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ENVIROTECH INC. $G(\mathcal{V}-|0|)$

GROUNDWATER ASSESSMENT SUPPLEMENTAL CLOSURE REPORT SMITH INTERNATIONAL INC. FARMINGTON, NEW MEXICO

Prepared for Mr. Maurice Sticker Environmental Affairs Coordinator Smith International, Inc.

RECEIVED

NOV 0 4 1992 OIL CONSERVATION DIV. SANTA FE

Project No. 91410 October 1992

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GROUNDWATER ASSESSMENT SUPPLEMENTAL CLOSURE REPORT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR MR. MAURICE STICKER ENVIRONMENTAL AFFAIRS COORDINATOR SMITH INTERNATIONAL, INC.

PROJECT NO: 91410

OCTOBER 1992

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ENVIROTECH INC. Environmental Scientists & Engineers 5796 U.S. Highway 64-3014 Farmington, New Mexico

(505) 632-0615

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GROUNDWATER ASSESSMENT SUPPLEMENTAL CLOSURE REPORT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

Envirotech, Inc. has been retained by Smith International, Inc., to install groundwater monitor wells and establish the quality of the groundwater at their above referenced property. This site is currently the staging yard for Smith Energy Services. This report is a supplement to the closure reports prepared by Envirotech Inc. for the subject site:

- UST Closure Report, Diesel & Gasoline Fuel System (March 1992)

- Surface Impoundment Closure Report, Wash Bay Solids Disposal Area (April 1992).

- Acid UST and Sump Closure Report, Acid Storage Tank and Loading Area (May 1992)

- Offsite Drainage Closure Report (June 1992)

All of the closure reports have been submitted to the New Mexico Environmental Department (NMED) and/or the New Mexico Oil Conservation Division (NMOCD).

INTRODUCTION

The property is currently an active staging yard for Smith Energy Services an oilfield service company. To facilitate a property transaction of the subject site, Smith International Inc. retained Envirotech Inc. to perform clean-up of the site.

From December 1991 to June 1992, Envirotech Inc. conducted an extensive abatement program for closure. Three sites of principal concern were involved at the subject property. These sites consisted of the:

Fuel Underground Storage Tank System (USTS) Wash Bay Solids Disposal Area Acid Tank Storage and Loading Area

Lead State of New Mexico regulatory agencies were contacted and involved with the closure operations. At all three sites, the remedial action consisted of excavation and removal of for treatment of the hydrocarbon contaminated soils. The excavations were extended to depths on the order of 28 feet (approximate depth of groundwater) with a track-hoe excavator. Approximately 14,000 cubic yards of soil were removed for treatment.

Based on the site assessment conducted during the closures and abatement operations, the hydrocarbon contamination of soil appeared to be limited to the immediately area at each site. Also, all soils exceeding the current regulatory levels for hydrocarbon contamination were excavated and removed for remediation in all areas practically feasible. Prior to backfilling, approval to close was given by Mr. Denny Foust, Oil and Gas Inspector, NMOCD, for all areas of concern.

As part of the pre-abatement assessment, three groundwater monitor wells were installed on the property (MW1, MW2 and MW3). Water samples analyzed from these wells indicated that the groundwater quality had not been significantly impacted. But considering the extent of the soil contamination, the NMOCD and NMED requested the installation of three additional groundwater wells and sampling to verify the groundwater quality.

PURPOSE & SCOPE OF SERVICES

The purpose of this groundwater assessment is to complete the closure of all sites at the Smith International property. The protocol outlined in the New Mexico Oil Conservation Division's proposed "Guidelines for Surface Impoundment Closure" (October 29, 1991) and the New Mexico Environment Department's UST Regulations (Amended July 26, 1990) were followed in the monitor well construction, development and sampling.

The scope of services that Envirotech was retained to provide included the following:

- A. Drill and construct three additional groundwater monitor wells.
- B. Measurement of water levels, well development, and sampling.
- C. Collect groundwater samples and submittal for laboratory analyses, to assess the impact on the groundwater from the contamination.
- D. Review available water supply information, and the findings of the earlier assessments and closures.
- E. Document the findings of the sampling and analyses.

DRILLING & MONITOR WELL CONSTRUCTION

Well Drilling:

Three groundwater monitor wells were drilled on June 21 and 22, 1992. Due to the alluvial site soil conditions which consisted of cobbles and gravels, the wells were advanced with a truck mounted rotary mud drilling rig using a six inch (6") diameter bit. All three borings were drilled to depths of approximately forty feet (40') below the ground surface. Locations of the bore holes are presented on the attached site plan.

Cutting developed during the drilling were classified in accordance with the Unified Soil Classification System (ASTM: D- 2488). Logs of the borings are included in the Appendix, and while the noted stratification lines represent approximate boundaries between soil types, transitions may be gradual.

<u>Well Completion:</u>

The borings were completed as groundwater monitor wells. The wells were constructed using two inch (2") diameter threaded-coupling schedule 40 PVC casing. The top of the screen section (0.020" slot size) was set approximately ten feet (10') above the groundwater level encountered during the drilling. Blank PVC casing was used to complete the wells to approximate site grade. The screened interval was filter packed to a minimum of one foot (1') above the slotted interval with 8-12 mesh gradation silica sand and sealed with 200 mesh bentonite. The remainder of the well annulus was grouted with a 5% bentonite cement slurry to within eighteen inches of the surface. Each monitor well was secured with an eight inch (8") diameter bolt-down steel monitor well covers, cement grouted and locking cap installed.

GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

Water Levels and Well Development:

Following drilling and well construction, the three new monitor wells (MW4, MW5, and MW6) were surveyed and measuring point (top of casing) elevations determined. The elevations were relative to the southwest corner of the warehouse building loading dock (benchmark: 100.00'), tying into the earlier survey of the original monitor wells (MW1, MW2, and MW3). The survey information is summarized in Table 1.

On May 26, 1992, the water levels for all the wells were measured (refer to Table 1). An electronic interface probe (SOLINST Model 121) was used to measure the liquid levels. The new wells were developed by pumping and removing approximately three to five well bore volumes (2" diameter: approximately 6 to 10 gallons). No sampling was done on May 26, 1992, to allow these wells to stabilize.

TABLE 1

MONITOR WELL DATA SUMMARY GROUNDWATER ASSESSMENT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

DRILLING & COMPLETION INFORMATION

MONITOR WELL	TOTAL DEPTH	WATER LEVEL	TOP OF SCREEN
1	34	25	15
2	40	30	18
3	40	28	20
4	38	25	18
5	40	24	15
6	40	27	20

SURVEY & WATER LEVEL INFORMATION MAY 26, 1992

		COORDINATE		WATER	WATER
LOCATION	ELEV.	<u> </u>	<u> </u>	<u>LEVEL(bgs)</u>	ELEV.
SW WAREHOUSE COR. (benchmark)	100.00	0.00	0.00		
MW1	99.78	346.41	195.63	26.36	73.42
MW2	99.85	85.11	-289.32	27.65	72.20
MW3	99.77	67.82	-199.59	27.53	72.24
MW4	97.85	87.68	-60.22	25.19	72.66
MW5	97.32	-5.20	-98.73	24.97	72.35
MW6	98.05	30.83	-278.51	26.41	71.64

Water Sampling and Analyses:

The two original monitor wells (MW2 and MW3) near the closed fuel UST area were sampled on May 26, 1992. The new monitor wells (MW4, MW5 and MW6) were sampled on August 13, 1992. Prior to sampling, approximately three (3) well volumes were bailed from these wells.

The water samples were then collected in laboratory supplied sample glass containers. BTEX samples were placed in 40 ml VOL vials and preserved with 5% HgCL₂, and TPH samples were placed in one liter bottles or the 40 ml VOC vials. The samples were placed on ice and transported to Envirotech's Laboratory for BTEX and TPH analysis. All sampling followed USEPA SW-846 protocol.

The BTEX (benzene, toluene, ethyl-benzene and total xylenes) analysis were done per USEPA Method 8020. The TPH (total petroleum hydrocarbons) were done per USEPA Method 418.1 in the area of the diesel tank and USEPA Method 8015 for the new wells where the source might not be well defined.

The results of the laboratory analyses are summarized in Table 2. Copies of the laboratory results, QA/QC and the chain of custodies are enclosed in the Appendix.

TABLE 2

LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO MAY & AUGUST 1992

SAMPL	Ε	EPA			ETHYL-	TOTAL	
<u>ID</u>	MATRIX	<u>METHOD</u>	BENZENE	TOLUENE	BENZENE	<u>XYLENE</u>	<u>TPH</u>
			(ug/L)	(ug/L)	(ug/L)	(ug/L)	(mg/L)
		MONIT	OR WELL	GROUNDWATE	ER SAMPLES	3	
MW2	WATTER	8020	ND	ND	ND	ND	_
MWD	WATED	419 1	-	-	-	-	ND
PINZ	WAIER	410.1					ND
MW3	WATER	8020	ND	ND	ND	0.7	-
MW3	WATER	418.1	-	-	-	-	ND
MW4	WATER	8020	ND	5.4	4.1	ND	-
MW4	WATER	8015	-		-	-	ND
MW5	WATER	8020	ND	5.1	3.7	3.2	-
MW5	WATER	8015	-	-	-	-	4.1
MW6	WATER	8020	ND	7.9	ND	2.7	-
MW6	WATER	8015	-	-	-	-	3.2

Notes: 1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

 Total Xylene - summation of m,p-Xylene and o-Xylene.

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Refer to the Site Plan (Sheet 1) for the monitor well locations.

SOIL AND GROUNDWATER CONDITIONS

Based on the previous site assessments and the drilling for the new monitor wells, the soil conditions to the depths explored appear to be typical alluvial sediments consisting of well graded gravels and cobble laminated with thin sand and silt lenses. These gravels overly a silty clay to clayey silt (blue shale) at a depth of approximately 35 to 40 feet below existing ground surface (bgs). Above the free water level the soils appear to be slightly moist to moist, becoming wet above the groundwater surface in the vadose zone. The vadose zone appeared to be on the order of one to two feet, typical for well graded noncohesive soils.

Based on the water level measurements from all the wells, the groundwater ranges from 25 to 30 feet below the existing ground surface. The water level is believed to fluctuate as much as two to five feet based on the observed water levels during the pit closure. The measured water levels taken in May for this assessment are anticipated to be near the seasonal high considering the heights of the San Juan and Animas Rivers during the spring of 1992.

The groundwater gradient and subsequent flow direction is to the west and south and averages approximately 0.0034 feet/foot. These are similar to the measurements taken in February 1992 during the fuel UST closure.

The shallow alluvial groundwater appears to represent an unconfined aquifer. The groundwater level and gradient may vary, considering the sites relative proximity to both the San Juan River and Animas River and site soil conditions.

DISCUSSION AND CONCLUSIONS

The current maximum allowable concentrations for groundwater contamination as outlined by the State of New Mexico Water Quality Control Commission (August 18, 1991) are summarized reported in Table 2. The maximum allowable concentrations for soil as outlined in the New Mexico Oil Conservation Division, "Guidelines for Surface Impoundment Closure (October 29, 1991)", and the New Mexico Environmental Department, "Underground Storage Tank Regulations" are also summarized in Table 3.

TABLE 3

HYDROCARBON SOIL & GROUNDWATER CONTAMINATION STANDARDS STATE OF NEW MEXICO

Parameter	Maximum <u>soil (mg/kg)</u>	Allowable Limits groundwater (ug/l)
Benzene	10	10
Toluene	-	750
Ethylbenzene	-	750
Total Xylene	-	620
Total Aromatics	50	-
Total Petroleum		
Hydrocarbons	100	-

Notes: 1) ug/kg or ug/l - equivalent to parts per billion.

2) mg/kg - equivalent to parts per million.

Review of the site assessments from the previous closures indicate that the residual hydrocarbon contamination of soil to be below the current regulator limits except in a relatively small area beneath the above ground acid storage tank, which could not be removed without extensive engineering, or demolition and reconstruction of the existing above ground acid storage system. Abatement by excavation and removal was terminated with the OCD's approval. Pending the results of the monitor wells installation and groundwater analysis, a revised remedial action plan may have been requested by the NMOCD.

The analysis of the groundwater from the five down gradient monitor wells indicates the residual hydrocarbon contamination to be well below the current regulated limits. The findings of the additional groundwater assessment complement the earlier findings from the closure assessments. Considering the findings of this groundwater assessment and the earlier closure assessments, we recommend closure of all sites at the subject Smith International Inc., Farmington, New Mexico site.

LIMITATIONS AND CLOSURE

The conclusions given in this report are based on visual observations of the site, subsurface soil conditions encountered during drilling operations, analyses of water samples collected from five groundwater monitor wells, and the findings of earlier site assessments conducted during closures. This report does not reflect subsurface variations which may exist between sampling points.

The scope of Envirotech's services for this assessment were limited to the installation of three monitor wells, sampling and the assessment of groundwater contamination with respect to hydrocarbon contamination associated with hydrocarbon products at typical oil field service and production facilities. All work has been performed in accordance with generally accepted professional practices in construction/excavation, environmental/petroleum engineering, and hydrogeology.

This report has been prepared for the exclusive use of Smith International as it pertains to their property located at 2198 East Bloomfield Highway, Farmington, New Mexico.

I hereby certify that the work performed by Envirotech as described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully Submitted, ENVIROTECH INC.

1 ned Michael K. Lane, P.E.

Geological Engineer

Reviewed By:

Jonis & Moun Morris D. Young President

APPENDICES

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STATE OF NEW MEXICO



ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION AZTEC DISTRICT OFFICE

BRUCE KING

ANITA LOCKWOOD CABINET SECRETARY 1000 RIO 3RAZOS ROAD AZTEC, NEW MEXICO 87410 (505) 334-6178

April 30, 1992

Envirotech Inc. Attn. Mike Lane, Project Engineer 5796 U. S. Highway 64-3014 Farmington, NM 87401

RE: Monitor Wells for Smith Energy Services Remediation Site Farmington, New Mexico Funded by Smith International.

Dear Mr. Lane:

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A minimum of two additional groundwater monitor wells must be installed at the Smith Energy Services Remediation Site. Contamination did reach the water table at the Wash Bay Solids Disposal Area and UST Acid Disposal Facility. Each of these sources of contamination is to have a monitor well installed S-SW of the point source in approximately the down gradient direction or the direction of flow towards the San Juan River. Monitor wells are to penetrate the water table five to ten feet and utilize a design similar to existing wells. The new wells are to be located at optimum locations to integrate with the existing monitor wells while detecting potential contamination. Additional wells may be needed if groundwater contamination is indicated by samples from the new wells.

Please feel free to contact this office for any clarification.

Yours truly,

Denny G. Foust Environmental Geologist

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Xc: Smith Energy Services OCD Environmental Bureau Environmental File DGF File



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> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Smith		Project #:	91410
Sample ID:	Acid Pit M.W. #2	Date Reported:	07-28-92
Laboratory Number:	0891	Date Sampled:	05-26-92
Sample Matrix:	Water	Date Received:	05-26-92
Preservative:	HgCl & Cool	Date Analyzed:	05-27-92
Condition:	Cool & Intact	Analysis Requested:	8020

Parameter	Concentration (ug/L)	Limit (ug/L)

Benzene	ND	0.2
Toluene	ND	0.3
Chlorobenzene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.5
o-Xylene	ND	0.3
1,3-Dichlorobenzene	0.3	0.2
1,4-Dichlorobenzene	ND	0.2
1,2-Dichlorobenzene	0.8	0.2

SURROGATE	RECOVERIES:	Parameter	Percent	Recovery	7
					-
		Trifluorotoluene		125.7	ş
		Bromfluorobenzene		91.7	z

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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> EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Smith International	Project #:	91410
Sample ID:	acid pit MW #2	Date Reported:	06-24-92
Laboratory 1	Number: 0891	Date Sampled:	05-26-92
Sample Matr:	ix: Water	Date Received:	05-26-92
Preservative	e: Cool	Date Analyzed:	05-29-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Smith International--acid Pit MW #2 Comments:

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> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Smith		Project #:	91410
Sample ID:	Acid Pit M.W. #3	Date Reported:	07-28-92
Laboratory Number:	0892	Date Sampled:	05-26-92
Sample Matrix:	Water	Date Received:	05-26-92
Preservative:	HgCl & Cool	Date Analyzed:	05-27-92
Condition:	Cool & Intact	Analysis Requested:	8020

Parameter	Concentration (ug/L)	Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.3
Chlorobenzene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	0.7	0.5
o-Xylene	ND	0.3
1,3-Dichlorobenzene	ND	0.2
1,4-Dichlorobenzene	ND	0.2
1,2-Dichlorobenzene	ND	0.2

SURROGATE	RECOVERIES:	Parameter	Percent Recovery
		Trifluorotoluene	125.8 %
		Bromfluorobenzene	98.2 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Smith International	Project #:	91410
Sample ID:	acid pit MW #3	Date Reported:	06-24-92
Laboratory N	Number: 0892	Date Sampled:	05-26-92
Sample Matri	ix: Water	Date Received:	05-26-92
Preservative	e: Cool	Date Analyzed:	05-29-92
Condition:	Cool & Intact	Analysis Needed:	ТРН

Demonster	Concentration	Limit
Parameter	(mg/L)	(mg/L)

ND

TPH

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Smith International--acid pit MW #3

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> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Smiths		Project #:	91410
Sample ID:	Smiths MW #4	Date Reported:	09-10-92
Laboratory Number:	2270	Date Sampled:	08-13-92
Sample Matrix:	Water	Date Received:	08-13-92
Preservative:	HgCl & Cool	Date Analyzed:	09-07-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

		Det.
	Concentration	Limit
Parameter	(ug/L)	(ug/L)
Benzene	ND	1.4
Toluene	5.4	- 3.3
Ethylbenzene	4.1	0.2
p,m-Xylene	ND	2.9
o-Xylene	ND	0.2

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	116.7 %
Bromfluorobenzene	106.1 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Bloomfield Hiway

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MODIFIED EPA METHOD 8015 NONHALOGENATED VOLATILE ORGANICS

Client:	Smiths	Project #:	91410
Sample ID:	MW #4	Date Reported:	09-28-92
Laboratory Number:	2270	Date Sampled:	08-13-92
Sample Matrix:	Water	Date Received:	08-13-92
Preservative:	HgCl & Cool	Date Analyzed:	08-20-92
Condition:	Cool & Intact	Analysis Requested:	TPH

	Concentration	Limit
Parameter	(mg/L)	(mg/L)
Total Petroleum Hydrocarbons	ND	0.12

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

> Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

This analysis was based on a Gasoline calibration.

Comments: Bloomfield Hiway.

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> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Smiths		Project #:	91410
Sample ID:	Smiths MW #5	Date Reported:	09-10-92
Laboratory Number:	2271	Date Sampled:	08-13-92
Sample Matrix:	Water	Date Received:	08-13-92
Preservative:	HgCl & Cool	Date Analyzed:	09-07-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

	den nen traction	Det. Limit
	Concentration	
Parameter	(ug/L)	(ug/L)
Benzene	ND	1.4
Toluene	5.1	3.3
Ethylbenzene	3.7	0.2
p,m-Xylene	3.2	2.9
o-Xylene	ND	0.2

SURROGATE	RECOVERIES:	Parameter	Percent	Recovery
		Bromfluorobenzene		112.1
		Trifluorotoluene		108.7

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Bloomfield Hiway

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> MODIFIED EPA METHOD 8015 NONHALOGENATED VOLATILE ORGANICS

Client:	Smith In	nternationa:	l, Inc.	Proje	ct #:	91410
Sample ID:		Smith's MV	¥ #5	Date 1	Reported:	09-28-92
Laboratory N	lumber:	2271		Date	Sampled:	08-13-92
Sample Matri	LX:	Water		Date 3	Received:	08-13-92
Preservative	:	Cool		Date .	Analyzed:	09-25-92
Condition:		Cool and I	Intact	Analy	sis Requested:	TPH

	Concentration	Det. Limit
Parameter	(mg/L)	(mg/L)
Total Petroleum Hydrocarbons	4.1	0.13

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

> Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

This analysis was based on a Diesel calibration.

Comments: Smith's, Bloomfield Highway

Luce Analyst





> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Smiths		Project #:	91410
Sample ID:	Smiths MW #6	Date Reported:	09-10-92
Laboratory Number:	2272	Date Sampled:	08-13-92
Sample Matrix:	Water	Date Received:	08-13-92
Preservative:	HgCl & Cool	Date Analyzed:	09-07-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

		Det.
	Concentration	Limit
Parameter	(ug/L)	(ug/L)
Benzene	ND	1.4
Toluene	7.9	3.3
Ethylbenzene	ND	0.2
p,m-Xylene	ND	2.9
o-Xylene	2.7	0.2

SURROGATE	RECOVERIES:	Parameter	Percent Recovery
		Trifluorotoluene	122.7
		Bromfluorobenzene	114.8

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Bloomfield Hiway

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MODIFIED EPA METHOD 8015 NONHALOGENATED VOLATILE ORGANICS

Client: Smith	International, Inc.	Project #:	91410
Sample ID:	Smith's MW #6	Date Reported:	09-28-92
Laboratory Number:	2272	Date Sampled:	08-13-92
Sample Matrix:	Water	Date Received:	08-13-92
Preservative:	Cool	Date Analyzed:	09-25-92
Condition:	Cool and Intact	Analysis Requested:	TPH

