3R - 276

REPORTS

DATE:

2000

MANANA GAS, INC.

PROPOSED RECLAMATION PLAN

NANCY HARTMAN #1E WELL SITE
(A) SECTION 22, T29N, R11W, NMPM
SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR:
MR. WILLIAM C. OLSON
NEW MEXICO OIL CONSERVATION DIVISION

DECEMBER 2000

PREPARED BY:
BLAGG ENGINEERING, INC.

Consulting Petroleum / Reclamation Services
P.O. Box 87
Bloomfield, New Mexico 87413

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDIX A

APPENDIX B

APPENDIX C

GROUNDWATER REMEDIATION PLAN
MANANA GAS, INC.
NANCY HARTMAN # 1E WELL SITE
NE/4, NE/4 (A) SECTION 22, T29N, R11W, NMPM
SAN JUAN COUNTY, BLOOMFIELD, NEW MEXICO

INTRODUCTION & BACKGROUND

Blagg Engineering, Inc. (**BEI**), was contracted by Manana Gas, Inc. (**MGI**) to perform a groundwater investigation and remediation plan at the Nancy Hartman #1E well site. The site is located within the city limits of Bloomfield, New Mexico (Figure 1) and is situated north of a Bloomfield School District (**BSD**) property where a Family Learning Center facility is under construction (Figure 2).

BEI was contacted by MGI's representative Mr. Tom Evans on Monday, October 23, 2000 and with the assistance of Mr. Denny Foust from the New Mexico Oil Conservation Division (**NMOCD**), informed BEI of soil hydrocarbon contamination found at a shallow subsurface depth (approximated at 1.5 to 2.0 feet below grade) adjacent to the on-site production tank. Mr. Evans also delivered a report generated by AMEC Earth & Environmental, Inc. (**AMEC**) of Albuquerque, New Mexico, dated October 6, 2000, pertaining to its Phase II Environmental Evaluation of the adjacent BSD property. Upon discussing Mr. Evans' findings near the production tank and groundwater contamination results observed within the AMEC report, it was apparent that groundwater impacts extended off-site. Delineation of soil and groundwater contamination would be necessary to comply with NMOCD regulations.

BEI conducted an initial site inspection and surface survey of the well site on Friday, October 27, 2000. On Monday, October 30, 2000, the BSD's board members convened a special session meeting to discuss their options in proceeding with construction of the new facility at the site. Mr. Evans, BEI, NMOCD's Mr. Frank Chavez and Mr. Foust, an AMEC representative, and BSD's architectural representative Mr. Scott Stafford, were all in attendance to discuss the recently encountered groundwater contamination. Following review of their options, BSD's board members voted to award the construction bid and commence with the final drafted plan to erect the building structure on the BSD property as shown in Figure 2. BEI was granted permission by the BSD to conduct environmental investigations on their property during building construction.

PURPOSE AND SCOPE OF WORK

The purpose and scope of this initial investigation was multifaceted. The initial and primary goal was to delineate hydrocarbon contamination in groundwater on the BSD's property previously identified by its contractor (AMEC) in September, 2000. The secondary goal was to identify the contamination on the MGI Hartman well site. The third goal was to develop a remediation scheme using the best available technology.

The scope of work consisted of the following:

1. Delineation of the groundwater hydrocarbon contamination impact on the BSD property by installing monitor wells.
2. Subsurface soil sampling using typical procedures from the boring advancements of the monitor wells.
3. Soil sampling of the excavated potential source(s) previously identified by MGI.
4. Groundwater sampling from previous existing and BEI's newly installed monitor wells (Figure 2).
5. Data evaluation and interpretation.
6. Communication with various entities having direct or incidental involvement associated with the groundwater contamination impact.
7. Generate this report which includes - findings, evaluation of the data acquired, site schematics, boring logs, monitor well details, and recommendation(s) for accelerated cleanup of hydrocarbon impacted groundwater.

FIELD INVESTIGATION

Soil description

Subsurface soils encountered during the on-site excavations at two potential source areas (Figure 3) and boring advancements of each monitor well installed revealed a predominantly silty sand phasing into sand throughout the area. Intermittent intervals of silty clay and clay were also observed at various and irregular depths below grade. Apparent soil discoloration was only observed within the bottom portions of MW #2M (assumed source well) and MW #5M located on the BSD's property. MW #2M revealed a medium gray sand between 21-23 feet below grade and contained a strong hydrocarbon odor, whereas MW #5M revealed a light olive gray sand between 17-23 feet below grade with a slight hydrocarbon odor (see boring logs - Appendix B). The on-site southern excavated pit soils disclosed varying degrees of discoloration ranging from light olive gray (exposed west sidewall) to black and encompassing a strong hydrocarbon odor.

Groundwater Depths and Flow Direction

Groundwater depths measured prior to development and sampling of the monitor wells (between November 3th and December 11th, 2000) range between approximately 11.5 to 14.0 feet below grade. The static water levels were measured with a Solinst water level detector. The referred depths are measured from the top of the well casing to the water level and then subtracting the distance from the top of the well casing to grade. Table 1 presents pertinent dates and groundwater depth information associated with all monitor wells installed on and off-site.

Based upon groundwater measurements collected Monday, November 6, 2000 (see Monitor Well Development/Sampling Data sheet in Appendix A), the groundwater flow direction appears to be due south with a slight southwest component (Figure 4).

TABLE 1

MANANA GAS, INC. GROUNDWATER MONITOR WELL INFORMATION

MW #	DRILLING COMPLETED	DEVELOPMENT COMPLETED	SURVEY COMPLETED	INITIAL SAMPLING COMPLETED	ANALYTICAL RESULTS RECEIVED	COMMENTS
1 [1]	9/22/00	9/22/00	9/26-29/00	9/23/00	9/29/00	GW DEPTH= 12.29' BGS [2]
2 [1]	9/22/00	9/22/00	9/26-29/00	9/23/00	9/29/00	GW DEPTH= 12.14' BGS [2]
3 [1]	9/22/00	9/22/00	9/26-29/00	9/23/00	9/29/00	GW DEPTH= 12.04' BGS [2]
1M	12/06/00	12/07/00	12/15/00	12/11/00	NA	GW DEPTH= 13.70' BGS
2M	12/06/00	12/07/00	12/15/00	12/11/00	NA	GW DEPTH= 14.04' BGS
3M	11/01/00	11/03/00	11/03/00	11/06/00	12/06/00	GW DEPTH= 11.84' BGS
4M	11/01/00	11/03/00	11/03/00	11/06/00	12/06/00	GW DEPTH= 11.77' BGS
5M	11/01/00	11/03/00	11/03/00	11/06/00	12/06/00	GW DEPTH= 12.14' BGS
6M	11/13/00	11/14/00	11/14/00	11/15/00	12/06/00	GW DEPTH= 11.47' BGS
7M	11/13/00	11/14/00	11/14/00	11/15/00	12/06/00	GW DEPTH= 11.49' BGS
8M	11/13/00	11/14/00	11/14/00	11/15/00	12/06/00	GW DEPTH= 12.47' BGS

NOTES:MW = MONITOR WELL; GW = GROUNDWATER; BGS = BELOW GROUND SURFACE; NA = NOT AVAILABLE AS OF THIS WRITING; GW DEPTHS RECORDED DURING DATES OF INITIAL SAMPLING; [1] = INSTALLED BY OTHERS; [2] = BASED ON 11/06/00 MEASUREMENTS.

ANALYTICAL RESULTS

After developing each monitor well (see Groundwater Monitor Well Development & Sampling procedures - Appendix A), groundwater samples were collected and analyzed for benzene, toluene, ethylbenzene, and total xylenes (**BTEX**) per USEPA method 8260, polynuclear aromatic hydrocarbon (**PAH**) per USEPA method 8310 (MW #1 only), trace metals per USEPA method 200.7 (iron only) and 200.8 (MW #'s 1, & 4M), and regulated anions per USEPA method 300.0 (MW #'s 1, 2, & 4M). Soil samples collected from each boring advancement during the monitor well installation (see individual boring logs - Appendix B) and after the completion of the on-site excavations were also collected and analyzed in the field and/or by a qualified laboratory for total petroleum hydrocarbons (**TPH**) per USEPA method 8015B & BTEX per USEPA method 8021B. All sampling was performed in accordance with USEPA SW-846 protocol.

The field and laboratory results are summarized as follows:

1. Table 2 summarizes BTEX results from all monitor wells (except MW #3) collected by BEI between November 6th and 15th, 2000. ***Note the New Mexico Water Quality Control Commissions (NMWQCC) allowable concentrations at the bottom of each table (1 through 5).***

2. Table 3 summarizes the trace metals laboratory analyses from MW #'s 1 & 4M collected on November 6, 2000.

3. Table 4 summarizes the PAH finding in MW #1 also collected on November 6, 2000.

4. Table 5 summarizes the field parameters [pH and calculated total dissolved solids (TDS)] and regulated anion results from MW #'s 1, 2, & 4M again collected on November 6, 2000.

5. Table 6 & 7 summarizes the field and laboratory results from the on-site excavations collected between November 3th and 29th, 2000. ***Note the NMOCD's regulatory standards for the site at the bottom of each of these tables.***

TABLE 2
BTEX RESULTS OF LABORATORY GROUNDWATER ANALYSIS
(see figure 5)

MW #	*SAMPLE DATE*	*BENZENE*	*TOLUENE*	*ETHYL-BENZENE*	*TOTAL XYLENES*
1	**11/06/00**	***5,000***	***10,000***	***830***	***12,000***
2	**11/06/00**	***48***	ND	ND	ND
3M	**11/06/00**	ND	ND	ND	ND
4M	**11/06/00**	***680***	ND	ND	ND
5M	**11/06/00**	***1,800***	***4,500***	330	***4,400***
6M	**11/15/00**	ND	ND	ND	ND
7M	**11/15/00**	ND	ND	ND	ND
8M	**11/15/00**	ND	ND	ND	ND
NMWQCC STANDARDS		***10***	***750***	***750***	***620***

NOTES :
1) BTEX = benzene, toluene, ethylbenzene, & total xylenes.
2) MW = monitor well.
3) NMWQCC - New Mexico Water Quality Control Commission.
4) Unit of data is parts per billion or µg/L.
5) ND = not detected at or above reporting limit.

TABLE 3
TRACE METALS RESULTS OF LABORATORY GROUNDWATER ANALYSIS

MW #	Sample Date	Mercury	Alum-inum	Arsenic	Barium	Boron	Cad-mium	Chro-mium	Cobalt	Copper
1	**11/06/00**	ND	3.7	0.086	***2.3***	ND	ND	0.003	ND	0.03
4M	**11/06/00**	ND	4.0	0.001	0.23	ND	ND	0.001	ND	ND
NMWQCC STANDARDS		***.002***	***5.0***	***0.1***	***1.0***	***0.75***	***0.01***	***0.05***	***0.05***	***1.0***

MW #	Sample Date	Iron	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Zinc
1	**11/06/00**	***27.4***	0.022	***9.6***	ND	0.02	0.004	ND	0.03
4M	**11/06/00**	0.85	0.008	***0.58***	ND	0.01	0.002	ND	0.02
NMWQCC STANDARDS		***1.0***	***0.05***	***0.2***	***1.0***	***0.2***	***0.05***	***0.05***	***10.0***

NOTES :
1) MW = monitor well.
2) NMWQCC - New Mexico Water Quality Control Commission.
3) Unit of data is parts per million or mg/L.
4) ND = not detected at or above reporting limit.

TABLE 4

PAH RESULTS OF LABORATORY GROUNDWATER ANALYSIS

MW #	Sample Date	Total Naphthalene	Benzo(a)pyrene
1	**11/06/00**	**146**	ND
NMWQCC STANDARDS		***30***	***0.7***

NOTES :
1) PAH = polynuclear aromatic hydrocarbons.
2) MW = monitor well.
3) NMWQCC - New Mexico Water Quality Control Commission
4) Unit of data is parts per billion or µg/L.
5) ND = not detected at or above reporting limit.

TABLE 5
FIELD & LABORATORY ANION GROUNDWATER RESULTS

MW #	Sample Date	pH[1]	TDS[2]	Chloride	Sulfate	Fluoride	Nitrate
1	**11/06/00**	6.83	889	89	3.0	0.20	ND
2	**11/06/00**	7.03	568	13	140	0.20	1.0
4M	**11/06/00**	6.92	756	27	120	0.20	0.90
NMWQCC STANDARDS		***6-9***	***1,000***	***250***	***600***	***1.60***	***10.0***

NOTES :
1) MW = monitor well.
2) NMWQCC - New Mexico Water Quality Control Commission.
3) Unit of data is parts per million or mg/L (pH is unitless).
4) ND = not detected at or above reporting limit.
5) TDS = total dissolved solids.
6) [1] - pH information derived from field parameter instrumentation.
7) [2] - TDS information derived from a 2:1 ratio of the electrical conductivity field parameter instrumentation and is used only as approximations.

TABLE 6

RESULTS OF SOIL ANALYSIS FROM NORTHERN EXCAVATION

(see figure 3)

SAMPLE ID	SAMPLE DATE	OVM	BENZENE	TOTAL BTEX	TOTAL TPH
1 @ 10 ft.	**11/03/00**	56.6	-	-	-
2 @ 10 ft.	**11/03/00**	55.2	-	-	-
3 @ 10 ft.	**11/03/00**	38.6	-	-	-
4 @ 10 ft.	**11/03/00**	2.6	-	-	-
5 @ 13 ft.	***11/03/00***	***1,122***	***24***	***1,027***	***6,540***
5 @ 18 ft.	**11/03/00**	***1,083***	-	-	-
NMOCD STANDARDS		***100***	***10***	***50***	***100***

NOTES :

1) OVM = Organic Vapor Meter (field instrument).
2) BTEX = benzene, toluene, ethylbenzene, & total xylenes.
3) TPH = total petroleum hydrocarbons.
4) NMOCD - New Mexico Oil Conservation Division.
5) Unit of data is parts per million or mg/kg.
6) Sample ID indicates depths collected below grade (approximated).

TABLE 7

RESULTS OF SOIL ANALYSIS FROM SOUTHERN EXCAVATION

(see figure 3)

SAMPLE ID	SAMPLE DATE	OVM	BENZENE	TOTAL BTEX	TOTAL TPH
1 @ 8 ft.	**11/29/00**	0.0	-	-	-
2 @ 8 ft.	**12/05/00**	4.2	-	-	-
3 @ 8 ft.	**11/29/00**	0.0	-	-	-
4 @ 7ft.	***11/29/00***	***866***	NA	NA	NA
5 @ 12 ft.	***11/29/00***	***173***	NA	NA	NA
NMOCD STANDARDS		***100***	***10***	***50***	***100***

NOTES :

1) OVM = Organic Vapor Meter (field instrument).
2) BTEX = benzene, toluene, ethylbenzene, & total xylenes.
3) TPH = total petroleum hydrocarbons.
4) NMOCD - New Mexico Oil Conservation Division.
5) Unit of data is parts per million or mg/kg.
6) Sample ID indicates depths collected below grade (approximated).

DATA EVALUATION and INTERPRETATION

Hydrocarbon and General Chemistry Concentrations in Groundwater

Test results (Table 2 & Figure 5) from monitor wells #1 & #5M reveal concentrations exceeding NMWQCC 's regulatory standards for all BTEX constituents except for ethylbenzene in MW #5M. Benzene concentration from monitor wells #2 (48 ppb) & #4M (680 ppb) were also found to exceed the NMWQCC's regulatory standards. As evident in Table 1 & Figure 5, all other monitor wells sampled disclose non detectable levels at the laboratory reporting limits for BTEX. Finally, as of this writing, the BTEX results for MW #1M (predicted background well) and MW #2M (assumed source well) have not been received by BEI to include in this report.

The PAH, trace metals barium, iron, and manganese all exceeded NMWQCC's standards in MW #1. The trace metal manganese also exceed NMWQCC's standards in MW #4M. All other targeted NMWQCC's regulated constituents appear to meet the allowable concentrations.

Site Excavations

The abatement was limited to excavation of the areas suspected as the principal sources (Figure 3). Following pit excavation, the sidewalls were not visibly contaminated with the exception of the west sidewall and pit bottom in close proximity to groundwater of the southern excavation. The northern excavation dimensions were measured at approximately 26 feet in width by 31 feet in length by 15 feet in depth. The southern excavation dimensions were measured at approximately 29 feet in width by 35 feet in length by 13 feet in depth. The estimated soil removed and transported off-site to the private property of Hartman, Edward M. ET. AL. (located in Unit L, Section 10, T29N, R11W) were 450 & 475 cubic yards respectively. The soil was landfarmed and bermed to adhered to NMOCD's guidelines. Finally, as of this writing, the soil TPH & BTEX results from the pit bottom and west sidewall of the southern excavation have not been received by BEI to include in this report.

Hydrocarbon Plume Interpretation in Groundwater

Based on the data collected to date, it appears that the hydrocarbon impact in groundwater has been adequately defined. It is evident that the down gradient limit does not extend beyond MW #'s 6M, 7M, & 8M. A reasonable interpretation can be construed and BEI believes that the plume may cover as much as approximately 1.5 areal acres as illustrated in Figure 6. It is important to note that since there is no control towards the east and southeast direction in reviewing the schematic mentioned, the eastern edge of this interpretation is based on the current data including the assumption that groundwater flow will remain due south or toward the southwest direction.

SUMMATION

The following summarizes the findings of the investigation and the necessitated conditions confronting both MGI and the BSD;

1. Soil conditions on and off-site appear to be a silty sand phasing into a sand at greater depth.
2. Groundwater depths are approximately between 11.5 to 14 feet below grade in the immediate vicinity.
3. Groundwater flow direction was relatively due south during the November 6, 2000 sampling event.
4. Hydrocarbon concentrations in groundwater exceed NMWQCC's standards in MW #'s 1, 2, 4M, & 5M for at least one constituent of BTEX and PAH (MW #1).
5. Three (3) trace metals in MW #1 exceed NMWQCC's standards, and manganese was exceeded in MW #4M.
6. The hydrocarbon plume in groundwater appears to have been delineated according to the data collected.
7. Source area hydrocarbon contaminated soils above the groundwater interface appear to have been remediated by the excavation undertaken in November, 2000 (with the exception of the west sidewall of the southern excavation).
8. Due to the ongoing dirt construction activities for the BSD's facility, BEI performed the following site work on an expedited time schedule;
    1. MW #'s 1, 4M, & 5M were abandoned on November 16, 2000 as to not impede the contractors progress for the building foundation preparation work. The monitor wells were grouted with a 5% bentonite concrete slurry either within the 2 inch PVC piping or within the boring after the piping was removed. Reinstallation of those wells is planned, however the exact date is unknown and is pending upon construction time frames.
    2. As illustrated in Figure 7, a vapor extraction system was installed subgrade below the proposed building foundation on November 27, 2000. Because of the time restrictions and cost effectiveness, it was necessary to install this remediation system to insure no possible hydrocarbon vapors accumulate underneath the building's concrete slab once in place. Details of the materials used and construction details are depicted on Figure 7.

PROPOSED RECLAMATION PLAN

Based on the results of the site investigation, BEI believes that air sparging is the best available technology for site remediation. Soil conditions above and below the water table interface appear to be ideal for allowing volatilization of residual soil and groundwater hydrocarbons. Due to the pending BSD school building construction it will not be feasible or desirable to install air sparge points in the immediate vicinity of the proposed structure. Therefore, BEI proposes installation of air sparge points within the contamination plume on the Hartman No. 1E well site and along the Manana/BSD property line only. A vapor extraction system has already been installed below the proposed footprint of the school building (Figure 7) to limit the potential for vapor accumulation below the building concrete slab. Additional vapor extraction will be installed in the area of air sparging if monitoring indicates that vapors are accumulating in subsurface soils.

Air Sparge System

The proposed air sparge system will be constructed using normal hollow stem auger drilling equipment. The proposed layout of the sparge system will include nine (9) air sparge points (Figure 8). The sparge points will be installed using 2-inch diameter PVC piping with a 1.5 foot screened interval located between approximately 10 - 11.5 feet below the water table surface (Figure 9). The setting depth of the sparge points has been designed to allow for a substantial deviation in the water table elevation. An expansion of the system can be accomplished in the future if adequate remediation of groundwater is not achieved.

Air injection into the sparge points will be from a typical oilfield compressor capable of moving approximately 100 mcfd of ambient air at the anticipated system back pressure (< 15 psig). This will allow for between 5 and 10 cfm of air into each sparge point. Actual injection rates can be varied depending on engine RPM and installation of a relief valve.

Vacuum extraction points, as indicated on Figure 10, will be installed in the event that monitoring of the school building vapor extraction system exhibits the collection of volatile gases. The extraction points will consist of slotted 2-inch PVC piping placed in the vadose zone between approximately 4' - 6' above the water table interface. Vacuum extraction from the extraction points, and from the building vapor extraction system, will be accomplished with a typical regenerative blower. The blower will be sized depending on anticipated extraction requirements following startup of the sparging system.

Monitoring Program

Site groundwater monitor wells will be monitored on a quarterly basis following standard NMOCD protocol. This will include sampling select wells in the monitoring system on a quarterly basis and testing for BTEX constituents following U.S. EPA Method 8260. Annually, certain wells will be tested for PAH constituents following U.S. EPA Method 8310 and for select metals analysis based on historical trends.

Vapors from the building monitoring system will be tested weekly using a calibrated organic vapor meter photo-ionization detector (PID) following system startup. In the event that volatile vapors are detected monitoring will be initiated on a daily basis. If vapors are detected to exceed 100 ppm deflection on the PID then samples will be collected for laboratory determination of BTEX concentration. If no volatile gases from the building vapor monitor system are detected following the first quarter of monitoring, then vapor monitoring will be placed on a monthly basis until the air sparge system is taken out of service.

Reporting Schedule

Following receipt of analytical test results from the annual sample event, a report will prepared for NMOCD review. This report will contain the analytical results of each quarterly sample event including site diagrams and maps indicating the extent of groundwater contamination and flow gradient. Field sampling parameters will also be included in the report. Recommendations for future monitoring or proposed revisions to the reclamation plan will be included.

Reclamation Termination

Reclamation will be terminated when each of the site groundwater monitor wells reach NMWQCC standards or are below background well levels for contaminates of concern for a minimum of four consecutive sampling events. In the event that site remediation can not be achieved, alternative methods for site clean up will be proposed. Such alternative methods could include expansion of the sparge system, bioremediation technologies or natural attenuation. In the event that reclamation may not be feasible using best available technology a revised closure standard to the NMWQCC may be requested.

LIMITATIONS AND CLOSURE

The scope of Blagg Engineering, Inc. services was limited to monitor well installations, sampling of the designated monitor wells, measurements of the standard field parameters in those wells, and soil sampling associated with the boring advancements and on-site excavations. All work has been performed in accordance with generally accepted professional practices in geotechnical/ environmental engineering and hydrogeology.

This Remediation Plan has been prepared for the exclusive use of Manana Gas, Inc. as it pertains to their Nancy Hartman #1E facility located within the NE/4 of the NE/4 of Section 22, Township 29N, Range 11W, NMPM, San Juan County, New Mexico.

I certify that I am personally familiar with the investigative work at the site, the site conditions, and the reported information as described and this document.

Respectfully Submitted,
BLAGG ENGINEERING, INC.

