GW - 14

WORK PLANS

NAVAJO	REFINIG	ID:505-748-9077	SEP 01'95	10:52 No.004 P.01
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		Navalo	NAVAJO REFINING P.O. DRAWER 159 501 EAST MAIN STI ARTESIA, NEW ME PHONE: (505) 748-3	G COMPANY REET XICO 88210 3311
			ENGINEERING DEI FAX: (505) 748-9077	PARTMENT 7
SENDING	10:	HAME Roger Anderson	Mark A	shley
		ORGANIZATION FIRM NMOCL	>	
		TELECOPY # 505-82	7-8177	
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NAVAJO REFINIG



August 31, 1995

WORK PLAN

Navajo Refining Co.

Lea Refinery

Groundwater Contamination Investigation

On Friday, August 25, 1995, Navajo discovered free phase hydrocarbon on the groundwater beneath the API Separator at our Lea Refinery near Lovington. Navajo was drilling a test hole adjacent to the API separator sump to investigate the integrity of the API separator sump box. At a depth of approximately 6 ft. Navajo encountered hydrocarbon contaminated soil and continued drilling all the way to groundwater at 93 ft. where 0.02 ft. of oil was found floating on the groundwater.

That same day samples were collected from Navajo's North Water Well and from the two City of Lovington water supply wells (City Well #9 and #5) that are located nearest the refinery. Navajo's Laboratory in Artesia analyzed the samples for Benzene over the weekend. Navajo's lab results showed the possible detection of Benzene at 1 ppb (parts per billion) in all three samples. The possible 1 ppb benzene is well below groundwater and drinking water standards but Navajo decided to collect another round of samples on Monday, August 28, 1995 for a more complete analysis by an independent Laboratory. The results of these samples were received the next day on August 29 (see attachment 1). Navajo's North Well, City #9 and City #5 showed no detectable BTEX (Benzene, Toluene, Ethylbenzene and Xylenes). Samples collected on August 28 included 2 additional wells - Navajo's South Well and City Well #8. Navajo's South Well is located very near the Navajo North Well while City #8 is located over a mile South and east of the refinery. The analysis on these wells showed 1 ppb benzene in the South Well and 2ppb benzene in City #8. Navajo intends to resample these wells to check the validity of these two results.

Verbal notification was made to OCD offices in Santa Fe and Hobbs on August 25. The City of Lovington has also been kept informed of all activities and findings, and they have participated in the sampling of the City wells.

Source of Contamination

Navajo's investigation has disclosed the source of the contamination to be a leaky underground sewer-line junction box located between the API Separator and monitor well MW-1 depicted on Figure 1. Navajo took immediate steps on August 25 to cut off all flow to the junction box and the API Separator. These units have been removed from service and will not be brought back in service until repaired. Thus, further contamination has been cut off at the source. Saturated soil near the source is being removed to bins, and samples have been taken for profiling and determining hazardous/non-hazardous status. At this point, bore holes have shown that the horizontal extent of soil contamination is quite limited.

Monitor Well Installation

The first well drilled has been completed as a monitoring well MW-1 (see attachment 2 for typical well completion). Navajo plans to install at least 4 other monitor wells at the locations shown on Figure 1. These locations were chosen to yield data on depths to groundwater so that Navajo can update the groundwater gradient that was determined back in 1988 when Navajo acquired the refinery. Consideration was also given in locating these wells so that they would yield samples from locations between the known contamination and active water supply wells.

Once the monitor wells have been installed and developed, samples will be collected and analyzed for the following constituents:

- **General Water Chemistry** Α.
 - 1. pH
 - 2. Conductivity
 - 3. Major Cations
 - Na
 - Ca
 - Ma κ
 - 4. Major Anions CI F SO₄ **HCO**₃
 - NO₃
- Β. Metals As, Ba, Cd, Cr, Pb, Hg, Se, Ag, Cu, Fe, Mu, Al, B, Co, Mo, Ni
- C. EPA Method 624 Organics which include BTEX and halogenated solvents
- D. PAH's by EPA Method 625

MOR YOUR GHLOOD: 9-5-95

ARE IN AS OF 9-5-95, NO WYOROCORBONS IN MW3, MW4 ARE APPARENT AT 4 ALL

THIS TIME

GT OF LOVINGTON? CHARLES KELLEY 80B CARTER 396-2044 (MATER 4080) 396-288 f (CITY HALL)

9-5-95 BOB DARTER3

CALLED AND REALISTIC WATER WATER WATER + MAP OF WELLS. WE WILL SEND

Plume Delineation Borings

Once the monitoring wells are in place, surveyed and water level measurements taken, a verification of the direction of groundwater flow will be made. This information will be used to determine appropriate locations for exploratory bore holes. These borings will extend to groundwater to verify the presence of contamination. Exploratory boring will continue until the boundaries of the plume of contamination are identified. The bore holes will not be permanently cased and completed as monitoring wells. They will be adequately back filled with a bentonite-cement grout plug at the surface after all necessary information is obtained from them.