		Det.
	Concentration	Limit
Parameter	(mg/L)	(mg/L)
		~~~~~
Total Petroleum Hydrocarbons	3.2	0.13

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

> Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

This analysis was based on a Diesel calibration.

Comments: Smith's, Bloomfield Highway

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> EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: NA		Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	07-28-92
Laboratory Number:	821b0527	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	05-27-92
Condition:	NA	Analysis Requested:	8020
Sample Matrix: Preservative: Condition:	Water NA NA	Date Received: Date Analyzed: Analysis Requested:	NA 05-27-92 8020

Concentration (ug/L)	Det. Limit (ug/L)
ND	0.2
ND	0.3
ND	0.2
ND	0.2
ND	0.5
ND	0.3
ND	0.2
ND	0.2
ND	0.2
	Concentration (ug/L)  ND ND ND ND ND ND ND ND ND ND ND ND ND

SURROGATE	<b>RECOVERIES:</b>	Parameter	Percent Recovery
		Trifluorotoluene	116.8 %
		Bromfluorobenzene	101.6 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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#### EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: NA		Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	07-28-92
Laboratory Number:	82LB0528	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	05-28-92
Condition:	NA	Analysis Requested:	8020

Concentration (ug/L)	Det. Limit (ug/L)
ND	0.2
ND	0.6
ND	0.2
ND	0.3
ND	0.6
ND	0.4
ND	0.2
ND	0.3
ND	0.2
	Concentration (ug/L) ND ND ND ND ND ND ND ND ND ND ND ND ND

SURROGATE RECOVERIES: Parameter Percent Recovery -----Trifluorotoluene 91.8 % Bromfluorobenzene 92.9 %

Method:

Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

in west m lawy Analyst





EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: NA		Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-10-92
Laboratory Number:	BTLB0907	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-07-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	meter (ug/L)				
Benzene	ND	1.4			
Toluene	ND	3.3			
Ethylbenzene	ND	0.2			
p,m-Xylene	ND	2.9			
o-Xylene	ND	0.2			

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	*	
	Trifluorotoluene	95.7 %
	Bromfluorobenzene	97.8 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

> Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615 • FAX: (505) 632-1865

#### MODIFIED EPA METHOD 8015 NONHALOGENATED VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-28-92
Laboratory Number:	DSLB0924	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-25-92
Condition:	NA	Analysis Requested:	TPH

	Concentration L:					
Parameter	(mg/L)	(mg/L)				
Total Petroleum Hydrocarbons	ND	0.13				

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

> Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

This analysis was based on a Diesel calibration.

Comments:

y'men Analyst





> MODIFIED EPA METHOD 8015 NONHALOGENATED VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-28-92
Laboratory Number:	GSLB0820	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	08-20-92
Condition:	NA	Analysis Requested:	TPH

	Concentration	Det. Limit
Parameter	(mg/L)	(mg/L)
Total Petroleum Hydrocarbons	ND	0.12

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

> Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

This sample was based on a Gasoline calibration.

Comments:

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**ENVIROTECH** INC.

# UST Closure Report Diesel and Gasoline Fuel System

at

# Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico

# RECEIVED

MAR 3 0 1992

OIL CONSERVATION DIV. SANTA FE

# Project **#**91410

March 1992

GW-101

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# UST CLOSURE REPORT DIESEL AND GASOLINE FUEL SYSTEM SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

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# PREPARED FOR MR. MAURICE STICKER ENVIRONMENTAL AFFAIRS COORDINATOR SMITH INTERNATIONAL, INC.

PROJECT NO: 91410

# MARCH 1992

ENVIROTECH INC. Environmental Scientists & Engineers 5796 U.S. Highway 64-3014 Farmington, New Mexico

(505) 632-0615

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# UST CLOSURE REPORT DIESEL AND GASOLINE FUEL SYSTEM SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

# PROJECT NO: 91410

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	SECTION 2
SITE DESCRIPTIO Water Supp	N
TANK REMOVAL & Site Safet USTS & Exc Site Groun Abatement	FIELD ASSESSMENT7y7avation7dwater Information8& Closure10
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APPENDIX B	TANK CLOSURE WORKSHEET Notification for Underground Storage Tanks (Amended) NMED Inspection Report Photographs
APPENDIX C	Results of Laboratory Analyses Chain-of-Custody
APPENDIX D	CERTIFICATION OF ORIGIN OF CONTAMINATED SOILS Bill of Ladings

# UST CLOSURE REPORT DIESEL AND GASOLINE FUEL SYSTEM SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

Envirotech Inc. has been retained by Smith International, Inc. to remove and dispose of two (2) Underground Storage Tanks (UST) for closure at the Smith Energy Services facility located at 2198 East Bloomfield Highway in Farmington, San Juan County, New Mexico. Enclosed please find a copy of the Tank Closure Worksheet and Amended Underground Storage Tank Notification Form 7530 for two (2) fuel tanks excavated and pulled from the above referenced site.

The tank removal was initiated on February 6, 1992 and excavation of the highly contaminated soils was completed on February 18, 1992. Hydrocarbon contaminated soil was found in the area associated with the piping at the center of the fuel UST system.

Mr. Leonard Murray of the New Mexico Environment Department (NMED) was present during the tank removal. He identified and reported the spill incident. Mr. Murray executed the tank closure documentation for this tank removal; refer to the closure forms in the Appendix.

#### PURPOSE & SCOPE OF SERVICES

The purpose of the excavation and removal of the UST's was to aid in the closure of the fuel UST system at the reference site. The New Mexico Environment Department's UST Regulations (Amended July 26, 1990) protocol was followed in the UST removal.

The scope of services that Envirotech was retained to provide included the following:

- A. Notification of the NMED, NMOCD and appropriate authorities of the intent to remove and close the fuel UST system at the referenced site.
- B. Excavation, removal and disposal of the UST's.
- C. Field assessment of the site to determine if a spill incident had occurred.

- D. Excavate and dispose of the highly contaminated soils to abate the spill incident.
- E. Provide acceptable fill material sufficient to backfill the excavation.
- F. Review available water supply information, collect groundwater samples, and analyze groundwater samples to assess the potential impact from the spill incident.
- G. Document the tank excavation, closure operations, and site assessment findings.

#### SITE DESCRIPTION

Bluestake New Mexico was contacted and underground utilities were marked, prior to the excavation operation. The main utilities are located along East Bloomfield Highway and Molta Avenue, the south and west boundaries of the property The underground utilities in the immediate area of the fueling system consisted of a one inch water line and electrical to the control/lube/storage building. These utilities were disconnected prior to the tank removal operations and subsequently were removed during the contaminated soil excavation.

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The site is an active staging yard for Smith Energy Services an oilfield services company. The fuel UST system was in use until within one week of the tank removal. The subject fuel UST system was located along the east side of the service yard. Refer to the attached general Site Plan (Sheet 1) prepared by ENERLOG/TIS Inc.

Access to the yard and site is available form East Bloomfield Highway (U.S. Highway 64) which is adjacent to the south property boundary.

The attached Site Plan (Sheet 2) shows the location of the buried utilities, as they were marked or uncovered and the fuel UST system.

#### Water Supply Information:

Based on a preliminary review of available records from the New Mexico State Engineers Office, there appear to be eight water supply wells within a half mile radius of the Smith International site. They are listed in Table 1 at the end of Section 2.

All wells appear to be located over 1000 feet from the site. The wells on Section 14 appear to be located up and cross gradient based on preliminary monitor well water level measurements. The remaining six wells on Sections 22 and 23 appear to be located down and cross gradient from the site and plume. Analysis of a water samples collected during the closure operations and from monitor wells #2 and #3 located adjacent to the fuel system did not detect BTEX or TPH contamination above the regulated limits. These monitor wells are located at the southwest and northwest corners of the fuel apron. Refer to the attached laboratory analytical results.

The San Juan River is south of the site, approximately threequarters of a mile down-gradient. The Animas River is north of the site, approximately one mile up-gradient. Both rivers flow to the west and south, and have year around water flow. The Willett Ditch provides irrigation water to farms in the general proximity of the

site. The Willett Ditch is fed on the south side of the Animas River, upstream of the site approximately 3/4 miles. Based on discussions with the New Mexico State Engineers Office, this ditch appears to be used primarily for irrigation and industrial use and is not a public drinking water source.

Where easily assessable, all of the above mentioned surface water courses were inspected. The author observed no superficial evidence of hydrocarbon contamination from a spill along any of the water courses. Thus, it is felt that the surface water courses in the immediate proximity of the site have not been nor are immediately threatened.

# WATER WELL INFORMATION SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 6, 1992 TABLE 1

Location (T.R.Sec.Quad)	Name	Well No.	Use	Depth (ft)	Aquifer
29.13.14.313	Valley Drive In	SJ-00176	dom,stk	35	Qal
29.13.14.443	Dowell Inc.	NA	NA	15	Kk,Qal
29.13.22.22	Dennis Burke	SJ-01673	dom	14	Qal
29.13.23.1	Tom Kannard	SJ-01562	dom	6	Qal
29.13.23.11	NA	SJ-01719	NA	NA	NA
29.13.23.123	NA	SJ-00187	NA	40	Qal
29.13.23.22	Mary Barkley	SJ-00352	dom	30	Qal
29.13.23.22	Tom Pratt	SJ-01376	dom	15	Qal

Notes:

NA - Information not available. dom - domestic water source stk - water source for livestock

Kk - Kirtland Shale

Qal - Quaternary alluvium

Based on available information from the State of New Mexico Engineers Office.

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#### TANK REMOVAL & FIELD ASSESSMENT

## <u>Site Safety:</u>

During the tank pull and excavation operations, the work area was contained and roped off with reflector type barricades. Access was limited to essential personnel. Hydrocarbon vapors were monitored by Envirotech personnel to assess if a health or explosion hazard existed. A MSA model 62 explosimeter was used to monitor the site. No hazard associated with hydrocarbon vapors was detected during the entire operation.

#### <u>USTS and Excavation:</u>

Both tanks were constructed of steel and buried at a depth of approximately four feet (4') below the existing ground surface. Residual product of less than 25 gallons was removed from both tanks. The gasoline tank was inerted with compressed air and carbon dioxide, prior to removing the tank. The following is a tank summary:

## UST SYSTEM SUMMARY SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 6, 1992 TABLE 2

Tank	Prior <u>Contents</u>	Diameter <u>(ft)</u>	Length (ft)	Volume <u>(gal)</u>	Condition	
1	Diesel	11.0	41.9	30,000	Minor corrosion	
2	UL. Gas.	6.8	14.1	4,000	Minor corrosion	

Refer to the attached Site Plan (Sheet 2) for the tank locations.

The tanks and piping were steel. The USTS was reportedly installed in August 1980. The USTS was in use until five days prior to the tank removal on February 6, 1992. The tanks were essentially emptied at that time.

The tanks were transported to Envirotech's Farmington Construction yard for disposal.

The tanks were inspected for any evidence of a hole or leak by Mr. Murray of the NMED, and Envirotech personnel. All tanks appeared to have minor surface corrosion with some pitting.

Both tanks were set and strapped to 12 inch thick reinforce concrete hold down slabs. Native soils appear to have been used to bed the tanks in place. The Native soils were classified as moderate to grayish brown well graded gravel with well rounded cobbles to 15 inches in diameter and medium to fine sand, dense, and moist.

#### <u>Site Groundwater Information:</u>

Three previously installed groundwater monitor well were used to estimate the site groundwater gradient. They were sampled to determine if groundwater had been impacted by the subject fuel UST hydrocarbon plume. The wells had been installed by ENERLOG/TIS for Smith International during an environmental audit of the property in August 1990. The wells were drilled with an air drill rig, and completed with four inch PVC casing. The monitor well information and groundwater level measurements (taken 2-7-92) are summarized in Table 3 at the end of Section 2.

Based on the water level measurements from the three wells, the groundwater ranges from 28 to 30 feet below the existing ground surface. The groundwater gradient and subsequent flow direction is to the west and south and averages approximately 0.002 feet/foot. The shallow alluvial groundwater appears to represent an unconfined aquifer. The groundwater level and gradient may vary, considering the sites relative proximity to both the San Juan River and Animas River and site soil conditions.

# MONITOR WELL DATA SUMMARY SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

# TABLE 3

DRILLING	& COMPLEY	TION INFORMA	<u>TION</u>
	AUGUST	1990	
	TOTAL	WATER	TOP OF
MONITOR WELL	DEPTH	LEVEL	SCREEN
1	34	25	15
2	40	30	18
3	40	28	20

# SURVEY & WATER LEVEL INFORMATION FEBRUARY 7, 1992

		COORI	DINATE	WATER	WATER	
LOCATION	ELEV.	<u> </u>	<u> </u>	<u>LEVEL(bgs)</u>	ELEV.	
SW WAREHOUSE COR. (benchmark)	100.00	0.00	0.00			
MW1	99.78	346.41	195.63	28.54	71.24	
MW2	99.85	85.11	-289.32	29.98	69.87	
MW3	99.77	67.82	-199.59	29.74	70.03	

#### <u>Abatement and Closure:</u>

Hydrocarbon contaminated soil was encountered at the center of the UST system in the area surrounding the control building. The spill is suspected to have been from piping leakage and/or over fill during fuel transfer to the tanks, as both tanks had previously tested tight and had no visible holes.

As the contamination appeared to be limited to the immediate area of the UST system, Smith International elected to abate the contamination by excavating all the highly contaminated soils. Soil samples were collected during excavation operations from the bottom and sidewalls. These soil samples were analyzed for organic hydrocarbon vapors and/or Total Recoverable Petroleum Hydrocarbons (TPH) to determine the extent of contamination following the NMUSTR guidelines of 100 ppm volatile organics by OVM and/or TPH. Additional excavation was performed in every area where the results exceeded the 100 ppm action level. Once the extent of contamination appeared to have been reached, confirmation soil samples were collected and analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) compounds from the final excavation. All sampling followed NMUSTR protocol.

The contamination was relatively extensive. Based on the final excavation the plume was limited to a depth of approximately 28 feet below the original ground surface and within a 50 to 75 foot diameter area (refer to the site plan, Sheet 2). The highly contaminated soils were excavated by Envirotech, following the removal of the UST's. Approximately 2,564 cubic yards of contaminated soil were removed from the site. These contaminated soils were transported to Envirotech's Soil Remediation Facility located at Hilltop, New Mexico. Attached are copies of the CERTIFICATION OF ORIGIN OF CONTAMINATED SOILS executed by Mr. Murray of the NMED and Bill of Ladings to manifest the soil.

As no new UST's were to be installed, clean imported soils were backfilled in the excavation upon completion of the highly contaminated soil removal and verification testing.

Photographs of the referenced tank excavation and tanks are attached.

#### SOIL & GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

After the removal of both tanks, the excavation bottom was sampled beneath both tanks to assess if hydrocarbon contamination was present. Soil was sampled from the tank excavation following US EPA SW-846 protocol. The soil was field tested for volatile hydrocarbons following the Headspace Field Method (Underground Storage Tank Regulations, State of New Mexico, Environmental Improvement Board, Part XII, Appendix C, July 26, 1990) using a photoionization detector (PID), Model 580-B Organic Vapor Meter (OVM) manufactured by Thermo Environmental Instrumental. As diesel was stored in Tank #2, additional soil samples were collected and analyzed for TPH per USEPA method 418.1 (modified for soil).

During the abatement by excavation, the highly contaminated soils were excavate until the field results of the OVM for volatile hydrocarbons were below the NMUSTR action level of 100 ppm.

The results of the field headspace analyses are summarized in Table 4 at the end of Section 3.

Upon completion of the removal of the highly contaminated soil, confirmation soil samples were collected from the excavation. These samples were submitted for laboratory analyzed for BTEX compounds per USEPA Method 8020 or TPH per USEPA Method 418.1 (modified for diesel in soil). Results of the analysis indicated the concentration the BTEX compounds are below the current regulated limits for groundwater. Refer to the appendix for copies of the laboratory results and guality control/quality assurance.

To assess if groundwater had been impacted by the hydrocarbon plume, groundwater samples were collected at the conclusion of the abatement operations. Prior to sampling, the monitor wells were developed by removing at least three well bore volumes or until the well bore was pumped off (approximately 6 gallons). Following development, groundwater samples were collected following US EPA SW-846 protocol. The water samples were analyzed to total petroleum hydrocarbons (TPH) per EPA 418.1, BTEX compounds per EPA 8020, and major cations/anions.

The results of the laboratory analyses are attached in Appendix C and summarized in Tables 5 and 6 at the end of Section 3.

# FIELD HEADSPACE OVM RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 6, 1992 TABLE 4

	Sai	<u>mple</u>	Date/Lab	<u>Sample Location</u>	<u>Time</u>	MVO (mqq)
	*	1	020692	$171$ bos $\pi V # 1$ S and	10.35	161
	*	ב 1 היש	020092	$17$ by $10^{+1}$ $5$ end $17$ by $7^{+1}$ $5$ end	10.35	101
		2	020092	$\frac{17}{20!} \text{ bgg } \Pi K \# 1 \text{ S end}$	10.35	E3 V
	+	2	020092	14! bgs $TK#1 3$ . end 14! bgs $TK#2 N$ opd	11.20	03.4
	Т	ר מידר	020092	14  bys  14#2  N  end	11.20	221
	4	1970	020092	$14 \text{ bgs } 14^{\text{H}} \text{ bgs }$	11.20	230
		4 4 TD	020092	$14 \text{ bgs } 14^{2} \text{ s. end}$	11.27	11 2
	*	4.6D 5	020092	$17 \text{ bgs } 17 \text$	11.20	7T'3
		5	021092	$17^{\circ}$ bys $10^{\circ}$ N, end $17^{\circ}$ bys $10^{\circ}$ N, end $17^{\circ}$ bys $10^{\circ}$ Dys $10^{\circ}$ N, end	10.47	2.9
	+	7	021192	$10^{\circ}$ by $5.10^{\circ}$ $10^{\circ}$ by $5.10^{\circ}$ $10^{\circ}$ by $70^{\circ}$ $10^{\circ}$ by $70^{\circ}$ $10^{\circ}$ by $70^{\circ}$ $10^{\circ}$ by $70^{\circ}$ $10^{\circ}$ by $10^{\circ}$ $10^{\circ}$ $10^{\circ}$ by $10^{\circ}$	10:47	J4.2
	÷	, 0	021192	$13^{\circ}$ by S N. $1X_{\#1}$ under Stab	10.45	165
	т Т	0	021192	191 bgg W of MV#1 glob C ord	11.40	105
	^	3	021192	16 bgs W. Of TK#1 Slab S.enu	11:48	132
		10	021192	$10^{\circ}$ bys E. OI IN#2 at Center	11:02	1.9
		11	021192	$21^{\circ}$ bys $(= 13^{\circ}S0^{\circ}O1^{\circ}TK\#1^{\circ}S1dD)$	11:04	3.2
		12	021292	17 bgs E. 13 SE OI TR#1	9:20	1.9
		11	021292	16 bgg E fongo SE gny bldg	9:22	0.6
		16	021292	151 bgs NF TV#2 A F force	9:20	12.2
		16	021292	13' bys NE $1R_{\#2}$ ( E. Tence	9:41	12.3
	4	17	021292	17 bys above sample #15	9:44	10.5
	•	10	021292	$17^{\circ}$ bys 5. bigg	10:10	700 T00
		100	021292	duplicate of complet #19	10.10	34.0
	4	100	021292	201 bac W of blda	11.01	100
	~	19	021292	20° bgs w. Of blag	11:21	190
		20	021292	20° bys E. OI blag	11:24	80.4
		21	021292	$14^{\circ} \text{ bys}$	11:54	53.4
	ىد	22	021292	10° DYS	10.00	44.0
	т Т	23	021292	25° bys W. of bldg	10:02	154.2
	т х	24	021292	27' bgs w. of blag	16:24	150.0
	^	20	021392	14' DGS TR#1 CUP SIAD	15:30	25.2
	-	20	021392	10' DGS TR#1 CCF SIAD	15:32	1.0
	- -	21	021392		0:40	198
	т Т	20	021392	$14^{\circ}$ bgs	8:50	100
A	•	29	021492	$14^{\circ}$ by S	14:02	128
e		21	021492	14 bgs	14:10	
A		22	021792	$14^{\circ}$ Dgs	15:03	12.6
e		33	021702	14° DYS	15:04	14.6
		27	021702	171 has	15:0/	1.8
		24	021702	151 bas	12:17 T2:TT	0.2
		35	021702	19 baa	12:13	3.6
		20	VZI/72	TO NAP	T2:T0	22.4

12

37	021792	13' bgs	15:18	58.8
38	021792	13' bgs	15:34	3.6
39	021792	23' bgs	15:40	1.9
40	021792	13' bgs	15:43	6.8
41	021792	16' bgs	15:44	11.2
42	021792	17' bgs	15:48	14.6
43	021892	15' bgs	10:01	1.0
44	021892	14' bgs	10:02	1.0
45	021892	14' bgs	10:04	ND
46	021892	18' bgs	10:12	ND

Notes: bgs - approximate depth below original ground surface.

OVM - 100 ppm action level per NMUSTR, 7/26/91.

ED - Field headspace OVM results measured by NMED inspector.

- * Samples taken within the removed contamination plume envelope.
- Q Samples taken at the deepest extent of excavation (approximately 28 feet).

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Refer to the site plan for the approximate sample locations.

# LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY, 1992 TABLE 5

## SOIL SAMPLES

SAMPI	LE	EPA			ETHYL-	TOTAL	
<u>ID</u>	MATRIX	<u>METHOD</u>	<b>BENZENE</b>	<b>TOLUENE</b>	<u>BENZENE</u>	<u>XYLENE</u>	TPH
			(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(mg/kg)
2	SOIL	418.1	-	-	-	-	80.2
*3	SOIL	8020	688	203	<50	66.1	-
*4	SOIL	8020	ND	303	1575	5156	-
*5	SOIL	418.1	-	-	-	-	97.4
6	SOIL	418.1	-	-	-	-	17.2
*7	SOIL	418.1	-	-	-	-	3327
12	SOIL	418.1	-	-	-	-	11.4
13	SOIL	418.1	-	-	-	-	14.3
*25	SOIL	418.1	-	-	-	-	109
26	SOIL	418.1		-	-	-	17.2
30	SOIL	418.1	-	-	-	-	<10.0
31	SOIL	8020	ND	477	<50	265.9	-
32	SOIL	8020	ND	187	ND	<b>@50</b>	-
33	SOIL	8020	ND	190	<50	285.5	-
34	SOIL	8015-D	-	-	-	-	ND
35	SOIL	8015-D	-	-	-	-	ND
38	SOIL	8015-D	-	-	-	-	ND

Notes:

1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

- Total Xylene summation of m,p-Xylene and o-Xylene.
- 3) @ Laboratory indicated traces of both m,p-Xylene and o-Xylene at detection limit of 50 ug/kg, the net total of which approximated 50 ug/kg.
- 4) * Samples taken within the removed contamination plume envelope.

Refer to the Sampling Detail (Sheet 3) for the approximate sample locations.

# LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY, 1992 TABLE 6

		MONIT	FOR WELL	GROUNDWATI	ER SAMPLES	3	
SAMPL	E	EPA			ETHYL-	TOTAL	
<u>ID</u>	MATRIX	<u>METHOD</u>	BENZENE	<u>TOLUENE</u>	<u>BENZENE</u>	<u>XYLENE</u>	<u>TPH</u>
			(ug/L)	(ug/L)	(ug/L)	(ug/L)	(mg/L)
MWl	WATER	8020	ND	ND	ND	ND	-
MW1	WATER	418.1	-	-	-	-	<10
MW2	WATER	8020	ND	<1.0	<1.0	<1.0	
MW2	WATER	418.1	-	-	-	-	14.5
MW3	WATER	8020	ND	<1.0	<1.0	<1.0	
MW3	WATER	418.1	-	-	-	-	ND

Notes: 1)

1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

- Total Xylene summation of m,p-Xylene and o-Xylene.
- 3) @ Laboratory indicated traces of both m,p-Xylene and o-Xylene at detection limit of 50 ug/kg, the net total of which approximated 50 ug/kg.
- 4) * Samples taken within the removed contamination plume envelope.

Refer to the Sampling Detail (Sheet 3) for the approximate sample locations.

#### LIMITATIONS AND CLOSURE

Based on the site assessment conducted during the USTS removal and abatement, it appears that the hydrocarbon contamination was limited to the area immediately around the UST's and the piping to the dispensers. The highly contaminated soils have been excavated and removed for remediation. Soils from the final excavation sidewalls and bottom tested below the action level of 100 ppm for volatile organic vapors and tested below action levels to BTEX compounds and/or TPH.

Analysis of the groundwater samples indicate that the soil hydrocarbon plume had not impacted groundwater at the site.

We respectfully request closure of this UST file, considering the findings of this report.

I hereby certify that the work performed by Envirotech and described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully submitted, ENVIROTECH Inc.

ACT C

Michael K. Lane, P.E. Geological Engineer

Reviewed By:

Morris D. Young President

APPENDICES

1410UST.RPT







# TANK CLOSURE WORKSHEET (COMPLETE AFTER CLOSURE)

.

Tank Owner CLM Properties, Inc. Phone 325-1288
Mailing Address 3211 Mountain View Dr. Farmington, NM 87401
Tank Address 2198 E. Blockfield Hory, Farmington Nell 87401
Contractor Name Evilia tech, Inc. Phone 632-0615
Address 5796 U.S. Huy64- 3014, Farmington, NM 47401
Contractor NamePhone
Address
Tank Closure Date $C = 6 - 72$ of Tanks Closed $C$
Tonk Closure Initial Procedures (check measures complied with):
. Obtain recommended safety equipment for all personnel
Contact Fire Marshall or other fire officials
Bond or ground equipment
$\sim$ Drain product from piping and tank
Disconnect, then cap or remove piping
Remove all residual product from tank
Excavate to tank top
Remove all tank fixtures
Properly purge or inert tank of all flammable vapors using approved method
Continually monitor for explosive vapors while tank is being removed
II. Tank Removal
Create vent hole unknown for gasolibe tout
Excavate tank using all safety precautions
Clean and inspect tank
Check excavation for evidence of leaks and notify EID and other proper
authorities if leak is found
Check vapor levels in tank before transporting lickerer
Dispose of tank in approved manner
30,000 gal tack - Hill top tack ity, south a toleant will
I ank disposal location 4,000 gal " - Ellino Fech Yard, 5796 11-5175 464, Paraulophi
How did you arrest site for leakage? US. 1 PTD Side to 1 Eventual Charliett
Closure report kent at Billin Ani - Fan La X
NOTE: Immediately report any evidence of leakage to FID at 827-0188
INOTE. Inimiculately report any evidence of leakage to End at 027-0100
I hereby state that the above information is correct
He alerray NMED/USTB
Signature of owner or contractor-performing work
***************************************
FOR EID USE ONLY
Notification Received 1-23-92 Approved By Lew Montes
Inspection Date 2-6-92- Inspector Kin Ulyn Leif

Notification for Underground Storage Ta	
UNDERGROUND STORAGE TANK BUREAU 1190 St. Francis Drive	IO MUMOUR STATE USE ONLY
Harold Runnels Bldg. N. 2164 Santa Fe, New Mexico 87503	Case Received
CALL AND A STATE OF A	ORMATION
<ul> <li>used to sove replaced tabetamers since Jammers 1, 1974, that are in the ground is of May 8, 1986, or that are brought has an after May 8, 1986. The information requested to require by Section 1982 of the Resource Conservation and Receivery Act. (RCRA), as another.</li> <li>The promary purpose of this non-ficution program is to locate and evaluate underground tasks that wave or have viewed periods on the locate underground sectors. It is sover a new sector will be based on records without the solar and the view of the based on recording the temperature of units the other sector of the temperature of the based on records of the temperature of the state underground tasks that wave received your knowing the temperature. It is sectored that the other sector of the temperature of temperature of te</li></ul>	Portione Saletty Act of 1986, or the Hazardovi Liquid Pipeline Salety Act of 1979 to which is an introduce portion lacks, or la group. 5. write: anyonidential proteins and control stores in a second 5. write: anyonidential proteins and to be an interpreted and to old or get production and gathering operations. 5. works control to a second protein a second store in the second of get production and gathering operations. 5. works operations. 5. works control to a second store in the second store in the second of the second store 5. works operations. 5. works operations. 5. works operations. 5. works operations. 5. works operations. 5. works operations. 5. works operations. 6. works of the frame. 5. works of the frame of the second labeling the order frame to be the second of the second of the second labeling the top of the second of the frame of the frame of the second of the
INSTRUC	TIONS
Please type or print in ink all items except "signature" in Section V. This for each location containing underground storage tanks. If more than 5 tanks at	na must by completed for Indicate number of continuation sheets
photocopy the no cra side, and slape constitution shorts to this form.	B LOCATION OF TANKIS)
Owner Name (Corporation, Individual, Prove Agency, or Other Energy)	(If same as Section 1, mark box here )
Street Address	Facility Name or Company Site Identifier, as applicable
Carry	Street Address of State Road, as 2004/2004,
Shu Juan	2198 E. Bloomfield Hoy
Farmington Nau . 87401	Sau Juan
(50 5) 325-1288	Farminictan NAM 87401
Type of Owner (Mart al Pet spoty 3)	Indicate number of tents of the Control of the state of the state to the state of t
III CONTACT PERSON	AT TANK LOCATION
Name (II same as Section L mark box nere ] Job Title	Area Code Phone Humber $565$ $327 - 728/$
IV TYPEOF N	
Mark bos here only if the statemented	or successioner notification for this location.
I cartify under penalty of law that I have personally examined and a documents, and that based on my inquiry of those individuals imme submitted information is true, accurate, and complete.	In familiar with the information submitted in this and all attached diatery responsible for obtaining the information, I believe that the
Norme and official que of owner or owner's supronzed representative	Cen Sgreet
Ullichael Much Dist Mar	MERVERSESURE

Ever Home (from Socian 1) CLM Imperfice, Inc. 1	ocation (from Sec	tion II) _ <u>7/98 (</u>	E. Licztiche K	, 🏹 Èaga No <u>,</u>	- 91 2+9- 5
Torix Identification No. (u.g., ABC-123), or	Tant No.	Tenk Ma	Tank No.	Tank Nor	TankiNd.
1 Tatus of Tank Currently in Uso (Idart all Call apply 2) Temporarity Out of Use Permanently Out of Use Brought into Use after 5/8/86					
1 Estimated Total Capacity (Gallons)	30,000901	4,800 qa.	•		•
A Martine of Construction     Steel     (Marti ene E)     Concrete     Fiberglass Reinforced Plastic     Unknown     Other, Plasse Specify					
(Mark all that apply E) (Mark all that apply E) Interior Lining (e.g., epoxy resins) None Unknown Other, Places Specify				0000	
Merk all that apply E) Painted (e.g., asothetic) (Merk all that apply E) Painted (e.g., asothetic) Fiberglass Reinforcad Plastic Costed None Unknown		DMODD			
Other, Plasse Specify			·		
7. Piping Bare Steet (Mark all Pet apply 2) Galvenized Steel Fiberglass Reinforced Plastic Cathodically Protected Unknown Other, Plasse Specity		<b>E</b> ODDAD			
L. Substance Currently or Last Stored & Empty			Ð		
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C. REEPOOLS SUDVINCE					
Chemical Abstract Service (CAS) No. Mark box (2 if tank stores a mixture of substances (4. Unknown					
Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr) b. Estimated quantity of substance remaining (gal.) c. Marz box B if tank was filled with inert matarial (e.g., send, concrete)	<u>~/192</u> &	0/192		·	/

204 Form 7530-1 (11-85) Reverse

	Underg Prevent 1190 St Santa F (505) 82	round Storag tion/Inspectic . Francis Drive e, New Mexic 27-0216	e Tank Bureau on Section e co 87503	, ,		INSF	PECTION Page	1 of two pag
DATE			CASE NUMBER	171 11	<u> </u>	OPENING CONFER		·
	-6-92		TANK	UT6M		<u> </u>	MODIFICATI	ON
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Owner Name	ichaels Ti	Grewe, P	Youy, ta	CMING TO	Owner No.	<u> </u>	Phone Na.	7
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Contractor Name		<u></u>				·····	Phone No.	<u> </u>
4. E	NUITOte	ech Ir	JC.	<u></u>			632-	- 0615
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TANK NO.	SIZE	CONTENTS	INSTALLATION DATE	TANK CONSTRUCTION	PIPING CONSTRUCTION	TANK RELEASE DETECTION	PIPING RELEASE DETECTION	TANK STATUS
1	30,000ga/	Diesel	1980	stee/	galiante	NONe	Red tocket	Permanent
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New Mexico Underground Storage Tank Bureau INSPECTION REPORT

# Page 2 of two pages

· · · ·		Yes	No	Unk. I	N/A	
1. All applicable tanks on site are registered.	1.	7				
2. Proper notification was made for the following:	2.			L	J	
a. Closure	а.	1				
b. Installation	b.				7	
c. Modification	<u>م</u>				$\overline{\mathcal{N}}$	
d. Repair	d.				7	
3. Tanks closed properly.	3.					
4. Tanks installed properly.	4.		/			
5. Tanks repaired/modified properly.	5.					
6. Release detection — tanks:	6.					
a. Inventory records combined with annual tank tightness testing	а.		/			
b. Manual tank gauging	b.		/			
c. Automatic tank gauging	<u>ل</u>		$\overline{\checkmark}$		_	
d. Vapor monitoring	d.		/			
e. Ground water monitoring	e		1			
f. Interstitial monitoring	f.		1		{	
7. Release detection — piping.	7.		<u>v</u>			Except for 2md
8. Certified tank installers.	8					9250 840 2
9. All required records are maintained.	9.		~			
10. Evidence of release/spill.	10.		-			
COMMENTS:			,			
150, Type - Sand, cobble, some day possible	below	14	. 4	lepth	- 70	groandwater
approx. 45 to 50'	<u>.                                    </u>					
7) To it +1- 30 nonal-Steal the A. San it is a		1			٢.	1 march 1
4: Your at - N,000 gal - Steel NO per 1000 1025 01	25924	1 ear		<u> wk</u>		/ Temovol
from around took had discernale hydro carbon swall	<u>Cen</u>	تسك	pa	dus	y e	r task
at at death of a porox 15' Soil sample takes south en	d tauk	at	200	ox. /3	<u> </u>	- PTD soil
VAHTE 103 DAM Francisco All - Palane 16/A man	2 L+		// \ <b>\</b>			مرز م
La all 1141	<u> </u>	<u></u>	(m)	Jon	фЛ.	10109
80vertill probable causes. No sugle taked at worth and tak	& Deca	પડ્ય હ	t C	we-i	الجو لد	robhans.
3. Tank #2 -4000 cal-Steel, No Aufornions observed in	400 M	sid	esal	t-tow	K.	Soil Sandes
the at 14, which is approx, 3ft below concert she towk 5	itting.	an 🕿	<u>A</u>	Dea	:10	OH-Abrth
and tack 2 230 pon, south end 2 11.3 pom. Soil Containstica	Ashable	2 004	50 70	(AINO	\$ 84	orf.11. 4t
able to obsurve dotton at task for perfortions, (4) Incident Report call	led in a	2-6-4	20	5) No.	NOU	issurd
CLOSING DATE TIME CONFERENCE: 2-6 67 /242				,		
Compliance Officer's Signature Date On-site Repres	sont stive's	Sanatu			Det	te
Kimard Wherear 2-10-92 Mich	Ka -	<u>L   </u>	<u></u>	5	~ _\$	2-10-92
DISTRIBUTION: WHITE - Owner CANARY - Operator PINK - U	ISTB		GO	LDENR	00 -	Compliance Officer



East Portion of Excavation from North



East Portion of Excavation from South

UST Closure Report Diesel & Gasoline Fuel System Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico



Lube Building Prior to Demolition



Extent of Excavation Toward the West

UST Closure Report Diesel & Gasoline Fuel System Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico



South End and West Side



North End and East Side Diesel Tank (Tk #1)

UST Closure Report Diesel & Gasoline Fuel System Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico



South End and West Side



North End and East Side Gasoline Tank (Tk #2)

UST Closure Report Diesel & Gasoline Fuel System Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico



ENVIROTECH LABS

5796 US Highway 64-3014 • Farmington, New Mexico 87401 Phone: (505) 632-0615 • Fax: (505) 632-1865

> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Sample #3	Date Reported: 2-17-92
Lab ID#: 020692410-2	Date Sampled: 2-6-92
Matrix: Soil	Date Received: 2-6-92
Preservative:	Date Extracted: 2-6-92
Sample Condition: Received on ice	Date Analyzed: 2-13-92
	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
Benzene	688	50.0	ug/kg
Toluene	203	50.0	ug/kg
Ethylbenzene	<50.0	50.0	ug/kg
m,p-Xylene	66.1	50.0	ug/kg
o-Xylene	<50.0	50.0	ug/kg

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Sample #4	Date Reported: 2-17-92
Lab ID#: 020692410-3	Date Sampled: 2-6-92
Matrix: Soil	Date Received: 2-6-92
Preservative:	Date Extracted: 2-10-92
Sample Condition: Received on ice	Date Analyzed: 2-13-92
	Injection Vol: 100 & 10 ul

	Analytical	Detection	
Analyte	Result	Limit	Units
Benzene	ND	50.0	ug/kg
Toluene	303	50.0	ug/kg
Ethylbenzene	1575	50.0	ug/kg
m,p-Xylene	5156	500.0	ug/kg
o-Xylene	ND	50.0	ug/kg

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

Mulu 2. 2. Analyst

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**ENVIROTECH LABS** 

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** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank	Date Reported: 2-17-92
Matrix: Soil	Date Extracted: 2-13-92
Preservative:	Date Analyzed: 2-13-92
	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/k
Toluene	ND	1.0	ug/k
Ethylbenzene	ND	1.0	ug/k
m,p-Xylene	ND	1.0	ug/k
o-Xylene	ND	1.0	ug/k

ND - Analyte not detected at given detection level.

Comments:

Reference: Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

Mulum J. ann Analyst

Reviewed





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# ** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Laboratory Number: 020692410-3	Date	<b>Reported:</b> 2-17-92
Sample Matrix: Soil	Date	<b>Sampled:</b> 2-6-92
Preservative:	Date	Extracted:2-10-92
sample Condition: Received on ice	Date	<b>Analyzed:</b> 2-13-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
****			فا ہے چہ جہ خا نا کا کر ہے چہ جا ک	
Benzene	100	ND	98.5	99
Toulene	100	303	398	96
Ethylbenzene	100	1575	1656	81

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA:	Analyte	Acceptance Range %
	Benzene	39 <del>-</del> 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Diesel Tank South Side #2 Laboratory Number: 020692410-1 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1

Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-6-92 Date Received: 2-6-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	80.2	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Diesel Tank N @17' Laboratory Number: 021092410-1 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-10-92 Date Received: 2-10-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
tal Recoverable		

Total Recoverable Petroleum Hydrocarbons

97.4

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalISample ID: E Wall of Diesel Tank Exc.ILaboratory Number: 021192410-2ISample Matrix: SoilITemperature: Received on iceIAnalysis Method: 418.1I

Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-11-92 Date Received: 2-11-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)	
Total Recoverable Petroleum Hydrocarbons	3327	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalProgramSample ID: 4' N of S End of Slab @19'RepLaboratory Number: 021192410-1DatSample Matrix: SoilDatTemperature: Received on iceDatAnalysis Method: 418.1Dat

Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-11-92 Date Received: 2-11-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)	
Total Recoverable			
Petroleum Hydrocarbons	17.2	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

michaeld. ann Analyst



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: #12 @16.5' Laboratory Number: 021292410-1 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

11.4

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: #13 @17' Laboratory Number: 021292410-2 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

14.3

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Sample #25 Laboratory Number: 021392410-1 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-13-92 Date Received: 2-13-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)	
Total Recoverable Petroleum Hydrocarbons	109	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Sample #26 Laboratory Number: 021392410-2 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-13-92 Date Received: 2-13-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	17.2	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 2-17-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)	
Total Recoverable	ND	10.0	
recroreum nyurocarbons	UND UND	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 021392410-2 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 2-17-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Spike Added (ug/kg)	Sample Result (ug/kg)	Spiked Sample Result (ug/kg)	Percent Recovery
трн	100	17.2	103	86

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITE	CRITERIA:	Analyte	Acceptance	Range	8	
			TPH	48 - 1	L43	

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	Project #: 91410
Sample ID: Monitor Well #1	Date Reported: 2-17-92
Lab ID#: 021492410-5	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	ND	1.0	ug/l
m,p-Xylene	ND	1.0	ug/l
o-Xylene	ND	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	Project #: 91410
Sample ID: Monitor Well #2	Date Reported: 2-17-92
Lab ID#: 021492410-4	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
-	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
		*	
Benzene	ND	1.0	ug/l
Toluene	<1.0	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	<1.0	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	Project #: 91410
Sample ID: Monitor Well #3	Date Reported: 2-17-92
Lab ID#: 021492410-6	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
-	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/l
Toluene	<1.0	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	<1.0	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference: Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank	Date Reported: 2-17-92
Matrix: Water	Date Extracted:
Preservative: HgCl ₂	Date Analyzed: 2-17-92
-	Injection Vol: 5 ml

	Analytical	Detection	•.
Analyte	Result	Limit	Units
	~~~~~~~~~~		
Benzene	ND	1.0	ug/k
Toluene	ND	1.0	ug/k
Ethylbenzene	ND	1.0	ug/k
m,p-Xylene	ND	1.0	ug/k
o-Xylene	ND	1.0	ug/k

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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# ** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Laboratory Number: 021492410-6	Date Reported: 2-17-92
Sample Matrix: Water	Date Sampled: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on ice	Date Analyzed: 2-17-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	10		9.8	98
Toulene Ethylbenzene	10 10	<1.0 <1.0	9.1 9.3	91 93

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITER	IA: Analyte	Acceptance Range %
	Benzene	<b>39 - 150</b>
	Toluene	46 - 148
	Ethylbenzene	32 - 160

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Sample #30 Laboratory Number: 021492410-7 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-4-92 Date Sampled: 2-14-92 Date Received: 2-14-92 Date Extracted: 2-18-92 Date Analyzed: 2-18-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalProject #: 91410Sample ID: Sample #30Report Date: 3-4-92Laboratory Number:021492410-7 DuplicateDate Sampled: 2-14-92Sample Matrix: SoilDate Received: 2-14-92Temperature: Received on IceDate Extracted: 2-18-92Analysis Method: 418.1Date Analyzed: 2-18-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-4-92 Date Extracted: 2-18-92 Date Analyzed: 2-18-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
otal Recoverable		

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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## ** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 021492410-7 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-4-92 Date Extracted: 2-18-92 Date Analyzed: 2-18-92

Analyte	Spike Added (ug/kg)	Sample Result (ug/kg)	Spiked Sample Result (ug/kg)	Percent Recovery
ТРН	100	<10.0	94.4	94

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Location #31	Date Reported: 2-28-92
Lab ID#: 021792410-1	Date Sampled: 2-17-92
Matrix: Soil	Date Received: 2-17-92
Preservative:	Date Extracted: 2-18-92
Sample Condition: Received on Ice	Date Analyzed: 2-28-92
	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	50.0	ug/kg
Toluene	477	50.0	ug/kg
Ethylbenzene	<50	50.0	ug/kg
m,p-Xylene	206	50.0	ug/kg
o-Xylene	59.9	50.0	ug/kg

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Location #32	Date Reported: 2-28-92
Lab ID#: 021792410-2	Date Sampled: 2-17-92
Matrix: Soil	Date Received: 2-17-92
Preservative:	Date Extracted: 2-18-92
Sample Condition: Received on Ice	Date Analyzed: 2-28-92
-	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
400			
Benzene	ND	50.0	ug/kg
Toluene	187	50.0	ug/kg
Ethylbenzene	ND	50.0	ug/kg
m,p-Xylene	<50	50.0	ug/kg
o-Xylene	<50	50.0	ug/kg

Protection Agency, SW-846, Vol. IB, November 1990.

ND - Analyte not detected at given detection level.

Comments:

Reference: Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental

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> EPA METHOD 8020 PURGEABLE AROMATICS

<b>Client:</b> Smith International	<b>Project #:</b> 91410
Sample ID: Location #33	Date Reported: 2-28-92
Lab ID#: 021792410-3	Date Sampled: 2-17-92
Matrix: Soil	Date Received: 2-17-92
Preservative:	Date Extracted: 2-18-92
Sample Condition: Received on Ice	Date Analyzed: 2-28-92
	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
		******	
Benzene	ND	50.0	ug/kg
Toluene	190	50.0	ug/kg
Ethylbenzene	<50	50.0	ug/kg
m,p-Xylene	216	50.0	ug/kg
o-Xylene	69.5	50.0	ug/kg

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank	Date Reported: 2-28-92
Matrix: Soil	Date Extracted: 2-28-92
Preservative:	Date Analyzed: 2-28-92
	Injection Vol: 100 ul

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	50.0	ug/kg
Toluene	ND	50.0	ug/kg
Ethylbenzene	ND	50.0	ug/kg
m,p-Xylene	ND	50.0	ug/kg
o-Xylene	ND	50.0	ug/kg

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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## ** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Date Reported: 2-28-92
Date Sampled: 2-17-92
Date Extracted:2-18-92
Date Analyzed: 2-28-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	100		96.2	96
Toulene Ethylbenzene	100 100	187 ND	281 84.1	94 84

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA:	Analyte	Acceptance Range %
	Benzene	<b>39 - 150</b>
	Toluene	46 - 148
	Ethylbenzene	32 - 160

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalProject #: 91410Sample ID: Location #34Report Date: 3-4-92Laboratory Number: 021792410-4Date Sampled: 2-17-92Sample Matrix: SoilDate Received: 2-17-92Temperature: Received on IceDate Extracted: 2-20-92Analysis Method: Modified 8015-DieselDate Analyzed: 2-25-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	0.1

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

J.J. K_



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

**Client:** Smith International **Project #:** 91410 **Sample ID:** Location #35 **Report Date:** 3-4-92 Laboratory Number: 021792410-5 Date Sampled: 2-17-92 Sample Matrix: Soil Date Received: 2-17-92 Temperature: Received on Ice Date Extracted: 2-20-92 Analysis Method: Modified 8015-Diesel Date Analyzed: 2-25-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable	~~~~~	
Petroleum Hydrocarbons	ND	0.1

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Method: Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

**Client:** Smith International **Sample ID:** Location #38 Laboratory Number: 021792410-6 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: Modified 8015-Diesel Date Analyzed: 2-25-92

**Project #:** 91410 Report Date: 3-4-92 **Date Sampled:** 2-17-92 Date Received: 2-17-92 Date Extracted: 2-20-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable	ND	0 1

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

hand J. Em Analyst



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**** QUALITY ASSURANCE REPORT** METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: Modified 8015-Diesel Date Analyzed: 2-25-92

**Report Date:** 3-4-92 Date Extracted: 2-25-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
tal Bagayarabla		

Total Recoverable Petroleum Hydrocarbons

ND

0.1

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

2. him Analyst





## ****** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 021792410-6 Sample Matrix: Soil Analysis Method: Modified 8015-Diesel Date Analyzed: 2-25-92

**Report Date:** 3-4-92 Date Extracted: 2-20-92

Analyte	Spike Added (ug/kg)	Sample Result (ug/kg)	Spiked Sample Result (ug/kg)	Percent Recovery
трн	100	ND	91.7	92

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range % TPH 48 - 143

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

1 J. Em Muchun Analyst

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #1 Laboratory Number: 030592410-1 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

D. an Analyst



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #2 Laboratory Number: 030592410-2 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)	
Total Recoverable			
Petroleum Hydrocarbons	14.5	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #3 Laboratory Number: 030592410-3 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Muchan 2. Com

onio D. your Review



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#### ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)
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Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Muchan Z. Com Analyst

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ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 030592410-3 Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92 I.

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Analyte	Spike Added (ug/kg)	Sample Result (ug/kg)	Spiked Sample Result (ug/kg)	Percent Recovery
трн	100	ND	104	104

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

D. Leron <u>Much</u> Analyst

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1006				Remarks									Date Time	······································			2-2-91 1225	0001 171 0 0		ean juan repro Form 578-61
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	CHAIN OF CUSTODY I			ape No.	Sample Matrix	501-							Date Time Received by	2/6/92 13:20	Received by		Received by		ENVIROTECH IN 5796 U.S. Highway 64-30 Farmington, New Mexico 8 (505) 632-0615	
		Project Location		Chain of Custody To	Lab Number	1-01229020				21-7-7					- 1.I					
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1007		Remarks									Date Time				2-10-52 1300	san juan repro Form 578-81
RECORD	ANALYSIS/PARAMETERS	2014C	61 1.81 9		7						yy: (Signature)	28-01	by: (Signature) M 2 C L	vr (Sinnatured	chard. Ea	VC. 014 87401
CHAIN OF CUSTODY		ody Tape No.	10	nber Sample 2 Matrix	0-1 Sou						Date Time Received b	7/0/42 /300	Received b	Beceived b	m	ENVIROTECH I 5796 U.S. Highway 64.3 Farmington, New Mexico (505) 632-0615
	Project Locati	Chain of Cust	Lee	Sample Sample Lab Nur Date Time	2/10/92 9:00 AN 02109841			15.1	n 1 9 2+10	line	(e tere		MJP 2-10-1		
	Client/Project Name	Sampler: (Signature)	aller Cor	Sample No./ Identification	Pleser TK N. 017						nquished by: (Signature)	Fleet	Relinquished by: (Signature)	Relinquished by: (Signature)		

1008		Remarks									Date Time			2-11-52 1100	san juan repro Form 578-81
RECORD	ANALYSIS/PARAMETERS	/ .8/	HJ_1 ++ UJ= ++ UJ=	3		<i>,</i>					y: (Signature)	y: (Signature) WLP Prof.	y: (Signature)	hard arow	VC. 014 87401
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0	Project Location	Chain of Custody Tape	Lab Number	051192410-1		02 1192410- 20			m 2 2 k				42		
	01410		Sample Sample Date Time	2/11/32 1045		2/1/32 1047							-11- Q -11-	AIN	
	Clian/Project Name S.M. i.T.H. E.N.572	Sampler: (Signature)	Sample No./ Identification	7. N. 07 5. 5. 5. 40	LE LE LE						nquished by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)		

1009		Remarks											Date Time			2-12-22 1645	tan tepro Form 578-41
RECORD	ANALYSIS/PARAMETERS	ereni .8/; -/:	ernoj 1977	, \	7	7	7	7					r: (Signature)	r: (Signature) M.2.C. 2. 12. 27		r: (Signature) Nav X. aron	IC. 114 87401
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1010			Remarks								Date Time				3-13-2 1615	tan juan repro Form 578-61
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	CHAIN OF CUSTODY	Polaci Locanon	thain of Custody Tape No.	Lab Number Sample Matrix	1392410-1 501-	221392410-2 Jor-		22-51-2 D	W ~ C		Date Time Received	12/22 1615	Received	C Received	m	ENVIROTECH I 5796 U.S. Highway 64- Farmington, New Mexico (505) 632-0615
	lien/Project Name	5NITH / 91410	ampler: (Signature)	Sample No./ Sample Sample Identification Date Time	213192 1530 0	AME#26 2/13/52 1532 (nquished by: (Signature)	Here De De C	elinquished by: (Signature)	alinquished by: (Signature) AA 2 5 2-12-7		

1 050 CHAIN OF CLISTODY RECORD	Protect I ocation	ANALYSIS/PARAMETERS	Chain of Custody Tape No.	of Iners	ov Sample Sample Lab Number Sample 20番子 た 必 on Date Time Lab Number Matrix 0名 テーチ	2 7/4/92 11.30 621492410-1 Sort Wrea	1 2/14/92 1005 021492410-2 WATEL	3 2/4/92 1049 021492410-3 WATER / / /	1#2 2/14/92 1135 02149240-4 WATER +	1#1 21/4/92 1010 021492410-5 WATES	#3 7/4/52 1054 021492410-6 Wm2. 2 V	#30 2/14/52 /6/5 02149240-7 501 2 v	MZ Z A-14	ignature) Date Time Received by: (Signature) Date Time	27 Pare 14/2 1/20 21	ignature) M 2 L Z-14-15 M 2 L Z-14-15	gnature) 2 2-14 - A - A - A - A - A - A - A - A - A -	ENVIROTECH INC. 5796 U.S. Highway 64:3014 Farmington, New Mexico 87401
	Client/Project Name	SMith Entrey	Sampler: (Signature)	and the	Sample No./ Sa Identification D	TP4-NW#2 2/14	74-MW#1 2/14	TPH- MW#3 214	8020-H/W#Z Z/	112 1#MH -0202	1020-HW#3 7/14	416.1 - 5mp#30 2/1		Iquished by: (Signature)	and the ce	Relinquished by: (Signature)	Relinquished by: (Signature)	

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	O	roject Location	MW LF	Chain of Custody Tape		Lab Number								M - L			· · · · · · · · · · · · · · · · · · ·								-
					9	Sample Time	1510	14245	1455		1530) }			5-2-5					
Ī			0			Sample Date	315/52	315/52	311-16-		<u>7552</u>								-	0	MZE				
		Client/Project Name	24174 / 1914	Sampler: (Signature)		Sample No./ Identification	14/11/ #]	MUHZ	M.1#3	C # /#/ /	Prezs'					•	Relinquished by: (Signature)	Aller &	Relinquished by: (Signature)		Relinquished by: (Signature)				

Inter Mountain Laboratories, Inc.