Nelson Velez
Staff Geologist

Reviewed By:

Jeffrey C. Blagg, P.E.
President

Appendices

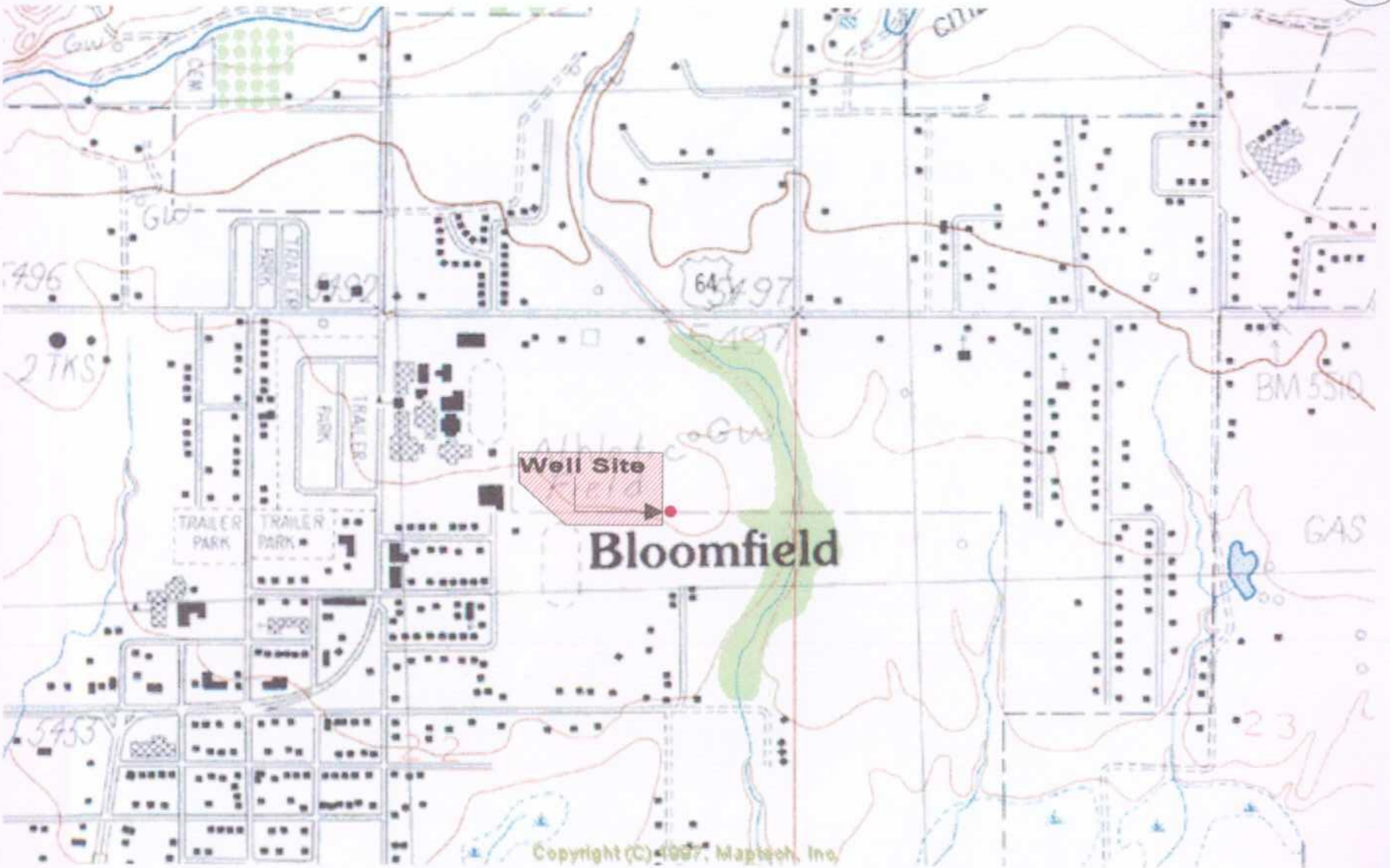
NV/nv

MGI-RP.RPT

LIST OF FIGURES

TOPOGRAPHIC MAP
BLOOMFIELD, NEW MEXICO
PROVISIONAL EDITION 1985

FIGURE 1



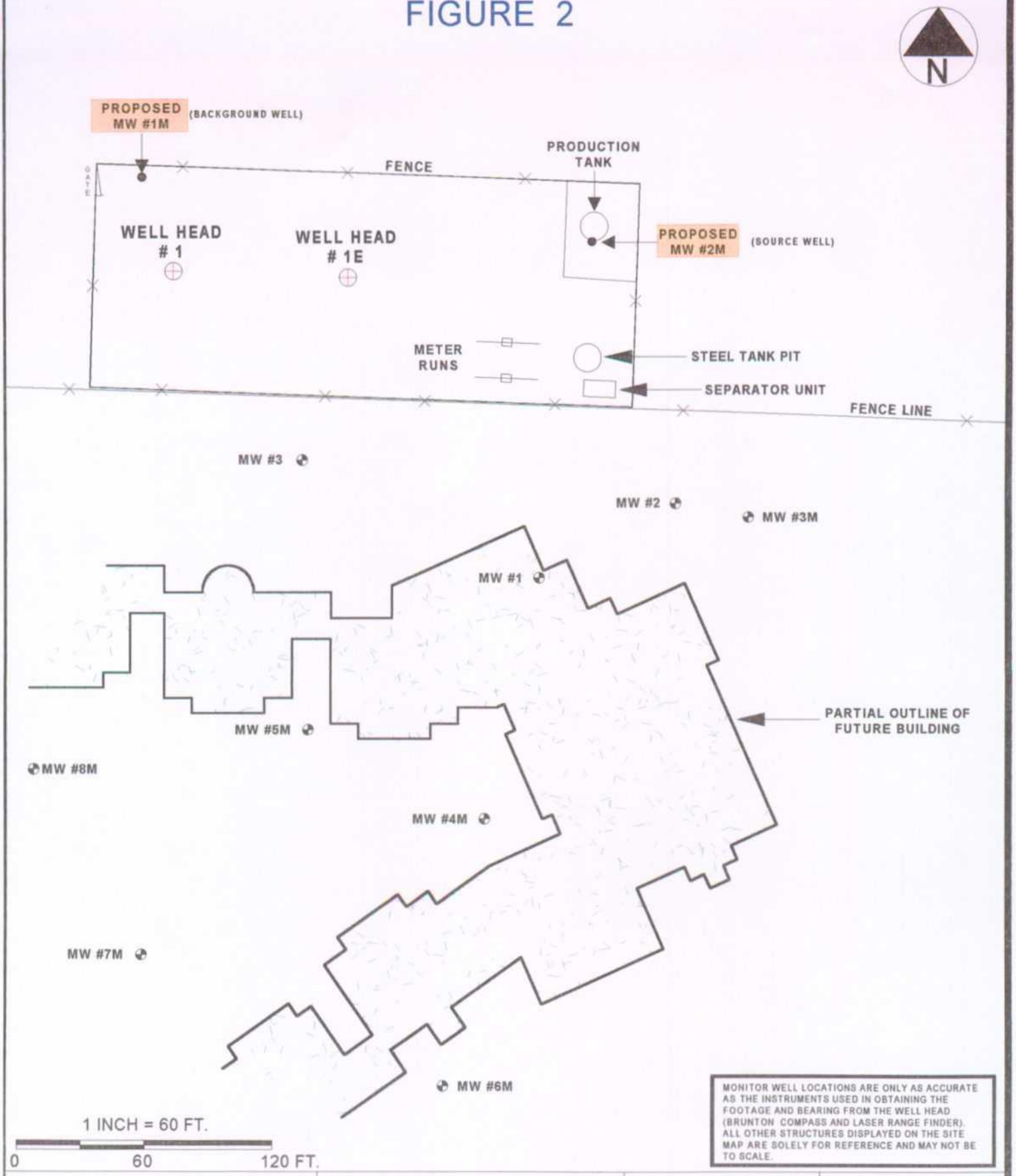
MANANA GAS, INC.
NANCY HARTMAN #1 & #1E
NE/4 NE/4 SEC. 22, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

GW INVESTIGATION
EDITED BY: NJV
FILENAME: MANA-TP.SKF

REFERENCE MAP
10/00

FIGURE 2



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

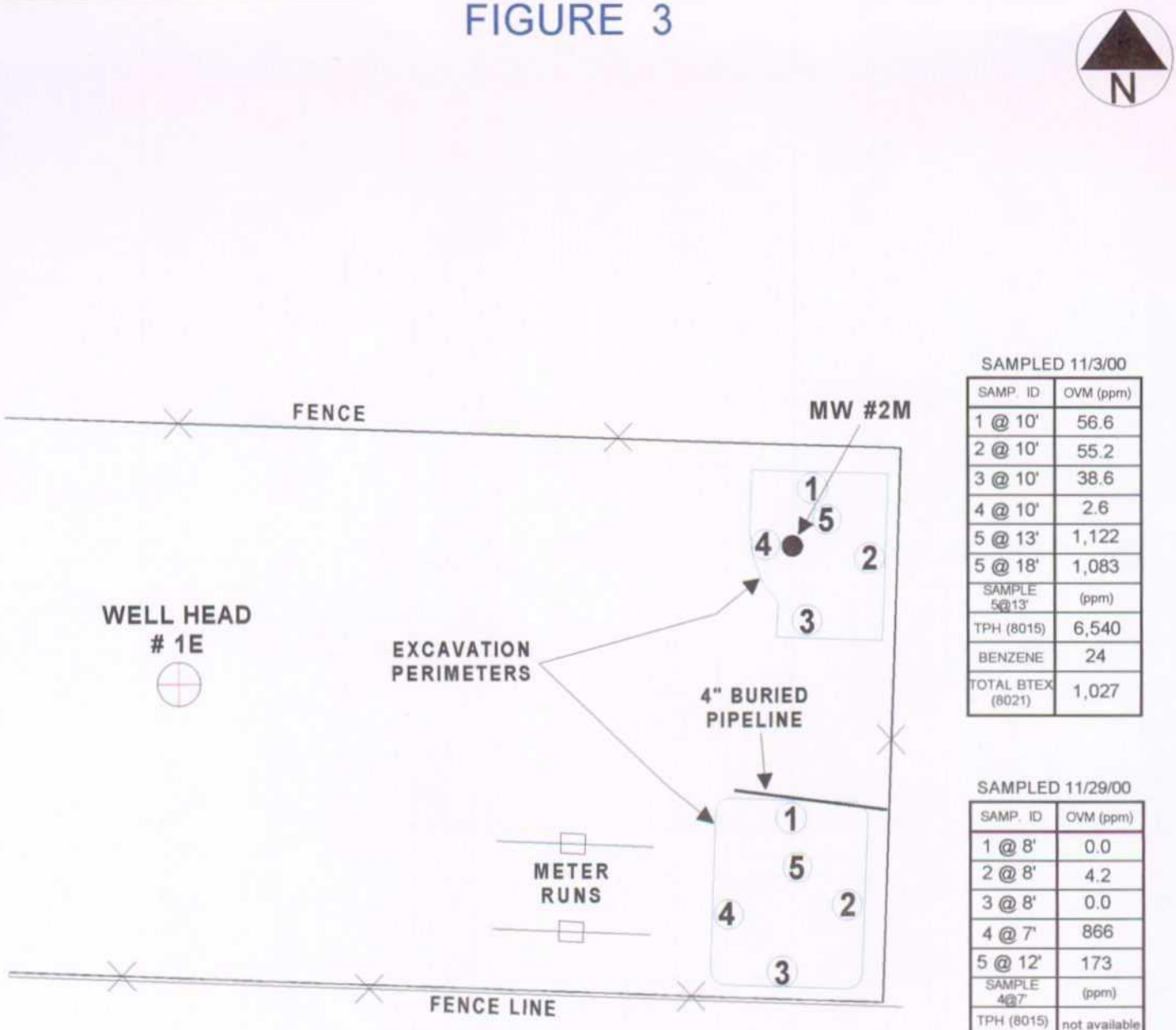
MANANA GAS, INC.
NANCY HARTMAN # 1 & # 1E
NE/4 NE/4 SEC. 22, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: GW INVESTIGATION
DRAWN BY: NJV
FILENAME: MANA-SM.SKF
REVISED: 11/12/00

SITE MAP
11/00

FIGURE 3



SAMPLED 11/3/00

SAMP. ID	OVM (ppm)
1 @ 10'	56.6
2 @ 10'	55.2
3 @ 10'	38.6
4 @ 10'	2.6
5 @ 13'	1,122
5 @ 18'	1,083
SAMPLE 5@13'	(ppm)
TPH (8015)	6,540
BENZENE	24
TOTAL BTEX (8021)	1,027

SAMPLED 11/29/00

SAMP. ID	OVM (ppm)
1 @ 8'	0.0
2 @ 8'	4.2
3 @ 8'	0.0
4 @ 7'	866
5 @ 12'	173
SAMPLE 4@7'	(ppm)
TPH (8015)	not available
BENZENE	as of this
TOTAL BTEX (8021)	writing
SAMPLE 5@12'	(ppm)
TPH (8015)	not available
BENZENE	as of this
TOTAL BTEX (8021)	writing

1 INCH = 30 FT.

0 30 60 FT.

MONITOR WELL LOCATION IS ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS & TAPE MEASURE). ALL OTHER STRUCTURES DISPLAYED ON THIS DIAGRAM ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

LEGEND

OVM = organic vapor meter
TPH = total petroleum hydrocarbons
BTEX = benzene, toluene, ethylbenzene, & total xylenes
ppm = parts per million
8015 or 8021 = USEPA method

NMOCD REGULATORY STANDARDS

OVM	= 100 ppm
TPH	= 100 ppm
BENZENE	= 10 ppm
TOTAL BTEX	= 50 ppm

MANANA GAS, INC.
NANCY HARTMAN # 1 & # 1E
NE/4 NE/4 SEC. 22, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

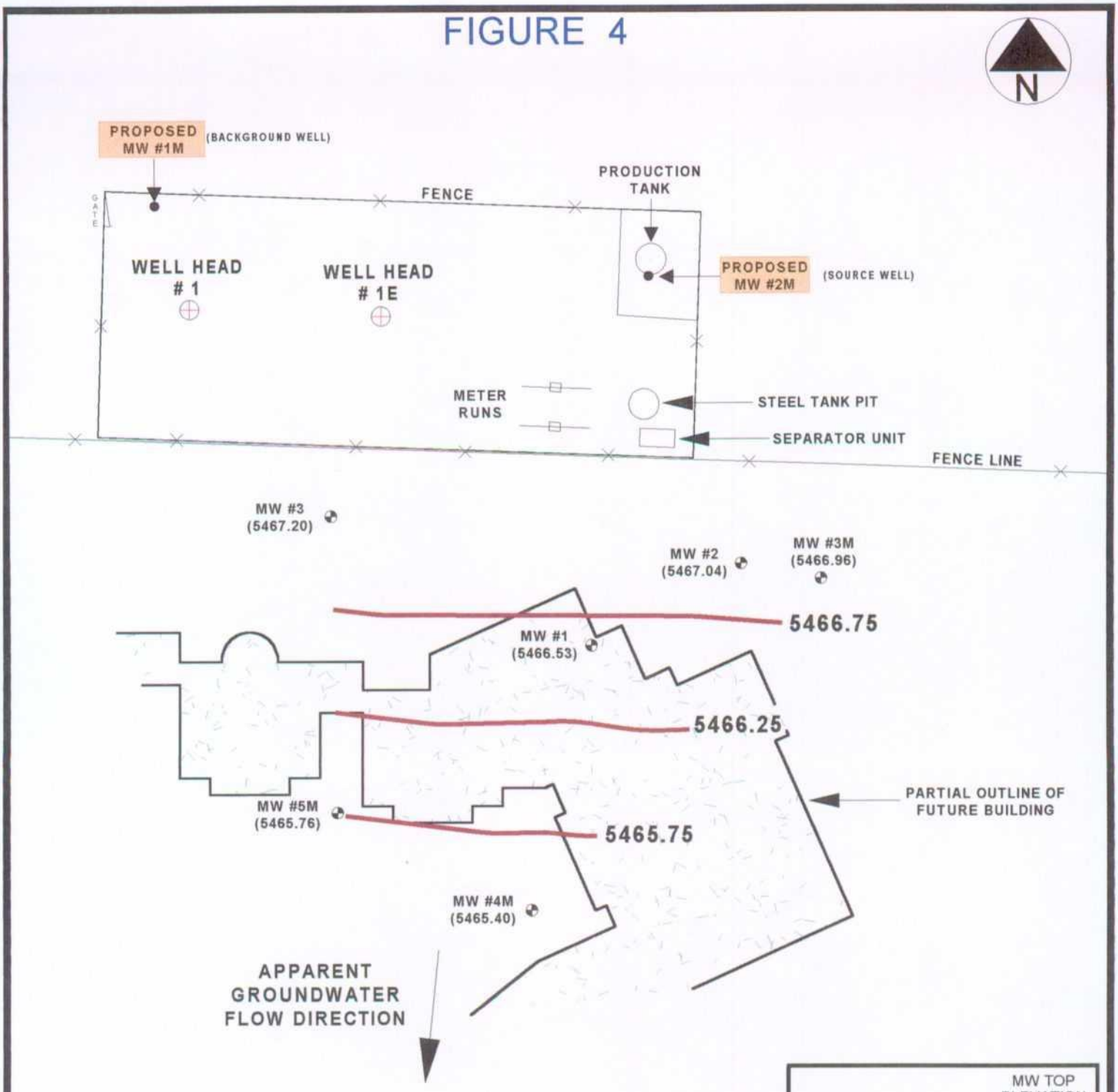
BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: GW INVESTIGATION
DRAWN BY: NJV
FILENAME: MANA-EX.SKF
REVISED: 12/14/00

EXCAVATION MAP

12/00

FIGURE 4



		MW TOP ELEVATION
MW # 1	-	(5481.38)
MW # 2	-	(5481.88)
MW # 3	-	(5482.64)
MW # 3M	-	(5481.20)
MW # 4M	-	(5479.07)
MW # 5M	-	(5481.10)
MW # 1 (5466.59)		Groundwater elevation as of 11 / 06 / 00.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

1 INCH = 60 FT.

0 60 120 FT.

MANANA GAS, INC.

NANCY HARTMAN # 1 & # 1E

NE/4 NE/4 SEC. 22, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: GW INVESTIGATION

DRAWN BY: NJV

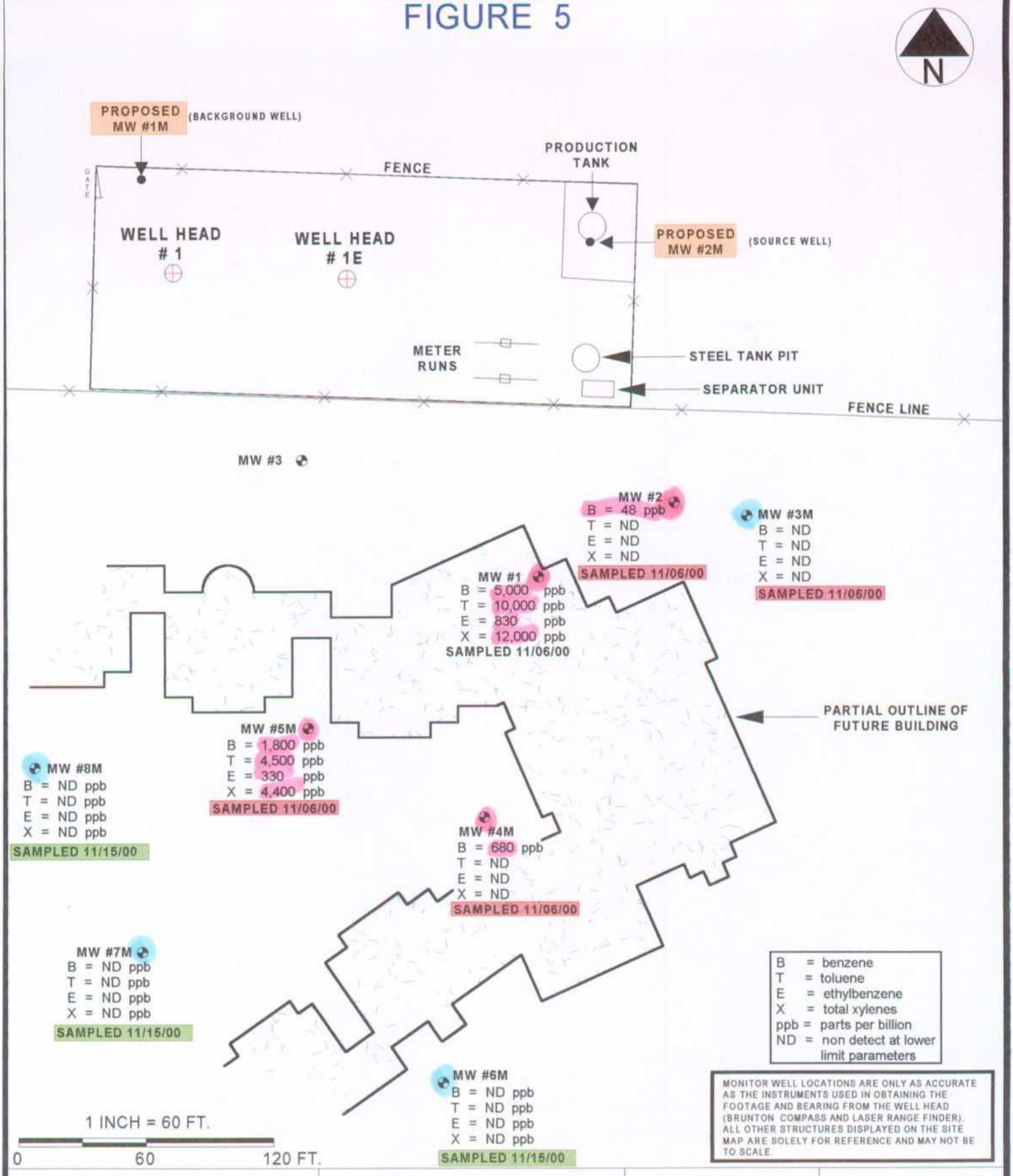
FILENAME: 11-06-GW.SKF

REVISED: 11/08/00

GROUNDWATER CONTOUR MAP

11/00

FIGURE 5



MANANA GAS, INC.

NANCY HARTMAN # 1 & # 1E

NE/4 NE/4 SEC. 22, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: GW INVESTIGATION

