

NM - 22

**MONITORING
REPORTS**

PROPOSAL

YEAR(S):

Jan. 31, 2001

PROJECT:
INVESTIGATION, CLEANUP AND ENVIRONMENTAL REMEDIATION
OF THE GOODWIN TREATING PLANT

Offeror Name: Enviroceering, Inc.

Project Approach (75): _____

Project Plan (150): _____

Experience:

Proposed project staff experience in oil field cleanup/remediation (150):

Offerors Organizational relevant experience (175): _____

References:

Corporate(75): _____

Staff (75): _____

Cost (300): 285,478 ^{430 p/cy} / ^{730 p/cy} 306,038

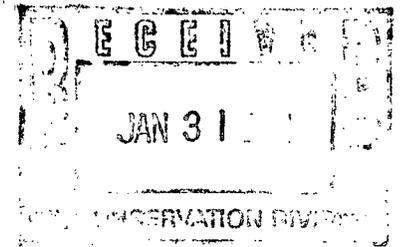
Turnkey: _____

Itemized supplemental: _____

Total points : _____

*Letter of transmittal - ok
Organization of proposal complete except business
specification not defined.*

*Round,
07*



PROPOSAL

**INVESTIGATION, CLEANUP AND
ENVIRONMENTAL REMEDIATION**

of the

**GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO**

Prepared for

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

Prepared by

ENVIRONEERING, INC.
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ENVIRONEERING, INC.

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1.0 – PROPOSAL SUMMARY

This proposal presents an engineering–construction team, uniquely qualified for investigation, cleanup, and remediation of the former Goodwin Treating Plant. Together, the team brings complimentary skill sets, conducive to the nature of this project. The team has developed an approach to this project that focus' on the elements most influential for cost control. Two specific areas of the work dictate the overall project cost more than any other work steps:

- The NORM survey approach, and
- The basis, action levels and controls for soil removal

While being fully protective and remaining responsive to the RFP, we consider our proposed approach to the work, to be the best at minimizing the ultimate project cost.

The approach to the NORM survey should result in the following:

- if regulated NORM is present at the site, it will be detected,
- the minimal required volume for regulated NORM will be established for disposal, and
- potential for the largest “ticket” costs on the project will be best controlled.

A risk based approach is also believed to provide the greatest merit in minimizing soil removal costs. This approach is discussed more herein.

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2.0 – RESPONSE TO TECHNICAL SPECIFICATIONS

GENERAL

ENVIRONEERING will provide a field supervisor to direct the site work. The supervisor will generally conduct the investigative portion of the work, and oversee the cleanup division of work to be conducted by USAE. The supervisor will direct all sampling and screening activities, direct well installation, conduct the soil and groundwater sampling activities, and coordinate with the Project Manager, EMNRD-OCD and USAE.

The following steps constitute responses to the Technical Specifications outlined in the RFP. Step ("Item") numbers correspond to specification numbers and budget item numbers in the RFP.

ITEM 1 – BORING & SAMPLING PROGRAM

An investigative boring will be completed within the emergency overflow pit, using an air rotary drill rig. The boring will be sampled for TPH, BTEX, and chloride during drilling. Samples will be collected at 3-5 feet below ground surface (bgs) followed by 10-foot intervals. PID measurements will be made and recorded continuously for screening purposes. One sample from each interval will be sent to the laboratory for chloride analysis. One sample each from the 3-5 foot interval, the highest PID location, and the bottom of the hole will be sent to the laboratory for TPH (8015 GRO & DRO) and BTEX analysis. All samples will be collected in laboratory supplied clean containers and immediately placed on ice for overnight shipment.

The borehole will be completed as a ground water monitor well. The depth of the borehole will be such that at least 15 feet of well screen will be below the water table intersect. Based on a preliminary study, it is expected that groundwater will be encountered between 60 and 80 feet at the site. Therefore the well will likely be in the range of 75 to 95 feet deep. For purposes of this proposal however, a 60-foot well is assumed for turnkey estimates.

ITEM 2 – MONITOR WELL INSTALLATION

The completed well will be of 2-inch PVC with at least 15 feet of screen. The well screen will be set with 5 feet above the water table and 10 feet below. A sand filter pack will extend 2-3 feet above the top of the screen with a 2-3 foot bentonite plug placed above the sand pack. The remainder of the annulus around the well will be tremie-grouted to the surface with cement and a 3-5% bentonite mix. A 3' x 3' x 6" concrete pad will be placed around the wellhead with a locking well cover.

The well will be developed after construction in accordance with EPA standards. Ground water purging will be conducted using a dedicated bailer.

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ITEM 3 – GROUND WATER SAMPLING

At least 24 hours after the well is developed, the Field Supervisor will sample the ground water in accordance with EPA methods and QA/QC standards. Ground water will be purged, sampled and analyzed for BTEX, PAH, TDS, major cations/anions and New Mexico WQCC metals.

ITEM 4 – NORM REQUIREMENTS

All work involving survey, handling and disposal of NORM will be conducted in accordance with requirements set forth in NMOCC Order R-10609. A certified radiation safety officer will conduct field surveying and testing for NORM, manage waste distribution and handling, and direct the safety conditions and exposure of all NORM. All requisite licensures are intact.

ITEM 5 – NORM SURVEY OF SITE

The radiation officer will conduct a complete NORM survey of all material on site. The site will be approached as if regulated NORM is potentially present. Site materials to be surveyed include site soils and contents in the tanks and treaters. The survey will be conducted in a manner that best controls any risk of potential regulated NORM being ultimately mixed with exempt material thereby expanding the potential disposal volume of regulated NORM. The approach will best enable isolation of material that exhibits field readings above 50 uR/hr, if any. Where possible, grid areas will be established for maximal coverage and optimal isolation potential. Isolated material detected at levels above 50 uR/hr will be sampled for Radium 226 analysis. If it is deemed that "twice background" levels are preferred or more appropriate as screening criterion per industry standards, such can be implemented instead of the 50 uR/hr level. For purposes of this proposal, 50 uR/hr screening criterion is assumed.

Sample analysis will be conducted at American Radiation Services in Baton Rouge, Louisiana. Where feasible after surveying and isolation, and concurrent with lab analyses, material screened below 50 uR/hr will be segregated to enable work progress while waiting on lab results. If notable variance is encountered in any isolated material left in place, the material will be delineated in a way that separates higher and lower level materials, to enable potential segregation needs pending lab results. Where lab results are less than 30 pCi/gm, the delineated material corresponding to that sample will be segregated and added to the exempt material. Where lab results are greater than 30 pCi/gm, that material will be segregated separately for disposal as regulated NORM.

In the end, this approach should result in the following:

- if regulated NORM is present at the site, it will be detected,
- the minimal required volume for regulated NORM will be established for disposal, and
- potential for the largest "ticket" costs on the project will be best controlled.

Prior to any segregation or removal actions, the site will be graded with controls as needed for storm water, spillage and rinseate control to prevent potential spreading of waste material.

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ITEM 6 – REMOVAL AND DISPOSAL OF TANK FLUIDS

Liquids and sludges will be removed first from the tanks. These fluids will be removed with vacuum assistance where necessary and as possible. For purposes of this proposal, and as suggested in the RFP, it is assumed that the liquids will not be recyclable. However, if it is considered reasonable based on field observation or EMNRD-OCD direction that testing for such is warranted, we will be prepared to assist with the assessment.

The fluids will be transported for disposal in vacuum trucks, permitted in accordance with all applicable regulations. Fluids will be disposed of at Sundance Services, Inc. in Eunice, NM.

ITEM 7 - REMOVAL AND DISPOSAL OF TANK SOLIDS

Residual solids in the tanks will be removed for disposal as conditions dictate. Segregation of exempt and regulated NORM materials will be maintained where necessary. The material will be pumped where possible. Manual efforts will be used and the material will be emptied into adjacent pits for loading. The material will be loaded into trucks or boxes for transport. The tanks will be cleaned with squeegees to prepare for dismantle and demolition operations. Only personnel trained in confined space entry will conduct any work in the tanks. A copy of USA's confined space entry plan and permit can be provided upon request.

For purposes of this proposal, the quantities reflected in the RFP are assumed. Turnkey disposal costs reflect landfill disposal at Sundance Services as opposed to land-farming remediation. This is for cost reasons and not reflective of our interests or responsiveness to the RFP. The quote provided to us from the nearest and most cost-effective alternative for land-farming at Rhino Environmental Services, is \$2/CY higher than Sundance. If the preferred landfarm option were exercised with Rhino's original quote to us, item 7 (tank solids) would increase \$6,735. This cost option is provided with the tabulated Offer Amounts. However, given that Rhino Environmental Services is also a Bidder, it is possible that the landfarming bid to EMNRD-OCD provided by Rhino is lower than its quote to us. If this is true, it may be beneficial and proper to assume their landfarm cost for that portion of our bid item, for a more fair and cost-competitive comparison.

ITEM 8 – REMOVAL AND DISPOSAL OF TANKS, TREATERS, & MISC. EQUIPMENT

All site equipment will be dismantled and reduced for transport and disposal.

The cleaned steel tanks will be cut for placement into salvage boxes for transport to a recycling company. The tanks will be cut using hydraulic shears and cutting torches where permissible.

Metal piping and process equipment will be cleaned out, cut and included in the salvage boxes.

The redwood tanks will be broken down with a trackhoe and loaded along with tank bottom solids into trucks for landfill disposal.

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Other debris and scrap including pumps, motors, hardware, pipe, tires, catwalks, etc. will be decontaminated and recycled as scrap or disposed of in a landfill.

Material to be hauled to a landfill will be disposed of at Sundance Services, Inc.

ITEM 9 – INVESTIGATE SITE SOILS

To fully characterize potentially affected site soils, the site will also be investigated for TPH, BTEX, and chlorides. This investigation will primarily target soils beneath each tank/sump, treater, and the tank bottom soil pile. Samples will be collected from the bottom of each excavation. PID measurements will be used as a screening tool. At a minimum, one sample from the highest PID location will be collected from each test area for analysis. Samples will be analyzed using the following methods: method 8015M GRO & DRO (for TPH), method 8060 (BTEX), and chloride (method E325.3). The investigation will couple with the NORM survey to enable full characterization and segregation of site affected soils for optimal remediation or disposal. For purposes of this proposal, 35 samples and analyses are assumed for the turnkey estimate.

ITEM 10 – REMOVAL AND DISPOSAL OF SITE SOILS

The approach to removal of affected site soils will be based on cost minimization while remaining environmentally protective. Considering the potential costs of this step and a limited study of site conditions, a risk based removal action is likely the best approach to take. Ground water is expected to be between 60 and 80 feet deep and preliminary assessment of likely exposure routes, source mass and attenuation conditions, suggest that action levels for removal can be safely increased. Presumably the action levels reflected in the RFP are derived on a preliminary risk basis, but it is believed that those levels are conservative enough that excessive removal costs could result. At this step in the project, we will know source concentrations, ground water concentrations if any, and will be able to readily assess each exposure pathway in a site-specific manner. A risk assessment is proposed and considered to be limited in scope and expense for this project. The effort would likely pay for itself many times over through reduction of soil disposal costs, assuming the soils are not excessively affected by NORM. The Senior Scientist rate provided in the supplemental cost schedule can be utilized for a limited risk study with EMNRD-OCD.

For purposes of this proposal, 1450 CY of soil removal to a maximum depth of 5 feet is assumed for turnkey costing. This assumption is based on the action levels required in the RFP. It is also assumed for turnkey costing, that action soils are below 50 pCi/gm Ra-226 for disposal. If action level soils also exceed 50 pCi/gm Ra-226, this material will be disposed of at Waste Management's facility in Carlyss, Louisiana for the cost rate provided in the supplemental cost schedule.

Turn-key disposal costs reflect landfill disposal at Sundance Services as opposed to land-farming remediation. This is for cost reasons and not reflective of our interests or responsiveness to the RFP. The quote provided to us from the nearest and most cost-effective alternative for land-farming at Rhino Environmental Services, is \$2/CY higher than Sundance. If the preferred landfarm option were exercised with Rhino's original quote to us, item 10 costs would increase \$3,650. This cost option is provided with

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the tabulated Offer Amounts. However, given that Rhino Environmental Services is also a Bidder, it is possible that the landfarming bid to EMNRD-OCD provided by Rhino is lower than its quote to us. If this is true, it may be beneficial and proper to assume their landfarm cost for that portion of our bid item, for a more fair and cost-competitive comparison.

Irrespective of likely savings associated with refined risk-based levels, soil excavation will also be conducted in a manner that further controls removal costs. Soil testing will be conducted in 1-foot intervals in order to prevent over excavation beyond final action levels. The end goal will be to minimize the volume of soil removal thereby minimizing soil removal costs. The proposed risk-based approach coupled with the controlled test/excavation approach should lead to this end goal.

ITEM 11 – BACKFILL EXCAVATIONS

In coordination with EMNRD-OCD, backfill material will be trucked to the site on back-hauls from the disposal or treatment facilities. If the facility is not prepared to provide fill soil, borrow soils will be purchased for backfill. Backfill soils will be place in one-foot lifts and compacted with a track dozer. Final lifts will be graded to 5% slopes to provide positive drainage and accommodate differential settlement with time.

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3.0 – RESPONSE TO BUSINESS SPECIFICATIONS

ENVIRONEERING, Inc. accepts the business specifications as presented.

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4.0 – OFFER AMOUNTS

Our offer amounts or Bid Prices are provided in this section. In accordance with the structure requested in the RFP, turnkey costs are provided, and supplemental rate costs are provided for work alternatives and work items with variable or excessive quantities relative to RFP baselines.

The Item Costs presented in the turnkey table are divided into two site labor categories. The first cost column represents site work (NORM) conditions found to be below 30 pCi/gm, and the second column represents work conditions found to be greater than 50 pCi/gm, warranting trained labor and protective equipment costs.

It should be noted again that turnkey disposal costs (solids and soils) reflect landfill disposal at Sundance Services as opposed to land-farming remediation. This is for cost reasons and not reflective of our interests or responsiveness to the RFP. The quote provided to us from the nearest and most cost-effective alternative for land-farming at Rhino Environmental Services, is \$2/CY higher than Sundance. If the preferred landfarm option were exercised with Rhino's original quote to us, costs for Items 7 and 10 would increase as noted below the tabulation. The option with Rhino is considered to be a part of the proposed bid, but the actual costs are considered to be unknown. Given that Rhino Environmental Services is also a Bidder, it is possible that the landfarming bid to EMNRD-OCD provided by Rhino is lower than its quote to us. If this is true, it may be beneficial and proper to assume their landfarm cost for that portion of our bid item, for a more fair and cost-competitive comparison. It is considered that such an adjustment would result in EMNRD-OCDs preferred option, landfarming, to be the most cost-effective option as well.

The following list represents turnkey bid prices structured in accordance with the RFP:

TECHNICAL SPECIFICATION ITEM

	<u>ITEM COSTS</u>	
	<u>Site Wastes</u> <u><30 pCi/gm</u>	<u>Site Wastes</u> <u>>30 pCi/gm</u>
1. Boring and Sampling Program	\$ 5,000.00	5,000.00
2. Monitor Well Installation	\$ 1,000.00	1,000.00
3. Groundwater Sampling	\$ 1,200.00	1,200.00
4. NORM Requirements	\$ 0.00	0.00
5. NORM Survey of Site (<i>Lab Analysis Excluded</i>)	\$ 2,500.00	2,500.00
6. Removal and Disposal of Tank Fluids	\$ 12,000.00	12,000.00
7. Removal and Disposal of Tank Solids (<i>Ra-226<50pCi/gm</i>)	\$ 118,165.00*	129,500.00*
8. Removal and Disposal of Tanks, Treaters & Misc. Equip.	\$ 56,500.00	58,810.00
9. Investigate Site Soils	\$ 7,800.00	7,800.00
10. Removal and Disposal of Site Soils (<i>Ra-226<50pCi/gm</i>)	\$ 45,550.00*	50,500.00*
11. Backfill Excavations	\$ 8,560.00	9,430.00
12. Phase I report	\$ 3,500.00	3,500.00
13. Phase 2 report	\$ 3,500.00	3,500.00
14. Phase 3 report	\$ 5,000.00	5,000.00

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Total	\$ 270,275.00	289,740.00
NM Gross Receipts Tax	\$ 15,203.00	<u>16,298.00</u>
Total Turnkey Cost	\$ 285,478	306,038

* Costs may be unrightfully high. Preferred landfarm option may be rightfully less than disposal costs listed. If current Rhino landfarm quote is utilized without adjustment noted above, Item 7 costs would increase by \$ 6,735, and Item 10 costs would increase by \$ 3,650. The supplemental rate below for offsite landfarm remediation may also be unrightfully high as it is also based on Rhino's original quote.

Supplemental cost rates are provided below for purposes of excessive quantities and work alternatives, in lieu of turnkey costs.

