3R - 23

REPORTS

DATE:

MAR. 24, 1995

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

March 24, 1995

Mr. William C. Olson, Hydrologist
New Mexico Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Re: Quarterly Monitoring Report
Amoco Production Company
Gallegos Canyon Unit (K) #162, Sec. 36-T29N-R12W
San Juan County, New Mexico

Dear Mr. Olson:

Amoco Production Company has retained Blagg Engineering, Inc. to conduct environmental monitoring of groundwater reclamation at Gallegos Canyon Unit (K) Well No. 162 (Figure 1). Following are quarterly monitoring results as required by the New Mexico Oil Conservation Division (NMOCD), pursuant to reclamation plan approval by the NMOCD with letter dated January 27, 1994.

Operation of the groundwater reclamation system at the site was suspended on January 26, 1995 after pumping and re-infiltrating a total volume of 217,732 gallons of water. Amoco exercised the option to excavate contaminated soil in lieu of operating the pump-and-treat system. This excavation is presently on-going, as discussed below under "Current and Proposed Activities". Future reactivation of the pump-and-treat system may be necessary depending on the results of water quality testing.

Summary Laboratory Analytical Results

Groundwater monitor wells at the site were sampled on March 8, 1995. Certain wells have been abandoned during excavation of contaminated soil and laboratory analytical testing data is not available for those wells. A summary of available laboratory analytical results is included in Table 1 on the following page. Laboratory data reports are included in Appendix B.

TABLE 1
Summary Laboratory Analytical Results
Amoco Production Company GCU Com "F" No. 162

Sample ID	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylenes ug/L	Naptha-lene ug/L	Benzo(a) pyrene ug/L	Cations meq/L	Anions meq/L	As mg/L	Ba mg/L	Cd mg/L	Cr mg/L	Pb mg/L	Hg mg/L	Se mg/L	Ag mg/L
MW-3																
2/25/94	476	0.7	ND	1.9	ND	ND	15.80	15.49	ND	3.27	0.0001	ND	0.0034	ND	0.0011	ND
6/17/94	13.6	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	20.9	3.4	0.9	10.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	241.5	101.1	12.7	223.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4																
2/25/94	240	3.1	40.2	469	ND	ND	17.74	18.50	0.0022	5.09	0.0016	ND	0.0373	ND	0.0015	ND
6/17/94	273	2.2	34.7	113	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	355	0.7	59.4	352	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	1694	7.6	241.3	1575	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5																
2/25/94	ND	1.0	ND	2.2	ND	ND	34.59	33.50	0.0064	3.16	0.0034	ND	ND	ND	0.0037	ND
6/17/94	2.1	2.7	4.5	32.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	1.3	0.5	1.0	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	0.8	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6																
2/25/94	15.9	3.2	5.3	140	ND	ND	13.39	12.34	ND	2.68	0.0002	ND	ND	ND	0.0007	ND
6/17/94	15.3	1.9	2.6	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	70.1	3.7	1.9	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	154.8	44.9	0.2	212.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	7.0	ND	ND	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-9																
2/25/94	ND	1.1	ND	1.4	ND	ND	13.73	13.47	ND	1.17	0.0011	ND	ND	ND	0.0012	ND
6/17/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	0.8	0.4	0.6	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-10																
2/25/94	ND	0.7	ND	1.7	ND	ND	15.04	15.45	ND	2.64	0.0140	ND	0.0012	ND	0.0018	ND
6/17/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
9/27/94	0.8	0.3	0.2	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stripper Effluent																
5/11/94	710	920	116	846	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/17/94	37.5	93	3.6	61.9	ND	ND	698.1	1,513	ND	ND	ND	ND	ND	ND	ND	ND
7/8/94	ND	ND	ND	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8/11/94	1.8	8.9	0.1	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/29/94	0.9	3.9	ND	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/13/94	1.4	0.9	0.3	3.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/94	0.8	0.7	ND	0.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WQCC LIMITS	10	750	750	620	30	0.7	------	------	0.1	1.0	0.01	0.05	0.05	0.002	0.05	0.05

ug/L = micrograms per liter, equivalent to parts per billion (ppb) mg/L= milligrams per liter, equivalent to parts per million (ppm) ND=not detected NA=not analyzed

Water Table Elevations

Depth to groundwater measurements in monitor wells was measured during the March 8, 1995 sample event. Table 2 includes water depth measurements, surface casing relative elevations and groundwater elevations. A contour map of relative water table elevations for this sample event is included in Figure 2.