DRAWN BY: NJV

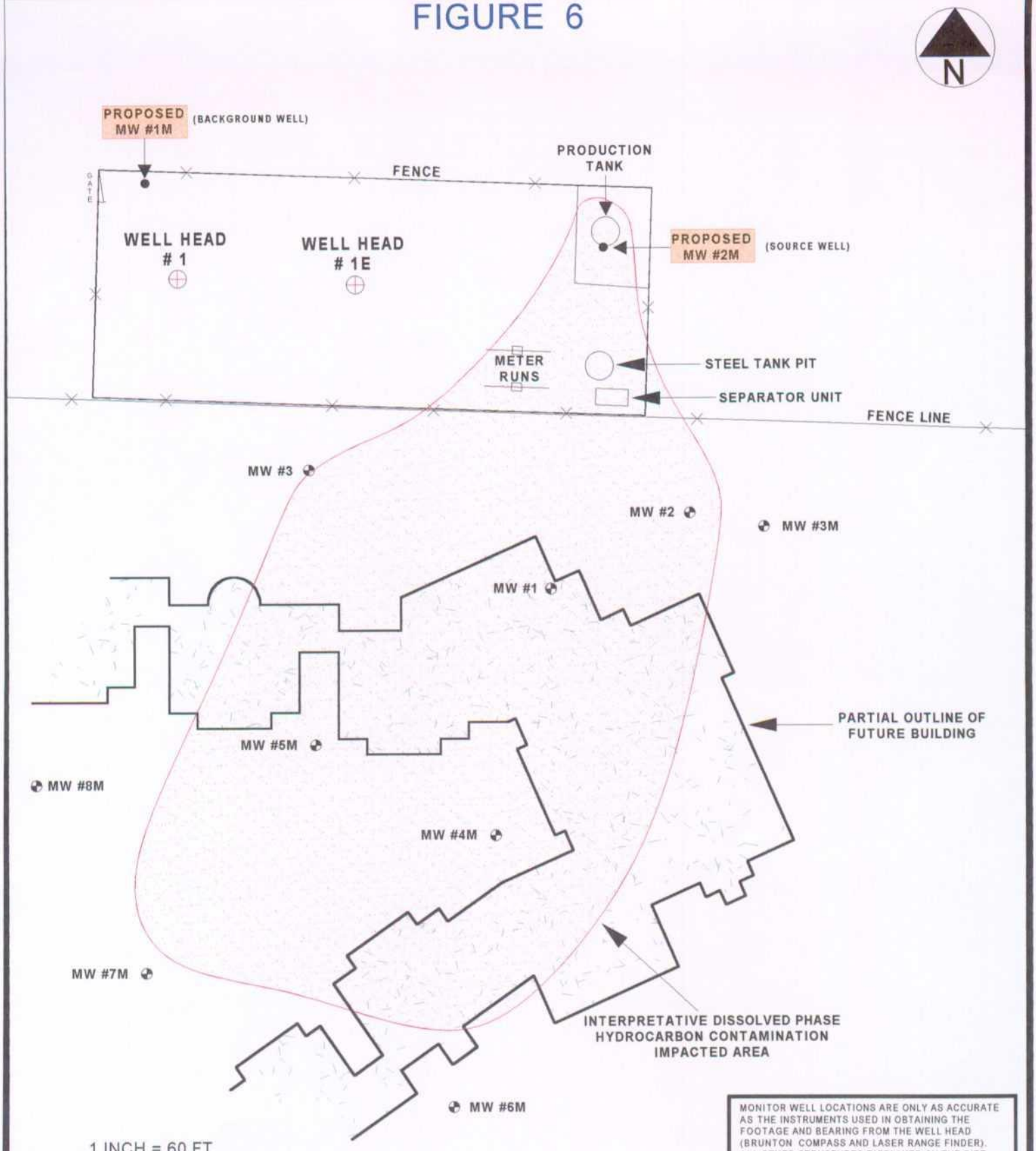
FILENAME: MANA-BC1.SKF

REVISED: 11/21/00

BTEX CONCENTRATION SCHEMATIC

11/00

FIGURE 6



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

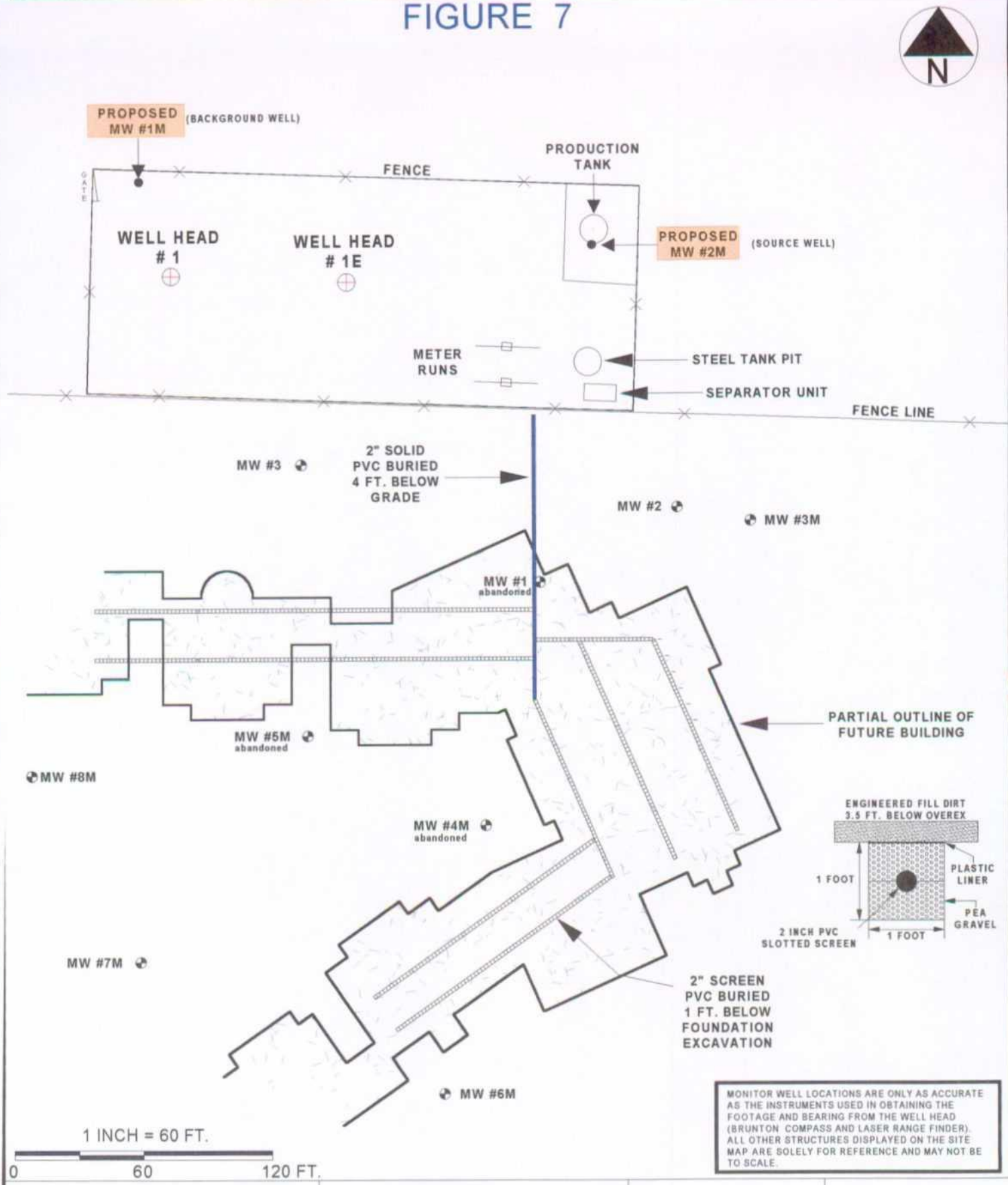
MANANA GAS, INC.
NANCY HARTMAN # 1 & # 1E
NE/4 NE/4 SEC. 22, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: GW INVESTIGATION
DRAWN BY: NJV
FILENAME: MANA-HP6.SKF
REVISED: 11/21/00

INTERPRETATIVE HYDROCARBON IMPACTED AREA SCHEMATIC
11/00

FIGURE 7



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

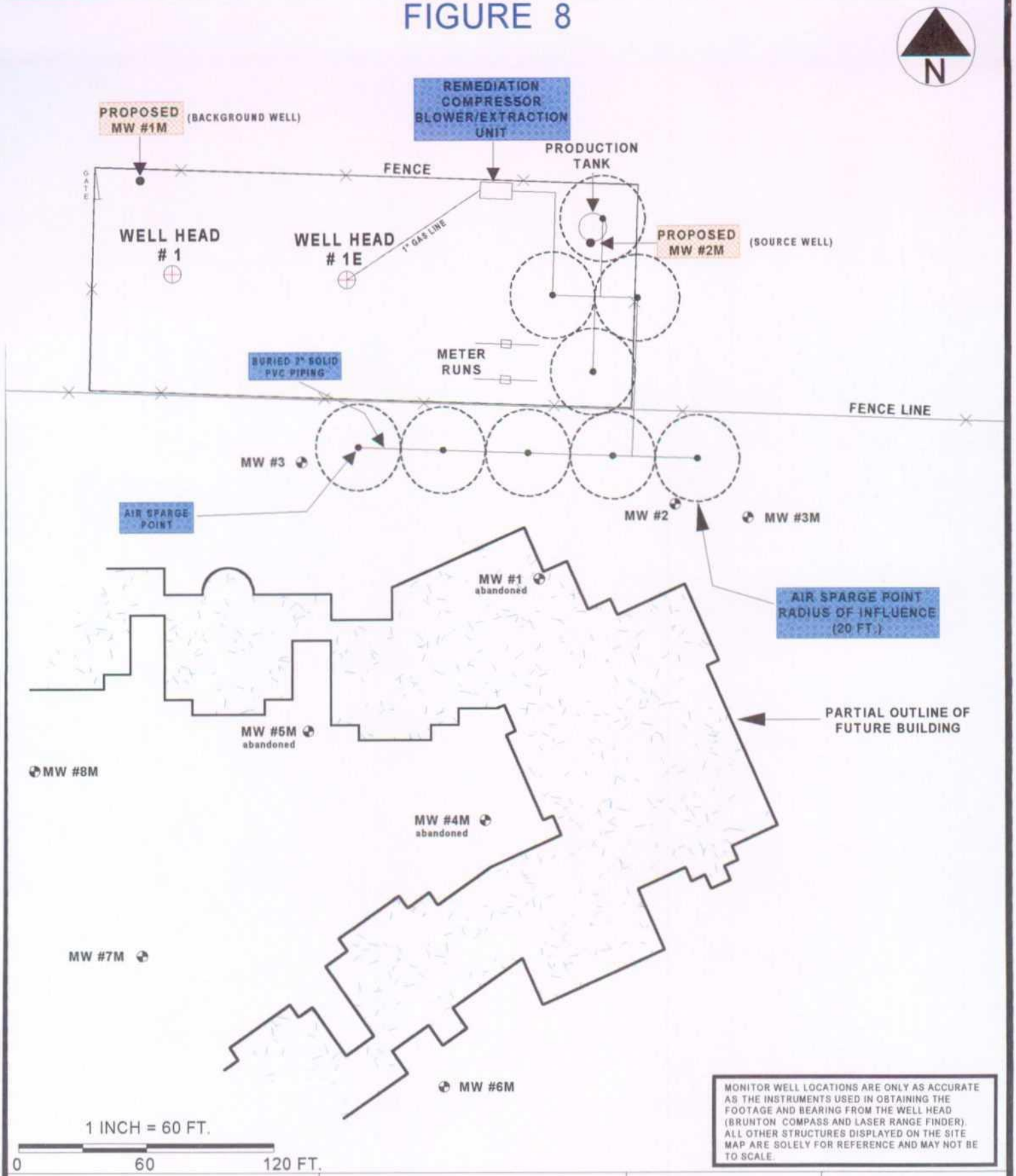
MANANA GAS, INC.
NANCY HARTMAN # 1 & # 1E
NE/4 NE/4 SEC. 22, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: GW INVESTIGATION
DRAWN BY: NJV
FILENAME: MANA-VE5.SKF
REVISED: 11/21/00

VAPOR EXTRACTION SCHEMATIC
11/00

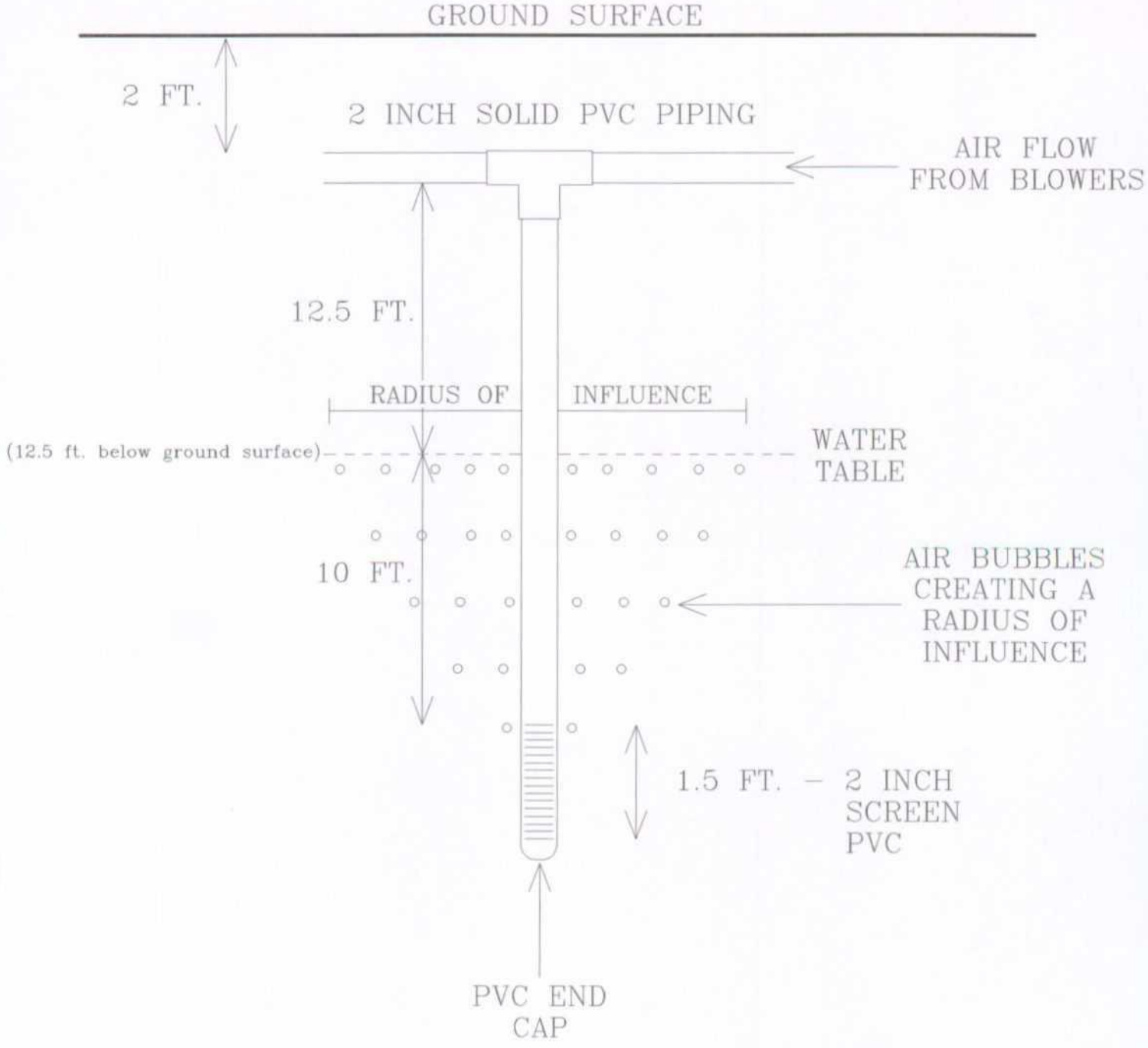
FIGURE 8



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

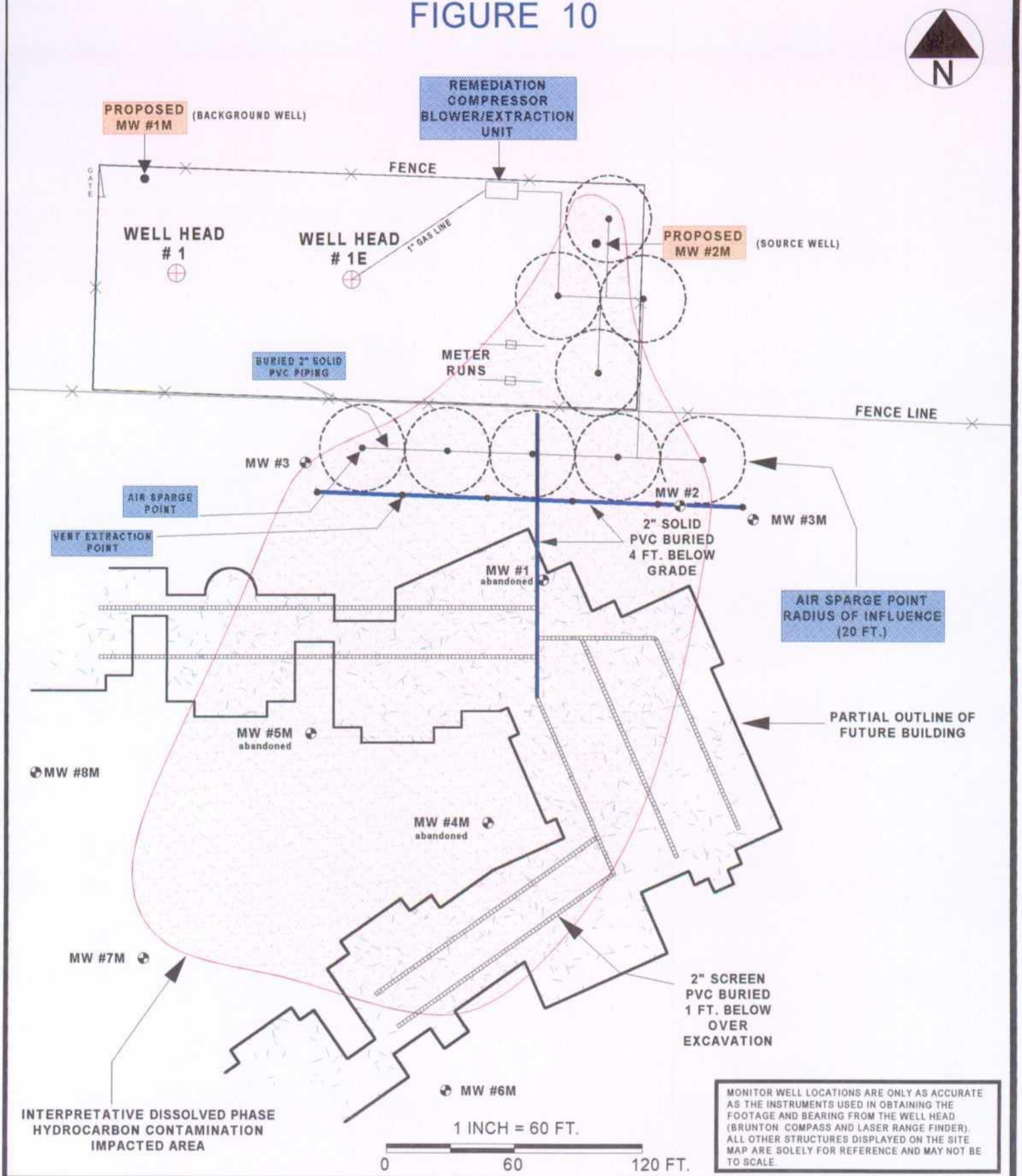
MANANA GAS, INC. NANCY HARTMAN # 1 & # 1E NE/4 NE/4 SEC. 22, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	B LAGG ENGINEERING, I NC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: GW INVESTIGATION DRAWN BY: NJV FILENAME: MANA-RS1.SKF REVISED: 11/14/00	AIR SPARGE PT. RADIUS OF INFLUENCE 11/00

FIGURE 9
SIDE VIEW OF A TYPICAL AIR SPARGE POINT



CLIENT NAME SITE NAME LEGAL DISCRIPTION COUNTY NAME, STATE NAME	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	DRAWN BY: NJV FILENAME: ASDP-TEMP DRAFTED: 2/02/98	AIR SPARGE POINT

FIGURE 10



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

MANANA GAS, INC. NANCY HARTMAN # 1 & # 1E NE/4 NE/4 SEC. 22, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: GW INVESTIGATION DRAWN BY: NJV FILENAME: MANA-RD3.SKF REVISED: 12/01/00	INTERPRETATIVE HYDROCARBON IMPACTED AREA/ REMEDIATION SYSTEM DESIGN SCHEMATIC 11/00

APPENDIX A

Groundwater Monitor Well Development & Sampling Procedures:

For the initial sampling, all monitor wells were developed by bailing with new disposable bailers until the field parameters had achieved static equilibrium and/or a minimum of three (3) well volumes had been removed prior to the day of sampling (see Monitor Well Development Data sheet within this Appendix). On the day of sampling, each monitor well was again developed (same procedure just noted) and groundwater samples were collected. The samples were collected using new disposable bailers at each monitor well.

BTEX samples were collected using laboratory supplied new 40 ml VOA vials preserved with hydrochloric acid (HCl); PAH in a new 1 liter amber coated glass container with teflon closure (MW #1 only), anion samples in laboratory supplied and cleaned 500 ml plastic containers [2 samples collected on 12/11/00 were preserved with sulfuric acid (H_2SO_4) and 2 without]; and trace metals in laboratory supplied and cleaned 500 ml plastic containers preserved with nitric acid. A trip blank sample was included with the sample set as a quality control screening procedure and was analyzed per USEPA method 8260. All laboratory samples were stored in a cooler with blue ice pack(s) and transported the same day to a qualified laboratory via United Parcel Service (UPS) overnight delivery.

Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site. The laboratory reports, quality assurance/quality control (QA/QC), and Chain-of-Custody Records are presented in Appendix C.

Monitor Well Drilling & Installation Procedures:

A CME truck mounted drill rig with five foot sections of six inch outer diameter auger flights was utilized for the groundwater monitor well installations. The boring advancements were reamed to a depth of approximately 10-12 feet below the groundwater surface. The inner rods and drill bit was then removed. The monitor well, [*constructed of new, threaded coupling Schedule 40 PVC casing, fifteen feet of 0.010 inch slotted screen (ideally, 10' below water level, 5' above water level), and a threaded end cap*], was then placed within the hollow stem augers. Once in place, a sand filter pack with 8-12 mesh grade Colorado silica sand was placed between the piping and boring annular to approximately three feet above the top slot of the PVC screen portion. The remaining portion, approximately four to five feet, was filled with a bentonite seal and hydrated above the filter pack to surface grade. The monitor well was secured with a locking end cap and a steel protector cover and then pad locked. All augers, drill rods, and bits were pressure cleaned prior to drilling and between borings to minimize the possibility of cross-contamination.

Monitor Well Survey Notes:

The surveying of the monitor well casing tops was performed by BEI utilizing a standard surveyor level and hand held measuring rod. The following notes show the calculated measurements for each monitor well surveyed.

11-3-00
1330 - 1340

MANANA - HARTMAN
WELL TOP SURVEY - TOPCON AT-G2
JCE : 7 x BOOKS
NV ROD
WEATHER : 40°, OVERCAST, DRIZZLE

STA	BS	HI	FS	ELEV
MW-1	1.47	5482.85		5481.38
MW-2			0.97	5481.88
MW-3			0.21	5482.64
MW-3M			1.65	5481.20
MW-4M			3.78	5479.07
MW-5M			1.75	5481.10
MW-1			1.47	5481.38

AMEC DATA

MW#1 = 5481.38
MW#2 = 5481.88
MW#3 = 5482.62

} 9-26-00

STA	BS	HI	FS	ELEV
MW-1	0.40	5481.78		5481.38
MW-4M			2.73	5479.05
MW-6M			3.40	5478.38
MW-7M			3.02	5478.76
MW-8M			1.62	5480.16
MW-1			0.40	5481.38
		12/15/00		
MW-3	4.02	5486.66		5482.64
MW-1M			1.83	5484.83
MW-2M			2.38	5484.28
MW-3			4.02	5482.64

MANANA - HARTMAN 11/14/00

1440 - 1450

JCB - T x Bwk.

NM - ROD

CLEAR, 37°F, Lite Breeze

TOPCON AT 22

12/15/00

0910 - 0925

JCB T x Bwk

NM - ROD

Overcast, 25°F, CALM

TOPCON

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT / SAMPLING DATA

CLIENT : MANANA GAS, INC.

CHAIN-OF-CUSTODY # : NA

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : November 6, 2000

SAMPLER : N J V

Filename : 11-06-00.WK4

PROJECT MANAGER : J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
3M	5481.20	5466.96	14.24	23.50	-	7.14	829	13.0	INITIAL
					-	7.09	890	13.5	4.00
					-	7.09	937	13.7	4.25
					-	7.10	916	13.9	4.50
					-	7.09	902	15.3	4.75
					1205	7.10	901	14.8	5.00
4M	5479.07	5465.40	13.67	25.00	-	6.92	1,579	12.9	5.00
					-	6.94	1,546	12.6	5.25
					-	6.92	1,500	13.0	5.50
					-	6.90	1,496	13.6	5.75
					1100	6.92	1,512	13.4	6.00
5M	5481.10	5465.76	15.34	25.00	-	7.04	1,073	18.4	INITIAL
					-	7.04	1,080	16.3	4.00
					-	7.09	990	20.8	4.25
					-	7.03	1,011	18.0	4.50
					-	7.02	1,012	17.7	4.75
					1255	7.02	1,010	17.9	5.00
1	5481.38	5466.59	14.79	22.36	-	6.73	1,615	13.7	INITIAL
					-	6.77	1,759	13.9	3.25
					-	6.81	1,765	13.5	3.50
					-	6.84	1,783	12.1	3.75
					1440	6.83	1,778	11.5	4.00
2	5481.88	5467.04	14.84	22.71	-	6.92	1,144	14.4	INITIAL
					-	6.99	1,222	11.9	3.25
					-	6.97	1,142	11.7	3.50
					-	6.97	1,149	12.6	3.75
					1340	7.03	1,136	12.4	4.00
3	5482.64	5467.20	15.44	23.14	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).
(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in all MW 's developed and sampled . Faint hc odor detected in MW # 5M , hc odor detected during development / purging of MW # 1 .

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT / SAMPLING DATA

CLIENT : MANANA GAS, INC.

CHAIN-OF-CUSTODY # : NA

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : November 15, 2000

SAMPLER : N J V

Filename : 11-15-00.WK4

PROJECT MANAGER : J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1	5481.38	5466.50	14.88	22.36	-	-	-	-	-
2	5481.88	5466.93	14.95	22.71	-	-	-	-	-
3	5482.64	5467.25	15.39	23.14	-	-	-	-	-
3M	5481.20	5466.85	14.35	23.50	-	-	-	-	-
4M	5479.07	5465.36	13.71	25.00	-	-	-	-	-
5M	5481.10	5465.74	15.36	25.00	-	-	-	-	-
6M	5478.38	5464.11	14.27	24.00	-	7.41	1,200	11.00	INITIAL
					-	7.55	1,300	12.11	3.00
					-	7.50	1,300	12.61	4.50
					-	7.45	1,300	13.00	4.75
					1110	7.43	1,300	13.11	5.00
7M	5478.76	5464.62	14.14	19.00	-	7.44	1,000	13.00	INITIAL
					-	7.57	1,100	13.11	1.00
					-	7.45	1,100	13.61	2.00
					-	7.40	1,100	13.39	2.50
					-	7.24	1,200	13.61	2.75
					1220	7.23	1,200	13.50	3.00
8M	5480.16	5465.49	14.67	25.00	-	7.52	1,000	13.11	INITIAL
					-	7.61	1,000	13.78	1.75
					-	7.75	900	13.22	3.50
					-	7.65	900	13.11	5.25
					-	7.64	900	13.17	5.50
					1335	7.68	900	13.00	5.75

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).
(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in MW 's # 7M & # 8M . Fair recovery in MW # 6M .

