State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

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SEP 23 1999
OIL CON. DIV.
DIST. 3

Rck

PIT REMEDIATION AND CLOSURE REPORT

Operator: Phillips Petroleum (Williams Field Services) Telephone: (801) 584-6361

Address: P.O. Box 58900, Salt Lake City, Utah 84158-0900

WellName: SJ 29-6 UNIT #50 (86303)

Location: Unit or Qtr/Qtr Sec H Sec 36 T 29N R 6W County Rio Arriba

PitType Dehydrator

LandType: State

Pit Location: Pit dimensions: length 16 ft., width 16 ft., depth 12 ft.
(Attach diagram)

Reference: Wellhead

Footage from reference: 242 ft.

Direction from reference: 293 Degrees East of North

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 points)	10
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1,000 feet (10 points) Greater than 1,000 feet (0 points)	0
	Ranking Score (TOTAL POINTS):	10

(86303)

Date Remediation Started: 11/9/96 Date Completed: 11/25/96

Remediation Method: (check all appropriate sections) Excavation ☑ Approx. Cubic Yard 120

Landfarmed ☑ Insitu Bioremediation ☐

Other Landfarmed soil after mechanical aeration.

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite ☑ Offsite

General Description Of Remedial Action:

The pit was excavated to remove gross petroleum contamination. The excavated material was mechanically aerated and placed into an onsite landfarm. Returned to site 4/6/99 and utilized hydraulic probe to collect sample at 18-20'. TPH: 14.2 HS: 76

Ground Water Encountered: No

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location SJ 29-6 #50 EX-V-01

A composite sample, made up of 4 points from each excavation face, was collected..

Sample depth Up to 12 feet

Sample date 11/13/96 Sample time

Sample Result

Benzene (ppm) 10.8

Total BTEX (ppm) 133

Field Headspace (ppm)

TPH (ppm) 91.6

Ground Water Sample: No

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 9-20-99

SIGNATURE M L Harvey FOR WFS

PRINTED NAME AND TITLE MARK HARVEY PROJECT COORDINATOR

Form B

Environmental Services
P.O. Box 58900
Salt Lake City, UT 84158-0900

Pit Closure and Retirement Addendum- Risk Assessment

The sample analyzed for confirmation at this site exhibited slightly elevated levels of toluene. Toluene toxicity information indicates that such low levels (<200 ppm) pose low risk to human health and the environment. This conclusion is based in part on the information below:

Toxicity Information

Toluene is a clear, colorless liquid with a sweetish, distinctive smell. Studies have concluded that toluene is non-carcinogenic. Studies on terrestrial organisms indicate that toluene would not be acutely toxic unless present in very high concentrations (1). Natural sources of toluene are associated with coal, petroleum, and forest fires.

Environmental Effects

Toluene which is released to soil will generally be lost through evaporation in near surface soils and will biodegrade in-situ. In fact, for various soil systems studied under experimental conditions, the half-life of toluene has been shown to be between 2 and 92 days. (2) Bioremediation has been shown to be more effective in sandy or gravely soils with the rate influenced by inorganic nutrients such as nitrogen and phosphorous. In one study, when nitrogen was added, a 100-fold increase in toluene degradation was observed. (3)

If released to surface water, removal can be rapid or take several weeks. Toluene evaporates rapidly from surface water with an experimentally determined half-life of 2.9-5.7 hours for evaporation from 1 meter of water with moderate mixing. The half life in winter has been observed to be 13 days. In ground water, biodegradation of toluene is generally slower depending on specific conditions, but toluene has been observed to completely degrade in 8 days, including a lag of 3-4 days, during which microbial populations became acclimated. (4)

When released to the atmosphere, toluene degrades by reactions with hydroxyl radicals which are produced photochemically. As a result of this reaction, toluene has been determined to have a half life of 3 - 25 hours largely dependent on ambient temperature. (4)

Based on an evaluation of topography, this site is believed to have ground water greater than 75' below ground surface. Due to the soil type encountered at this site, it is very likely that the residual toluene remaining in the pit will degrade in the short term under existing conditions, or certainly during the life of the producing well. Granular nitrogen fertilizer has been added to the soil in order to facilitate further degradation as cited above. Observations and data collected from other sites suggests that the concentration of toluene would diminish vertically and likely be less than 10 ppm within the next 3-8 feet of soil depth.