TABLE 2

Relative Groundwater Elevations
Amoco Production Company GCU Com "F" No. 162
December 7, 1994

Monitor Well	Total Depth (feet)	Depth to Fluid (feet)	Relative Casing Elevation (feet)	Relative Groundwater Elevation (feet)
MW-1	Well	abandoned	during	excavation
MW-2	23.1	na	100.16	na
MW-3	Well	abandoned	during	excavation
MW-4	Well	abandoned	during	excavation
MW-5	25.1	22.30	102.50	80.20
MW-6	26.8	20.62	98.68	78.06
MW-7	25.3	na	97.39	na
MW-8	Well	abandoned	during	excavation
MW-9	19.6	12.48	88.50	76.02
MW-10	20.3	14.85	91.58	76.73

na = water table elevation not measured

Current and Proposed Activities

The extent of contaminated soil and groundwater has previously been investigated and reported (Figure 3). Amoco is presently stockpiling clean top soil on location and removing contaminated soil for off-site composting operations. This excavation is proposed for remediation of contamination found within the confines of the well location. It is proposed to install an air sparge/vacuum extract system for remediation of contaminated soil and groundwater on private property immediately west of the location (Figure 4). Horizontal vent piping is to be installed in

borings at an elevation of 3 feet to 10 feet above the water table surface. Vertical air sparge points installed at a depth of 5 feet to 10 feet below the water table surface are proposed for introduction of air to the reclamation system. Air pumps and/or compressors to operate the air sparge/vacuum extract system will be located on the well site. The location of horizontal vent piping and air sparge points as indicated on Figure 4 is conceptual only. The final locations of these systems will be dependent on surface and subsurface restrictions and the actual magnitude of contamination found during site work.

Summary

This report has been prepared by Blagg Engineering, Inc. on behalf of Amoco Production Company. Questions or comments may be directed to Jeff Blagg at (505)632-1199.

