

**Report of
Groundwater Monitoring
Fourth Quarter
San Antonio Pump Station**

City and County of San Francisco

May 1994

Prepared For:

**City and County of San Francisco
San Francisco Water Department
1000 El Camino Real
Millbrea, California 94030**

Prepared By:

**Camp Dresser & McKee Inc.
100 Pringle Avenue, Suite 300
Walnut Creek, California 94596**

CDM

environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE INC.

One Walnut Creek Center
100 Pringle Avenue, Suite 300
Walnut Creek, California 94596
510 933-2900, Fax: 510 933-4174

July 8, 1994

Mr. Paul Mazza
San Francisco Water Department
1000 El Camino Real
Millbrae, California 94030

Subject: *Groundwater Monitoring Report, Fourth Quarter
San Antonio Pump Station, Alameda County*

Dear Mr. Mazza:

Enclosed are the results of fourth quarter groundwater monitoring conducted at the San Antonio Pump Station in Sunol Valley, California. The results of this groundwater sampling round confirm past sampling results which indicate that petroleum compounds previously stored in underground storage tanks are not detectable in the groundwater beneath the site.

Camp Dresser & McKee Inc. recommends discontinuing further groundwater sampling and monitoring activities at the site and requests that Alameda County Health Care Agency evaluate the site for final closure.

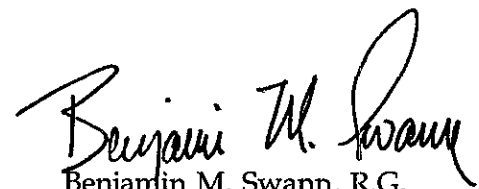
If you have any questions about the results of this work, please call.

Sincerely,

CAMP DRESSER & McKEE INC.



Jason Preece
Environmental Scientist



Benjamin M. Swann, R.G.
Project Geologist

Enclosure (3 copies)

cc: Mr. Ron Krzyzanowski, CCSF, BCM (1)

9005#27.012

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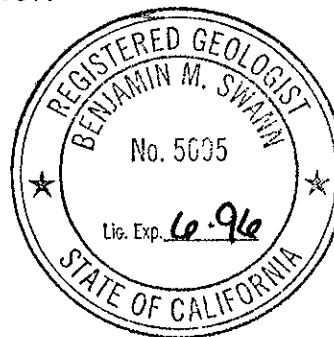
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PROFESSIONAL CERTIFICATION



A handwritten signature in cursive script that reads "Ben Swann". The signature is written over a horizontal line.

Ben Swann, R.G.
Project Geologist

Prepared by CDM under the profession supervision of the persons whose seals and signatures appear hereon.

This report has been prepared for the exclusive use of the City and County of San Francisco as it pertains to the San Antonio Pump Station located in Alameda County, California. Our services have been performed in accordance with applicable State and local ordinances, and generally accepted practices in the geosciences and environmental engineering field.

In the event that changes in the nature of the property occur, or additional relevant information about the property is brought to our attention, the conclusions and recommendations contained in this report may not be valid unless these changes and additional relevant information are reviewed by CDM and the conclusions of this report modified or verified in writing.

San Antonio Pump Station Groundwater Monitoring Report Fourth Quarter

Introduction

This report presents the result of fourth quarter groundwater sampling conducted at the City of San Francisco's San Antonio Pump Station located at 5555 Calaveras Road in Sunol, California. Groundwater monitoring wells were installed at the site following the discovery of petroleum contamination associated with three underground storage tanks removed from the site in November 1991. The underground tanks consisted of two 10,000 gallon diesel fuel tanks and one 500 gallon waste oil tank. Following the discovery of soil contamination beneath the tanks, approximately 1,500 cubic yards of contaminated soil was excavated and removed from the site for disposal.

Three groundwater monitoring wells were subsequently installed to evaluate the groundwater conditions beneath the site. The groundwater monitoring wells were sampled in June 1992 for volatile organics, semi-volatile organics, and petroleum hydrocarbons. The results of the initial groundwater sampling indicated that groundwater had not been impacted at detectable levels by any of the previously detected soil contaminants or tank constituents. In order to monitor the long-term impact of the contaminants on groundwater, the Alameda County Health Care Agency (ACHCA), the lead review agency, requested the collection and analysis of four quarters of groundwater samples. The first quarter of groundwater sampling was conducted in June 1993, the second quarter in September 1993, and the third quarter in January 1994. Results from these sampling events again indicated that tank constituents had not impacted groundwater.

This report presents the fourth quarter of groundwater sample results collected at the San Antonio Pump Station.

Groundwater Sampling

On May 23, 1994, the three groundwater monitoring wells on-site (MW-1, MW-2 and MW-3) were sampled by Camp Dresser & McKee Inc (CDM). Prior to sampling, the groundwater elevations were measured to evaluate groundwater flow direction and gradient (see Table 1 - Groundwater Depth and Elevation Data). Monitoring wells MW-2 and MW-3 were purged of a minimum of three well volumes using a 2-inch diameter teflon bailer. Monitoring well MW-1 had very slow recharge, as in previous sampling episodes, and was purged of one volume using a 2-inch diameter teflon bailer. Groundwater samples were collected with disposable one-inch diameter bailers dedicated to each well (see Appendix B, Field Procedures). Groundwater samples were placed in one liter bottles and 40 milliliter volatile organic analysis vials pending transportation to CKY Incorporated Environmental Services in Pleasanton, California.

Table 1
Groundwater Depth and Elevation Data

	MW-1		MW-2		MW-3	
	Well Elevation: 289.50 Total Well Depth: 15.90		Well Elevation: 288.98 Total Well Depth: 21.20		Well Elevation: 289.24 Total Well Depth: 21.22	
	Depth	Elevation	Depth	Elevation	Depth	Elevation
June 1992	14.95	274.55	14.74	274.24	15.43	274.31
June 1993	14.28	275.22	14.62	274.36	15.30	274.44
September 1993	14.82	274.68	15.18	273.80	15.50	274.24
October 1993	15.08	274.42	14.84	274.14	15.62	273.62
November 1993	no access	--	14.86	274.12	15.57	273.67
December 1993	14.04	275.10	14.70	274.28	15.43	273.81
January 1994	14.57	274.93	14.86	274.12	15.58	273.66
February 1994	14.55	274.95	14.80	274.18	14.45	274.79
March 1994	14.17	275.33	14.65	274.33	15.36	273.88
April 1994	14.61	274.89	14.75	274.14	15.50	273.74
May 1994	14.00	275.50	14.63	274.35	15.35	273.89
June 1994	14.61	274.89	14.78	274.20	15.46	273.78

This is a May 1994 report!