SUPPLEMENTAL RATES

<u>DESCRIPTION OF SERVICE</u>	<u>RATE</u>	<u>UNIT</u>
Air rotary rig equipped to perform all work Set out in technical specifications	\$ 30.00	foot
Bentonite pellets	\$ 1.80	pound
Blank 2 inch PVC riser	\$ 2.25	foot
Move-in, move-out charges	\$ 140.00	hour
Water truck (capacity 130 bbls.)	\$ 75.00	hour
Backhoe (minimum hours if applicable: 6)	\$ 55.00	hour
Trackhoe (minimum hours if applicable: 8)	\$ 90.00	hour
Dozer (minimum hours if applicable: 8)	\$ 85.00	hour
Trucking (minimum hours if applicable: --)	\$ 75.00	hour
Front end loader (minimum hours if applicable: 6)	\$ 65.00	hour
Senior scientist/consultant	\$ 75.00	hour
Environmental technician	\$ 45.00	hour
Certified NORM technician/scientist	\$ 75.00	hour
Certified NORM technician/scientist per deim	\$ 100.00	day

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Labor	\$ 30.00	hour
Photo Ionization Detector (PID)	\$ 35.00	day
Chloride laboratory analysis	\$ 22.00	each
TPH laboratory analysis	\$ 65.00	each
BTEX laboratory analysis	\$ 54.00	each
Contaminated soil offsite landfarm remediation*	\$ 15.00*	cubic yard
Back-haul clean soil	\$ 5.00	cubic yard
NORM soil haul & offsite disposal (Ra-226>50pCi/gm)	\$ 525.00	cubic yard
NORM soil haul & offsite disposal (Ra-226<50pCi/gm)	\$ 31.00	cubic yard
Ra-226 Lab Analysis (excluding freight to lab)	\$132.00	each
Produced water and non-NORM liquids disposal	\$ 3.15	barrel

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5.0 – ADDITIONAL TERMS AND CONDITIONS

ENVIRONEERING requires no additional terms and conditions for this project.

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6.0 – SUPPORTING MATERIAL

This section of the proposal provides the project team, qualifications and experience of the team and project staff, and team references.

PROJECT TEAM

ENVIRONEERING, INC. will be the prime contractor for this project. ENVIRONEERING will generally conduct the investigative portion of the work, and oversee the cleanup division of work to be conducted by USA Environment, Inc. (USAE). ENVIRONEERING also brings Darrell Crass Drilling, Inc. (Odessa, TX.) to the team for drilling services, and e-Lab, Inc. (Houston, TX.) for analytical services. Mr. Jeff Byrd is proposed as ENVIRONEERING's field supervisor. Mr. Byrd is located in our Carlsbad, New Mexico office. Mr. Tim White will serve as Project Manager. Professional profiles of these team managers and other personnel that may assist with the work are provided below.

The cleanup subcontractor, USAE, will also be conducting the surveying, testing, management, and disposal of NORM waste. USAE brings American Radiation Services to the team for NORM analytical services.

QUALIFICATIONS AND EXPERIENCE

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GENERAL

ENVIRONEERING is a full-service environmental consulting firm that provides professional consulting services to private industry and government agencies. The firm provides a wide range of environmental services including site investigations, hydrogeological characterizations, site remediation and closures, risk assessments, corrective measures evaluations, hazardous waste permitting, air permitting, and master planning. We have considerable experience in site investigations and characterization, compliance services, and remedial support for facilities throughout North America. ENVIRONEERING's staff has provided assistance to clients in over 39 states and five countries.

We have a client base of more than 100 companies, many of which are Fortune 500 companies. In addition, many of our client companies have facilities throughout the United States. A partial list of our client companies is as follows:

Occidental Chemical Corporation

OxyChem Pipeline Operations

Oxy USA, Inc.

Pennzoil

Formosa Plastics Corporation

Ultramar Diamond Shamrock

Reef Industries, Inc.

Valero Energy Corporation

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Wyman Gordon Forgings	Armco Steel
Rohm & Haas Texas, Inc.	Seagull Energy Corporation
Sterling Chemicals	Lubrizol Petroleum Chemicals
National Oilwell	Vinson & Elkins
Quantum Chemicals	Citicorp North America
ALCOA, Inc.	Best Uniform Supply Company
Equistar Chemicals	Millennium Petrochemicals
Texas Natural Resource Conservation Commission	

Most of our clients are long-term clients, and most of our projects originate as repeat work from our existing clients.

ENVIRONEERING personnel are published and recognized speakers in various symposiums and conferences. Our core personnel have regularly participated as speakers at the Texas Environmental Regulation Briefing presented by Executive Enterprises, Inc. Topics discussed by ENVIRONEERING personnel have included wastewater discharge regulations affecting the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) industry, Toxicity Characteristic Leaching Procedure (TCLP) hazardous waste criteria, Benzene National Emission Standards for Hazardous Air Pollutants (NESHAPS), possible future trends of the Land Ban rules, storm water regulations, National Pollutant Elimination System (NPDES) discharge permitting and the requirements for those permits, and chlorinated solvent sites.

ENVIRONEERING provides a wide range of services, including:

- Hazardous and solid waste site investigation and remediation;
- Hydrogeological characterizations;
- Groundwater flow and contaminant transport modeling;
- Underground storage tank investigations and remediation;
- Clean Air Act Amendments Compliance and permitting;
- Air Modeling;
- In-Plant Services & Environmental Management;
- Spill Prevention Control and Countermeasure (SPCC) plans;
- Engineering design of hazardous and solid waste management facilities;
- Hazardous facility closure plans, implementation and closure certification;
- Hazardous waste management studies;
- Industrial hygiene personnel and area monitoring and surveys;
- Industrial facility compliance assessments;
- Property transfer assessments;
- Superfund Amendment Reauthorization Act (SARA Title III Compliance assistance);
- Environmental Protection Agency (EPA) and state agency negotiation;

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- Groundwater sampling and contaminant assessments;
- Waste stream characterization;
- NPDES wastewater and Storm water permitting; and
- Solid and hazardous waste facility permitting;
- Updating Past Remedy Decisions (per Superfund Reforms);
- Liability Control & Strategic Planning;
- Litigation Support & Expert Testimony

The Enviroengineering Advantage

ENVIRONEERING's business goal is to develop customized service programs that meet client-specific, organizational needs. Accordingly, with ENVIRONEERING, this focus is provided as a way of business with the incentive to continue our success in sustaining business relations, preferred by our clients. We have learned over the years how the operations of each industry are culturally unique, and how important that is to effective and functional consulting services. We take pride in our philosophy and motivation to recognize and learn program-specific needs and interests of each client operation, and our ability to adjust to those needs to provide best-fit services.

The ENVIRONEERING advantage is based on our business philosophy. The concept behind the our business philosophy and organization is to better ensure:

- "objective-based" focus as part of quality project management;
- projects are viewed as environment-related business problems and not overshadowed by the technical challenges;
- organized communication and teamwork for consistent and effective delivery of project services; and
- mode of operation that enables constant input and change of client-specific interests for each project and the program as a whole.

Therefore, our management philosophy is based on the balance and prioritization of four core values:

- **Objectives Focus** - Meeting well-defined objectives through a practice of "back-tracking" from a projected end product is the key to quality project management. This practice requires guided discipline and is essential to meeting NMOCD's consulting needs.
- **Communication** - No business or relationship can thrive without effective communication and business success is varied by the effectiveness of communication. Our service would be dysfunctional to the extent our communications are ineffective. The success of our services is dictated in part by our communication efforts, internally and externally.

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- **Big-picture Perspective** - Our ability to see the "big-picture" of NMOCD projects depends on our ability to comprehend these projects as business problems to NMOCD. By comprehending projects in this fashion, we become able to distinguish technical challenge from project objectives and client needs, share NMOCD perspective on project scope requirements, and better accomplish quality project management of project work.
- **Resourcefulness** - Being resourceful is the key to effective consulting engineering. The capacities of consulting engineering services are proportionate to the organization or consultant is resourceful.

REPRESENTATIVE PROJECT EXPERIENCE

Provided below are overviews of ENVIRONEERING experience that are applicable to projects NMOCD may request us to conduct. Each category is followed by select project summaries representative of our experience in these categories.

Site Investigations and Remediation

ENVIRONEERING has conducted well over a hundred hydrogeological investigations to characterize soil contamination and groundwater flow conditions and contaminant transport at industrial and commercial sites throughout the country with a significant number in the southwest. The primary goal of our hydrogeological investigations is to develop a site-specific conceptual model of the hydrogeological environment and site constituent characteristics and behavior, in order to enable informed decision-making for optimal remedial planning. ENVIRONEERING is familiar with a wide variety of organic and metal constituents. In particular, we have completed site investigations, risk assessments, and corrective measure studies at numerous sites contaminated with chlorinated solvents. All work is conducted with full recognition that big-ticket project costs are generated by the corrective action phase. The investigative phase controls the level of conservatism required for remedial design. Therefore, the investigative phase is carefully scoped based on the ultimate purpose of minimizing overall project costs.

As an integral part of hydrogeological studies, ENVIRONEERING has complete field capabilities including such for logging and sampling borings and monitoring wells, conducting slug and pumping tests, and borehole and surface geophysical testing.

ENVIRONEERING is well versed with the regulatory community and programs that require hydrogeological characterizations including hazardous waste permitting, SWMU investigations, UST investigations, hazardous and industrial waste unit closures, and spills and releases of hazardous constituents. We have worked with all programs within Superfund, RCRA, and TNRCC-specific organization.

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The following is a limited list of select projects summarized to provide representative project experience.

Investigation & Bioremediation of JP-8 Impacted Soils from Release

Location:	Texas City, Texas
Client:	Basis Petroleum, Inc. (now Valero Refining Co.)
Total Contract Amount:	\$80,000
Date Completed:	October 1997

“Basis” suffered a release of JP-8 jet fuel into secondary containment areas at its on-site tank farm. The bulk of the material was immediately recovered at the time of the release. Basis retained ENVIRONEERING to assist in delineating the lateral and vertical extent of potentially affected soils in the area. ENVIRONEERING prepared a work plan to perform an initial investigation. The work plan was approved by the TNRCC and ENVIRONEERING implemented that work plan in December 1996.

After the investigation, site impacts were assessed and a remedial action plan was developed. The overall remediation program consisted of enhanced biological degradation of target parameters by the addition of specially formulated microbial products, nutrients and other chemical amendments and soil penetrants. In addition, mechanical aeration and mixing of upper soil layers was performed on a routine basis.

The five affected tank containment areas were initially inoculated with a commercially available microbial product specially formulated to degrade jet fuel. The impacted areas were also treated with chemical soil amendments to enhance microbial activity and degradation of jet fuel constituents. These chemical amendments included the use of biologically degradable, non-hazardous organic-based soil penetrating compounds and oil dispersing agents and the addition of soil nutrients such as nitrates and phosphates. In addition, a chemical oxygen source, hydrogen peroxide, was utilized. These amendments were added to the soil under treatment on a weekly basis, as needed. Initially, the accessible soils in these tank containment areas were mechanically mixed to a depth of eighteen to twenty-four inches. Weather permitting, soil in these areas were routinely tilled or placed into windrows at least three times per week. In inaccessible areas, surface inoculation was performed and soil penetrants were added to increase soil permeability to oxygen and water. Treatability studies performed prior to onset of the field phase of the project indicated that the soil penetrants could permeate to a depth of twenty-four inches in twelve hours. The downward penetration of the liquid carries with it microorganisms and nutrients, facilitating degradation where surficial tilling could not be performed. Where possible, these areas were scarified manually to increase the depth of the treatment zone.

Sampling results from the treatment of affected soils with microorganisms indicated very effective remediation. Several orders of magnitude reductions of TPH concentrations were demonstrated in the affected areas, with many of the areas having no detectable concentrations of TPH after three months of treatment.

Facility Groundwater Model & Master Remedial Plan

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Location: 201 Bay Street South, Texas City, Texas 77590
Client: Sterling Chemicals, Inc.
Total Contract Amount: \$27,500
Date Completed: December 1994

Sterling's chemical plant in Texas City has identified and investigated a number of unit-specific groundwater contamination problems. By 1994, the number of these unit problems was large enough that ENVIRONEERING suggested a plant-wide approach for managing the plant's affected groundwater rather than unit-by-unit. This approach provided the same level of protection to human health and the environment while reducing the overall cost of groundwater remediation and compliance. Because of the earlier unit-by-unit approach, existing monitoring wells in the plant were located in clusters around the affected units. This left some rather significant gaps in the water-level database. Because of the voluminous groundwater data, the first step in developing the flow model was to develop a system to manage the groundwater data. The data formats were designed, and a spreadsheet program was used to store the data. Data from the spreadsheet was automatically downloaded into the model based on the model's input requirement.

A 3-D groundwater flow model was developed using ModFlow®. The first and most important step was the development of the site conceptual model. Surface impoundments, waste transfer ditch systems, and sludge-drying beds were modeled as river nodes, which allows the head in the aquifer to respond to the leakage from those units. The upper three aquifers underlying the plant were included to depth of 150 feet. The model was calibrated to steady state conditions.

After model calibration, it was determined that off-site migration of site contaminants was likely. The model was used to design a groundwater recovery system that would prevent this occurrence. In this case, the model was used to determine well spacing and pumping rates that would prevent any groundwater from leaving the plant site in the affected locations. The model was used to evaluate the removal of the waste transfer ditch and the unlined wastewater impoundment on the groundwater flow system with and without the recovery system. The changes to the recovery system were predicted if either or both of these units were closed.

Site Investigation and Risk Assessment

Location: Houston, Texas
Client: Reef Industries, Inc.
Total Contract Amount: \$186,121
Date Completed: February 1998

ENVIRONEERING completed the Comprehensive Site Assessment (CSA) by performing several tasks not included in the original submittal completed by another consulting firm. The scope of work included a water well inventory within one mile of the site and a field survey within 500 feet of the site. In addition, a boring was drilled, and selected soil samples were analyzed for PAHs. An on-site monitoring well was sampled for PAHs. A report was prepared presenting the results of these tasks to the TNRCC.

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Plan A and Plan B Risk Assessments were performed using the results of the CSA. The site failed to meet the Plan A risk levels, and a Plan B Risk Assessment was performed. The Plan B Risk Assessment used an industrial land use with three different exposure scenarios based on current operations at the plant. The Plan B Risk Assessment showed that no unacceptable risks exist at the site. A groundwater monitoring program was developed to ensure no future off-site migration occurs. Currently, quarterly groundwater monitoring is ongoing.

ENVIRONEERING also conducted an expedited removal of bagged soil cuttings that were stored onsite. The cuttings were sampled in place and analyzed for constituents of concern. The bags of soil cuttings were segregated according to waste classification, loaded into roll-off boxes, and transported to an off site landfill. The project was completed within three weeks that include time for laboratory analysis.

Superfund Remedy Amendment

Location:	New York
Client:	Confidential
Total Contract Amount:	\$500,000
Date Completed:	Ongoing

ENVIRONEERING developed a strategic plan to modify an impracticable remedy decision reflected in the Record Of Decision (ROD) for a Superfund site in Olean, New York. The site is a chlorinated site surrounded by other chlorinated sites. The original ROD was based on an inaccurate site conceptual model of subsurface soil and groundwater. The ROD was based on regional and generic characterization of contamination and hydrogeology, and did not account for site-specific conditions and heterogeneities. The original site model required remedial action objectives that dictated the remedy decision, which left the site vulnerable to costly, unattainable, long-term liabilities. ENVIRONEERING developed a strategy that would effectively lead to a ROD amendment, carry statutory strength, mitigate poor agency relations in EPA's Region II, reduce risk, reduce potential for further investigative costs, and prevent multimillion dollar liabilities that would otherwise likely occur over the long term.

ENVIRONEERING developed a master plan that is based on the Updating Remedy Decisions Reform announced in the third round of Superfund Reforms. The strategic plan effectively links statutory requirements, leads to a more protective alternate remedy while being more cost-effective, eliminates vulnerability to excessive, long-term costs, better meets statutory requirements, triggers the Technical Impracticability Waiver program, enables recovery of agency relations, and defensibly updates the site conceptual model and the remedy decision based on the state of practice and site-specific characterization. The source of contamination was the release of TCE during the 50 years of facility operations. The upper and lower zone aquifers have been affected by DNAPLs. The lower zone aquifer supplies drinking water to the local municipality. The conceptual model update identified the presence of DNAPL, the behavior of DNAPL, facility-specific factors, the distinction of DNAPL zones from dissolved-phase zones, and the general location of such zones and their behavior relative to the site-specific stratigraphy.

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ENVIRONEERING is currently evaluating alternative remedy updates for selection of the optimal update. The strategic plan is on track and the current cost savings projection is approximated between \$2 million and \$3 million.

Acquisition Assessments

In the rapidly growing field of environmental assessments and site investigations, ENVIRONEERING's personnel have successfully completed both large and small-scale projects in the industrial, commercial and real estate sectors. These projects have included the following services:

- Providing environmental investigations and evaluations of properties on behalf of both the potential buyers and sellers;
- Providing scientific and technical information to legal firms concerning potential environmental liabilities;
- Determining regulatory compliance status for a variety of industries including petrochemical, steel, product pipeline, and manufacturing;
- Assessing the adequacy of environmental protection measures in the areas of air pollution, water pollution, and solid waste;
- Conducting asbestos surveys and assessments in both commercial and industrial settings;
- Wastewater treatment plant operational trouble-shooting and redesign, as required; and
- Soil and ground water remedy selection, implementation, and operation including soil vapor extraction systems and bioremediation.

The following is a limited list of select projects summarized to provide representative project experience.

Acquisition of Four Manufacturing and Maintenance Facilities

Location:	Multiple Locations in Texas and Oklahoma
Client:	National-Oilwell, Inc.
Total Contract Amount:	\$75,000
Date Completed:	Ongoing

ENVIRONEERING is providing National-Oilwell, Inc. (NOI) with a variety of environmental consulting services. One of the key services is conducting acquisition assessments of facilities that NOI is in the process of purchasing. NOI has established a two-part program for environmental issues for facilities that NOI acquires. The first part is to determine if a large environmental liability (>\$1,000,000) exists for this property. The second step, if the first part is acceptable, is determination of compliance with

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environmental rules and regulations. Finally, after the acquisition is complete, ENVIRONEERING will delineate extent of contamination, develop response and correction action plans, and implement those plans. In addition, we will develop and implement a compliance strategy for each facility with an implementation schedule. NOI has averaged two major acquisitions per year for the past three years with ENVIRONEERING conducting these assessments for NOI. This project description is for the most recent acquisition assessment conducted by ENVIRONEERING.

