STUDY ON EX-SITU TREATMENT ON SALT WATER IMPACTED SOILS

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TALON/LPE OVERVIEW

Talon/LPE is a multifaceted Environmental Services firm with offices in Texas, Oklahoma, New Mexico, and Colorado.

- Environmental Consulting
- Environmental Engineering
- Environmental Drilling
- Air Permitting
- Spill Management
 Oilfield Construction
- Safety Training



SERVICE AREA





ENVIRONMENTAL CONSULTING

- Comprehensive Environmental Site Assessments
- Soil and Groundwater Remediation
- UST Removal Oversight, Sampling, and Reporting
- Groundwater Monitoring
- Waste Characterization , Management and Minimization
- Wastewater Permitting
- Air Permitting
- Asbestos Consultant
- Safety Training
- Naturally Occurring Radioactive Material Surveys
- National Environmental Policy Act Investigations and Compliance
- Facility Compliance Audits



CONSTRUCTION SERVICES

CONSTRUCTION SERVICES:

- Excavation & Earth Moving
- Remediation System Installation & Modification
- Storage Tank Cleaning, Upgrading, & Demolition
- UST Removal
- Building Demolition
- Waste Hauling
- Directional Boring
- Road Construction and Maintenance
- Well Pad Site Construction
- Site Reclamation

EQUIPMENT CURRENTLY OPERATED:

- Backhoes
- Dump trucks
- Excavators
- Skid Loaders
- Vacuum Trucks
- End Dumps
- Hydro Excavator
 - Dozers
- Front End Loader
- Graders



DRILLING

Services

Rotary Drilling Methods:

- Direct Air Rotary
- Direct Mud Rotary
- Down-Hole Hammer

Hollow Stem Auger Drilling:

- High Torque CME 85 Rig
- Limited access SS-5 Rig

Direct Push Methods:

- Geoprobe Limited Access Rigs
- Truck mounted Geoprobe

MOBILE DUAL PHASE EXTRACTION (MDPE)

Utilize current technology and utilizes both industry standard and site specific remedial strategies to meet individual client/site specific needs. With the ability to utilize down well 'stingers' or submersible pumps, and the ability to treat and dispose of extracted liquids onsite, Talon/LPE has both the expertise and equipment to meet your needs.

Onsite Water Filtration

 Process liquid recovery rates of up to 50-gpm while maintaining effective filtration to meet all discharge limits

Sampling

- Discreet sample collection and screening of extracted soil vapor along with concurrent process flow data to provide accurate mass recovery estimates
- Effluent vapor sample collection and screening to ensure proper destruction of extracted VOC's
- Effluent/treated water sample collection from two stages of the treatment process to ensure discharged liquid concentrations are below permitted levels



HEALTH AND SAFETY TRAINING

- HSE Training:
 - Regulations Overview: OSHA, EPA, DOT
 - HAZWOPER
 - 40-hour Hazardous Waste Operations and Emergency Response
 - 24-hour Technician Level Emergency Spill Response
 - Annual 8-Hour Refreshers
 - Incident Management System: ICS and NIMS
 - Confined Space Entry & Rescue
 - Electrical and Arc Flash
 - Hazard Communication Standard (GHS)
 - Job Hazard Analysis (JHA)-Job Safety Environmental Assessment (JSEA)
 - Bloodborne Pathogens
 - Hazardous Materials Management
 - Fire Extinguisher Training
 - DOT HazMat Employee Training as per 49 CFR 172.700-704
 - Excavation Safety
 - Safety Management
 - Personal Protective Equipment (PPE), including FR and AR
 - Hot Work
 - Hydrogen Sulfide training under OSHA, TAC, API, OCD, ASSE...
 - Environmental Regulations: RCRA, CERCLA, CWA, CAA, NEPA...



SPILL RESPONSE

- 24-Hour Response
- Spill Abatement & Remediation
- Oil Spill Response
- Transformer Spill Response
- Railroad Incident Response
- Commercial Transport Incident Response
- Sampling & Analysis
- Vacuum Truck Services
- Waste Characterization & Disposal
- Site Restoration
- Regulatory Compliance & Reporting



SOIL SHREDDING

Talon/LPE offers on-site soil shredding services for the treatment of soils impacted by hydrocarbons and other compounds. Talon currently operates four soil shredders.

- Impacted soil is mechanically broken down
- Aerate Soil
- Maximum surface contact

Amendments or remediation compounds
Soil is then ejected at a high rate of speed
Eliminates dig and haul
Eliminates long term liability



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PROBLEM

Many of Talon/LPE's clients were regularly asking for a solution to salt water impacted soils.

- Many products available
- Costly
- Large amount water required by manufactures
- Limited analytical results to support effectiveness
- Limited application techniques



DRIVING FACTORS

- Soil shredding process is effective method of remediation of hydrocarbon impacted soils
- Eliminates "dig and haul"
- Economical solution for clients
- Breaks down soil particles to allow effective amendment application
- Relationship with WTAMU, Nationally recognized environmental program



STUDY

Develop a study with WTAMU to combine soil shredding technology with most widely accepted amendments for salt water impacted soils.

- Effectiveness of soil shredder and application via spray bar system
- Effectiveness of four different amendments
- Produce reliable analytical results in a field study



TREATMENT LAYOUT

Set up area to test 6 cubic yards of impacted soil for each amendment. Three commercial products were chosen, along with a Gypsum and straw treatment. A fifth cell (Control) was shredded and treated with water only.





PROCESS

Each amendment was mixed according to manufacturer specifications, based on volume to be treated, and applied via spray bar after passing through the soil shredder. Poly liner material was used as a barrier between native soil and the treated soil.

SAMPLING & MONITORING

The treatment site is sampled and monitored on a weekly basis.







With the variety of testing and regulatory requirements in different states, each sample is analyzed for the following:

- pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS)
- Na, Ca, Mg, K, B
- Total Soluble Salts (TSS), Sodium Adsorption Ratio (SAR), Exchangeable Sodium Percentage (ESP)
- Cl⁻, CO₃, HCO₃, NO₃, SO₄











FUTURE OF STUDY

This study is ongoing:

 We will continue to collect analytical data
 Following evaluation, a variety of flora will be tested in the soil(s) at WTAMU's greenhouse

Results will be published



QUESTIONS AND DISCUSSIONS