2506 W. Main Street Farmington, New Mexico 87401

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CLIENT: ID:	Envirotech 1000	DATE REPOR	TED:	03/02/92
SITE:	MW#1	DATE RECEI	VED:	02/14/92
LAB NO:	F8163	DATE COLLEC	TED:	02/14/92
	Lab pH (s.u.) Lab Conductivity, umhos/ Lab Resistivity, ohm-m Total Dissolved Solids (Total Dissolved Solids (Total Alkalinity as CaCO Total Hardness as CaCO3, Sodium Adsorption Ratio.	<pre>'cm @ 25C 180C), mg/L. calc), mg/L. 3, mg/L mg/L</pre>	7.14 675 14.8 420 442 237 315 0.80	*
	Bicarbonate as HC03 Carbonate as C03 Chloride Sulfate Calcium Magnesium Potassium. Sodium. Major Cations. Major Anions. Cation/Anion Difference.	mg/L 289 0 15.5 133 102 14.4 2.22 32.5	meq/L 4.74 0 0.44 2.76 5.11 1.18 0.06 1.41 7.76 7.94 1.13	ş

* Reanalyzed, no significant change.

Mary Mary Stepp Lab Director

-Indo Wanda Orso Water Lab Supervisor

Inter Mountain Laboratories, Inc.

2506 W. Main Street Farmington, New Mexico 87401

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CLIENT: ID:	Envirotech 1125	DATE REPO	RTED:	03/02/92
STTE.	MW#2	DATE RECE	TVED.	02/14/92
TAR NO.	F8164	DATE COLLE	CTED.	$\frac{02}{14}$
TYP NO:	Lab pH (s.u.) Lab Conductivity, umhos/cm Lab Resistivity, ohm-m Total Dissolved Solids (180 Total Dissolved Solids (cal Total Alkalinity as CaCO3, Total Hardness as CaCO3, mo	<pre>@ 25C OC), mg/L. Lc), mg/L. mg/L</pre>	7.06 840 11.9 454 524 279 378	*
	Sodium Adsorption Ratio	mcr/T.	0.73	
	Bicarbonate as HC03	340	5.58	
	Carbonate as C03	0	0	
	Chloride	35.0	0.99	
	Sulfate	133	2.78	
	Calcium	139	6.93	
	Magnesium	7.69	0.63	
	Potassium	9.35	0.24	
	Sodium	32.5	1.41	
	Major Cations		9.21	
	Major Anions	••••	9.35	
	Cation/Anion Difference		0.72	8

* Reanalyzed, no significant change.

Ma Lab Director

(JEC) Wanda Orso

Water Lab Supervisor

Inter Mountain Laboratories, Inc.

2506 W. Main Street Farmington, New Mexico 87401 L

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CLIENT:	Envirotech	DATE REPORTED:	03/02/92
SITE:	MW#3	DATE RECEIVED:	02/14/92
LAB NO:	F8165	DATE COLLECTED:	02/14/92
	Lab pH (s.u.) Lab Conductivity, umhos/cm Lab Resistivity, ohm-m Total Dissolved Solids (18 Total Dissolved Solids (ca Total Alkalinity as CaCO3, Total Hardness as CaCO3, m Sodium Adsorption Ratio	7.3 86 11. 30C), mg/L. 54 1c), mg/L. 54 mg/L. 31 ng/L. 39 0.7	8 4 6 8 1 8 2
	Bicarbonate as HC03 Carbonate as C03. Chloride. Sulfate. Calcium. Magnesium. Potassium. Sodium. Major Cations. Major Anions. Cation/Anion Difference.	mg/Lmeq/23796.2034.10.91362.81336.616.01.38.980.232.91.49.610.	L 1 0 6 3 5 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

Mary Stepp / Lab Director

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Wanda Orso Water Lab Supervisor

		PARAMETERS	Premarks			Course & Cap Royer		* ENANGO COLAG	Thuk Sketuaten \$	Courded wares Sol	REHAUTE OPERATOR	Possible Sol	Ensmy to Wert			Date Time		Date Time	Date Time	201492 1335	Longmire Drive 00776 ge Station, TX 77845 hhone (409) 774-4999
ECORD		/ ANALYSES /	, , , , , , , , , , , , , , , , , , ,	No. of Container MAJOC CAT 4 A.M	>	7	7									ed by: (Signature)		ed by: (Signature)	ed by laboratory: (Signature)	inde vid	 Route 3, Box 256 Route 3, Box 256 College Station, TX 77845 College Station, TX 77845 Telephone (409) 776-8945 Telep
OF CUSTODY RI	rt Location	im Every	tody Tape No.	Matrix	WARER		7									Date Time Receive	74 hr 1335	Date Time Receive	Date Time Receive	untain Laboratories	t 910 Technology Blvd. Suite B Bozeman, Montana 59715 4737 Telephone (406) 586-8450
CHAIN	Projec	Su	Chain of Cus	Lab Number																Inter-Mou	Z506 West Main Stree Earmington, NM 8740 Telephone (505) 326-
		1410		Time	000/	112S	1045								/						Circle ning 82716 07) 682-8945
		4		Date	7/4/22	34192	314192										Ŵ				1714 Phillips Gillette, Wyon Telephone (3
Inter-Mountain Laboratories, Inc.	Client/Project Name	ENVIROTEH /ve.	Sampler: (Signature)	Sample No./ Identification	MW/#/	NW#2	HW#3									Relinquished by: (Signature)		Relinquished by: (Signature)	Relinquished by: (Signature)		1633 Terra Avenue 1633 Terra Avenue Sheridan, Wyoming 82801 Telephone (307) 672-8945

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ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

CERTIFICATION OF ORIGIN OF

CONTAMINATED SOILS

The soil at <u>SMITH ENERGY</u> SERVICED <u>Z198 E. BLOOMFIELD HWY, FARMINATON, NM</u> (DIEDEL & GADOLINE TANKS)

was contaminated by a leaking Underground Storage Tank System.

Unray 2-6-92 INSPECTOR DATE

I certify that <u>ENUROTECH</u>, <u>INC.</u> has transported <u>2564</u> cubic yards of hydrocarbon contaminated soils from <u>SHITH ENERGY</u> <u>SERVICE YARD</u> <u>2198 E. BLOONFIELD HWY</u>, FARMINGTON, NM

To Envirotech's Soil Remediation Site at Hilltop, New Mexico.

BY:

0 Z/6/9Z ENVIROTECH INC. DATE

459.DOC

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	ACL	COMPANY	DRIVE	X												
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PHONE: (505)	632-0615					OW	NTH OF 1-66 1-92
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5/16/91			5796 U.S. Hi	GHWAY 64 3014	FARMIN	VGTON,	New Mexico 87401	san juan repro Form 578-80

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PHONE	: (505	5) 632-0615			L ad	6 L	MON	ITH OF Feb - 92
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71-8	ત	Smith Encros	Loud Larm	contaned dirt	~	Ô	Enviretech	R Vanier 6 mines MK
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2-12	15	Smith Energy	Land Ruch	polint 1100	4	0	Bauratech	Et Durin Comment
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PHONE: (505) 632-0615		Bill of	Ladi	OW bu	NTH OF _	Felwiry
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PHONE:	(505) 632-0615	5	Bill of	Lad	ing	MON	ITH OF	1-eb-13-1992
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2-13	_	Scurtuan Conk.	Fraley	3/4 Graver		20	Enviretec 1.	K45	Daniel Groven
61-2	~	Smith Energy	Lend fain	Conterned deret		20	Buwrotcoh	12 4 8	11 1 1 1 miles
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2-13	4	Swith Energe	Land Furty	Conterned dirt		50	Envirotech	EHS	And the second of the
2-13	5	SMith Energy	Lerned Ferry	Contamed dirt		2	Envirotech	18 17 17	Dun et lovalle -
2-13	-	Leind Farm	Sinith	fill dirt		20	Envirotech	12 48	Daniel Courses Ans
2-13	z	Land Farm	Smith	F.11 d. 1 F		2	Enwrotech	E 48	Real Comments
61-6	5	Land Parm	Smith	P.11 dirt		2	Burrotech	12 8	Dowel lowver my
2-13	ų	Land Farm	Sinith	Fill dirt		50	Envirotach	1548	Raufel Commerce
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ENVIROTECH INC.

Acid UST and Sump Closure Report

for

Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico

RECEIVED

JUN 0 1 1992

OIL CONSERVATION DIV. SANTA FE

Project #91410

May 1992

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5796 U.S. HIGHWAY 64 - 3014 • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 632-0615

ACID UST AND SUMP CLOSURE REPORT ACID STORAGE TANK AND LOADING AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR MR. MAURICE STICKER ENVIRONMENTAL AFFAIRS COORDINATOR SMITH INTERNATIONAL, INC.

PROJECT NO: 91410

MAY 1992

ENVIROTECH INC. Environmental Scientists & Engineers 5796 U.S. Highway 64-3014 Farmington, New Mexico

(505) 632-0615

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PROJECT NO: 91410

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MAY 1992

ACID UST AND SUMP CLOSURE REPORT ACID STORAGE TANK AND LOADING AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

Envirotech Inc. has been retained by Smith International, Inc. to remove and dispose of the acid underground storage tank (UST); perform the necessary site assessment and remediation of the associated system used for the storage and loading of hydrochloric acid. These services were performed for closure of the acid system, at the Smith Energy Services facility, 2198 East Bloomfield Highway in Farmington, San Juan County, New Mexico.

ENERLOG/TIS Inc. conducted two site assessments dated April 1990 and August 1990 for the subject property as part of a property transaction. Three sites requiring remediation were identified in the assessment reports:

> Fuel Underground Storage Tank System (USTS) Wash Bay Solids Disposal Area Acid Tank Storage and Loading Area

Enclosed please find a copy of Smith International's January 30, 1992 request of the New Mexico Oil Conservation Division for authorization of the proposed site assessment and remediation.

The UST's comprising of the fuel system were removed and the site remediated for closure in February and early March 1992, under the direction of the New Mexico Environment Department (NMED). The USTS closure was completed prior to commencing the disposal pit and acid tank assessments and remediation. A Seven Day Report and a USTS Closure Report have been submitted to the NMED under separate covers.

The remediation of the disposal pit by excavation and removal was initiated on February 18, 1992. The excavation of the highly contaminated soils was completed on March 20, 1992. Hydrocarbon contaminated soil was found throughout the area within the original pit perimeter. Additionally, contamination extended laterally 10 to 30 feet beyond the pit perimeter and vertically to groundwater at approximately 28 feet below the original ground surface. A Surface Impoundment Closure Report has been submitted to the NMOCD under separate cover. Remediation of the acid storage area was performed concurrent with the fuel USTS closure and the wash bay disposal pit closure. The site remediation was initiated December 24, 1991. The UST in the acid system was removed during the fuel system closure on February 6, 1992. The excavation and removal of the highly contaminated soils for the site remediation was completed on April 8, 1992. Hydrocarbon contaminated soil was found around the UST, the acid spill catchment, associated piping and beneath the overfill catchment sump. The soil contamination extended laterally 10 to 15 feet beyond the system's perimeter and vertically to groundwater at approximately 29 feet below the original ground surface.

Mr. Denny Foust of the State of New Mexico Oil Conservation Division (NMOCD) conducted periodic site inspections during the closure and site assessment operations.

PURPOSE & SCOPE OF SERVICES

The purpose of the excavation and removal of the highly hydrocarbon contaminated soils was to aid in the closure of the acid storage UST system at the reference site. The protocol outlined in the New Mexico Oil Conservation Division's proposed "Guidelines for Surface Impoundment Closure" (October 29, 1991) and the New Mexico Environment Department's UST Regulations (Amended July 26, 1990) were followed in the soil removal and treatment, site assessment, and final closure. It should be noted that the hydrochloric acid stored in the UST is currently not a regulated substance per RCRA.

The scope of services that Envirotech was retained to provide included the following:

- A. Notification of the NMOCD and appropriate authorities of the intent to remediate and close the original acid storage and loading UST system at the referenced property.
- B. Excavate and dispose of the highly contaminated soils to abate the spill incident.
- C. Provide acceptable fill material sufficient to backfill the excavation.
- D. Field assessment of the site, including laboratory analyses, to determine the extent of the contamination.

- E. Review available water supply information, collect groundwater samples, and analyze groundwater samples to assess the potential impact from the contamination.
- F. Document the pit excavation, closure operations, and site assessment findings.
- G. Design and installation of a replacement spill catchment, storage and loading system.

SITE DESCRIPTION

Bluestake New Mexico was contacted and underground utilities were marked, prior to the excavation operation. The main utilities are located along East Bloomfield Highway and Malta Avenue, the south and west boundaries of the property. The only underground utilities in the immediate area of the acid system were a 2.5" diameter gas line and 4" diameter water line in the west portion of the acid loading area.

The site is an active staging yard for Smith Energy Services an oilfield services company. The acid system was in use until December of 1991. The subject acid system was located in a fenced area at the east end of the north warehouse building. Refer to the attached general Site Plan (Sheet 1) prepared by ENERLOG/TIS Inc.

Access to the yard and site is available from East Bloomfield Highway (U.S. Highway 64) which is adjacent to the south property boundary.

The attached System Site Detail (Sheet 2) shows the location of the acid system storage and loading area.

<u>Water Resource Information:</u>

Based on a preliminary review of available records from the New Mexico State Engineers Office, there appears to be eight water supply wells within a half mile radius of the Smith International site. They are listed in Table 1 at the end of Section 2.

All wells appear to be located over 1000 feet from the site. The wells in Section 14 appear to be located up and cross gradient based on preliminary monitor well water level measurements. The remaining six wells in Sections 22 and 23 appear to be located down and cross gradient from the site and plume. Analysis of water samples collected during the USTS closure operations and from the excavation bottom did not detect BTEX or TPH contamination above the regulated limits. Monitor well #1 is located east of the pit and monitor wells #2 and #3 are located west of the previous fuel USTS.

The San Juan River is south of the site, approximately threequarters of a mile down-gradient. The Animas River is north of the site, approximately one mile up-gradient. Both rivers flow to the west and south, and have year around water flow. The Willett Ditch provides irrigation water to farms in the general proximity of the site. The Willett Ditch is fed on the south side of the Animas River, upstream of the site approximately 3/4 miles. Based on discussions with the New Mexico State Engineers Office, this ditch appears to be used primarily for irrigation and industrial use and

is not a public drinking water source.

Where easily assessable, all of the above referenced surface water courses were inspected during the USTS closure. The author observed no superficial evidence of hydrocarbon contamination from a spill along any of the water courses. Thus, it is felt that the surface water courses in the immediate proximity of the site have not been nor are immediately threatened.

TABLE 1

WATER WELL INFORMATION SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 1992

Location (T.R.Sec.Quad)	Name	Well No.	Use	Water Depth (ft)	Aquifer
29.13.14.313	Valley Drive In	SJ-00176	dom,stk	35	Qal
29.13.14.443	Dowell Inc.	NA	NA	15	Kk,Qal
29.13.22.22	Dennis Burke	SJ-01673	dom	14	Qal
29.13.23.1	Tom Kannard	SJ-01562	dom	6	Qal
29.13.23.11	NA	SJ-01719	NA	NA	NA
29.13.23.123	NA	SJ-00187	NA	40	Qal
29.13.23.22	Mary Barkley	SJ-00352	dom	30	Qal
29.13.23.22	Tom Pratt	SJ-01376	dom	15	Qal

Notes:

NA - Information not available. dom - domestic water source

stk - water source for livestock

Kk - Kirtland Shale

Qal - Quaternary alluvium

Based on available information from the State of New Mexico Engineers Office.

SYSTEM CLOSURE & FIELD ASSESSMENT

<u>Site Safety:</u>

The entire acid system and extent of the excavation remained within the fenced compound of the Smith Energy Services facility. The work area could only be access from the fenced yard and, during excavation operations, access was limited to essential personnel. Hydrocarbon vapors were monitored by Envirotech personnel to assess if a health or explosion hazard existed. A MSA model 62 explosimeter was used to monitor the site. No hazard associated with hydrocarbon vapors was detected during the entire operation.

Acid Storage/Loading System & Excavation:

The acid storage and loading system located at the east end of the of the Smith Energy Services facility warehouse building consisted of three elements. These were:

Above Grade Acid Storage Tank (24,000 gal) with concrete catchment enclosure.

Acid Spill Catchment and concrete apron

Fiberglass Acid UST (10, 000 gal)

New product was stored in the above grade tank (AGT). The concrete catchment enclosure adjacent to the warehouse consisted of a three foot (3') retaining wall on all sides and a overflow sump at the northeast corner. The overflow sump drained into the north end of the UST by three inch (3") PVC piping. Piping from the warehouse drained into the catchment.

The acid spill catchment consisted of a five foot (5') by twelve foot (12') by three and one half foot (3.5') concrete sump covered with metal grating, and concrete aprons draining to the sump. This basin was used to catch any spills in transfer or loading acid. The sump drained into the south end of the UST in six inch (6") PVC piping.

The UST stored the recovered acid product and any liquids that drained from the warehouse catchment. The tank was fiberglass, buried approximately four feet (4') below grade, and capable of storing 10,000 gallons. All piping to the tank was PVC consisting of a three inch (3") line from the catchment sump, six inch (6") line from the spill catchment, and two eight inch (8") clean-outs.

The UST was inspected by Envirotech personnel after removal for holes and/or cracks. Aside from a puncher hole which were caused by cobbles during the tank removal, two other holes were observed that may have contributed to soil contamination. Patching was noted around the original holes. One hole approximately 1/4 from the UST top was located toward the southeast side of the tank. The patching appears to have leaked since repair. Discussions with the Smith Energy personnel, indicated that the repair had been performed approximately three years prior to the UST removal.

The final excavation extended approximately thirty-five feet (35') east and south of the retaining wall surrounding the AGT and to a total depth at the ground water of approximately 29 feet below the overall site grade (bsg). The southeast corner of the excavation did not extend to groundwater, as the extent of contamination terminated at approximately seventeen feet (17') bsg.

Based on the excavation sidewalls, native soils were classified as moderate to grayish brown well graded gravel with well rounded cobbles to 15 inches in diameter and medium to fine sand, dense, and moist to saturated below the water table. The hydrocarbon soil contamination appears to have been from piping leaks, a hole in the east side of the UST, and the failure of the spill catchment which appeared to have been corroded by acid.

Due to the proximity of the AGT and concrete catchment, the excavation and removal of the highly contaminated soils was terminated at the AGT foundation. High soil contamination is not believe to extend more than a couple of feet beneath the AGT support structure.

As a new spill collection system was to be constructed, clean imported soils were backfilled in the excavation upon completion of the highly contaminated soil removal and verification testing. After installation of the new spill collection system (Sheet 4), the entire area will be paved to minimized potential surface water recharge or possible leaching of residual soil contamination to groundwater.

Refer to the system site detail for the acid dump system and final excavation perimeter (Sheet 2).

Photographs of the referenced UST and excavation are attached.

Site Groundwater Information:

Three previously installed groundwater monitor well were used to estimate the site groundwater gradient. They were sampled to determine if groundwater had been impacted by the fuel UST and/or the disposal pit hydrocarbon plumes. The wells had been installed by ENERLOG/TIS for Smith International during an environmental audit of the property in August 1990. The wells were drilled with an air drill rig, and completed with four inch PVC casing. The monitor well information and groundwater level measurements (taken 2-7-92) are summarized in Table 3 at the end of Section 2. Based on the water level measurements from the three wells, the groundwater ranges from 28 to 30 feet below the existing ground surface. The groundwater gradient and subsequent flow direction is to the west and south and averages approximately 0.002 feet/foot. The shallow alluvial groundwater appears to represent an unconfined aquifer. The groundwater level and gradient may vary, considering the sites relative proximity to both the San Juan River and Animas River and site soil conditions.

During the coarse of the excavation and abatement, the groundwater at the bottom of the excavation was observed to fluctuate in depth. Fluctuations appeared to be on the order of one to three feet, corresponding to a water level of 27 to 30 feet bsg. This fluctuation is not unusual, considering the site soil condition, and proximity of the site to the San Juan and Animas Rivers.

Groundwater samples were also collected at the bottom of the excavation, prior to backfill.

TABLE 2

MONITOR WELL DATA SUMMARY SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 1992

DRILLING	& COMPLET	TION INFORMA	TION
	AUGUST	1990	
	TOTAL	WATER	TOP OF
MONITOR WELL	DEPTH	LEVEL	SCREEN
l	34	25	15
2	40	30	18
3	40	28	20

SURVEY & WATER LEVEL INFORMATION FEBRUARY 7, 1992

		COORI	DINATE	WATER	WATER
LOCATION	ELEV.	<u> </u>	<u> </u>	<u>LEVEL(bgs)</u>	ELEV.
SW WAREHOUSE COR. (benchmark)	100.00	0.00	0.00		
мw1 (99.78	346.41	195.63	28.54	71.24
MW2	99.85	85.11	-289.32	29.98	69.87
MW3	99.77	67.82	-199.59	29.74	70.03

<u>Abatement and Closure:</u>

Hydrocarbon contaminated soil was encountered throughout the UST and acid spill containment area. Contamination is suspected to have been from several sources: overfill and pumped out spillage, piping leaks, holes in the UST and the failure of the spill catchment basin bottom from acid. The contamination is suspected to be primarily from used acid and produced oil and gas well fluids recovered by Smith Energy's equipment during well acid service operations.

Based on the earlier ENERLOG/TIS assessments, the contamination appeared to be limited to the immediate area of the UST and relatively shallow (ie. above the UST). Thus, Smith International elected to abate the contamination by excavating all the highly contaminated soils. Soil samples were collected during excavation operations from the bottom and sidewalls. These soil samples were analyzed for organic hydrocarbon vapors and/or Total Recoverable of Hydrocarbons (TPH) to determine the extent Petroleum contamination following the NMOCD guidelines of 100 ppm volatile organics by OVM and/or TPH. Where practical, additional excavation was performed in all areas where the results exceeded the 100 ppm action level.

It should be noted that due to the relative proximity of the AGT support structure to the contamination plume, those areas that would not inhibit the structural integrity of the AGT foundation and associated concrete catchment were excavated for remediation. On April 7, 1992, excavation was terminated when the sidewalls under the AGT foundation showed evident of potential failure. Soil sampling was limited to those areas that could safely be sampled while the excavation was backfill to avoid the potential failure.

The contamination was relatively extensive. Based on the final excavation, the plume extended to the groundwater at a maximum depth of approximately 29 feet below the original ground surface and within a 4,000 to 5,000 sf area (refer to the System Site Plan, Sheet 2).

Approximately 2,032 cubic yards of contaminated soil were removed from the site. These contaminated soils were transported to Envirotech's Soil Remediation Facility located at Hilltop, New Mexico. Attached is a copy of Envirotech's NMOCD request to receive the contaminated soils and laboratory analytical results showing that the soils are not characterized as hazardous waste per Resource Conservation Recovery Act (RCRA) standards. Mr. Roger Anderson of the NMOCD authorized Envirotech to receive these soils. Copies of the Bill of Ladings manifesting the contaminated soils are included in the Appendix.

SOIL & GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

During the abatement by excavation, the highly contaminated soils were excavated until the field results of the OVM for volatile hydrocarbons were below the NMOCD action level of 100 ppm OVM and/or TPH. Soil samples were taken from the excavation bottom and sidewalls following US EPA SW-846 protocol. The soil was field tested for volatile hydrocarbons following the Headspace Field Method (Guidelines For Surface Impoundment Closure, New Mexico Oil Conservation Division, Part 1 (IA.2a) October 29, 1991) using a photoionization detector (PID), Model 580-B Organic Vapor Meter (OVM) manufactured by Thermo Environmental Instrumental.

The results of the field headspace analyses are summarized in Table 4 at the end of Section 3.

Upon completion of the removal of the highly contaminated soil, confirmation soil samples were collected from the excavation. These samples were submitted for laboratory analyzed for TPH per USEPA Method 418.1 (modified soil).

As previously noted, only limited soil sampling was done on April 7, 1992 and no groundwater samples were collected at the excavation bottom to assess if groundwater had been impacted by the hydrocarbon plume, due to the unstable excavation conditions. However, the three monitor wells were sampled as part of the fuel UST Closure to assess the groundwater conditions at this Smith International site. Prior to sampling, the monitor wells were developed by removing at least three well bore volumes or until the well bore was pumped off (approximately 6 gallons). Groundwater samples were collected following US EPA SW-846 protocol. The water samples were analyzed to total petroleum hydrocarbons (TPH) per EPA 418.1, BTEX compounds per EPA 8020, and/or major cations/anions.

The results of the laboratory analyses and quality control/quality assurance are attached in Appendix C and summarized in Tables 5 and 6 at the end of Section 3.

TABLE 3

FIELD HEADSPACE OVM RESULTS ACID STORAGE TANK AND LOADING AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO DECEMBER 1991 - APRIL 1992

OVM

<u>Sample</u>	Date/Lab #	Sample Location	Time	(mqq)
*E 1	122491	12' bsg West side	NA	ND
*E 2	011392	12' bsg NE cnr	NA	NA
*E 3	013192	12' bsg SE cnr	NA	NA
* 1	021992	22' bsg NE cnr	NA	903
* 2	021992	16' bsg NE cnr above #1	NA	254.8
* 3	021992	17' bsg NW cnr	NA	11.2
* 4	021992	20' bsg N end slab	NA	2,648
5	021992	17' bsg W wall under AGT	NA	14.3
6	021992	17' bsg W wall under AGT	NA	6.5
* 7	021992	16' bsg SW cnr slab	NA	1,013
*J 1	022092	18' bsg E of UST	NA	311
*J 2	022092	17' bsg NE cnr N of #1	NA	145
*J 3	022092	17' bsg S end slb	NA	4,850
*J 4	022092	21' bsg below #J 3	NA	3,140
J 5	022092	20' bsg SE cnr	NA	13
J 6	022092	20' bsg W of #J 5	NA	45
*J 7	022092	20' bsg S & E of slab	NA	211
* 8	022192	22' bsg SW cnr	NA	387
9	022192	22' bsg N end	NA	53.4
10	021992	27' bsg NE cnr N of #1	NA	94.2
11	022692	18' bsg East wall	NA	35.4
* 12	040692	10' bsg W of sump	NA	1,071
* 13	040692	14' bsg E of sump	NA	3,201
* 14	040692	24' bsg S of #8	NA	6,830
* 14D	040692	#14 duplicate	NA	8,571
* 15	040692	24' bsg S of AGT	NA	124.8
* 15D	040692	#15 duplicate	NA	138.3
* 16	040692	24' bsg E of #13	NA	322
* 17	040792	25' bsg S of #10	NA	132.7
* 18	040792	28' bsg SE of AGT	NA	3,490
* 19	040792	28' bsg below S end AGT	NA	3,050
20	040792	28' bsg W of #17	NA	7.5
21	040792	27' bsg S wall	NA	79.1
22	040792	17' bsg SE cnr	NA	92.8
23	040792	24' bsg SW cnr	NA	87.9
* 24	040792	26' bsg SE of sump	NA	1,147

TABLE 3 (Continued) FIELD HEADSPACE OVM RESULTS ACID STORAGE TANK AND LOADING AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO DECEMBER 1991 - APRIL 1992

Notes: 1) bsg - approximate depth below original surface grade.

- 2) OVM 100 ppm action level per NMOCD Guidelines, 10/29/91.
- 3) * Samples taken within the removed contamination plume envelope. Efforts were made to continue the excavation beyond these location.
- 4) Samples E# collected by Mr. Mike Eason, samples J# collected by Mr. Jack Dewey, remaining samples # collected by Mr. Myke Lane.

Refer to the Sample Detail (Sheet 3) for the approximate sample locations.

TABLE 4

LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY/MARCH 1992

SOIL SAMPLES

SAMPLE		EPA			ETHYL-	TOTAL	
<u>ID</u>	<u>MATRIX</u>	<u>METHOD</u>	<u>BENZENE</u>	TOLUENE	<u>BENZENE</u>	<u>XYLENE</u>	<u> </u>
			(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(mg/kg)
*E1	SOIL	418.1	_	_	-	-	19.5
*E2	SOIL	418.1	-	-	-	-	3,552
*E3	SOIL	418.1	-	-	-	-	703
3	SOIL	418.1	-	-	-	-	152
5	SOIL	418.1	-	-	-	-	194
6	SOIL	418.1	-	-	-	-	26.2
6D	SOIL	418.1	-	-	-	-	24.2
11	SOIL	418.1	-	-	-	-	<10.0
11D	SOIL	418.1	-	-	-	-	<10.0
*18	SOIL	418.1		-	-	-	25,400
*19	SOIL	418.1	-	-	-	_	3,580
20	SOIL	418.1	-	-	-	-	ND

Notes:

1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

- Total Xylene summation of m,p-Xylene and o-Xylene.
- 3) @ Laboratory indicated traces of both m,p-Xylene and o-Xylene at detection limit of 50 ug/kg, the net total of which approximated 50 ug/kg.
- 4) * Samples taken within the removed contamination plume envelope.

Refer to the Sampling Detail (Sheet 3) for the approximate sample locations.

TABLE 5LABORATORY ANALYTICAL RESULTSSMITH INTERNATIONAL INC.2198 EAST BLOOMFIELD HIGHWAYFARMINGTON, SAN JUAN COUNTY, NEW MEXICOFEBRUARY, 1992

SAMPL ID	E <u>MATRIX</u>	EPA <u>METHOD</u>	<u>BENZENE</u> (ug/L)	<u>TOLUENE</u> (ug/L)	ETHYL - <u>BENZENE</u> (ug/L)	TOTAL <u>XYLENE</u> (ug/L)	TPH (mg/L)
		MONIJ	OR WELL	GROUNDWATI	ER SAMPLE:	3	
MW1 MW1 MW2 MW2 MW3 MW3	WATER WATER WATER WATER WATER WATER	8020 418.1 8020 418.1 8020 418.1	ND - ND - ND -	ND <1.0 - <1.0	ND <1.0 <1.0	ND <1.0 <1.0	<10 14.5 ND

Notes: 1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

- Total Xylene summation of m,p-Xylene and o-Xylene.
- 3) + Laboratory indicated traces of both m,p-Xylene and o-Xylene near the detection limit of 1.0 ug/kg, the net total of which approximated 3.2 ug/kg.
- 4) * Samples taken within the removed contamination plume envelope.

Refer to the Site Plan (Sheet 1) for the monitor well locations.

CONCLUSIONS

The current maximum allowable concentrations for groundwater contamination as outlined by the State of New Mexico Water Quality Control Commission (August 18, 1991) are summarized reported in Table 6. The maximum allowable concentrations for soil as outlined in the New Mexico Oil Conservation Division, Guidelines for Surface Impoundment Closure (October 29, 1991) are also summarized in Table 6. The analyses for hydrocarbon contamination of the soil and groundwater in the immediate area of the acid UST system at the Smith International Farmington facility showed; the soil to be above the current regulated limits, and groundwater to be at or below the current regulated limits.

TABLE 6 HYDROCARBON SOIL & GROUNDWATER CONTAMINATION STANDARDS STATE OF NEW MEXICO

Parameter	Maximum X <u>soil (mg/kg)</u>	Allowable Limits groundwater (ug/l)
Benzene	10	10
Toluene	-	750
Ethylbenzene		750
Total Xylene	-	620
Total Aromatics	50	-
Total Petroleum		
Hydrocarbons	100	-

Notes: 1) ug/kg or ug/l - equivalent to parts per billion.

2) mg/kg - equivalent to parts per million.

Based on the site assessment conducted during the closure and abatement of the acid UST and spill catchment system, it appears that the hydrocarbon contamination was limited to the area immediately around the system and had limited lateral extent.

The highly contaminated soils have been excavated and removed for remediation in all areas practically feasible. Removal of any remaining highly contaminated soils will required extensive engineering to stabilize the foundation of the AGT system and/or removal and reconstruction of the AGT system. Soils from the final excavation sidewalls and bottom tested below the action level of 100 ppm for volatile organic vapors and tested below action levels to TPH.

Preliminary analysis of the groundwater samples, taken from the monitor wells, indicates that the soil hydrocarbon plume may have had limited impact to the groundwater at the site. There are currently no action limits for total petroleum hydrocarbon in groundwater in the State of New Mexico.

As per NMOCD's April 30, 1992 request (Refer to Appendix B), two additional monitor wells will be installed down gradient of the acid UST system to assess the site groundwater conditions. The findings from these monitor wells will be prepared as a supplemental report under separate cover, upon completion of the well construction, development, sampling and testing. Due to the nature of the site soils, these wells will be drilled using a rotary drill rig with water based drilling fluid.

If the findings from the additional monitor wells indicate no impact to the site groundwater, we will request closure of this acid UST system file, considering the findings of this report.

LIMITATIONS AND CLOSURE

The conclusions given in this report are based on a visual observation of the site, subsurface soil conditions encountered during the closure operations, and analysis of soil and water samples collected during site assessment. This report does not reflect subsurface variations which may exist between sampling points.

The scope of Envirotech's services was limited to site remediation and the assessment of soil and/or groundwater contamination with respect to hydrocarbon contamination associated with hydrocarbon products at typical oil field service and production facilities. All work has been performed in accordance with generally accepted professional practices in construction/excavation, geotechnical/environmental/petroleum engineering and hydrogeology.

This report has been prepared for the exclusive use of Smith International as it pertains to their property located at 2198 East Bloomfield Highway, Farmington, New Mexico. I hereby certify that the work performed by Envirotech as described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully Submitted, ENVIROTECH INC.

UZ

Michael K. Lane, P.E. Geological Engineer Reviewed By:

Jornia J. your $\mathbf{\gamma}$ Morris D. Young President

APPENDICES

1410ACD.RPT











South End & West Side



North End & East Side 10,000 Gallon Fiberglass Tank

Acid UST & Sump Closure Report Smith International Inc. 2198 East Bloomfield Highway SE/4, SW/4, Section 14, TWP 29N, RGE 13W Farmington, San Juan County, New Mexico Envirotech Inc. May 1992 Project: 91410



North End of Acid UST Excavation



South End of Acid UST Excavation

Acid UST & Sump Closure Report Smith International Inc. 2198 East Bloomfield Highway SE/4, SW/4, Section 14, TWP 29N, RGE 13W Farmington, San Juan County, New Mexico Envirotech Inc. May 1992 Project: 91410



Final Excavation, South of Above Ground Acid Storage Tank.

Acid UST & Sump Closure Report Smith International Inc. 2198 East Bloomfield Highway SE/4, SW/4, Section 14, TWP 29N, RGE 13W Farmington, San Juan County, New Mexico Envirotech Inc. May 1992 Project: 91410
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STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION AZTEC DISTRICT OFFICE

BRUCE KING GOVERNOR ANITA LOCKWOOD CABINET SECRETARY 1000 RIO BRAZOS ROAD AZTEC, NEW MEXICO 87410 (505) 334-6178

April 30, 1992

Envirotech Inc. Attn. Mike Lane, Project Engineer 5796 U. S. Highway 64-3014 Farmington, NM 87401

RE: Monitor Wells for Smith Energy Services Remediation Site Farmington, New Mexico Funded by Smith International.

Dear Mr. Lane:

A minimum of two additional groundwater monitor wells must be installed at the Smith Energy Services Remediation Site. Contamination did reach the water table at the Wash Bay Solids Disposal Area and UST Acid Disposal Facility. Each of these sources of contamination is to have a monitor well installed S-SW of the point source in approximately the down gradient direction or the direction of flow towards the San Juan River. Monitor wells are to penetrate the water table five to ten feet and utilize a design similar to existing wells. The new wells are to be located at optimum locations to integrate with the existing monitor wells while detecting potential contamination. Additional wells may be needed if groundwater contamination is indicated by samples from the new wells.

I lease feel free to contact this office for any clarification.

Yours truly,

Z. Tour

Denny G. Foust Environmental Geologist

DGF\sh

Xc: Smith Energy Services OCD Environmental Bureau Environmental File DGF File





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Report Date: 1-10-92 Sample ID: Ex. #1 Date Sampled: 12-24-91 Laboratory Number: 122491410-1 Date Received: 12-24-91 Analysis Requested: 418.1 Date Extracted:12-30-91 Sample Matrix: Soil Date Analyzed: 12-30-91 Condition: Received on Ice Preservative: Cool

		Det.
	Concentration	Limit
Parameter	(mg/Kg)	(mg/Kg)
Total Recoverable		
Petroleum Hydrocarbons	19500.0	10.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the stated detection limit.