As a part of the due diligence for this acquisition of three facilities in Texas and one in Oklahoma, ENVIRONEERING reviewed facility documents provided by the seller, and developed a site inspection and investigation plan. The four facilities were inspected by a senior engineer, which included a review of the facility's environmental documents such as waste manifests, permits, and plans. In addition, the engineer inspected the site facilities to confirm the investigation plan and to determine if any other parts of the facility Acquisition of Four Manufacturing and Maintenance Facilities required investigation. Immediately following the inspection, ENVIRONEERING mobilized staff and drilling equipment to each facility to investigate subsurface soils and groundwater in areas of potential contamination. These areas include a drum storage area, floor pits and sumps, stained soils, metal chip disposal area, fuel storage area, septic systems, steam cleaning area, painting area, and sandblasting yard. The inspections and investigations, including laboratory analyses, were completed within one week of approval from the buyer for site access. The investigation information was interpreted to provide the information in the two-part program. For this acquisition, the decision was to proceed with the acquisition followed with a scheduled compliance evaluation and implementation.

Oil and Gas Property Acquisition Assessments

Location:	Texas, Louisiana, North Dakota, and Gulf of Mexico
Client:	Seagull Energy Corporation
Total Contract Amount:	\$45,000
Date Completed:	June 1991

Description of Experience:

ENVIRONEERING conducted several projects for Seagull Energy, assisting in the due diligence portion of the company acquisition and mergers. For these projects, ENVIRONEERING personnel worked closely with Seagull Energy's in-house legal staff and operations department to perform the due diligence needed in these often large acquisition projects.

The projects included the inspection of numerous oil and gas leases, determining the environmental integrity of the leases, their compliance with environmental regulations and the preparation of remedial cost estimates, where needed.

Inspection of the leases for indications of adverse environmental conditions was performed. These site visits often involved the sampling of soils to assess the extent of spills and releases and determine potential remedial costs. The inspection of gathering lines, process lines, and offshore equipment to

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determine compliance with TRRC, TNRCC, LADEQ, NDDEP, EPA, USCG, and MMS air, solid waste, wastewater/process water discharges was conducted.

A review of historical operating records, agency files and correspondence, and interviews of key employees and operators were performed to gather a clear and comprehensive picture of the site's operating history and regulatory compliance prior to takeover by Seagull Energy.

Upon completion a detailed report describing the results of all tasks and an assessment of whether or not a more detailed investigation was necessary to identify and quantify potential contamination and related liabilities was prepared and submitted to Seagull Energy's legal staff. The findings in these reports were often used in the financial decision made about the acquisition.

Air Quality, Compliance and Permitting

Personnel currently employed by ENVIRONEERING have considerable experience with a variety of air quality issues, in industrial and non-industrial settings. ENVIRONEERING's background in the field of air quality includes the following:

- Preparation of Title V permits;
- Preparation of state air permit applications and exemption requests. The types of processes permitted include combustion operations (cogeneration turbines and compressors, thermal oxidizers, engine test cells, boilers, heat stress relief ovens, etc.); coating, solvent cleaning and abrasive cleaning operations; and petrochemical processing operations;
- Development of emission estimates for a variety of industrial processes and operations;
- Negotiations with state and federal regulatory personnel regarding air quality issues associated with state permitting, compliance with CAA regulations, RCRA air monitoring and assessment requirements, and federal operating permit programs;
- Performance of regulatory air compliance audits for state and federal regulations, including the preparation of standardized air compliance checklists for a number of state and federal regulations;
- Providing technical support to industrial facilities on air compliance issues;
- Preparation of air monitoring and compliance guideline documents and work plans;
- Performance and oversight of perimeter air monitoring at various Superfund sites for particulate matter, metals, toxic organic compounds and asbestos;
- Performance of personnel air monitoring at Superfund sites, industrial facilities and remediation sites for carbon monoxide, metals, asbestos, hydrogen sulfide, PCBs and toxic organic compounds;

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- Preparation of air emission inventories;
- Preparation of federal operating permits for industrial facilities;
- Performance of toxicological assessments and evaluation of air pathway exposures;
- Design and specification of emissions control and abatement equipment; and
- Air dispersion modeling.

The following is a limited list of select projects summarized to provide representative project experience.

Air Compliance Evaluation and Preparation of Title V Permit Application

Location:	Red River Army Depot, Hooks, Texas
Client:	U.S. Army Industrial Operations Command
Total Contract Amount:	\$250,000
Date Completed:	December 1998

ENVIRONEERING, INC. was retained to perform a pre-permit application compliance evaluation for the Federal Operating Permit (Title V) Program at a U.S. Army owned and operated depot and to complete the Title V permit application for the facility. This depot, the Red River Army Depot (RRAD), is located in northeast Texas and is the largest U.S. Army Material Command Supply and Maintenance installation in the country. RRAD maintains 1,400 buildings located on approximately 19,000 acres and performs a variety of industrial operations such as rebuilding of combat vehicles, supply of army posts, National Guard and Reserve units and the Air Force and demilitarization of munitions. The purpose of the project was to identify potential compliance problems at the facility in order to develop a corrective action plan for RRAD to achieve compliance with all applicable State and Federal regulations prior to submittal of their Title V permit application.

ENVIRONEERING, INC.'s project responsibilities included:

1. Identification of Emission Sources - This task involved locating and identifying all sources of emissions to the atmosphere at the facility. Pertinent technical information regarding those sources was also collected to assist in subsequent project tasks. The result of this task was the development of a facility-wide master list of processes, types of equipment, types of emission points and nature of emissions. This task served as the starting point for determining compliance, calculating emissions and development of an air emissions database for the facility.
2. Documentation Review - An extensive review of facility documents was performed in order to retrieve necessary support information for emissions calculations and the compliance evaluation. A partial list of the types of documents reviewed includes environmental files, including permit

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application files, permit files and record keeping files, inventory records, equipment drawings and specifications, technical reports and engineering studies and internal army communications.

3. Calculation of Maximum Potential to Emit - Calculation of the total RRAD maximum potential to emit, as defined under the Title V program, was performed to determine applicable source category. These calculations were performed for all emissions sources identified in earlier tasks, and considered equipment design, maximum processing capability and currently allowable emissions. The calculations performed were documented and incorporated into an air emissions database developed for the facility. All calculations performed used EPA approved methodologies and were suitable to be used directly in preparation of the Title V application.
4. Compliance Determination - This task involved performing an extensive compliance evaluation for all applicable State and Federal regulations governing air quality. In order to facilitate the evaluation, compliance checklists were developed which were either specific for certain types of emissions sources or for particular regulations. The checklists consisted of a series of simple and direct questions that walked the reader through the applicable regulatory requirements. The questions were formatted to have a 'yes', 'no', or 'uncertain' response. Any question answered with a 'no' response triggered a potential noncompliance. In this way, a rapid compliance determination of a vast number of emission sources was made. Based on the results of the compliance evaluation, the facility could effectively determine its permitting strategy for Title V.
5. Database Development - As part of this project, an air emissions database was developed for the facility. This database was used to support all of the regulatory air programs to which the facility was subject, such as compliance with existing permits, preparation of air emissions inventories, compliance with applicable regulations and compliance and maintenance of the Title V permit.
6. Preparation of Permit Application - After the completion of the above mentioned tasks, ENVIRONEERING was retained to prepare the complete and final Title V permit application for the facility and to perform onsite training of depot personnel who would be responsible for ensuring facility compliance with the permit.

Preparation of Air Permit Standard Exemptions, Permit Applications, Development and Implementation of Record-Keeping Procedures and Compliance Monitoring

Location:	Multiple Locations in Texas, Louisiana, and Oklahoma
Client:	National-Oilwell
Total Contract Amount:	\$150,000 on an Annual Basis
Date Completed:	Ongoing

Over a period of several years, ENVIRONEERING has prepared numerous State air permit applications and permit exemptions for oil field equipment manufacture and repair facilities. These facilities are located throughout the U.S., but conduct similar types of industrial activities such as spray painting, abrasive cleaning, solvent cleaning and engine performance testing. In addition, ENVIRONEERING has assisted the facilities in developing and implementing record-keeping procedures and practices to

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demonstrate compliance with permit conditions, including the design and development of an electronic database system for emissions tracking and calculation. On a routine basis, ENVIRONEERING also conducts compliance inspections of these facilities and assistance in correcting compliance issues and developing air quality management strategies.

ENVIRONEERING's key project responsibilities included:

1. Site inspection, identification and characterization of emission sources.
2. Calculation of emissions.
3. Regulatory compliance evaluations for affected emission sources.
4. Preparation of required permit application forms.
5. Implementation of record keeping and compliance monitoring programs in support of permits.
6. Participation in negotiations and technical discussions with regulatory agencies.

Air Compliance Strategy Support for Petroleum Refinery

Location:	Alma, Michigan
Client:	TPI Petroleum, Inc.
Total Contract Amount:	\$95,000
Date Completed:	Ongoing

ENVIRONEERING performed numerous tasks including regulatory and permit compliance review, and consulting with corporate personnel regarding air compliance strategies for the shut down of a major petroleum refinery.

ENVIRONEERING was responsible for the completion of quarterly reports for the continuous emission monitoring system (CEMS) on the fluid catalytic cracking (FCC) unit. These reports were required by NSPS Subpart J and by the facility's State of Michigan air permit. The report preparation involved taking raw data from the CEMS and calculating the emissions. If an exceedance was noted, verification research was then performed to determine the cause, and the corrective action taken for correct the exceedance. This research included the review of maintenance and operators logbooks, discussions with operating and maintenance personnel, and analysis of the raw data to determine trends that might reveal the cause.

ENVIRONEERING prepared a State of Michigan Title V Opt-Out permit application for the facility. An opt-out permit is a permit for a minor source (known as "synthetic minor" in some states) for all contaminants, thus "opting out" of Title V. Calculations were performed to determine the post-shutdown emissions, which included boilers, wastewater treatment plant, remediation activities, tanks and storage, and the continued operation of the onsite truck and rail-car terminals. Because the opt-out permit is not an official part of Michigan's State Implementation Plan (SIP), ENVIRONEERING negotiated with the Michigan Department of Environmental Quality (MDEQ) permit engineer to ensure that the application met all requirements of the SIP.

Because the refinery was shutting down, TPI was eligible to bank historical emissions as emission reduction credits, which could then be sold to other facilities in need of credits. ENVIRONEERING

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prepared the emissions credit application for the closed facility. This included meeting with the MDEQ emissions credits team and discussing the administrative and technical requirements for the credit application, determining which past facility emissions could be converted into credits, and calculating the allowable differences as emission credits.

Federal Operating Permit Compliance Evaluation

Location:	Lone Star Army Ammunition Depot, Texarkana, Texas
Client:	U.S. Army Research Office
Total Contact Amount:	\$80,000
Date Completed:	February 1998

ENVIRONEERING, INC. was retained to determine applicability of the Federal Operating Permit (Title V) Program and prepare the necessary documentation required to support preparation of the Title V permit application at the U.S. Army owned and contractor-operated ammunition plant. This ammunition plant, the Lone Star Army Ammunition Plant (LSAAP), is comprised of approximately 15,600 acres and conducts industrial activities such as loading, assembly and packing of ammunition and demilitarization items, and storage, issue and salvage of field service stocks. The purpose of this project was to determine LSAAP's regulatory requirements under the Title V program and to prepare the facility for preparation of the permit application. In addition, the work conducted at this facility was part of a larger scope project in which a guidance document was being prepared for general use by the army at all of its installations. LSAAP was used as a model in the guidance development of a facility of moderate size to which the Title V program would potentially apply.

ENVIRONEERING, INC.'s project responsibilities included:

1. Identification and Characterization of Emission Sources - This task involved performing multiple site inspections to identify and characterize all emission sources at the facility. Pertinent technical information was obtained for use in subsequent tasks.
2. Emission Source Classification Determination - This task involved determining whether the facility would be required to obtain a Title V permit because of its potential to emit at or above major source thresholds, as defined in the Title V program. Emissions calculations were performed for the contaminants that would be most likely to exceed these threshold amounts. These calculations were documented and performed using EPA approved methodologies. The calculations took into consideration the facility's current level of activity as well as future facility emissions. As a result of these calculations, it was determined the LSAAP would be considered a major source for several contaminants, and therefore, was subject to the Title V permitting program.
3. Compliance Determination - This task involved determining the regulatory status of the facility with respect to State and Federal regulations governing air that would be considered applicable requirements for the Title V program. Of major concern was the regulatory status of previously unpermitted or grandfathered emission sources. Based on the results of the compliance evaluation, a permitting strategy was developed for the facility.

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4. Record Keeping and Monitoring Requirements - The purpose of this task was to determine what record keeping and monitoring practices were required under the Title V program and how they could be implemented at the facility. Development of these procedures would be key to maintaining facility compliance with future permits. In particular, a pre-permit implementation program was developed for the facility which would allow it to train employees, set up required data management systems and track emissions on a trial basis before submittal of the permit application. This trial period could then be used to work out problems and develop a final format for these programs, which was most suitable for the facility.

5. Development of Permitting Strategy - This task involved the development of a strategy for preparation of the Title V permit application. This strategy included additional State permitting, implementation of limitations on potential to emit at certain sources and involved validation of emission calculations.

REFERENCES

The following list represents a list of clients that can provide reference for investigative work experience and performance.

Client's Name: National-Oilwell
Client's Address: 10000 Richmond Ave, 4th fl., Houston, Texas 77042
Contact name and Telephone Number: Kenneth Jeck (713) 346-7767

Client's Name: Smith Corrosion Services, Inc.
Client's Address: 8320 Hempstead Highway, Houston, Texas 77008
Contact Name and Telephone Number: Mr. Jim Ford (713) 867-8433

Client's Name: Alcoa, Inc
Client's Address: 300 N. Hall Rd., Alcoa, Tennessee 37701
Contact Name and Telephone Number: Mr. Robert Prezbindowski, (865) 977-3811

Client's Name: Diamond Shamrock Refining Company, L.P.
Client's Address: Sunray, Texas
Contact Name and Telephone Number: Alex Evins (806) 935-1354

Clients Name: Basis Petroleum, Inc.
Client's Address: 1301 Loop 197, Texas City, Texas 77592
Contact Name and Telephone Number: Mr. Gino Paganucci (409) 948-7215

Client's Name: Normco Leasing, Inc.
Client's Address: 1525 N. 75th St., Houston, Texas 77011
Contact Name and Telephone Number: Mr. Carl Norman (713) 923-9495

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Client's Name: Reef Industries, Inc.
Client's Address: 10020 Mykawa Rd. Houston, Texas 77048
Contact Name and Telephone Number: Mr. Jeff Large (713)507-4330

Client's Name: Formosa Plastics Corporation, Texas
Client's Address: 101 Formosa Drive, Point Comfort, Texas 77978
Contact Name and Telephone Number: Steve Marwitz (512)987-7447

SELECTED PERSONNEL PROFILES

The following is a list of select profiles of ENVIRONEERING professionals. This list includes Dianna Chianis, P.E., President, Timothy H. White, REM, Principal, William S. Stevens, P.E., P.G., Senior Hydrogeologist, Philip A. Tritico, P.E., Senior Consultant, Robert E. Robinson, Senior Environmental Engineer, John S. Cowen, Senior Engineer, Kevin L. Worley, Environmental Engineer, and S. Shawn Flannigan, Environmental Engineer.

Ms. Chianis is a Registered Professional Engineer in the States of Texas, Louisiana, and New York, and is a Corrective Action Project Manager (CAPM). She has over eighteen years of experience in the environmental engineering and science field. Her academic credits include a Bachelor of Science in Biology and Master of Science in Environmental Engineering. She has conducted and/or managed over 200 environmentally related projects including environmental site assessments, ground water investigations, air, solid and hazardous waste permitting, remedial site investigations and remediation, hazardous facility closures, environmental regulatory compliance assessments, and has sampled numerous ground water wells, surface water sources, pits ponds, lagoons, tanks, and API separators. Ms. Chianis was the Principal-In-Charge for the air permitting at Red River and Lone Star Army Ammunition Depots. She also established the acquisition program that ENVIRONEERING conducts for all of National Oilwell's acquisitions.

Mr. White has a Bachelor of Science degree in Aquatic Biology from Roger Williams College in Rhode Island and has completed graduate level course work in Environmental Engineering at the University of Houston. He is a Registered Environmental Manager with the National Association of Environmental Professionals. He has over fifteen years experience in the completion of technical environmental projects. Mr. White has broad project management experience in the petrochemical, manufacturing, and oil & gas industries in the areas of air, solid and hazardous waste activities and remedial closure standards. He has extensive experience in environmental regulatory requirements, processes, and policies at the federal, state and local levels. He has negotiated several closure plans, agreed orders, and risk assessments with both the TNRCC and the EPA. Past projects include the assessment of risks related to releases of hazardous chemicals utilizing the risk reduction standards. He has conducted waste exposure assessments for a variety of compounds at industrial sites. Assessments ranged from site evaluations to detailed physiochemical and statistical modeling. These assessments have contemplated the current and future uses of the site when calculating the target concentrations of health-based standards. He has provided technical review of the determination of the TNRCC's Plan A and Plan B media specific target

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concentrations for leaking underground petroleum storage tanks for sites in Texas. He has been involved in several prompt responses for chemical spill and plant upsets which required remedial planning and oversight as well as regulatory agency liaison and negotiations. He has extensive experience in assisting responsible parties in determining options for cleanup objectives. These options have taken into consideration public health and safety, groundwater protection policies and cost effectiveness. He has also assisted in providing regulatory interpretation on new rules for his clients and continues to keep abreast of current developments in order to provide timely and expert advice on evolving regulatory issues.

