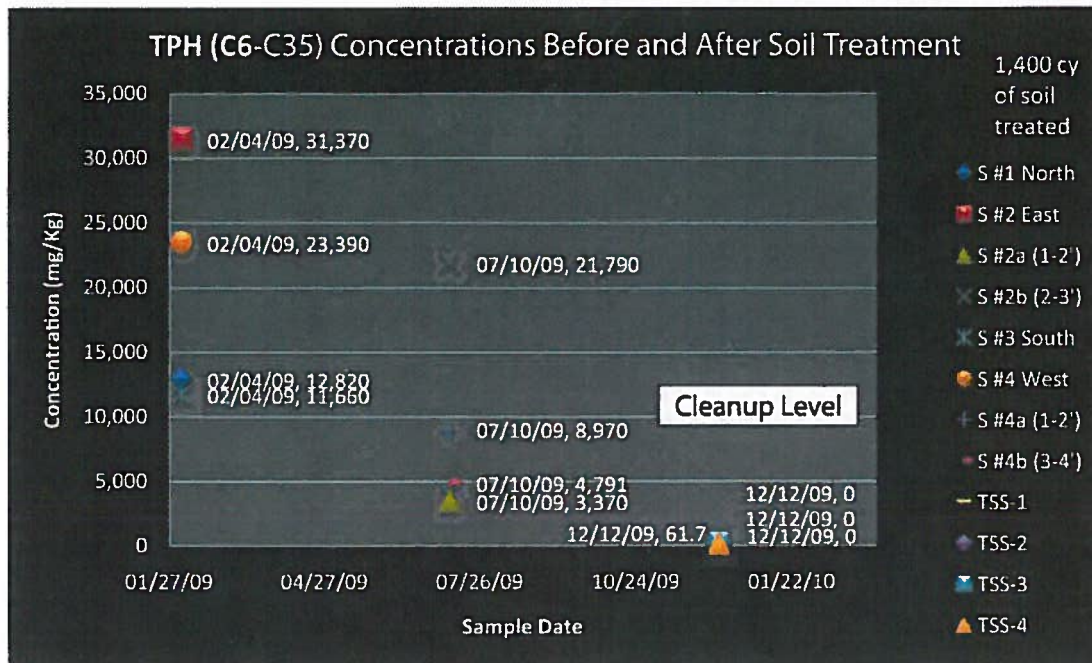


Rapid Response • Rapid Assessment • Rapid Remediation



Advanced Soil Remediation

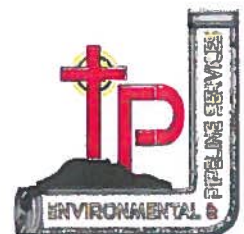
Concentrations Before and After Soil Treatment



For more information visit our website or give us a call

TPEnviro.com • 877.886.5176

Rapid Response • Rapid Assessment • Rapid Remediation



Advanced Soil Remediation - Ex-Situ Mechanical Shredding with Chemical Oxidation

One of TP's core competencies is providing soil remediation services to our clients. TP has developed a soil remediation process that will remediate affected soil in short order. TP has successfully remediated many soil types affected with a wide range of petroleum hydrocarbons including gasoline, diesel, condensate, and lube oil. Other chemicals of concern that have been addressed by TP have included chloride and amines.

24/7 Emergency Response, Spill Management, and Cleanup Services

Emergency response situations are critical and time consuming for our diverse clients. Through our knowledge and experience, TP provides a complete and professional response measured to the needs of our clients. TP can provide assistance in the complex realm of the response for regulatory interface, development of response action plans, equipment, implementation of the ICS, financial controls, and technical knowledge.

Engineering Design, Construction Management, and General Contracting

TP provides engineering services to a wide range of clients for many different types of environmental permits including preparation of sealed plan sets and/or review of sealed plans for construction or permit approval. Projects include: pipeline construction and related facility installations, subtitle D landfills, C - Stores, waste water discharge, facility decommissioning, waste water treatment plants, brine pond construction, waste disposal and environmental closure projects for the TCEQ and RRC. TP's professional engineers provide design and design review as necessary for the noted projects where sealed drawings and design are required. For these projects, TP also provides project and construction management through completion. TP professionals are experienced at managing a variety of environmental and civil construction projects and are well-versed at cost management. TP has full range to turn key any project with complete construction abilities from the earthwork, masonry, electrical and mechanical crews. TP pre-qualifies and maintains a variety of subcontractors to ensure the client has a reduced liability associated with project activities and to ensure a safe and quality-oriented workplace.

Landfarm Design, Construction, Management, and Bioremediation

TP professionals are experienced in the design, construction, and operation of land farms and bioremediation cells. Our staff has designed and operated numerous landfarm and bioremediation facilities for crude oil, sludges, and petroleum product spills. We have remediated saltwater-impacted soils using land farming and bioremediation technology as well. TP has extensive experience in permitting and negotiating operation of land farms and bioremediation facilities with the regulatory agencies and can assist in landowner negotiation where appropriate. We offer treatability studies, ex-situ and in-situ bioremediation services, as well as bio-composting and windrow techniques. In addition to these services, we offer conventional treatment and stabilization capability for hazardous and non-hazardous solid waste and wastewater.

Hydrotest Water Permitting and Treatment

TP has developed a specialized expertise in permitting, handling, and treatment of pipeline hydrostatic test water. We have developed a number of innovative solutions for fast-track projects, and can take hydrostatic testing projects from start to finish within budget and on schedule. We have completed water treatment and discharge projects which have varied from tank bottom water to hydrostatic test water and volumes ranging from 21,000 gallons to 500,000,000 gallons.

14800 Bristol Park Blvd.
OKC, Oklahoma 73013
(877)886-5176
(405)340-7660
info@tpenviro.com



TP Environmental Successfully Completes Remediation of Historical Oil Field Pit Site in Southeast Wyoming, January 11, 2013

From June 2012 through October 2012, TP Environmental & Pipeline Services performed soil and groundwater remediation activities on a former well blowdown pit located in southwestern Wyoming. The historic impacts originated in the 1970s and chemicals of concern consisted of various refined and unrefined petroleum-related VOC contaminants. Before TP was contracted other strategies had been employed onsite (pump and treat, air sparge/soil vapor extraction) with little success. The site was registered under the WY Department of Environmental Quality-Voluntary Cleanup Program, whereby TP utilized a mobile soil shredding unit to process 92,000 cubic yards of contaminated soil. Soils consisted of poorly graded clays, sands, gravels, and small boulders with TPH concentrations ranging from 90 mg/kg to >24,000 mg/kg. The average treatment rate over the course of the project was 1,090 yards per day. Cleanup standards assigned to the site were USEPA Soil Screening Levels, which are known to be some of the strictest/lowest risk-based concentrations to achieve within the country. TP effectively remediated all soils below regulatory cleanup standards, in addition to treating thousands of gallons of hydrocarbon-impacted groundwater via an onsite air stripping unit.



View of Excavation Area



View of Stockpiled Soils



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