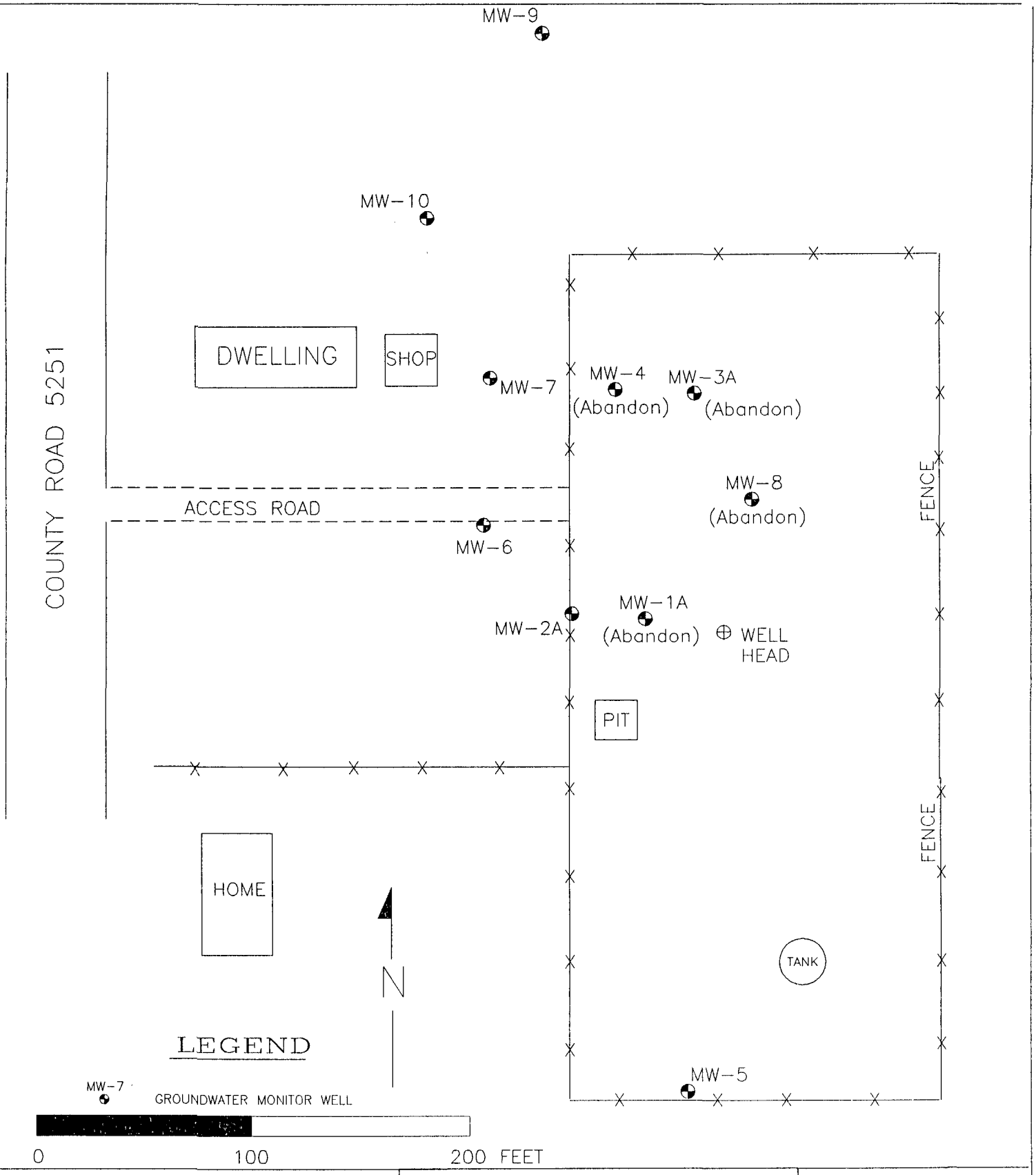
Respectfully submitted:
Blagg Engineering, Inc.

Jeffrey C. Blagg, P.E.
President

cc: Mr. Denny Foust, NMOCD
Mr. Wayne Cannon, NM State Engineers Office
Mr. Buddy Shaw, Amoco Production Company