Mr. Stevens is a Registered Professional Engineer in the State of Texas, a Registered Professional Geologist in the State of Arkansas, a Certified Ground Water Professional, a Corrective Action Project Manager (CAPM00473), and a Diplomate in the American Academy of Environmental Engineers. He also has a Doctor of Engineering from Texas A&M University. He has twenty years experience in hydrogeologic characterizations, site and risk assessments, and remedial action evaluation, selection, and design as a project manager and senior hydrogeologist. Dr. Stevens has directed and managed numerous investigations and remediations at chlorinated solvent sites throughout the country particularly along the gulf coast. He developed the procedures and investigations for one of the first technical impracticability demonstrations in Texas. Dr. Stevens had managed several acquisition assessments that involved numerous facilities requiring a rapid turnaround. These projects generally involved soil sampling, well installation and sampling, and interpretation of the data collected within the objectives of the client. He was the project manager for the UST contract with the TNRCC. This \$1.5 million contract is for the investigation and remediation of the Leaking UST sites along the Texas Gulf Coast. He also has conducted numerical simulations of saturated and unsaturated ground water flow and solute transport, provided technical direction to determine appropriate field methods and testing techniques for high-level radioactive waste repository siting, and was involved in the selection and design of treatment techniques for a variety of toxic and hazardous wastes.

Mr. Byrd has a B.S. degree in Agricultural Engineering from New Mexico State University at Las Cruces, New Mexico. He has experience in subsurface investigations, ground water sampling, and in operating remedial treatment systems. Mr. Byrd has conducted oversight of bioremediation projects including the application of surfactants and biological enhancers. He has installed subsurface vapor extraction systems and ground water plume containment systems. He is experienced in the logging of soil cores and monitor well instillation, including the soil classification and lithological description of subsurface units. Mr. Byrd has conducted soil and ground water investigations at numerous facilities in New Mexico, Texas, Louisiana, Wyoming, California, New York and Tennessee. He has been involved in subsurface investigations at petroleum refineries, pipeline transmission facilities, petroleum storage facilities and Federal and State Superfund sites. He has conducted Release Determinations and Risk-Based Assessments at over 100 leaking petroleum storage tank (LPST) sites.

Mr. Tritico has a B.S. in civil engineering from Texas A&M University, and is a registered Professional Engineer in the State of Texas. He has over 18 years of experience in the civil/environmental engineering consulting business and has become a strong generalist in these fields. His consulting experience encompasses operations management, program management, senior/expert consulting, project management, project engineering, and design engineering capacities. Mr. Tritico's predominant

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experience is in geo-environmental consulting. His career developed primarily through design and construction operations where he versed the dependencies of big-ticket project costs and risks on the engineering phases of construction/remediation projects. Over his career, Mr. Tritico has worked for several manufacturing, chemical, and oil and gas companies, government agencies, and commercial businesses. Mr. Tritico has served on numerous "cradle-to-grave" remediation/closure projects, site development projects, and large-scale litigation projects. Technically, Mr. Tritico specializes in geo-environmental and geo-civil practices including containment technologies, stabilization, ground modification, earthworks engineering and construction, and in-situ remediation technologies. He is also well versed in the remediation of chlorinated waste sites. He has directed the operations and quality control for many concurrent projects ranging from investigative to post-investigative phases of remediation projects. His dominant project experience includes several waste-site closure projects. The closure projects were conducted under his direction from pre-design through construction phases. These closure projects ranged in cost from \$1 million to \$12.5 million with change order totals ranging from 0 to 0.5 percent of the construction costs.

Mr. Robinson has B.S. and M.S. degrees in environmental engineering from the University of Texas, and is a registered Professional Engineer in Texas. He has over ten years of experience in the field of environmental engineering. Mr. Robinson has worked extensively in the areas of environmental permitting, treatment technology evaluations, site investigations and audits, and treatability studies. His experience includes preparing wastewater and hazardous waste permit applications, performing ground water investigations and assessments, conducting treatability studies for wastewater, ground water, sludge and soil, performing site audits, and evaluating alternative treatment technologies for site remediation. In addition to his environmental engineering work, Mr. Robinson was the manager for the wastewater permitting program for the TNRCC. At the agency, Mr. Robinson was responsible for developing and implementing the new Texas Pollutant Discharge Elimination System (TPDES) program that combined the wastewater, storm water, animal feeding operations, and sludge permitting requirements under federal and state law.

Mr. Cowen is a Registered Professional Engineer in the States of Texas, Colorado, and Washington, and has over twenty years of environmental and civil engineering and industrial hygiene experience. His academic credits include a Bachelor of Science in Civil Engineering, a Master of Civil Engineering and a Master of Science in Industrial Hygiene. He has designed and produced bid packages and provided construction liaison for several hazardous waste facilities. Other projects include ground water evaluation, underground plume interception, CERCLA site remedial construction, site assessments, asbestos abatement oversight, and personnel and area monitoring for noise and physical and chemical hazards. He is an EPA-accredited AHERA inspector and management planner for asbestos abatement projects, and a NIOSH 582 accredited microscopist for fiber counts in Phase Contrast Microscopy.

Mr. Worley has a B.S. in Agricultural Engineering from Texas A & M University and a M.S. in Environmental Engineering from the University of Houston. He has prepared several Title V permit applications for the Department of Defense (DOD) at ammunitions depots, at manufacturing facilities, and at refineries. As part of this work, he worked closely with DOD to develop emission factors for various ammunition detonations. An integral part of the application was dispersion modeling of the entire depot including the various detonation areas, work shops, water treatment facilities, etc. He has also

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prepared numerous operating state permits applications, conducted emissions inventories, completed air dispersion modeling, and prepared standard permit exempts for facilities in Texas. He has significant experience in water and wastewater treatment. He has sampled and characterized water and waste streams, selected treatment technologies, and operated wastewater treatment facilities. Mr. Worley

Mr. Flannigan has a B.S. in Agricultural Engineering with an emphasis in Environmental Engineering and a M.S. in Agricultural Engineering with Specialization in Air Quality both from Texas A&M University. Mr. Flannigan is very familiar with both Federal Regulations as well as the State of Texas Regulations. He has worked on the Title V Federal Operating Permit for a large forging facility in Texas. This included emission point identification, emission point histories, permit and exemption investigation, determination of Federally applicable rules and regulations, and interaction with the state regulatory agency. Mr. Flannigan has assisted with preparation of emission inventories, and has experience in NO_x reductions and emission reduction credits in the State of Texas. He has worked on State of Texas air permits and exemptions for both surface preparation and surface coating facilities, including dispersion modeling, modeling different developed operating scenarios, developing record keeping protocol, site inspections, compliance checklists and construction and implementation of record keeping database. Mr. Flannigan has developed several Risk Management Plans (RMP) for facilities in the State of Texas which handle EPA listed hazardous substances to comply with 40 CFR Part 68. His experience includes hazard reviews, emergency response, compliance audits, prevention programs, worst case and alternative release modeling and coordination with local emergency planning committees.

Resumes of individuals from this group that are on the Project Team or may assist with the project are provided in the next section.

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PROJECT TEAM & SELECT RESUMES

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Timothy H. White, Principal

Fields of Competence

Environmental engineering; spill response; remediation; industrial facility assessments; hazardous waste sampling and characterization; ground water investigations; NPDES wastewater discharge permitting; and property transfer assessments.

Experience Summary

Mr. White has more than twelve years of project and management experience including hazardous waste management, feasibility design studies, ground water monitoring, characterization, and laboratory analysis.

Credentials

Graduate Level Courses - Environmental Engineering - University of Houston

B.S. Aquatic Biology - Roger Williams College (1979)

Registered Environmental Professional

Registered Environmental Manager

EPA-accredited AHERA Inspector for Asbestos Abatement Projects

EPA-accredited AHERA Management Planner for Asbestos Abatement Projects

Certified Asbestos Inspector, State of Mississippi, Department of Environmental Quality

Certified by the National Spill Control School-Corpus Christi State University (1986)

Professional Affiliations

Water Environment Federation

Texas Water Environment Association

Texas Hazardous Waste Management Society

Houston Geological Society

Air and Waste Management Society

Key Projects

- Project manager of a wastewater treatment design study for an organic chemical manufacturing facility in the Gulf Coast area. The study involved assessing the available technologies which would meet best the OCPSF discharge standards and CWA water quality criteria.

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Key Projects

Timothy H. White, Principal

- Provided technical and regulatory assistance in the development of *Response Plans for Onshore Oil Pipelines* required under the Oil Pollution Act of 1990 (OPA 90) and Texas General Land Office *Oil Discharge Prevention and Response Plans* for a petroleum products pipeline company.
- Provided oversight and coordination of emergency response activities for a large toluene release. Responsibilities included the management of remedial activities, including product recovery, and impacted media disposal, interfacing with TWC, TACB and local regulatory agencies, development and implementation of site closure plans under the TNRCC Risk Reduction Rules.
- Conducted environmental assessments of petroleum product bulk loading facilities for an interstate pipeline company. Duties included site characterization, sampling and analysis, and regulatory compliance inspections.
- Prepared an NPDES permit application for an ethylene glycol manufacturing facility in the Texas Gulf Coast region.
- Provided oversight and coordination of remedial activities for a petroleum condensate release at a pipeline valve station. Activities included the interfacing with Railroad Commission of Texas and TNRCC personnel, determination of horizontal and vertical extent of impacted soils, and the implementation and approval of site closure under the Railroad Commission of Texas guidelines.
- Project manager for the preparation of a toxic Chemical Release Inventory Reporting Package (SARA 313) for a large Gulf Coast chemical manufacturing facility.
- Prepared conceptual design alternatives for the closure of a 17-acre hazardous waste impoundment for a large Texas chemical facility. Waste at the site included bulk sludges and contaminated solids.
- Developed and implemented sampling and analysis plans and subsurface investigations for assessment of PCB and hydrocarbon contamination in gas compressor station waste oil ponds for an interstate gas pipeline company (10 stations in four states). Upon completion of the investigation, closure plans were developed and implemented.
- Evaluated hazardous waste landfill cap designs, using the U.S. Army Corps of Engineers Hydrologic Computer Simulation of Solid Waste Disposal Sites (HELP) model for several industrial facilities.

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Key Projects

Timothy H. White, Principal

- Managed air emission inventories for four petrochemical plants in Texas. The project involved the data compilation for point and non-point (fugitive) sources. Contact, coordination, and negotiations with the Texas Air Control Board were required.
- Conducted the experimentation, field investigation, and assisted with the process design of a sludge thickener at a major petrochemical facility.
- Project manager for several environmental assessments of industrial and commercial facilities throughout the continental U.S.
- Prepared a work plan for the disposal of impoundment water at a CERCLA site in Hempstead, Texas. In addition, a sampling and analysis plan was included to ensure that no further spread of contamination would occur. Duties also included the supervision of the construction of an HDPE-lined sump and the coordination of all activities with the EPA.
- Prepared a baseline ground water monitoring report for a large Texas City, Texas chemical facility. The project consisted of the collection and reporting of analytical data in addition to the development of ground water contours of the area. The report was used to determine the quality of the ground water at the time of the facilities purchase.
- Assisted in the preparation of an RCRA compliance monitoring plan for a forty-acre hazardous waste land farm. This land farm was designed to determine experimentally the optimum waste degradation characteristics. It included sixteen experimental plots. The land farm is situated on top of a sand drainage layer with an HDPE geomembrane liner.

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William S. Stevens, D.E., P.E., P.G.

Fields of Competence

Hydrogeological characterizations; site assessments; remedial investigations; feasibility studies; ground water flow and contaminant transport modeling; quantitative analysis of complex hydrogeologic systems; design of monitoring well networks and recovery systems for contaminated ground water; and ground water supply development and well field design.

Experience Summary

Mr. Stevens has more than seventeen years experience in hydrogeologic characterizations and site assessments as a principal-in-charge, project manager, and project hydrogeologist. Projects have included the evaluations of remedial alternatives and design of remedial action programs in a wide variety of hydrogeologic settings. Specialized in numerical simulations of saturated and unsaturated ground water flow and solute transport. Directed more than forty modeling studies in a variety of geologic settings including unconsolidated coastal sediments and crystalline and sedimentary rocks. Involved in the selection and design of treatment techniques for a variety of toxic and hazardous wastes. Provided technical direction to determine appropriate field methods and testing techniques for high-level radioactive waste repository siting.

Credentials

B.E.S., Engineering - Texas A&M University (1976)
M.E., Agricultural Engineering - Texas A&M University (1978)
D.E., Engineering - Texas A&M University (1980)
Registered Professional Engineer, State of Texas
Registered Professional Geologist, State of Arkansas
Certified Ground Water Professional, AGWSE
LPST Corrective Action Project Manager, State of Texas
Diplomate, American Academy of Environmental Engineers

Professional Affiliations

Association of Ground Water Scientists and Engineers
American Geophysical Union

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Key Projects

William S. Stevens, D.E., P.E., P.G.

- Principal-In-Charge for a hydrogeological investigation and corrective measures study for a former PCP wood treating facility. Directed the installation of the TNRCC-approved remedial action that included ground water recovery and treatment, reinjection of the treated water, and biological land treatment.
- Principal-In-Charge for several air emissions inventories at chemical plants in Texas.
- Principal-In-Charge and project manager for hydrogeological investigations, RFIs, remedial investigations and remedial action plans at numerous chemical plants in Texas.
- Principal-In-Charge and project manager for the development of fully 3-D ground water flow model at five sites in Texas. The flow model was used to select the optimum ground water recovery system at each site.
- Principal-In-Charge and project manager for the design and installation of an RCRA ground water monitoring system at a hazardous waste land treatment facility.
- Principal-In-Charge and project manager for an erosion control study, surface soil contamination assessment, hydrogeological investigation, and a ground water remedial action plan at a chemical plant in East Texas.
- Project manager for remedial investigation and design of a ground water recovery system to mitigate the effects of seepage from a 600-acre mine-tailings pond in southwestern Wyoming. A three-dimensional ground water flow model was developed and used in the characterization and remediation.
- Project manager for the evaluation of water movement through selected covers for a solid waste sanitary landfill in Orange County, California. The movement of moisture through the cover was determined using a saturated/unsaturated numerical flow model.
- Project manager for an emergency response to a release of gasoline into the shallow aquifer from a leaking under-ground storage tank in central Florida. Designed a subsurface drain after delineating the extent of gasoline migration.
- Project manager for a hydrogeological investigation at an industrial facility in Virginia. Contaminated ground water migrated under a major river into domestic water supply wells.

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Key Projects

William S. Stevens, D.E., P.E., P.G.

- Designed and supervised the installation of more than 20 large-diameter water supply wells and more the 75 wells for monitoring water quality and water levels.
- Technical manager for designing a mitigation program for a contaminated industrial facility. An analytical flow model was used to locate both recovery and water supply wells at the site.
- Project manager for a 20-million-gallon-per-day emergency water supply in Virginia. Five large capacity wells were designed and installed to minimize water-level decline on domestic and agricultural supply wells.

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Philip A. Tritico, P.E.

Fields of Competence

Strategic consulting/planning, risk/cost control, total quality management, liability control, litigation strategy and support, geoenvironmental practice, pre-design/design operations, closure/remediation planning, and chlorinated waste sites.

Experience Summary

Mr. Tritico has over eighteen years of experience in the environmental/ civil engineering consulting business. His consulting experience encompasses operations management, program management, senior/expert consulting, project management, project engineering, and design engineering capacities. Mr. Tritico's predominant experience is in environmental consulting. He has worked for several manufacturing, chemical, and oil and gas companies. Mr. Tritico has served on numerous "cradle-to-grave" remediation/closure projects, site development projects, and large-scale litigation projects. Technically, he specializes in geoenvironmental practices including containment technologies, stabilization, ground modification, in-situ remediation technologies, and remedial planning for chlorinated sites.

Credentials

B.S., Civil Engineering, Texas A&M University, 1982

Graduate Studies - Environmental/Geotechnical Engineering, University of Houston, 1985-1990

Registered Professional Engineer, State of Texas

Professional Affiliations

American Society of Civil Engineers

Key Projects

- Developed the strategy and scope for the risk based closure of a 17-acre industrial waste landfill at a sulfur mining facility in West Texas. The scope was based on a "cradle-to-grave," design-build approach which included remedial investigations, risk reduction, concept design, engineering, and remedial action phases. Managed the RI and risk reduction phases.
- Served as the expert witness in support of a confidential defendant for a litigation involving the release of fuel oils in Lyon County, Minnesota. Damage claims were associated with an alleged failure of a secondary containment system for aboveground storage tanks.
- Managed a large-scale, pre-investigation, site remediation costing effort as part of a consent agreement for a confidential client in Miami, Florida. The site involved numerous free-phase and dissolved phase, organic and inorganic groundwater plumes covering over 200 acres.

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Key Projects

Phillip A. Tritico, P.E.