Collected USEPA Method 8260 from MW #'s 6M, 7M, & 8M only .

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT / SAMPLING DATA

CLIENT : MANANA GAS, INC.

CHAIN-OF-CUSTODY # : NA

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : December 11, 2000

SAMPLER : N J V

Filename : 12-11-00.WK4

PROJECT MANAGER : J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1M	5484.83	5468.83	16.00	24.00	-	7.30	1,200	12.22	INITIAL
					-	7.31	1,300	13.44	3.00
					-	7.33	1,200	13.78	3.25
					-	7.36	1,200	13.33	3.50
					-	7.37	1,200	13.28	3.75
					1300	7.37	1,200	13.39	4.00
2M	5484.28	5467.79	16.49	23.50	-	7.29	1,300	12.22	INITIAL
					-	7.34	1,300	11.89	2.75
					-	7.35	1,300	12.11	3.00
					-	7.36	1,300	12.11	3.25
					1400	7.34	1,300	12.00	3.50

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).
(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in MW 's # 1M & # 2M . Collected USEPA method 8260, anion, & ICAP metals from MW # 1M, collected USEPA method 8260 from MW # 2M .

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT DATA

CLIENT : MANANA GAS, INC. **CHAIN-OF-CUSTODY # :**

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED :

Date : November 3, 2000 **SAMPLER :** N J V

Filename : 11-03-00.WK4 **PROJECT MANAGER :** J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
3M	5481.20	5466.92	14.28	23.50	-	7.80	500	INITIAL	-
					-	7.21	900	2.00	-
					-	7.21	900	2.50	-
					-	7.07	900	3.00	-
					-	7.05	900	3.50	-
					-	7.04	900	4.00	-
					-	7.07	900	4.50	-
4M	5479.07	5465.36	13.71	25.00	-	7.03	1,400	4.00	-
					-	6.92	1,500	4.50	-
					-	6.94	1,500	5.00	-
					-	6.92	1,400	5.50	-
5M	5481.10	5465.69	15.41	25.00	-	6.97	1,000	INITIAL	-
					-	7.13	1,100	2.00	-
					-	7.07	1,100	2.50	-
					-	7.10	1,100	3.00	-
					-	7.09	1,100	3.50	-
					-	7.08	1,100	4.50	-
					-	7.09	1,100	5.00	-
1	5481.38	5466.53	14.85	22.36	-	-	-	-	-
2	5481.88	5466.98	14.90	22.71	-	-	-	-	-
3	5482.64	5467.10	15.54	23.14	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores),

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in all MW 's developed .

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT DATA

CLIENT : MANANA GAS, INC.

CHAIN-OF-CUSTODY # : _____

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED : _____

Date : November 14, 2000

SAMPLER : N J V

Filename : 11-14-00.WK4

PROJECT MANAGER : J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
6M	5478.38	5464.14	14.24	24.00	-	7.30	1,100	15.17	INITIAL
					-	7.30	1,100	15.00	1.50
					-	7.35	1,100	14.28	3.00
					-	7.56	1,300	13.61	4.50
					-	7.28	1,300	14.44	4.75
					-	7.28	1,300	14.67	5.00
					-	7.28	1,300	14.56	5.25
7M	5478.76	5464.66	14.10	19.00	-	7.37	1,000	15.50	INITIAL
					-	7.41	1,100	15.22	1.00
					-	7.47	1,100	14.83	2.00
					-	7.45	1,100	14.78	2.50
					-	7.38	1,100	14.89	2.75
					-	7.37	1,100	14.94	3.00
8M	5480.16	5465.52	14.64	25.00	-	7.37	1,000	14.89	INITIAL
					-	7.35	1,000	15.00	1.75
					-	7.36	900	14.00	3.50
					-	7.45	900	14.11	5.25
					-	7.55	1,000	13.89	5.50
					-	7.54	900	14.00	5.75

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).
(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in MW 's # 7M & # 8M . Fair recovery in MW # 6M .

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT DATA

CLIENT : MANANA GAS, INC.

CHAIN-OF-CUSTODY # : _____

NANCY HARTMAN # 1E
UNIT A, SEC. 22, T29N, R11W

LABORATORY (S) USED : _____

Date : December 7, 2000

SAMPLER : N J V

Filename : 12-07-00.WK4

PROJECT MANAGER : J C B

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1	5481.38		-	22.36	-	-	-	-	-
2	5481.88		-	22.71	-	-	-	-	-
3	5482.64		-	23.14	-	-	-	-	-
1M			15.84	24.00	-	7.45	1,300	-	INITIAL
					-	7.40	1,300	-	3.00
					-	7.41	1,200	-	3.25
					-	7.40	1,200	-	3.50
					-	7.44	1,300	-	3.75
					-	7.45	1,300	-	4.00
					-	7.44	1,300	-	4.25
2M			16.39	23.50	-	7.52	1,400	-	INITIAL
					-	7.39	1,600	-	2.75
					-	7.35	1,500	-	3.00
					-	7.33	1,500	-	3.25
					-	7.38	1,500	-	3.50
					-	7.33	1,400	-	3.75

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).
(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

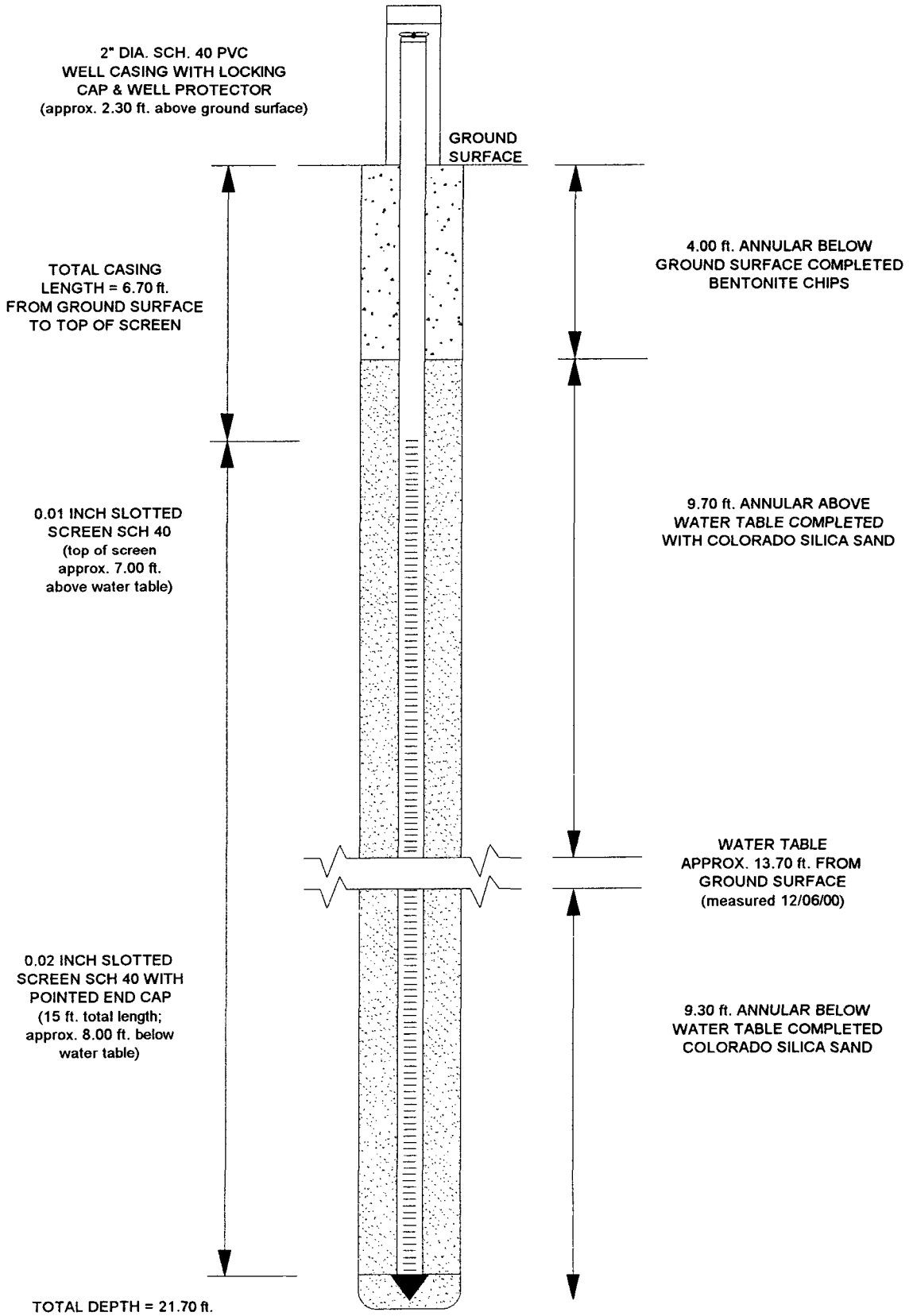
Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Excellent recovery in MW 's # 1M & # 2M .

MONITOR WELL #1M



MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: DEC. 6, 2000

FILENAME: MW-1M

MONITOR WELL #2M

MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

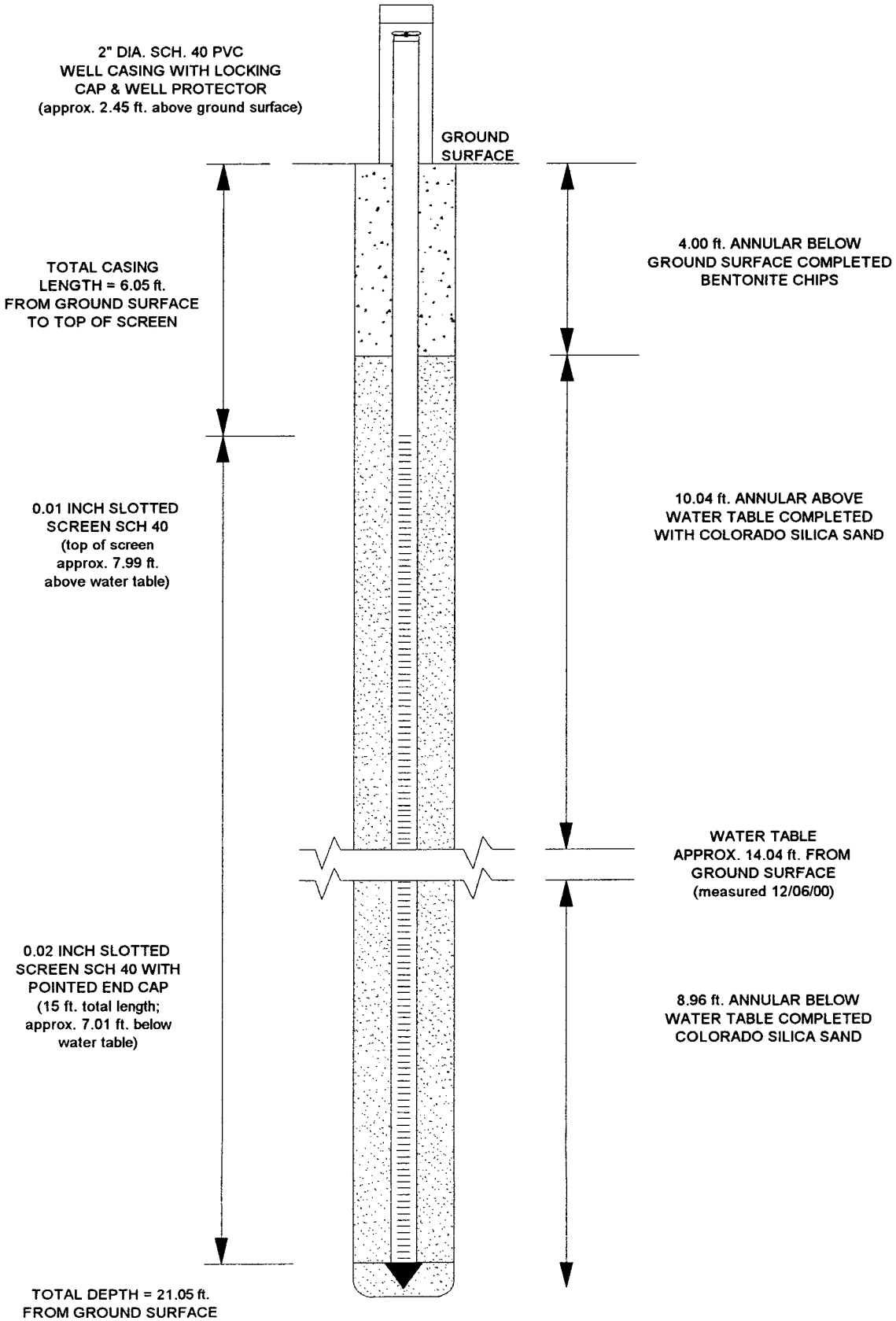
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: DEC. 6, 2000

FILENAME: MW-2M



MONITOR WELL #3M

MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

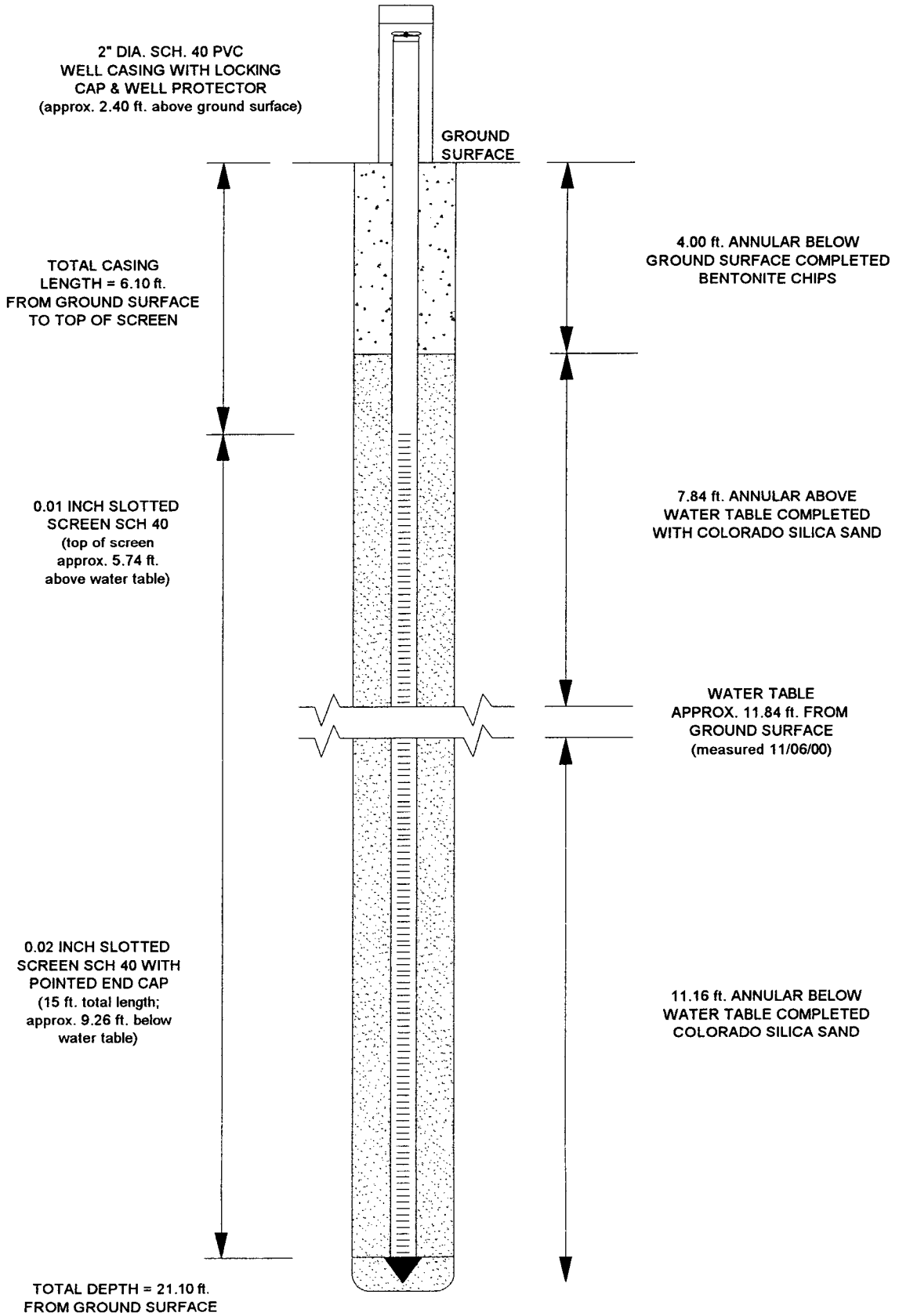
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: NOV. 1, 2000

FILENAME: MW-3M



MONITOR WELL #4M

MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

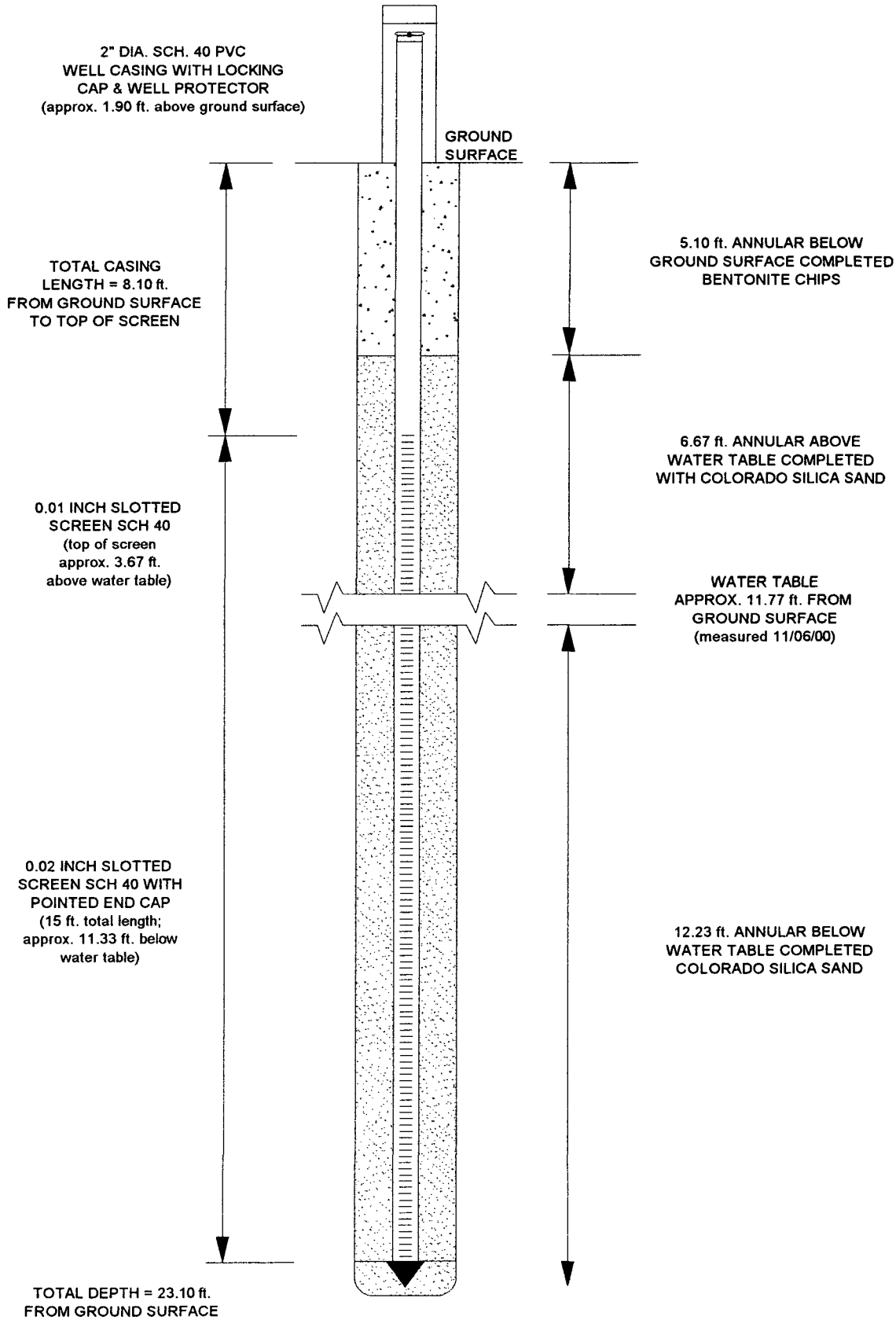
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

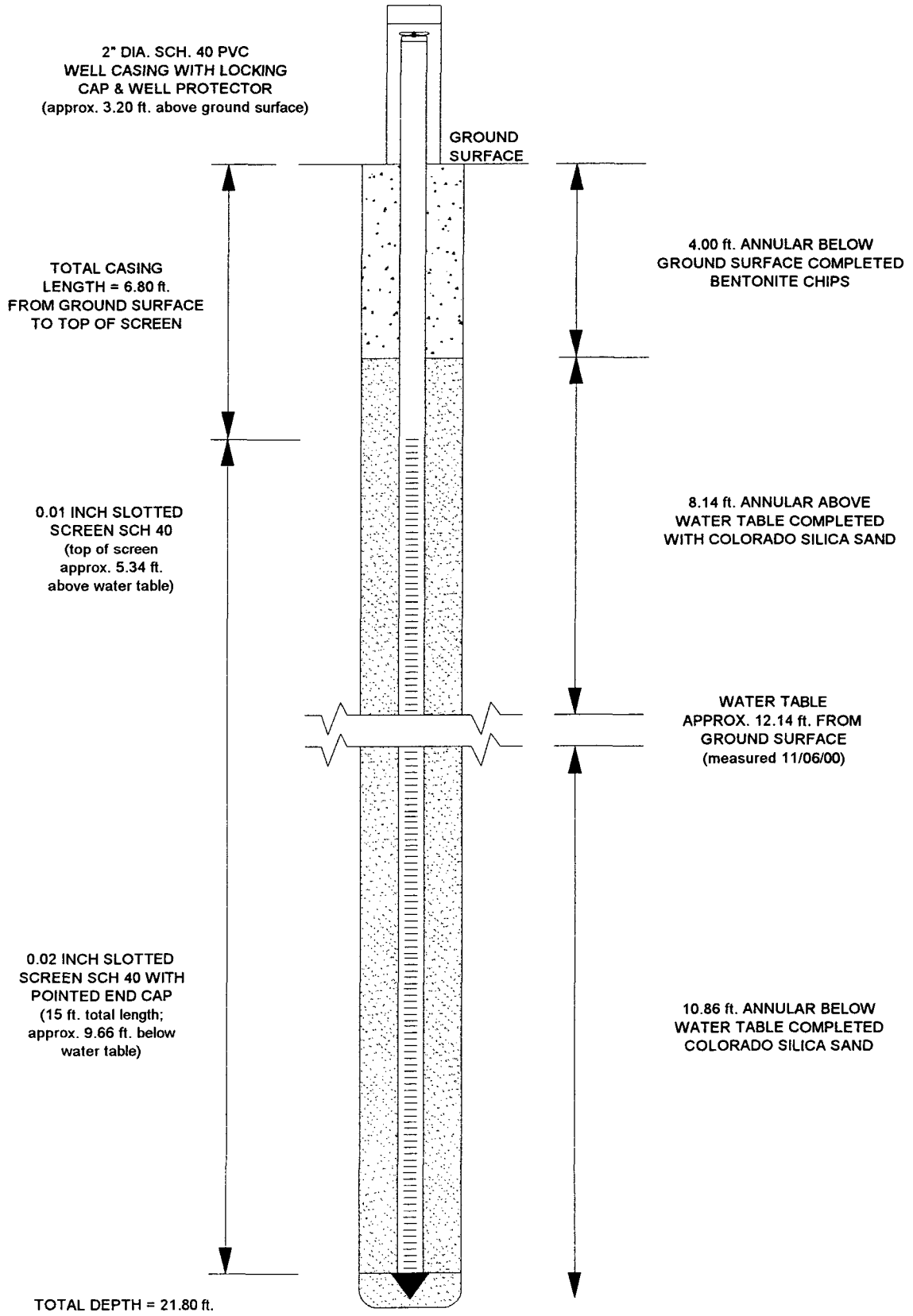
DRAFTED BY: NJV

INSTALL. DATE: NOV. 1, 2000

FILENAME: MW-4M



MONITOR WELL #5M



MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

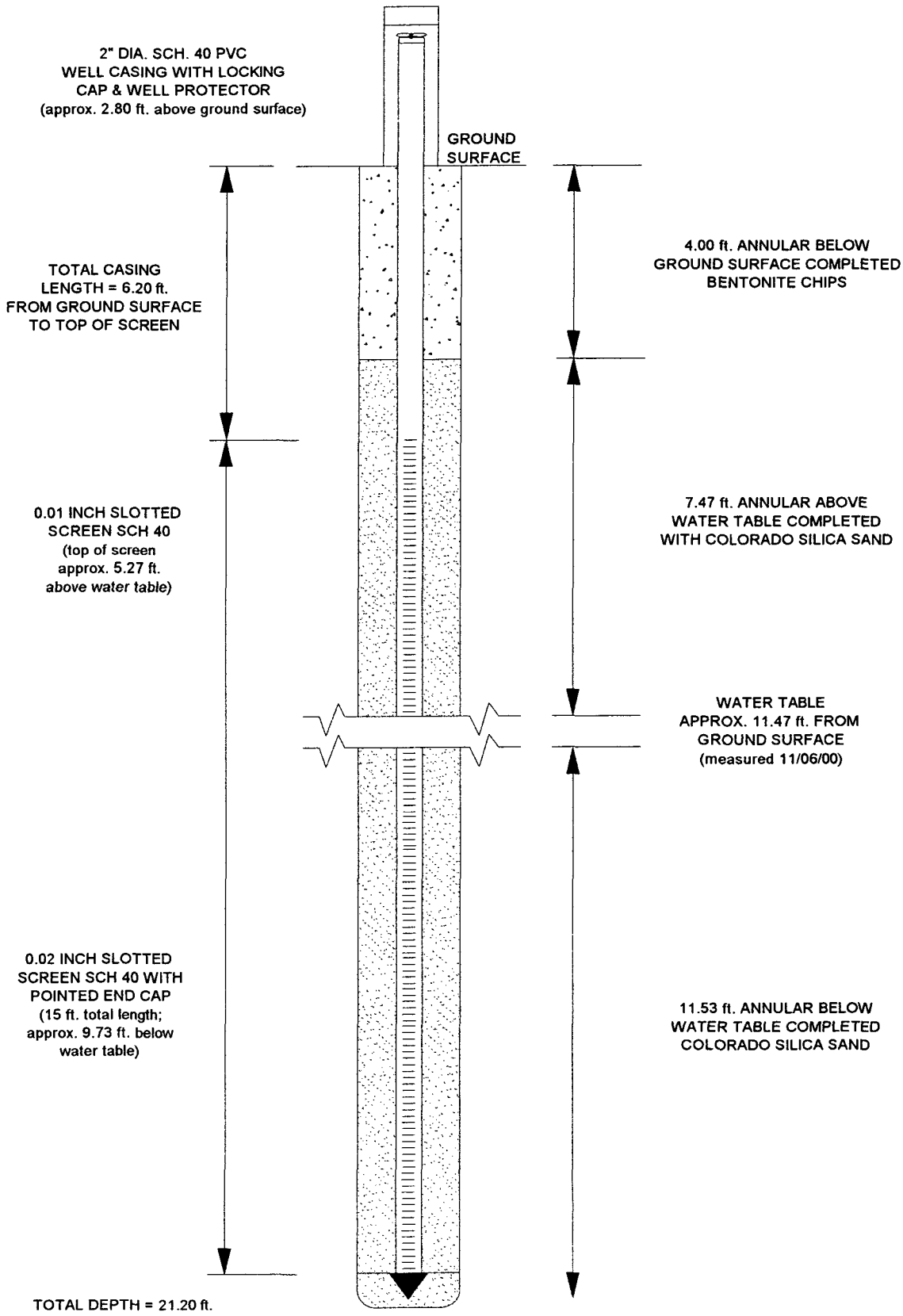
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: NOV. 1, 2000