APPENDIX A

FIGURES



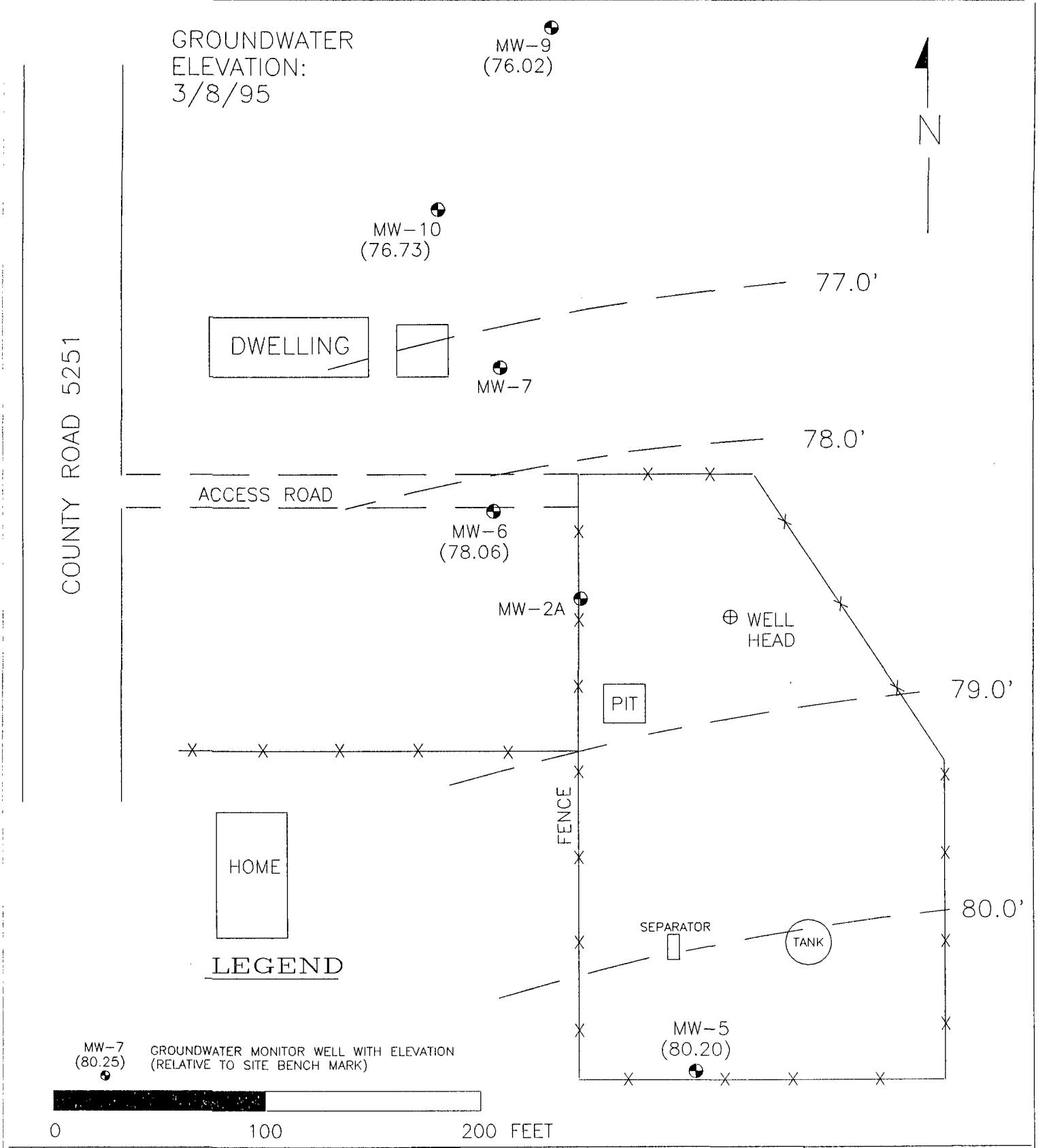
AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