Analytical Procedures

Groundwater samples were analyzed for the compounds listed in Table 2. Purgeable halocarbons analysis was conducted; however, it was not required as indicated in a letter dated June 1, 1994, from Mr. Scott Seery of the ACHCA. The letter was not received by CDM in time to eliminate the analysis. The laboratory analytical results and sample Chain-of-Custody documents are presented in Appendix A.

Table 2
Groundwater Analyses

Compound Type	Detection Limits micrograms/liter (µg/l)
TPH as Diesel	50
TPH as Gasoline	50
Total Oil and Grease	1,000
Semi-volatile Organics	10-50
Aromatic Volatile Hydrocarbons (BTEX)	0.5
Purgeable Halocarbons	5-50

Results and Conclusions

The results of this monitoring were non-detect for all compounds in groundwater with the exception of phenol detected at a concentration of 13 µg/l and 4-methylphenol detected at a concentration of 28 µg/l in the groundwater sample collected from monitoring well MW-1 (see Appendix A). Phenol and 4-methylphenol have not been detected in previous groundwater sampling events. Phenol is a common laboratory chemical and its presence in the sample may be the result of laboratory or field contamination.

The results of the groundwater elevation data is presented in Table 1 and displayed in Figure 1. The groundwater elevation has risen in groundwater monitoring wells MW-1, MW-2 and MW-3 since the last sampling in January 1994. The wells exhibited their lowest level thus far during late October 1993. The groundwater flow continues to be to the southwest.

These results in addition to the previous three quarters of sampling results, confirm that petroleum hydrocarbons previously stored in underground storage tanks have had no detectable impact on groundwater quality beneath the site. Furthermore, groundwater flow data collected over the previous 13 months has evidenced consistent flow to the southwest.

Recommendations

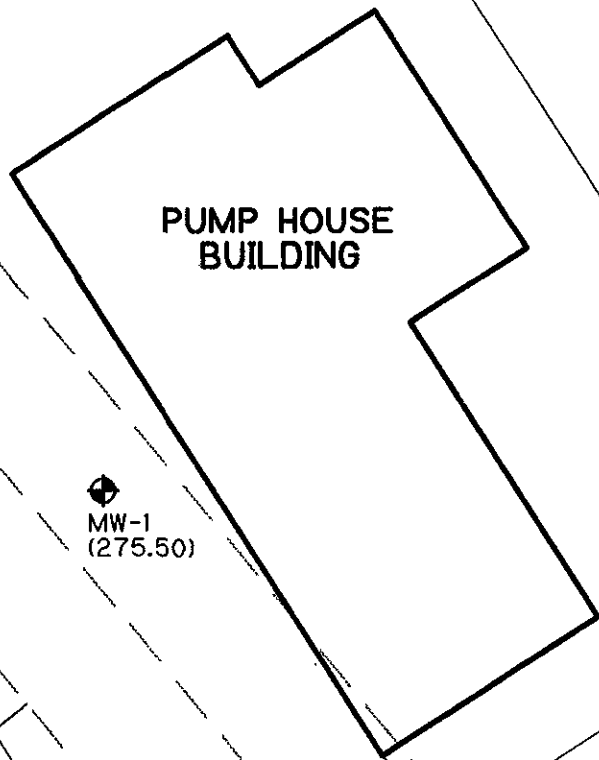
Based upon the culmination of sampling results collected over the previous four quarters, CDM recommends discontinuing further groundwater sampling and monitoring activities at the site and requests that ACHCA discuss final site closure with the Regional Water Quality Control Board.

CDM/CADD ST6

05/29/94 0:34:01

PLAN002B

X:\ACAD\5800-110\



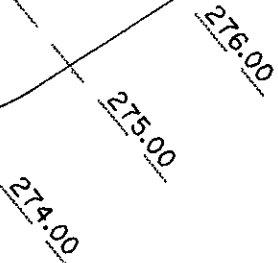
CALAVERAS ROAD

MW-2
(274.35)

MW-1
(275.50)

MW-3
(273.89)

GROUNDWATER FLOW DIRECTION



1" = 30'



EXPLANATION

MW-1
(275.50)



MONITORING WELL WITH GROUNDWATER ELEVATION

275.00

ESTIMATED EQUIPOTENTIAL LINE

ADAPTED FROM ENVIRONMENTAL BIO-SYSTEMS REPORT DATED NOVEMBER 1992.

SAN ANTONIO PUMP STATION
**GROUNDWATER MONITORING WELL LOCATION &
 GROUNDWATER FLOW MAP**
 4th QUARTER SAMPLING

CDM
 environmental engineers, scientists,
 planners, & management consultants

Figure No. 1

Appendix A
Analytical Data



CKY incorporated Environmental Services

Date: 05/23/94
N9405-36

Camp Dresser & McKee
100 Pringle Avenue, Ste. 300
Walnut Creek, CA 94596

Attn: Mr. Jason Preece

Subject: Laboratory Report
Project: San Antonio


Enclosed is the laboratory report for samples received on 05/23/94. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

<u>Method</u>	<u>No. of Analysis</u>
EPA 8010	3 Water
TPH-DIESEL	3 Water
TPH-GAS	3 Water
EPA 8020	3 Water
EPA 625	3 Water
EPA 418.1	3 Water

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,



Danny Hoang
Laboratory Director

EPA METHOD 418.1
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

=====
CLIENT: CDM DATE REC'D: 05/23/94
PROJECT: SAN ANTONIO DATE EXTRACTED: 05/25/94
CONTROL NO: N9405-36 DATE ANALYZED: 05/27/94
MATRIX: Water
=====