FILENAME: MW-5M

MONITOR WELL #6M



MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

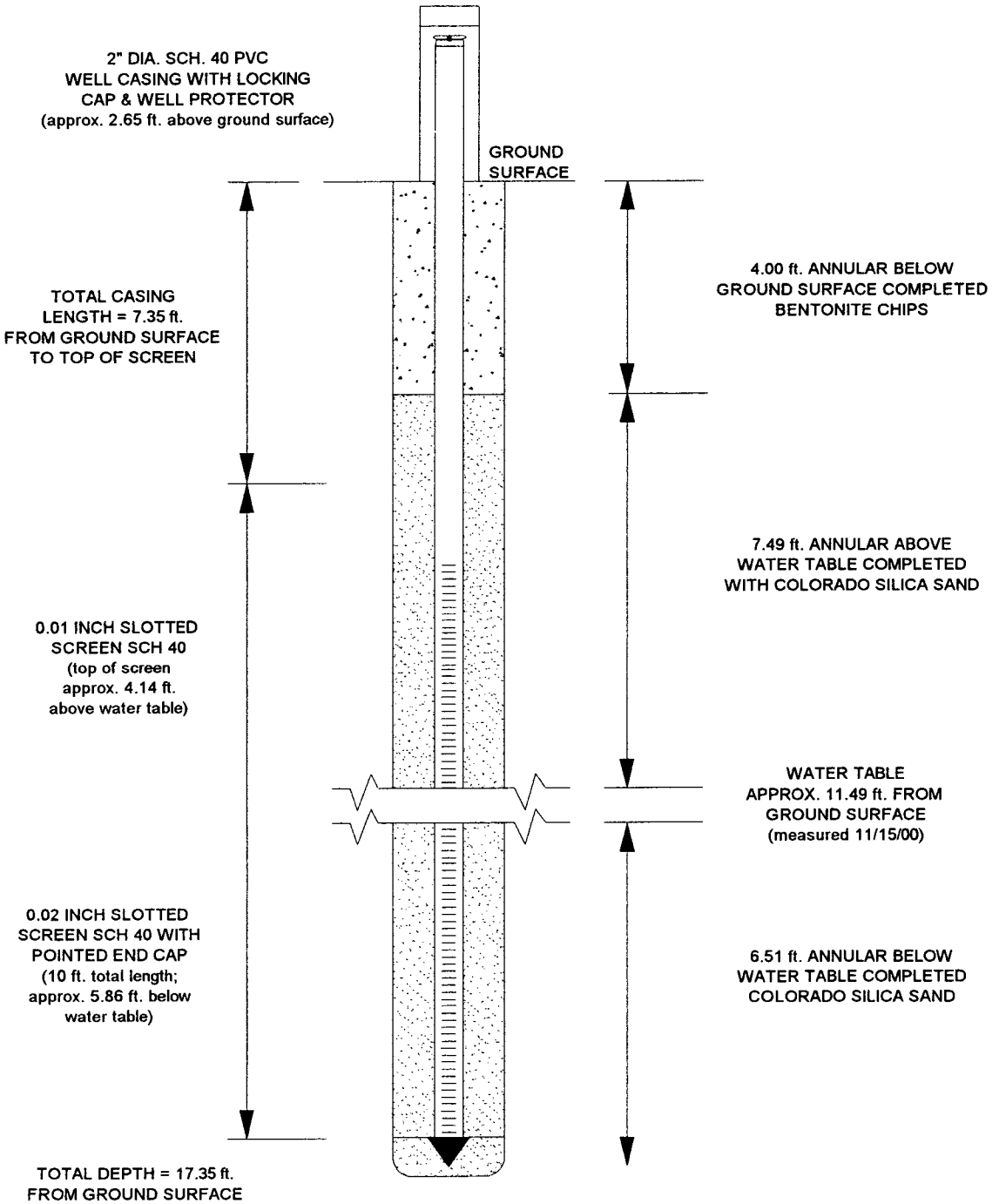
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: NOV. 13, 2000

FILENAME: MW-6M

MONITOR WELL #7M



MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

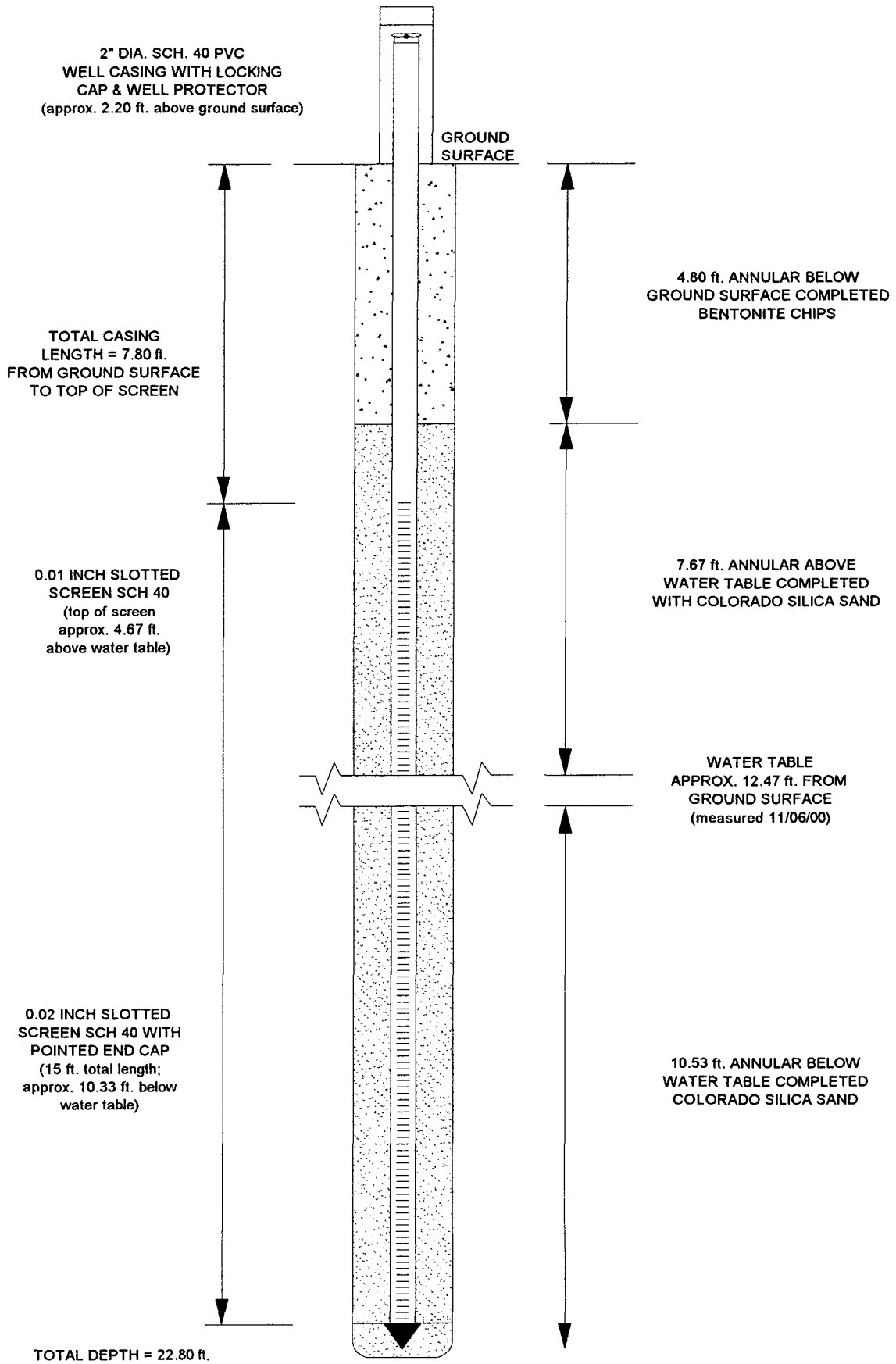
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: NOV. 13, 2000

FILENAME: MW-7M

MONITOR WELL #8M



MANANA GAS, INC.

NANCY HARTMAN # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: NOV. 13, 2000

FILENAME: MW-8M

MANANA GAS, INC. TENTATIVE MW SAMPLING SCHEDULE
2001
PREPARED BY BLAGG ENGINEERING, INC.

MW #	QTR/YR.	TENTATIVE DATE	LABORATORY ANALYSES	REMARKS
#1	1st-01	Feb - 01	BTEX only	BTEX - 1st week after remed. sys. start up (once MW is reinstalled).
	1st-01	Mar - 01	BTEX, PAH, 3 METALS	METALS - barium, iron, & manganese , subsequent sampling for PAH & / or
	2nd-01	Jun - 01	BTEX only	METALS dependent on findings .
	3rd-01	Sept - 01	BTEX only	
	4th-01	Dec - 01	BTEX only	
# 2	1st-01	Mar - 01	BTEX only	BTEX quarterly thereafter .
# 2M	1st-01	Jan - 01	BTEX & PAH	PAH to be sampled prior to remed. sys. start up . BTEX - 1st week after remed. sys. start up , then 1 week after operational, thereafter on a quarterly basis .
	1st-01	Jan - 01	METALS & ANIONS	Dependent upon 12 /11 / 00 sampling event findings .
#3	1st-01	Mar - 01	BTEX & ANIONS	BTEX quarterly thereafter , subsequent ANIONS analysis, if any, dependent on initial findings .
#3M	1st-01	Mar - 01	BTEX only	BTEX quarterly thereafter .
# 4M	1st-01	Mar - 01	BTEX, PAH, 1 METAL	METAL - manganese . BTEX - biannually 1st year, annually thereafter unless results dictate otherwise . MW needs to be reinstalled .
# 5M	1st-01	Mar - 01	PAH, METALS, ANIONS	Subsequent sampling, if any, dependent on initial findings . MW needs to be reinstalled .
	1st-01	Mar - 01	BTEX	BTEX - biannually 1st year, annually thereafter unless results dictate otherwise .
# 6M	1st-01	Mar - 01	BTEX	BTEX quarterly thereafter .
	2nd-01	Apr - 01	PAH & METALS	Dependent on MW # 4M findings .
# 7M	1st-01	Mar - 01	BTEX	BTEX quarterly thereafter .
	2nd-01	Apr - 01	PAH & METALS	Dependent on MW # 5M findings .
# 8M	1st-01	Mar - 01	BTEX only	BTEX quarterly thereafter .

APPENDIX B

SOIL SAMPLING & FIELD ANALYSIS PROCEDURES ..... 1ST PAGE

1. **BH-1 FOR MW # 4M INSTALLED 11/01/00.**
2. **BH-2 FOR MW # 3M INSTALLED 11/01/00.**
3. **BH-3 FOR MW # 5M INSTALLED 11/01/00.**
4. **BH-4 FOR MW # 6M INSTALLED 11/13/00.**
5. **BH-5 FOR MW # 8M INSTALLED 11/13/00.**
6. **BH-6 FOR MW # 7M INSTALLED 11/13/00.**
7. **BH-7 FOR MW # 1M INSTALLED 12/06/00.**
8. **BH-8 FOR MW # 2M INSTALLED 12/06/00.**

Soil Sampling Procedures:

Grab soil samples were collected from the excavation sidewalls at various intervals from the relative ground surface and at the excavation bottoms directly above the groundwater interface. Recovered soil samples were placed in a 475 ml glass container and air tight sealed for field screening of volatile hydrocarbon vapors with an organic vapor meter (**OVM**) applying the Headspace Field Method (NMOCD Surface Impoundment Closure Guidelines, February, 1993). The grab soil samples were classified in accordance with the Unified Soil Classification System (ASTM: D-2488). Soil samples submitted for laboratory analyses were collected in laboratory supplied four ounce glass jars with teflon seals. A trip blank sample was included with the sample set as a quality control screening procedure during the northern excavation sampling event and was analyzed per USEPA method 8260. All laboratory samples were stored in a cooler with blue ice pack(s) and transported to a qualified laboratory via United Parcel Service (UPS) overnight delivery. The laboratory report, quality assurance/quality control (QA/QC), and Chain-of-Custody Records are presented in Appendix C (bottom of page 11 of 13).

During the boring advancements, soil samples were collected implementing a 140 pound gravity penetration split tube sampler at five foot intervals and field screened with an OVM employing the NMOCD Field Headspace Method. The split-tube sampler will be decontaminated with soap and water then rinsed with distilled water prior to each sampling event. The split-tube soil samples were classified in accordance with the Unified Soil Classification System (ASTM: D-2488). Logs of the borings are included within this appendix and the noted stratification lines recorded to the approximate boundaries between soil types.

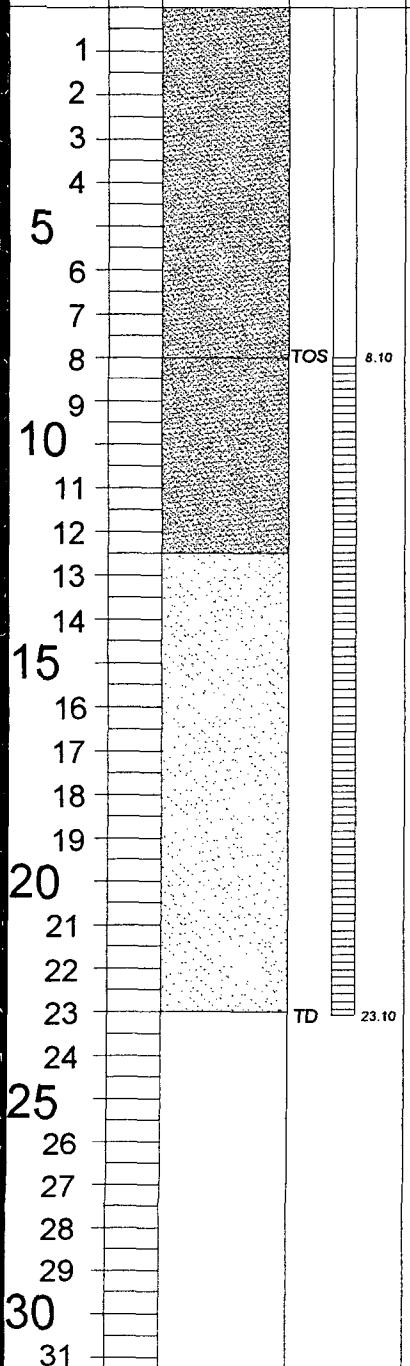
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

BORING #.....	BH - 1
MW #.....	4M
PAGE #.....	1
DATE STARTED	11/01/00
DATE FINISHED	11/01/00
OPERATOR.....	KP
PREPARED BY	NJV

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	258.5 FEET, S14E FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.90 FT. BELOW GROUND SURFACE.

DARK YELLOWISH ORANGE SILTY SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 8.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 0907 READING 0923 BLOWS 5 8 12 SOIL TEMP. = 60.0 F

PALE TO DARK YELLOWISH BROWN SILTY SAND, NON COHESIVE, MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (8.0 - 12.5 FT. INTERVAL).

OVM @ 10 ft. = 0.0 ppm COLLECTED 0917 READING 0932 BLOWS 2 1 1 SOIL TEMP. = 59.0 F

▼ GW DEPTH ON 11/06/00 = 11.77 FT. (APPROX.) FROM GROUND SURFACE.

PALE YELLOWISH BROWN SAND, NON COHESIVE, SATURATED, LOOSE TO FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (12.5 - 24.0 FT. INTERVAL).

NOTE:
- SILTY SAND.
- SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-01.SKD	DATE: 12/11/00	DWN BY: NJV

BLAGG ENGINEERING, INC.

P.O. BOX 87

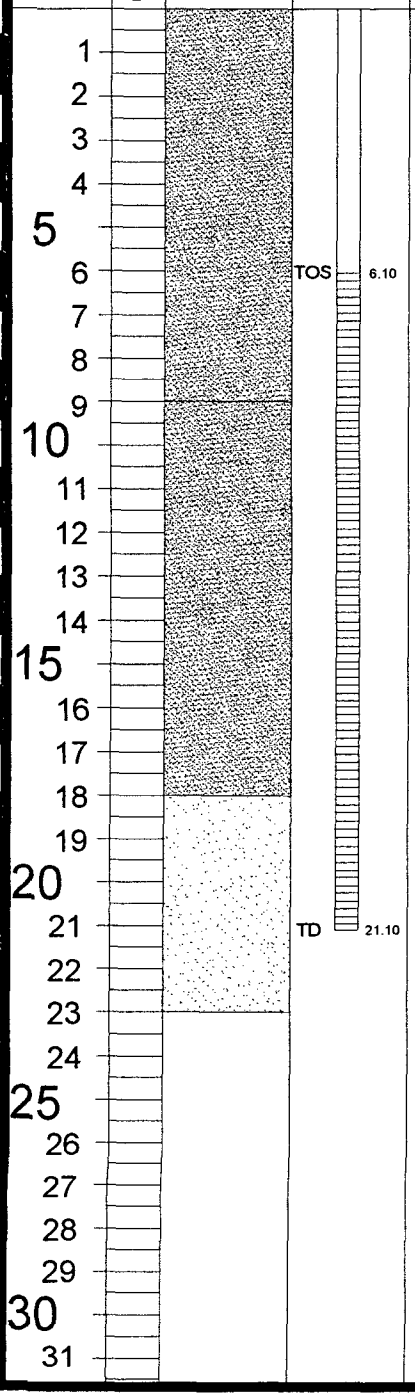
BLOOMFIELD, NM 87413

(505) 632-1199

BORE / TEST HOLE REPORT

BORING #.....	BH - 2
MW #.....	3M
PAGE #.....	2
DATE STARTED	11/01/00
DATE FINISHED	11/01/00
OPERATOR.....	KP
PREPARED BY	NJV

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	218.5 FEET, S59E FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.40 FT. BELOW GROUND SURFACE.

PALE YELLOWISH BROWN SILTY SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 9.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 1158 READING 1216 BLOWS 5 10 10 SOIL TEMP. = 64.6 F

OVM @ 10 ft. = 0.0 ppm COLLECTED 1210 READING 1237 BLOWS 1 2 3 SOIL TEMP. = 65.8 F

▼ GW DEPTH ON 11/06/00 = 11.84 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.0 - 18.0 FT. INTERVAL).

PALE YELLOWISH BROWN SAND, NON COHESIVE, SATURATED, LOOSE, NO APPRARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (18.0 - 23.0 FT. INTERVAL).

NOTE:

- SILTY SAND.
- SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-02.SKD	DATE: 12/11/00	DWN BY: NJV

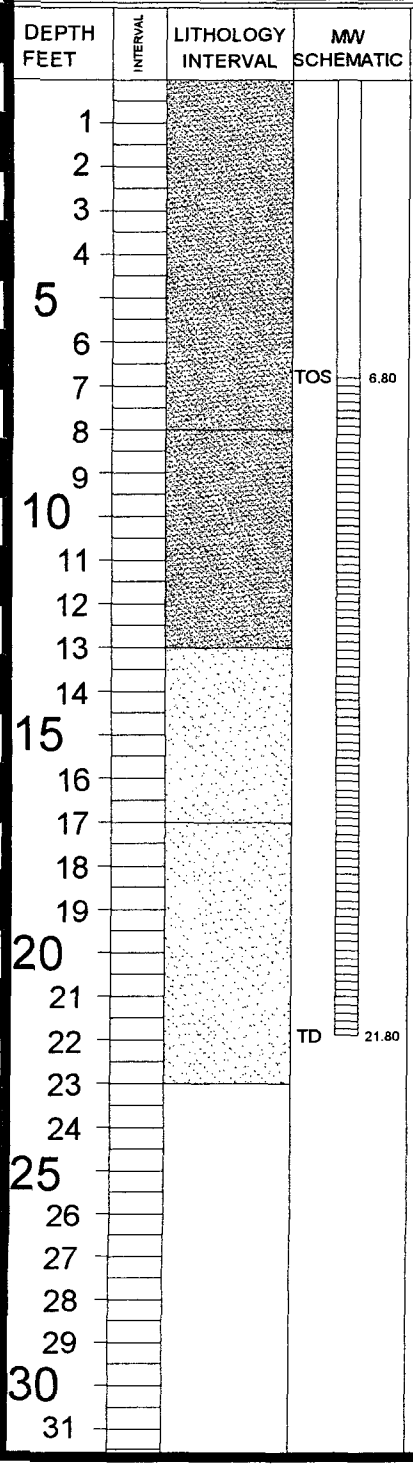
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	210 FEET, S5W FROM WELL HEAD.

BORING #.....	BH - 3
MW #.....	5M
PAGE #.....	3
DATE STARTED	11/01/00
DATE FINISHED	11/01/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 3.20 FT. BELOW GROUND SURFACE.

DARK YELLOWISH ORANGE SILTY SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 8.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 1455 READING 1511 BLOWS 5 7 7 SOIL TEMP. = 64.0 F

DARK YELLOWISH BROWN SILTY SAND PHASING INTO SAND, NON COHESIVE, SLIGHTLY MOIST TO MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (8.0 - 13.0 FT. INTERVAL).

OVM @ 10 ft. = 0.0 ppm COLLECTED 1503 READING 1523 BLOWS 1 1 2 SOIL TEMP. = 64.0 F

▼ GW DEPTH ON 11/06/00 = 12.14 FT. (APPROX.) FROM GROUND SURFACE.

PALE TO MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SATURATED, LOOSE TO FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (13.0 - 17.0 FT. INTERVAL).