MARCH, 1995

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

SITE PLAN

FIGURE 1	DRWN BY: JCB
162REV	PROJ MGR: JCB



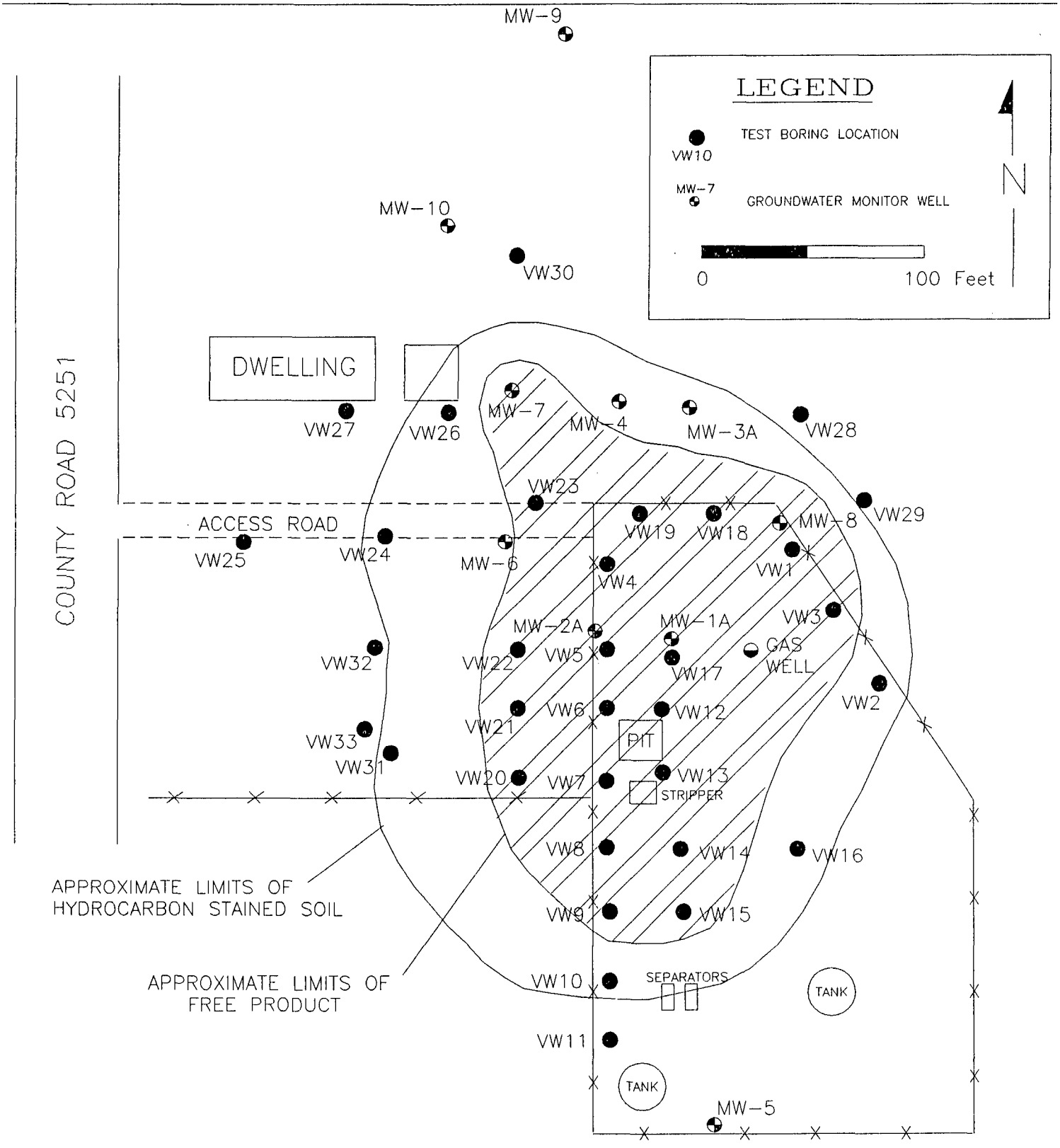
AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