- Served since 1995, as the program manager, project manager, and technical director of a multi-phased remedial investigation, liability control, remedial planning, and "litigation prevention" project for a former chemical distribution facility in Wichita, Kansas. Also served as a representative on a technical advisory committee comprised of participating parties (PRP's) in a joint agreement with city and state agencies designed to establish Operable Unit leads and fair share liabilities void of orphan liabilities throughout the corridor. Also served as Unocal's representative in the authorship and negotiation of the agreement, which depended on federal de-listing of the Superfund sites. The site is dominated by chlorinated solvents and petroleum hydrocarbons, within a corridor off Superfund sites and commingled chlorinated plumes spanning many miles through downtown Wichita. A conceptual site model per a comprehensive DNAPL site evaluation, including DNAPL migration and persistence studies, was developed for purposes of informed decision making. Many dissolved phase trends analyses and hydrogeological fate & transport models were also conducted for strategic planning purposes.
- Managed the closure design and construction of three neutralized acid waste sludge pits as a groundwater restoration measure for an electrical conduit manufacturing plant in Gilmer, Texas. Concept design was developed in accordance with a risk-based closure approach. Project included closure plan preparation, treatability studies, sludge stabilization/solidification, storm water management, earthen/geosynthetic cap cover systems, regulatory interactions, CQA and closure certification.
- Managed the remedial investigation and feasibility study for a PCB affected site in Sealy, Texas. Project involved extensive regulatory negotiations.
- Managed the design and construction for the restoration of pesticide affected groundwater and soil a pesticide formulation plant in Dallas, Texas. Project included agency interactions, preparation of plans, specifications, contract documents, and construction management. Major components of design included a subsurface cut-off-wall system, a reinforced concrete pier retaining wall, excavation/disposal of pesticide affected soils; and earthen/geosynthetic infiltration gallery system and cap, and a 50-gpm GAC groundwater treatment plant, recovery and re-injection systems.
- Prepared a conceptual design for source control remedial action at the Royal Hardage Superfund site near Criner, Oklahoma. Lead engineer for design evaluations for remediation, stabilization and containment of an above-grade landfill containing industrial waste-filled drums and perched sludges/liquids. Project included preparation of preliminary plans and specifications, design reports, cost estimates and expert testimony to support litigation. Project resulted in the only successful litigation of the EPA attaining steering committee-led RD/RA with their selected remedy as opposed to the EPA's requested remedy.

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S. Shawn Flannigan

Fields of Competence

Environmental engineering, wastewater treatment, and air pollution engineering

Credentials

M.S. Agricultural Engineering, Texas A&M University (1997)

B.S. Agricultural Engineering, Texas A&M University (1995)

Professional Affiliation

American Society of Agricultural Engineers

Publications

“Minimum Cost Compliance Strategies for Cotton Gins,” Master Thesis, Texas A&M University (1997).

“Minimum Cost Compliance Strategies for Cotton Gins Across the U.S.” Cotton Ginning Journal (1997/1998)

Key Projects

Prepared a pipeline response plan for a major petrochemical facility. Identified pipeline routes, constituents, environmentally sensitive areas, worst case spill impacts, and development of emergency response procedures and coordination efforts with neighboring facilities and local emergency planning committees.

- Waste water treatability studies for several facilities. Detail analysis of waste stream and process streams, characterization of waste water contaminants, and identification of possible treatment scenarios.
- Title V federal operating air permit for a major source facility. Duties included emission point histories, permits and exemption investigation, emission point verification, determination of federally applicable rules and regulation, and interaction with the state regulatory agency.
- Assisted in the soil and groundwater investigation of three sites located in Texas and Louisiana. Experience includes sample collection, logging lithology of soil borings, summarizing analytical data, and determination of waste characterization for material disposal.

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Key Projects

S. Shawn Flannigan

- Assisted in the development and design of a wastewater treatment system. The associated tasks included wastewater treatability study, system design, equipment procurement, supervision of field construction, operation, maintenance, and troubleshooting.
- Aided in the construction and operation of a pilot test system for a new industrial wastewater treatment system to replace an existing treatment system. Duties during operation included monitoring water quality at various stages of the system and adjusting variables to help optimize the treatment system.
- Performed ground water sampling and analysis. The primary objective involved collecting the most representative ground water sample following detailed protocol. Tasks included recording observations and proper sample collection and handling.
- Assisted in the preparation of a TNRCC standard exemption from permitting for an outdoor painting and blasting operation at large industrial facility. Development of recordkeeping strategies and database.
- Prepared an NOR for a large industrial facility. Tasks included identification of solid waste streams, classification of the waste streams, and determination of proper disposal.
- Prepared Risk Management Plan (RMP) for several facilities. Tasks included identification of hazardous chemicals, operating procedures, employee training, equipment maintenance, development of a prevention program, and worst case and alternative release modeling.
- Provided technical assistance for the operation of a wastewater treatment system at an industrial laundry facility. Designed and installed pH control system and established a biological treatment system.
- Development of Storm Water Pollution Prevention Plans (SWPP) for several facilities located in several states. Tasks included identification of pollution sources, drainage patterns, mitigation practices, methods to reduce industrial contact with storm water. Also established monitoring and recordkeeping practices.

ENVIRONEERING, INC.

Jefferson L. Byrd

Fields of Competence

Ground water, surface water and soil sampling, treatment system maintenance, and technical report preparation.

Credentials

B.S. Agricultural Engineering, Soil and Water - New Mexico State University (1995)
Engineer in Training

Affiliations

American Society of Agricultural Engineers

Key Projects

- Collected ground water samples at an industrial facility. The samples were collected from a ground water monitoring system installed around a surface impoundment in accordance with the facility's RCRA permit. Ground water samples were analyzed on-site for pH and specific conductivity.
- Collected water samples from an industrial facility in support of a storm water characterization study. This included maintaining and using an automatic sampler.
- Performed subsurface soil and water sampling for a Phase II Environmental Site Assessment at an oil recycling facility. Field screening with a photo ionization detector was performed to select soil samples for laboratory analysis.
- Completed site activities for five LPST sites for the TNRCC Region 3 Maintenance and Evaluation Contract. Site activities included maintenance for the continuous operation of ground water recovery and treatment systems. Ground water recovery was achieved with pneumatic, submersible pumps or diaphragm pumps. Treatment was provided by separation, air stripping and carbon adsorption. Responsibilities were maintenance and repair of existing equipment and procurement and installation of new equipment as necessary. Assured proper operation of treatment systems with the collection of influent and effluent water samples for laboratory analysis. Evaluated system treatment efficiencies from the laboratory data. Also performed passive recovery at numerous LPST sites. Prepared Monthly Product Recovery Reports and Monthly Status Reports.

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Key Projects

Jefferson L. Byrd

- Performed ground water sampling at more than twenty TNRCC State-Lead Remediation LPST sites. This included taking water and product level measurements, measuring pH and specific conductivity on samples in the field. Field quality control of analytical results was maintained with duplicate sample collection. Additional responsibilities included compilation of analytical and ground water data and preparation of Monitoring Event Summary Reports.
- Conducted subsurface investigation at an LPST site. Collected soil samples from hand augured borings to aid in delineation of a potential release from an underground storage tank and/or distribution system.
- Performed explosimeter survey at a potentially sensitive site in response to a leaking underground storage tank.

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LETTERS OF COMENDATION



FORMOSA PLASTICS CORPORATION, TEXAS

P. O. BOX 700
201 FORMOSA DRIVE
POINT COMFORT, TEXAS 77978

PHONE: 512/987-7000
FAX: 512/987-2721

December 08, 1994

Mrs. Dianna Chianis, P.E.
President
Environeering Inc.
10565 Katy Freeway, Suite 237
Houston, Texas 77024

Dear Dianna:

I would like to take this opportunity to personally thank you for your continuing support of Formosa Plastics Corporation, Texas in our environmental compliance program.

Your knowledge and expertise in environmental regulations is appreciated by the members of the environmental staff and myself. Additionally, we are deeply honored that you have always responded immediately to our request for assistance.

As the year draws to a close, its important to reflect on friendships and work relationships that have made the past year successful. In part you and your staff, thru professional and technical support you have provided, has made 1994 a very fulfilling year.

Again, thanks for your support and I wish you a very joyous holiday season.

Very truly yours,

W. Ken Mounger
Vice President/General Manager
Formosa Plastics Corporation, Texas



TANGRAM PARTNERS, INC.
200 SOUTH WACKER DRIVE, SUITE 3850
CHICAGO, ILLINOIS 60606-5802
(312) 441-2300

DAVID F. DOLAN

January 17, 1995

Mr. Timothy White
ENVIRONEERING, Inc.
10565 Katy Freeway, Suite 237
Houston, Texas 77024

Dear Tim:

I just wanted to express my gratitude for the environmental consulting assistance which you and Keith Kilson provided for the property of Precision Tube Technology. After Bill Stevens received a cold call from me on December 14, you made yourself available for a lengthy conference call the following day, and were on-site to begin work the morning of December 16th. Once samples had been taken, your ability to work closely with the testing laboratory provided us with results on a quick-turn basis and allowed us to meet our time schedule.

In a process in which we were under extreme time pressures to complete our due diligence, you have played a pivotal role in helping us to diffuse all of our significant concerns about the property which we are about to acquire.

Thank you again for your assistance.

Sincerely,

David F. Dolan

cc: Enclosure.

ENVIRONEERING, INC.

USA ENVIROMNMENT, Inc.

GENERAL

USA offers its clients expertise and capabilities to address virtually any remedial need. USA's level of expertise and capabilities, as well as USA's proprietary remediation technologies/techniques, identify our organization as a leading site remediation contractor and help place USA among the top remedial contractors.

USA is a unique environmental remediation contractor offering a complete range of design and implementation services to industry and government. Specializing in the recovery of hazardous materials, decontamination and reclamation of the environment, USA makes use of the latest technologies to get the job done quickly and efficiently. Unlike many environmental remediation firms, USA has the resources to offer cost-effective services for any size project. From the small one drum pick-up to the massive, onsite projects requiring access to large and diverse heavy equipment resources, USA has the expertise, the personnel and the financial strength to handle the job. Our primary services lines include Hazardous Waste Disposal and Handling; Nonhazardous Waste Disposal and Handling; NORM Disposal and Handling; Excavation and Removal Actions; Solidification/Fixation; Lagoon/Pond Closures; Capping and Closures; Remediation Systems; Bioremediation; and Drum Recovery.

PROJECT STAFF & PROJECT SPECIFIC EXPERIENCE

ENVIRONEERING, INC.

Bret Pardue

Education

B.B.A., Marketing, Ohio State University

Special Training/Affiliations

OSHA 40 – Hour 1910.120 HAZWOPER	Land Disposal Restrictions Training (I & II)
Regulatory Awareness Training	TxDOT Waste Material Recycling
DOT HM 126 (f) Training	Subtitle D Landfill Operations Training
DOT Basic 49 CFR Training	Hazardous Material Manager Training
T.S.D.F. Operations	GAAP Accounting Training
RCRA 40 CFR 260-268 Regulations Training	Safety Management
Advanced RCRA Topics I & II	

Summary of Experience: Mr. Pardue offers more than 12 years of **Executive Management** experience within the hazardous and non-hazardous waste management industry. As President of USA Environment, Inc., Mr. Pardue is responsible for the profitability and growth of USA in addition to the performance and quality of the services that are delivered to the clients of the company. Mr. Pardue previously held the position of Division Manager of Industrial Services for Waste Management, Inc. where he had P & L responsibility for a division generating approximately \$75,000,000 in annual revenues. Mr. Pardue's division served both industrial and consulting clients. Services provided were: hazardous and non-hazardous waste transportation and disposal; hazardous and non-hazardous waste material recycling; NORM remediation and disposal services; site remediation services; rapid response services; waste related field services; in-plant waste management services; tank cleaning services; landfill construction services; underground storage tank installation and removal services; and demolition services. Prior to his tenure with Waste Management, Inc., Mr. Pardue was the Founder and served as President of USA Environmental Services, Inc., a full service environmental service company that offered many of the client services mentioned above. Under Mr. Pardue's leadership, the company grew from a start-up in 1991 to over \$7,000,000 in revenues in 1997. The company was sold at the end of 1997 to Waste Management, Inc. Mr. Pardue's initial executive management experience was with Browning-Ferris Industries where he served as Vice President / Division Manager of the Bay Area District. The Bay Area District of BFI provided non-hazardous waste transportation and disposal services to both industrial and commercial clients. Revenues at Bay Area during Mr. Pardue's tenure grew from \$5,000,000 in 1988 to over \$17,000,000 at the end of 1990.

Project Specific Experience:

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Former Iron Works Facility – Houston, Texas: Project Manager for the remediation of a 40 acre tract of prime real estate located near the intersection of I-10 and I-610 West in Houston, Texas. The project scope involved the excavation and proper disposal of oily waste material from a pit measuring approximately 250 feet by 200 feet with an approximate depth of 20 feet below ground surface. An 8-inch thick concrete slab covered most of the pit and was also required to be removed and properly disposed of. In addition, the project scope required that the excavation be filled with clean compacted backfill. Contaminates involved with the waste were RCRA metals, TPH, and volatile organic compounds (VOC's). Through generator process knowledge and RCRA characteristics testing, all of the waste material in the scope of work (approximately 30,000 cubic yards) was determined to be Class I and Class II non-hazardous. Mr. Pardue managed all aspects of the project including: waste characterization, waste manifesting, concrete breaking and removal, waste excavation and stockpiling, waste sampling and classification, surface water run-off control, waste transportation, waste disposal, placement and compaction of backfill, and all safety issues in accordance with the site specific Health and Safety Plan. The project was completed within budget and within the 8-week time period specified in the contract with the client.

Former Oil Tool Facility – Corpus Christi, Texas: Project Manager for the emergency response, abatement, and disposal of contaminants and wastes from an abandoned chrome plating facility. The remedial action was in response to a potential enforcement action of the property by the TNRCC. Characteristically hazardous, F-Listed hazardous, U-Listed hazardous, and industrial non-hazardous liquid and solid wastes had been abandoned at the site. Most of the waste materials were being stored improperly in leaking drums, open chromium plating vats, sumps, leaking storage tanks, and a submerged rail car. The scope of work called for the characterization, removal, packaging, manifesting, transportation, and disposal of all wastes and all storage vessels located within the site. Mr. Pardue provided a detailed Health and Safety Plan for the site, supervised the proper removal and packaging of all waste materials, assisted the client in making hazardous waste determinations and determining state waste codes, prepared all manifests for the project, and coordinated all transportation and disposal activities for the project. Once all of the wastes were properly removed from the site, Mr. Pardue was tasked to prevent further contamination of the site through filling the sumps and plating vats along with repairing the roof above the chrome plating room.

Glue Manufacturing Facility – Houston, Texas: Project manager for the dismantling of out-of-service glue manufacturing process plant. The project scope involved the dismantling, removal and disposal of the entire process facility including the metal glue storage vats, the process vessels, all overhead and underground piping, and all outdated and discarded products and chemicals contained therein. Mr. Pardue provided the Site Specific Health and Safety Plan for the project, supervised crane, lift, and track hoe operators, supervised the removal and packaging of all discarded product found within the process lines and tanks, assisted the client in making hazardous waste determinations and obtaining state waste codes, and coordinated all transportation and disposal activities for the project.

Abandoned Waste Disposal Facility – Texas City, Texas: Project Manager for a waste storage tank evacuation and cleaning project that involved the removal, packaging, transportation and disposal of approximately 150,000 gallons of hazardous bulk liquid waste, 200,000 gallons of non-hazardous bulk

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liquid wastes, 20 bulk vacuum boxes of hazardous and non-hazardous sludges, and 150 hazardous and non-hazardous drummed wastes. Mr. Pardue's duties included supervising the physical removal of the materials from the tanks into DOT approved containers, expediting disposal approvals into 6 different facilities, preparing all manifests and land disposal restriction forms, and coordinating all transportation and disposal activities for the project.

Russell G. Herrscher

Education

B.S., Environmental Management, La Salle University

Special Training/Affiliations

OSHA 40-Hour 1910.120 HAZWOPER Regulatory Awareness Training DOT HM 126(f) Training CPR Certification T.S.D.F. Operations Advanced G2 Training & CPM Scheduling Society of American Military Engineers HASC Basic & Chevron Specific Training	L.D.R.N. Training Radiological Support Training Site Safety Officer Training Stationary Engineers License Federal Acquisition Regulation (FAR) Training Member American Defense Preparedness Association RCRA 40 CFR 260-268 Subtitle C UST Removal/Closure License (ILP001147)
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Summary of Experience: Mr. Herrscher offers more than fourteen years of experience within the specialty chemicals and environmental remediation industries. As the Environmental Manager for a Texas based chemical manufacturing facility, he was responsible for compliance with local, state and federal regulations including permitting, RCRA record keeping and reporting, hazardous waste minimization, disposal and remediation activities. Mr. Herrscher has worked as a Project Manager for RUST with P&L, operational, and regulatory responsibilities for projects which included soil and drum excavations, waste water recovery and treatment, UST removal and replacement, chemical fixation, emergency response actions and landfill cell construction and capping. As a Project Development Manager for RUST, Mr. Herrscher has been responsible for the preparation of written Technical and Cost Proposals for clients requiring remediation/construction services. Mr. Herrscher served as the Program Manager for ID/IQ Environmental Restoration Contracts at Tinker AFB and Kelly AFB managing multiple Delivery Orders.

Project Specific Experience:

Solvay Animal Health - Charles City, Iowa (\$1,200,000): Project Manager for the remediation of the Shaw Avenue (NPL) site in Floyd County, Iowa. Contaminants were generated from former veterinary pharmaceutical production and included arsenic, orthonitroaniline, various halogenated organic compounds, aromatic hydrocarbons and heavy metals. Mr. Herrscher worked on behalf of the

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municipality of Charles City and Solvay Animal Health in the preparation of a Remedial Action Plan (RAP) to perform remedial activities associated with Operable Unit 1. Mr. Herrscher was responsible for the implementation of the selected remedy which included: in-situ fixation/stabilization of chemical fill to meet TCLP based performance standards; removal and disposal of chemical fill and contaminated soil; installation of a low permeability cap; and installation of a groundwater monitoring program to determine effectiveness of the remedy in preventing leaching of contaminants into the groundwater.