LIGHT OLIVE GRAY SAND, NON COHESIVE, SATURATED, LOOSE, HYDROCARBON ODOR DETECTED PHYSICALLY - EXACT STARTING INTERVAL UNKNOWN, (17.0 - 23.0 FT. INTERVAL).

OVM FROM CUTTINGS BETWEEN 17 - 23 FT. = 11.6 ppm COLLECTED 1522 READING 1530

NOTE:
- SILTY SAND.
- SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-03.SKD	DATE: 12/11/00	DWN BY: NJV

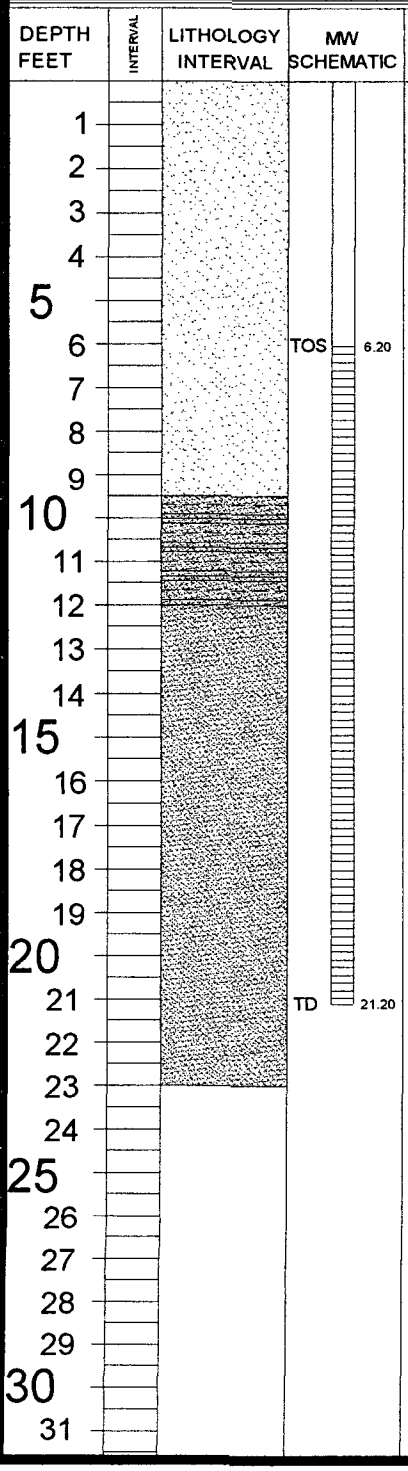
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	376.5 FEET, S6.5E FROM WELL HEAD.

BORING #.....	BH - 4
MW #.....	6M
PAGE #.....	4
DATE STARTED	11/13/00
DATE FINISHED	11/13/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.80 FT. BELOW GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 9.5 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 1000 READING 1105 BLOWS 6 12 8 SOIL TEMP. = 72.0 F

OVM @ 10 ft. = 0.0 ppm COLLECTED 1010 READING 1110 BLOWS 1 0 0 SOIL TEMP. = 72.0 F

▼ GW DEPTH ON 11/15/00 = 11.47 FT. (APPROX.) FROM GROUND SURFACE.

MODERATE TO DARK YELLOWISH BROWN SILTY SAND TO SILTY CLAY, NON COHESIVE, SLIGHTLY MOIST TO MOIST, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.5 - 12.0 FT. INTERVAL).

PALE YELLOWISH BROWN SAND, NON COHESIVE, SATURATED, LOOSE, NO APPRARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (12.0 - 23.0 FT. INTERVAL).

NOTE:
- SILTY SAND.
- SAND.
- SILTY SAND TO SILTY CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-04.SKD	DATE: 12/11/00	DWN BY: NJV

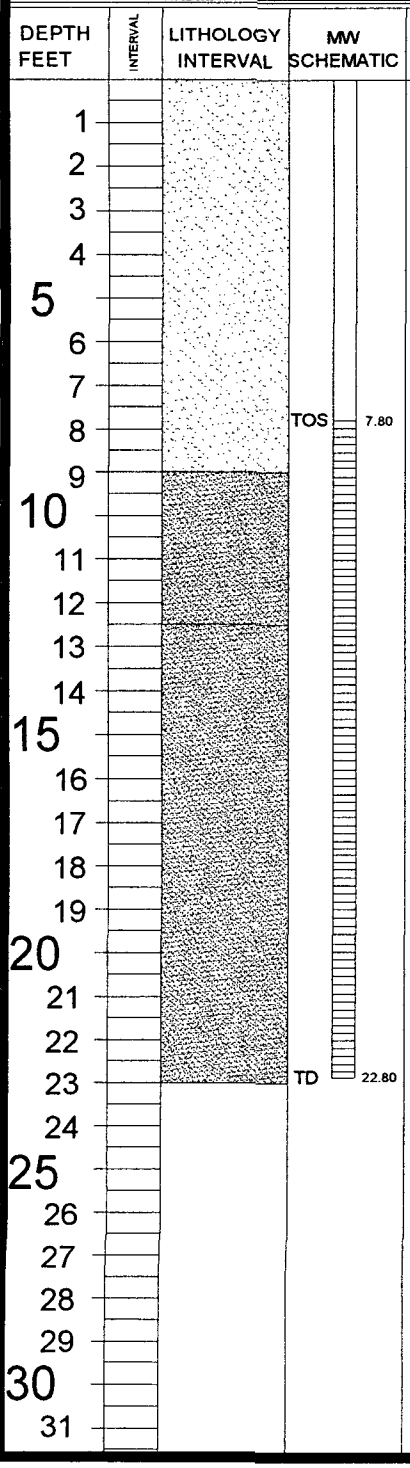
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	271 FEET, S33W FROM WELL HEAD.

BORING #.....	BH - 5
MW #.....	8M
PAGE #.....	5
DATE STARTED	11/13/00
DATE FINISHED	11/13/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.20 FT. BELOW GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 9.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 1235 READING 1330 BLOWS 3 3 5 SOIL TEMP. = 63.0 F

OVM @ 10 ft. = 0.0 ppm COLLECTED 1245 READING 1330 BLOWS 1 0 0 SOIL TEMP. = 59.0 F

▼ GW DEPTH ON 11/15/00 = 12.47 FT. (APPROX.) FROM GROUND SURFACE.

MODERATE TO DARK YELLOWISH BROWN SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO MOIST, LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.0 - 12.5 FT. INTERVAL).

PALE YELLOWISH BROWN SILTY SAND, NON COHESIVE, SATURATED, LOOSE, NO APPRARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (12.5 - 23.0 FT. INTERVAL).

NOTE:

- SILTY SAND.
- SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-05.SKD	DATE: 12/11/00	DWN BY: NJV

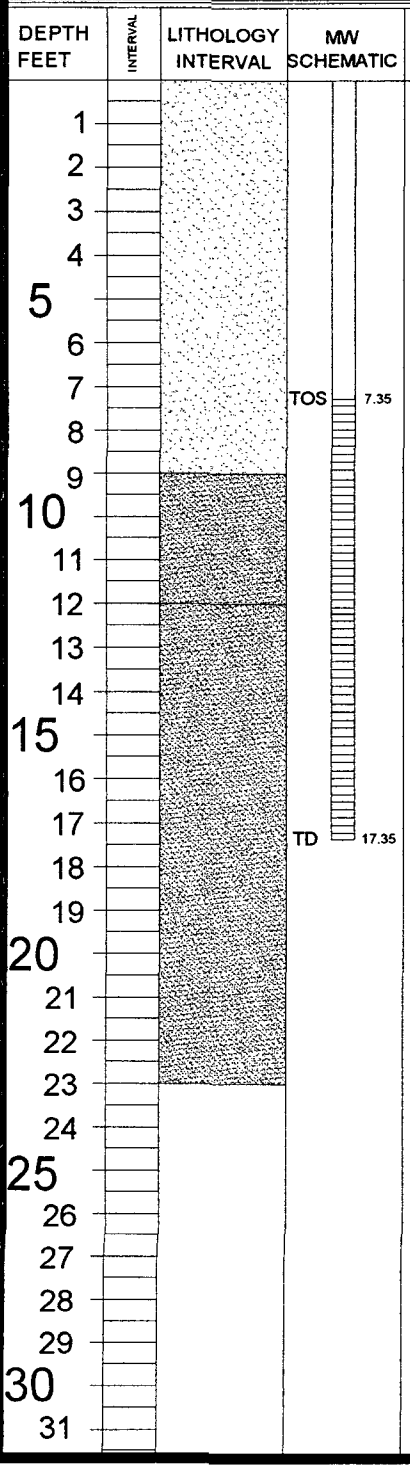
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON BLFD. SCHOOL PROPERTY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	328 FEET, S17W FROM WELL HEAD.

BORING #.....	BH - 6
MW #.....	7M
PAGE #.....	6
DATE STARTED	11/13/00
DATE FINISHED	11/13/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.65 FT. BELOW GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 9.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 1438 READING 1522 BLOWS 5 4 6 SOIL TEMP. = 74.0 F

OVM @ 10 ft. = 0.0 ppm COLLECTED 1448 READING 1522 BLOWS 1 0 2 SOIL TEMP. = 68.0 F

▼ GW DEPTH ON 11/15/00 = 11.49 FT. (APPROX.) FROM GROUND SURFACE.

MODERATE TO DARK YELLOWISH BROWN SILTY SAND, NON COHESIVE, SLIGHTY MOIST TO MOIST, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.0 - 12.0 FT. INTERVAL).

PALE YELLOWISH BROWN SILTY SAND, NON COHESIVE, SATURATED, LOOSE, NO APPRARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (12.0 - 23.0 FT. INTERVAL).

NOTE:
- SILTY SAND.
- SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
ppm - PARTS PER MILLION.

DRAWING: BH-06.SKD	DATE: 12/11/00	DWN BY: NJV

BLAGG ENGINEERING, INC.

P.O. BOX 87

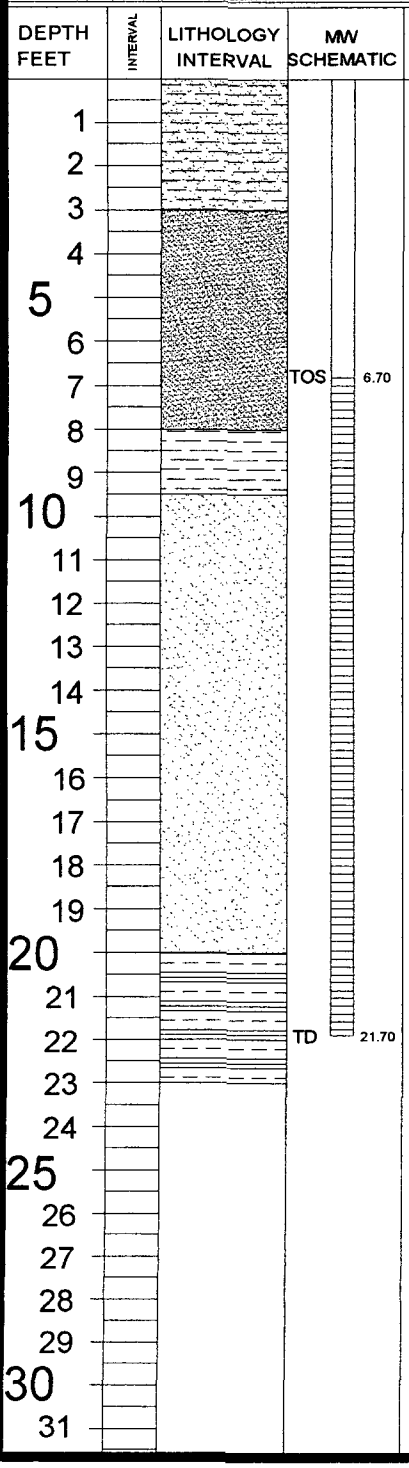
BLOOMFIELD, NM 87413

(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON WELL PAD
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	95 FEET, N35W FROM WELL HEAD.

BORING #.....	BH - 7
MW #.....	1M
PAGE #.....	7
DATE STARTED	12/06/00
DATE FINISHED	12/06/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.30 FT. BELOW GROUND SURFACE.

DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN SILTY SAND TO SILTY CLAY, NON COHESIVE TO SLIGHTLY PLASTIC, DRY TO SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 3.0 FT. INTERVAL).

OVM @ 5 ft. = 0.0 ppm COLLECTED 0923 READING 0954 BLOWS 3 3 3 SOIL TEMP. = 67.8 F

MODERATE YELLOWISH BROWN SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (3.0 - 8.0 FT. INTERVAL).

MODERATE YELLOWISH BROWN SILTY CLAY, SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (8.0 - 9.5 FT. INTERVAL).

OVM @ 10 ft. = 0.0 ppm COLLECTED 0935 READING 0955 BLOWS 3 6 9 SOIL TEMP. = 66.0 F

▼ GW DEPTH ON 12/11/00 = 13.70 FT. (APPROX.) FROM GROUND SURFACE.

MODERATE TO DARK YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, DENSE TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.5 - 20.0 FT. INTERVAL).

MODERATE TO DARK YELLOWISH BROWN CLAY, SLIGHTLY PLASTIC TO PLASTIC, SATURATED, NO APPARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY, (20.0 - 23.0 FT. INTERVAL).

NOTE:

- SILTY SAND.
- SAND.
- SILTY SAND TO SILTY CLAY.
- SILTY CLAY.
- CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.

TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.

GW - GROUND WATER.

ppm - PARTS PER MILLION.

DRAWING: BH-07.SKD	DATE: 12/11/00	DWN BY: NJV

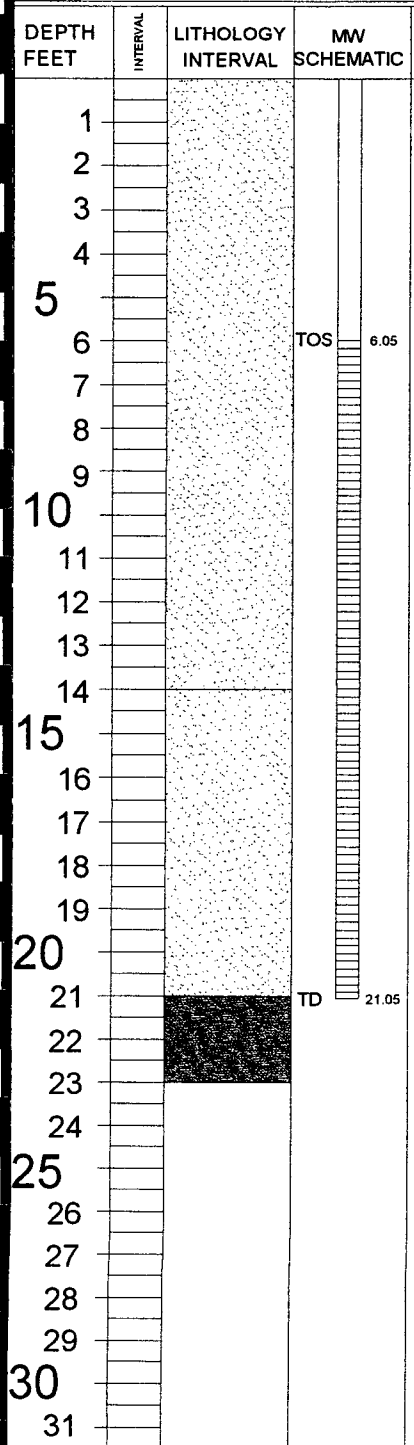
BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

CLIENT:	MANANA GAS, INC.
LOCATION NAME:	NANCY HARTMAN # 1E - ON WELL PAD
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	118 FEET, N78W FROM WELL HEAD.

BORING #.....	BH - 8
MW #.....	2M
PAGE #.....	8
DATE STARTED	12/06/00
DATE FINISHED	12/06/00
OPERATOR.....	KP
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.45 FT. BELOW GROUND SURFACE.

PALE TO MODERATE YELLOWISH ORANGE TO BROWN SAND (FILL DIRT), NON COHESIVE, DRY TO SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 14.0 FT. INTERVAL).

▼ GW DEPTH ON 12/11/00 = 14.04 FT. (APPROX.) FROM GROUND SURFACE.

MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED, SLIGHT TO MODERATE HYDROCARBON ODOR DETECTED PHYSICALLY AT GREATER DEPTH (14.0 - 21.0 FT. INTERVAL).

MEDIUM GRAY SAND, NON COHESIVE, SATURATED, FIRM TO LOOSE, MODERATE TO STRONG HYDROCARBON ODOR DETECTED PHYSICALLY, (21.0 - 23.0 FT. INTERVAL).

NOTE:
- SAND.
- DISCOLORED SAND.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.
- ppm - PARTS PER MILLION.

DRAWING: BH-08.SKD	DATE: 12/11/00	DWN BY: NJV

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-01A
Client Sample ID: MW#1
Collection Date: 11/6/00 2:40:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	5000	500		µg/L	500	11/10/00
Bromobenzene	ND	50		µg/L	50	11/10/00
Bromodichloromethane	ND	50		µg/L	50	11/10/00
Bromoform	ND	50		µg/L	50	11/10/00
Bromomethane	ND	50		µg/L	50	11/10/00
Carbon Tetrachloride	ND	50		µg/L	50	11/10/00
Chlorobenzene	ND	50		µg/L	50	11/10/00
Chloroethane	ND	100		µg/L	50	11/10/00
Chloroform	ND	50		µg/L	50	11/10/00
Chloromethane	ND	50		µg/L	50	11/10/00
2-Chlorotoluene	ND	50		µg/L	50	11/10/00
4-Chlorotoluene	ND	50		µg/L	50	11/10/00
cis-1,2-DCE	ND	50		µg/L	50	11/10/00
cis-1,3-Dichloropropene	ND	50		µg/L	50	11/10/00
1,2-Dibromo-3-chloropropane	ND	100		µg/L	50	11/10/00
Dibromochloromethane	ND	50		µg/L	50	11/10/00
1,2-Dibromoethane (EDB)	ND	50		µg/L	50	11/10/00
Dibromomethane	ND	100		µg/L	50	11/10/00
1,2-Dichlorobenzene	ND	50		µg/L	50	11/10/00
1,3-Dichlorobenzene	ND	50		µg/L	50	11/10/00
1,4-Dichlorobenzene	ND	50		µg/L	50	11/10/00
Dichlorodifluoromethane	ND	50		µg/L	50	11/10/00
1,2-Dichloroethane (EDC)	ND	50		µg/L	50	11/10/00
1,1-Dichloroethane	ND	50		µg/L	50	11/10/00
1,1-Dichloroethene	ND	50		µg/L	50	11/10/00
1,2-Dichloropropane	ND	50		µg/L	50	11/10/00
1,3-Dichloropropane	ND	50		µg/L	50	11/10/00
2,2-Dichloropropane	ND	50		µg/L	50	11/10/00
1,1-Dichloropropene	ND	50		µg/L	50	11/10/00
Ethylbenzene	830	50		µg/L	50	11/10/00
Hexachlorobutadiene	ND	50		µg/L	50	11/10/00
Isopropylbenzene	58	50		µg/L	50	11/10/00
4-Isopropyltoluene	ND	50		µg/L	50	11/10/00
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	50	11/10/00
Methylene Chloride	ND	150		µg/L	50	11/10/00
n-Butylbenzene	ND	50		µg/L	50	11/10/00
1-Methylnaphthalene	ND	100		µg/L	50	11/10/00
2-Methylnaphthalene	ND	100		µg/L	50	11/10/00
n-Propylbenzene	76	50		µg/L	50	11/10/00
Naphthalene	130	100		µg/L	50	11/10/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	50	µg/L	50	11/10/00
Styrene	ND	50	µg/L	50	11/10/00
tert-Butylbenzene	ND	50	µg/L	50	11/10/00
Tetrachloroethene	ND	50	µg/L	50	11/10/00
Toluene	10000	500	µg/L	500	11/10/00
1,1,1,2-Tetrachloroethane	ND	50	µg/L	50	11/10/00
1,1,2,2-Tetrachloroethane	ND	50	µg/L	50	11/10/00
trans-1,2-DCE	ND	50	µg/L	50	11/10/00
trans-1,3-Dichloropropene	ND	50	µg/L	50	11/10/00
Trichloroethene	ND	50	µg/L	50	11/10/00
Trichlorofluoromethane	ND	50	µg/L	50	11/10/00
1,2,3-Trichlorobenzene	ND	50	µg/L	50	11/10/00
1,2,4-Trichlorobenzene	ND	50	µg/L	50	11/10/00
1,1,1-Trichloroethane	ND	50	µg/L	50	11/10/00
1,1,2-Trichloroethane	ND	50	µg/L	50	11/10/00
Vinyl chloride	ND	100	µg/L	50	11/10/00
1,2,3-Trichloropropane	ND	100	µg/L	50	11/10/00
1,2,4-Trimethylbenzene	860	50	µg/L	50	11/10/00
1,3,5-Trimethylbenzene	440	50	µg/L	50	11/10/00
Xylenes, Total	12000	500	µg/L	500	11/10/00
Surr: 1,2-Dichloroethane-d4	102	65-114	%REC	50	11/10/00
Surr: 4-Bromofluorobenzene	96.5	74-122	%REC	50	11/10/00
Surr: Dibromofluoromethane	105	65-113	%REC	50	11/10/00
Surr: Toluene-d8	103	60-123	%REC	50	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-01B
Collection Date: 11/6/00 2:40:00 PM
Client Sample ID: MW#1
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PAHS BY 8310		**SW8310**				Analyst: **IC**
Naphthalene	87	2.5		µg/L	1	11/19/00
1-Methylnaphthalene	17	2.5		µg/L	1	11/19/00
2-Methylnaphthalene	42	2.5		µg/L	1	11/19/00
Acenaphthylene	ND	2.5		µg/L	1	11/19/00
Acenaphthene	ND	2.5		µg/L	1	11/19/00
Fluorene	ND	0.80		µg/L	1	11/19/00
Phenanthrene	ND	0.60		µg/L	1	11/19/00
Anthracene	ND	0.60		µg/L	1	11/19/00
Fluoranthene	ND	0.30		µg/L	1	11/19/00
Pyrene	ND	0.30		µg/L	1	11/19/00
Benz(a)anthracene	ND	0.020		µg/L	1	11/19/00
Chrysene	ND	0.20		µg/L	1	11/19/00
Benzo(b)fluoranthene	ND	0.050		µg/L	1	11/19/00
Benzo(k)fluoranthene	ND	0.020		µg/L	1	11/19/00
Benzo(a)pyrene	ND	0.020		µg/L	1	11/19/00
Dibenz(a,h)anthracene	ND	0.040		µg/L	1	11/19/00
Benzo(g,h,i)perylene	ND	0.030		µg/L	1	11/19/00
Indeno(1,2,3-cd)pyrene	ND	0.080		µg/L	1	11/19/00
Surr: Benzo(e)pyrene	79.5	77-104		%REC	1	11/19/00

Lab ID: 0011039-01C
Collection Date: 11/6/00 2:40:00 PM
Client Sample ID: MW#1
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ANIONS BY 300.0		**E300**				Analyst: **SDU**
Bromide	0.80	0.10		mg/L	1	11/8/00
✓ Chloride	89	1.5	H	mg/L	15	11/10/00
✓ Fluoride	0.20	0.10		mg/L	1	11/8/00
✓ Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	11/8/00
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	11/8/00
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50		mg/L	1	11/8/00
✓ Sulfate	3.0	0.50		mg/L	1	11/8/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E