<u>SAMPLE ID:</u>	<u>CONTROL NO:</u>	<u>RESULTS</u> <u>(mg/L)</u>	<u>DETECTION LIMIT</u> <u>(mg/L)</u>
M. BLANK	N940536-BLK	ND	1
MW-1	N940536-1	ND	1
MW-2	N940536-2	ND	1
MW-3	N940536-3	ND	1

=====

QUALITY CONTROL DATA

CLIENT: CDM
 PROJECT: SAN ANTONIO DATE EXTRACTED: 05/25/94
 CONTROL NO: N9405-36 DATE ANALYZED: 05/27/94

METHOD EPA 418.1
 MATRIX: Water

SAMPLE ID: BLANK

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (mg/L)	<u>AMOUNT SPIKED</u> (mg/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
IR REF STD	ND	150	85	94	10

EPA METHOD 5030/Mod. 8015-GASOLINE
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

=====

CLIENT:	CDM	DATE REC'D:	05/23/94
PROJECT:	SAN ANTONIO	DATE ANALYZED:	05/23/94
CONTROL NO:	N9405-36	MATRIX:	Water

=====

<u>SAMPLE ID:</u>	<u>CONTROL NO:</u>	<u>RESULTS</u> <u>(ug/L)</u>	<u>DET. LIMIT</u> <u>(ug/L)</u>	<u>% SURRO</u> <u>RECOVERY</u>
M. BLANK	N940536-BLK	ND	50	87
MW-1	N940536-1	ND	50	76
MW-2	N940536-2	ND	50	74
MW-3	N940536-3	ND	50	79

=====

LABORATORY CONTROL SAMPLE

CLIENT: CDM DATE EXTRACTED: N/A
PROJECT: SAN ANTONIO DATE ANALYZED: 05/23/94
CONTROL NO: N9405-36

=====

METHOD M8015-GAS
MATRIX: WATER

SAMPLE ID: LCS

<u>COMPOUND</u>	<u>FOUND</u> (ug/L)	<u>TRUE</u> <u>VALUE</u> (ug/L)	<u>%</u> <u>REC</u>
GASOLINE	4.7	5	94

QUALITY CONTROL DATA

CLIENT: CDM
 PROJECT: SAN ANTONIO DATE EXTRACTED: N/A
 CONTROL NO: N9405-36 DATE ANALYZED: 05/23/94

METHOD M8015-GAS
 MATRIX: Water

SAMPLE ID: N9405-33-13

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
GASOLINE	1.5	5	110	110	0

EPA METHOD - 8020
BTEX

```

=====
CLIENT:          CDM                      DATE REC'D:    05/23/94
PROJECT:         SAN ANTONIO             DATE ANALYZED: 05/23/94
CONTROL NO:      N9405-36               MATRIX TYPE:   WATER
=====
  
```

		RESULTS (ug/L)							
<u>SAMPLE ID:</u>	<u>CONTROL NO:</u>	<u>Benz</u>	<u>Tol</u>	<u>Et Benz</u>	<u>Xyls</u>	<u>1,3-DCB</u>	<u>1,4-DCB</u>	<u>1,2-DCB</u>	<u>% SURRO RECOVERY</u>
M. BLANK	N940536-BLK	ND	ND	ND	ND	ND	ND	ND	84
MW-1	N940536-1	ND	ND	ND	ND	ND	ND	ND	73
MW-2	N940536-2	ND	ND	ND	ND	ND	ND	ND	71
MW-3	N940536-3	ND	ND	ND	ND	ND	ND	ND	74
DETECTION LIMIT		.5	.5	.5	.5	.5	.5	.5	

LABORATORY CONTROL SAMPLE

CLIENT: CDM DATE EXTRACTED: N/A
PROJECT: SAN ANTONIO DATE ANALYZED: 05/23/94
CONTROL NO: N9405-36

=====

METHOD EPA 8020
MATRIX: WATER

SAMPLE ID: LCS

<u>COMPOUND</u>	<u>FOUND</u> (ug/L)	<u>TRUE</u> <u>VALUE</u> (ug/L)	<u>% REC</u>
Benzene	51	50	102
Toluene	49	50	98
Ethylbenzene	47	50	94
Xylene	96	100	96

QUALITY CONTROL DATA

CLIENT: CDM
 PROJECT: SAN ANTONIO DATE EXTRACTED: N/A
 CONTROL NO: N9405-36 DATE ANALYZED: 05/23/94

METHOD EPA 8020
 MATRIX: Water

SAMPLE ID: N940533-14

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
Benzene	ND	50	82	100	20
Toluene	ND	50	102	98	4
Ethylbenzene	ND	50	98	94	4
Xylene	ND	100	99	96	3

EPA METHOD 625
SEMIVOLATILE ORGANICS BY GC/MS

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=====
CLIENT:      CDM                                DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO                       DATE EXTRACTED: 05/25/94
SAMPLE ID:   BLANK                             DATE ANALYZED: 05/26/94
CONTROL NO:  N9405-36                         MATRIX TYPE:   WATER
=====
  