Hydrocarbon Recovery and Remediation

It is too early at this stage to provide any details as to the design of a hydrocarbon recovery and remediation system. Current thoughts about remediation include a two pronged approach to the problem. This would possibly consist of a soil vapor extraction process to deal with the contaminated vadose zone soil and a hydrocarbon recovery well network to contain and recover the contaminated groundwater and free oil.

Communications

Navajo proposes to FAX a brief progress report each week until the boundaries of the contamination are identified and the risk of contamination of any water supply well evaluated. This report will be FAXed to Mark Ashley of NMOCD-Santa Fe, Jerry Sexton of NMOCD-Hobbs, and Bob Carter-Lovington City Manager. Once the area of contamination is identified and the threat to any supply wells determined, Navajo proposes to send out progress reports only as each step in the remediation process is complete such as the engineering design step, the recovery well(s) completion step and so on.

Navajo also anticipates required groundwater monitoring at regular intervals as defined by NMOCD. These results will be distributed as above unless otherwise directed.

Summary

Upon discovery of hydrocarbon contamination in the groundwater beneath the refinery, Navajo's initial concern was to determine if any nearby water supply wells had been impacted. Analyses of these wells did not show any contamination of immediate concern therefore, Navajo is proceeding to further investigate the extent of the contamination. Once this is determined, then Navajo will design and install a remediation system. One of the primary remediation goals will be preventing contamination from reaching any water supply wells.

Navajo is well aware of the seriousness of contaminated groundwater. Particularly this groundwater which is the municipal water supply for the City of Lovington as well as the water supply for the refinery.

NAVAJO REFINIG	ID:505-748-9077	SEP 01'95 10:56 №.004 P.06
*6701 Aberdeen Avenue Lubbock, Texas 79474 606+794+1296		Atlach Dut 1
I AX 806∙794∙1298	ANALYTICAL RESULTS FOR NAVAJO REFINING COMPANY Attention: Darrell Moore 501 E. Main Artegia, NM 88210	
August 29, 1995 Receiving Date: 00/28/95 Sample Type: Water Project No: NA Project Location: Lea Ref	ining	Frep Date: 08/28/95 Analysis Date: 08/28/95 Sampling Date: 08/28/95 Sample Condition: Intact & Cool Sample Received by: MS Project Name: NA

BTEX (ug/L)	T40407 City Well #9	Reporting Limit
Methyl tert butyl ether	ND	2
Benzene	ND	1
Toluene	ND	1
Ethylbenzene	ND	-
m,p-Xylene	ND	1
o-Xylene	ND	1

& RECOVERY

Dibromofluoromethane	104
Toluene-d8	101
4-Bromofluorobenzene	97

ND = Not Detected

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Director, Dr. Blair Leftwich	8/24/95- DATE
Director, Dr. Bruce McDonell	
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A Laboratory for Advanced Environmental Hese	arch and Analysis

NAVAJO REFINIG	ID:505-748-9077	SEP 01'95 10:56 No.004 P.07
6/01 Aberdeen Avenue Lubbock, Texas 79424		Attachment I cont'd
нлө • 794 • 1296 FAX 806 • /нл • 1299	ANALYTICAL RESULTS FOR NAVAJO REFINING COMPANY Attention: Darrell Moorg 501 E. Main Arteric NM 90210	
Artesia, NM 00210 August 29, 1995 Receiving Date: 08/28/95 Sample Type: Water Project No: NA Project Location: Les Refining		Prep Date: 08/28/95 Analysis Date: 08/28/95 Sampling Date: 08/28/95 Sample Condition: Intact & Cool Sample Received by: MS Project Name: NA

BTEX (ug/L)	T40408 City Well #5	Reporting Limit
Methyl tert butyl ether	ND	2
Dongono	ND	1
Toluene	ND	1
Sthylben##N#	ND	1
m, p-Xylene	ND	1
o-Xylene	ND	1

& RECOVERY

Dibromofluoromethane	104
foluene-d8	101
4-Bromofluorobenzene	100

ND = Not Detected

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5/29/55-DATE Director, Dr. Blair Weitwich Director, Dr. Bruce McDonell N NILALAN MANNA ALYSIS, INC. MUMALLA MARKAN A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINIG	ID:505-748-9077	SEP 01'95 10:57 No.004 P.03
⁵ 6701 Aberdeen Avenue Fubbock, Texas 79424 806≁794≈1296		Attachement (conta
FAX 806+794+1298	ANALYTICAL RESULTS FOR NAVAJO REFINING COMPANY Attention: Darrell Moore 501 E. Main Artesia, NM 88210	
August 29, 1995 Receiving Dato: 08/28/05 Sample Type: Water Project No: NA Project Location: Lea Ref.	ining	Prep Date: 08/28/95 Analymim Date: 08/28/95 Sampling Date: 08/28/95 Sample Condition: Intact & Cool Sample Received by: MS Project Name: NA

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BTEX (ug/L)	T40409 City Well #8	Reporting Limit
Methyl tert butyl ether	ND	2
Benzene	2	1
Toluene	ND	1
Ethylbenzene	ND	1
m,p-Xylene	ND	1
o-Xylene	ND	Ĩ.