Analyst





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank NE Side @ 12' Laboratory Number: 011392410-1 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1

Report Date: 1-14-92 Date Sampled: 1-13-92 Date Received: 1-13-92 Date Extracted: 1-13-92 Date Analyzed: 1-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable	2552	10.0
Fectoreum nyurocarbons	3354	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank SE Side @ 12' Laboratory Number: 011392410-2 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1

Report Date: 1-14-92 Date Sampled: 1-13-92 Date Received: 1-13-92 Date Extracted: 1-13-92 Date Analyzed: 1-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	703	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

17.2





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank Sample #3 Laboratory Number:02192410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-4-92 Date Sampled: 2-19-92 Date Received: 2-19-92 Date Extracted: 2-21-92 Date Analyzed: 2-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	152	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank Sample #5 Laboratory Number:02192410-2 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-4-92 Date Sampled: 2-19-92 Date Received: 2-19-92 Date Extracted: 2-21-92 Date Analyzed: 2-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	194	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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Review





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank Sample #6 Laboratory Number:02192410-3 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-4-92 Date Sampled: 2-19-92 Date Received: 2-19-92 Date Extracted: 2-21-92 Date Analyzed: 2-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
~~~~		
Total Recoverable		
Petroleum Hydrocarbons	26.2	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Analyst





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalProject #: 91410Sample ID: Acid Tank Sample #6Report Date: 3-4-92Laboratory Number:02192410-3 DuplicateDate Sampled: 2-19-92Sample Matrix: SoilDate Received: 2-19-92Temperature: Received on IceDate Extracted: 2-21-92Analysis Method: 418.1Date Analyzed: 2-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
	خت مت کر ہے جہ جہ بند بند کا مت مت خ	
Total Recoverable Petroleum Hydrocarbons	24.2	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

Analyst





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank East Side @ 20' Laboratory Number:022692410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

**Project #:** 91410 Report Date: 3-4-92 Date Sampled: 2-26-92 Date Received: 2-26-92 Date Extracted: 3-4-92 Date Analyzed: 3-4-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	<10	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith InternationalProject #: 91410Sample ID: Acid Tank East Side @ 20'Report Date: 3-4-92Laboratory Number: 022692410-1 DuplicateDate Sampled: 2-26-92Sample Matrix: SoilDate Received: 2-26-92Temperature: Received on IceDate Extracted: 3-4-92Analysis Method: 418.1Date Analyzed: 3-4-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
******		
Total Recoverable		
Petroleum Hydrocarbons	<10	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

**Client:** Smith International Sample ID: Acid Tank East Side @ 16' Laboratory Number:022692410-2 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

**Project #:** 91410 Report Date: 3-4-92 Date Sampled: 2-26-92 Date Received: 2-26-92 Date Extracted: 3-4-92 Date Analyzed: 3-4-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	13.1	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978. Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank #18 Laboratory Number: 040792410-1 Sample Matrix: Sand Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 4-28-92 Date Sampled: 4-7-92 Date Received: 4-7-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	25400	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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# TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

**Client:** Smith International Sample ID: Acid Tank #19 Laboratory Number: 040792410-2 Sample Matrix: Sand Temperature: Received on Ice Analysis Method: 418.1

**Project #:** 91410 Report Date: 4-28-92 Date Sampled: 4-7-92 Date Received: 4-7-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
al Recoverable		

Total Recoverable Petroleum Hydrocarbons 3580

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank #20 Laboratory Number: 040792410-3 Sample Matrix: Sand Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 4-28-92 Date Sampled: 4-7-92 Date Received: 4-7-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Acid Tank Laboratory Number: 040792410-4 Sample Matrix: Sand Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 4-28-92 Date Sampled: 4-7-92 Date Received: 4-7-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

3490

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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# ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1

Report Date: 1-4-92 Date Extracted: 12-30-91 Date Analyzed: 12-30-91

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### ** QUALITY ASSURANCE REPORT MATRIX SPIKE/DUPLICATE - TOTAL RECOVERABLE PETROLEUM Hydrocarbons

Laboratory Number: 123091410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 1-10-91 Date Extracted: 12-30-92 Date Analyzed: 12-30-92

	Spike	Sample	Spiked Sample	
	Added	Result	Result	Percent
Analyte	(mg/kg)	(mg/kg)	(mg/kg)	Recovery
TPH	847	42.7	728	81

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:



Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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# ** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 043091410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 1-10-91 Date Extracted: 12-30-91 Date Analyzed: 12-30-91

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
	*******	
Total Recoverable		
Petroleum Hydrocarbons	40.3	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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# ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1

Report Date: 1-14-92 Date Extracted: 1-13-92 Date Analyzed: 1-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
tal Decemphic		

Total Recoverable Petroleum Hydrocarbons

ND

0.1

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.





## ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-4-92 Date Extracted: 2-21-92 Date Analyzed: 2-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		

Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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# ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-4-92 Date Extracted: 3-4-92 Date Analyzed: 3-4-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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### **** QUALITY ASSURANCE REPORT** METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

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Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1

Report Date: 4-28-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

Concentration Detection Limit Analyte (mg/kg) (mg/kg) _____ ______ _____

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### **** QUALITY ASSURANCE REPORT** SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 0134 Sample Matrix: Sand Analysis Method: 418.1 Report Date: 4-29-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: Sample 0132 was None Detected as well.

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### ** QUALITY ASSURANCE REPORT MATRIX SPIKE/DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 040792410-4 Sample Matrix: Sand Analysis Method: 418.1 Report Date: 4-29-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92 I.

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Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery
ТРН	331	464	ND	128

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte

Acceptance Range %

TPH

48 - 143

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:





Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by . Method 3550, SW-846, USEPA, 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Monitor Well #1	Date Reported: 2-17-92
Lab ID#: 021492410-5	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	ND	1.0	ug/l
m,p-Xylene	ND	1.0	ug/l
o-Xylene	ND	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

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Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Monitor Well #2	Date Reported: 2-17-92
Lab ID#: 021492410-4	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
•	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/l
Toluene	<1.0	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	<1.0	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference: Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	<b>Project #:</b> 91410
Sample ID: Monitor Well #3	Date Reported: 2-17-92
Lab ID#: 021492410-6	Date Sampled: 2-14-92
Matrix: Water	Date Received: 2-14-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 2-17-92
-	Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
#= == == == == == == .			
Benzene	ND	1.0	ug/l
Toluene	<1.0	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	<1.0	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-346, Vol. IB, November 1990.

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****** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank Matrix: Water Preservative: HgCl,

Date Reported: 2-17-92 Date Extracted: Date Analyzed: 2-17-92 Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/k
Toluene	ND	1.0	ug/k
Ethylbenzene	ND	1.0	ug/k
m,p-Xylene	ND	1.0	ug/k
o-Xylene	ND	1.0	ug/k

ND - Analyte not detected at given detection level.

Comments:

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Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

h. J.T. Analyst



** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Laboratory Number:021492410-6Date Reported:2-17-92Sample Matrix:WaterDate Sampled:2-14-92Preservative:HgCl2Date Extracted:Sample Condition:Received on iceDate Analyzed:2-17-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	10	ND	9.8	98
Toulene	10	<1.0	9.1	91
Ethylbenzene	10	<1.0	9.3	93

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte	Acceptance Range %	
	Benzene Toluene Ethylbenzene	$39 - 150 \\ 46 - 148 \\ 32 - 160$

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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#### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #1 Laboratory Number: 030592410-1 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
		***
Total Recoverable		
Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #2 Laboratory Number: 030592410-2 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	14.5	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Monitor Well #3 Laboratory Number: 030592410-3 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-13-92 Date Sampled: 3-5-92 Date Received: 3-5-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration	Detection Limit
Pulary Ce		

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.





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### ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

	(	
Analyte	(ma/ka)	(ma/ka)
	Concentration	Detection Limit

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: . T.A. ". t . Analyst





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# **** QUALITY ASSURANCE REPORT** MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 030592410-3 Report Date: 3-13-92 Sample Matrix: Water Analysis Method: 418.1

Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Spike Added (ug/kg)	Sample Result (ug/kg)	Spiked Sample Result (ug/kg)	Percent Recovery
TPH	100	ND	104	104

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte

Acceptance Range %

TPH

48 - 143

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:
Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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	Client/Project Name	SHITH ENTER	Sampler: (Signature)	Children Children	Sample No./ Identification	TPH- MW#2	1. H-HW#1		217H- MW#3	8020-HW#Z	2020-11W#1	1020-HW#3	418.1- 540#30				Iquished by: (Signature)	and the	Relinquished by: (Signature)		Relinquished by: (Signature)		

Inter Mountain Laboratories, Inc.

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2506 W. Main Street Farmington, New Mexico 87401

CLIENT: ID:	Envirotech 1000	DATE REPORTED:	03/02/92
SITE: LAB NO:	MW#1 F8163	DATE RECEIVED: DATE COLLECTED:	02/14/92 02/14/92

Lab Conductivity, umhos/cm @ 25C Lab Resistivity, ohm-m Total Dissolved Solids (180C), mg/L.	675 14.8 420	*
Total Alkalinity as CaCO3, mg/L.	442 237	
Total Hardness as CaCO3, mg/L Sodium Adsorption Ratio	315 0.80	
mg/L Bicarbonate as HC03	meq/L 4.74 0 0.44 2.76 5.11 1.18 0.06 1.41 7.76 7.94 1.13	90

* Reanalyzed, no significant change.

Mary Stepp Lab Director

Choo 20

Wanda Orso Water Lab Supervisor

Inter Mountain Laboratories, Inc.

2506 W. Main Street Farmington, New Mexico 87401

CLIENT:	Envirotech	DATE REPORTE	D:	03/02/92
SITE: LAB NO:	MW#2 F8164	DATE RECEIVE DATE COLLECTE	D: D:	02/14/92 02/14/92
	Lab pH (s.u.) Lab Conductivity, umhos/cm Lab Pasistivity, ohm-m	e 25C	7.06	

Total Dissolved Solids (180C),	mg/L.	454	*
Total Dissolved Solids (calc),	mq/L.	524	
Total Alkalinity as CaCO3, mg/I		279	
Total Hardness as CaC03, mg/L.		378	
Sodium Adsorption Ratio		0.73	
	/-		
	mg/L	med/r	
Bicarbonate as HC03	340	5.58	
Carbonate as CO3	0	0	
Chloride	35.0	0.99	
Sulfate	133	2.78	
Calcium	139	6.93	
Magnesium	7 60	0.63	
	7.09	0.05	
Potassium	9.35	0.24	
Sodium	32.5	1.41	
Major Cations		9.21	
Major Anions		9.35	
Cation/Anion Difference		0 72	9
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* Reanalyzed, no significant change.

Lab Director

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C GEO Orso

Wanda Orso Water Lab Supervisor

Inter-Mountain Laboratories, Inc.

Envirotech

1045

CLIENT:

ID:

2506 W. Main Street Farmington, New Mexico 87401

Farmington, New Mexi

03/02/92

MW#3 SITE: 02/14/92 DATE RECEIVED: F8165 02/14/92 LAB NO: DATE COLLECTED: 7.38 Lab pH (s.u.).... Lab Conductivity, umhos/cm @ 25C.... Lab Resistivity, ohm-m. Total Dissolved Solids (180C), mg/L. Total Dissolved Solids (calc), mg/L. 864 11.6 - 546 548 Total Alkalinity as CaCO3, mg/L.... 311 Total Hardness as CaC03, mg/L..... 398 Sodium Adsorption Ratio..... 0.72 mq/L meq/L Bicarbonate as HC03..... 379 6.21 Carbonate as C03..... 0 0 Chloride..... 0.96 34.1 Sulfate..... 136 2.83 Calcium....., 133 6.65 Magnesium..... 16.0 1.32 Potassium..... 8.98 0.23 Sodium..... 32.9 1.43 Major Cations..... 9.63 Major Anions..... 10.0 Cation/Anion Difference..... 1.92 %

Lab Director

DATE REPORTED:

Wanda Orso Water Lab Supervisor

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UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

January 24, 1992

Mr. Roger Anderson Environmental Engineer State of New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87504

VIROTECH INC.

RE: Contaminated Soil from Smith International, Inc. 2198 Bloomfield Highway Farmington, New Mexico Project No: 91410

Dear Mr. Anderson:

Enclosed are the laboratory results of chemical analyses for soil samples, collected December 20, 1991, from the referenced Smith International facility in Farmington, New Mexico. The samples are of the contaminated material around the acid tank and acid disposal pit areas, as discussed with you earlier by Mr. Morris Young of Envirotech.

The results for all parameters are non-detectable or below RCRA limits.

Therefore, Envirotech requests permission to receive this soil at Envirotech's Soil Remediation Facility at Hilltop, New Mexico.

Respectfully submitted, ENVIROTECH, Inc.

Michael K. Lane, P.E. Geological Engineer

Enclosures

C: Mr. Maurice Sticker, Smith International, Inc. Mr. Chuck Hagen

MKL/mkl 410TCLP.LTR

Inter Mountain Laboratories, Inc.

## RECEIVED JAN 3 1 1992

2506 West Main Street Farmington, New Mexico 87401 Tel. (505) 326-4737

91410

Smith INTERNATIO

#### Case Narrative

On December 20, 1991 a sample set consisting of one sample was received by Inter-Mountain Laboratories - Farmington, NM. Enclosed is a copy of the chain of custody indicating the requested analysis. The normal turn around time was requested for this sample and is reflected in the analytical price.

It is the policy of this laboratory to employ, whenever possible, analytical methods which have been approved by regulatory agencies. The methods which we use are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

Quality Assurance reports have been included in this package. These reports can be identified by the title of the report.

Please feel free to call if you have any questions.

Tony Tristano

Tony[']Tristano Senior Analytical Chemist

#### CASE NARRATIVE

On December 21, 1991, one soil sample was received for analysis at Inter-Mountain Labs, Bozeman, Montana. The chain of custody form requested analysis for Toxic Characteristic Leaching Procedure Parameters. Client name/Project name was listed as Envirotech / Smith Energy.

No target analytes were detected .

The Toxic Characteristic Leaching Procedure methodology used is outlined in the Federal Register, 40 CFR 261, Vol 55, No 126, June 29, 1990. Results are reported in mass per unit volume of leachate (mg/L) and calculated from matrix spike recoveries as prescribed by the TC Rule.

Limits of detection for each instrument/analysis are determined by sample matrix effects, instrument performance under standard conditions, and dilution requirements to maintain chromatography output within calibration ranges.

Wvnn Sudtelate

IML-Bozeman

Inter-Mountain Laboratories, Inc.

Borsman, Montana 59715

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL VOLATILE COMPOUNDS

Client: Sample ID: Project ID: Laboratory ID: Sample Matrix: Preservation: Condition: ENVIROTECH Waste Pit Comp. Smith Energy B914207 Soil Cool Intact

Date Reported:	01/24/92
Date Sampled:	12/20/91
Date Received:	12/21/91
Date Extracted TCLP:	01/03/92
Date Analyzed:	01/08/92

	Analytical	Detection	
Parameter	Result	Limit	Units
Vinyl Chloride	ND	0.025	nıg/L
1.1-Dichloroethene	· · ND	0.025	mg/L
Chloroform	ND	0.025	mg/L
1,2-Dichloroethane	ND	0.025	mg/L
Carbon Tetrachloride	ND	0.025	mg/L
Trichloroethene	ND	0.025	mg/L
Benzene	ND	0.025	mg/L
Tetrachloroethene	ND	0.025	mg/L
Chlorobenzene	ND	0.025	mg/L
2-Butanone	ND	0.125	mg/L

ND - Compound not detected at stated Detection Limit.

J - Meets identification criteria, below Detection Limit.

B - Compound detected in Method Blank.

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Inter-Mountain Laboratories, Inc.

910 Technology Boulevard, Suite 8 Bozemen, Montens 59715

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE . TENTATIVELY IDENTIFIED COMPOUNDS

Client: Sample ID: Laboratory ID: Sample Matrix: ENVIROTECH Waste Pit Comp. B914207 Soil

Date Reported: Date Sampled: Date Analyzed:

Concentration

01/24/92 12/20/91 01/08/92

# Tentative

No additional compounds found at reportable levels.

Unknown concentrations calculated assuming a Relative Response Factor = 1.

Retention

lime (min)

## QUALITY CONTROL:

Surrogate Recovery	%	
1,2-Dichloroethane-d4	98	
Toluene-d8	96	
Bromofluorobenzene	93	

#### References:

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Third Edition, November 1986.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

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Inter-Mountain Laboratories, Inc.

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL SEMI-VOLATILE COMPOUNDS

Client:	ENVIROTECH			
Sample ID:	Waste Pit Comp.	Report Date:		01/23/92
Project ID:	Smith Energy	Date Sampled:		12/20/91
Laboratory ID:	B914207	Date Received:		12/21/91
_ Sample Matrix:	Soil	Date Extracted-TCLP:	**	01/17/92
Preservation:	Cool	Date Analyzed:		01/21/92
Condition:	Intact	Date Extracted-BNA:	**	01/20/92

** - Sample was re-extracted due to low surrogate recoveries. First extrations were TCLP=1/3/92 and BNA=1/10/92

	Analytical	Detection	
Parameter	Result	Limin	Units
1,4-Dichlorobenzene	ND	0.015	mg/L
Hexachloroethane	ND	0.015	mg/L
Nitrobenzene	ND	0.015	mg/L
Hexachloro-1,3-butadiene	ND	0.015	mg/L
2,4,6-Trichlorophenol	ND	0.015	mg/L
2,4,5-Trichlorophenol	ND	0.015	mg/L
2,4-Dinitrotoluene	. ND	0.015	mg/L
Hexachlorobenzene	ND	0.015	. mg/L
Pentachlorophenol	ND	0.015	mg/L
o-Cresol	ND	0.015	mg/L
m & p-Cresol	ND	0.015	mg/L
Pyridine	ND	0.15	mg/L

ND - Compound not detected at stated Detection Limit

J - Meets identification criteria, below Detection Limit

B - Compound detected in Method Blank.

		910 Technology Bouleverd, Suite B Bozemen, Montene 59715
TOXICITY CHARACTE TENTATIVELY	RISTIC LEACHING PROCEDURI	Ε
VVIROTECH aste Pit Comp. 914207 bil	Date Reported: Date Sampled: Date Analyzed:	01/23/92 12/20/91 01/21/92
Ratention Lime(min;):	Concentra	llon Units
13.71 21.33 26.09 1 28.12	0.03 0.03 0.06 0.02	mg/L mg/L mg/L mg/L
	TOXICITY CHARACTE TENTATIVELY	TOXICITY CHARACTERISTIC LEACHING PROCEDURI   TENTATIVELY IDENTIFIED COMPOUNDS   NVIROTECH Date Reported:   'aste Pit Comp. Date Sampled:   914207 Date Sampled:   oil Date Analyzed:   Retention   Flime (min.) Concentra   13.71 0.03   n 21.33 0.03   26.09 0.06   n 28.12 0.02

## QUALITY CONTROL:

Surrogate Recoveries	%
2-Fiuorophenol	52
Phenol-d6	43
Nitrobenzene-d5	92
2-Fluorobiphenyl	82
2.4.6-Tribromophenol	68
Terphenyl-d14	79

#### References:

Method 8270, Gas Chromatography/Mass Spectrometry for Semi-Volatile Organics, Test Methods for Evaluating Solid Wastes, United States Environmental Protection Agency, December 1987.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

Reviewed

Analyst

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inte	L-ITIOnurani	Laboratories, inc.

910 Technology Boulevard, Sinte B Bozemen, Montane 59715

## **METHOD 8150** CHLORINATED HERBICIDES TCLP PARAMETERS

Client:	ENVIROTECH .		
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	B914207	Date Received:	12/21/91
Sample Matrix:	Soil	Date Extracted:	01/10/92
Preservative:	Cool	Date Analyzed:	01/23/92
Condition:	Intact	•	

Parameter		Analytical 2 Result		Delection	Unite
2,4-D 2,4,5-TP	1. :	ND ND	•	0.001 0.001	mg/L mg/L

#### ND - Parameter Not Detected at Stated Detection Limits

**Reference:** 

Method 8150, Chlorinated Herbicides, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, Vol. IB, November, 1886.

Analyst

Reviewed

# Inter-Mountain Laboratories, Inc.

910 Technology Boulevard, Suite 8 Bozamen, Montane 55715

### EPA METHOD 8080 ORGANOCHLORINE PESTICIDES TCLP PARAMETERS

Client:	ENVIROTECH		
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	B914207	Date Received:	12/21/91
Sample Matrix:	Soil	Date Extracted:	01/10/92
Preservative:	Cool	Date Analyzed:	01/15/92
Condition:	Intact		

Parameter	Analytical Result	noliseled	Unite
Lindono (comma BHC)	ND	0.006	ma/L

	110	0.000	
Endrin	ND	0.006	mg/L
Methoxychlor	ND	. 0.02	mg/L
Heptachlor	ND	0.006	mg/L
Toxaphene	ND	0.5	mg/L
Chlordane	ND	0.03	mg/L

ND - Parameter Not Detected at Stated Detection Limits

References:

Analyst

Method 8080, Organochlorine Pesticides and PCB's, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency SW-846, Vol. IB September 1986.

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Reviewed

Inter-Mountain Laboratories, Inc.

1633 Terre Avenue Sheridan, Wyoming 82801

#### TOXICITY CHARACTERISTIC LEACHING PROCEDURE TRACE METAL CONCENTRATIONS

Client: Sample Id: Lab Id: Matrix: Preservation:	Envirotech 7788 B914207/4659 Soil COOL / INTACT		Repo Date Date TCLP Date	rt Date: Sampled: Received: Extract: Analyzed:	01/23/92 12/20/91 12/21/91 01/04/92 01/21/91
Parameter:	(units)	Analytic Result	al		Regulatory Level
Arsenic	mg/L	<0.1	· · ·	•	5.0
Barium	mg/L	3.5	<b>B</b> -		100
Cadmium	mg/L	0.008	•		1.0
Chromium	mg/L	<0.01			5.0
Lead	mg/L	<0.2			5.0
Mercury	mg/L	<0.001			0.2
Selenium	mg/L	<0.1			1.0
Silver	mg/L	<0.01		· .	1.0

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, EPA Vol 55, No. 126 June 29, 1990 Method 6010A: Inductively Coupled Plasma-Atomic Emission Spectroscopy, SW-846, Nov. 1990. Method 7470A: Mercury in Liquid Waste (Manual Cold-Vapor Technique), SW-846, Nov. 1990.

Reviewed by: <u>CB</u>.

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	ES / PARAMETERS	Aemi									12/2/ Fa				☐ 3304 Longmire Drive College Station, TX 77845 Telephone (409) 774-4999
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CUSTODY REC	tion ENERG 9	Ipe No.	Matrix			12/2/2/				Time Received by	· A.S. 11: 354	Time Received by	Time Received by	in Laboratories, I	Image: Contrology Bivd. Suite B F   910 Technology Bivd. Suite B F   Bozeman, Montana 59715 C   Telephone (406) 586-8450 T
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	ENUIROTECH TERNATONAL	Kours	Date Time	5E:11 12/02/21 00						(e	Hours Inin		(@		Telephone (307) 682-6945
Inter-Mourtain Laboratories, Inc.	Client/Project Name	Sampler: (Signature)	Sample No./ Identification	WASTE PIT C						Relinquished by: (Signatur		Retinguished by: (Signatur	Relinquished by: (Signatur		1633 Terra Avenue 1633 Terra Avenue Sheridan, Wyoming 82801 Telephone (307) 672-8945

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## ENVIROTECH INC. GW-10/

## Acid UST & Sump Closure Supplemental Réport Smith International, Inc. 2198 East Bloomfield Highway Farmington, New Mexico

### RECEIVED

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OIL CONSERVATION DIV. SANTA FE

July 1992

Project #91410

5796 U.S. HIGHWAY 64 - 3014 • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 632-0615

## **ENVIROTECH INC.**

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

July 8, 1992

Mr. Maurice Sticker Environmental Affairs Coordinator Smith International, Inc. P.O. Box 060068 Houston, Texas 77205-0068

RE: Supplement to the Acid UST & Sump Closure Report Smith International Inc. 2198 East Bloomfield Highway SE/4, SW/4, Sec. 14, T29N, R13W, NMPM San Juan County, Farmington, NM Project No. 91410

Dear Mr. Sticker:

Envirotech, Inc. has been retained by Smith International, Inc., to complete the abatement of additional soil contamination noted in the area of a small catchment north of the previous acid underground storage tank system (UST) and sump at their above referenced property. This site is currently the staging yard for Smith Energy Services. This letter is a supplement to the closure summarized in the "Acid UST and Sump Closure Report, Acid Storage Tank and Loading Area", prepared by Envirotech Inc. in May 1992, and submitted to the New Mexico Oil Conservation Division (NMOCD).

#### INTRODUCTION

From December 1991 to April 1992, Envirotech Inc. removed one UST and the associated system for closure. This system was used for the storage of acid used for oil field purposes. Soil contamination associated with the UST system was found and a spill incident reported to the NMOCD. The remedial action consisted of excavation and removal of for treatment of the highly contaminated soil around the UST and sump located south of the UST and piped to the UST. The excavation extended to a depth of 28 feet (approximate depth of groundwater) with a trachoe excavator. Approximately 2,000 cubic yards of soil were removed for treatment. SMITH: SUPPLEMENT TO ACID CLOSURE ENVIROTECH, INC. July 8, 1992 Page 2 Project NO: 91410

Based on the site assessment conducted during the closure and abatement operations, the hydrocarbon contamination was limited to the area immediately around the system. Also, the highly contaminated soils had been excavated and removed for remediation in all areas practically feasible.

During installation and piping for a replacement acid storage system, additional soil contamination was noted in the area of a catchment located north and west of the UST. Refer to the attached site plan.

#### ABATEMENT & FIELD ASSESSMENT

The north catchment was demolished, piping removed, and contaminated soils in the area removed for treatment in a similar manner as during the closure. A limited field assessment was performed and confirmation soil samples collected to verify abatement. As no new catchment was to be constructed the excavation was backfilled with clean imported material.

The catchment was constructed of concrete and approximately two foot by two foot by three foot deep. Drainage from the spill containment for the new acid product above ground storage tank (AGT) collected in the northeast corner of the containment. This drainage was piped into the catchment. Subsequently, the catchment was piped to the previous acid UST with 2" PVC piping (believed to be schedule 40).

Hydrocarbon contaminated soil was encountered in the immediate area beneath the catchment. This contamination is suspected to have been from failure of the catchment's concrete bottom and poor piping connections.

The contamination was relatively limited in extent and required relatively little excavation for the area to be abated. The final excavation was approximately nine foot (north-south) by fifteen foot (east-west) by eight foot deep. Approximately 40 cubic yards of contaminated soil were removed for treatment at Envirotech's NMOCD approved soil remediation facility located at Hilltop, New Mexico. As the origin of contamination was believed to be the same as with the acid system, Mr. Denny Foust of the NMOCD authorized Envirotech to recieve these soils. Copies of the Bill of Ladings, manifesting the contaminated soils, are attached. SMITH: SUPPLEMENT TO ACID CLOSURE ENVIROTECH, INC. July 8, 1992 Page 3 Project NO: 91410

Attached is a photograph of the final excavation prior to backfill and closure.

Upon completion of the excavation, soil samples were taken from the excavation bottom and sidewalls following US EPA SW-846 protocol. The soil was field tested for volatile hydrocarbons following the Headspace Field Method (Guidelines For Surface Impoundment Closure, New Mexico Oil Conservation Division, Part 1 (IA.2a) October 29, 1991) using a photoionization detector (PID), Model 580-B Organic Vapor Meter (OVM) manufactured by Thermo Environmental Instrumental.

The results of the field headspace analyses are summarized in Table 1.

#### TABLE 1

#### FIELD HEADSPACE OVM RESULTS SUPPLEMENTAL TO ACID UST & SUMP CLOSURE REPORT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

#### MAY 1992

Sample	<u>Date/Lab #</u>	Sample Location	Time	OVM (mqq)
1	060992	8' bsg South side	15:46	21.2
2	060992	6.5' bsg NW side	15:47	ND
3	060992	7.5' bsg East end	15:48	ND
4	060992	5' bsg center	15:49	ND

Notes: 1) bsg - approximate depth below original : surface grade.

2) OVM - 100 ppm action level per NMOCD Guidelines, 10/29/91.

Refer to the Site Plan for the approximate sample locations.

Additionally, a confirmation soil sample was collected from the excavation. This sample was submitted for laboratory analyzed for TPH per USEPA Method 418.1 (modified soil). The laboratory result for verification sample indicated a residual TPH concentration in the soil of 28.6 ppm.

Attached are copies of the laboratory reports and quality control.

#### SMITH: SUPPLEMENT TO ACID CLOSURE ENVIROTECH, INC. July 8, 1992

Page 4 Project NO: 91410

#### CONCLUSIONS

The maximum allowable concentrations of TPH and aromatic hydrocarbons (as determined by field OVM) for soil [New Mexico Oil Conservation Division, Guidelines for Surface Impoundment Closure (October 29, 1991)] are 100 ppm (and/or mg/kg). The analyses for hydrocarbon contamination of the soil in the immediate area of the catchment after abatement show the soil to be current regulated limits.

Based on the site assessment conducted during the closure and abatement, it appears that the hydrocarbon contamination was limited to the area immediately around the catchment and had limited lateral and vertical extent.

The highly contaminated soils have been excavated and removed for remediation.

Soils from the final excavation sidewalls and bottom tested below the action level of 100 ppm for volatile organic vapors and tested below action levels to TPH.

This report supplements the previously noted abatement activities, and it is recommended that this area be closed as part of the acid UST closure file.

#### CLOSURE

This supplement has been prepared for the exclusive use of Smith International as it pertains to their property located at 2198 East Bloomfield Highway, Farmington, New Mexico.

I hereby certify that the work performed by Envirotech as described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully Submitted,

ENVIROTECH INC. 100 Cal

Michael K. Lane, P.E. Geological Engineer

Attachments: Site Plan Laboratory TPH Results & QC/QA Photographs Bill of Ladings

91410ACD.SUP

Reviewed By:

Moun V. your Morris D. Young President







5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615 • FAX: (505) 632-1865

> EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Smith	International	Project #:	91410
Sample ID: #5		Date Reported:	06-24-92
Laboratory Number:	1206	Date Sampled:	06-09-92
Sample Matrix:	Soil	Date Received:	06-09-92
Preservative:	Cool	Date Analyzed:	06-10-92
Condition: Cool &	Intact	Analysis Needed:	ТРН

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	28.6	5.0

Method:	Method	418.1,	Petrole	eum	Hydro	carbo	ons, '	<b>Fotal</b>
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ND - Parameter not detected at the stated detection limit.

Comments: , Smith International--N Acid Sump

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Final North Sump Excavation

Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico

Envirotech Inc. June 1992 Project #91410

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# ENVIROTECH INC. GW-101

## Offsite Drainage Closure Report

### for

# Smith International Inc. 2198 Bloomfield Highway Farmington, New Mexico

### RECEIVED

#### JUN 0 8 1992

OIL CONSERVATION DIV. SANTA FE

# Project #91410

### June 1992

5796 U.S. HIGHWAY 64 - 3014 • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 632-0615

OFFSITE DRAINAGE CLOSURE REPORT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

#### PREPARED FOR MR. MAURICE STICKER ENVIRONMENTAL AFFAIRS COORDINATOR SMITH INTERNATIONAL, INC.

PROJECT NO: 91410

JUNE 1992

ENVIROTECH INC. Environmental Scientists & Engineers 5796 U.S. Highway 64-3014 Farmington, New Mexico

(505) 632-0615

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#### PROJECT NO: 91410

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- APPENDIX B Photographs
- APPENDIX C Results of Laboratory Analyses Chain-of-Custody
- APPENDIX D Request to Receive Contaminated Soils Bill of Ladings

#### OFFSITE DRAINAGE CLOSURE REPORT SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

#### INTRODUCTION

Envirotech Inc. has been retained by Smith International, Inc. to abate, remove, and dispose of soil contamination associated with offsite storm water drainage and the spill incident identified by New Mexico Oil Conservation Division (NMOCD) personnel. These services were performed for closure of the spill incident, at the Smith Energy Services facility, 2198 East Bloomfield Highway in Farmington, San Juan County, New Mexico.

These abatement services were performed in conjunction with remediation actives for the Smith International Inc. property as part of a property transaction. Envirotech has prepared closure reports summarizing the remediation of three areas at the site. All reports were for Smith International Inc., 2198 East Bloomfield Highway, SE/4, SW/4 Section 14, Township 29N, Range 13W, Farmington, New Mexico and were titled:

- Seven Day Report, February 19, 1992
- UST Closure Report Diesel and Gasoline Fuel System, March 1992
- Surface Impoundment Closure Report, Wash Bay Solids Disposal Area, April 1992
- Acid UST and Sump Closure Report, Acid Storage Tank and Loading Area, May 1992

Copy of these reports have been submitted to Smith International Inc., CLM Properties of Farmington (current owner), and the NMOCD Aztec office, and the NMOCD Santa Fe office. The UST Closure Report was submitted to the NMED, which maintains jurisdiction of the UST site.

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Most of the Smith site is paved. Drainage of storm water from the staging yard is diverted offsite to the west, and into an unlined earthen drainage parallelling Malta Street. Assessment to determine if soils were contaminated with hydrocarbons typical of a staging/parking facility was conducted in conjunction with the fuel UST closure. Abatement of the offsite areas was initiated in March 1992, but due to weather conditions was not completed until early May 1992. The abatement included removal by excavation and treatment of contaminated soils, backfill with clean imported soils and construction of an earthen berm to capture and contain storm water on the Smith property.

Mr. Denny Foust of the State of New Mexico Oil Conservation Division (NMOCD) conducted periodic site inspections during the closure and site assessment operations.

#### PURPOSE & SCOPE OF SERVICES

The purpose of the assessment and abatement the highly hydrocarbon contaminated soils was to aid in the closure of the offsite spill incident at the reference site. The protocol outlined in the New Mexico Oil Conservation Division's proposed "Guidelines for Surface Impoundment Closure" (October 29, 1991) and the New Mexico Environment Department's UST Regulations (Amended July 26, 1990) were followed in the soil removal and treatment, site assessment, and final closure.

The scope of services that Envirotech was retained to provide included the following:

- A. Notification of the NMOCD and appropriate authorities of the intent to remediate and close the offsite spill at the referenced property.
- B. Excavate and dispose of the highly contaminated soils to abate the spill incident.
- C. Provide acceptable fill material sufficient to backfill the excavation and construct a containment berm to prevent recontamination.
- D. Field assessment of the site, including laboratory analyses, to determine the extent of the contamination.

- E. Review of prior closure activities and closure reports for applicable information regarding available water supply information, groundwater sampling, and analyses to assess the potential impact from the contamination.
- F. Document the spill excavation, closure operations, and site assessment findings.

#### SITE DESCRIPTION

Bluestake New Mexico was contacted and underground utilities were marked, prior to the excavation operation. The main utilities are located along East Bloomfield Highway and Malta Avenue, the south and west boundaries of the property. The only underground utilities in the immediate area of the acid system were a 2.5" diameter gas line and 4" diameter water line.

The site is an active staging/parking yard for Smith Energy Services an oilfield services company. The yard is paved and fenced. The offsite spill incident was located west of the fence between the west property line and Malta Street, in an unpaved area. Refer to the attached general Site Plan (Sheet 1).

Access to the yard and site is available from East Bloomfield Highway (U.S. Highway 64) which is adjacent to the south property boundary.

#### Site Remediation Summary:

As indicated in the Introduction several reports have been prepared summarizing remediation activities at the subject property. Detailed information regarding water resources and groundwater is available in those reports. The following is a brief summary of the findings in the earlier reports.

Both the San Juan and Animas rivers and associated irrigation and drainages are within a one mile radius of the site. Based on the New Mexico State Engineers office there are eight water wells located near the site. Prior to commencing the site remediation Smith International had three groundwater monitor wells installed on the subject property. Groundwater was encountered at a depth of approximately twenty-eight feet (28'). During the various remediation activities, no surficial evidence of hydrocarbon contamination from a spill at the site was observed along any of the water courses, and no significant evidence of impact to groundwater was found in the monitor wells. Additional monitor wells have been recently installed at the request of the NMOCD. Results of the sampling and analyses are not available as of this writing. Upon receipt of the sampling data, a supplemental report will be prepared.

Subsurface hydrocarbon contamination of soil appears to have been limited to the three areas remediated (fuel UST, disposal pit, and acid UST). Refer to the site plan for approximate aerial extent of these spills. Soils at the site were classified as well graded gravel with well rounded cobbles to 15 inches in diameter and medium to fine sands , dense, and moist to saturated below the water table.

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#### SPILL ABATEMENT & FIELD ASSESSMENT

#### <u>Site Safety:</u>

The extent of the excavation was immediately west of the fenced yard and remained within ten feet of the fence on the Smith property. Access was limited to essential personnel. Hydrocarbon vapors were monitored by Envirotech personnel during the initial assessment to assess if a health or explosion hazard existed. A MSA Model 62 Explosimeter was used to monitor the site. No hazard associated with hydrocarbon vapors were detected.

#### Drainage System & Excavation:

The majority of the yard is paved with storm water drainage diverted into two inverts that then direct drainage to the west offsite. The subject yard is fenced on all sides. At the time of the initial assessment there was no curb or other diversion structures to contain drainage to the site. The fence is located ten of more feet inside the west property line. A drainage ditch, at the property line, parallels the west fence and Malta Street. Flow in the ditch is toward Bloomfield Highway south of the site. Ultimately, drainage from the channel is believed to be captured in the sewer system associated with Bloomfield Highway.

The unpaved area between the fence and the west property line was inspected during the fuel UST closure. Soil samples were tested for hydrocarbon contamination. Highly contaminated soil was found in the areas where the inverts emptied into this ditch.

The final excavation extended approximately ten feet (10') west of the fence and roughly the entire length of the fenced yard. It extended to a depth of approximately two feet (2') below the original site grade (bsg).

The hydrocarbon soil contamination is suspected to be from the storm water and hydrocarbons present on the paved area. Most likely, the source is fuel and lubricants used and spilled from motor vehicles in the parking, drive, and shop areas.

An earthen berm was constructed on the inside and along the west fence to capture and divert the surface drainage from the pavement and to prevent additional contamination offsite. Clean imported soils were backfilled in the excavation upon completion of the highly contaminated soil removal and laboratory verification testing. Refer to the Site Plan Sheet 1.

Photographs of the referenced UST and excavation are attached.

#### Abatement and Closure:

Hydrocarbon contaminated soil was encountered at the ends of the inverts and throughout the unpaved west side of the property.

Based on the preliminary assessments, the contamination appeared to be limited to the immediate area of the ditch and area west of the fence. Thus, Smith International elected to abate the contamination by excavating all the highly contaminated soils.

Soil samples were collected during excavation operations from the excavation bottom. These soil samples were analyzed for organic hydrocarbon vapors and/or Total Recoverable Petroleum Hydrocarbons (TPH) to determine the extent of contamination following the NMOCD guidelines of 100 ppm volatile organics by OVM and/or TPH. Additional excavation was performed in all areas where the results exceeded the 100 ppm action level.

The contamination was relatively minor and limited. Based on the final excavation, the spill was limited to the top one to two feet and did not impact groundwater which is at approximately twenty-eight feet (28') bsg.

Approximately 480 cubic yards of contaminated soil were removed from the site. These contaminated soils were transported to Envirotech's Soil Remediation Facility located at Hilltop, New Mexico. Attached is a copy of Envirotech's NMOCD request to receive the contaminated soils and laboratory analytical results showing that the soils are not characterized as hazardous waste per Resource Conservation Recovery Act (RCRA) standards. Mr. Roger Anderson of the NMOCD authorized Envirotech to receive these soils. Copies of the Bill of Ladings manifesting the contaminated soils are included in the Appendix.

#### SOIL SAMPLING AND ANALYTICAL RESULTS

During the initial assessment and abatement by excavation, the highly contaminated soils were excavated until the field results of the OVM for volatile hydrocarbons were below the NMOCD action level of 100 ppm OVM and/or TPH. Soil samples were taken from the excavation bottom following US EPA SW-846 protocol. The soil was field tested for volatile hydrocarbons following the Headspace Field Method (Guidelines For Surface Impoundment Closure, New Mexico Oil Conservation Division, Part 1 (IA.2a) October 29, 1991) using a photoionization detector (PID), Model 580-B Organic Vapor Meter (OVM) manufactured by Thermo Environmental Instrumental.

The results of the field headspace analyses are summarized in Table 1 at the end of Section 3.

Upon completion of the removal of the highly contaminated soil, confirmation soil samples were collected from the excavation. These samples were submitted for laboratory analyzed for total recoverable hydrocarbons (TPH) per US EPA Method 418.1 (modified soil).

The results of the laboratory analyses and quality control/quality assurance are attached in Appendix C and summarized in Tables 2 at the end of Section 3.

#### TABLE 1

#### FIELD HEADSPACE OVM RESULTS OFFSITE DRAINAGE SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO MARCH - APRIL 1992

<u>Sa</u>	mple_	<u>Date/Lab #</u>	Sample Location	Time	MVO (mqq)
*	1	021292	12" bsg West of N. invt	NA	ND
*	2	021292	0-6" bsg S of N invert	NA	ND
*	3	021292	18" bsg @ #1	NA	ND
	4	021292	2' bsg S of #1	NA	ND
*	5	021292	0-6" bsg @ Shop invert	NA	0.9
	6	040992	24" bsg S of N invert	NA	ND
	7	040992	24" bsg N of N invert	NA	ND
	8	043092	24" bsg @ Shop invert	NA	ND

Notes: 1) bsg - approximate depth below original surface grade.

- 2) OVM 100 ppm action level per NMOCD Guidelines, 10/29/91.
- 3) * Samples taken within the removed contamination spill envelope.
- 4) ND parameter not detected at detection limit of 0.1 ppm for this instrument.

Refer to the Sample Detail (Sheet 1) for the approximate sample locations.

#### TABLE 2

#### LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO APRIL 1992

#### SOIL SAMPLES

SAMPLE		EPA	
<u>ID</u>	<u>MATRIX</u>	<u>METHOD</u>	<u>TPH</u>
			(mg/kg)
* 1	SOIL	418.1	1945
* 2	SOIL	418.1	2050
* 3	SOIL	418.1	407
4	SOIL	418.1	22.9
* 5	SOIL	418.1	15, 806
6	SOIL	418.1	ND
7	SOIL	418.1	ND
8(SW Cnr)	SOIL	418.1	ND

Notes:

1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

2) * - Samples taken within the removed contamination plume envelope.

Refer to the Site & Sampling Detail (Sheet 1) for the approximate sample locations.

#### CONCLUSIONS

The maximum allowable concentrations for hydrocarbon contamination of soil as outlined in the New Mexico Oil Conservation Division, Guidelines for Surface Impoundment Closure (October 29, 1991) are also summarized in Table 3. The analyses for hydrocarbon contamination of the soil in the immediate area of the west drainage at the Smith International Farmington facility showed the soil to be above the current regulated limits regulated limits.

#### TABLE 3

#### HYDROCARBON SOIL CONTAMINATION STANDARDS STATE OF NEW MEXICO

Maximum Allowable LimitsParametersoil (mg/kg)

Benzer	e	10
Toluer	ie	-
Ethylt	enzene	-
Total	Xylene	-
Total	Aromatics	50

Total Petroleum Hydrocarbons 100

Notes: 1) mg/kg - equivalent to parts per million.

Based on the initial site assessment conducted during the fuel UST closure, a spill incident had occurred. Verification testing following abatement of the drainage. It appears that the hydrocarbon contamination was limited to the area immediately west of the fence to the channel parallel to Malta Street and had limited lateral and vertical extent.

The highly contaminated soils have been excavated and removed for remediation in all areas. Abatement of the site is completed.

Soils from the final excavation bottom tested below the action level of 100 ppm for both volatile organic vapors and TPH.

We recommend closure of this spill incident file, considering the findings of this report.

#### LIMITATIONS AND CLOSURE

The conclusions given in this report are based on a visual observation of the site, subsurface soil conditions encountered during the closure operations, and analysis of soil samples collected during site assessment. This report does not reflect subsurface variations which may exist between sampling points.

The scope of Envirotech's services was limited to site remediation and the assessment of soil and/or groundwater contamination with respect to hydrocarbon contamination associated with hydrocarbon products at typical oil field service and production facilities. All work has been performed in accordance with generally accepted professional practices in construction/excavation, geotechnical/environmental/petroleum engineering and hydrogeology.

This report has been prepared for the exclusive use of Smith International as it pertains to their property located at 2198 East Bloomfield Highway, Farmington, New Mexico.

I hereby certify that the work performed by Envirotech as described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully Submitted, ENVIROTECH INC.

Sull Z

Michael K. Lane, P.E. Geological Engineer

APPENDICES

1410DRN.RPT

Reviewed By:

Morris D. Young

President





North Invert Drainage



Shop Invert Drainage

Offsite Drainage Closure Report Smith International Inc. 2198 Bloomfield Highway SE/4, SW/4, Section 14, T29N, R13W Farmington, New Mexico

March 1992

Envirotech Inc.

Project: 92112



Shop Invert & Earthen Berm (May 1992)

Offsite Drainage Closure Report Smith International Inc. 2198 Bloomfield Highway SE/4, SW/4, Section 14, T29N, R13W Farmington, New Mexico

March 1992 Envirotech Inc. Project: 92112





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Drainage #1 Laboratory Number: 021292410-3 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
	بين هي هي جن جن جن جن جن جن جن جن جن	
Total Recoverable		
Petroleum Hydrocarbons	1945	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Drainage #2 Laboratory Number: 021292410-4 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
		یہ جنہ بند نند کہ کہ جہ نہ کے کہ کو کہ جہ نگ
tal Recoverable		

Total Recoverable Petroleum Hydrocarbons

2050

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Drainage #3 Laboratory Number: 021292410-5 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	407	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.



TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Drainage #4 Laboratory Number: 021292410-6 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1

Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
~~~~~		
tal Recoverable		