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PARAMETER	(ug/L)	PARAMETER	(ug/L)
N-Nitrosodimethylamine	ND (10)	3-Nitroaniline	ND(50)
Pyridine	ND (10)	Acenaphthene	ND(10)
Aniline	ND (10)	2,4-Dinitrophenol	ND(50)
Phenol	ND (10)	4-Nitrophenol	ND(50)
bis(2-Chloroethyl)ether	ND (10)	Dibenzofuran	ND(10)
2-Chlorophenol	ND (10)	2,4-Dinitrotoluene	ND(10)
1,3-Dichlorobenzene	ND (10)	Diethylphthalate	ND(10)
1,4-Dichlorobenzene	ND (10)	4-Chlorophenyl-phenylether	ND(10)
Benzyl Alcohol	ND (10)	Fluorene	ND(10)
1,2-Dichlorobenzene	ND (10)	1,2-Diphenylhydrazine	ND(50)
2-Methylphenol	ND (10)	4-Nitroaniline	ND(50)
2,2'-oxybis(1-Chloropropane	ND (10)	4,6-Dinitro-2-methylphenol	ND(50)
4-Methylphenol	ND (10)	N-Nitrosodiphenylamine (**)	ND(10)
N-Nitroso-di-n-propylamine	ND (10)	4-Bromophenyl-phenylether	ND(10)
Hexachloroethane	ND (10)	Hexachlorobenzene	ND(10)
Nitrobenzene	ND (10)	Pentachlorophenol	ND(10)
Isophorone	ND (10)	Benzidine	ND(50)
2-Nitrophenol	ND (10)	Phenanthrene	ND(50)
2,4-Dimethylphenol	ND (10)	Anthracene	ND(10)
Benzoic Acid	ND (50)	Carbazole	ND(50)
bis(2-Chloroethoxy)methane	ND (10)	Di-n-butylphthalate	ND(10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND(10)
1,2,4-Trichlorobenzene	ND (10)	4,4'-Methylene Dianiline	ND(50)
Naphthalene	ND (10)	Pyrene	ND(10)
4-Chloroaniline	ND (20)	Bisphenol-A	ND(10)
Hexachloro-1,3-butadiene	ND (10)	Butylbenzylphthalate	ND(10)
4-Chloro-3-methylphenol	ND (20)	3,3'-Dichlorobenzidine	ND(20)
2-Methylnaphthalene	ND (10)	Benzo(a)anthracene	ND(10)
Hexachlorocyclopentadiene	ND (10)	Chrysene	ND(10)
2,4,6-Trichlorophenol	ND (10)	bis(2-Ethylhexyl)phthalate	ND(10)
2,4,5-Trichlorophenol	ND (10)	Di-n-octylphthalate	ND(10)
2-Chloronaphthalene	ND (10)	Benzo(b)fluoranthene	ND(10)
1-Chloronaphthalene	ND (10)	Benzo(k)fluoranthene	ND(10)
2-Nitroaniline	ND (50)	Benzo(a)pyrene	ND(10)
Dimethylphthalate	ND (10)	Indeno(1,2,3-cd)pyrene	ND(10)
Acenaphthylene	ND (10)	Dibenzo(a,h)anthracene	ND(10)
2,6-Dinitrotoluene	ND (10)	Benzo(g,h,i)perylene	ND(10)
<u>% Surrogate Recovery</u>			
Nitrobenzene-d5	82		35-114
2-Fluorobiphenyl	73		43-116
Terphenyl-d14	73		33-141
Phenol-d5	73		10-110
2-Fluorophenol	82		21-110
2,4,6-Tribromophenol	69		10-123

** Cannot be separated from Diphenylamine.

**EPA METHOD 625
SEMIVOLATILE ORGANICS BY GC/MS**

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=====
CLIENT:      CDM                      DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO              DATE EXTRACTED: 05/25/94
SAMPLE ID:   MW-1                    DATE ANALYZED: 05/26/94
CONTROL NO:  N9405-36-1             MATRIX TYPE:   WATER
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<u>PARAMETER</u>	<u>(ug/L)</u>	<u>PARAMETER</u>	<u>(ug/L)</u>
N-Nitrosodimethylamine	ND (10)	3-Nitroaniline	ND(50)
Pyridine	ND (10)	Acenaphthene	ND(10)
Aniline	ND (10)	2,4-Dinitrophenol	ND(50)
Phenol	13 (10)	4-Nitrophenol	ND(50)
bis(2-Chloroethyl)ether	ND (10)	Dibenzofuran	ND(10)
2-Chlorophenol	ND (10)	2,4-Dinitrotoluene	ND(10)
1,3-Dichlorobenzene	ND (10)	Diethylphthalate	ND(10)
1,4-Dichlorobenzene	ND (10)	4-Chlorophenyl-phenylether	ND(10)
Benzyl Alcohol	ND (10)	Fluorene	ND(10)
1,2-Dichlorobenzene	ND (10)	1,2-Diphenylhydrazine	ND(50)
2-Methylphenol	ND (10)	4-Nitroaniline	ND(50)
2,2'-oxybis(1-Chloropropane	ND (10)	4,6-Dinitro-2-methylphenol	ND(50)
4-Methylphenol	28 (10)	N-Nitrosodiphenylamine (**)	ND(10)
N-Nitroso-di-n-propylamine	ND (10)	4-Bromophenyl-phenylether	ND(10)
Hexachloroethane	ND (10)	Hexachlorobenzene	ND(10)
Nitrobenzene	ND (10)	Pentachlorophenol	ND(10)
Isophorone	ND (10)	Benzidine	ND(50)
2-Nitrophenol	ND (10)	Phenanthrene	ND(50)
2,4-Dimethylphenol	ND (10)	Anthracene	ND(10)
Benzoic Acid	ND (50)	Carbazole	ND(50)
bis(2-Chloroethoxy)methane	ND (10)	Di-n-butylphthalate	ND(10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND(10)
1,2,4-Trichlorobenzene	ND (10)	4,4'-Methylene Dianiline	ND(50)
Naphthalene	ND (10)	Pyrene	ND(10)
4-Chloroaniline	ND (20)	Bisphenol-A	ND(10)
Hexachloro-1,3-butadiene	ND (10)	Butylbenzylphthalate	ND(10)
4-Chloro-3-methylphenol	ND (20)	3,3'-Dichlorobenzidine	ND(20)
2-Methylnaphthalene	ND (10)	Benzo(a)anthracene	ND(10)
Hexachlorocyclopentadiene	ND (10)	Chrysene	ND(10)
2,4,6-Trichlorophenol	ND (10)	bis(2-Ethylhexyl)phthalate	ND(10)
2,4,5-Trichlorophenol	ND (10)	Di-n-octylphthalate	ND(10)
2-Chloronaphthalene	ND (10)	Benzo(b)fluoranthene	ND(10)
1-Chloronaphthalene	ND (10)	Benzo(k)fluoranthene	ND(10)
2-Nitroaniline	ND (50)	Benzo(a)pyrene	ND(10)
Dimethylphthalate	ND (10)	Indeno(1,2,3-cd)pyrene	ND(10)
Acenaphthylene	ND (10)	Dibenzo(a,h)anthracene	ND(10)
2,6-Dinitrotoluene	ND (10)	Benzo(g,h,i)perylene	ND(10)
<u>% Surrogate Recovery</u>			
Nitrobenzene-d5	84		35-114
2-Fluorobiphenyl	71		43-116
Terphenyl-d14	68		33-141
Phenol-d5	79		10-110
2-Fluorophenol	84		21-110
2,4,6-Tribromophenol	78		10-123