MARCH, 1995

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

GROUNDWATER CONTOUR

FIGURE 2	DRWN BY: JCB
162GWE	PROJ MGR: JCB

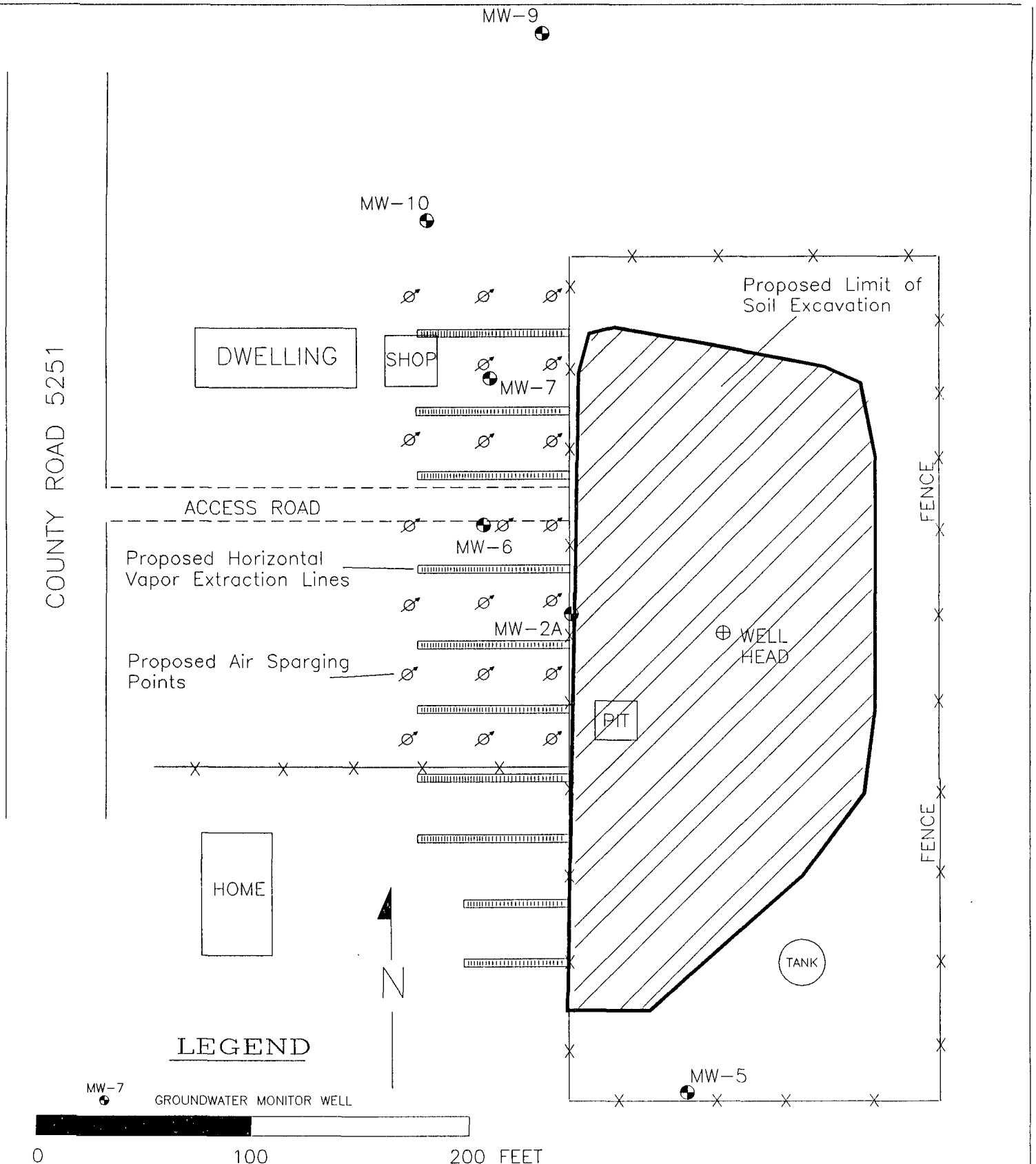


AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO
OCTOBER, 1994

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

CONTAMINATION LIMITS

FIGURE 3	DRWN BY: JCB
162BEI5	PROJ MGR: JCB



AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

MARCH, 1995

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

CONCEPTUAL SITE RECLAMATION PLAN

FIGURE 4	DRWN BY: JCB
162REV	PROJ MGR: JCB

APPENDIX B

LABORATORY ANALYTICAL DATA REPORTS

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*Nelson Velez*	Date:	3/8/95
Company:	*Blagg Engineering*	*Lab ID:*	*2635*
Address:	*P.O. Box 87*	*Sample ID:*	*5413*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***GCU Com "F" 162***				
Project Location:	***MW #5***				
Sampled by:	NV	Date:	3/7/95	Time:	14:00
Analyzed by:	DLA	Date:	3/8/95		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	ND	*0.2*
Toluene	ND	*0.2*
Ethylbenzene	ND	*0.2*
m,p-Xylene	ND	*0.2*
o-Xylene	ND	*0.2*
	TOTAL 0.0 ug/L	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DaG