Total Recoverable Petroleum Hydrocarbons

22.9

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Drainage #5 Laboratory Number: 021292410-7 Sample Matrix: Soil Temperature: Received on ice Analysis Method: 418.1 Project #: 91410 Report Date: 2-17-92 Date Sampled: 2-12-92 Date Received: 2-12-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)
		~~~~~~~~~~~
tal Decomposit		

Total Recoverable Petroleum Hydrocarbons

15806

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

**Client:** Smith International Sample ID: West Drainage D#6 Laboratory Number: 040992410-1 Sample Matrix: Silt Temperature: Received on Ice Analysis Method: 418.1

**Project #:** 91410 Report Date: 4-28-92 Date Sampled: 4-9-92 Date Received: 4-9-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)
Total Recoverable		
Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: West Drainage D#7 Laboratory Number: 040992410-2 Sample Matrix: Silt Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 4-28-92 Date Sampled: 4-9-92 Date Received: 4-9-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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Analyst



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

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Client: Smith International Report Date: 5-5-92 Sample ID: SW Corner Date Sampled: 4-30-92 Laboratory Number: 0310 Date Received: 4-30-92 Analysis Requested: 418.1 Date Extracted: 4-30-92 Sample Matrix: Soil Date Analyzed: 4-30-92 Condition: Received on Ice Preservative: Cool

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Total Recoverable		
Petroleum Hydrocarbons	ND	10.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the stated detection limit.

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Analyst





#### ** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 2-17-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
		**********
Total Recoverable		
Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Analyst





#### ** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 021292410-5 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 2-17-92 Date Extracted: 2-14-92 Date Analyzed: 2-14-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	387	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### ** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 021292410-6	Report Date: 2-17-92
Sample Matrix: Soil	Date Extracted: 2-14-92
Analysis Method: 418.1	Date Analyzed: 2-14-92

	Spike	Sample	Spiked Sample	
	Added	Result	Result	Percent
Analyte	(mg/kg)	(mg/kg)	(mg/kg)	Recovery
Трн	331	22.9	247	70

ND - Analyte not detected at the stated detection limit.

QA AQ	ACCEPTANCE	CRITERIA:	Analyte	Acceptance Range %
			TPH	48 - 143

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:



Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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#### ****** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL PETROLEUM HYDROCARBONS

Analysis:	418.1	Date Sampled:	4-28-92
Sample Matrix:	Soil	Date Analyzed:	4-28-92

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

Comments:

Mulu 2. 2 Analyst

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL PETROLEUM HYDROCARBONS

Laboratory Number:040792410-4Date Sampled:4-7-92Analysis:418.1Date Analyzed:4-28-92Sample Matrix:SoilPreservative:CoolCondition:Received on IceCool

	Spike	Sample	Spiked Sample	
	Added	Result	Result	Percent
Parameter	(mg/Kg)	(mg/Kg)	(mg/Kg)	Recovery
Total Petroleum Hydrocarbons	331.0	ND	464.0	140.2

QA ACCEPTANCE CRITERIA:

Parameter -----Total Petroleum Hydrocarbons Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

Analyst

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** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL PETROLEUM HYDROCARBONS

Laboratory Number:0132Date Sampled:4-22-92Analysis:418.1Date Analyzed:4-28-92Sample Matrix:SoilPreservative:CoolCondition:Received on IceCool

	Sample	Dup Sample	Percent
Parameter	(mg/Kg)	(mg/kg)	Recovery
Total Petroleum			`
Hydrocarbons	ND	ND	ND

QA ACCEPTANCE CRITERIA: Parameter Acceptance Range (%) Total Petroleum +-35 Hydrocarbons

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

Comments:

micha J. Em





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**** QUALITY ASSURANCE REPORT** SAMPLE DUPLICATE - TOTAL PETROLEUM HYDROCARBONS

Laboratory Number:	0312	Date Sampled:	4-30-92
Analysis:	418.1	Date Analyzed:	4-30-92
Sample Matrix:	Soil	Preservative:	Cool
Condition:	Received on Ice		

	Sample	Dup Sample	Percent
Parameter	(mg/Kg)	(mg/kg)	Recovery
Total Petroleum			
Hydrocarbons	ND	ND	ND

QA ACCEPTANCE CRITERIA: Parameter Acceptance Range (%) -----______ 50 - 150 Total Petroleum Hydrocarbons

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

Comments:

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### **** QUALITY ASSURANCE REPORT** MATRIX SPIKE - TOTAL PETROLEUM HYDROCARBONS

Laboratory Number:	0310	Date Sampled:	4-30-92
Analysis:	418.1	Date Analyzed:	4-30-92
Sample Matrix:	Soil	Preservative:	Cool
Condition:	Received on Ice		

	Spike	Sample	Spiked Sample	
	Added	Result	Result	Percent
Parameter	(mg/Kg)	(mg/Kg)	(mg/Kg)	Recovery
Tatal Dataslaus	947 0		706 0	 05 C
Hydrocarbons	847.0	ND	/24.0	0.00

QA ACCEPTANCE CRITERIA: Parameter _____

Acceptance Range (%) _____ Total Petroleum 50 - 150

Hydrocarbons

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Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

- Comments:

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### **** QUALITY ASSURANCE REPORT** METHOD BLANK - TOTAL PETROLEUM HYDROCARBONS

Analysis:	418.1	Date Sampled:	4-30-92
Sample Matrix:	Soil	Date Analyzed:	4-30-92

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	10.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978.

ND - Parameter not detected at the detection limit.

Comments:

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Analyst

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**** QUALITY ASSURANCE REPORT** METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 4-28-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

ConcentrationDetection LimitAnalyte(mg/kg)(mg/kg)--------------------

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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### ** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 0134 Sample Matrix: Sand Analysis Method: 418.1 Report Date: 4-29-92 Date Extracted: 4-28-92 Date Analyzed: 4-28-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: Sample 0132 was None Detected as well.

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** QUALITY ASSURANCE REPORT MATRIX SPIKE/DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number:040792410-4Report Date:4-29-92Sample Matrix:SandDate Extracted:4-28-92Analysis Method:418.1Date Analyzed:4-28-92

Spiked Sample Spike Sample Result Percent Added Result (mg/kg) (mg/kg) (mg/kg) Recovery Analyte ____ _____ _____ -----128 TPH 331 464 ND

ND - Analyte not detected at the stated detection limit.

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:



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Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

January 24, 1992

Mr. Roger Anderson Environmental Engineer State of New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87504

NVIROTECH INC.

RE: Contaminated Soil from Smith International, Inc. 2198 Bloomfield Highway Farmington, New Mexico Project No: 91410

Dear Mr. Anderson:

Enclosed are the laboratory results of chemical analyses for soil samples, collected December 20, 1991, from the referenced Smith International facility in Farmington, New Mexico. The samples are of the contaminated material around the acid tank and acid disposal pit areas, as discussed with you earlier by Mr. Morris Young of Envirotech.

The results for all parameters are non-detectable or below RCRA limits.

Therefore, Envirotech requests permission to receive this soil at Envirotech's Soil Remediation Facility at Hilltop, New Mexico.

Respectfully submitted, ENVIROTECH, Inc.

Michael K. Lane, P.E. Geological Engineer

Enclosures

C: Mr. Maurice Sticker, Smith International, Inc. Mr. Chuck Hagen

MKL/mkl 410TCLP.LTR

# inter Mountain Laboratories, Inc.

810 Technology Boulevard, Suite 3 Boramen, Montene 59715

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL VOLATILE COMPOUNDS

Client:	ENVIROTECH			
Sample ID:	Waste Pit Comp.		Date Reported:	01/24/92
Project ID:	Smith Energy	•	Date Sampled:	12/20/91
Laboratory ID:	B914207		Date Received:	12/21/91
Sample Matrix:	Soil		Date Extracted TCLP:	01/03/92
Preservation:	Cool		Date Analyzed:	01/08/92
Condition:	Intact		· · · · · ·	

	Analytical		Detection	
Parameter	Result		Linit	Units
Vinyl Chloride	ND ·	• i	0.025	mg/L
1,1-Dichloroethene	· · ND	. :`	0.025	mg/L
Chloroform	ND	•	0.025	mg/L
1,2-Dichloroethane	ND ,	• ••	0.025	mg/L

2-Butanone	ND	0.125	mg/L
Chlorobenzene	ND	0.025	mg/L
Tetrachloroethene	ND	0.025	mg/L
Benzene	ND	0.025	mg/L
Trichloroethene	ND	0.025	mg/L
Carbon Tetrachioride		0.025	mg/L

ND - Compound not detected at stated Detection Limit.

J - Meets identification criteria, below Detection Limit.

B - Compound detected in Method Blank.

nter Mountair	ı La	borator	les,	Inc.
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910 Technology Boulevard, Suite 8 Bozeman, Montana 59715

### TOXICITY CHARACTERISTIC LEACHING PROCEDURE TENTATIVELY IDENTIFIED COMPOUNDS

Client: Sample ID: Laboratory ID: Sample Matrix: ENVIROTECH Waste Pit Comp. B914207 Soil

Date Reported:	01/24/92
Date Sampled:	12/20/91
Date Analyzed:	01/08/92
•	

Concentration

Tentative Identification== =Retention= Time (min)=

No additional compounds found at reportable levels.

Unknown concentrations calculated assuming a Relative Response Factor = 1.

# QUALITY CONTROL:

	Surrogate Recovery	%	
	1,2-Dichloroethane-d4	98	
	Toluene-d8	96	
·.	Bromofluorobenzene	93	

### References:

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Third Edition, November 1986.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

Reviewed

### Inter-Mountain Laboratories, Inc.

. 910 Technology Boulevard, Suite B Bozeman, Montana 59715

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL SEMI-VOLATILE COMPOUNDS

Client:	ENVIROTECH			
Sample ID:	Waste Pit Comp.	Report Date:		01/23/92
Project ID:	Smith Energy	Date Sampled:		12/20/91
Laboratory ID:	B914207	Date Received:	•	12/21/91
Sample Matrix:	Soil	Date Extracted-TCLP:	**	01/17/92
Preservation:	Cool	Date Analyzed:		01/21/92
Condition:	Intact	Date Extracted-BNA:	**	01/20/92

** - Sample was re-extracted due to low surrogate recoveries. First extrations were TCLP=1/3/92 and BNA=1/10/92

Parameter	Result		Units
1,4-Dichlorobenzene	ND	0.015	mg/L
Hexachloroethane	ND	0.015	mg/L
Nitrobenzene	ND	0.015	mg/L
Hexachloro-1,3-butadiene	ND	0.015	mg/L
2,4,6-Trichlorophenol	ND	0.015	mg/L
2,4,5-Trichlorophenol	ND	0.015	mg/L
2,4-Dinitrotoluene	, ND	0.015	mg/L
Hexachlorobenzene	ND	0.015	mg/L
Pentachlorophenol	ND .	0.015	mg/L
o-Cresol	ND	0.015	mg/L
m & p-Cresol	ND	0.015	mg/L
Pyridine	ND	0.15	mg/L

ND - Compound not detected at stated Detection Limit

J - Meets identification criteria, below Detection Limit

B - Compound detected in Method Blank.

FRCM: bozeman Inter: Mountain Laboratories, Inc. TO: FARMINGTON IML

JAN 24, 1992 11:47HM

910 Technology Souleverd, Suite B Bozemen, Montene 39713

F.05

# TOXICITY CHARACTERISTIC LEACHING PROCEDURE TENTATIVELY IDENTIFIED COMPOUNDS

Client: Sample ID: Laboratory ID: Sample Matrix:	ENVIROTECH Waste Pit Comp. B914207 Soil	Date Reported: Date Sampled: Date Analyzed:	01/23/92 12/20/91 01/21/92
-----------------------------------------------------------	--------------------------------------------------	---------------------------------------------------	----------------------------------

Earameler	Relention	Concentration	Units
Unknown organic acid	13.71	0.03	mg/L
Unknown hydrocarbon	21.33	0.03	mg/L
Diethylphthalate	26.09	0.06	mg/L
Unknown hydrocarbon	28.12	0.02	mg/L

Unknown concentrations calculated assuming Relative Response Factor = 1.

# QUALITY CONTROL:

Surrogate Recoveries	%
2-Fluorophenol	52
Phenol-d6	· 43
Nitrobanzene-d5	92
2-Fluorobiphenyl	82
2 4 6-Tribromonbenol	68
Terphenyl-d14	79

### References:

Method 8270, Gas Chromatography/Mass Spectrometry for Semi-Volatile Organics, Test Methods for Evaluating Solid Wastes, United States Environmental Protection Agency, December 1987.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

Analyst

Inter Mountain Laboratories, Inc.

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910 Technology Boulevard, Suite B Bozemen, Montane 59715

# METHOD 8150 CHLORINATED HERBICIDES TCLP PARAMETERS

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Client:	ENVIROTECH		
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	- B914207	Date Received:	12/21/91
Sample Matrix:	Soli	Date Extracted:	01/10/92
Preservative:	Cooi	Date Analyzed:	01/23/92
Condition:	Intact	•••	
	•		

		Analylical	Detection	
Parameter		Result	Umit	Units
		· · ·		
2.4-D	•	ND	0.001	mg/L
2,4,5-TP		ND	0.001	. mg/L
• •	·	•		
ND Parameta	r Not Detected at Stated De	tection Limits		
NU - Falanie(e	Not Deletted at Stated De			
		-		
•	•			
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• •				
Reference:	Method 8150, Chlorin	ated Herbicides, Test Methods for Ex	valuating Solid Waste,	
	United States Environ	mental Protection Agency, SW-846,	Vol. IB, November, 1886.	
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			· · · · ·	

Analyst /

Reviewed

### EPA METHOD 8080 ORGANOCHLORINE PESTICIDES TCLP PARAMETERS

Client:	ENVIROTECH		
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	B914207	Date Received:	12/21/91
Sample Matrix:	Soil	Date Extracted:	01/10/92
Preservative:	Cool	Date Analyzed:	01/15/92
Condition:	Intact		

	Analytical	Delection	
Parameter	Result	slimit	Unite
l indane (camma BHC)	ND	0.006	mg/L
Endrin	ND	0.006	mg/L
Methoxychlor	ND	· 0.02	mg/L
Heptachlor	ND	0.006	mg/L
Toxaphene	ND	0.5	mg/L
Chlordane	ND	0.03	mg/L

ND - Parameter Not Detected at Stated Detection Limits

**References:** 

Method 8080, Organochlorine Pesticides and PCB's, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency SW-846, Vol. IB September 1986.

スれ Analyst

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Reviewed

### TOXICITY CHARACTERISTIC LEACHING PROCEDURE TRACE METAL CONCENTRATIONS

Client:	Envirotech	
Sample Id:	7788	Report Date: 01/23/92
Lab Id:	B914207/4659	Date Sampled: 12/20/91
Matrix:	Soil	Date Received:12/21/91
Preservation:	COOL / INTACT	TCLP Extract: 01/04/92
•	•	Date Analyzed:01/21/91

Parameter:	(units)	Analytical Result	Regulatory Level
Arsenic	mg/L	<0.1	5.0
Barium	mg/L	3.5 B	100
Cadmium	mg/L	0.008	1.0
Chromium	mg/L	<0.01	5.0
Lead	mg/L	<0.2	5.0
Mercury	mg/L	<0.001	0.2
Selenium	mg/L	<0.1	1.0
Silver	mg/L	<0.01	1.0
		•	

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, EPA Vol 55, No. 126 June 29, 1990 Method 6010A: Inductively Coupled Plasma-Atomic Emission Spectroscopy, SW-846, Nov. 1990. Method 7470A: Mercury in Liquid Waste (Manual Cold-Vapor Technique), SW-846, Nov. 1990.

Reviewed by: <u>CB</u>.

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# ENVIROTECH INC. GW-101

# Surface Impoundment Closure Report Wash Bay Solids Disposal Area

# for

# Smith International Inc. 2198 East Bloomfield Highway Farmington, New Mexico

# RECEIVED

APR 27 1992

OIL CONSERVATION DIV. SANTA FE

# Project #91410

# April 1992

5796 U.S. HIGHWAY 64 - 3014 • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 632-0615

SURFACE IMPOUNDMENT CLOSURE REPORT WASH BAY SOLIDS DISPOSAL AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

### PREPARED FOR MR. MAURICE STICKER ENVIRONMENTAL AFFAIRS COORDINATOR SMITH INTERNATIONAL, INC.

PROJECT NO: 91410

APRIL 1992

1

ENVIROTECH INC. Environmental Scientists & Engineers 5796 U.S. Highway 64-3014 Farmington, New Mexico

(505) 632-0615

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### PROJECT NO: 91410

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### SECTION 3

	GROUNDWATER &	SOIL	SAMPLING	AND	ANALYTICAL	RESULTS		1	1
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#### SECTION 4

#### APPENDICES

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- APPENDIX B Photographs
- APPENDIX C Results of Laboratory Analyses Chain-of-Custody
- APPENDIX D Request to receive Contaminated Soils Bill of Ladings
## SURFACE IMPOUNDMENT CLOSURE REPORT WASH BAY SOLIDS DISPOSAL AREA SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY SE/4, SW/4 SECTION 14, TOWNSHIP 29N, RANGE 13W FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

Envirotech Inc. has been retained by Smith International, Inc. to perform the necessary site assessment and remediation of the surface impoundment (pit) used for the disposal of wash bay solids for closure at the Smith Energy Services facility, 2198 East Bloomfield Highway in Farmington, San Juan County, New Mexico.

ENERLOG/TIS Inc. conducted two site assessments dated April 1990 and August 1990 for the subject property as part of a property transaction. Three sites requiring remediation were identified in the assessment reports and were:

> Fuel Underground Storage Tank System (USTS) Wash Bay Solids Disposal Area Acid tank storage and loading Area

Enclosed please find a copy of Smith International's January 30, 1992 request of the New Mexico Oil Conservation Division for authorization of the proposed site assessment and remediation.

The UST's in the fuel system were removed and the site remediated for closure in February and early March 1992, under the direction of the New Mexico Environment Department (NMED). The USTS closure was completed prior to commencing the disposal pit and acid tank assessments and remediation. A Seven Day Report and USTS Closure Report have been submitted to the NMED under separate covers.

The remediation of the disposal pit by excavation and removal was initiated on February 18, 1992 and excavation of the highly contaminated soils was completed on March 20, 1992. Hydrocarbon contaminated soil was found throughout the area within the original pit perimeter. Additionally, contamination extended laterally 10 to 30 feet beyond the pit perimeter and vertically to groundwater at approximately 28 feet below the original ground surface.

Mr. Denny Foust of the State of New Mexico Oil Conservation Division (NMOCD) made periodic site inspections during the closure and site assessment operations.

Remediation of the acid storage area has been concurrent with the fuel USTS closure and the wash bay disposal pit closure. The findings of the acid area closure will be submitted under separate cover, upon completion.

# PURPOSE & SCOPE OF SERVICES

The purpose of the excavation and removal of the highly hydrocarbon contaminated soils was to aid in the closure of the surface impoundment used for wash bay solids disposal at the reference site. The protocol outlined in the New Mexico Oil Conservation Division's proposed "Guidelines for Surface Impoundment Closure" (October 29, 1991) were followed in the soil removal and treatment, site assessment, and final closure.

The scope of services that Envirotech was retained to provide included the following:

- A. Notification of the NMOCD and appropriate authorities of the intent to remediate and close the impoundment area at the referenced property.
- B. Excavate and dispose of the highly contaminated soils to abate the spill incident.
- C. Provide acceptable fill material sufficient to backfill the excavation.
- D. Field assessment of the site, including laboratory analyses, to determine the extent of the contamination.
- E. Review available water supply information, collect groundwater samples, and analyze groundwater samples to assess the potential impact from the contamination.
- F. Document the pit excavation, closure operations, and site assessment findings.

#### SITE DESCRIPTION

Bluestake New Mexico was contacted and underground utilities were marked, prior to the excavation operation. The main utilities are located along East Bloomfield Highway and Malta Avenue, the south and west boundaries of the property. There were no underground utilities in the immediate area of the disposal pit.

The site is an active staging yard for Smith Energy Services an oilfield services company. The disposal pit was in use until January of 1992. The subject disposal area was located in a fenced area at the northeast corner of the service yard. Refer to the attached general Site Plan (Sheet 1) prepared by ENERLOG/TIS Inc.

Access to the yard and site is available from East Bloomfield Highway (U.S. Highway 64) which is adjacent to the south property boundary.

The attached Site Plan (Sheet 2) shows the location of the disposal pit area.

#### Water Supply Information:

Based on a preliminary review of available records from the New Mexico State Engineers Office, there appears to be eight water supply wells within a half mile radius of the Smith International site. They are listed in Table 1 at the end of Section 2.

All wells appear to be located over 1000 feet from the site. The wells on Section 14 appear to be located up and cross gradient based on preliminary monitor well water level measurements. The remaining six wells on Sections 22 and 23 appear to be located down and cross gradient from the site and plume. Analysis of water samples collected during the USTS closure operations and from the excavation bottom did not detect BTEX or TPH contamination above the regulated limits. Monitor well #1 is located east of the pit and monitor wells #2 and #3 are located west of the previous fuel USTS.

The San Juan River is south of the site, approximately threequarters of a mile down-gradient. The Animas River is north of the site, approximately one mile up-gradient. Both rivers flow to the west and south, and have year around water flow. The Willett Ditch provides irrigation water to farms in the general proximity of the site. The Willett Ditch is fed on the south side of the Animas River, upstream of the site approximately 3/4 miles. Based on discussions with the New Mexico State Engineers Office, this ditch appears to be used primarily for irrigation and industrial use and is not a public drinking water source.

Where easily assessable, all of the above mentioned surface water courses were inspected during the USTS closure. The author observed no superficial evidence of hydrocarbon contamination from a spill along any of the water courses. Thus, it is felt that the surface water courses in the immediate proximity of the site have not been nor are immediately threatened.

## WATER WELL INFORMATION SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 1992 TABLE 1

Location (T.R.Sec.Quad)	Name	Well No.	Use	Water Depth (ft)	Aquifer
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29.13.22.22	Dennis Burke	SJ-01673	dom	14	Qal
29.13.23.1	Tom Kannard	SJ-01562	dom	6	Qal
29.13.23.11	NA	SJ-01719	NA	NA	NA
29.13.23.123	NA	SJ-00187	NA	40	Qal
29.13.23.22	Mary Barkley	SJ-00352	dom	30	Qal
29.13.23.22	Tom Pratt	SJ-01376	dom	15	Qal

Notes:

NA - Information not available. dom - domestic water source

stk - water source for livestock

Kk - Kirtland Shale

Qal - Quaternary alluvium

Based on available information from the State of New Mexico Engineers Office.

#### PIT CLOSURE & FIELD ASSESSMENT

### <u>Site Safety:</u>

The entire disposal pit area and extent of the excavation remained within the fenced compound of the Smith Energy Services facility. The work area could only be access from the fenced yard and, during excavation operations, access was limited to essential personnel. Hydrocarbon vapors were monitored by Envirotech personnel to assess if a health or explosion hazard existed. A MSA model 62 explosimeter was used to monitor the site. No hazard associated with hydrocarbon vapors was detected during the entire operation.

### Surface Impoundment & Excavation:

The disposal pit area located at the northeast corner of the Smith Energy Services facility covered approximately 4,000 square feet (sf).

Prior to the remediation, the impoundment was approximately three to four feet below the adjacent ground surface and had a berm of approximately one foot around the north, east and south perimeter. The west side of the impoundment has a four to six inch thick concrete spillway. Soils at the bottom of the impoundment were classified as mottled brown to gray black silty to clayey sand with gravel, firm, dry to moist, with a slight petroleum odor. No liquids were present.

During the coarse of the excavation and abatement, a secondary pit area appeared to have been identified. This pit area appears to have been smaller (approximately 1800 sf) and included the east half of the disposal impoundment, extending 20 feet south.

The final excavation extended from the north fence, south 80 feet; ten feet from the east fence, west 125 feet; and to a total depth at the ground water of approximately 29 feet below the overall site grade (bsg). The south 40 feet of the excavation did not extend to groundwater, as the extent of contamination terminated at approximately 15 feet bsg.

Based on the excavation sidewalls, native soils were classified as moderate to grayish brown well graded gravel with well rounded cobbles to 15 inches in diameter and medium to fine sand, dense, and moist to saturated below the water table.

As no new impoundment was to be constructed, clean imported soils were backfilled in the excavation upon completion of the highly contaminated soil removal and verification testing. The final site grade was built approximately one foot above bsg to enhance positive drainage away from the pit area and to minimized potential surface water recharge or possible leaching of residual soil

#### contamination to groundwater.

Refer to the site detail for the pit original pit outline and final excavation perimeter (Sheet 2).

Photographs of the referenced pit excavation are attached.

#### Site Groundwater Information:

Three previously installed groundwater monitor well were used to estimate the site groundwater gradient. They were sampled to determine if groundwater had been impacted by the fuel UST and/or the disposal pit hydrocarbon plumes. The wells had been installed by ENERLOG/TIS for Smith International during an environmental audit of the property in August 1990. The wells were drilled with an air drill rig, and completed with four inch PVC casing. The monitor well information and groundwater level measurements (taken 2-7-92) are summarized in Table 3 at the end of Section 2.

Based on the water level measurements from the three wells, the groundwater ranges from 28 to 30 feet below the existing ground surface. The groundwater gradient and subsequent flow direction is to the west and south and averages approximately 0.002 feet/foot. The shallow alluvial groundwater appears to represent an unconfined aquifer. The groundwater level and gradient may vary, considering the sites relative proximity to both the San Juan River and Animas River and site soil conditions.

During the coarse of the excavation and abatement, the groundwater at the bottom of the excavation was observed to fluctuate in depth. Fluctuations appeared to be on the order of one to three feet, corresponding to a water level of 27 to 30 feet bsg. This fluctation was not unusual, considering the site soil condition, and proximity of the site to the San Juan and Animas Rivers.

Groundwater samples were also collected at the bottom of the excavation, prior to backfill.

## MONITOR WELL DATA SUMMARY SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY 1992 TABLE 2

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DRILLING	COMPLET	ION INFORMA	<u>TION</u>
	AUGUST	1990	
MONITOR WELL	TOTAL DEPTH	WATER LEVEL	TOP OF SCREEN
1	34	25	15
2	40	30	18
3	40	28	20

# SURVEY & WATER LEVEL INFORMATION FEBRUARY 7, 1992

		COORD	INATE	WATER	WATER
LOCATION	ELEV.	<u> </u>	<u> </u>	<u>LEVEL(bgs)</u>	ELEV.
SW WAREHOUSE COR.	100.00	0.00 ,	0.00		
MW1	99.78	346.41	195.63	28.54	71.24
MW2	99.85	85.11	-289.32	29.98	69.87
MW3	99.77	67.82	-199.59	29.74	70.03

### <u>Abatement and Closure:</u>

Hydrocarbon contaminated soil was encountered throughout the pit area. Contamination is suspected to have been from previous waste disposal practices typically used by similar oil & gas service and industrial companies. Wastes are suspected to be primarily from wash bay solids and produced oil and gas well fluids recovered by Smith Energy's equipment during well service operations.

Based on the earlier ENERLOG assessments, the contamination appeared to be limited to the immediate area of the pit and relatively shallow (ie. above eighteen feet bsg). Thus, Smith International elected to abate the contamination by excavating all the highly contaminated soils. Soil samples were collected during excavation operations from the bottom and sidewalls. These soil samples were analyzed for organic hydrocarbon vapors and/or Total Recoverable Petroleum Hydrocarbons (TPH) to determine the extent of contamination following the NMOCD guidelines of 100 ppm volatile organics by OVM and/or TPH. Additional excavation was performed in every area where the results exceeded the 100 ppm action level.

The contamination was relatively extensive. Based on the final excavation the plume extended to the groundwater at a maximum depth of approximately 29 feet below the original ground surface and within a 7,000 to 8,000 sf area (refer to the site plan, Sheet 2).

Approximately 8,268 cubic yards of contaminated soil were removed from the site. These contaminated soils were transported to Envirotech's Soil Remediation Facility located at Hilltop, New Mexico. Attached is a copy of Envirotech's NMOCD request to receive the contaminated soils and laboratory analytical results showing that the soils are not characterized as hazardous waste per Resource Conservation Recovery Act (RCRA) standards. Mr. Roger Anderson of the NMOCD authorized Envirotech to recieve these soils. Copies of the Bill of Ladings manifesting the contaminated soils \ are included in the Appendix.

## SOIL & GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

During the abatement by excavation, the highly contaminated soils were excavated until the field results of the OVM for volatile hydrocarbons were below the NMOCD action level of 100 ppm OVM and/or TPH. Soil samples were taken from the excavation bottom and sidewalls following US EPA SW-846 protocol. The soil was field tested for volatile hydrocarbons following the Headspace Field Method (Guidelines For Surface Impoundment Closure, New Mexico Oil Conservation Division, Part 1 (IA.2a) October 29, 1991) using a photoionization detector (PID), Model 580-B Organic Vapor Meter (OVM) manufactured by Thermo Environmental Instrumental.

The results of the field headspace analyses are summarized in Table 4 at the end of Section 3.

Upon completion of the removal of the highly contaminated soil, confirmation soil samples were collected from the excavation. These samples were submitted for laboratory analyzed for TPH per USEPA Method 418.1 (modified soil).

To assess if groundwater had been impacted by the hydrocarbon plume, groundwater samples were collected at the excavation bottom, prior to backfilling, and in the monitor wells. Prior to sampling, the monitor wells were developed by removing at least three well bore volumes or until the well bore was pumped off (approximately 6 gallons). Groundwater samples were collected following US EPA SW-846 protocol. The water samples were analyzed to total petroleum hydrocarbons (TPH) per EPA 418.1, BTEX compounds per EPA 8020, and/or major cations/anions.

The results of the laboratory analyses and quality control/quality assurance are attached in Appendix C and summarized in Tables 5 and 6 at the end of Section 3.

# FIELD HEADSPACE OVM RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY/MARCH 1992 TABLE 3

					OVM
<u>Sa</u>	ample	<u>Date/Lab_#</u>	Sample Location	<u>Time</u>	(mqq)
*	0	022592	15' bsg SE cnr pit	NA	1110
	1	022592	16' bsg SE cnr E of #0	NA	85.4
	2	022592	16' bsg E side S edge	NA	62.5
	3	022592	16' bsg E side pit	NA	13.2
	4	022592	16' bsg N side E end	NA	8.1
	5	022592	21' bsg 15' W of #4	NA	77.3
	6	030292	16' bsg SE cnr excavat.	NA	13
	7	030292	17' bsg W of #6	NA	69
*	8	030292	$26' \pm bsg N of #7/W of #2$	NA	3,500
*	9	030292	26'± bsg W & btw #2 & #3	NA	3,100
*	10	030292	26' <u>+</u> bsg W of #4 & #5	NA	2,900
*	11	030292	28' <u>+</u> bsg W of #8	NA	>10,000
*	12	030292	26' <u>+</u> bsg W of #10	NA	>10,000
*	13	030292	20 <b>'</b> <u>+</u> bsg S of #8	NA	1,200
*	Ml	030592	28' <u>+</u> bsg N. side	15:20	243.9
*	MlD	030592	28' <u>+</u> Duplicate #M1	15 <b>:</b> 20	290.0
*	M2	030592	28' <u>+</u> bsg N side E of #M1	14:00	ND
*	MЗ	030992	20-24' bsg W of #13	14:10	146.7
*	M4	030992	20-24' bsg N of #M3	14:12	134.2
	M5	030992	8-9'bsg S of #M4	14:16	6.2
*	M6	030992	10'bsg btw #M4 & #M5	14:21	253.2
	M7	031092	26-28'bsg E of #M6	9:01	17.0
	M8	031092	25-17'bsg W of #M6	9:06	15.4
	M9	031092	26-28'bsg W of #M8	9:11	32.8
*	M10	031092	26'bsg N & W of #M9	9:20	123.3
*	M11	031092	26'bsg W & N of #M10	9:24	252.4
	M12	031292	28' <u>+</u> bsg S of #M11	15 <b>:</b> 13	9.7
*	M13	031292	28' <u>+</u> bsg W & S of #M11	15:14	217.8
*	M14	031292	28' <u>+</u> bsg N side W of #M2	15 <b>:</b> 35	62.8
*	M15	031292	28' <u>+</u> bsg N side W of #M14	15:36	57.9
*	M16	031292	28' <u>+</u> bsg W of #M11	15:44	147.3
*	M17	031292	20' <u>+</u> bsg above #M16	15:55	131.4
	M18	031892	22 <b>'<u>+</u>bsg W of #M16</b>	8:13	2.7
	M19	031892	22 <b>'<u>+</u>bsg S of #M18</b>	8:14	1.8
	M20	031892	28' <u>+</u> bsg btw #M18 & #M19	8:16	1.8
	M21	031892	20' <u>+</u> bsg above #M18	8:26	0.9
	M22	031892	20' <u>+</u> bsg above #M19	8:28	0.9
	M23	031892	28' <u>+</u> bsg W of #M21	16:11	15.0
	M24	031892	28' <u>+</u> bsg N side W of #M15	16:15	7.2
	M25	031892	28'+bsg W of #M23	16:16	5.8

### FIELD HEADSPACE OVM RESULTS SMITH INTERNATIONAL INC. TABLE 3 (continued)

M26	031892	25'bsg W of #M20	16:20	13.3	
M27	032092	25'bsg W of #M26	12:15	ND	

Notes: 1) bsg - approximate depth below original surface grade.

- 2) OVM 100 ppm action level per NMOCD Guidelines, 10/29/91.
- 3) * Samples taken within the removed contamination plume envelope. Efforts were made to continue the excavation beyond these location.
- 4) Samples 1-10 collected by Mr. Jack Dewey, samples M1-M26 collected by Mr. Myke Lane, sample M27 collected by Mr. Morris Young

Refer to the site plan for the approximate sample locations.

# LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY/MARCH 1992 TABLE 4

### SOIL SAMPLES

SAMPL	E	EPA			ETHYL-	TOTAL	
_ID	MATRIX	<u>METHOD</u>	<u>BENZENE</u>	<b>TOLUENE</b>	<u>BENZENE</u>	<u>XYLENE</u>	<u> </u>
			(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(mg/kg)
2	SOIL	418.1		-	-	-	ND
* M2	SOIL	418.1	-	-	-	-	2063
M7	SOIL	418.1	-	-	-	-	ND
M9	SOIL	418.1	-	-	-	-	ND
*M11	SOIL	418.1		-	-	-	15,594
M12	SOIL	418.1	-	-	-	-	ND
M13	SOIL	418.1	-	-	-	-	10.2
*M14	SOIL	418.1	-	-	-	-	168
*M15	SOIL	418.1		-	-	-	117
M18	SOIL	418.1	-	-	-	-	<10.0
M19	SOIL	418.1	-	-	-	-	<10.0
M20	SOIL	418.1	-	-	-	-	<10.0
M21	SOIL	418.1		-	-	-	ND
M22	SOIL	418.1	-	-	-	-	<10.0
M23	SOIL	418.1	-	-	-	. –	27.4
M24	SOIL	418.1	-	-	-	-	25.8
M25	SOIL	418.1	-	-	-	-	ND
M26	SOIL	418.1	-	-	-	-	ND
M27	SOIL	418.1	-	-	-	-	<10.0

Notes:

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1) ND - Parameter not detected at method detection limit (refer to analytical results for detection limit).

- Total Xylene summation of m,p-Xylene and o-Xylene.
- 3) @ Laboratory indicated traces of both m,p-Xylene and o-Xylene at detection limit of 50 ug/kg, the net total of which approximated 50 ug/kg.
- 4) * Samples taken within the removed contamination plume envelope.

Refer to the Sampling Detail (Sheet 3) for the approximate sample locations.

# LABORATORY ANALYTICAL RESULTS SMITH INTERNATIONAL INC. 2198 EAST BLOOMFIELD HIGHWAY FARMINGTON, SAN JUAN COUNTY, NEW MEXICO FEBRUARY, 1992 TABLE 5

SAME	PLE	EPA			ETHYL-	TOTAL	
<u>ID</u>	MATRIX	<u>METHOD</u>	<u>BENZENE</u>	TOLUENE	<u>BENZENE</u>	<u>XYLENE</u>	TPH
			(ug/L)	(ug/L)	(ug/L)	(ug/L)	(mg/L)
			_				
		MONIT	COR WELL (	GROUNDWATH	ER SAMPLES	5	
MWl	WATER	8020	ND	ND	ND	ND	-
MWl	WATER	418.1	-	-		-	<10
MW2	WATER	8020	ND	<1.0	<1.0	<1.0	-
MW2	WATER	418.1	-	-	-	-	14.5
MW3	WATER	8020	ND	<1.0	<1.0	<1.0	-
MW3	WATER	418.1	-	-	-	-	ND
		PIT	BOTTOM GI	ROUNDWATE	R SAMPLES		
0	סיסית א	8020		ND	<10	<10	_
9	WAIER	410 1	ND · _		~10	<10	2107
9 Mae	WALER	410.1	<u> </u>		- -1 0	2 2+	2197
MOE	WATER	8020	<1.0	ND	<1.0	J.ZT	
MZS	WATER	418.1	-	-	-	-	ND
	Notes:	1) ND d r	- Param etection esults fo	eter not limit ( r detecti	detected refer to on limit)	d at me analyt	thod ical
		2) Tot	al Xylene -Xvlene.	- summat	ion of m,	p-Xylene	and
		3) + · X 1 3 4) * -	- Laborat ylene and .0 ug/kg, .2 ug/kg. Samples	ory indic o-Xylene the net t taken wit	cated tra near the c cotal of w hin the r	ces of b letection hich app emoved	ooth m,p- n limit of roximated
			contamin	ation plu	me envelo	pe.	

Refer to the Sampling Detail (Sheet 3) for the approximate sample locations.

### CONCLUSIONS

The current maximum allowable concentrations for groundwater contamination as outlined by the State of New Mexico Water Quality Control Commission (August 18, 1991) are summarized reported in Table 6. The maximum allowable concentrations for soil as outlined in the New Mexico Oil Conservation Division, Guidelines for Surface Impoundment Closure (October 29, 1991) are also summarized in Table 6. The analyses for hydrocarbon contamination of the soil and groundwater in the immediate area of the disposal pit at the Smith International Farmington facility showed; the soil to be above the current regulated limits, and groundwater to be at or below the current regulated limits.

### HYDROCARBON SOIL & GROUNDWATER CONTAMINATION STANDARDS STATE OF NEW MEXICO TABLE 6

Parameter	Maximum <u>soil (mg/kg)</u>	Allowable Limits groundwater (ug/l)
Benzene	10	10
Toluene	-	750
Ethylbenzene	-	750
Total Xylene	-	620
Total Aromatics	50	-
Total Petroleum		
Hydrocarbons	100	-

Notes: 1) ug/kg or ug/l - equivalent to parts per billion.

2) mg/kg - equivalent to parts per million.

Based on the site assessment conducted during the pit closure and abatement, it appears that the hydrocarbon contamination was limited to the area immediately around the pit and had limited lateral extent. The highly contaminated soils have been excavated and removed for remediation. Soils from the final excavation sidewalls and bottom tested below the action level of 100 ppm for volatile organic vapors and tested below action levels to BTEX compounds and/or TPH.

Preliminary analysis of the groundwater samples indicates that the soil hydrocarbon plume may have had limited impact to the groundwater at the site. There are currently no action limits for total petroleum hydrocarbon in groundwater in the State of New Mexico.

We respectfully request closure of this surface impoundment file, considering the findings of this report.

### LIMITATIONS AND CLOSURE

The conclusions given in this report are based on a visual observation of the site, subsurface soil conditions encountered during the pit closure operations, and analysis of soil and water samples collected during site assessment. This report does not reflect subsurface variations which may exist between sampling points.

The scope of Envirotech's services was limited to site remediation and the assessment of soil and/or groundwater contamination with respect to hydrocarbon contamination associated with hydrocarbon products at typical oil field service and production facilites. All work has been performed in accordance with generally accepted professional practices in construction/excavation, geotechnical/environmental engineering and hydrogeology.

This report has been prepared for the exclusive use of Smith International as it pertains to their property located at 2198 East Bloomfield Highway, Farmington, New Mexico.

I hereby certify that the work performed by Envirotech as described in this report was performed under my direct supervision, and that I am personally familiar with the nature of the work, the results of the assessment and the contents of this report.

Respectfully Submitted, ENVIROTECH INC.

Michael K. Lane, P.E. Geological Engineer

Reviewed By:

Marin D.

Morris D. Young President

APPENDICES

1410PIT.RPT









Pit Area Prior to Excavation



Final Excavation to North & East

Surface Impoundment Closure Report Wash Bay Solids Disposal Area Smith International Inc. 2198 East Bloomfield Hwy SE/4, SW/4, Section 14, TWP 29N, RNG 13W Farmington, New Mexico

Envirotech Inc. Project: 91410 March 1992



Backfill of North & East Portion of Site as Excavation to South & West Progressed



Final Excavation to West Prior to Back Filling

Surface Impoundment Closure Report Wash Bay Solids Disposal Area Smith International Inc. 2198 East Bloomfield Hwy SE/4, SW/4, Section 14, TWP 29N, RNG 13W Farmington, New Mexico

Envirotech Inc. Project: 91410

March 1992



Final Excavation to South West

Surface Impoundment Closure Report Wash Bay Solids Disposal Area Smith International Inc. 2198 East Bloomfield Hwy SE/4, SW/4, Section 14, TWP 29N, RNG 13W Farmington, New Mexico

Envirotech Inc. Project: 91410 March 1992





> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith InternationalProject #: 91410Sample ID: East End of ExcavationDate Reported: 2-28-92Lab ID#: 022892410-1Date Sampled: 2-28-92Matrix: WaterDate Received: 2-28-92Preservative:Date Extracted:Sample Condition: Received on IceDate Analyzed: 2-28-92Injection Vol: 500 ulDate Analyzed: 2-28-92

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	10.0	ug/l
Toluene	ND	10.0	ug/l
Ethylbenzene	<10	10.0	ug/l
m,p-Xylene	<10	10.0	ug/l
o-Xylene	<10	10.0	ug/l

ND - Analyte not detected at given detection level.

Comments: Not enough sample to preform a matrix spike.

### Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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5796 US Highway 64-3014 • Farmington, New Mexico 87401 Phone: (505) 632-0615 • Fax: (505) 632-1865

** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Laboratory Number: 021792410-2	Date	<b>Reported:</b> 2-28-92
Sample Matrix: Soil	Date	<b>Sampled:</b> 2-17-92
Preservative:	Date	Extracted:2-18-92
Sample Condition: Received on ice	Date	Analyzed: 2-28-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	100 ,	ND	96.2	96
Toulene	100	187	281	94
Ethylbenzene	100	ND	84.1	84

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA:	Analyte	Acceptance Range %
	Benzene Toluene Ethylbenzene	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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****** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - PURGABLE AROMATICS

Laboratory No.: 022892410-1	Date Reported: 2-28-92
Matrix: Water	Date Extracted:
Preservative: HgCl,	Date Analyzed: 2-28-92
- 2	Injection Vol: 500 ul

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	10.0	ug/l
Toluene	ND	10.0	ug/l
Ethylbenzene	<10	10.0	ug/l
m,p-Xylene	<10	10.0	ug/l 🗤
o-Xylene	<10	10.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank Matrix: Water Preservative: HgCl₂ Date Reported: 2-28-92 Date Extracted: Date Analyzed: 2-28-92 Injection Vol: 5 ml

	Analytical	Detection	•
Analyte	Result	Limit	Units
	~~~~~~~~~		
Benzene	ND	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	ND	1.0	ug/l
m,p-Xylene	ND	1.0	ug/l
o-Xylene	ND	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluation Solid Waste, SW-846, United States Environmental Protection Agency, SW-846, Vol. IB, November 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: East End of Pit Laboratory Number: 022892410-2 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-13-92 Date Sampled: 2-28-92 Date Received: 2-28-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Concentration (mg/kg)	Detection Limi (mg/kg)	
Total Recoverable Petroleum Hydrocarbons	2197	10.0	