Eagle Pitcher Industries - Joplin, Missouri (\$500,000): Project Manager for a high priority emergency response action, which involved the extraction and neutralization of various lithium alloys. The remedial action was in response to a detonation of reactive compounds and subsequent fires that destroyed a manufacturing facility used in the production of the Patriot Missile's primary ignition system. The project occurred during the Persian Gulf War and involved reconnaissance missions into the destroyed complex to retrieve brinks containers housing the lithium alloys. Once the containers were recovered, they were deactivated on-site and transported off-site for disposal.

Freeman United Coal Mine - Farmersville, Illinois (\$1,800,000): Project Manager for the excavation and disposal of approximately 6,000 tons of PCB contaminated soil at a former coalmine in Southern Illinois. The project required the surgical excavation of soil on a 25 foot by 25-foot grid system throughout the abandoned mining facility. Additional responsibilities included installation and operation of a water treatment system, demolition of existing structures, removal of abandoned transformers and remediation of mercury contaminated switchgear and soils.

DuPont - Deer Park, Texas (\$350,000): Project Manager for the removal and disposal of synthetic tank liners at the Intercontinental Terminals facility in Deer Park, Texas. The tanks were used to store a ferric chloride solution and were classified as Naturally Occurring Radioactive Material (NORM) based upon preliminary radiological surveys. Mr. Herrscher provided Project Management support supervising specialty subcontractors, coordinating transportation and disposal services, and management of our affiliate, Chem-Nuclear, for radiological controls.

Total Environmental Restoration Contract (\$150 million): Mr. Herrscher served as the RUST Remedial Services (RRS) Lead Estimator for the Total Environmental Restoration Contract (TERC) offered by the U.S. Army Corps of Engineers (USACE). The TERC is a cost plus contracting mechanism that offers the advantages of providing the Government with a continuity of personnel and institutional knowledge for developing streamlined and cost-effective remediation through the use of a single contractor for all phases of a remediation project. The contract was awarded to RUST Environment & Infrastructure with a value up to \$150 million over a ten-year period.

USAF Installation Restoration Program (\$385 million): Mr. Herrscher served as the Offer Manager on behalf of RRS Southern Region for the Installation Restoration Program (IRP) proposals submitted to the USAF. The overall objective of the IRP is to identify, investigate, and remedy all environmental contamination problems resulting from past hazardous waste disposal practices. Effective January 1994, RUST was awarded two contracts under the IRP at Tinker Air Force Base in Oklahoma City, Oklahoma and Kelly Air Force Base in San Antonio, Texas. Both are ID/IQ contracts with a cumulative value of up to 385 million over a five-year period. The contact requires numerous requests for environmental support

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at hazardous waste sites under the control of the Federal Government. The individual delivery orders are awarded on a firm fixed price arrangement as the requirements for remedial services are identified.

North Cavalcade Site Soils Operable Unit - Houston, Texas (\$2,100,000): Mr. Herrscher served as the Project Manager for the North Cavalcade Superfund Site which encompasses 21 acres in an industrial area of northeast Houston. The selected technical approach to soil treatment is solid phase land treatment in engineered cells. Soil contained in windrows is turned with a windrow machine and managed for optimum biodegradation. Mr. Herrscher is responsible for activities which included: site grading, cell construction, excavation, soil processing, bioremediation, water treatment, sampling and analysis, perimeter and real time air monitoring. The constructed treatment provides for the biological treatment of approximately 12,000 cubic yards of contaminated soil.

Houston Scrap Remedial Action - Houston, Texas (\$1,033,500): Mr. Herrscher served as the Project Manager responsible for Work Plan development, Cost and Schedule control and Project Management for the excavation and consolidation of contaminated soil, sediment drums, vegetation and miscellaneous debris; construction of an on-site land treatment cell; off-site transportation and disposal of hazardous waste; consolidation of excavated material into a single area; construction of a capping system to cover the consolidated waste mass; and construction and development of monitoring wells.

City of Houston Lagoons Sludge Removal and Closure - Houston, Texas (\$2,200,000): Mr. Herrscher worked with the estimating department taking an aggressive and practical approach to this lagoon closure contract valued at over \$ 2.2 million. After award, Mr. Herrscher served as the Project Manager providing technical support and conducting monthly progress meetings with the client. The project scope included the installation of temporary haul roads, removal and disposal of supernatant piping and valves, removal and disposal of 80,000 cubic yards of water treatment sludge, installation reinforced concrete storm sewer pipe and site restoration.

The Ball Park at Union Station - Houston, Texas: Mr. Herrscher served as the Program Manager for the remediation contract awarded by Roy F. Weston, Inc. to provide environmental services in support of the \$190 million construction efforts for The Ball Park at Union Station. Services included notifications to regulatory agencies, permits, removal of underground storage tanks (UST's) containing petroleum products and hazardous materials, excavation of impacted soil, waste characterization, confirmation sample collection and analysis, profile preparation, loading, transportation, disposal and preparation of closure report documentation.

Austin-Bergstrom International Airport - Austin, Texas: Mr. Herrscher managed the New Airport Project Teams (NAPT) Site Wide Remediation III Contract for environmental construction at the Austin-Bergstrom International Airport. This project consists of contaminated materials remediation and removal of asbestos-containing underground piping at non-project specific construction areas at the new Austin-Bergstrom International Airport (A-BIA). The sites addressed in this contract depended on the results of U.S. Air Force assessment and remediation activities, as well as situations where other NAD contractors discover contaminated media in the course of performing their work. The general scope of work includes: demolition, removal, transportation and disposal of concrete building foundations, and concrete and asphalt pavement; removal, transportation and disposal of general construction debris;

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excavation, removal, transportation and disposal of steel or concrete piping and subsequent capping of lines in excavations proximal to contaminated soils; mobilization and placement of 55-gallon drums; mobilization, placement and demobilization of roll-off containers; placement, maintenance and removal of temporary security fencing; backfilling and compaction of remedial excavations; construction, operation, maintenance and demolition of decon pads; sampling, analysis, waste classification and disposal of contractor generated waste; manual excavation and stockpiling of soils using hand shovels; excavation, stockpiling and proper management of soils potentially contaminated by petroleum fuels and other substances; loading, transport and disposal of impacted soils; loading, transport and disposal of hazardous soil and debris; containerization and disposal of petroleum fuels or water contaminated by petroleum fuels; performance of Subchapter H discharge parameter requirements; solidification of waste; trenching to expose underground ACM piping; abatement of transite pipe, to include capping and sealing of pipe remaining in place; and transportation and disposal of ACM.

Michael L. Cooper

Special Training/Affiliations

OSHA 40-Hour 1910.120 HAZWOPER	Hazardous Waste Operations
Asbestos Inspector Training Updates	Land Disposal Restrictions Training
Louisiana Asbestos Inspector Certification	RCRA 40 CFR 260-268 Subtitle C
Asbestos Management Planner	PPE & Safety Supervisor – Texas A & M
Asbestos Worker Training Program	Confined Space Entry Training
HAZCAT Field Identification Seminar	Transporting Hazardous Materials Seminar
First in Emergency Response I & II	HAZMAT Positive Incident Control
Respiratory Protection & Selection	Air Monitoring & Confined Space Courses
Practical Aspects of Industrial Hygiene	Pre-Site Basic Entry
Regulatory Awareness Training	Radiological Support Training
DOT HM 126(f) Training	Site Safety Officer Training
CPR Certification	UST Removal/Closure License (ILP001147)

Summary of Experience: Mr. Cooper offers more than sixteen years of relevant experience in managing a variety of environmental restoration projects. He served as the Vice President of Operations for Loflin-Cooper Associates, Inc., providing environmental remediation services to commercial, industrial, real estate and governmental clients in the areas of hazardous waste remediation, transportation, disposal, underground storage tank (UST) investigations and closure and environmental site assessments. As an Environmental Specialist for Jones and Neuse, Inc. he provided environmental consulting and remediation services including hazardous and solid waste site assessments, remediation and disposal, UST removals and closures, PCB sampling and remediation, and asbestos inspections and sampling. Mr. Cooper worked as a Project Manager for Rollins Environmental Services providing emergency response, PCB transformer removals, industrial plant decontamination and remediation of contaminated soil. He has also served as a Hazardous Waste Manager responsible for the administration of a complete safety and environmental training program, performed Environmental Site Assessments for property

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transactions, and assisted Generators of hazardous waste with DOT requirements, manifesting procedures and ultimate disposal and treatment options.

Project Specific Experience:

Texas Department of Transportation (TXDOT), 8 County Region: Mr. Cooper developed and managed routine (quarterly) drummed waste disposal for TXDOT. The scope Includes characterization of multiple unknown waste streams. The "Milk Runs" generally include as many as 10-15 sites and can include up to 80 drums per run.

Private Retail Facility in Brookshire, TX: This project involved the removal of two (2) underground storage tanks located at a private business in Brookshire, TX. The removal of this installation was necessary because both UST's were floating due to an improper installation. The work included the removal of 3,075 square feet of paving, the erection of temporary fencing and barricades to restrict the access to work areas. Excavated approximately 1,500 cubic yards of soil including stockpiling and protection from rain and/or runoff. The UST's were removed and transported to the manufacturer for recertification. A 14' X 60' hold down slab was constructed and the UST's reinstalled, banded and anchored as per API Standards. The tank appurtenances were reinstalled and the damaged equipment replaced. The area was backfilled with pea gravel and compacted to a grade suitable for paving replacement. The area was then paved with 6" of 3000 PSI concrete.

Emergency Response Action – Conroe, Texas: This project was the result of a plane crash located in a residential neighborhood in Conroe, TX. As the plane lost altitude, damage was caused at three separate property locations throughout the site. Fuel and debris affected the drainage ditches in the City streets Right Of Way. Soil and surface water samples were collected and analyzed to determine whether the contaminants were derived from aviation JP-4 fuel or low lead 100. All results were positive for low lead 100. Mr. Cooper removed plane wreckage, downed trees, and damaged fencing. Roll-off boxes were delivered to the site and used for collection of debris and contaminated soils. Soil that was contaminated with aviation fuel was excavated and placed into lined roll-off containers. Forecasted rain warranted the placement of 6mil polyethylene over the entire crash site. Approximately 6,500 gallons of petroleum-impacted rainwater was evacuated from the crash site. Confirmation samples were taken in the areas that the impacted soils had been excavated. Analytical results indicated effective removal. Backfill and grading of excavated areas was completed. 200' X 6' of damaged chain link fencing was replaced. All vegetation debris was transported for recycling as mulch. Plane wreckage was transported for scrap metal. Two propellers, two engines and three of the four fuel tanks were transported to the yard for further investigation by the FAA. The impacted rainwater was sent for recycling. Impacted soils were transported and staged off-site pending approval. Once approved the soil was transferred into the landfill for direct burial.

Property Management Company – Irving, Texas: This project originated from a metal plating facility that had been abandoned and the owner was faced with clean up activities. Contaminants of concern were acids, bases, metals, and many unknown vats of liquid. Mr. Cooper was responsible for the preparation of a site specific Health & Safety Plan, sampling of waste, profiling and removal of solids and liquids (including drums and containers) for disposal at approved and permitted TSDF. Additional work

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included decontamination of building surfaces, ductwork and ceilings. All tanks were triple rinsed and rinseate was collected and transferred into an on-site waste water treatment system. Once decontamination was complete, Mr. Cooper directed the dismantling of all tankage, ductwork and electrical equipment.

Construction of Decontamination Facility: This project included the construction of a wheel wash decontamination facility at an existing landfill and included the excavation of four-wheel wash structures and storage facilities. Specific activities managed by Mr. Cooper included; Stripped and grubbed area for installation of access road including removal of existing gravel roadway; Raised dirt roadway and added 12" topsoil to bring slope up to natural ground elevations prior to placement of gravel and dirt roads; Constructed drainage swales; Installed new access roads to wheel wash facility consisting of 12" thick of crushed concrete, 12" thick lime stabilized subgrade, 1.5" asphalt binder course, and 1.5" asphalt wearing course; Installed 2" and 4" water lines to wheel wash facility using HDPE pipe and fittings; Installed double containment discharge piping and with 6" HDPE primary piping inside 10" secondary piping; Leak tested and verified that all joints were properly sealed; Constructed the actual concrete structure including the installation of pipe bollards, chain link fencing, access gates, 10" reinforced slab, 8" walls, jiggle bars and wall sleeves.

Richard B. Smith

Education

B.B.A., Management – Texas A & M University

Special Training/Affiliations

OSHA 40-Hour 1910.120 HAZWOPER	L.D.R.N. Training
Regulatory Awareness Training	DOT HM 126(f) Training
Site Safety Officer Training	CPR Certification
T.S.D.F. Operations	RCRA 40 CFR 260-268 Subtitle C

Summary of Experience: Mr. Smith is experienced in a wide range of industrial operations including: Heavy Construction, Transportation and Logistics, Contract Industrial Services, Waste Management, Waste Disposal and Environmental Services. Mr. Smith has over ten years of experience with specific responsibilities in consulting, operations management, revenue production, financial management and general management. He was involved with founding and growing (through merger and acquisition activities) a series of companies, which were sold to USA/Waste Management, Inc. He was the General Manager of USA Environmental responsible for the day-to-day financial and general management of a \$7 million remediation and disposal company. He managed the Hazardous Waste Transportation operations for Conoco and Dupont and served as the Operations Manager for AllWaste Environmental Services Transportation and Industrial Services. He was Co-Founder of AgTech Environmental Services, which merged, with USA Environmental in April of 1996. He is a founding member of USA and manages the Waste

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Disposal and Transportation Services as well as ensuring the companies compliance with State and Federal Regulations.

Project Specific Experience:

Emergency Response Action: This project involved a 500-gallon diesel tank, which overturned into a drainage ditch. The tank caught fire and burned until fire fighters arrived and extinguished the fire by placing a blanket of foam on the tank and the remaining diesel in the ditch. A vacuum truck was used to remove the diesel and water from the ditch and the remainder of the material from the damaged tank. A pressure washer on the vacuum truck was used to clean damaged tank prior to removal. The tank was washed until a consistent LEL reading of 0% was recorded. The resulting rinseate was also removed by the vacuum truck. All of the removed liquids were transported to a hydrocarbon fluids recycler for recycling. When the tank was deemed to be vapor free it was labeled and transported for scrap and a certificate of destruction was issued. A backhoe was used to remove contaminated soil from the roadside and drainage ditch. Soil was removed from the entire length of the ditch where diesel and firewater were present. Over excavation was performed in the area where the tank had been located and large amounts of diesel had been standing. All contaminated soil was deposited directly into a rolloff box for transportation and disposal. The material was characterized as Class 1 Non hazardous and transported to a permitted Subtitle D Landfill for disposal. After soil removal was complete, the backhoe was utilized to return the drainage ditch to its original grade. The roadway was also scraped to remove any mud from traffic lanes. Traffic control was handled by the Precinct Constable.

Municipal Port Authority: This project involved an abandoned liquid waste disposal facility. Mr. Smith sampled, characterized and disposed of approximately 100 drums of unknown waste; sampled, characterized and disposed of 25 tanks of unknown liquid and sludge wastes containing approximately 350,000 gallons of material; and cleaned all tanks and containment areas after waste removal to the point where all metal from the tanks could be recycled and all concrete from containment areas could be disposed of as inert. Contaminants of concern were F listed solvents, D characteristic metals, and RCI. Hazardous wastes were transported to a fuel blending facility, incineration facility, or treatment facility. Non-hazardous solid waste was sent to landfill and no hazardous liquid waste was sent for treatment.

Texas Department of Transportation - Orchard, Texas: This project originated when an unidentified liquid had been released at the intersection of State Highways 1489 and 1952 and was creating a slick condition. TXDOT personnel had ordered sand trucks dispatched to sand the affected surfaces. A response crew equipped to conduct initial containment and identification was dispatched immediately. The response crew arrived within one hour of when the emergency call came in. It was determined that the material appeared to be a light hydrocarbon aqueous solution. It did not register any characteristics of being an acidic solution or alkaline solution nor did it appear to be volatile or of a herbicide or pesticide nature. A sample was taken and dispatched to a laboratory for further characterization. It was further determined that the soil along the roadway had been impacted by the material itself as well as the disbursement of the sand by traffic. At this time a backhoe, broom and hopper equipped bobcat and roll off containers were sent to the scene. The impacted shoulder areas were excavated and placed into roll off

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containers along with the sand that had been swept off the intersection by the specially equipped bobcat. Confirmation samples were taken from the excavated areas for future analysis. The excavated areas were immediately backfilled with material supplied by TXDOT. This was done to avoid creating a hazardous traffic condition with low, soft or uneven shoulders. Traffic control was handled by TXDOT personnel and light trucks, DPS troopers and their vehicles, Fort Bend County Sheriff, and the response team personnel. Initial lab results showed that material of concern was approximately a 30% solution of calcium chloride. Final lab results showed later that there were no hazardous constituents. All equipment was decontaminated and removed from the site.

Medical Waste Incinerator – Pearland, Texas: This project involved the complete decontamination of a medical waste incinerator that was just days away from going to enforcement. Contaminants of concern were biohazards, mercury, acids, caustics, solvents, and bulk liquids. Mr. Smith sampled, characterized, and disposed of 22 unknown waste streams and disposed of over 35,000 gallons of bulk liquid waste and 75 drums of waste.