Lab Order: 0011039

Lab ID: 0011039-02A
Client Sample ID: MW#2

Collection Date: 11/6/00 1:40:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	48	2.0		µg/L	2	11/10/00
Bromobenzene	ND	2.0		µg/L	2	11/10/00
Bromodichloromethane	ND	2.0		µg/L	2	11/10/00
Bromoform	ND	2.0		µg/L	2	11/10/00
Bromomethane	ND	2.0		µg/L	2	11/10/00
Carbon Tetrachloride	ND	2.0		µg/L	2	11/10/00
Chlorobenzene	ND	2.0		µg/L	2	11/10/00
Chloroethane	ND	4.0		µg/L	2	11/10/00
Chloroform	ND	2.0		µg/L	2	11/10/00
Chloromethane	ND	2.0		µg/L	2	11/10/00
2-Chlorotoluene	ND	2.0		µg/L	2	11/10/00
4-Chlorotoluene	ND	2.0		µg/L	2	11/10/00
cis-1,2-DCE	ND	2.0		µg/L	2	11/10/00
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	11/10/00
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	11/10/00
Dibromochloromethane	ND	2.0		µg/L	2	11/10/00
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	11/10/00
Dibromomethane	ND	4.0		µg/L	2	11/10/00
1,2-Dichlorobenzene	ND	2.0		µg/L	2	11/10/00
1,3-Dichlorobenzene	ND	2.0		µg/L	2	11/10/00
1,4-Dichlorobenzene	ND	2.0		µg/L	2	11/10/00
Dichlorodifluoromethane	ND	2.0		µg/L	2	11/10/00
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	11/10/00
1,1-Dichloroethane	ND	2.0		µg/L	2	11/10/00
1,1-Dichloroethene	ND	2.0		µg/L	2	11/10/00
1,2-Dichloropropane	ND	2.0		µg/L	2	11/10/00
1,3-Dichloropropane	ND	2.0		µg/L	2	11/10/00
2,2-Dichloropropane	ND	2.0		µg/L	2	11/10/00
1,1-Dichloropropene	ND	2.0		µg/L	2	11/10/00
Ethylbenzene	ND	2.0		µg/L	2	11/10/00
Hexachlorobutadiene	ND	2.0		µg/L	2	11/10/00
Isopropylbenzene	5.1	2.0		µg/L	2	11/10/00
4-Isopropyltoluene	ND	2.0		µg/L	2	11/10/00
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	11/10/00
Methylene Chloride	ND	6.0		µg/L	2	11/10/00
n-Butylbenzene	ND	2.0		µg/L	2	11/10/00
1-Methylnaphthalene	ND	4.0		µg/L	2	11/10/00
2-Methylnaphthalene	ND	4.0		µg/L	2	11/10/00
n-Propylbenzene	ND	2.0		µg/L	2	11/10/00
Naphthalene	ND	4.0		µg/L	2	11/10/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	2.0	µg/L	2	11/10/00
Styrene	ND	2.0	µg/L	2	11/10/00
tert-Butylbenzene	ND	2.0	µg/L	2	11/10/00
Tetrachloroethene	ND	2.0	µg/L	2	11/10/00
Toluene	ND	2.0	µg/L	2	11/10/00
1,1,1,2-Tetrachloroethane	ND	2.0	µg/L	2	11/10/00
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	2	11/10/00
trans-1,2-DCE	ND	2.0	µg/L	2	11/10/00
trans-1,3-Dichloropropene	ND	2.0	µg/L	2	11/10/00
Trichloroethene	ND	2.0	µg/L	2	11/10/00
Trichlorofluoromethane	ND	2.0	µg/L	2	11/10/00
1,2,3-Trichlorobenzene	ND	2.0	µg/L	2	11/10/00
1,2,4-Trichlorobenzene	ND	2.0	µg/L	2	11/10/00
1,1,1-Trichloroethane	ND	2.0	µg/L	2	11/10/00
1,1,2-Trichloroethane	ND	2.0	µg/L	2	11/10/00
Vinyl chloride	ND	4.0	µg/L	2	11/10/00
1,2,3-Trichloropropane	ND	4.0	µg/L	2	11/10/00
1,2,4-Trimethylbenzene	ND	2.0	µg/L	2	11/10/00
1,3,5-Trimethylbenzene	ND	2.0	µg/L	2	11/10/00
Xylenes, Total	ND	2.0	µg/L	2	11/10/00
Surr: 1,2-Dichloroethane-d4	95.0	65-114	%REC	2	11/10/00
Surr: 4-Bromofluorobenzene	97.8	74-122	%REC	2	11/10/00
Surr: Dibromofluoromethane	96.3	65-113	%REC	2	11/10/00
Surr: Toluene-d8	96.2	60-123	%REC	2	11/10/00

Lab ID: 0011039-02C **Collection Date:** 11/6/00 1:40:00 PM
Client Sample ID: MW#2 **Matrix:** AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ANIONS BY 300.0		**E300**				Analyst: **SDU**
Bromide	0.10	0.10		mg/L	1	11/8/00
Chloride	13	0.10		mg/L	1	11/8/00
Fluoride	0.20	0.10		mg/L	1	11/8/00
Nitrogen, Nitrate (As N)	1.0	0.10		mg/L	1	11/8/00
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	11/8/00
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50		mg/L	1	11/8/00
Sulfate	140	5.0	H	mg/L	10	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-03A
Client Sample ID: MW#3M
Collection Date: 11/6/00 12:05:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/10/00
Bromobenzene	ND	1.0		µg/L	1	11/10/00
Bromodichloromethane	ND	1.0		µg/L	1	11/10/00
Bromoform	ND	1.0		µg/L	1	11/10/00
Bromomethane	ND	1.0		µg/L	1	11/10/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/10/00
Chlorobenzene	ND	1.0		µg/L	1	11/10/00
Chloroethane	ND	2.0		µg/L	1	11/10/00
Chloroform	ND	1.0		µg/L	1	11/10/00
Chloromethane	ND	1.0		µg/L	1	11/10/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/10/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/10/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/10/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/10/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/10/00
Dibromochloromethane	ND	1.0		µg/L	1	11/10/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/10/00
Dibromomethane	ND	2.0		µg/L	1	11/10/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/10/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/10/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/10/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/10/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/10/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/10/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/10/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/10/00
Ethylbenzene	ND	1.0		µg/L	1	11/10/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/10/00
Isopropylbenzene	ND	1.0		µg/L	1	11/10/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/10/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/10/00
Methylene Chloride	ND	3.0		µg/L	1	11/10/00
n-Butylbenzene	ND	1.0		µg/L	1	11/10/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/10/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/10/00
n-Propylbenzene	ND	1.0		µg/L	1	11/10/00
Naphthalene	ND	2.0		µg/L	1	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	1.0	µg/L	1	11/10/00
Styrene	ND	1.0	µg/L	1	11/10/00
tert-Butylbenzene	ND	1.0	µg/L	1	11/10/00
Tetrachloroethene	ND	1.0	µg/L	1	11/10/00
Toluene	ND	1.0	µg/L	1	11/10/00
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	11/10/00
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	1	11/10/00
trans-1,2-DCE	ND	1.0	µg/L	1	11/10/00
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	11/10/00
Trichloroethene	ND	1.0	µg/L	1	11/10/00
Trichlorofluoromethane	ND	1.0	µg/L	1	11/10/00
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	11/10/00
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	11/10/00
1,1,1-Trichloroethane	ND	1.0	µg/L	1	11/10/00
1,1,2-Trichloroethane	ND	1.0	µg/L	1	11/10/00
Vinyl chloride	ND	2.0	µg/L	1	11/10/00
1,2,3-Trichloropropane	ND	2.0	µg/L	1	11/10/00
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	11/10/00
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	11/10/00
Xylenes, Total	ND	1.0	µg/L	1	11/10/00
Surr: 1,2-Dichloroethane-d4	89.3	65-114	%REC	1	11/10/00
Surr: 4-Bromofluorobenzene	91.6	74-122	%REC	1	11/10/00
Surr: Dibromofluoromethane	92.7	65-113	%REC	1	11/10/00
Surr: Toluene-d8	93.4	60-123	%REC	1	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-04A
Client Sample ID: MW#4M
Collection Date: 11/6/00 11:00:00 AM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	680	50		µg/L	50	11/10/00
Bromobenzene	ND	20		µg/L	20	11/10/00
Bromodichloromethane	ND	20		µg/L	20	11/10/00
Bromoform	ND	20		µg/L	20	11/10/00
Bromomethane	ND	20		µg/L	20	11/10/00
Carbon Tetrachloride	ND	20		µg/L	20	11/10/00
Chlorobenzene	ND	20		µg/L	20	11/10/00
Chloroethane	ND	40		µg/L	20	11/10/00
Chloroform	ND	20		µg/L	20	11/10/00
Chloromethane	ND	20		µg/L	20	11/10/00
2-Chlorotoluene	ND	20		µg/L	20	11/10/00
4-Chlorotoluene	ND	20		µg/L	20	11/10/00
cis-1,2-DCE	ND	20		µg/L	20	11/10/00
cis-1,3-Dichloropropene	ND	20		µg/L	20	11/10/00
1,2-Dibromo-3-chloropropane	ND	40		µg/L	20	11/10/00
Dibromochloromethane	ND	20		µg/L	20	11/10/00
1,2-Dibromoethane (EDB)	ND	20		µg/L	20	11/10/00
Dibromomethane	ND	40		µg/L	20	11/10/00
1,2-Dichlorobenzene	ND	20		µg/L	20	11/10/00
1,3-Dichlorobenzene	ND	20		µg/L	20	11/10/00
1,4-Dichlorobenzene	ND	20		µg/L	20	11/10/00
Dichlorodifluoromethane	ND	20		µg/L	20	11/10/00
1,2-Dichloroethane (EDC)	ND	20		µg/L	20	11/10/00
1,1-Dichloroethane	ND	20		µg/L	20	11/10/00
1,1-Dichloroethene	ND	20		µg/L	20	11/10/00
1,2-Dichloropropane	ND	20		µg/L	20	11/10/00
1,3-Dichloropropane	ND	20		µg/L	20	11/10/00
2,2-Dichloropropane	ND	20		µg/L	20	11/10/00
1,1-Dichloropropene	ND	20		µg/L	20	11/10/00
Ethylbenzene	ND	20		µg/L	20	11/10/00
Hexachlorobutadiene	ND	20		µg/L	20	11/10/00
Isopropylbenzene	ND	20		µg/L	20	11/10/00
4-Isopropyltoluene	ND	20		µg/L	20	11/10/00
Methyl tert-butyl ether (MTBE)	ND	20		µg/L	20	11/10/00
Methylene Chloride	ND	60		µg/L	20	11/10/00
n-Butylbenzene	ND	20		µg/L	20	11/10/00
1-Methylnaphthalene	ND	40		µg/L	20	11/10/00
2-Methylnaphthalene	ND	40		µg/L	20	11/10/00
n-Propylbenzene	ND	20		µg/L	20	11/10/00
Naphthalene	ND	40		µg/L	20	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	20	µg/L	20	11/10/00
Styrene	ND	20	µg/L	20	11/10/00
tert-Butylbenzene	ND	20	µg/L	20	11/10/00
Tetrachloroethene	ND	20	µg/L	20	11/10/00
Toluene	ND	20	µg/L	20	11/10/00
1,1,1,2-Tetrachloroethane	ND	20	µg/L	20	11/10/00
1,1,2,2-Tetrachloroethane	ND	20	µg/L	20	11/10/00
trans-1,2-DCE	ND	20	µg/L	20	11/10/00
trans-1,3-Dichloropropene	ND	20	µg/L	20	11/10/00
Trichloroethene	ND	20	µg/L	20	11/10/00
Trichlorofluoromethane	ND	20	µg/L	20	11/10/00
1,2,3-Trichlorobenzene	ND	20	µg/L	20	11/10/00
1,2,4-Trichlorobenzene	ND	20	µg/L	20	11/10/00
1,1,1-Trichloroethane	ND	20	µg/L	20	11/10/00
1,1,2-Trichloroethane	ND	20	µg/L	20	11/10/00
Vinyl chloride	ND	40	µg/L	20	11/10/00
1,2,3-Trichloropropane	ND	40	µg/L	20	11/10/00
1,2,4-Trimethylbenzene	ND	20	µg/L	20	11/10/00
1,3,5-Trimethylbenzene	ND	20	µg/L	20	11/10/00
Xylenes, Total	ND	20	µg/L	20	11/10/00
Surr: 1,2-Dichloroethane-d4	92.0	65-114	%REC	20	11/10/00
Surr: 4-Bromofluorobenzene	93.8	74-122	%REC	20	11/10/00
Surr: Dibromofluoromethane	90.4	65-113	%REC	20	11/10/00
Surr: Toluene-d8	96.5	60-123	%REC	20	11/10/00

Lab ID: 0011039-04C **Collection Date:** 11/6/00 11:00:00 AM
Client Sample ID: MW#4M **Matrix:** AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ANIONS BY 300.0		**E300**				Analyst: **SDU**
Bromide	0.30	0.10		mg/L	1	11/8/00
Chloride	27	0.10		mg/L	1	11/8/00
Fluoride	0.20	0.10		mg/L	1	11/8/00
Nitrogen, Nitrate (As N)	0.90	0.10		mg/L	1	11/8/00
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	11/8/00
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50		mg/L	1	11/8/00
Sulfate	120	5.0	H	mg/L	10	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-05A
Client Sample ID: MW#5M
Collection Date: 11/6/00 12:55:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	1800	50		µg/L	50	11/10/00
Bromobenzene	ND	50		µg/L	50	11/10/00
Bromodichloromethane	ND	50		µg/L	50	11/10/00
Bromoform	ND	50		µg/L	50	11/10/00
Bromomethane	ND	50		µg/L	50	11/10/00
Carbon Tetrachloride	ND	50		µg/L	50	11/10/00
Chlorobenzene	ND	50		µg/L	50	11/10/00
Chloroethane	ND	100		µg/L	50	11/10/00
Chloroform	ND	50		µg/L	50	11/10/00
Chloromethane	ND	50		µg/L	50	11/10/00
2-Chlorotoluene	ND	50		µg/L	50	11/10/00
4-Chlorotoluene	ND	50		µg/L	50	11/10/00
cis-1,2-DCE	ND	50		µg/L	50	11/10/00
cis-1,3-Dichloropropene	ND	50		µg/L	50	11/10/00
1,2-Dibromo-3-chloropropane	ND	100		µg/L	50	11/10/00
Dibromochloromethane	ND	50		µg/L	50	11/10/00
1,2-Dibromoethane (EDB)	ND	50		µg/L	50	11/10/00
Dibromomethane	ND	100		µg/L	50	11/10/00
1,2-Dichlorobenzene	ND	50		µg/L	50	11/10/00
1,3-Dichlorobenzene	ND	50		µg/L	50	11/10/00
1,4-Dichlorobenzene	ND	50		µg/L	50	11/10/00
Dichlorodifluoromethane	ND	50		µg/L	50	11/10/00
1,2-Dichloroethane (EDC)	ND	50		µg/L	50	11/10/00
1,1-Dichloroethane	ND	50		µg/L	50	11/10/00
1,1-Dichloroethene	ND	50		µg/L	50	11/10/00
1,2-Dichloropropane	ND	50		µg/L	50	11/10/00
1,3-Dichloropropane	ND	50		µg/L	50	11/10/00
2,2-Dichloropropane	ND	50		µg/L	50	11/10/00
1,1-Dichloropropene	ND	50		µg/L	50	11/10/00
Ethylbenzene	330	50		µg/L	50	11/10/00
Hexachlorobutadiene	ND	50		µg/L	50	11/10/00
Isopropylbenzene	ND	50		µg/L	50	11/10/00
4-Isopropyltoluene	ND	50		µg/L	50	11/10/00
Methyl tert-butyl ether (MTBE)	ND	50		µg/L	50	11/10/00
Methylene Chloride	ND	150		µg/L	50	11/10/00
n-Butylbenzene	ND	50		µg/L	50	11/10/00
1-Methylnaphthalene	ND	100		µg/L	50	11/10/00
2-Methylnaphthalene	ND	100		µg/L	50	11/10/00
n-Propylbenzene	ND	50		µg/L	50	11/10/00
Naphthalene	ND	100		µg/L	50	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	50	µg/L	50	11/10/00
Styrene	ND	50	µg/L	50	11/10/00
tert-Butylbenzene	ND	50	µg/L	50	11/10/00
Tetrachloroethene	ND	50	µg/L	50	11/10/00
Toluene	4500	250	µg/L	250	11/10/00
1,1,1,2-Tetrachloroethane	ND	50	µg/L	50	11/10/00
1,1,2,2-Tetrachloroethane	ND	50	µg/L	50	11/10/00
trans-1,2-DCE	ND	50	µg/L	50	11/10/00
trans-1,3-Dichloropropene	ND	50	µg/L	50	11/10/00
Trichloroethene	ND	50	µg/L	50	11/10/00
Trichlorofluoromethane	ND	50	µg/L	50	11/10/00
1,2,3-Trichlorobenzene	ND	50	µg/L	50	11/10/00
1,2,4-Trichlorobenzene	ND	50	µg/L	50	11/10/00
1,1,1-Trichloroethane	ND	50	µg/L	50	11/10/00
1,1,2-Trichloroethane	ND	50	µg/L	50	11/10/00
Vinyl chloride	ND	100	µg/L	50	11/10/00
1,2,3-Trichloropropane	ND	100	µg/L	50	11/10/00
1,2,4-Trimethylbenzene	280	50	µg/L	50	11/10/00
1,3,5-Trimethylbenzene	160	50	µg/L	50	11/10/00
Xylenes, Total	4400	50	µg/L	50	11/10/00
Surr: 1,2-Dichloroethane-d4	97.3	65-114	%REC	50	11/10/00
Surr: 4-Bromofluorobenzene	101	74-122	%REC	50	11/10/00
Surr: Dibromofluoromethane	95.5	65-113	%REC	50	11/10/00
Surr: Toluene-d8	102	60-123	%REC	50	11/10/00

Lab ID: 0011039-06A **Collection Date:** 11/3/00 9:00:00 AM
Client Sample ID: 5 @ 13' **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
DRO BY 8015B		**SW8015**				Analyst: **JT**
T/R Hydrocarbons: C10-C28	40	25		mg/Kg	5	11/10/00
T/R Hydrocarbons: C28-C34+	ND	250		mg/Kg	5	11/10/00
Surr: DNOP	125	74-125		%REC	5	11/10/00
GASOLINE RANGE ORGANICS		**SW8015**				Analyst: **AFM**
T/R Hydrocarbons: C5-C15+	6500	100		mg/Kg	20	11/13/00
Surr: BFB	0	74-118	S	%REC	20	11/13/00
BTEX BY EPA 8021B		**SW8021**				Analyst: **AFM**
Methyl tert-butyl ether (MTBE)	ND	2.0		mg/Kg	20	11/13/00
Benzene	24	1.0		mg/Kg	20	11/13/00
Toluene	390	1.0		mg/Kg	20	11/13/00
Ethylbenzene	43	1.0		mg/Kg	20	11/13/00
Xylenes, Total	570	1.0		mg/Kg	20	11/13/00
Surr: 4-Bromofluorobenzene	104	74-118		%REC	20	11/13/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Project: Nancy Hartman #1E
Lab Order: 0011039

Lab ID: 0011039-07A
Collection Date:
Client Sample ID: Trip Blank
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/10/00
Bromobenzene	ND	1.0		µg/L	1	11/10/00
Bromodichloromethane	ND	1.0		µg/L	1	11/10/00
Bromoform	ND	1.0		µg/L	1	11/10/00
Bromomethane	ND	1.0		µg/L	1	11/10/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/10/00
Chlorobenzene	ND	1.0		µg/L	1	11/10/00
Chloroethane	ND	2.0		µg/L	1	11/10/00
Chloroform	ND	1.0		µg/L	1	11/10/00
Chloromethane	ND	1.0		µg/L	1	11/10/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/10/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/10/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/10/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/10/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/10/00
Dibromochloromethane	ND	1.0		µg/L	1	11/10/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/10/00
Dibromomethane	ND	2.0		µg/L	1	11/10/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/10/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/10/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/10/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/10/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/10/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/10/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/10/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/10/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/10/00
Ethylbenzene	ND	1.0		µg/L	1	11/10/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/10/00
Isopropylbenzene	ND	1.0		µg/L	1	11/10/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/10/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/10/00
Methylene Chloride	13	3.0		µg/L	1	11/10/00
n-Butylbenzene	ND	1.0		µg/L	1	11/10/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/10/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/10/00
n-Propylbenzene	ND	1.0		µg/L	1	11/10/00
Naphthalene	ND	2.0		µg/L	1	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

CLIENT: Blagg Engineering **Lab Order:** 0011039
Project: Nancy Hartman #1E

sec-Butylbenzene	ND	1.0	µg/L	1	11/10/00
Styrene	ND	1.0	µg/L	1	11/10/00
tert-Butylbenzene	ND	1.0	µg/L	1	11/10/00
Tetrachloroethene	ND	1.0	µg/L	1	11/10/00
Toluene	ND	1.0	µg/L	1	11/10/00
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	11/10/00
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	1	11/10/00
trans-1,2-DCE	ND	1.0	µg/L	1	11/10/00
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	11/10/00
Trichloroethene	ND	1.0	µg/L	1	11/10/00
Trichlorofluoromethane	ND	1.0	µg/L	1	11/10/00
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	11/10/00
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	11/10/00
1,1,1-Trichloroethane	ND	1.0	µg/L	1	11/10/00
1,1,2-Trichloroethane	ND	1.0	µg/L	1	11/10/00
Vinyl chloride	ND	2.0	µg/L	1	11/10/00
1,2,3-Trichloropropane	ND	2.0	µg/L	1	11/10/00
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	11/10/00
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	11/10/00
Xylenes, Total	ND	1.0	µg/L	1	11/10/00
Surr: 1,2-Dichloroethane-d4	81.8	65-114	%REC	1	11/10/00
Surr: 4-Bromofluorobenzene	96.2	74-122	%REC	1	11/10/00
Surr: Dibromofluoromethane	85.5	65-113	%REC	1	11/10/00
Surr: Toluene-d8	93.4	60-123	%REC	1	11/10/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Lab Order: 0011083
Project: Nancy Hartman #1E
Lab ID: 0011083-01A

Client Sample ID: MW#6M
Collection Date: 11/15/00 11:10:00 AM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/20/00
Bromobenzene	ND	1.0		µg/L	1	11/20/00
Bromodichloromethane	ND	1.0		µg/L	1	11/20/00
Bromoform	ND	1.0		µg/L	1	11/20/00
Bromomethane	ND	1.0		µg/L	1	11/20/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/20/00
Chlorobenzene	ND	1.0		µg/L	1	11/20/00
Chloroethane	ND	2.0		µg/L	1	11/20/00
Chloroform	ND	1.0		µg/L	1	11/20/00
Chloromethane	ND	1.0		µg/L	1	11/20/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/20/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/20/00
Dibromochloromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/20/00
Dibromomethane	ND	2.0		µg/L	1	11/20/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/20/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/20/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Ethylbenzene	ND	1.0		µg/L	1	11/20/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/20/00
Isopropylbenzene	ND	1.0		µg/L	1	11/20/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/20/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/20/00
Methylene Chloride	ND	3.0		µg/L	1	11/20/00
n-Butylbenzene	ND	1.0		µg/L	1	11/20/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
n-Propylbenzene	ND	1.0		µg/L	1	11/20/00
Naphthalene	ND	2.0		µg/L	1	11/20/00
sec-Butylbenzene	ND	1.0		µg/L	1	11/20/00

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Client Sample ID: MW#6M
Lab Order: 0011083
Collection Date: 11/15/00 11:10:00 AM
Project: Nancy Hartman #1E
Lab ID: 0011083-01A
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Styrene	ND	1.0		µg/L	1	11/20/00
tert-Butylbenzene	ND	1.0		µg/L	1	11/20/00
Tetrachloroethene	ND	1.0		µg/L	1	11/20/00
Toluene	ND	1.0		µg/L	1	11/20/00
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
trans-1,2-DCE	ND	1.0		µg/L	1	11/20/00
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Trichloroethene	ND	1.0		µg/L	1	11/20/00
Trichlorofluoromethane	ND	1.0		µg/L	1	11/20/00
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/20/00
Vinyl chloride	ND	2.0		µg/L	1	11/20/00
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/20/00
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
Xylenes, Total	ND	1.0		µg/L	1	11/20/00
Surr: 1,2-Dichloroethane-d4	84.9	65-114		%REC	1	11/20/00
Surr: 4-Bromofluorobenzene	98.1	74-122		%REC	1	11/20/00
Surr: Dibromofluoromethane	87.6	65-113		%REC	1	11/20/00
Surr: Toluene-d8	92.0	60-123		%REC	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Lab Order: 0011083
Project: Nancy Hartman #1E
Lab ID: 0011083-02A

Client Sample ID: MW#7M
Collection Date: 11/15/00 12:20:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/20/00
Bromobenzene	ND	1.0		µg/L	1	11/20/00
Bromodichloromethane	ND	1.0		µg/L	1	11/20/00
Bromoform	ND	1.0		µg/L	1	11/20/00
Bromomethane	ND	1.0		µg/L	1	11/20/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/20/00
Chlorobenzene	ND	1.0		µg/L	1	11/20/00
Chloroethane	ND	2.0		µg/L	1	11/20/00
Chloroform	ND	1.0		µg/L	1	11/20/00
Chloromethane	ND	1.0		µg/L	1	11/20/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/20/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/20/00
Dibromochloromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/20/00
Dibromomethane	ND	2.0		µg/L	1	11/20/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/20/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/20/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Ethylbenzene	ND	1.0		µg/L	1	11/20/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/20/00
Isopropylbenzene	ND	1.0		µg/L	1	11/20/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/20/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/20/00
Methylene Chloride	ND	3.0		µg/L	1	11/20/00
n-Butylbenzene	ND	1.0		µg/L	1	11/20/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
n-Propylbenzene	ND	1.0		µg/L	1	11/20/00
Naphthalene	ND	2.0		µg/L	1	11/20/00
sec-Butylbenzene	ND	1.0		µg/L	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Lab Order: 0011083
Project: Nancy Hartman #1E
Lab ID: 0011083-02A