Since there are no nearby receptors or domestic water sources, this site poses little risk to human health and the environment. Closure is justified based on the relatively low total petroleum hydrocarbon (TPH) concentration and the fact that benzene, ethylbenzene, and xylene meet applicable closure criteria.

(1) USEPA, Office of Pollution Prevention and Toxics. Chemical Summary for Toluene. August 1994.

(2) Government of Canada. Toluene (Priority substances list assessment report; no. 4). Canada Communication Group Publishing. Ottawa, Ontario. 1992.

(3) Allen-King, R.M., J.F. Barker, R. W. Gillham, B. K. Jensen. Substrate-and nutrient-limited toluene biotransformation in sandy soil. *Environmental Technology and Chemistry* 13:693-705. 1994.

(4) National Primary Drinking Water Regulations. Technical Factsheet on: Toluene

86503 X

PIT RETIREMENT FORM

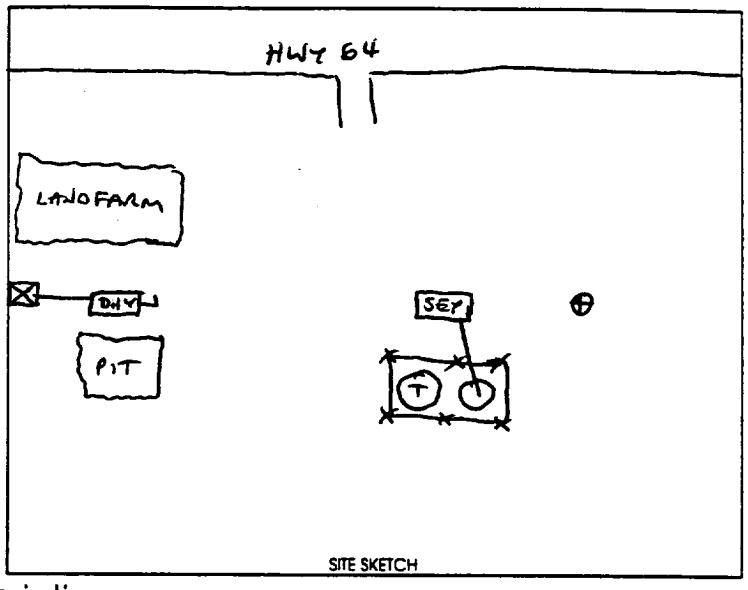
Date: 11/19/96 Weather _____

Well Name SJ 29-6 # 50 Operator PHILLIPS PETROLEUM Sec 36 T 29N R 6W UL 1650 FNL 990 FEL

Land Type: BLM STATE FEE INDIAN County RIO ARRIBA

One Call Made (505-765-1234)? Y N

Line Marking Evident? Y N



Pit Location:

Reference Wellhead X Other _____

Distance from: 242'

Direction: 293 Degrees X E N X of W S

Starting Pit Dimensions 10' x 10' x 2'

Final Pit Dimensions 16' x 16' x 12'

Organic Vapor Readings: Start _____ @ 2' _____ @ 4' _____ @ 6' _____ @ 8' _____ @ _____ @ _____

Soil Description: SILTY CLAY
" "
" "
" " W/SAND
" " "
CLAYEY SILT + SAND

Well Proximity To: Residence, Domestic Water Well, Stock Well NONE

Arroyo, Wash, Lake, Stream ~

Estimated or Known Distance to Ground Water >50

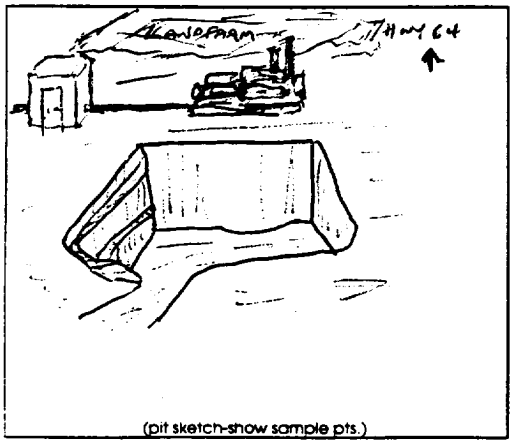
Source of Backfill (if other than processed material _____