** Cannot be separated from Diphenylamine.

EPA METHOD 625
SEMIVOLATILE ORGANICS BY GC/MS

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=====
CLIENT:      CDM                                DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO                       DATE EXTRACTED: 05/25/94
SAMPLE ID:   MW-2                              DATE ANALYZED: 05/26/94
CONTROL NO:  N9405-36-2                       MATRIX TYPE:   WATER
=====
  
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PARAMETER	(ug/L)	PARAMETER	(ug/L)
N-Nitrosodimethylamine	ND (10)	3-Nitroaniline	ND(50)
Pyridine	ND (10)	Acenaphthene	ND(10)
Aniline	ND (10)	2,4-Dinitrophenol	ND(50)
Phenol	ND (10)	4-Nitrophenol	ND(50)
bis(2-Chloroethyl)ether	ND (10)	Dibenzofuran	ND(10)
2-Chlorophenol	ND (10)	2,4-Dinitrotoluene	ND(10)
1,3-Dichlorobenzene	ND (10)	Diethylphthalate	ND(10)
1,4-Dichlorobenzene	ND (10)	4-Chlorophenyl-phenylether	ND(10)
Benzyl Alcohol	ND (10)	Fluorene	ND(10)
1,2-Dichlorobenzene	ND (10)	1,2-Diphenylhydrazine	ND(50)
2-Methylphenol	ND (10)	4-Nitroaniline	ND(50)
2,2'-oxybis(1-Chloropropane	ND (10)	4,6-Dinitro-2-methylphenol	ND(50)
4-Methylphenol	ND (10)	N-Nitrosodiphenylamine (**)	ND(10)
N-Nitroso-di-n-propylamine	ND (10)	4-Bromophenyl-phenylether	ND(10)
Hexachloroethane	ND (10)	Hexachlorobenzene	ND(10)
Nitrobenzene	ND (10)	Pentachlorophenol	ND(10)
Isophorone	ND (10)	Benzidine	ND(50)
2-Nitrophenol	ND (10)	Phenanthrene	ND(50)
2,4-Dimethylphenol	ND (10)	Anthracene	ND(10)
Benzoic Acid	ND (50)	Carbazole	ND(50)
bis(2-Chloroethoxy)methane	ND (10)	Di-n-butylphthalate	ND(10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND(10)
1,2,4-Trichlorobenzene	ND (10)	4,4'-Methylene Dianiline	ND(50)
Naphthalene	ND (10)	Pyrene	ND(10)
4-Chloroaniline	ND (20)	Bisphenol-A	ND(10)
Hexachloro-1,3-butadiene	ND (10)	Butylbenzylphthalate	ND(10)
4-Chloro-3-methylphenol	ND (20)	3,3'-Dichlorobenzidine	ND(20)
2-Methylnaphthalene	ND (10)	Benzo(a)anthracene	ND(10)
Hexachlorocyclopentadiene	ND (10)	Chrysene	ND(10)
2,4,6-Trichlorophenol	ND (10)	bis(2-Ethylhexyl)phthalate	ND(10)
2,4,5-Trichlorophenol	ND (10)	Di-n-octylphthalate	ND(10)
2-Chloronaphthalene	ND (10)	Benzo(b)fluoranthene	ND(10)
1-Chloronaphthalene	ND (10)	Benzo(k)fluoranthene	ND(10)
2-Nitroaniline	ND (50)	Benzo(a)pyrene	ND(10)
Dimethylphthalate	ND (10)	Indeno(1,2,3-cd)pyrene	ND(10)
Acenaphthylene	ND (10)	Dibenzo(a,h)anthracene	ND(10)
2,6-Dinitrotoluene	ND (10)	Benzo(g,h,i)perylene	ND(10)

% Surrogate Recovery

Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	78	43-116
Terphenyl-d14	78	33-141
Phenol-d5	83	10-110
2-Fluorophenol	90	21-110
2,4,6-Tribromophenol	80	10-123