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: Not enough sample to preform Duplicate.

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** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: DI Water Sample Matrix: Water Analysis Method: 418.1

1

Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Pe Rec	ercent covery
ТРН	84.7	ND	64.4		76

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte

TPH

48 - 143

Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:





** QUALITY ASSURANCE REPORT (Continued) MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: DI Water Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-13-92 Date Extracted: 3-13-92 Date Analyzed: 3-13-92

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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	ANALYSIS/PARAMETERS			Grou							7.78-52		C		
DY RECORD		d iners	د//۶ ۲ <i>۰۰۶</i>	2 2	>					ved by: (Signature)	ved by: (Signature)	MAC	red by: (Signature)	I INC. 64-3014 tico 87401 5	
AIN OF CUSTOI		ö	Sample Matrix	WA 152	wArén					Date Time Received	Receir		Racel	ENVIROTECH 5796 U.S. Highway Farmington, New Mex (505) 632-061	
с Г	Project Location S. L. Yard	Chain of Custody Tape N	Lab Number	1-01425820	1-01425J170		28-82			4		8.57			
		h	iple Sample ite Time	0401 248	0/01 23/8			MZE			Y	7-1 0.	70		
	Client Project Name Smith Energy	Sampler: (Signature) Jach D. Cerve	Sample No./ Sam Identification Da	East End Pit 2/22	EAST 6,10 PIT 2/20					Relinquished by: (Signature)	Palinquished by: (Signature)		Relinquished by: (Signature)		

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 25 Groundwater Laboratory Number: 031892410-5 Sample Matrix: Water Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)		
Total Recoverable				
Petroleum Hydrocarbons	ND	10.0		

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: Not enough sample for duplicate

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: DI Water Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery
TPH	84.7	ND	64.4	76

ND - Analyte not detected at the stated detection limit.

V.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:





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Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Water Analysis Method: 418.1 Report Date: 3-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	(mg/kg)	(mg/kg)
	Concentration	Detection Limit

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 18 Laboratory Number: 031892410-7 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-21-92 Date Analyzed: 3-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 19 Laboratory Number: 031892410-8 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-21-92 Date Analyzed: 3-21-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)		
Total Recoverable Petroleum Hydrocarbons	<10.0	10.0		

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 20 Laboratory Number: 031892410-9 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	<10.0	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 21 Laboratory Number: 031892410-10 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration Detection e (mg/kg) (mg/kg 				
Total Recoverable Petroleum Hydrocarbons	ND	10.0			

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 031892410-10 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	10.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

ND - Analyte not detected at the stated detection limit.

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 22 Laboratory Number: 031892410-11 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)				
Total Recoverable						
Petroleum Hydrocarbons	<10.0	10.0 '				

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 23 Laboratory Number: 031892410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	27.4	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 24 Laboratory Number: 031892410-2 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	ConcentrationDetectionyte(mg/kg)(mg/kcoverable44Hydrocarbons25.810.0				
Total Recoverable Petroleum Hydrocarbons	25.8	10.0			

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 25 Laboratory Number: 031892410-3 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Recoverable eum Hydrocarbons ND 10.			
Total Recoverable Petroleum Hydrocarbons	ND	10.0		

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 26 Laboratory Number: 031892410-4 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-18-92 Date Received: 3-18-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analvte	Concentration (mg/kg)	Detection Limit (mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M 27 Laboratory Number: 032092410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-27-92 Date Sampled: 3-20-92 Date Received: 3-20-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit
Analyte	(

Total Recoverable Petroleum Hydrocarbons <10.0

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 2-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
tal Recoverable		

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031892410-8 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery	
ТРН	84.7	ND	. 52.6	62	

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:





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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031892410-8 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-27-92 Date Extracted: 3-23-92 Date Analyzed: 3-23-92

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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			410		Xan	Sample Sample Date Time	3/18/92 94 6	942	944	953	456		M L C		2.2	1-1-6-7	
		Client/Project Name	SHITH /91.	Sampler: (Signature)	alle the	Sample No./ Identification	Ив	۲. ۲	Mzo	M21	127			Relinquisted by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature) 2	

1026 RECORD	ANALYSIS/PARAMETERS	Remarks	8005 1205 1205 1205 1205 205 205 205			7	>	2			y: (Signature) Date Time	2-18-52	r: (Signature)		1: (Signature) Ru J. J. Jacob 3-18-52 1700	IC. 014 87401
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	Client/Project Name	Sampler: (Signature)	Identification Date Time	M22. 316.62 1944 0	M24 1545 0	M2S M247 4	M26 15.49	GW EM2S 1600 (100 25	Relinquished by: (Signature)	il taxe	Relinquished by: (Signature)	3-18-5	Relinquished by: (Signature)	

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CHAIN OF CUSTODY RECORD	roject Location	SINITY YAR D	thain of Custody Tape No.	ot	Lab Number Sample Voita	32042410-1 5016 1 / 1			42	3.70		Date Time Received by: (Signature) Date Time	3-20-22 1300	Received by: (Signature) A. 2. C. J.	Received by: (Signature)	ENVIROTECH INC. 5796 U.S. Highway 64-3014 Farmington, New Mexico 87401 (505) 632-0615
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	Client/Project Name	SMITH INTERNA	Sampler: (Signature)	mouri Q. L	Sample No./ Identification	7211						Relinquished by: (Signature)	Trans. O.L	Relinquished by: (Signature)	Relinquished by: (Signature)	

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> EPA METHOD 8020 PURGEABLE AROMATICS

Client: Smith International	Project #: 91410
Sample ID: M25 Groundwater	Date Reported: 3-27-92
Lab ID#: 031892410-6	Date Sampled: 3-18-92
Matrix: Water	Date Received: 3-18-92
Preservative: HgCl,	Date Extracted:
Sample Condition: Received on Ice	Date Analyzed: 3-20-92
	Injection Vol: 5 ml

	Analytical	Detection	
Analyte	Result	Limit	Units
Benzene	<1.0	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	3.2	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Michael . Caron

Reviewed Young



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** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - PURGABLE AROMATICS

Laboratory No.: 031892410-6	Date Reported: 3-27-92
Matrix: Water	Date Extracted:
Preservative: HgCl,	Date Analyzed: 3-20-92
	Injection Vol: 5 ml

Analyto	Analytical	Detection	IInita
Analyce	Nesuic		UNILS
Benzene	<1.0	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	<1.0	1.0	ug/l
m,p-Xylene	4.4	1.0	ug/l
o-Xylene	<1.0	1.0	ug/l

ND - Analyte not detected at given detection level.

Comments:

Reference:

Muchand J. Em-Analyst

Mori D. young



** QUALITY ASSURANCE REPORT METHOD BLANK - PURGABLE AROMATICS

Sample ID: Method Blank Matrix: Water Preservative: HgCl₂ Date Reported: 3-27-92 Date Extracted: Date Analyzed: 3-20-92 Injection Vol: 5 ml

Analyte	Analytical Result	Detection Limit	Units
Benzene	ND	1.0	ug/l
Toluene	ND	1.0	ug/l
Ethylbenzene	ND	1.0	ug/l
m,p-Xylene	ND	1.0	ug/l
o-Xylene	ND	1.0	ug/l

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ND - Analyte not detected at given detection level.

Comments:

Reference:

Muchal J. L.

Reviewed . young





****** QUALITY ASSURANCE REPORT MATRIX SPIKE - PURGABLE AROMATICS

Laboratory Number: 032092127-1 Date Reported: 3-27-92 Sample Matrix: Water Preservative: HgCl, Sample Condition: Received on ice

Date Sampled: 3-20-92 Date Extracted: Date Analyzed: 3-20-92

Analyte	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	10	<1.0	9.3	93
Toulene	10	<1.0	8.4	84
Ethylbenzene	10	<1.0	9.1	91

ND - Analyte not detected at the stated detection limit.

QA	ACCEPTANCE	CRITERIA:	Analyte	Acceptance Range %
			Benzene Toluene Ethylbenzene	39 - 150 46 - 148 32 - 160

Reference:

1

Muchal J. Sm.

moni D. young Reviewed





5796 US Highway 64-3014 • Farmington, New Mexico 87401 Phone: (505) 632-0615 • Fax: (505) 632-1865

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M12 Laboratory Number: 031292410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-20-92 Date Sampled: 3-12-92 Date Received: 3-13-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Recoverable Petroleum Hydrocarbons	ND	10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 031292410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-20-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

1

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Muchal J. hm Analyst

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M13 Laboratory Number: 031292410-2 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-20-92 Date Sampled: 3-12-92 Date Received: 3-13-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

10.2

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M14 Laboratory Number: 031292410-3 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-20-92 Date Sampled: 3-12-92 Date Received: 3-13-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)				
Total Recoverable						
Petroleum Hydrocarbons	168	10.0				

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: M15 Laboratory Number: 031292410-4 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-20-92 Date Sampled: 3-12-92 Date Received: 3-13-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

117

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-20-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
tal Recoverable		

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031292410-2 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-20-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery
ТРН	331	10.2	. 257	77

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:



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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031292410-2 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-20-92 Date Extracted: 3-20-92 Date Analyzed: 3-20-92

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

mela J. hum Analyst

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1024		RAMETERS	Remarks				·								Date Time	-13-52-61-				3-13-72 0830		san juan rapro Form 574-61	
		ANALYSIS/PAI		o of enenies	814 HC- NOODN	- 3									leceived by: (Signature)	2 -	teceived by: (Signature) M 2.5		lecelved by: (Signature)	Muchar J. Caur	CH INC. way 64-3014	Mexico 8/401 :0615	
	Project Location	Pir Aeea	Chain of Custody Tape No.		Lab Number Matrix		031292410-1 201-	2-011,257160	5-011,242160	V VIO- 4			13-22-51		Date Time R	13/92 830	Ť		Ť		ENVIROTE 5796 U.S. Highw	Farmington, New I (505) 632-	
	Client/Project Name	SMITH 191410	Sampler: (Signature)	millesse	Sample No./ Sample Sample Identification Date Time		1412 412/92 1605	M12 1607	1/14 ////	MIS 1/1015				MA La	Aelinquished by: (Signature)	ON SECO	Relinquished by: (Signature)	26-21-2 2 2-13-92	Relinquished by: (Signature)		· · ·		

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Pit-Location 2 (east side) Laboratory Number: 030692410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-12-92 Date Sampled: 3-6-92 Date Received: 3-6-92 Date Extracted: 3-6-92 Date Analyzed: 3-12-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)				
al Recoverable						

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Analyst Z. Caron Review





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Pit-M2 West Wall @ 28' Laboratory Number: 031092410-1 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-12-92 Date Sampled: 3-10-92 Date Received: 3-10-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)				
# # # # # # # #						
al Peroverable						

Total Recoverable Petroleum Hydrocarbons

2063

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Muchand 2. Curron Review



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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Pit-M7 Laboratory Number: 031092410-2 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-12-92 Date Sampled: 3-10-92 Date Received: 3-10-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)			
Total Recoverable Petroleum Hydrocarbons	ND	. 10.0			

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Pit-M9 Laboratory Number: 031092410-3 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1 Project #: 91410 Report Date: 3-12-92 Date Sampled: 3-10-92 Date Received: 3-10-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Mucha 2. Caron Review





TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Client: Smith International Sample ID: Pit-M11 Laboratory Number: 031092410-4 Sample Matrix: Soil Temperature: Received on Ice Analysis Method: 418.1

Project #: 91410 Report Date: 3-12-92 Date Sampled: 3-10-92 Date Received: 3-10-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyta	Concentration	Detection Limit
	(mg/kg)	(mg/ kg)

Total Recoverable Petroleum Hydrocarbons 15594

10.0

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Method: Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments: Sample diluted 1:10

<u>muchul 2. Com</u> Mound Analyst Review





****** QUALITY ASSURANCE REPORT METHOD BLANK - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample ID: Method Blank Sample Matrix: Soil Analysis Method: 418.1

Report Date: 3-12-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

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ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

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Analyst



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** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 030692410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-12-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery
трн	331	ND	239	72

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:




5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE REPORT (Continued) MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 030692410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-12-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

muchan J. Sm Analyst



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5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE REPORT MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031092410-2 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-12-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Analyte	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked Sample Result (mg/kg)	Percent Recovery
ТРН	331	ND	221	67

ND - Analyte not detected at the stated detection limit.

QA ACCEPTANCE CRITERIA: Analyte Acceptance Range %

ND - Analyte not detected at the stated detection limit.

Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.:



ENVIROTECH LABS

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** QUALITY ASSURANCE REPORT (Continued) MATRIX SPIKE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory Number: 031092410-2 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-12-92 Date Extracted: 3-12-92 Date Analyzed: 3-12-92

Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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Analyst



ENVIROTECH LABS

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** QUALITY ASSURANCE REPORT SAMPLE DUPLICATE - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Laboratory No: 030692410-1 Sample Matrix: Soil Analysis Method: 418.1 Report Date: 3-6-92 Date Extracted: 3-6-92 Date Analyzed: 3-6-92

	Concentration	Detection Limit
Analyte	(mg/kg)	(mg/kg)

Total Recoverable Petroleum Hydrocarbons

ND

10.0

ND - Analyte not detected at the stated detection limit.

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA, 1978.Extraction by Method 3550, SW-846, USEPA, 1986.

> Modified Method 8015, Petroleum Hydrocarbons, Total Recoverable, Gas Chromatography. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846,USEPA, 1990. Extraction by Method 3550, SW-846, USEPA, 1990.

Comments:

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Analyst

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1059			Remarks		TAKON FRAM BAST	SIDE WALL IT.				•		Date Time			3-6-72 1530		sen juan repro form 578-61
	RECORD	ANALYSIS/PARAMETERS		· 81;	+ 1							(Signature)		(Signature) A1 2 8 5-6 11	(Signature)	C. 14 7401	
	CHAIN OF CUSTODY F	PT AREA	n of Custody Tape No.		Lab Number Sample Z				65.1			Date Time Received by:	3442 4530	-52 Received by:	Received by:	ENVIROTECH ING 5796 U.S. Highway 64-301 Farmington, New Mexico 8	(505) 632-0615
	ent/Project Name	Smith / 91410	mpler: (Signature) Chair	Miller Colo	Sample No./ Sample Sample Identification Date Time	004/21/2/ 07 = 711-10				W F2-		Minquished by: (Signature)	l'ille a	Ainquished by: (Signature) $A = C = -\frac{1}{2}$	ilinquished by: (Signature)		

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ORD	- ANALYSIS/PARAMETEF	1.8								iture)	iture) M & C	au D. au		
AIN OF CUSTODY REC		ot iners	Sample Conta		-					ate Time Received by: (Signal A2 14 35	Received by: (Signat	Received by: (Signal	ENVIROTECH INC. 5796 U.S. Highway 64.3014 Farmington, New Mexico 87401 (505) 632-0615	
CH	Project Location	Chain of Custody Tape No.	Time Lab Number	125 031052/10 - 3	14-2 0310 55 110 - 4		<u>7</u> ² . m	41 4 310		30	-16-51			
	VProject Name Shitth / 91410	iler: (Signature)	Sample No./ Sample Samp	12/0/22	·	•				quished by: (Signature)	quished by: (Signature)	quished by: (Signature) M.2.5		

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ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

January 24, 1992

Mr. Roger Anderson Environmental Engineer State of New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87504

RE: Contaminated Soil from Smith International, Inc. 2198 Bloomfield Highway Farmington, New Mexico Project No: 91410

Dear Mr. Anderson:

Enclosed are the laboratory results of chemical analyses for soil samples, collected December 20, 1991, from the referenced Smith International facility in Farmington, New Mexico. The samples are of the contaminated material around the acid tank and acid disposal pit areas, as discussed with you earlier by Mr. Morris Young of Envirotech.

The results for all parameters are non-detectable or below RCRA limits.

Therefore, Envirotech requests permission to receive this soil at Envirotech's Soil Remediation Facility at Hilltop, New Mexico.

Respectfully submitted, ENVIROTECH, Inc.

Michael K. Lane, P.E. Geological Engineer

Enclosures

C: Mr. Maurice Sticker, Smith International, Inc. Mr. Chuck Hagen

MKL/mkl 410TCLP.LTR TO:FARMINGTON IML

FROM: bozeman Inter: Mountain Laboratories, Inc.

> 910 Technology Boulevard, Suite B Boremen, Montene 59715

TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL VOLATILE COMPOUNDS

Client: Sample ID: Project ID: Laboratory ID: Sample Matrix: Preservation: Condition: ENVIROTECH Waste Pit Comp. Smith Energy B914207 Soil Cool Intact

Date Reported:	01/24/92
Date Sampled:	12/20/91
Date Received:	12/21/91
Date Extracted TCLP:	01/03/92
Date Analyzed:	01/08/92

	Analytical	Detection	
Parameter	Result		9000
Vinyl Chloride	ND	0.025	mg/L
1,1-Dichloroethene	· · ND ·	0.025	mg/L
Chloroform	ND	0.025	mg/L
1,2-Dichloroethane	ND	0.025	mg/L
Carbon Tetrachloride	ND	0.025	mg/L
Trichloroethene	ND	0.025	mg/L

_	• *		•	
2-Butanone	ND	^{',} 0.	.125	mg/L
Chlorobenzene	ND	0.	.025	mg/L
Tetrachloroethene	ND	0.).025	mg/L
Benzene	ND	0.	.025	· mg/L
Irichioroethene	NU	· . U	1.023	ing/⊆

ND - Compound not detected at stated Detection Limit.

J - Meets identification criteria, below Detection Limit.

B - Compound detected in Method Blank.

Inter-Mountain Laboratories, Inc.

FROM: bozeman

910 Technology Boulevard, Suite B Bozemen, Montena 59715

TOXICITY CHARACTERISTIC LEACHING PROCEDURE TENTATIVELY IDENTIFIED COMPOUNDS

IU: HAKMINGIUN IME

Client: Sample ID: Laboratory ID: Sample Matrix:

Tentative

ENVIROTECH Waste Pit Comp. B914207 Soil

Date Reported: 01/24/92 12/20/91 Date Sampled: 01/08/92 Date Analyzed:

Identification

Concentration

No additional compounds found at reportable levels.

Unknown concentrations calculated assuming a Relative Response Factor = 1.

Retention

Time (min)

QUALITY CONTROL:

	Surrogate Recovery	%	
	1,2-Dichloroethane-d4	98	,
•	Toluene-d8	96	1
	Bromofluorobenzene	93	

References:

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Third Edition, November 1986.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

Reviewed

TO:FARMINGTON IML

JAN 24, 1992 11:46AM 4.04

Inter-Mountain Laboratories, Inc.

FROM: bozeman

910 Technology Boulevard, Suite B Bozeman, Montana 59713

TOXICITY CHARACTERISTIC LEACHING PROCEDURE HSL SEMI-VOLATILE COMPOUNDS

Client:	ENVIROTECH			
Sample ID:	Waste Pit Comp.	Report Date:		01/23/92
Project ID:	Smith Energy	Date Sampled:		12/20/91
Laboratory ID:	B914207	Date Received:		12/21/91
Sample Matrix:	Soil	Date Extracted-TCLP:	**	01/17/92
Preservation:	Cool	Date Analyzed:		01/21/92
Condition:	Intact	Date Extracted-BNA:	**	01/20/92

** - Sample was re-extracted due to low surrogate recoveries. First extrations were TCLP=1/3/92 and BNA=1/10/92

Parameter	Analytical	Detection	Unite
1,4-Dichlorobenzene	ND	0.015	mg/L
Hexachloroethane	ND	0.015	mg/L
Nitrobenzene	ND	0.015	mg/L
Hexachloro-1,3-butadiene	ND	0,015	mg/L
2,4,6-Trichlorophenol	ND	0.015	mg/L
2,4,5-Trichlorophenol	ND	0.015	mg/L
2,4-Dinitrotoluene	ND	0.015	mg/L
Hexachlorobenzene	ND	0.015	. mg/L
Pentachlorophenol	ND .	0.015	mg/L
o-Cresol	ND	0.015	mg/L
m & p-Cresol	ND	0.015	mg/L
Pyridine '	ND	0.15	∖ mg/L

ND - Compound not detected at stated Detection Limit

J - Meets identification criteria, below Detection Limit

B - Compound detected in Method Blank.

FROM: bozeman Inter: Mountain Laboratories, Inc. TO: FARMINGTON IML

JAN 24, 1992 11:47AM P.05

910 Technology Boulevard, Suite B Bozemen, Montene 50715

TOXICITY CHARACTERISTIC LEACHING PROCEDURE TENTATIVELY IDENTIFIED COMPOUNDS

Client: Sample ID: Laboratory ID: Sample Matrix:	ENVIROTECH Waste Pit Comp. B914207 Soil	•	Date Reported: Date Sampled: Date Analyzed:	01/23/92 12/20/91 01/21/92
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Parameter	Elime(mini):	Concentration	Unite
Unknown organic acid	13.71	0.03	mg/L
Unknown hydrocarbon	21.33	0.03	mg/L
Diethylphthalate	26.09	0.06	mg/L
Unknown hydrocarbon	28.12	0.02	mg/L

Unknown concentrations calculated assuming Relative Response Factor = 1.

QUALITY CONTROL:

Surrogate Recoveries		%
2-Fluorophenol Phenol-d6 Nitrobenzene-d5 2-Fluorobiphenyl 2,4,6-Tribromophenol Terphenyl-d14	\	52 43 92 82 68 79

References:

Method 8270, Gas Chromatography/Mass Spectrometry for Semi-Volatile Organics, Test Methods for Evaluating Solid Wastes, United States Environmental Protection Agency, December 1987.