Samples collected: Type Progress: Verification: ID SJ29-6 #50 EX-V-01 (soil) / water

Progress: Verification: ID SJ29-6 #50 CF-V-01 (soil) / water

Progress: Verification: ID _____ soil / water

Sample sent to Lab Via: Courier (Hand Carried) Other _____ Preservative: (ICE) Other _____



(pit sketch-show sample pts.)

Comments: SITE IS ~ 175 YDS SOUTH OF HWY 64 — SET UP + BEGIN EXCAVATING — MATERIAL IS MOIST + STICKY — MIX + SHRED CONSTRUCT LANDFARM 50' NORTH OF PIT —

Soil Shipped to: _____

Prepared by: Mike J Hai for MARK HARVEY

ANALYTICAL LABS

Organic Analysis - Pit Closure

Williams Field Services

Project ID:	OCD Pits	Report Date:	11/18/96
Sample ID:	SJ 29-6 #50 EX-V-01	Date Sampled:	11/13/96
Lab ID:	5677	Date Received:	11/13/96
Sample Matrix:	Soil	Date Extracted:	11/15/96
Preservative:	Cool	Date Analyzed:	11/15/96
Condition:	Intact		

Target Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Aromatic Hydrocarbons	**133**	
Benzene	10.8	0.69
Toluene	117	0.69
Ethylbenzene	ND	0.69
m,p-Xylenes	5.27	1.37
o-Xylene	ND	0.69
Total Recoverable Petroleum Hydrocarbons	**91.6**	**26.1**

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Trifluorotoluene	183	81 - 117%
	Bromofluorobenzene	99	74 - 121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Final Update I, July, 1992.

Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Review

ANAITAS ENVIRONMENTAL LABS

Organic Analysis - Pit Closure

Williams Field Services

Project ID:	OCD Pits	Report Date:	11/18/96
Sample ID:	SJ 29-6 #50 LF-V-01	Date Sampled:	11/13/96
Lab ID:	5678	Date Received:	11/13/96
Sample Matrix:	Soil	Date Extracted:	11/15/96
Preservative:	Cool	Date Analyzed:	11/15/96
Condition:	Intact		

Target Analyte	Concentration (mg/kg)	Detection Limit (mg/kg)
Total Aromatic Hydrocarbons	**11.6**	
Benzene	ND	0.75
Toluene	10.6	0.75
Ethylbenzene	ND	0.75
m,p-Xylenes	0.93	1.49
o-Xylene	ND	0.75
Total Recoverable Petroleum Hydrocarbons	**ND**	**27.5**

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Trifluorotoluene	124	81 - 117%
	Bromofluorobenzene	94	74 - 121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Final Update I, July, 1992.

Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Review

QWAL LABORATORIES, INC.

2911 ROTARY TERRACE, P.O. BOX 562/PITTSBURG, KS 66762/(316)232-1970

LABORATORY REPORT: **REFERENCE #:** 9904322

CLIENT *WILLIAMS FIELD SERVICE*
ATTN TO: *295 CHIPETA WAY*
SALT LAKE CITY, UTAH 84158
MARK HARVEY
PROJECT: NM PITS

DATE REPORTED: 09/17/99
DATE COLLECTED: 04/06/99
DATE RECEIVED: 04/09/99

Reference Fraction: 9904322-11A
Sample ID: SJ29-6 #50 @18-20/86303
Sample Date Collected: 04/06/9913:15:00

Sample Matrix: SOIL

TEST	METHOD	RESULT	UNITS	PQL	ANALYZED	BY
TPH	SW846-8015	14.2	MG/KG	2	04/17/99	KKL

ND=NONE DETECTED
PQL=PRACTICAL QUANTITAION LIMIT
SU=STANDARD UNITS
B=DETECTED IN METHOD BLANK

APPROVED BY: Terry Koester

TERRY KOESTER
LABORATORY DIRECTOR

PROBE SAMPLE