** Cannot be separated from Diphenylamine.

**EPA METHOD 625
SEMIVOLATILE ORGANICS BY GC/MS**

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=====
CLIENT:      CDM                                DATE REC'D:  05/23/94
PROJECT:     SAN ANTONIO                       DATE EXTRACTED: 05/25/94
SAMPLE ID:   MW-3                              DATE ANALYZED:  05/26/94
CONTROL NO:  N9405-36-3                       MATRIX TYPE:   WATER
=====
  
```

<u>PARAMETER</u>	<u>(ug/L)</u>	<u>PARAMETER</u>	<u>(ug/L)</u>
N-Nitrosodimethylamine	ND (10)	3-Nitroaniline	ND(50)
Pyridine	ND (10)	Acenaphthene	ND(10)
Aniline	ND (10)	2,4-Dinitrophenol	ND(50)
Phenol	ND (10)	4-Nitrophenol	ND(50)
bis(2-Chloroethyl)ether	ND (10)	Dibenzofuran	ND(10)
2-Chlorophenol	ND (10)	2,4-Dinitrotoluene	ND(10)
1,3-Dichlorobenzene	ND (10)	Diethylphthalate	ND(10)
1,4-Dichlorobenzene	ND (10)	4-Chlorophenyl-phenylether	ND(10)
Benzyl Alcohol	ND (10)	Fluorene	ND(10)
1,2-Dichlorobenzene	ND (10)	1,2-Diphenylhydrazine	ND(50)
2-Methylphenol	ND (10)	4-Nitroaniline	ND(50)
2,2'-oxybis(1-Chloropropane	ND (10)	4,6-Dinitro-2-methylphenol	ND(50)
4-Methylphenol	ND (10)	N-Nitrosodiphenylamine (**)	ND(10)
N-Nitroso-di-n-propylamine	ND (10)	4-Bromophenyl-phenylether	ND(10)
Hexachloroethane	ND (10)	Hexachlorobenzene	ND(10)
Nitrobenzene	ND (10)	Pentachlorophenol	ND(10)
Isophorone	ND (10)	Benzidine	ND(50)
2-Nitrophenol	ND (10)	Phenanthrene	ND(50)
2,4-Dimethylphenol	ND (10)	Anthracene	ND(10)
Benzoic Acid	ND (50)	Carbazole	ND(50)
bis(2-Chloroethoxy)methane	ND (10)	Di-n-butylphthalate	ND(10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND(10)
1,2,4-Trichlorobenzene	ND (10)	4,4'-Methylene Dianiline	ND(50)
Naphthalene	ND (10)	Pyrene	ND(10)
4-Chloroaniline	ND (20)	Bisphenol-A	ND(10)
Hexachloro-1,3-butadiene	ND (10)	Butylbenzylphthalate	ND(10)
4-Chloro-3-methylphenol	ND (20)	3,3'-Dichlorobenzidine	ND(20)
2-Methylnaphthalene	ND (10)	Benzo(a)anthracene	ND(10)
Hexachlorocyclopentadiene	ND (10)	Chrysene	ND(10)
2,4,6-Trichlorophenol	ND (10)	bis(2-Ethylhexyl)phthalate	ND(10)
2,4,5-Trichlorophenol	ND (10)	Di-n-octylphthalate	ND(10)
2-Chloronaphthalene	ND (10)	Benzo(b)fluoranthene	ND(10)
1-Chloronaphthalene	ND (10)	Benzo(k)fluoranthene	ND(10)
2-Nitroaniline	ND (50)	Benzo(a)pyrene	ND(10)
Dimethylphthalate	ND (10)	Indeno(1,2,3-cd)pyrene	ND(10)
Acenaphthylene	ND (10)	Dibenzo(a,h)anthracene	ND(10)
2,6-Dinitrotoluene	ND (10)	Benzo(g,h,i)perylene	ND(10)
<u>% Surrogate Recovery</u>			
Nitrobenzene-d5	94		35-114
2-Fluorobiphenyl	82		43-116
Terphenyl-d14	82		33-141
Phenol-d5	87		10-110
2-Fluorophenol	99		21-110
2,4,6-Tribromophenol	79		10-123

** Cannot be separated from Diphenylamine.

QUALITY CONTROL DATA

CLIENT: CDM DATE EXTC'D: 05/25/94
 PROJECT: SAN ANTONIO DATE ANALYZED: 05/26/94
 CONTROL NO: N9405-36

METHOD: EPA 625
 MATRIX: Water

SAMPLE ID: BLANK

<u>COMPOUND</u>	<u>SAMPLE CONC. (ug/L)</u>	<u>SPIKE ADDED (ug/L)</u>	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
Phenol	ND	150	64	69	8
2-Chlorophenol	ND	150	61	71	15
1,4-DCB	ND	100	52	64	21
N-Nitroso-di-n propylamine	ND	100	76	80	5
1,2,4-TCB	ND	100	57	67	16
4-Chloro-3- methylphenol	ND	150	69	73	6
Acenaphthene	ND	100	67	74	10
4-Nitrophenol	ND	150	82	91	10
2,4-Dinitrotoluene	ND	100	73	79	8
Pentachlorophenol	ND	150	98	108	10
Pyrene	ND	100	70	77	10

LABORATORY CONTROL SAMPLE

CLIENT: CDM DATE EXTRACTED: 05/25/94
PROJECT: SAN ANTONIO DATE ANALYZED: 05/26/94
CONTROL NO: N9405-36

METHOD EPA 625
MATRIX: WATER

SAMPLE ID: LCS

<u>COMPOUND</u>	<u>FOUND</u> (ug/L)	<u>TRUE</u> <u>VALUE</u> (ug/L)	<u>%</u> <u>REC</u>
Phenol	96	150	64
2-Chlorophenol	92	150	61
1,4-DCB	52	100	52
N-Nitroso-di-n	76	100	76
1,2,4-TCB	57	100	57
4-Chl-3-Methyl	103	150	69
Acenaphthene	67	100	67
4-Nitrophenol	123	150	82
2,4-Dinitrotol	73	100	73
Pentachlorophe	147	150	98
Pyrene	70	100	70



EPA METHODS - 601

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=====
CLIENT:      CDM                      DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO              DATE ANALYZED: 05/25/94
SAMPLE ID:   BLANK                   MATRIX TYPE:  Water
CONTROL NO:  N9405-36
=====

```

<u>PARAMETERS (601)</u>	<u>RESULTS (ug/L)</u>	<u>DETECTION LIMIT (ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	50
Trans-1,2-Dichloroethene	ND	5
cis 1,2 -dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
Trans-1,3-Dichloropropene	ND	5
Cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Dibromochloromethane	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
=====		
% Surrogate Recovery		
1,4-dichloroethane-d4	90	
Toluene-d8	75	
Bromofluorobenzene	80	

EPA METHODS - 601

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=====
CLIENT:      CDM                                DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO                       DATE ANALYZED: 05/25/94
SAMPLE ID:   MW-1                              MATRIX TYPE:   Water
CONTROL NO:  N9405-36-1
=====
  
```

<u>PARAMETERS (601)</u>	<u>RESULTS (ug/L)</u>	<u>DETECTION LIMIT (ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	50
Trans-1,2-Dichloroethene	ND	5
cis 1,2 -dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
Trans-1,3-Dichloropropene	ND	5
Cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Dibromochloromethane	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
=====		
% Surrogate Recovery		
1,4-dichloroethane-d4	108	
Toluene-d8	109	
Bromofluorobenzene	100	

EPA METHODS - 601

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=====
CLIENT:      CDM                      DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO              DATE ANALYZED: 05/25/94
SAMPLE ID:   MW-2                    MATRIX TYPE:   Water
CONTROL NO:  N9405-36-2
=====
  
```

<u>PARAMETERS (601)</u>	<u>RESULTS (ug/L)</u>	<u>DETECTION LIMIT (ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	50
Trans-1,2-Dichloroethene	ND	5
cis 1,2 -dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
Trans-1,3-Dichloropropene	ND	5
Cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Dibromochloromethane	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
=====		
% Surrogate Recovery		
1,4-dichloroethane-d4	100	
Toluene-d8	103	
Bromofluorobenzene	108	