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, Environmental Protection Agency, Vol. 55, No. 126, June 29, 1990.

Analyst

LINUL PULLEMEN Inter-Mountain Laboratories, Inc.

> 910 Technology Bouleverd, Suite B Bozemen, Montane 59715

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METHOD 8150 CHLORINATED HERBICIDES TCLP PARAMETERS

THE FEATURE AT MALE

Client	ENVIROTECH		
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	· B914207	Date Received:	12/21/91
Sample Matrix:	Soli	Date Extracted:	01/10/92
Preservative:	Cool	Date Analyzed:	01/23/92
Condition:	Intact		
			•

Parameter Detection Units

• • •		· •	•		
2,4-D 2,4,5-TP		ND ND	•	0.001 0.001	mg/L . mg/L
• ·					

ND - Parameter Not Detected at Stated Detection Limits

Reference:

Method 8150, Chlorinated Herblcides, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, Vol. IB, November, 1886.

Reviewed

Analyst

Inter-Mountain Laboratories, Inc.

910 Technology Bouleverd, Suite B Bozomen, Montane 55715

EPA METHOD 8080 **ORGANOCHLORINE PESTICIDES TCLP PARAMETERS**

Client:	ENVIROTECH	-	
Sample ID:	Waste Pit Comp.	Date Reported:	01/24/92
Project ID:	Smith Energy	Date Sampled:	12/20/91
Laboratory ID:	B914207	Date Received:	12/21/91
Sample Matrix:	Soil	Date Extracted:	01/10/92
Preservative:	Cool	Date Analyzed:	01/15/92
Condition:	Intact		

Paramele/	Analylioal Husef	Detection	enite
Lindane (namma BHC)	ND	0.006	ma/L
Endrin	ND	0.006	mg/L
Methoxychlor	ND	· 0.02	mg/L
Heptachlor	ND	0.006	mg/L
Toxaphene	ND	0.5	mg/L
Chiordane	ND	0.03	mg/L

ND - Parameter Not Detected at Stated Detection Limits

References:

Method 8080, Organochlorine Pesticides and PCB's, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency SW-846, Vol. IB September 1986.

Analyst

LØ Reviewed

JHN 24, 1992 11:46HM H.06

Inter-Mountain Laboratories, Inc.

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1633 Terre Avenue Sheildan, Wyoming 82801

TOXICITY CHARACTERISTIC LEACHING PROCEDURE TRACE METAL CONCENTRATIONS

Client:	Envirotech	
Sample Id:	7788	Report Date: 01/23/92
Lab Id:	B914207/4659	Date Sampled: 12/20/91
Matrix:	Soil	Date Received:12/21/91
Preservation:	COOL / INTACT	TCLP Extract: 01/04/92
	· · · · · ·	Date Analyzed:01/21/91
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TUT HKMINGIUN INC

Parameter:	(units)	Result	Level
Arsenic	mg/L	<0.1	5.0
Barium	mg/L	3.5 B	100
Cadmium	mg/L	0.008	1.0
Chromium	mg/L	<0.01	5.0
Lead	mg/L	<0.2	5.0
Mercury	mg/L	<0.001	0.2
Selenium	mg/L	<0.1	1.0
Silver	mg/L	<0.01	1.0

Toxicity Characteristic Leaching Procedure, Final Rule, Federal Register, 40 CFR 261-302, Part V, EPA Vol 55, No. 126 June 29, 1990 Method 6010A: Inductively Coupled Plasma-Atomic Emission Spectroscopy, SW-846, Nov. 1990. Method 7470A: Mercury in Liquid Waste (Manual Cold-Vapor Technique), SW-846, Nov. 1990.

Reviewed by:

CB.

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PHONE:	: (505) 632-0615		Bill of	Ladi	bu	MOM	NTH OF	FEBRUARY 1992
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2.27	3	Smith Energy	Land Farm	Contaminated		20 Eu	ייולסדציא	E-52	Dave Garbonnah
2.7	¥	Smith Energy	Land Farm	Con taminated		ic Fur	IRO TECH	E-5.2	Dave Garbennal
12.2	S	Smith Energy	Land Farm	Contaminatel		20 Env	iro Tech	6-52	How Elanderonal
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12.4	7	Level Farm	smith Energy	Fill Dirt		0 Fm	N180780#	E-S2	Darie Clarkennich
7-27	ん	Land Farm	Smith' Energy	Fi//Dird		ë Eni	UIROTECH	E-52	Davelanharmoh
12-2	3	Land Turm	Smith' Energy	FillDirt		e Enu	urotech	E-52	Dave Zranboran, K
2.27	4	Land Farm	Smith Energy	F.11 Dirt		Zo Env	1 rotech	E-52	Darelt an horacial
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PHONE:	(505) 632-0615		Bill of	Ladi	IOW Bu		Lebruary 92	
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT		TRANSPO	RTING CC	OMPANY CO	
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YD	S COMPANY	TRK #	DRIVER SIGNATURE	
STIC	~	Smith Energy	Lovel Farm	Could Dirt	26	o envirobel	49	Darey Church	
3/28	2	Smith Energy	Land Farm	Cont Int	7	o Enintech	494	Laring Olymon	
328	M	Fm. Th Energy	Loud Farm	Cent Birt	5	O Ewinotech	404	Henerer Blunson	1
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2/28	-10	Smith Energy	Land Fan	Cut 2nd	ন্ধ	& Emerindeech	bh	formy from	
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						1 100 M. 1.			
3/28		LandFarm	Smith Erry	11:05	4	D Ewirotech	49	Harris Chim	
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5/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	fon, New Mexico 87401		ean juan rapro form 578-80	

Z		COTECH INO	! !.					1462
PHONE:	(505) 632-0615		Bill of	Ladi	bu	MONTH OF	Macch 2-92
MANIF	EST	COMPLETE DI	ESCRIPTION OF	SHIPMENT		TRA	NSPORTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS COMPANY	TRK #	DRIVER SIGNATURE
2-2	-	Smith Energy	Land fain	Contame .		-0 Enviretes	48	Can'- 1 (moves
3.2	2	Smith Energy	Landfarm	tip tomes		O BNUILOTEC	2 H C	Daniel Grover
2.2	\sim	Smith Eneros	Landfarm	contames dint	2	O Enviroter	1, K3 4 8	Daniel Grover
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3-2	و	Smith Energy	Land Farn	contaired dirt		O Envirotech	548 148	Daniel Grover
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3-2	~	Land Farm	Smith	fill dirt	<u> </u>	e Envirates	48 48	Daniel Grover
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3.2	\sim	Land Furn	5 12.44	P.U. dirt	4	Dyuirotech	F.48	Dauiel Groven Mr.
7-2	4	Land Parm	Sm. th	Pilldirt	7	O Burirotech	843	Daniel Grover Mil
3-2	Ś	Land Farm	Sm. th	+,114,1+	7	O Envirotech	E 48	Daniel Groven Mit
3-2	2	Land Farn	Suith	fill dirt	ત્	0 Envirotes	4 K 48	Daniel Grover
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		586551	Ŵ	1.				
6/16/01			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	TON, NEW MEXICO 87401		san juan repro Form 578-80

BI DESCRIPTION OF SHIPMEN CANTRON OF SHIPMEN CANTRON CENT SPICE SP		05) 632-0615 0. POINT OF ORITING S.M.H. S.M. S.M.H.
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Z	J	COPECH INC							
PHONE	: (50	5) 632-0615	\ 	Bill of	Lad	inç	OW	NTH OF	March
MANII	FEST	COMPLETED	ESCRIPTION OF	SHIPMENT			TRANSPC	DRTING	COMPANY
DATE	°. Z	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	хах	COMPANY	TRK #	DRIVER SIGNATURE
3.12	~	Smith Energy	Level Farm	Contaminated		20	Envirotech	E-52	the way and wanter of
ω i	3	Smith Energy	Land Farm	Conterninated		3	Envirotech	E-S2	Contraction of the second second second second second second second second second second second second second s
5.5	Ŋ	Smith Energy	Level Farm	Curtaminated		20	Enviratech	E-S2	Que Wannel
N	7	Smith Energy	Land Farm	Contaminated		·2.	Envirotech	E-52	One Kenternel
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				M. T.					
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~	х	Land Farms	SmithEnergy	Fill Dirt		20	Envirotech	E-52	Concerned and a second
3.2	т	kand Farm	Smith Energy	Fill Dirt		20	Envirotech	E.52	Court in other with
2.6	7	Land Farm	SimithEnergy	Fill Dirt		20	Envirotech	E-52	Dave Wenterent
~	4	Laue Farm	SmithEnergy	Fill Dirt	VI. T.	20	Envirotech	E-52	O and Wanhan and
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		ESCRIPTION OF	DESTINATION	y Land Fan	Land Far	Land Farm	Land Far	Land Farm	Land Far		Smith	Smith	Smith.	mith.	Im th	Smith					5796 U.S. Hi
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Ĩ	: (505)	FEST	No.	~	3	3	4	5	Ø		\	z	В	4	S	-					
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		SPORTING COMP/	TRK # DF	EST	EN C	E-51 /4	E-5/0	EST M	ES a											
		TRAN	COMPANY	ENJAPEL													-			VEW MEXICO 87401
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	Bill of	SHIPMENT	MATERIAL	(ont	R,P	(ont:	P.C	Cent	BF				M.T. OU	n	B. T.					3HWAY 64 - 3014
		ESCRIPTION OF	DESTINATION	Christian)	South	LAnder	ENER (CANCERIA	Freder	(/										5796 U.S. Hid
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PHONE:	: (505) 632-0615	1	Bill of	Lad	ing	MON	VTH OF	March 3 - 92
MANIF	FEST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	γDS	COMPANY	TRK #	DRIVER SIGNATURE
3 - 3	~	Smith Energy	Land Farn	Contaned		20	Enwice tech	<u>k</u> 48	Daniel Grover
3-3	Å	Smith Energy	Laud Farm	Containe (dirt	A	20	Juvivtech	517 V	Day al Groups
3.3	ŝ	Sinith Eneroc	Landfarn	contamed dirt		2	Envintech	11 S	Daniel Graven
Ċ,	Ļ	Smith Energy	Land Parn	contant ed dint		20	Ghuirated	4 8 8	Day: is brown
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3-1	و	Smith Energy	LandFarn	contented dipt		20	Envirotech	E 4 8	Daniel Groven
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3-3	~	Laud Farm	Smith	F,11d,27	•	20	Envirotech	E 48	Can'el Cercere 1th
3 - 3	له.	Land farm	Sm. th	fill dirt		20	Enviretech	5 H &	Daniel Grover
3 - 3	\sim	kand farm	Sm. th	Pill dirt		20	Eurivetse 4	ر م ل	Daniel l's rou en
, - J	ħ	Land Parm	Smith ~	Pill dirt		20	Envirotech	Eys	Oanie/ Groven
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(-(~	Land Farm	Smith	f:11 dirt		20	Envirotech	E48	Daniel Grover Mix
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					M. T.	19			
		586841							
5/16/91			5796 U.S. Hi	GHWAY 64 - 3014	FARMIN	NGTON	, New Mexico 87401		aan juan rapro form 578-80

EV.		OTECH INC							1480
PHONE:	(505	5) 632-0615	1	Bill of	Lad	linç	IOW	NTH OF	March
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	γDS	COMPANY	TRK #	DRIVER SIGNATURE
3.3.92	~	Smith Energy	Land Furm	Contaneinated		20	Envirotech	E-52	Dave It and enderwith
5-2	ĸ	Smith Energy	Lerul Fikh	Contaminated		20	Envirotech	F-52	Carrie Verbarande
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Ņ	4	Smith Energy	LandFath	Coulomingtal		20	Envrote ch	E-52	O are Kankenerder
3.3	ιŅ	Smith Energy	Land Fith	Can aminaked		20	Enureteck	E-52	Dave Harbergud
3-3	ې	Swith Energy	Land Fa HA	Con tamina led		20	Enviroteck	5-52	and the Ux endower ()
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7 3.92	-	Land Farm	Smith Energy	Fill Diet		20	Envirotech	E-S2	Dr. e. D. enkineuch
ň	5	kand Farm	Smith Energy	FillDirt		<i>3</i> 0	Envirotech	E-52	Dave Vienhumuch
2-3	3	Land Farm	SmiltiFrengy	Ell Dirt		30	Enviretech	E-S2	And Knitwould
5 5	×	Land Farm	Smith Energy	Fill Dirt		2	Envirotech	E-S2	Davelkershered
3.3	ŝ	kand Farm	Smith Errory y	Fill Dirt	843	20	Envirotech	E-S2	Dave Vxnhondr
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\$/16/91			5796 U.S. HI	IGHWAY 64 - 3014	FARMI	NGTON	, New Mexico 87401		san juan repro Form 578-80

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1484	March 92	COMPANY	DRIVER SIGNATURE	Adviney Phinson	down Alwon	dawy Jaluar	Harring Blenson	damy Alum	0			adoney Johnson	Harvey Murrow	Harry aluno	Channel Oliver	Aaren Chine					-7 4 Jan Juan repro Form 578-60
	NTH OI	RTING	TRK #	49	49	49	49	67				4	Ъħ	49	5/7	49					
	D WOL	TRANSPO	COMPANY	Envirotech	Envirotech	ENVITO beek	twinstech	Ewintech	(A, D)	01		Enviroteat	Envirokeek	Ewintech	ENUTYO Leek	Ewirobech	¢	12 C Q			4, NEW MEXICO 87401
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	La		GRIC							,	۲							ľ,			FAR
	Bill of	SHIPMENT	MATERIAL	CouldDirt	Containt	Cond Dirt	Could Dirt	Contol dirt				li:t	Lill	Did	MIG	Sill		W.			GHWAY 64 - 3014
		ESCRIPTION OF	DESTINATION	Land Fan	Land Farm	Land Farm	Land Farm	hand Farm				Smith	Smith	Smith	Smi th	Smith					5796 U.S. Hi
DEECH INC	632-0615	COMPLETE D	POINT OF ORIGIN	Smith Energy	Smith Energy	Smith Energy	Smith Energy	Smith Energy	- >			Land Farm	hand farm	Land Farm	Land Farm	Land Farm					
	(505)	EST	No.		3	3	7	5				\	Z	3	4	S.					
	PHONE:	MANIF	DATE	E) E)	500	3/3	23	53				EE	8) E	e.	m m	5/3					5/16/01

Z		OTECH INC		Bill of	Ladi				1481
HONE	: (505) 632-0615				D	MOM	ITH OF	March 92
MANIF	EST	COMPLETE D	ESCRIPTION-OF	SHIPMENT			TRANSPOI	RTING	COMPANY
DATE	vo v	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK #	DRIVER SIGNATURE
3-4	~	Smith Energy	Land Farm	Contaminated		Envi	irotech	E-52	Dave Washrowh
3-4	と	Smith Energy	Lan Farm	Centaminated		C Envi	ro tech	E-52	and it when end
2.4	ξ	Smith Energy	hand tarm	Centaminated		co Envi	rotech	E-52	Care Wanhenever
τ	7	Smith Energy	Land Farm	Con Parama Ped		E ENVI	rotech	E-S2	C nu) Kandara
3-4	S	Smith Energy	LandFarm	Con to ministed	10	20 Envir	where	E-52	Chine have a rough
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<i>h-c</i>	7	Land Farm	SmithEnergy	F.11 Dirt		20 Envin	iotech	E.S.2	Da. P. Dan Buch
3.4) N	Land Farm	Smith Energy	Fill Dirt		O Envi	rotech	E-52	Onue I Mul even of
3-4	2	Land Farm	SmithEnersy	F.11 ():++	- ()	o Envi	ro tech	E-52	Care Hanlerouch
3-4	7	Land Farm	Smith Fuergy	Fill Dirt		20 Env	irotech	E-S2	Deve Kanbersuch
3.4	Ś	Lanel Farm	Smith Energy	Fill Dirt	_2	o Envir	otech	E-52	Dave Dr. as learned.
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	NOM	TRANSPO	COMPANY	Envirotech	ENVICOTECK	ENVirotech	ENVIROTECH	Ewvira Lech	QU	Q, 0, 2		ENVirotech	Pruirofech	ENVIOLED	ENVirotech	Enviro tech		0.89	0 ×	
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	Bill of	SHIPMENT	MATERIAL	Contol dirt	Cont dict	could diry	Cont & did	Cardial drit				Lill 35	Sill	11:5	1:11 11	f:11 3			R.	
		ESCRIPTION OF	DESTINATION	Land Farm	Land Furn	Loud Farm	Loud Farm	hand fain				Smith	Smith	Smith	Smith	Smith				
TECH INC	32-0615	COMPLETE DI	POINT OF ORIGIN	5mith Energy	mith Energy	Inith Energy	smith Energy	mith Energy	10			und Farm	Land Farm	and Farm	and Farm	rand Ferm				
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EN		OTECH INC	 					1480 m
PHONE:	: (505	6) 632-0615	8		Ladi	MG MG	ONTH OF	March 4 -92
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT		TRANSP	ORTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YI	DS COMPANY	TRK #	DRIVER SIGNATURE
ý ~ 4	~	Smith Eneres	Leud Pacm	Contaried	2	0 Enviretes	54 S	Dan el Graver
3-4	ょ	Smith Bueros	Land Furn	contarol detet	イ	o Envirotech	E 48	Daniel Groven
3-4	\sim	Smith Energy	Landfain	Coutanel Coutanel	2	O BAU. rotech	48 4	Daniel Graven
4	Ţ	Smith Energy	LeurdParn	y a wratio	ন	O Envirotech	E 43	Orus el Groven
3-4	5	5 12, 44 Eucres	Levad Farm	Contaned ditt	2	o Enviratech	1548	Ocuriel Gover
					Cores I	Bi.Co		
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3-4	、	Leind Larun	Sm. Ph	Pilldirr	<u>1</u>	O Envirotech	100 100 100 100 100 100 100 100 100 100	Daniel Grover
7-4	7	Land farm	Smith	Pilldint	で	O Envirotech	17 11 11	Oun al Froncen
۰ - ۲	~	Landfarm	514.24	Pill dirt	2	O Envirates 6	5 V	Do 11 - 1 6 10 - 10
7-4	Н	Land Farm	Sm, th	fill dirt	7	o Envirotech	18 17 12	Deniel Comien
3-4	5	Land Parm	Smith	Pill dirt	<u>~</u>	6 Enviratech	Et P	Davis + lorover
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6/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	TON, NEW MEXICO 87401	1	tan juan repro Form 578-80

	Bill of Lading MONTH OF MACH	IPTION OF SHIPMENT	FINATION MATERIAL GRID YDS COMPANY TRK # DRIVER SIGNATURE	notion Part & Environ ESI MCCC	ili B.L 20 ESI Mark	marin Coat Dr Call Chelle	Pring Bic Do / Fist Mc Cit	shim cart 20 (ES ill Che	Eredy BL PO Fill Call	moren (ant 20) ESI / 20 / 10 Carl	Engen BF DO ESI MELLE	NChein Crant 20 Est MULT	Every B.F. D. EST ALLINC		0,1%	P2 (10 0 (1) - 10 (1) (1) - 10 (1) (1) - 10 (1) - 10 (1) (1) - 10 (1) (1) - 10 (1) -			
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DEECH INC	632-0615	COMPLETE DESC	POINT OF ORIGIN	SMittered C	LAndlard 3	Size ty	LANGLEIN "	Sanda (1 Anter	Shiffau [CAMPlein 5	Smilts L	LANDEIN -						
ENWERC	PHONE: (505) (MANIFEST	DATE No.	3/492 1	3/492 2	1/4/523	2 16214	8/14/62 K-	14/62 6	2/1/52 7	14/2 8	3/4/62 6	3462		į				

	MONTH OF March 92	ANSPORTING COMPANY	Y TRK # DRIVER SIGNATURE	et 49 plenner X Johnon	when 49 adarent Oliver	at 14 planung Illucan	eh 49 Harry Olioan	_			h 49 Hanner Shuge	it 49 Harrie Throw	ech 49 Adving Chron							1] san juan rapro Form 578-80
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	of L		GF	× ×	7,	7-	7-			2						N, T				•
	Bill o	SHIPMENT	MATERIAL	Cental di	Contadi	Ontilde	Contidation				fill	J;11	fill							GHWAY 64 - 3014
		ESCRIPTION OF	DESTINATION	Land Fark	Loud Farm	Land Farm	hand fam				Smith,	Said	Smith	•						5796 U.S. Hid
erech i ng) 632-0615	COMPLETE DE	POINT OF ORIGIN	Smith Every	Smith Ener'	Smith Energy	Snith Energy	•			Land Farm	Land Farm	hand Farm							
Ĩ	(505)	EST	No.	~	2	W.	4				`	~	3	4						
Z	PHONE:	MANIF	DATE	3/5	3%-	-1/2	3/5-				3/5-	:3/5-	3/5	3/5-	,			** **	-	5/16/91

NF- (50	15) 632-0615	• 8 8 8 8 1	Bill of	Ladi			March 37
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	COMPLETEL	DESCHIPTION OF	SHIPMENT		TRAN	SPORTING	COMPANY
ž	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS COMPANY	TRK #	DRIVER SIGNATURE
7	Smith Enway	Land Farm	Cartaminatal		C Enviratech	E-52	Dave Wardersuch
4	Smith Energy	Land Farm	Courtaining kel		20 Envirolet	E-52	Barre Wark On 18 11 2100
ŝ	SmithEnergy	Land Ferm	Contramina loci		20 Envirolech	E-S2	Cours 1 xaller k
4	Smith Energy	Land Farm	Contorning Rd		to Envirofection	E.S2	Drywy Dry Barard
S	Smith Energy	Laud Farks	Can to incited		20 Envirlech	E. S2	A and xon bound
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	Lave/Farm	Smith Frenzy	Fill Dirt	,	20 Enviroted	E-S2	Mue Manhanaunder
2	Land Farm	SmithEnergy	Fil Dirt		O Envirotech	E-S2	Dave Warderout
Ν	Land Farm	Smith Frongy	F://Dirt	N }	o Envirotech	E-52	Cove Wanhavingh
4	Land Farm	Smith Energy	Fill Dirt		a Envirotech	E.S2	Dans Warlenauch
Ś	Land Farm	Smith Energy	FillDirt		20 Envirotech	5-3	Churs Vankanal
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	ROTECH HUC						1487
PHONE: (50	15) 632-0615		Bill of	Lad	bu	MONTH OF	March 5 - 92
MANIFEST	COMPLETED	DESCRIPTION OF	SHIPMENT		TRAN	SPORTING	COMPANY
DATE No.	POINT OF ORIGIN	DESTINATIÓN	MATERIAL	GRID Y	DS COMPANY	TRK #	DRIVER SIGNATURE
3-5-1	Sinth Energe	Leurd Farm	Contaured	_~	Co Envirettech	18 15	Paulie/ Groven
3-5 2	Sin th Energe	Land Parn	co :1 ta m = d		w Envirotech	4 4 4	Ocus. "al Grover
3-5 3	Smith Eneroc	haud fach	dirt dirt		6 Envirotech	E H S	Onarial Graven
-5 4	Smith Buerge	Land Farm	tontan et		o Envirotech	4 S 4	Daniel Groven
3-5 5	Smith Energy	Landfarm	Contained dirt	_7	e Envirotech	17 17 17 18	Deviel Grover
3-5-6	Smith Energy	Land farm	Contanted dirt	<u> </u>	é Envirotech	48	Duniel Grover
3-5 1	Land Larm	5 14.74	+".1 4. rt	.9	20 Envirodes	17 8 17 8	Daniel Graven
3-52	Land farm	Smith	イベック リンナ	<u>`X</u>	20 Equiratech	62	Dan 'el Groven
3-5-3	Land farm	Sire. La	Pill dirt	<u> </u>	O Bur rotect	и 1 1 8	Oaniel Groven
3-5-4	Land Larm	Sm. 24	Fill dirt		0 Enviratech	48 48	Daniel Groven
3-5-5	Land farm	Smith	fill dint		Lo Enviratech	48 48	Daw el Graver
2440	Land furth	Swith	1.11 d.rt	0	0 Enviratera	5H 27	Part of beause
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			M. T.				
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	BUILD	TRK #	E31	57	E-51	EST	E.S.	E	Ed	EST	187	27	_							
	TRANSPO	COMPANY	Ewleck		~															
ding		YDS	R	07	2	07	0त्	R	ନ୍ସ	R	R	PS (24)			2	89				
f La(GRID											-		T,		8			
Bill of	SHIPMENT	MATERIAL	Cont	BF	heret	Bir	1 (Ent	BF	tro	B, C	Cent .	RF		-1.2 3 -		,00V	M. T. M 100	60 6°		
	ESCRIPTION OF	DESTINATION	LANGIN	SMITS FREAU	CANCH TIM	Sur Heigy	LANKEN	SATAT	LANOFGIM	Swith	CAROLAT N	E nereu	//							
632-0615	COMPLETE DI	POINT OF ORIGIN	Smith Energy	LAN Halin	Smitta- alul	LANC/ANN	Smithersu	LANDA IN	Shith I Deligy	LANdtein	Shit Hais U	/ todarah								
(505)	EST	No.		2	5	در ر	τŇ	4	Й.	8	6	Q								
PHONE	MANIF	DATE	SKRI	5/5/2	5/15/12		21593	がさな	3/1/1/2	213/01	5/5/62	15/62			 					

Z	Ĩ	OTECH INC							1488 1488	
PHONE	: (505) 632-0615		Bill of	Lad	ing	OM	NTH OF	Merch 6 -92	
MANIF	FEST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY	
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK #		f
3~6	~	Smith Energy	Land farm	Contained dite	<u> </u>	20 [2]	nuiratech	57	Daniel Grover	
<u>} - (</u>	7	Smith Energy	tand Farm	+ suntios		20 6.	aviretech	54 S	Daniel broven	-
3-5	Ś	Smith Bueros	Laudharn	1 2, 2 p = 1 2, 10)		20 8.	nuited to b	C48	Doui'el 6mv er	-
- و	4	Smith Energy	Level Furn	Contained dirt		2 2	u. retech	100 K	Daniel Graver	
3- 6	5	Smith Encres	Landfarn	contaned dirt		とら	nuiratech	648	Deniel brown	
					10	0.10				
					00					
3-6	<u> </u>	Land Lan m	5 14.44	4.11 dirt		20 6.	nuiratec 6	548	Dan'el lomen	
3-6	ょ	rand	Sin, th	fill dirt		12 2	nuirotech	8 4 2	Daulel Examer	
3-6	\sim	Land Larm	Suth	インタンン		20 2.	aviretec \$	k HS	Daniel Grover	
2-6	Ч	Land Parm	54.74	fill dirt		20 E.	ivitotecs	H &	Rowiel Groven	
7-6-	- 14	tund furry	Smith	Pill dirt		200	notrotech	к С.)	Owned former of	
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					M. T.					
		587643	Υ.							
16/91/5			5796 U.S. HI	GHWAY 64 - 3014	FARMIN	gton, Ne	w Mexico 87401		ean juan tepro Form 578-80	

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	March Q2.	COMPANY	DRIVER SIGNATURE	Rever Warken and	O ruce Wantung	Con Sin Contraction	One Michael	Church 2x0 allored						O and have have a	One Kinkening	he man Calleren	A a way way and				
	ITH OF	RTING	TRK #	E-52	E-52	E-52	E-52	5-52						25:27	E-S2	E-S2	E-S2				
	NOW	TRANSPO	COMPANY	Envirotech	Envirotech	Enviratech	Envirofech	Enviro tech		QQ'U				Egunolech	Envirolech	Envirotech	Envirotech		62-26		, New Mexico 87401
	ling		γDS	3	Z	57 57	64 (4	R		(9			2	20	20	ని		28		INGTON
	Lac		GRID								8									M. T.	FARM
	Bill of	SHIPMENT	MATERIAL	Contrastinatas	Courte united	Contronnates	Conto mineled	antaninder			~	M. 7		F.11.1.++	Fill Dirt	F.11Di=+	FillDit				GHWAY 64 - 3014 •
		ESCRIPTION OF	DESTINATION	Land Farm	Land Farm	Landtarin	Lond Farm	Loud Tarns						Simily Frenge	Smith Energy	SmithEnergy	Smith Enersy	10			5796 U.S. Hi
OTECHI Ži NO	632-0615	COMPLETE D	POINT OF ORIGIN	Smith Energy	Smith Energy	SmithEnerow	Smith Energy	SmithEnergy	10					Lavel Farm	Land Farm	Land Farm	Land Farm				
	(505)	EST	No.	7	2	m	7	Ś						7	3 م	m	4				
Z.	PHONE:	MANIF	DATE	3-6	3-6	3-6	ى ا	3- Çi						3-6	3. G	Э-Ç	3-6				16/31/

1499	MARCH	OMPANY	DRIVER SIGNATURE	Kler	Je US	all when	and vere	all Cal	sel (h)	all che	De la L	da Varp								san juan rapro Form 578-80
	NTH OF		TRK #	Z-S/	15-31	ESI	15:3	5.3	E31	251	いい	ESI	-							 - ,
	W	TRANSPC	COMPANY	Frelloch				/												New Mexico 87401
	ding		a yos	Q	R	R	C	R	R	R	R	B		 60	186					 MINGTON,
	Bill of La	SHIPMENT	MATERIAL	(saf	13,F	Pont	A F	Cent	BF	Cont 1	BF.	Cont		21	, who is	AT V and	0	14. F.		HWAY 64 - 3014 • FAI
		DESCRIPTION OF 5	DESTINATION	Landkin	Ship	LANDLES M	Sm.W Znesu	LAndelm'	series,	Landra	ALING	LANDEM	\		-	e				5796 U.S. High
OPECH IN(632-0615	COMPLETE	POINT OF ORIGIN	SAUCH	Londkin	20005V	Andtelah	52 . + L	Conclean	L'UN L'	LAndlew)	3-6.14								
	PHONE: (505)	MANIFEST	DATE No.	3/6/62 1	16/52 2	3/6/23	1 2 1	3/6/125	74/00 10	3/6/20 7	3 161 8	2/6/57 5	· / ·							 6/16/91

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	Ma	1 SOMP/	DF	2 a	Lee	4	12	A	a a		1 A	4	A	A	B	A	A					
	TH OF	TING (TRK #	49	49	49	49	49	49		49	49	49	49	5	67	49					
	MON	TRANSPOF	COMPANY	Ewitrokeh	Ewvirobech	Ewindech	Ewvintech	ENVINATER	EN UNATER		ENVIDED	Ewindech	Ewviro tech	Envirotech	ENUTO Fech	EN VIN Yeak	ENVIROTECH					NEW MEXICO 87401
	ding		YDS	30	20	ନ୍ଦି	л С	न्	n.		20	2	20	20	30	200	ac	λ	20	2-89		INGTON,
	Lac		GRID																SI Q	ر ا	\$	FARM
	Bill of	SHIPMENT	MATERIAL	· Coutal dir	Contiddirt	and dist	Coulddirt	Certificit	Cond BL divit		<i>£</i> ://	fr1(fil	f_{rll}	PrVI	$\mathcal{L}\mathcal{M}$	frll				Mr 170	HWAY 64 - 3014
		SCRIPTION OF	DESTINATION	Land Far	Land Fam	Land Farm	Land Farm	Land Firm	Land Fam		Smill.	Smith	Smith	Smith	Smith.	Smith	Smith					5796 U.S. Hic
DEFECH INC	632-0615	COMPLETE DE	POINT OF ORIGIN	Smith Every	Smith Energy	Smith Enorgy	Smith Energy	Smith Energy	mith Every	1	E wirdtech yaud	Ew virotech yard	Land Farm	Land Farm	Land Farm	Land Farm	Land Farm					
	(202)	EST	No.		Ч	Ŋ	4	5	6			Ч	Э	4	-'n	19	N					1
EN.	PHONE:	MANIF	DATE	36	6	36	6/	3	3		36	3	3	3	i) o	3	3					5/16/91

Ĩ		OTECH INC	- 					1480	
PHONE:	: (505	5) 632-0615		Bill of	Ladi	, DD	NTH OF ∠	larch 9-92	
MANIF	EST	COMPLETE DI	ESCRIPTION OF	SHIPMENT		TRANSP	ORTING CO	MPANY .	
DATE	° Ž	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YI	COMPANY	TRK #	DRIVER SIGNATURE	•
3-9	~	Smith Enerou	Land fain	Contaned dirt	4	o Enwinatech	12 48 C	All Comments	
1 - 9	2	Smith Energy	hand form	contained dirt		O Envintach	1843		
3 - 9	2	Sry th Energy	Land Farm	contaned dirt	4	o Buirotech	581	All and a second	
6.	1	Smith Energy	Leend Lora	(citaned	~	e Environtech	د ک تا ۲ ۲	The family of the	
3.9	2	Sm. 44 Buerer	Land Lann	contamed dirt	2	Convertect	1 2 H	Mr. Ma	
3-9	9	Smith Energy	Leudharn	Comtaned dirt	4	Emi: retteck	15 D	W.	
							a .	12/2/2/2/12/00	
3-9		Level Parm	Sin th	Pill dirt	~	10 Envirates	1 242	auch lenous Mb	
3-9	α	Land Farm	5 m. 41	Pill dirt	-7	O Envirotech	E48	All course in the	
6- 8	~	Lend Form	512.44	イント リンチ	8	O Enviratech	12 AS 1	an el broven	
3.9	<u>ر</u> ر	Land Larn	5 14. 44	L'11 dir+	Ċ κ	o Envirotes +	7 24	and brower	
3 - 9	5	Land furn	Sinith	Pill dirt	4	o Envirotech	480	AM - ward 1 - was	
3-9	9	Land Farm	Sm. th	fildit	C a	o Envirotech	E48 D	ani-1 Conner Not	
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				M.	r , 20	3 R.W			
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5/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	TON, NEW MEXICO 87401		aan juan repro Form 578-80	

		DEFECTE LAC 632-0615 632-0615 COMPLETE D POINT OF ORIGIN POINT OF ORIGIN Smith Energy Smith Energy Smith Energy Smith Energy	ESCRIPTION OF DESTINATION Land Farm Land Farm Land Farm Land Farm	Bill of Bill of SHIPMENT MATERIAL MATERIAL MATERIAL <i>Carlamineted</i> Carlamineted Carlamineted		ing	MO TRANSPC TRANSPC COMPANY COMPANY Company Com	NTH OF RTING RTING RTING RTING RTING RTING	March 92 March 92 COMPANY COMPANY DRIVER SIGNATURE DRIVER SIGNATURE DRIVER SIGNATURE DRIVER SIGNATURE
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	NN	Land Farm Land Farm	Smith Energy Smith Energy	E.11 Dirt Fill Dirt		22	Envintech Envinctech	E-52	Dave yarborer
	M J	Land Farm Land Farm	SmithEnergy SmithEnergy	FillDut FillDut		20	Envirotech Envirotech	E-52	Oure Manhaveuren "
	<u>ک</u> ک	land Farm	SmithEnergy Smith Enersy	Fill Dirt	N	201	Envirotech Envirotech ODBA	E-S2 E-S2	Coure Karleverry
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HONE	Ē	5) 6 32- 061 3			- a	6 J	NOM	TH OF	Mark 42	
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPOF	RTING	COMPANY	
DATE	°. Z	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK #	DRIVER SIGNATURE	
MC B	~	Anuill Eucron	Land Farm	Conto dist	- 8	2	Claricher ad,	49	Harver Menon	
30	Ц	Lynth Energy	touch tam	Cart'd quit	13	07	Swinded	49	Harvey Relevan	
10/0	Ŋ	Smith Euron	Luchtam	Control dist	7	3	murietel	49	Harry O Server	
\$. 0	#	Luith Energy	Land Jarm	Contd dist	60	9	Eminetel	49	Adamy atim	
39	Ŋ	Linth Emery	Foud Laru	contol dut	8	2	Envirotich	49	Daniey Muse	
50	9	Louth Every	Faulitan	Control dict	10	9	Eminetel	Ъħ	charrier Recor	,
399	7	Lmith Energy	Land Jar	Contra dist		e	mintel	49	dowed hum	
		0.0	2							
3/9	\	Land Lerm	Lineth Fresh	y field	אי	02	Convicted	49	Harvey alusa	
3/9	2	And Farm	Low Miner	H ly liel	<u> </u>	50	Enviroted	49	Harry () hyon	- F
39	3	toud Sam	Smith Sung	Josef 1	17	20	Emviroted	p4	Harry a hero	
3	7	Land Larue	Init Ener	M. Lill		29	Envirotel	49	Harvey (him	
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:3/9	e	Fand Jam	Lith Con	yy hered	• 0	3	Envirotech	49	to	
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5/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	STON,	Vew Mexico 87401		aan juan rapro Form 578-80	