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Dibromofluoromethane	104
Toluene-d8	102
4-Bromofluorobenzene	96

ND = Not Detected

Director, Dr. Dieir Leftwich Director, Dr. Bruce McDonell	8/29/FS-
A laboratory for Advanced Environmental Rose	, INCALLANA MUANA

NAVAJO REFINIG	ID:505-748-9077	SEP 01'95 10:57 No.004 P.09
⁴ G/01 Aberdeen Avenue Lubbock, Texas 79424		Attachment 1 Contid
806●794●1290 FAX 806●794●1298	ANALYTICAL RESULTS FOR NAVAJO REFINING COMPANY Attention: Darrell Moore 501 E. Main	
August 29, 1995 Rocciving Date: 08/29/9 Sample Type: Water Project No: NA Project Location: Lea F	Artesia, NM 99210 S Offining	Prop Date: 05/28/95 Analymim Date: 05/28/95 Sampling Date: 08/28/95 Sample Condition: Intact & Cool Sample Received by: MS Project Name: NA

	T40410		
BTEX (ug/L)	ig/L) Les Refining North Well		
Methyl tert butyl ether	ND	2	• • • •
Benzane	ND	1	
Toluene	ND	1	
Ethylbensonc	ND	1	
m,p-Xylene	ND	1	
u-Xylene	ИИ	ī	

* RECOVERY

)ibromofluoromethane	105
Coluene~d8	101
-Bromofluorobenz ene	98

ND = Not Detected

87 24/45 DHIE Director, Dr. Dier Leftwich Director, Dr. Bruce McDonell A Laboratory for Advanced Environmental Research and Analysis

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*6701 Aberdeen Avanue		Attachment conta
Lubbock, Texas 79424		
806+794+1206		
FAX 806•794•1298	ANALYTICAL RESULTS FOR NAVAJO REFINING COMPANY Attention: Darrell Moore 501 E. Main Artegia, NM 69210	
August 29, 1995 Receiving Date: 08/39/91 Sample Type: Water Project No: NA Project Location: Lea Re	afining	Prep Date: 08/28/95 Analysis Date: 05/28/95 Sampling Date: 08/28/95 Sample Condition: Intact & Cool Sample Received by: NS Project Name: NA

BTEX (ug/L)	T40411 Lea Refining South Well	Reporting Limit		
Methyl tert butyl ether	ND	2		
Benzene	l	-		
Toluene	ND	1		
Ethylbensene	ND	÷ 1		
m,p-Xylene	ND	* 1		
0-Xylene	ND	1		

N RECOVERY

Dibromofluoromethane	104
Toluene-d8	101
4-Bromofluorobenzene	99

ND = Not Detected

51/28/95 Detre Director, Dr. Blair Leftwich Director, Dr. Bruce McDonell AULINAMAN LINAM. MANALLA MUNALLANA TRACEANALYSIS, INC. A Laboratory for Advanced Environmental Hesearch and Analysis

ŝ	GEOLOGIST: Darrell	Moore Moore	nit	oring	Well Installation
	DRILLER: POOL ENV DRILLING METHOD: Hollow	i'ronmen7 Vstem Auge	lal D Ir	ntilling 1	TOP OF CASING ELÉV.: SROUND SURFACE ELEV.:
	GEOLOGIC LOG		TYPE 00T	LOG	AS BUILT
			SAMPLE . BLOWS /F	DEPTH IN FEET	Protective Steel Caring Cover
	Hard, tan and light gray sand	cemented			
	Dense, tan fine sand			ساسب	<u>Concert</u> Bentonite Grout
	••			سيستليد	X ITTIX
					Schedule 40 PVC Casing
		•			Backfill
	· · · · · · · · · · · · · · · · · · ·			سسسا	Bentonite Pellet Seal
	·. ; · · ·	•		minim	Sand Filter 0.010" Slotted Screen Screen
-					2-in. I.D. PVC Plug
		•		ساميس	The screens will the set so that 5 to 10 ft of screen extents above
		1		E F	the water level and 10 to 15 ft



REFINIG

NAVAJO

ID:505-748-9077

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