EPA METHODS - 601

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=====
CLIENT:      CDM                      DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO              DATE ANALYZED: 05/25/94
SAMPLE ID:   MW-3                    MATRIX TYPE:   Water
CONTROL NO:  N9405-36-3
=====
  
```

<u>PARAMETERS (601)</u>	<u>RESULTS (ug/L)</u>	<u>DETECTION LIMIT (ug/L)</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	50
Trans-1,2-Dichloroethene	ND	5
cis 1,2 -dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
Trans-1,3-Dichloropropene	ND	5
Cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Dibromochloromethane	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
=====		
% Surrogate Recovery		
1,4-dichloroethane-d4	87	
Toluene-d8	89	
Bromofluorobenzene	82	

QUALITY CONTROL DATA

CLIENT: CDM DATE EXTC'D: N/A
 PROJECT: SAN ANTONIO DATE ANALYZED: 05/25/94
 CONTROL NO: N9405-35

METHOD EPA 601
 MATRIX: Water

SAMPLE ID: BLANK

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
1,1 DCE	ND	50	106	94	12
Benzene	ND	50	110	90	20
TCE	ND	50	106	98	8
Toluene	ND	50	104	86	19
Chlorobenzene	ND	50	96	78	21

LABORATORY CONTROL SAMPLE

CLIENT: CDM
 PROJECT: SAN ANTONIO DATE ANALYZED: 05/25/94
 CONTROL NO: N9405-36

=====

 METHOD EPA 601
 MATRIX: Water

SAMPLE ID: LCS

<u>COMPOUND</u>	<u>FOUND</u> (ug/L)	<u>TRUE</u> <u>VALUE</u> (ug/L)	<u>% REC</u>
1,1DCE	48	50	96
Benzene	50	50	100
TCE	47.5	50	95
Toluene	47	50	94
Chlorobenzene	43	50	84

EPA METHOD Mod. 8015-DIESEL
TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

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=====
CLIENT:      CDM                                DATE REC'D:   05/23/94
PROJECT:     SAN ANTONIO                       DATE EXTRACTED: 05/24/94
CONTROL NO:  N9405-36                          DATE ANALYZED: 05/24/94
MATRIX:      Water
=====

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=====
SAMPLE ID:   CONTROL NO:   RESULTS      H-C RANGE   %SURROGATE
              (ug/L)
              1-4,DCB Di-ni-Octo
PREP BLANK   N940536-BLK           ND           N.A.         80          86
MW-1         N940536-1            ND           N.A.         84          87
MW-2         N940536-2            ND           N.A.         85          87
MW-3         N940536-3            ND           N.A.         81          81
=====

```

DETECTION LIMIT: 50 ug/L

=====

QUALITY CONTROL DATA

CLIENT: CDM
PROJECT: SAN ANTONIO
CONTROL NO: N9405-36
DATE EXTRACTED: 05/24/94
DATE ANALYZED: 05/24/94

METHOD M8015 DIESEL
MATRIX: Water

SAMPLE ID: N940533-14

<u>COMPOUND</u>	<u>SAMPLE RESULTS</u> (ug/L)	<u>AMOUNT SPIKED</u> (ug/L)	<u>% REC.</u>	<u>DUP. % REC.</u>	<u>RPD</u>
DIESEL	ND	100	100	101	1

LABORATORY CONTROL SAMPLE

CLIENT: CDM DATE EXTRACTED: 05/24/94
PROJECT: SAN ANTONIO DATE ANALYZED: 05/24/94
CONTROL NO: N9405-36

=====

METHOD M8015-DIESEL
MATRIX: WATER

SAMPLE ID: LCS

<u>COMPOUND</u>	<u>FOUND</u> (ug/L)	<u>TRUE</u> <u>VALUE</u> (ug/L)	<u>% REC</u>
DIESEL	93	100	93

CHAIN OF CUSTODY RECORD

Camp Dresser & McKee Inc.

F6260

CDM

PROJECT NAME San Antonio Pump Station

PROJECT NUMBER 9005-116-BI-FLD

Field Log Book
Reference No. _____

LEGEND: Original: Return to Sample Traffic Control Center
Copies: Ship with Samples

SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	SAMPLE TYPE	ANALYSES							NUMBER OF CONTAINERS	LOG BOOK PG. NO.	REMARKS	
					EXTR. ORG.	VOA	PEST. PCB	TRACE METALS	DDT/PCP	625	419				THQ/HCB
1 MW-1	5/23/94	4:05P	MW-1	Water									1		
2 MW-2	↓	2:35P	MW-2	↓									1		
3 MW-3	↓	3:32P	MW-3	↓									1		
					N9405-36										
					R4/R8B										

SAMPLED BY (SIGN)

Jason Preece

RELINQUISHED BY (SIGN)

① *Jason Preece*

DATE/TIME (5/23/94 4:45)

RELINQUISHED BY (SIGN)

② _____

DATE/TIME (/ /)

RELINQUISHED BY (SIGN)

③ _____

DATE/TIME (/ /)

RELINQUISHED BY (SIGN)

④ _____

DATE/TIME (/ /)

RELINQUISHED BY (SIGN)

⑤ _____

DATE/TIME (/ /)

RECEIVED BY (SIGN)

① *[Signature]*

DATE/TIME (5/23/94 1:05)

RECEIVED BY (SIGN)

② _____

DATE/TIME (/ /)

RECEIVED BY (SIGN)

③ _____

DATE/TIME (/ /)

RECEIVED BY (SIGN)

④ _____

DATE/TIME (/ /)

RECEIVED BY (SIGN)

⑤ _____

DATE/TIME (/ /)

METHOD OF SHIPMENT

SHIPPED BY (SIGN)

RECEIVED FOR LABORATORY BY (SIGN)

DATE/TIME

(/ /)

Appendix B
Field Procedures

Appendix B Field Procedures

Groundwater Monitoring Well Purging and Sampling

Groundwater well purging protocol requires the withdrawal of a sufficient quantity of groundwater from the well to ensure that representative formation water is sampled. For the fourth quarter sampling round, a minimum of three well casing volumes was removed from monitoring wells MW-2 and MW-3. Monitoring well MW-1 was purged of one casing volume before going dry and allowed to recover for three hours before sampling. Only 62% of original water level was recoverable before sample collection. Aquifer parameters include pH, electrical conductivity, and temperature were monitored during the purging process to ensure that stable groundwater conditions were present prior to sampling. Removal of groundwater was performed with a 2-inch diameter teflon bailer. Aquifer parameters were collected at approximately two gallon intervals for all wells. Field data sheets showing measure purge parameters, volumes and time are included.