Petroleum Distributor – Houston, Texas: This project originated from a 500 to 800 gallon gasoline overflow of an AST. Mr. Smith managed the removal fencing for site access, clearing of brush and small trees, removal of 18-inches of impacted soil, and stockpiling of soil on visqueen. Hard to reach areas were manually excavated to ensure that all contamination was removed. The site was secured with barricade tape and the stockpile was covered with visqueen to protect from run-off disbursement. Composite confirmation samples were collected from the floor of the excavation to test for hydrocarbons, ensuring that all contamination was removed prior to backfilling with clean, imported soil. Composite samples were collected of the stockpiled soil to analyze for disposal characterization and acceptance. A drainpipe in the wall of the AST containment was also repaired to ensure that rainwater did not carry residual hydrocarbons back into the environment. Analysis confirmed that the excavated areas were successfully remediated. All stockpiled characterization levels were confirmed to be within the guidelines for a Class II disposal authorization. 182 cubic yards of contaminated soil and 28 cubic yards of brush, trees and debris were loaded and shipped for landfill burial. 22,684 gallons of impacted rainwater was vacuumed from the excavation and sent for treatment. Imported and placed 266 cubic yards of fill material to bring the excavation back to grade. Restored site to near original condition and re-erected fence.

Mike Nalepa

Education

B.B.A., Economics – Sam Houston State University

Special Training/Affiliations

OSHA 40-Hour 1910.120 HAZWOPER	L.D.R.N. Training
Regulatory Awareness Training	Radiological Support Training
DOT HM 126(f) Training	Site Safety Officer Training
CPR Certification	T.S.D.F. Operations
RCRA 40 CFR 260-268 Subtitle C	Radiation Safety Officer (RSO) Certification

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Radiation Surveying Certification

Summary of Experience: Mr. Nalepa has managed low level and mixed radioactive remediation sites in the oil field as well as Naturally Occurring Radioactive Material (NORM) projects in the steel and wood products industry. He brings over twenty-three years of experience in the operation and handling of special wastes as well as tank cleaning and disposal expertise. Mr. Nalepa has extensive experience in the management and disposal of hazardous and non-hazardous bulk waste streams. He was the founding member of Torque Petroleum, which was a 2500 BPD Refinery for the distillation of heavy crude oil and tank bottoms. He also managed Torque's movement into Hazardous Waste Management, receiving Interim Status as a TSD facility. Mr. Nalepa has provided an invaluable service to our clients in the management of their waste transportation and disposal needs.

Project Specific Experience:

- Project Manager for a multi-million dollar project in Oklahoma and Kansas involving NORM waste and site remediation.
- Project Manager for the remediation of a low level radioactive catalyst at a major petrochemical refinery.
- Managed the site clean up for a large abandoned plating operation. The scope included waste characterization and disposal, reclamation of waste, and demolition and dismantling of the entire facility.
- Managed a tank-cleaning project for a major pipeline company consisting of thirty-seven thousand barrels of solids in a fifty-year-old storage tank. The project involved utilization of all known tank cleaning technologies as well as ingenuity to manage the waste. The project was completed at a cost of about 30% below the next closest bidder.
- Ongoing Management of Refinery Bulk Liquid Waste Stream. Mr. Nalepa has been responsible for the redirection of waste into "Alternative Feedstock" programs resulting in Waste Minimization and significant cost savings for major petrochemical facilities.
- Sludge removal and cleaning of above ground crude oil storage tanks including the treatment and reclamation of tank bottoms and complete washing of tanks and associated piping.

Greg Blomquist

Special Training/Affiliations

Underground Storage Tank Management - TNRCC Sponsored
Soil Remediation Management - TNRCC Sponsored

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RCRA Hazardous Waste Management Course - Texas A&M
OSHA 40-Hour 1910.120 HAZWOPER
Regulatory Awareness Training
DOT HM 126(f) Training
Site Safety Officer Training
CPR Certification
T.S.D.F. Operations Training
RCRA 40 CFR 260-268 Subtitle C

Summary of Experience: Mr. Blomquist offers over thirteen years of relevant experience in the construction and environmental industry. He has successfully managed operations for the removal Underground Storage Tanks (USTs) and site remediation for the past ten years. Mr. Blomquist is experienced in all aspects of estimating, critical path scheduling, project management and operations management. He has worked for one of the largest waste disposal companies in the world as a construction project manager and estimator. He served as the Environmental Services Manager for cleanuptexas.com and was responsible for the marketing, estimating, and profit and loss for the environmental services of cleanuptexas.com.

Project Specific Experience:

Alamo Forest Products, Pentachlorophenol Remediation Project: On the first mobilization to the site, Mr. Blomquist was able to successfully treat 60+ cubic yards of soil with levels of Pentachlorophenol (PCP) above the RCRA Limits to nonhazardous levels and dispose of the waste as a Texas Class I Nonhazardous. Mobilizing the second time to the site, Mr. Blomquist was required to excavate, transport and dispose of 4,400+ cubic yards of PCP contaminated soils. Excavation of 2,400 cubic yards of the PCP waste soil was completed within a warehouse with highly restricted access to move equipment around the work area and no room for stockpiling of excavated soils. Additionally, 2,000 cubic yards of soil was removed from the loading dock area and around the "gray beam" structure of the warehouse. Mr. Blomquist supervised a Professional Engineer to design the shoring and support plan, required during the excavation around the "gray beam."

Kelly AFB, UST Removal San Antonio, Texas: This project included the demolition and removal of four (4) 50,000 gallon JP-4 fuel tanks and above ground stainless steel piping, valves, filters, and pumps. The project consisted of excavating approximately 3,000 cubic yards of material to remove the tanks and piping. The excavation was backfilled with imported fill

Kelly AFB – San Antonio, Texas - The project involved the demolition and dismantling of the Facility 1592 Fuel Systems Yard at Kelly Air Force Base in San Antonio, Texas. The scope of work included: disconnecting all utilities prior to beginning demolition activities; characterization and disposal of residual fluids and sludges in the Aboveground Storage Tanks (ASTs); cleaning of ASTs; demolish and cut steel two 420,000 gallon ASTs into manageable sizes for loading and disposal at a recycling facility; removal of

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four Underground Storage Tanks (USTs) and one Oil Water Separator; remove the contents of three waste oil tanks and dispose of material in accordance with regulatory requirements; triple rinse and remove three waste oil tanks from the site; demolition and dismantling of Building 1592 (Storage Facility), Building 1593 (Pump House Facility), Building 1582 (Electrical Control Room), Building 1583 (Main Fuel Supply Control Pump House Facility), Building 1594 (Fill Stands) and the Fire Suppression Building; demolition, transportation and disposal of over 7,500 cubic yards of concrete foundations, tank rings, support structures, sidewalks, parking areas and turnouts; cleaning and removal of underground fueling system piping; and railroad spurs; removal of asphalt and gravel pavement; and restoration of the site to include placement, compaction of approximately 9,000 cubic yards of imported fill.

Major Oil Company: Mr. Blomquist was the project manager responsible for the solidification, excavation, transportation, and disposal of 11,000 cubic yards of material from former salt-water disposal well site in Friendswood, Texas. The project was values in excess of \$ 630,000.

City of Houston: Mr. Blomquist managed multiple City of Houston Underground Storage Tank construction contracts. Projects involved the installation, removal, and remediation of USTs at various City of Houston properties. Projects totaled \$ 2,000,000 in value.

Geraghty & Miller Engineers: Installation of groundwater remediation system at Town & Country Shopping Center. Project consisted of the installation, piping, and controls for 19 on-site and off site recovery wells and 22 on-site vapor recovery wells. The treatment system is capable of treatment of DNAPL contaminated groundwater at a rate of 160 gpm. Project Value \$ 300,000

ARCO Pipeline: Remediation of crude oil pipeline. On-site bioremediation of 26,000 cubic yards of oil impacted soil to levels acceptable for backfill. Project Value \$ 750,000

City of Austin: Estimator for remediation of former electrical material storage yard. Project consisted of the remediation of 10,000+ cubic yards of PCB, Lead and hydrocarbon contaminated soils. Project Value \$750,000.

Celanese: Solidification, excavation, transportation, and disposal of 6,000 cubic yards of sludge from pond at major chemical plant in Clear Lake, TX. Project Value \$ 316,000

Jason E. Kettler

Education

B.S., Environmental Studies, Texas A & M University, 1996

M.S., Environmental Management, University of Houston – Clear Lake, 1998

Special Training/Affiliations

24-Hour Hazardous Materials Awareness per Section 1910.120

DOT Basic and Advanced Courses Per HM 126

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24-Hour Hazardous Waste Management I
Supervisor Drug and Alcohol Training (382.603)

Summary of Experience: Mr. Kettler offers more than four years of experience with industrial and non-industrial generating and disposal facilities throughout the Gulf Coast. As the Industrial Transportation Manager for a large waste corporation, he was responsible for P & L, operational, and regulatory activities for a twenty-four hour a day full service \$500,000 per month transportation company. Transportation services included bobtail and tractor-trailer roll-offs, tankers, flatbeds, box vans, end-dumps, sea-land containers, and over-sized loads. Mr. Kettler has worked as Transportation Manager for projects that included tank clean-outs, plant turnarounds, pond closures, remediation, emergency response, Superfund, plant demolition, UST removals, and ACM abatement. In addition, Mr. Kettler was responsible for transportation proposals and estimation of expenses for transportation services.

Project Specific Experience:

Phillips Petroleum – Sweeny, Texas (\$220,000): Manager for the timely delivery and transportation of over 150 hazardous catalyst roll-off loads from Sweeny, Texas to Convent, Louisiana. Constant communication between dispatch, Phillips, and the disposal facility was required in order to reduce demurrage charges and promote efficient activity. The project lasted six weeks and required six day a week activity in order to reduce all roll-off rental charges.

Waste Management – Humble, Texas (\$150,000): Manager for transportation services for a hazardous waste remediation project. Scheduled and supervised roll-off, end dump, and sea container transportation to five different disposal facilities in the Southern United States. All containers were cleaned at various washout facilities and returned to vendors. The project lasted over six months and more than 100 roll-off and 60 sea containers were successfully tracked from the inception of the project.

Tennessee Gas Pipeline – Cleveland, Texas (\$130,000): Manager for the coordination of transportation activities for a non-hazardous concrete demolition project. The project was time sensitive in order to reduce demolition equipment rental charges. Many roll-off and end-dump trailers were utilized to ensure a quick completion of the project.

Chevron Chemical Company – Cedar Bayou, Texas (\$100,000): Manager for in-plant and transportation activities for a plant turnaround. The four-month project required six day a week activity and often twenty-four hour shifts. Specialty watertight, vacuum, asbestos, and trash roll-off containers were utilized and tracked. Hazardous and non-hazardous waste was hauled from the facility to various disposal sites.

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Chevron Chemical Company – Cedar Bayou, Texas (\$80,000): Coordinator of transportation services for a pond cleanout. The twenty-four hour a day seven days a week project required bobtail and tractor-trailer roll-off services. The project lasted approximately four weeks and required the tracking of forty-five roll-off containers.

Crown Central Petroleum – Deer Park, Texas (\$80,000): Manager for the safe transportation and in-plant work for a hazardous waste tank cleanout. The project required twenty-four hour seven day a week in-plant bobtail roll-off service and tractor trailer roll-off transportation services to three different disposal facilities on the Gulf Coast. The tank cleanout lasted two months and required the delivery, retrieval, and tracking of sixty-five specialty rolling lid roll-off containers.

Shell Refinery – Deer Park, Texas (\$70,000): Transportation Coordinator for a hazardous waste tank cleanout. The project required the delivery, retrieval, and tracking of seventy specialty roll-off containers. On-call bobtail roll-off in-plant work was required for six months. Several price negotiations were required to ensure a fair price for the lengthy rental period.

MDI Superfund Site – Houston, Texas (\$45,000): Manager for the utilization of safe on site bobtail roll-off work. Daily coordination with on site supervisors was required for fluctuating safety and service requirements. The project lasted six weeks and required a minimum of one unit per day and an on call unit five days a week.

Chevron Chemical Company – Orange, Texas (\$40,000): Managed transportation services for a plant demolition project requiring several tractor-trailer roll-off units. All loads were wait to loads so efficient scheduling and planning was essential. Constant communication between on site coordinators and dispatch was required in order to alleviate down time for demolition equipment and demurrage for transportation services.

Intermediate School – Houston, Texas (\$35,000): Managed the safe transportation of asbestos, demolition debris, and trash from an abatement project. The project required a full time bobtail roll-off driver five to six days a week for six weeks. Several asbestos, watertight, and trash containers were required for the successful completion of the project.

V. Carl Tragesser, III

Education

Rice University, Studies in Chemical Engineering

Special Training/Affiliations

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OSHA 40-Hour 1910.120 HAZWOPER	Regulatory Awareness Training
DOT HM 126(f) Training	Site Safety Officer Training
CPR Certification	Stage II Vapor Recovery Training
Excavation Safety Course	Self Contained Breathing Apparatus
TNRCC CAPM No.1124	HASC Basic & Chevron Specific Training
UST Installation & Removal License (ILP001780)	

Summary of Experience: Mr. Tragesser offers more than ten years of experience within the environmental consulting and environmental remediation industries. As a Sr. Project Manager for three environmental consulting firms in Texas over a seven-year period, he was responsible for all phases of project management including conceptual design, procurement, contractual negotiations, project management, P&L responsibilities and TNRCC Corrective Action Reports. Mr. Tragesser has worked as an Operations Manager for USA Environmental Services (a Waste Management, Inc. subsidiary) with P&L, operational, and regulatory responsibilities for projects which included soil and drum excavations, groundwater recovery and treatment, UST removal and replacement, emergency response actions and landfill cell construction and capping. As a Project Manager for USA Environment, Inc., Mr. Tragesser has been responsible for the preparation of written Technical and Cost Proposals for clients requiring remediation/construction services.

Project Specific Experience:

City of Houston UST Program - Houston, Texas (\$1,500,000): Mr. Tragesser served as the Project Manager responsible for preparation of bid specifications and construction drawings for installation, retrofit and removal of USTs and ASTs at 140 City facilities. Project Construction Quality Assurance services included submittal review, materials testing and numerous other special services including emergency response activities.

Large Overnight Delivery Firm - 21 states and Puerto Rico (\$1,250,000): Mr. Tragesser served as the Project Manager responsible for retrofit, removal and installation of USTs and ASTs at over forty facilities in 21 state throughout the United States and Puerto Rico. Responsibilities included initial assessment of the systems, design of retrofit, removal and installation activities, coordination of subcontractors, execution of the project and reporting to the appropriate State agencies. Additional projects included performing remedial activities at numerous facilities including soil transportation and disposal, free product recovery and installation of groundwater treatment systems

County of Montgomery, Texas - Conroe, Texas (\$500,000): Mr. Tragesser served as the Project Manager responsible for the preparation of bid specifications and construction drawings for retrofit and removal of USTs and ASTs at County facilities. Other responsibilities included preparation of all required TNRCC forms and reports and waste characterization profiles and manifests.

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Major University - Houston, Texas (\$350,000): Mr. Tragesser served as the Project Manager for the abandonment in place of underground storage tanks and waste characterization and disposal of over 5,000 cubic yards of soil encountered during construction of a seven-story building.

Former Utility Maintenance Yard - Austin, Texas (\$1 million): Mr. Tragesser served as the on-site Project Manager for the remediation of a former utility maintenance storage yard. The project included the demolition of fourteen buildings contaminated with polychlorinated biphenyls (PCBs) and lead. In addition, the project included the removal of over 6,000 cubic yards of hazardous and non-hazardous soils along the banks of Shoal Creek, a tributary of the Colorado River in downtown Austin. Mr. Tragesser's responsibilities included personnel management, subcontractor scheduling, daily project management, waste characterization and disposal and P&L responsibilities.

Various Petrochemical Plants - Texas: Mr. Tragesser served as a Project Manager and Operations Manager for numerous projects at petrochemical plants throughout Texas. The projects have included lab packing of hazardous materials, drum disposal, UST and AST projects, daily maintenance projects, shutdowns, excavation and disposal of soils, pond closures, tank cleaning and emergency response activities. Many of the projects have required hot work permits, confined space entry permits or other logistical challenges.

Many Diversified Interest (MDI) Superfund Site - Houston, Texas (\$915,000): Mr. Tragesser served as the Operations Manager for the MDI Superfund Site. The property was an inactive steel-casting foundry. It was utilized by several different entities from 1926 until 1992. The site once consisted of numerous metal industrial buildings and other structures. The remediation included scattered piles of foundry sand and slag waste, 3,200 drums of spent catalyst material and approximately 1,000 drums of corrosive liquids, flammable liquids and solids, and combustible liquids.

The PRP's elected to remove the drummed material including the spent catalyst. The catalyst was not suitable for reclaiming or recycling so it had to be disposed of as a hazardous material (K171 and K172). The waste was consolidated into 120 roll off boxes and analyzed to see if it met the various treatment standards. A determination was then made for disposal; incineration, treatment or direct landfill.

The crushed drums were disposed as a Class I non-hazardous material in a local landfill. Approximately 9,000 gallons of liquids that had been contaminated with the K171 and K172 was thermally treated and disposed at a local facility.

Malone Service Company Emergency Response Activity - Texas City, Texas (\$1,100,000): Mr. Tragesser served as the Project Manager responsible for the waste profiling and manifesting of over 650 tons of K051 waste resulting from a joint TNRCC/EPA enforcement action. The project included in the loading of the material into trucks for transshipment to a railcar loading facility. Railcars were loaded and shipped to a Subtitle C facility in Andrews, Texas for thermal treatment and disposal.