FAVIE	OTHE OTH INC						1 200 1 500
PHONE: (505) 632-0615		Bill of	Ladin	D	NTH OF -	1- MANCH
MANIFEST	COMPLETEI	DESCRIPTION OF	SHIPMENT		TRANSPO	RTING C	OMPANY
DATE No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YDS	COMPANY	TRK #	DRIVER SIGNATURE
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	О М О	TRANSPC	COMPANY	Enviretech	Envirotech	Envirotech	Envirotech	Envirotech	Enviro tech		Q			Envirotech	Envirotech	Enviratech	Envirolech	Envirotech					v, New Mexico 87401
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OTECH INC) 632-0615	COMPLETE D	POINT OF ORIGIN	Smith Energy	Smith Energy	Smith Energy	Smith Energy	Smith Energy	Smith Ener qy	1				Land Farm	Land Farm	land Farm	Land Farm	Land Fares					
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DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YI	DS COMPANY	TRK # DRIVER SIGNATURE	
3-10	~	Smith Burrow	Land Lain	contane A dirt	a	O BUNCRACH	R Onus lower	1
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OFFCH INC	632-0615	COMPLETE D	POINT OF ORIGIN	Smith Energy,	South Energy	Anoth Every	Anith Energy	Amil Energy	Lmith Energy	0		9	And tam	Landsterm	Fand Farm	Jayel Varm	Fondation	Janel Farm					
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< 1-	Land Larm	Sm. 44	Pill dirt	2	Chuipotech	L'P	Dawiel Groven	r													
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OTTECH INC) 632-0615	COMPLETE	POINT OF ORIGIN	SmithEnergy	Smith Energy	Smith Energy	Smith Energy	/r						kand Farm	hand Farm	Land Farm	kand Farm	Land Farm			
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	f La		GRIE	X	43	13	toret	A State			9										 FARI
1	Bill o	SHIPMENT	MATERIAL	Contal dire	Contd Condi	Contal Couch	Control con	Contol con			2	- fiel	J. J.	Valiel	fill	J. M.	\bigcup				GHWAY 64.3014
		ESCRIPTION OF	DESTINATION	Jand Farm	Frucktarm	Leubtan	Land Jam	Fand Jaru			J:H	divert dary	Smith	Anth	Anith.	Amith					5796 U.S. Hi
OTECH INC	632-0615	COMPLETE D	POINT OF ORIGIN	Smill Every	Lynth Enviry	Lovie the Energy	Smith Energy	Smith Energy			104	that want	Revel Farm	Find farm	Kend Laren	Land Jarm					
Ä	: (505)	EST	°. Z		Ц	5		\searrow					r(Ŋ	4	-5					
E	PHONE	MANI	DATE	3/1	3/11	3/11	3	3/1				3/11	2	3/11	3/11	2/1					5/18/91

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	Lac		GRID													Pa	No Contraction	d'			• Farm
	Bill of	SHIPMENT	MATERIAL	Fue)	3F	101	ZC	ren	8 7	fart	R R	Cont	RT ST	Cont-		C	6	C OC			HWAY 64 - 3014
	\	SCRIPTION OF	DESTINATION	LANCTOIR	12/2 12/21/21	LANDE IN	Saith	LANDEIM	Shith a	Cardfala	Sur int	(M)(au)	51-12	LANDIN	-						5796 U.S. Hig
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PHONE: (505	i) 632-0615	1	Bill of	Lad	ing	Ŭ M	NTH OF	March 1210
MANIFEST	COMPLETE	DESCRIPTION OF	SHIPMENT			TRANSPC	RTING C	OMPANY
DATE No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	YDS	COMPANY	TRK #	DRIVER SIGNATURE
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2/12/20 2	LADREIN! 1	Smith	135		2		EST	Old Car
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3/2625	EANDEIN	Smiller 1	13/2		R		L'ET	MA in
2/12/12/15	Shipper 1	CANCETA	1 VQ		Q		153	all and
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5/16/91		5796 U.S. Hig	3HWAY 64 - 3014	FARMIN	IGTON, I	New Mexico 87401		ean Juan rapro Form 578-80

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	итн оғ 📈	RTING COM	TRK #	E.S.	F15/0	ES1	L31	631	2.50	130	52	23	E 3	2-3/ 5	ES1 1						
	MOM	TRANSPO	COMPANY	Thoraster	-																Vew Mexico 87401
	Lading		arid yds	37	લે	R	0 C	Z	Ľ	æ	E	RC	8	20	C?	40		<i>i</i> 2, 99		 	FARMINGTON, 1
	Bill of I	SHIPMENT	MATERIAL	BF	tor	-41	Cent	RF	COAF	35	Cont	F. / -	(ant	S C	Cent		o M	000000000000000000000000000000000000000	- reil é		IWAY 64 - 3014 •
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dtech in o	632-0615	COMPLETE DI	POINT OF ORIGIN	LADJEIN	うちょう	LANDRIK	577146	ANDACH	5M. 44	ANKIN	Shuth Energy	Canarin	54:42	LANJEN A	Jr. 40						
ENTER	PHONE: (505)	MANIFEST	DATE No.	3/2/1	2 July	512/2/2	7 3/214	71131351	3/2/496	3//3/62/1	3/13/5046	5112/2 J	0,9575	3135211	21.2hr 12						5/16/91

	or March 92	NG COMPANY	K # DRIVER SIGNATURE	19 Danue hil	19 Saruh lead	14 thank / won			,	4 Samer Sup	19 channed lleiger	19 Answer Mune						ean juan repro Form 578-80
	MONTH	TRANSPORTI	COMPANY TRI	O Emision Taking	o Eminetick 4	: Eurivetech 9	M.T.			o Enviroted 9	O Emerated 4	0 Emineteal 1		T.M PO				ron, New Mexico 87401
	Bill of Ladin	HIPMENT .	MATERIAL GRID VDS	Cutil duttonen 30	Fift Emerate 20	Coverete to		00 ⁰ 1*		fill 20	fill se	shill at						iway 64 - 3014 • Farmingto
		E DESCRIPTION OF S	DESTINATION	n Level Sur	7 Reuchtonel	14 Fand Sour				a drith	Amith "	Smith 6	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					5796 U.S. Higi
OTECH IN) 632-0615	COMPLET	POINT OF ORIGIN	Imit Ener	Low the mercy	Linth Eucro				Land Lan	Fand Sam	Jend Term						
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	F March	G COMPANY	# DRIVER SI	No.	2 (Chang) No		Cone O	2 Marine Ro						Z Lewis X:		C OTTO	2 Chanelkin	Dan 240			
	MONTH C	PORTIN	тяк	E-32	E'S'	E SZ	ES.	E.S.						 E-S	Ē,S,	ES:	1-S-A	E-S2			
	-	TRANS	COMPANY	Envirelech	Envindech	Envirotech	ENVIRTEDA	Envintel		1 m Q				Envirobech	Envirotech	Envirofech	Enviro feels	Enviretech	JSG W. T		4, New Mexico 87401
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	Bill o	SHIPMENT	MATERIAL	Contarmiche	Outrinick	Curtannoved	putaminak	Contamine Ke				ι.		Fill Dirt	Fil Dirt	F. M. Dit	Fill Dert	Fill Dirt			3HWAY 64 - 3014
		ESCRIPTION OF	DESTINATION	Land Farm	Love/Kern	Land/Farm	Land Farm	Land Farm			N.			Smith Energy	Smith Energy	Smith Energy	SmithEnergy	Smith Energy	>		5796 U.S. Hi
OTECH INC) 632-0615	COMPLETE D	POINT OF ORIGIN	Smith Energy	Suith Energy	Smith Energy	SmithEnergy	Smith Energy	/ (Land Farm	Land Farm	KandFarm	Kand Farm	Laue Farm			
Ĩ	: (505)	FEST	No.	7	2	M	#	5						7	と	M	A	Ъ			
Z	PHONE	MANI	DATE	3.12	3./2	21-5	12	3.12						3-12	3-12	3./2	3-12	3-12			5/16/91

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PHONE:	(505) 632-0615	1	Bill of	Lad	≥ 5	оитн ог 🖄	1 urch 12-92
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT		TRANSI	ORTING CC	MPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS COMPANY	TRK #	DRIVER SIGNATURE
3-12	~	Sm. H Energi	Laud Parn	Contamed Concrite		20 Enviratech	848	Date / Carrer
3-12	7	Smith Energy	Lee u Larn	contanod		Lo Euripotech	48 1	Carlel Contra
3-12	\sim	Smith Energe	Land Farn	contermed concrite		La Equiratech	548 6	and by bon ver
イー	4	Smith Energe	Landforn	Contained		re Envirates 5	548	cuial Graven
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					BO			
3~17	~	Land Farm	Sm. 44	L'II diry		20 Envirotect	1843	aniel Croues
71-{	ح	Land farm	SM.74	fill dirt		20 Envirated	548	aurol Gener
3.12	2	Land Larm	5m-44	findir+	• *	La Enviratech	Fig	laniel Groven
71. 0	Ż	Land Farm	Smith	Fildirt		6 Envirotech	2 Sty	aniel Groven
71- {	5	Land Farm	Smith	fill dirt	<u> </u>	-0 Enviratech	648 0	ani'el Grover
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					7	200		
		88709	588503	Fuel 135	Grad.			
5/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMIN	gton, New Mexico 87401		een juan repro Form 578-80

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PHONE:	: (505) 632-0615			Lau	6 L	OW	NTH OF Marce 4 13 - 9 2
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPC	RTING COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK # DRIVER SIGNATURE
3-13		Sm. th Energy	Lund Lurn	Conterned C		Pet h	Enviretech	Rys Daniel Conver
5-5	R	Smith Enerce	Laud Parm	Contane K			nuiratech	R Dar w/ low is -
3-13	\sim	Sir 44 Enerou	Land Lann	Cout tame of		4	HU. OFFICE	Kur Marial Carrier
<u>(</u> /·	Н	Smith Encrou	Laidlain	Containe C		<u></u> य	au rotech	ENR Duriel Contract
5-13	12	Smith Enerci	Land Larn	contant		14	au retech	E Contel Contes
						10	~	
					001	}		
3~13	-	Land farm	Sm. 44	Fill dirt		7 07	curretech	48 Duniel Conver
3-1)	ん	Land Parm	Smith	fill dirt	~~	207	Purintech	Ets Daniel Carries
3-13	η	Land Farm	Sm. th	Pill dirt	<u> </u>	0	Envirotech	EN Paule Crows
5-13	Ц	turd tara	Smith	L'II dire	_4	0	in. rotech	E Oni el lora 1 Er
1-1	ア	Land Farm	Smith	fill dirt	.7	1 07	an retect	48 Daniel Grouper
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					 2-			
		88960	588953	115. Cal.				
5/16/01			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	GTON,	NEW MEXICO 87401	san juan repro Form 574-80

E		ROTECH INC	- 						1201 and 1201
PHONE:	(50	5) 632-0615	1	Bill of	Lad	bu	OW	NTH OF	March 92
MANIF	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPC	DRTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK #	DRIVER SIGNATURE
5.13	~	Smith Enerav	Land Farm	Court amirals		202	Thritettech	F.S.	Camera Manducented
3-/3	2	Smith Enersy	Laud Farm	Contramina feel		202	nvivatech	E.S2	Carry Kanley Include
3-13	Μ	Sinita Grens y	land term	Con Kamine La		2017	nvirotech	L SZ	Chine Way at the
<u>(13</u>	Ľ,	Smith Energy	Landtern	Cutomickel		202	hundech	5-52	On Waller
		10							
					0	r PC	~		
					6				
				Ð					
3 - / 3	$\overline{\ }$	land Farm	Swith Erenan	Fill Dirt		2	Envirotech	E-S2	Course Kind which
<u> 2 /- ع</u>	2	land Farn	SwithEuroy	Fill Dirt		2	Envira Le C	E SZ	in the second se
3.13	M	Land Farm	SmithEnergy	FillDirt		4	Aviratech	Fisz	Could Manuel
			//						
						` 0	140		
					No No No	0. C0			
5/16/91			5796 U.S. HI	IGHWAY 64 - 3014	FARMING	STON, N	iew Mexico 87401		san juan repro Form 578-80

	MONTH OF MOREN 82	TRANSPORTING COMPANY	COMPANY TRK # DRIVER SIGNATURE	winted 49 throwy Chingen	winted 49 Hawit They	visted 44 Dany Jour	virted 49 avert Thear	winter 49 Hamy / pro-	(uninted 49 planues Marin	winted 49 damen Lake	windted 49 Hawy Lipa	Wiretech 49 Adamy Maga	minetech 49 Hannel Minen	www. Leh 49 Hawey / hear					AEXICO 87401
	of Lading		L GRID YDS	07.	30 52	(20 En	2 au En	A 320		5 2	(~ 20 En	20 8	30 E	1 17 EC	20 6-1		× h dd	O TO DE TO	D.	14 • FARMINGTON, NEW 1
	Bill	IPTION OF SHIPMENT	TINATION MATERIA	udture Contol	alitered Center	uch tarm Part'o	uditaria Cont.	and true Cont !		mith file	mith file	with thell	T. yoy lock	mith fill	hited here					5796 U.S. HIGHWAY 64 - 30
DIFECH INC.	632-0615	COMPLETE DESCR	POINT OF ORIGIN DES	Amith Course to	Liveth Curry Se.	Louth Eurin Le	Lmith Emran La	Smith Euron I		Land Farm A	Kind tarm 2	tand Sam A	fand term E.	et yard at	Kind tarm El					
ENVHR O	PHONE: (505) (MANIFEST	DATE No.	3/3 /	3/13 2	3/3 3	3/3 4 2	3/3 5		1 81/8	3/2 2 4	3/3.3	313 4 6	3/3 5	3/3 6					6/16/91

	March	OMPANY	DRJVER SIGNATURE	Ula Jac	all and	all in	112 Cm	11 11 S	ILL Che	all and	AK CLAS	and the							ean juan repro Form 578-80
	DNTH OF _	ORTING C	TRK #	RJ	63	Fi	5.5	E.S.	27	5.3	B	15-21							
	W	TRANSP	COMPANY	Carly A Jeroko cl										65					Vew Mexico 87401
	ading		ID YDS	Qu	200	A	2	Ę	Ŗ	6	n de G	B	M, 7,	A CW				· ·	RMINGTON, 1
	Bill of La	SHIPMENT	MATERIAL GR	R.F	Car ha	BF	Cont	24	Cont 1	755		LL M		0		01 :			 HWAY 64 - 3014 • FA
	1	DESCRIPTION OF	DESTINATION	Jun (Th	(makein	Shi Zy	CASE R	Call 1	1 And Kin	Shi H	1 A BEIN	Son 40			\				 5796 U.S. Hig
OTECH IN(632-0615	COMPLETE	POINT OF ORIGIN	(Dudrein	Some the	LAnderh	Smt 1/2	(Malich	541.26 201311	And In	512 12	LANKI							
N N N N N N N N N N N N N N N N N N N	PHONE: (505)	MANIFEST	DATE No.	3/16/21	3116/2 2	3/16/21	1 2 0 1	JUNE 51	3/14/910	3/16/63 7	3/11/12 & -	1/10/52 A							 5/16/91

	ROTECH INO	• -						don 12.29
PHONE: (50)	5) 632-0615	8	Bill of	Lad	ing	MON	ІТН ОF	Manch 92
MANIFEST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	TING	COMPANY
DATE No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	YDS	COMPANY	TRK #	DRIVER SIGNATURE,
3/10 1	Smith Every	y Tauchton	m could'		R	Empiroteck	67	Harrier China
3/16 2	Amith Even	4 Soud tar	m Cord'd		2	Emvioted	рų	Harver / Brog-
3/4 3	Smith Energy	Fand Stad	n Contid		30	Eminated	51	Harrie flyge
3/14 4	Smith Energy	Landfam	1 Carl 2		20	Enviro tech	49	Harry alway
		•						
				1	P	O M.T.		
			~/) Q¢	h			
3/16 1	Jand Farm	Louth	fill		ନ୍ଚି	Emintel	49	Larung Muton
3/6 2	Ford Jam	Lith	field		98	Eminotech	49	dawy Chies
3/6 3	Fand Varue	Amith	low		NC NC	Envirotech	67	Chrun Marten
3/16 4	Jand Lann	Hinte	fill		20	Enviroted	49	Harvey Chever
/			0			. 8.		
						in slow		
					28			
5/16/81		5796 U.S. Hid	GHWAY 64 - 3014	FARMI	NGTON	New Mexico 87401		ean juan repro Form 578-80
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	NTH OF March 92	DRTING COMPANY	TRK # DRIVER SIGNATURE	ES Daw Workmand	E.S.2 Coult Minund	ES Down Marsh	ESZ Dave Man And And	E.SZ Down has Rough al	0 0					E-S2 Dave Walker and	E-S2 Dave Donkerner	ES2 Daw Wardenah	Esz Dourt Handerer)	E-52 Dave Undergund			san juan repro Form 578-80
	ow MO	TRANSPC	DS COMPANY	20 Envirolech	20 Envirotech	20 Euvinotech	20 Ennimbech	o Enviro tech		× V V	1. (n). · · · ·			20 Envirofech	o Envintech	2 Enviro tech	D Envirotech	20 Envirotech	N 980-0	in a singly	ston, New Mexico 87401
	Ladi		arid Y		1	IV.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2			6	00			<u>N</u>			<u>N</u>		ř	Farming
	Bill of	SHIPMENT	MATERIAL	outo winched	ENTRANING Red	Cutaminula)	entemine tail	Cu le minated						Fi//Dir.+	Eill Dit	F:// D;r+	Fill Dirt	Fill Dit			зниау 64 - 3014 •
		ESCRIPTION OF	DESTINATION	LandFam	Lanc/Farm	Land Farm	Law Farm	Laud Farm						Smith Erran	Smith Eres	Smith Energy	Smith Energy	Smilh Energy			5796 U.S. Hic
OTECH INC) 632-0615	COMPLETE D	POINT OF ORIGIN	SmithEnergy	SmithEnergy	Smith Energy	Smith Energy	Smith Energy	1					LandFarm	kand Farm	Land Farm	Land Farm	Land Farm			
	:: (505)	FEST	No.	~	く	ŝ	4	S						 /	2	Ŵ	4	S			
E	PHONE	MANI	DATE	3 - 16	3. 16	3-16	21.	3-16						3-16	3-16	3-16	3-16	3-16			5/16/91

2	Ä	OTECH INC	- 1 			2			1533	•
с ш	(505)	632-0615			Lau	6 u	MOI	NTH OF	March 16-92	1
Ξ	ST	COMPLETED	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY	•
	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DS	COMPANY	TRK #	DRIVER SIGNATURE	
		Smith Energy	Land Fain	Concrit.	Y	0	Emirated	545	Dani-1 Comune	
. 0	4	Smith Energy	Fard	Conterned Concerte		20	Enn. cutech	545	1	
								9	12/10/07/21/00/07	
						0	DWF			1
					non,	<u> </u>				
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						-				
		589393	fuel go Ga	/						
		589555								
			5796 U.S. Hic	энway 64 - 3014 •	FARMING	STON, I	New Mexico 87401		tan juan rapro Form 578-80	

1.2.2 J	777 MRR 1992	OMPANY	DRIVER SIGNATURE	At have	La Contraction	2 Domestic	X Charles					2 A A Level	X						san juan repro Form 578-80
	ΓH OF ∠	TING O	FRK #	48	AB	48-	<u>7</u> 8				4	84	48						
	NOW	TRANSPOR	COMPANY	ENVIRO TE CH	ENWROTECH	ENVIROTECH	ENVIROTECH				ENVICO TECH	ENVIRO TECH	ENVIRO RECK		1.89				I, New Mexico 87401
	lin		УDS	2	20	20	20	1	R		20	20	20			2			INGTON
	Lac		GRID							þ						2			Farm
	Bill of	SHIPMENT	MATERIAL	(ement	Cartanade of	Jun	and a		, M		F. 11	Fill	F.11 .			之初			3HWAY 64 - 3014 •
! !		ESCRIPTION OF	DESTINATION	Land Faxin	LANCI FROM	LAND FREM	LAND FROM				Ser TH all	SALTH BY 9	Jm1 TY Eus						5796 U.S. Hic
ONE ON INC	632-0615	COMPLETE DI	POINT OF ORIGIN	Smith everet	ZMITH ENERGY	Smith ENERCY	SmITH ENERGY				LAND Facan	Land Fare m	Lind Fala						
Ň	(505)	EST	No.		N	\mathcal{S}	X					3	3	-					
	PHONE:	MANIF	DATE	2/12	17	3/17	17				21/2	3/17	3/17	_					5/16/91

••• J ••• •• 1534	DF MALCH	G COMPANY	(# DRIVER SIGNATURE	1 Ma Une	7 delines	5 alachad	S We Card	1 lett Une	all len	111 Charl	S all C	1 Me Cand	all Carl	All loc	ante l'a								an juan repro Form 578-80
	MONTH (NSPORTIN	твк	L. F.	the second	12	Ü	5	E.S.	ũ,	1	1.2	2	E S	53								- - - -
	1	TRA	COMPANY	LNUMB													~						NEW MEXICO 87401
	ling		YDS	R	R	R	R	22	97	R	2	B	20	01	20		M I	101	2				INGTON,
	Lac		GRID														t v	, p/	6 (C				FARM
	Bill of	SHIPMENT	MATERIAL	Cont	ßΕ	two	BF	Cart	RF	traj-	, BF	Cont	35	(ent	Br'	2. 4		K.	100 5	061 :	- 		GHWAY 64 - 3014
		ESCRIPTION OF	DESTINATION	1 An Mala	South here u	LANd Kin	SPECK (LANOPEN	Set into a v	(2) a/2 12 13	Engles alla	LAN Bin	34.14	1 And Rich	2442	//						`.	5796 U.S. Hi
OUTEON INO	632-0615	COMPLETE D	POINT OF ORIGIN	Smith Real 1	LANG (h)	SVZ 14 MI	(An U/E/m	Smith Energy	LANDEIN	SMIN LOCK	1 and kin	Jen the	LAN Perk	ShithEmigu	LAnd have	-							
	PHONE: (505)	MANIFEST	DATE No.	3/11/2	11 - 14 C	3(17623	71.12K2 4	3/17/22	1 mps 6	11-11-12 J	1 2kg 4	3/17/629	arcycife	3176716	D AILING	-							5/16/91

	ROTECH	INC	- ,						6051
PHONE: (5	<u>5</u> 05) 632-0615		1	Bill of	Lad	ing	MON	VTH OF	March 92
MANIFES	T CON	MPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY
DATEN	0. POINT OF C	DRIGIN	DESTINATION	MATERIAL	GRID	sa,	COMPANY	TRK #	DRIVER SIGNATURE
3-17 1	Smith Ene	erd y	Land Farm	Contaminula		50	Envirotech	E-52	Daneskinkerend-
5-17 2	Smith Ene	2017	Land Farm	Sou amineted		5	Envirotech	E-S2	Dave Unkerner
3-17 3	SmithEne	1 C	Kend Ferm	Con Taminated		20	Furiotech	ESZ	Day Marleson
V V V ·	f Smith Ener	رر ۲۶۷	Land Erm	an taninakal		2 22	Envirotech	E-S2	Dans Jankannich
3-17 6	5 SmithEn	J1 ergy	Landterm	Cou duing a		ZU E	Invirotech	E-S2	DaudKanhand
					Ű	PO,	- 7		
					B		····		
					Pa				
1 11-2	Land Farn	2	Smith Energy	Fill Dirt		20 1	Envirtech	E-52	Caue Manhar and
3.17 2	Land Farm	Σ	Smith Frongy	Eil Dirt	× ×	20 2	Envire tech	E-S2	On in I take leven
3.17 3	S Land Farn	z	Smith Energy	F:// Dir+	. 1	<u> 7</u> 20	Invitatech	E.S2	Dave Underland
3-17 4	1 Land Far.	¥	SmithEnergy	Fill Dirt		20 2	Envirolech	E-52	Dave Wandaning
3-17 5	5 Land Far	z	Smith Energy	Fill Dirt		201	Fuvirotech	E-S2	Davelyandrenouch
			2			-	N. S. S. S. S. S. S. S. S. S. S. S. S. S.		<i>c</i> 0
						6	T.M . T.		
					Ŕ	2			
5/16/91			5796 U.S. H	GHWAY 64 - 3014	FARMIN	IGTON,	New Mexico 87401		aan juan repro Form 576-80

FN	ROTECH INC	 				1221
PHONE: (50)	5) 632-0615		Bill of	Ladi	mg Mo	NTH OF March 17-92
MANIFEST	COMPLETE C	ESCRIPTION OF	SHIPMENT		TRANSPC	DRTING COMPANY
DATE No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	DSCOMPANY	TRK # DRIVER SIGNATURE
3-17 1	Sm. H. Eneresco	Leved Furn	dirt amed		20 Enviretted	Ed & Daniel Correct
3-172	Smith Enerou	Levil & Parn	Lontain ad	R	0 Envintech	E48 Dani-1 6001-1
3-17 3	Smith Energy	Lundforn	tontan ed	R	0 Enviratech	48 0 1 1
17 4	Smith Energy	Lernd Ferry	costaned dirt	<u>n</u>	W Enviratech	K / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /
3-17 5	Smith Energe	Fred Para	contant ed	<u>u</u>	0 Enviratech	R Daniel Groupe
			-			
1 11-6	Kand Farm	Smith	Pill dirt	4	O Envirated	×48 Daniel 6 mines
3-17 2	Land Parm	Sm. 44	Pill dirt	ત	-0 Anuirotech	ER Daviel Cours
3-17 7	Leiyd Larm	Surth	P.W dint	C3	6 Envirotech	48 Daniel 62000
h (1~ ~	Land Parm	Sin. th	fr,1 qr,v+	<u>e</u> t '^	O Enviratach	12 Daniel Grover
3-17 5	Landfarm	Sm. +4	トンレムシア	7	20 Enviret cch	EHS Daw 21 CONDEN
					Ξ.	
				, X	1 100 m 3 10	
				V	r 100 -	
9 Start	81 800	8202	109 60			
6/10/01 - C		5796 U.S. H	GHWAY 64 - 3014 •	FARMING	ston, New Mexico 87401	san juan repro Form 578-80

1535	F MARL	3 COMPANY	# DRIVER SIGNATURE	1 alle che	The chin	1 Jule Unc	1 ph cles	1 Med Ched	1 all Cal	Jaken Ca	all land	apple in	1 Jack Conter	ill lac	all Carl						aan juan rapro Form 578-80
	NTH O	DRTING	TRK	T.S.	12	12	14	5	13	10	5-3	5	<u>E</u> S	63	ESI						
	MO	TRANSPC	COMPANY	Er all arch	-		(Pd			New Mexico 87401
	ding		ХDS	8	8	8	R	R	R	8	20	00	8	R	2		<u>}</u> 0'¥		2		INGTON,
	Lac		GRID											•				B C	0		FARM
	Bill of	SHIPMENT	MATERIAL	(-6n+	<u>1</u> 2	Cant	5	1 20 t	31	2 ort	420	Port	BF	Cart	1BF				0/		3HWAY 64 - 3014
 .		ESCRIPTION OF	DESTINATION	LUANCHAN	Spill.	1 PARekelon	Ser M.	L'Andlel M	Shits Shits	L'and Ela	Sold of a Carlas	LANKCh	5416	LAN Kin	Sur de	1.					5796 U.S. Hic
OTECH INC) 632-0615	COMPLETE D	POINT OF ORIGIN	Shill and	LAN TEIN	South Eray	Carollein	L'NOV IN	1 And le(m)	SMITENPEN	Lotre les	SMELERU	Landform	Shitty	(m/C/b)						
	PHONE: (505)	MANIFEST	DATE No.	7/18/1/2	J1662)	3/16/23	7.427.	2/10/25	3/18/52 6	7 Jaka 7	2 18 W S	2/10/22 9	2/18/15/16	2/16/20/1	Clabil	\$					5/16/81

		OTECH INO	I J,						-1522
PHONE:	(505) 632-0615		Bill of	Lad	Ĩ	IOW E	VTH OF	March 18-92
MANIFE	EST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPC	RTING	COMPANY
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	γDS	COMPANY	TRK #	DRIVER SIGNATURE
3-18		Sinith Energe	Landfarn	contane 2 ditt		20	Equinotecs	Et P	On the I bearing
3-18	d	Smith Baeras	hand karm	tontaned		02	Baurdtoch	×7	Don't l'action
3-18	\sim	Smith Energy	Land Parn	contaned dirt		02	Enviratech	7.0	Davial Caller
81~	Н	Smith Eneros	Lerud Larn	contan . K		20	Envination	St St	Dout at 62000
3-18	- 1~	Sm. H Enerec	Landfarm	contranced		20	Buu notech	17 C	Daviel Conversion
81-5	6	Sn. th Energe	LandPark	COUTerment					
		10							
3 -1-8.	~	Land Larm	Smith	L'11 dirx		20	Eurirdres	48	Dan. ' 1 (
3-18	2	Lond Lain	5 14.44	fr,11 dirt		20	Enviratech	E 40	Daviel Carries
3 -18	5	Loud Parm	Sour 24	P.11 dirt		20	Eurivetech	F.49	Dauter Competen
81- 0	ų	Land farm	5 m. 44	f."h 11.14		50	Envirotect	643	Can'el lon 11-1
ļ						·		,	
						 	T.M. T.		
				-	2	Ø	a dan 1		
						6			
					N.	2			
6/16/91		82265	5796 U.S. Hi	GHWAY 64-3014 •	FARMIN	IGTON	, New Mexico 87401		san juan repro Form 578-80

	Bill of Lading MONTH OF March 92	SHIPMENT TRANSPORTING COMPANY	MATERIAL GRID YDS COMPANY TRK # DRIVER SIGNATURE	interminated 20 Envirotech E-52 Daw 2Aarbernie L	Situningted 20 Envirotech E-52 Danlanenal	outeminated 20 Envirotech E-S2 Days 240, Bar work	internisted zo Envirotech Escharian	outaminuted 20 Envirotech E-SZ Daw Wardward		· · ma ma			Eill Dit 20 Envirotech E-S David Walnuch	Fill Dirt 20 Envirotech ES2 Dave Darberough	511 Dirt Zo Envirotech E-52 Dono Chan Baran	cilDit 20 Envirotech Escharg Landrand	71/ Dirt 20 Envirotech ES2 Naue Transauer	FillDirt Zo Enviratech ESZ Day Zunkenneh	0 0 1 2 2 4	
	Bill of Lading	SHIPMENT	MATERIAL GRID YDS COM	and annaled 20 Enviro	contaminated 20 Enviro	Parteminaled 20 Enviro	antaminated 20 Enviro	outaminated 20 Enviro	۲ ۲	2 200 WC	~ d01 ³ /		Fill Dit 20 Envirot	Fill Dirt 20 Envirol	Fill Dirt 20 Envino	Fil/Dirt 20 Envino	Fill Dirt 20 Envirot	FillDirt zo Envirate	1 2 U.S. 4	
	1	DESCRIPTION OF	DESTINATION	Land Farm	Kand Farm	Land Farm	Land Farm	LandFarm (Smith Energy	SmithEnergy	SmithEnergy	Smith Energy	Smith Energy	5mithEnergy		
OPECH INC) 632-0615	COMPLETE	POINT OF ORIGIN	Smith Energy	Smith Energy	Smith Energy	Smith Energy	Smith Energy	\ r				Kand Farm	Land Farm	Land Farm	Land Farm	Land Farm	Land Farm		
	NE: (505	ANIFEST	VTE No.	18 1	18 2	18 3	18 4	18 S				 	18 1	18 2	18 3	18 4	18 5	18 6		

	MONTH OF THREAK 1992	ANSPORTING COMPANY	TRK # DRIVER SIGNATURE	1 HB A View	# 48 20 -	18 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4 48 Land	148 × 84	1 to Litree		1 48 25	40 70 07	(1) HB	19 20	H 48 80 200						ean juan repro Form 578-80
	ing	ТВ	rds COMPANY	20 ENVIEOTEC	20 ENVIRONTEC	ZU ENWEDTECH	20 ENURO TEO.	20 ENVIROTEC	ZU ENUROTED		20 ENVIROTED	20 ENTIROTED	20 ENVIEOTECH	20 ENVIROTECH	20 ENVIRO IEC	M. T	A DU GAN T				GTON, NEW MEXICO 87401
	Lad		GRID Y															201	rac.)		Farmin
	Bill of	SHIPMENT	MATERIAL	FIL	RIC	Fill	ととし	Fill	F.M.		Chron To	Conto.	Conta.	Covor.	Certh.			•			GHWAY 64 - 3014 •
		ESCRIPTION OF	DESTINATION	Simit H EUSY	Smith Earsy	Smith ENGV	DWITH ENGY	Sauth END	SmITH ENEN		LANT Farm	LANd Frem	Lind Frient	LAND HARM	LAND From	•					5796 U.S. Hi
OFFERH INO	632-0615	COMPLETE D	POINT OF ORIGIN	WAND FARD	Laid Facen	LAND FREM	LANIT FREM	KAND FARM	LAND FREM		Smith ENERGY	SMITH ENERGY	Smith ENERGY	Smith ENERGY	SMITH ENERGY						
	: (505)	FEST	No.		N	Ŋ	Å	5	6			て	M	4	5						
Ż	PHONE	MANI	DATE	3/18	3/18	3/10	18	3/18	3//8		3/10	3/18	3/8	8	3/18 c		·				5/16/91

ENVIR	COTECH INC						, 153 6
PHONE: (505) 632-0615		Bill of	Ladin	OW D	NTH OF	MARCH
MANIFEST	COMPLETE E	DESCRIPTION OF	SHIPMENT		TRANSPC		COMPANY
DATE No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID YDS	COMPANY	TRK #	DRIVER SIGNATURE
3/19/52 1	Smith Ellor y	1 Aralan	(OnF	R	ENUPARA	15-31	JUL UL
3/192 2	LAN John	Shind	BR.	8		EST	1. Clark
3/15/623	SAM	LANTAN	Cert	() ()		でも	Jele 1
-16621	Land In!	ENERV	FF FF	20		L'N	all la c
3/9/2/	SM/H Anerey	LANCHEON	tion	A		E'S	Chelle 11-C
3/19/2	LAN BUM	Shilly	42	QA QA		<u>'E-5</u>	lla Und
CIARS)	Sinity	LAR BEGA	Cent	8		N.S.	litter (hull
21.66.28	CANPERA	SATTA F. Male U	BF.	Q		ESI	All land
2/10/02 0	3 MAR U	(Antrik	4Ve)	22		E:51	All 1/2
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11211	MONTH OF March 92	PORTING COMPANY	TRK # DRIVER SIGNATURE	E-52 Dave yarderouch.	E-SZ Daw Harberger	E-52 Dave Darberer	E-52 Dave Zharkerwer	E.SZ Dave 22 Marenel	E'S2 Dave Coullerand	¢ 0				E-52 Dave 21 arbained	E-52 Dave 7 han barnen	E-52 Deve year derand	ES2 Davelordoran	E-52 Danel Acherent	E'se Durch when E			san juan repro Form 578-80
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1538	MARCH	COMPANY	DRIVER SIGNATURE	All Unt	All (Jul	A. C. Inc	<i>^</i>										san juan repro Form 578-80
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DATE	°. No	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID Y	'DS	COMPANY	TRK #	DRIVER SIGNATURE
3-20		Smith Energy	Land Farm	Centaminated		02	Envirolech	E,SZ	David Ann Ranning
3.20	ん	Smith Energy	Land Farm	Can laminatas		2	Envirotech	E 52	Dave 1 Di Laward
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3-20	2	Land Farm	Smith Enorgy	Fill Dirt		2	Envirotech	E-52	Den Zandanan L
3-20	と	Land Farm	Smith Energy	Fill Dirt	2	0	Enviro tech	25 4	Drivel Mark Lever
3.20	m	hand Farm	Smith Energy	Fill Dirt		202	In virodech	E.S.2	Dane Varland
3-20	7	Land Farm	SmithEnergy	Fill Dirt	<u> </u>	2	Furintech	F:S2	Dave Var Raphish
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5/16/91			5796 U.S. Hi	GHWAY 64 - 3014 •	FARMING	GTON,	New Mexico 87401		aan juan repro Form 578-60

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PHONE: (;	(202)	632-0615		Bill of	Lad	Ĩnç	NOM	ITH OF	March 20 -92	
MANIFE	ST	COMPLETE D	ESCRIPTION OF	SHIPMENT			TRANSPO	RTING	COMPANY	
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	γDS	COMPANY	TRK #	DRIVER SIGNATURE	
3-201		Smith Burren	Land Parn	Conterned birt		20	Envirates	643	Vaniel Grover	
3-20 2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Smith Eneros	Landform	contane d		2	Enviratech	E 49	Caniel Grover	
3.20 3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mith Energe	Land Fare	dirt Contam ed		20	Enviratach	K49	Oun el lorover	
3	4	imith Energy	Land harn	contaned		20	Envirotech	643	Daniel Grover	
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3.20		Lewed Farm	S m. 44	fill dirt		20	Envirete 04	249	Daniel Corner	
) . Je	2	Land farm	Sm. th	fill dirt		9	Enviratech	in an	Daniel Grover	
3.20	~	Land farm	5 m. 24	Pi'll dirt		20	Enviratech	546	Daniel Grouper	
e je	4	Land Farm	Sm. 44	fill dirt		20	Envireduch	673	Quality Compare	
	 r						R M. T.	•		
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