Groundwater samples were collected with a one-inch diameter disposal bailer directly following purging. For each well, a groundwater sample was transferred into two 1-liter glass bottles and four 40-ml VOA vials.

Sample ID No: MW-1	
Well No.: MW-1	
Installation: San Antonio Pump Sta. Site: Monitoring Well	
HAZWRAP Contractor:	Project No.: 9005-116-BI-FLD
Sample Start: (Date) 5/23/94 (Time) 1230	Sample End: (Date) 5/23/94 (Time) 1605
Sampled by: Jason Preece	

Orig. SWL: 14.00 ft BTOC* Final SWL: 14.73 ft BTOC
 Screen Interval: 10 ? - 1590 ft BTOC

Purge vol. $\frac{15.90}{14.00} \times 1.90 \times 0.65 \times 3 \text{ Cas. Vol.}$
 = 3.70 g

Temp	pH	Cond.	Turbidity
74.0	4.89	1110	dark gray
68.9	5.10	978	"
65.7	4.87	1115	gray tint clearer
68.5	4.67	1037	"
68.8	5.81	1087	
68.3	5.67	1079	

W.L. Are parameters 20% of purge values? Y/N

Repurge? Y/N

14.74 No. repurge volumes: _____

sampled 14.73

Sampling Method:

Submersible Pump Dedicated Bladder Pump Bladder Pump Bailer SS
 Peristaltic Pump Hand Pump Gas Lift/Displacement Pump Tef Centrifugal Pump
 PVC Other _____

Sampling Equipment (Make, Model, etc) Disposable 1/2" diameter

Sample Equipment Decon'd? N

If pump or discrete bailer; Depth(s) where pump set: _____ ft BTOC

Weather: Sunny (80°F)

Lab Analyses: (Circle)

VOA SVOA METALS PEST/PCBS TPH CATIONS ANIONS TDS

Others: TOC

Metals: (Circle) Filtered Unfiltered Both

Field Dups: N Referee Dups.: N

Comments: Well purged dry and allowed to recover before sampling. Only recovered to 62% of original water level

* BTOC = Below Top of Casing (or other measurement reference point)

Sample ID No: MW-3	
Well No.: MW-3	
Installation: San Antonio Pump Sta. Site: Monitoring Well	
HAZWRAP Contractor:	Project No.: 9005-116-BI-FLD
Sample Start: (Date) 5/23/94 (Time) 1500	Sample End: (Date) 5/23/94 (Time) 1545
Sampled by: Jason Preece	

Orig. SWL: 15.35 ft BTOC* Final SWL: 16.95 ft BTOC
 Screen Interval: 160 - 210 ft BTOC

Purge Volume
 21.20
 15.35
 5.85 x 65 = 3.80
 x 3
 11.40 g

Time	Temp	pH	Cond.	Turbidity
305				
312	65.9	5.68	1144	clear
316	62.7	5.58	1072	
322	62.7	5.54	1108	
325	62.2	5.55	1092	
332	63.1	5.41	1081	clear
3:44	63.7	5.40	966	

gals. pumped W/L
 Are parameters 20% of purge values? N
 1704 Repurge? N
 16.95 - 3.27
 16.22 No. repurge volumes: _____

Sampling Method:

- Submersible Pump Dedicated Bladder Pump Bladder Pump Bailor Tef Centrifugal Pump
 Peristaltic Pump Hand Pump Gas Lift/Displacement Pump PVC Other _____

Sampling Equipment (Make, Model, etc) Disposable 1/2" diameter

Sample Equipment Decon'd? Y / N

If pump or discrete bailor; Depth(s) where pump set: _____ ft BTOC

Weather: Sunny (80°F)

Lab Analyses: (Circle)

VOA SVOA METALS PEST/PCBS TPH CATIONS ANIONS TDS

Others: TOK

Metals: (Circle) Filtered Unfiltered Both

Field Dups: Y / N Referee Dups.: Y / N

Comments:

* BTOC = Below Top of Casing (or other measurement reference point)

Sample ID No: MW-2	
MONITORING WELL SAMPLING LOG	
Well No.: MW-2	
Installation: San Antonio Pump Sta. Site: Monitoring Well	
HAZWRAP Contractor:	Project No.: 9005-116-BI-FLD
Sample Start: (Date) 5/23/94 (Time) 1350	Sample End: (Date) 5/23/94 (Time) 1424
Sampled by: Jason Freese	

Orig. SWL: 14.63 ft BTOC* Final SWL: 14.65 ft BTOC
 Screen Interval: 11.0 - 21.0 ft BTOC

21.30
 14.73
6.57 x 0.65 = 4.29
X 3
12.87

Temp	pH	Cond.	Turbidity
65.3	4.22	802	clear
64.2	4.15	486	
64.3	4.36	467	
64.1	4.45	474	clear
63.6	4.50	476	

Are parameters
 20% of purge values? Y N

Repurge? Y N

No. repurge volumes: _____

Sampling Method:

Submersible Pump Dedicated Bladder Pump Bladder Pump Bailor Tef Centrifugal Pump
 Peristaltic Pump Hand Pump Gas Lift/Displacement Pump PVC Other _____
 Sampling Equipment (Make, Model, etc) Disposable 1/2" dia.

Sample Equipment Decon'd? Y N

If pump or discrete bailer; Depth(s) where pump set: _____ ft BTOC

Weather: Sunny (80°F)

Lab Analyses: (Circle)

VOA SVOA METALS PEST/PCBS TPH CATIONS ANIONS TDS

Others: TOC

Metals: (Circle) Filtered Unfiltered Both

Field Dups: Y N Referee Dups.: Y N

Comments:

* BTOC = Below Top of Casing (or other measurement reference point)