Pesticide Plant - Houston, Texas (\$500,000): Mr. Tragesser served as Operations Manager of a project at a Pesticide Plant which included the reworking of a large drainage ditch to seal pesticide leachate from entering tributaries of the Houston Ship Channel. The project included the installation of chain link

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fence, tree removal, flowable fill, geotextile liners, slope paving, backfill and grading activities and hydromulching.

Chester Langford

Superintendent / Site Safety Officer

Special Training/Affiliations

OSHA 40-Hour 1910.120 HAZWOPER
OSHA Construction Safety Training
Site Safety Officer Training
CPR & First Aid Certification
CDL Class A with Tanks & Hazardous Material Endorsement License # 06928115
UST Remover / On-Site Supervisor Certification
8-Hour Lead Abatement Training
HASC Basic Plus & Chevron Specific Training
Confined Space Entry Training
TNRCC Licensed On Site Supervisor (ILP002200)
HACSC 8-Hour HAZWOPER Supervisory Training 29 CFR 1910.120 (e) (4)

Summary of Experience: Mr. Langford offers over ten years of experience within the environmental / construction industry. As the Manager of Shuttle Service for The Parking Company of America Satellite Lots at the Houston International Airport, Mr. Langford supervised over 30 employees providing diverse managerial and operational skills. Mr. Langford worked at the Crosby Superfund Site, which involved the Incineration of over 2 million cubic yards of contaminated soil and the construction and capping of an on-site waste landfill cell. Mr. Langford has experience on a variety of construction and environmental projects including bioremediation, lagoon and pond closures, stabilization, UST removals and replacements and landfill construction and closures.

Project Specific Experience:

North Cavalcade Site Soils Operable Unit - Houston, Texas (\$2,100,000): Mr. Langford worked on the North Cavalcade Superfund Site which encompasses 21 acres in an industrial area of northeast Houston. The selected technical approach to soil treatment was solid phase land treatment in engineered cells. Soil contained in windrows was turned with a windrow machine and managed for optimum biodegradation. Mr. Langford was responsible for activities, which included: site grading, cell construction, excavation, soil processing, and bioremediation.

Houston Scrap Remedial Action - Houston, Texas (\$1,033,500): Mr. Langford served as the Site Supervisor responsible for the day to day operations including excavation and consolidation of

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contaminated soil, sediment, drums, vegetation and miscellaneous debris; construction of an on-site land treatment cell; off-site transportation and disposal of hazardous waste; consolidation of excavated material into a single area; and construction of a capping system to cover the consolidated waste mass.

City of Houston Lagoons Sludge Removal and Closure - Houston, Texas (\$2,200,000): Mr. Langford supervised day to day operations of this project which included the installation of temporary haul roads, removal and disposal of supernatant piping and valves, removal and disposal of 80,000 cubic yards of water treatment sludge, installation reinforced concrete storm sewer pipe and site restoration.

Larry Jones

Field Superintendent

Education

1972-1976 South Houston High School, South Houston, Texas
1980 San Jacinto College – English

Summary of Experience Mr. Jones has twenty-three years experience in Petrochemical Plant Construction and Demolition. He has over six years experience in the Environmental Construction Industry. He also has extensive experience in reading prints, doing layouts and shooting grades. Mr. Jones can operate a wide variety of heavy equipment, including, but not limited to: Motorgraders, draglines, trackhoes, gradalls, maintainers, loaders, scrapers, mixers, and rollers.

Project Experience:

Superintendent

Silber Road, Houston Texas - Remediation project consisted of the load-out, transportation and disposal of approximately 30,000 cubic yards of contaminated soil.

U.S. Zinc, Houston Texas - Project consisted of the removal and disposal of approximately twelve thousand tons of waste zinc from inside a warehouse.

Union Pacific Railroad, Mission, Texas project was the demolition and disposal of buildings and excavation, transportation and disposal of hazardous pesticide contaminated soil from a two-acre site.

MOTOROLA Chemical, Channelview, Texas - Demolition of Plant and Pond Closure stabilized in place capped with clay and topsoil.

Port of Brownsville, Brownsville, Texas consisted of the stabilization in place of oil and sludge. The site was then compacted back to 95% and graded out.

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Bayer Plant, Baytown, Texas - Demolition and rebuilding of a Phosgene Plant in Baytown, Texas.

Kelly AFB – San Antonio, Texas - The project involved the demolition and dismantling of the Facility 1592 Fuel Systems Yard at Kelly Air Force Base in San Antonio, Texas. The scope of work included: disconnecting all utilities prior to beginning demolition activities; characterization and disposal of residual fluids and sludges in the Aboveground Storage Tanks (ASTs); cleaning of ASTs; demolish and cut steel two 420,000 gallon ASTs into manageable sizes for loading and disposal at a recycling facility; removal of four Underground Storage Tanks (USTs) and one Oil Water Separator; remove the contents of three waste oil tanks and dispose of material in accordance with regulatory requirements; triple rinse and remove three waste oil tanks from the site; demolition and dismantling of Building 1592 (Storage Facility), Building 1593 (Pump House Facility), Building 1582 (Electrical Control Room), Building 1583 (Main Fuel Supply Control Pump House Facility), Building 1594 (Fill Stands) and the Fire Suppression Building; demolition, transportation and disposal of over 7,500 cubic yards of concrete foundations, tank rings, support structures, sidewalks, parking areas and turnouts; cleaning and removal of underground fueling system piping; and railroad spurs; removal of asphalt and gravel pavement; and restoration of the site to include placement, compaction of approximately 9,000 cubic yards of imported fill.

USA will assign either Greg Blomquist or Mike Nalepa as project manager of cleanup division, reporting to ENVIRONEERING.

Health and Safety

Worker and community safety is of the utmost importance on this and any other project that USA will be a party too. USA will designate a person on the site that has the experience necessary to act as the Site Safety Coordinator (SSC) and Radiation Safety Officer (RSO) to monitor the provisions of the project's entire health and safety plan. USA's representatives will have the authority to suspend work in cases where he/she feels USA or one of its subcontractors is out of compliance with the Site Health and Safety Plan (SHSP) or USA's Corporate Safety Plan. The SHSP will be provided to Environeering, Inc. before USA commences work on the site

USA's RSO will be on site during all activities when NORM material may be encountered. The RSO will monitor material and personnel during operations to assure they are warned of the presence of NROM material and adequately protected.

USA will provide our employees with required personal protective equipment (PPE) and ensure that our subcontractors have the required PPE for their workers in accordance with the approved SHSP.

All of USA's employees and its subcontractor personnel working at the site will have appropriate OSHA training, and will present evidence, prior to the start of work, of having completed such training including Hazardous Waste Workers Training per 29 CFR 1910.120, and appropriate 8-hour refresher training, and evidence of current medical surveillance examination, if applicable.

For this project, important concerns will be; heat, equipment safety, traffic safety, unknown contaminants that may be encountered at the site, as well as snakes and insects

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Confined Space Entry Plan and Permit

USA Environment, Inc.
Confined Space Entry Plan

Permit-Required Confined Space Entry for: Decontamination of Tanks. CSE work will be conducted in accordance with this HASP.

<u>Job Information</u>	Date:	Job Number:
Client:		
Contact:		
Phone/Pager Numbers:		
Location:		

Product involved: Hazard Data Section

Site Activities:

TESI Chain of Command: (TO BE COMPLETED IN THE FIELD)

	<u>Printed Name</u>	<u>Signature</u>
Supervisor:	_____	_____
Health and Safety:	_____	_____
Operators:	_____	_____
Technicians:	_____	_____
	_____	_____
	_____	_____
(use attachment if necessary)	_____	_____

All personnel have received the appropriate safety training in accordance with 29 CFR 1910.120 section (e) and 1910.146 and are currently under medical surveillance in accordance with 29 CFR 1910.120 section (f). By signing the above chain of command, I acknowledge that I have been instructed in the Site Safety Tailgate Meeting. See tailgate safety meeting for topics covered.

Outside Organizations:

Name	Agency/Company	Phone Number	Pager Number

Site Security and Control

Site Security and control will be the responsibility of the Site Supervisor. No unauthorized persons will be permitted within the Permit-Space area. All activities and arriving/departing personnel will be coordinated with the Site Supervisor. Initially the entire Permit-Space area may be considered an Exclusion Zone. Upon completion of exposure monitoring, contamination reduction and support zones will be designated.

Decontamination

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Protective Suit	Glove(s)	Respiratory Protection	Standard Equipment
X <input type="checkbox"/> YES			
Poly Coated Tyvek	Nitrile	Supplied Air	Steel Toe Boots
			Safety Glasses
			Hard Hat
			Hearing Protection

Task: _____

Protective Suit	Glove(s)	Respiratory Protection	Standard Equipment
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Steel Toe Boots
			Safety Glasses
			Hard Hat

The failure to use mandatory PPE will result in the immediate removal from job site and a write up in your employee file.

Emergency Alerting:

Beyond visual and verbal communication, air-horn signaling will be utilized as follows:

Air-horn Signaling	Meaning
One Long Blast	Break
Two Short Blasts	In Need of Supervisor
Multiple Short Blasts	Emergency Evacuation
Visual Signaling	Meaning
Hands on top of Head	Need assistance
Hands on Chest	Respiratory Problems
Hands Pointing to Side of Head	Return to Decon for Consultation
Thumbs Up	O.K., I'm all right, I understand
Thumbs Down	No, Negative

Site Safety Concerns: Check appropriate site specific concerns:

Weather concerns:

Temperature	Winds	Conditions

Emergency/First Aid: Located on the Field Supervisors Response Vehicle is the First Aid Kit, Blood Bourne Pathogens Kit, and Fire Extinguisher. The fire extinguisher on TESI Response Vehicles is a Tri-Class "ABC" Dry Chemical for class A, B, and C fires. It is a 5.0 pound UL rated fire extinguisher consisting of non-toxic mono-ammonium phosphate based material.

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External Hazards: Identify all external hazards that may pose a physical or health hazard to the Authorized Entrants, Attendants, and/or Supervisors.

Heavy Equipment Concerns: All employees must maintain visual contact with operator at all times. Maintain safe work distances from heavy equipment. Operators must wear appropriate PPE while on job site.

Small Tools: Many small tools can be extremely dangerous when used improperly. Make sure that blades are sharp and machines are functioning properly. As a general rule, stay 3 lengths away from equipment of concern (i.e. 3 ax handle lengths, 3 weed eater boom lengths, etc.). Operators must wear appropriate eye and ear protection.

Lifting. Proper lifting techniques must be utilized while working with equipment and waste. Do not overfill bags or over handle materials. Use lifting equipment or a buddy when handling overweight or bulky items.

Emergency Meeting Point: Identify an emergency meeting location and/or a facility emergency evacuation plan and meeting point prior to commencement

Medical Emergency: The following procedure is to be followed in the event of a medical Emergency. Employees will be provided medical attention at no personal cost.

Hospital: Wilford Hall Medical Center

Directions from Job Site:

From the site proceed north on 36th street and head north to Highway 90. Turn left onto Hoghway 90 and west to SW Military Drive. Trun left on SW Military Drive and head south to Wilford Hall Medical Center.

Contact a Health Safety Coordinator *Immediately*.

Injuries and Illnesses must be reported immediately. Please have injured prepare an Injury Report and Supervisor complete Accident Analysis. These documents must be turned in the following day. **Report Near Miss Incidents** to Health and Safety officer for analysis and correction.

Chemical Hazard Data: Specific Information should be obtained from MSDS's from manufacturer or from Chemical Data Bases. When mixtures occur, use mixture formulas for TWAs.

OSHA PEL:	Vapor Pressure:
NIOSH REL:	Ionization Potential:
NIOSH IDLH:	Solubility:
Ceiling SEE ATTACHMENT	NFPA : H= , F= , R= ,
%LEL SEE ATTACHMENT	Odor Threshold:
%UEL SEE ATTACHMENT	Odor:
Target Organs: SEE ATTACHMENT	Routes of Entry: SEE ATTACHMENT

OSHA PEL:	Vapor Pressure:
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OSHA STEL:	Ionization Potential:
NIOSH IDLH:	Solubility:
Ceiling	NFPA : H= , F= , R= ,
%LEL	Odor Threshold:
%UEL	Odor:
Target Organs:	Routes of Entry:

OSHA PEL:	Vapor Pressure:
OSHA STEL:	Ionization Potential:
NIOSH IDLH:	Solubility:
Ceiling	NFPA : H= , F= , R= ,
%LEL	Odor Threshold:
%UEL	Odor:
Target Organs:	Routes of Entry:

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TESI Pre-Entry Confined Space Checklist

Do Not Enter a confined space until you have considered every question, and have determined the space to be safe.

Use the following checklist to evaluate the confined space:

<u>YES</u>	<u>NO</u>	
_____	_____	Is entry necessary?
_____	_____	Have you and the crew been trained in confined space entry?
_____	_____	Have you and your crew been trained in the duties of each authorized position?
		<u>Testing</u>
_____	_____	Are the instruments used in atmospheric testing properly calibrated?
_____	_____	Has the atmosphere in the confined space tested?
_____	_____	Is the Oxygen at least 20% but not more than 22%?
_____	_____	Were toxic, flammable, or oxygen displacing gases/vapors present?
		Hydrogen Sulfide Carbon Monoxide
		Methane Carbon Dioxide
		Other (list) _____
		<u>Monitoring</u>
_____	_____	Will the atmosphere in the space be monitored while work is going on? Continuously? Remember, conditions can change easily and quickly.
		<u>Cleaning</u>
_____	_____	Has the space been ventilated before entry?
_____	_____	Will ventilation be continuous during entry?
_____	_____	Is the air intake for the ventilation free of hazardous atmospheres?
_____	_____	If atmosphere was ventilated, was it re-tested before entry?
		<u>Isolation</u>
_____	_____	Has the space been isolated from other systems?
_____	_____	Has electrical equipment been locked-out .tagged-out?
_____	_____	Has mechanical equipment been blocked, chocked, etc., and tagged where necessary?
_____	_____	Have lines under pressure been blanked, bled, and tagged?
		<u>Clothing and Equipment</u>
_____	_____	Is special clothing required? What? _____
_____	_____	Are special tools required? What? _____
		<u>Respiratory Protection</u>
_____	_____	Is respiratory protection required? If so, is it available?
_____	_____	Can you get through the opening with respiratory equipment on? <u>If no, how?</u>
		<u>Standby/Rescue</u>
_____	_____	Will there be a standby person on the outside?
_____	_____	Will be standby be in constant visual/auditory communication with entrants?
_____	_____	Has the standby been trained in rescue procedures?
_____	_____	Will safety lines and harness be required to remove a person?
_____	_____	Are company SOP's available to follow for emergencies?
_____	_____	Are you familiar with emergency rescue procedures?
_____	_____	Do you know who to notify and how in the event of an emergency?
		<u>Permit</u>
_____	_____	Has confined space entry permit been issued?
_____	_____	Does the permit include a list of emergency telephone numbers?
_____	_____	Has the permit been sent to corporate for approval?

Permit-Required Confined Space Entry Permit

Purpose of Entry into Space **Inspection** **Repair** **Maintenance** **Other** (specify in Supplementary Information)

Date: _____ **Permit Duration:** _____ **Location:** _____ **Job Number:** _____ **(optional)**

Identify & Describe all hazards (use Supplemental Information for more space)	HAZARDS	SAFETY EQUIPMENT REQ'D	USE ONLY	STAND-BY ONLY	NOT REQ'D

Electrical (describe) Structural (describe) Engulfment by: (describe) # # # # # #
 Atmospheric (list substances below) Other

List acceptable entry conditions for atmospheric hazards below. List acceptable entry conditions for non-atmospheric hazards here:

List & describe all pre-entry control measures used: **Isolation/Blanking**
Purging **Lockout/Tagout** **Mechanical Ventilation/Line capping**
Line breaking (Caution: potential oxygen deficiency) **Other** (describe)
 (Identify equipment affected, e.g., location or # of capped lines, locked valves, etc.)

Yes **No**

1. Will other than periodic, voice communications be used for contact during entry?
 2. Have any additional permits, e.g. hot work, been issued ?

Rescue & Emergency Information:
Responding Rescue Service(s):

Supplementary information:

Attendant: _____ **Entry Supervisor:** _____ **List Personnel changes in Supplementary Information**

NAME	Entry Roster		NAME	TIME IN	TIME OUT
	TIME IN	TIME OUT			

Signature of Entry Supervisor Authorizing Entry & Time

Signature of Entry Supervisor Canceling Permit & Time

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Project/Client References

Name and Company	Project Description
Glen Springs Holdings Division of Oxy Jack Calhoun 713-215-7110	NORM remediation of closed oilfield pipe yard. Project Value \$ 1,800,000
City of Houston – Owner Industrial Texas Corporation – Gen. Cont. David Holmes 281-890-0152	Demolition of Feric Chloride tank. Disposal of NORM affected material.
Chapparrel Steel Troy Youngblood 972-779-1618	Successfully completed two NORM projects. Awarded \$ 1.2 million job to begin 3/01
Chevron Wink, Texas Eddie McClean 281-596-3578 Lynn Sadler 281-596-3560	Cleaned tank containing 37,000 bbls of solids and transported material for disposal. Project value \$ 1,000,000.
Palmer Barge Superfund Site Roy F. Weston / EPA James Lewis (Roy F. Weston) 713-621-1620	Cleaning tanks and disposing of hazardous and non- hazardous materials in tanks. Project value \$ 600,000.00