Date: 3/8/95

OFF: (505) 325-8786

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*Nelson Velez*	Date:	3/8/95
Company:	*Blagg Engineering*	*Lab ID:*	*2635*
Address:	*P.O. Box 87*	*Sample ID:*	*5414*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***GCU Com "F" 162***				
Project Location:	***MW #6***				
Sampled by:	NV	Date:	3/7/95	Time:	13:30
Analyzed by:	DLA	Date:	3/8/95		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L***	***Detection Limit Concentration ug/L***
Benzene	7.0	*0.2*
Toluene	ND	*0.2*
Ethylbenzene	ND	*0.2*
m,p-Xylene	8.2	*0.2*
o-Xylene	ND	*0.2*
	TOTAL 15.2 ug/L	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DaG
Date: 3/8/95

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*Nelson Velez*	Date:	3/8/95
Company:	*Blagg Engineering*	*Lab ID:*	*2635*
Address:	*P.O. Box 87*	*Sample ID:*	*5415*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***GCU Com "F" 162***				
Project Location:	***MW #9***				
Sampled by:	NV	Date:	3/7/95	Time:	15:00
Analyzed by:	DLA	Date:	3/8/95		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	ND	*0.2*
Toluene	ND	*0.2*
Ethylbenzene	ND	*0.2*
m,p-Xylene	ND	*0.2*
o-Xylene	ND	*0.2*
	TOTAL 0.0 ug/L	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DaG

Date: 3/8/95

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*Nelson Velez*	Date:	3/8/95
Company:	*Blagg Engineering*	*Lab ID:*	*2635*
Address:	*P.O. Box 87*	*Sample ID:*	*5416*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***GCU Com "F" 162***				
Project Location:	***MW #10***				
Sampled by:	NV	Date:	3/7/95	Time:	14:30
Analyzed by:	DLA	Date:	3/8/95		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	ND	*0.2*
Toluene	ND	*0.2*
Ethylbenzene	ND	*0.2*
m,p-Xylene	ND	*0.2*
o-Xylene	ND	*0.2*
	TOTAL *0.0 ug/L*	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DaG

Date: 3/8/95

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 3/8/95

Internal QC No.: 0222-STD
Surrogate QC No.: 0223-STD
Reference Standard QC No.: 0300-STD

Method Blank

Analytes in Blank	Amount
Average Amount of All Analytes In Blank	<0.1 ppb

Calibration Check

Calibration Standards	Units of Measure	*True Value	Analyzed Value	% Diff	Limit
Benzene	ppb	20	20	1	15%
Toluene	ppb	20	19	3	15%
Ethylbenzene	ppb	20	20	1	15%
m,p-Xylene	ppb	40	40	1	15%
o-Xylene	ppb	20	20	1	15%

Spike Results

Analyte	1- Percent Recovered	2 - Percent Recovered	Limit	%RSD	Limit
Benzene	102	101	(39-150)	0	20%
Toluene	101	100	(46-148)	1	20%
Ethylbenzene	95	92	(32-160)	3	20%
m,p-Xylene	108	107	(35-145)	1	20%
o-Xylene	94	91	(35-145)	2	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	S3 Percent Recovered
Limits	(70-130)		
5413-2635	100		

S1: Flourobenzene

CHAIN OF CUSTODY RECORD

2635

ON SITE TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 3/7/95

Page 1 of 1

Purchase Order No.:	Job No.		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Nelson Velez — Title PE
Company	Blagg Engineering — Dept.	Company	Same
Address	P.O. Box 87	Mailing Address	Same
City, State, Zip	Bloomfield, NM 87413	City, State, Zip	Same
		Telephone No.	632-1199 — Telefax No.

Sampling Location: Gcu com "F" 162

Sampler: Nelson Velez

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	BTEX (8020)	LAB ID
MW # 5	3/7/95	1400	WATER	$HgCl_2$	2	✓	5413-2635
MW # 6	3/7/95	1330	WATER	$HgCl_2$	2	✓	5414-2636
MW # 9	3/7/95	1500	WATER	$HgCl_2$	2	✓	5415-2635
MW #10	3/7/95	1430	WATER	$HgCl_2$	2	✓	5411-2635

ANALYSIS REQUESTED

Relinquished by: Nelson Velez	Date/Time 3/7/95 1615	Received by:	Date/Time 3/8/95 1115
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Rush	24-48 Hours	10 Working Days	Special Instructions:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client