Client Sample ID: MW#7M
Collection Date: 11/15/00 12:20:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Styrene	ND	1.0		µg/L	1	11/20/00
tert-Butylbenzene	ND	1.0		µg/L	1	11/20/00
Tetrachloroethene	ND	1.0		µg/L	1	11/20/00
Toluene	ND	1.0		µg/L	1	11/20/00
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
trans-1,2-DCE	ND	1.0		µg/L	1	11/20/00
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Trichloroethene	ND	1.0		µg/L	1	11/20/00
Trichlorofluoromethane	ND	1.0		µg/L	1	11/20/00
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/20/00
Vinyl chloride	ND	2.0		µg/L	1	11/20/00
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/20/00
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
Xylenes, Total	ND	1.0		µg/L	1	11/20/00
Surr: 1,2-Dichloroethane-d4	93.2	65-114		%REC	1	11/20/00
Surr: 4-Bromofluorobenzene	101	74-122		%REC	1	11/20/00
Surr: Dibromofluoromethane	108	65-113		%REC	1	11/20/00
Surr: Toluene-d8	106	60-123		%REC	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Lab Order: 0011083
Project: Nancy Hartman #1E
Lab ID: 0011083-03A

Client Sample ID: MW#8M
Collection Date: 11/15/00 1:35:00 PM
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/20/00
Bromobenzene	ND	1.0		µg/L	1	11/20/00
Bromodichloromethane	ND	1.0		µg/L	1	11/20/00
Bromoform	ND	1.0		µg/L	1	11/20/00
Bromomethane	ND	1.0		µg/L	1	11/20/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/20/00
Chlorobenzene	ND	1.0		µg/L	1	11/20/00
Chloroethane	ND	2.0		µg/L	1	11/20/00
Chloroform	ND	1.0		µg/L	1	11/20/00
Chloromethane	ND	1.0		µg/L	1	11/20/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/20/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/20/00
Dibromochloromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/20/00
Dibromomethane	ND	2.0		µg/L	1	11/20/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/20/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/20/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Ethylbenzene	ND	1.0		µg/L	1	11/20/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/20/00
Isopropylbenzene	ND	1.0		µg/L	1	11/20/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/20/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/20/00
Methylene Chloride	ND	3.0		µg/L	1	11/20/00
n-Butylbenzene	ND	1.0		µg/L	1	11/20/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
n-Propylbenzene	ND	1.0		µg/L	1	11/20/00
Naphthalene	ND	2.0		µg/L	1	11/20/00
sec-Butylbenzene	ND	1.0		µg/L	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Client Sample ID: MW#8M
Lab Order: 0011083
Collection Date: 11/15/00 1:35:00 PM
Project: Nancy Hartman #1E
Lab ID: 0011083-03A
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Styrene	ND	1.0		µg/L	1	11/20/00
tert-Butylbenzene	ND	1.0		µg/L	1	11/20/00
Tetrachloroethene	ND	1.0		µg/L	1	11/20/00
Toluene	ND	1.0		µg/L	1	11/20/00
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
trans-1,2-DCE	ND	1.0		µg/L	1	11/20/00
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Trichloroethene	ND	1.0		µg/L	1	11/20/00
Trichlorofluoromethane	ND	1.0		µg/L	1	11/20/00
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/20/00
Vinyl chloride	ND	2.0		µg/L	1	11/20/00
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/20/00
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
Xylenes, Total	ND	1.0		µg/L	1	11/20/00
Surr: 1,2-Dichloroethane-d4	86.5	65-114		%REC	1	11/20/00
Surr: 4-Bromofluorobenzene	102	74-122		%REC	1	11/20/00
Surr: Dibromofluoromethane	93.8	65-113		%REC	1	11/20/00
Surr: Toluene-d8	97.0	60-123		%REC	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Lab Order: 0011083
Project: Nancy Hartman #1E
Lab ID: 0011083-04A

Client Sample ID: Trip Blank
Collection Date: 11/15/00
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY 8260B		**SW8260B**				Analyst: **HSB**
Benzene	ND	1.0		µg/L	1	11/20/00
Bromobenzene	ND	1.0		µg/L	1	11/20/00
Bromodichloromethane	ND	1.0		µg/L	1	11/20/00
Bromoform	ND	1.0		µg/L	1	11/20/00
Bromomethane	ND	1.0		µg/L	1	11/20/00
Carbon Tetrachloride	ND	1.0		µg/L	1	11/20/00
Chlorobenzene	ND	1.0		µg/L	1	11/20/00
Chloroethane	ND	2.0		µg/L	1	11/20/00
Chloroform	ND	1.0		µg/L	1	11/20/00
Chloromethane	ND	1.0		µg/L	1	11/20/00
2-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
4-Chlorotoluene	ND	1.0		µg/L	1	11/20/00
cis-1,2-DCE	ND	1.0		µg/L	1	11/20/00
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/20/00
Dibromochloromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/20/00
Dibromomethane	ND	2.0		µg/L	1	11/20/00
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/20/00
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/20/00
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloroethene	ND	1.0		µg/L	1	11/20/00
1,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,3-Dichloropropane	ND	1.0		µg/L	1	11/20/00
2,2-Dichloropropane	ND	1.0		µg/L	1	11/20/00
1,1-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Ethylbenzene	ND	1.0		µg/L	1	11/20/00
Hexachlorobutadiene	ND	1.0		µg/L	1	11/20/00
Isopropylbenzene	ND	1.0		µg/L	1	11/20/00
4-Isopropyltoluene	ND	1.0		µg/L	1	11/20/00
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/20/00
Methylene Chloride	ND	3.0		µg/L	1	11/20/00
n-Butylbenzene	ND	1.0		µg/L	1	11/20/00
1-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
2-Methylnaphthalene	ND	2.0		µg/L	1	11/20/00
n-Propylbenzene	ND	1.0		µg/L	1	11/20/00
Naphthalene	ND	2.0		µg/L	1	11/20/00
sec-Butylbenzene	ND	1.0		µg/L	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Client Sample ID: Trip Blank
Lab Order: 0011083
Collection Date: 11/15/00
Project: Nancy Hartman #1E
Lab ID: 0011083-04A
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Styrene	ND	1.0		µg/L	1	11/20/00
tert-Butylbenzene	ND	1.0		µg/L	1	11/20/00
Tetrachloroethene	ND	1.0		µg/L	1	11/20/00
Toluene	ND	1.0		µg/L	1	11/20/00
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	11/20/00
trans-1,2-DCE	ND	1.0		µg/L	1	11/20/00
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/20/00
Trichloroethene	ND	1.0		µg/L	1	11/20/00
Trichlorofluoromethane	ND	1.0		µg/L	1	11/20/00
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/20/00
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/20/00
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/20/00
Vinyl chloride	ND	2.0		µg/L	1	11/20/00
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/20/00
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/20/00
Xylenes, Total	ND	1.0		µg/L	1	11/20/00
Surr: 1,2-Dichloroethane-d4	83.9	65-114		%REC	1	11/20/00
Surr: 4-Bromofluorobenzene	98.3	74-122		%REC	1	11/20/00
Surr: Dibromofluoromethane	90.3	65-113		%REC	1	11/20/00
Surr: Toluene-d8	94.8	60-123		%REC	1	11/20/00

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

ENERGY LABORATORIES
Billings • Casper • Gillette
Helena • Rapid City

ENERGY LABORATORIES, INC.
SHIPPING: 2393 SALT CREEK HIGHWAY • CASPER, WY 82601
MAILING: P.O. BOX 3258 • CASPER, WY 82602
E-mail: casper@energylab.com • FAX: (307) 234-1639
PHONE: (307) 235-0515 • TOLL FREE: (888) 235-0515

LABORATORY ANALYSIS REPORT

MW #1

Client:	**Hall Environmental**
Sample ID:	**0011039-01D**
Sample Date/Time:	**11-06-00 14:40**
Date Received:	**11-10-00**
Sample Matrix:	**Liquid, Water**
Laboratory ID:	**00-37515-1**
Report Date:	**November 29, 2000**

Major Ions	Method	Units	Reporting Limit	Results
Calcium	EPA 200.7	mg/L	1.0	265
Magnesium	EPA 200.7	mg/L	1.0	22.4
Sodium	EPA 200.7	mg/L	1.0	113
Potassium	EPA 200.7	mg/L	1.0	1.5

Trace Metals				
Aluminum	EPA 200.8	mg/L	0.10	3.7
Arsenic	EPA 200.8	mg/L	0.001	0.086
Barium	EPA 200.8	mg/L	0.10	2.3
Boron	EPA 200.8	mg/L	0.10	< 0.10
Cadmium	EPA 200.8	mg/L	0.005	< 0.005
Chromium	EPA 200.8	mg/L	0.001	0.003
Cobalt	EPA 200.8	mg/L	0.01	< 0.01
Copper	EPA 200.8	mg/L	0.01	0.03
Iron	EPA 200.7	mg/L	0.03	27.4
Lead	EPA 200.8	mg/L	0.001	0.022
Manganese	EPA 200.8	mg/L	0.01	9.6
Mercury	EPA 200.8	mg/L	0.001	< 0.001
Molybdenum	EPA 200.8	mg/L	0.01	< 0.01
Nickel	EPA 200.8	mg/L	0.01	0.02
Selenium	EPA 200.8	mg/L	0.001	0.004
Silver	EPA 200.8	mg/L	0.001	< 0.001
Zinc	EPA 200.8	mg/L	0.01	0.03

dmc: r:\reports\clients2000\hall_environmental_analysis_lab\liquid\37515-1.xls

TRACKING NO. PAGE NO.
37515R00003

ENERGY LABORATORIES, INC.
SHIPPING: 2393 SALT CREEK HIGHWAY • CASPER, WY 82601
MAILING: P.O. BOX 3258 • CASPER, WY 82602
E-mail: casper@energylab.com • FAX: (307) 234-1639
PHONE: (307) 235-0515 • TOLL FREE: (888) 235-0515
Billings • Casper • Gillette
Helena • Rapid City

LABORATORY ANALYSIS REPORT

MW # 4M

Client:	**Hall Environmental**
Sample ID:	**0011039-04D**
Sample Date/Time:	**11-06-00 11:00**
Date Received:	**11-10-00**
Sample Matrix:	**Liquid, Water**
Laboratory ID:	**00-37515-3**
Report Date:	**November 29, 2000**

Major Ions	Method	Units	Reporting Limit	Results
Calcium	EPA 200.7	mg/L	1.0	280
Magnesium	EPA 200.7	mg/L	1.0	17.0
Sodium	EPA 200.7	mg/L	1.0	64.4
Potassium	EPA 200.7	mg/L	1.0	1.6

Trace Metals				
Aluminum	EPA 200.8	mg/L	0.10	4.0
Arsenic	EPA 200.8	mg/L	0.001	0.001
Barium	EPA 200.8	mg/L	0.10	0.23
Boron	EPA 200.8	mg/L	0.10	< 0.10
Cadmium	EPA 200.8	mg/L	0.005	< 0.005
Chromium	EPA 200.8	mg/L	0.001	0.001
Cobalt	EPA 200.8	mg/L	0.01	< 0.01
Copper	EPA 200.8	mg/L	0.01	< 0.01
Iron	EPA 200.7	mg/L	0.03	0.85
Lead	EPA 200.8	mg/L	0.001	0.008
Manganese	EPA 200.8	mg/L	0.01	0.58
Mercury	EPA 200.8	mg/L	0.001	< 0.001
Molybdenum	EPA 200.8	mg/L	0.01	< 0.01
Nickel	EPA 200.8	mg/L	0.01	0.01
Selenium	EPA 200.8	mg/L	0.001	0.002
Silver	EPA 200.8	mg/L	0.001	< 0.001
Zinc	EPA 200.8	mg/L	0.01	0.02

dmc: r:\reports\clients2000\hall_environmental_analysis_lab\liquid\37515-3.xls

TRACKING NO. PAGE NO.
37515R00005

ENERGY LABORATORIES
Billings • Casper • Gillette
Helena • Rapid City

ENERGY LABORATORIES, INC.
SHIPPING: 2393 SALT CREEK HIGHWAY • CASPER, WY 82601
MAILING: P.O. BOX 3258 • CASPER, WY 82602
E-mail: casper@energylab.com • FAX: (307) 234-1639
PHONE: (307) 235-0515 • TOLL FREE: (888) 235-0515

LABORATORY ANALYSIS REPORT

TRACE METALS ANALYSIS NOT REQUESTED

Client:	**Hall Environmental**
Sample ID:	**0011039-02D**
Sample Date/Time:	**11-06-00 13:40**
Date Received:	**11-10-00**
Sample Matrix:	**Liquid, Water**
Laboratory ID:	**00-37515-2**
Report Date:	**November 29, 2000**

MW # 2

Major Ions	Method	Units	Reporting Limit	Results
Calcium	EPA 200.7	mg/L	1.0	188.9
Magnesium	EPA 200.7	mg/L	1.0	10.0
Sodium	EPA 200.7	mg/L	1.0	63.7
Potassium	EPA 200.7	mg/L	1.0	1.3

Trace Metals				
Aluminum	EPA 200.8	mg/L	0.10	0.82
Arsenic	EPA 200.8	mg/L	0.001	< 0.001
Barium	EPA 200.8	mg/L	0.10	< 0.10
Boron	EPA 200.8	mg/L	0.10	< 0.10
Cadmium	EPA 200.8	mg/L	0.005	< 0.005
Chromium	EPA 200.8	mg/L	0.001	< 0.001
Cobalt	EPA 200.8	mg/L	0.01	< 0.01
Copper	EPA 200.8	mg/L	0.01	< 0.01
Iron	EPA 200.7	mg/L	0.03	0.30
Lead	EPA 200.8	mg/L	0.001	< 0.001
Manganese	EPA 200.8	mg/L	0.01	0.16
Mercury	EPA 200.8	mg/L	0.001	< 0.001
Molybdenum	EPA 200.8	mg/L	0.01	< 0.01
Nickel	EPA 200.8	mg/L	0.01	< 0.01
Selenium	EPA 200.8	mg/L	0.001	0.001
Silver	EPA 200.8	mg/L	0.001	< 0.001
Zinc	EPA 200.8	mg/L	0.01	< 0.01

dmc: r:\reports\clients2000\hall_environmental_analysis_lab\liquid\37515-2.xls

TRACKING NO. PAGE NO.
37515R00004

CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: BLAGG / MANANA GAS
↓
Address: P.O. BOX 87
BLOOMFIELD, NM 87413
Phone #: 505-632-1199
Fax #: 505-632-3903

Project Name: NANCY HARTMAN #1E
Project #: —
Project Manager: JEFF BLAGG
Sampler: NELSON VELEZ
Samples Cold?: ☒ Yes ☐ No

Date	Time	Matrix	Sample I.D. No.	Number/Volume / Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative:	HEAL No.
11/6/00	1440	WATER	MW #1	5		✓ 8260		0011039-1
11/6/00	1340	WATER	MW #2	3		✓ 8260		-2
11/6/00	1205	WATER	MW #3M	2		✓ 8260		-3
11/6/00	1100	WATER	MW #4M	4		✓ 8260		-4
11/6/00	1255	WATER	MW #5M	2		✓ 8260		-5
11/3/00	0900	SOIL	⑤ @ 13'	1				-6
11/6/00	910	~~DISTIL~~ DEIONIZED WATER	TRIP BLANK	2				-7

ANALYSIS REQUEST

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B MOD (Gas/Diesel)	TPH (Method 418.1)	Volatiles Full List (8021)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Cations (Na, K, Ca, Mg)	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260 (VOA)	8270 (Semi-VOA)	1 GW METALS (SEE ATTACHED LIST)	BTEX (8021) ONLY	Air Bubbles or Headspace (Y or N)
							✓		✓	✓		✓		✓		
									✓	✓		✓				
												✓				
									✓	✓		✓		✓		
												✓				
		✓													✓	≠ AIR
												✓				

Date: 11/6/00 Time: 1530 Relinquished By: (Signature) Nelson Velez
Received By: (Signature) 0935 11/7/00
Date: Time: Relinquished By: (Signature)
Received By: (Signature)

Remarks: PLEASE PROVIDE VERBALS ON 8260 [BTEX ONLY] AT EARLIEST CONVENIENCE.

Hall Environmental Analysis Labor

4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109-
(505) 345-3975

CHAIN-OF-CUSTODY RECORD

Subcontractor:

Energy Labs
2393 Salt Creek Highway
Casper, WY 82601

TEL: (888) 235-0515
FAX: (307) 234-1639
Acct #:

07-Nov-00

Sample ID	Matrix	Collection Date	Bottle Type	Please see attached list [redacted]	[redacted]	Requested Tests: Ca, Mg, Na, K				
0011039-01D	Aqueous	11/6/2000 2:40:00 PM	250HDPEHNO3	1	1	✓				
0011039-02D	Aqueous	11/6/2000 1:40:00 PM		●		✓				
0011039-04D	Aqueous	1/6/2000 11:00:00 AM	250HDPEHNO3	1	1	✓				

Comments: Project Name: Nancy Hartman #1E
Please fax results by 11/24/00

		Date/Time			Date/Time
Relinquished by:	Stephanie Ukhanov	11/7/00 1515	**Received by:**	[signature]	11/8/00 1000
Relinquished by:			**Received by:**		

TRACKING NO. PAGE NO.

3751 SR0007

CHAIN-OF-CUSTODY RECORD

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: BLAGG ENGINEERING/MANANA GAS

Address: P.O. BOX 87
BLOOMFIELD, NM 87413

Phone #: 505-632-1199

Fax #: 505-632-3903

Project Name: NANCY HARTMAN #1E

Project #: —

Project Manager: JEFF BLAGG

Sampler: NELSON VELEZ

Samples Cold?: ☒ Yes ☐ No

Date	Time	Matrix	Sample I.D. No.	Number/Volume (CONTAINERS)	Preservative $HgCl_2$	Preservative HCl	Preservative	HEAL No.
11/15/00	1110	WATER	MW #6M	2 - 40mL		✓		0011083-1
11/15/00	1220	WATER	MW #7M	2 - 40mL		✓		-2
11/15/00	1335	WATER	MW #8M	2 - 40mL		✓		-3
11/15/00	710	DEIONIZED ~~WATER~~ WATER	TRIP BLANK	2 - 40mL				-4

ANALYSIS REQUEST

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B MOD (Gas/Diesel)	TPH (Method 418.1)	Volatiles Full List (8021)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Cations (Na, K, Ca, Mg)	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260 (VOA)	8270 (Semi-VOA)			Air Bubbles or Headspace (Y or N)
												✓				
												✓				
												✓				
												✓				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
11/15/00	1525	[signature]	[signature] 0940 11/16/00
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: PLEASE PROVIDE VERBALS ON BTEX ONLY AT EARLIEST CONVENIENCE.

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **MB2-66** Batch ID: **66** Test Code: **SW8015** Units: **mg/Kg** Analysis Date: **11/10/00** Prep Date: **11/10/00**
Client ID: Run ID: **FIDHP_001110C** SeqNo: **2064**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C10-C28	ND	5.0									
Surr: DNOP	126	0	100	0	126	74	135	0			

Sample ID: **MB-66** Batch ID: **66** Test Code: **SW8015** Units: **mg/Kg** Analysis Date: **11/10/00** Prep Date: **11/10/00**
Client ID: Run ID: **FIDHP_001110D** SeqNo: **2085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C10-C28	ND	5.0									
T/R Hydrocarbons: C28-C34+	ND	50									
Surr: DNOP	109	0	100	0	109	74	125	0			

Sample ID: **MBLK** Batch ID: **R142** Test Code: **SW8015** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:
Client ID: Run ID: **PIDFID_001113A** SeqNo: **2643**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C5-C15+	ND	5.0									
Surr: BFB	101	0	100	0	101	74	118	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **MBLK** Batch ID: **R142** Test Code: **SW8021** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:

Client ID: Run ID: **PIDFID_001113A** SeqNo: **2639**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10									
Benzene	ND	0.050									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.050									
Surr: 4-Bromofluorobenzene	103	0	100	0	103	74	118	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **rb 5ml 2** Batch ID: **R161** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/9/00** Prep Date:
Client ID: Run ID: **THOR_001109A** SeqNo: **3079**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Bromobenzene	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon Tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chloroethane	ND	2.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
2-Chlorotoluene	ND	1.0									
4-Chlorotoluene	ND	1.0									
cis-1,2-DCE	ND	1.0									
cis-1,3-Dichloropropene	ND	1.0									
1,2-Dibromo-3-chloropropane	ND	2.0									
Dibromochloromethane	ND	1.0									
1,2-Dibromoethane (EDB)	ND	1.0									
Dibromomethane	ND	2.0									
1,2-Dichlorobenzene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
Dichlorodifluoromethane	ND	1.0									
1,2-Dichloroethane (EDC)	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3-Dichloropropane	ND	1.0									
2,2-Dichloropropane	ND	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

1,1-Dichloropropene	ND	1.0						
Ethylbenzene	ND	1.0						
Hexachlorobutadiene	ND	1.0						
Isopropylbenzene	ND	1.0						
4-Isopropyltoluene	ND	1.0						
Methyl tert-butyl ether (MTBE)	ND	1.0						
Methylene Chloride	ND	3.0						
n-Butylbenzene	ND	1.0						
1-Methylnaphthalene	ND	2.0						
2-Methylnaphthalene	ND	2.0						
n-Propylbenzene	ND	1.0						
Naphthalene	ND	2.0						
sec-Butylbenzene	ND	1.0						
Styrene	ND	1.0						
tert-Butylbenzene	ND	1.0						
Tetrachloroethene	ND	1.0						
Toluene	ND	1.0						
1,1,1,2-Tetrachloroethane	ND	1.0						
1,1,2,2-Tetrachloroethane	ND	1.0						
trans-1,2-DCE	ND	1.0						
trans-1,3-Dichloropropene	ND	1.0						
Trichloroethene	ND	1.0						
Trichlorofluoromethane	ND	1.0						
1,2,3-Trichlorobenzene	ND	1.0						
1,2,4-Trichlorobenzene	ND	1.0						
1,1,1-Trichloroethane	ND	1.0						
1,1,2-Trichloroethane	ND	1.0						
Vinyl chloride	ND	2.0						
1,2,3-Trichloropropane	ND	2.0						
1,2,4-Trimethylbenzene	ND	1.0						
1,3,5-Trimethylbenzene	ND	1.0						
Xylenes, Total	ND	1.0						
Surr: 1,2-Dichloroethane-d4	9.32	0	10	0	93.2	65	114	0

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Surr: 4-Bromofluorobenzene	9.68	0	10	0	96.8	74	122	0
Surr: Dibromofluoromethane	8.68	0	10	0	86.8	65	113	0
Surr: Toluene-d8	9.64	0	10	0	96.4	60	123	0

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **MB-55** Batch ID: **55** Test Code: **SW8310** Units: **µg/L** Analysis Date: **11/19/00** Prep Date: **11/8/00**

Client ID: Run ID: **HPLC_001118A** SeqNo: **3330**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	2.5									
1-Methylnaphthalene	ND	2.5									
2-Methylnaphthalene	ND	2.5									
Acenaphthylene	ND	2.5									
Acenaphthene	ND	2.5									
Fluorene	ND	0.80									
Phenanthrene	ND	0.60									
Anthracene	ND	0.60									
Fluoranthene	ND	0.30									
Pyrene	ND	0.30									
Benz(a)anthracene	ND	0.020									
Chrysene	ND	0.20									
Benzo(b)fluoranthene	ND	0.050									
Benzo(k)fluoranthene	ND	0.020									
Benzo(a)pyrene	ND	0.020									
Dibenz(a,h)anthracene	ND	0.040									
Benzo(g,h,i)perylene	ND	0.030									
Indeno(1,2,3-cd)pyrene	ND	0.080									
Surr: Benzo(e)pyrene	839.2	0	1000	0	83.9	77	104	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS** Batch ID: **R142** Test Code: **SW8015** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:
Client ID: Run ID: **PIDFID_001113A** SeqNo: **2644**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C5-C15+	23.5	5.0	25	0	94.0	82	124	0			

Sample ID: **LCSD** Batch ID: **R142** Test Code: **SW8015** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:
Client ID: Run ID: **PIDFID_001113A** SeqNo: **2645**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
T/R Hydrocarbons: C5-C15+	25.7	5.0	25	0	103	82	124	23.5	8.94	18	

Sample ID: **LCS** Batch ID: **R142** Test Code: **SW8021** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:
Client ID: Run ID: **PIDFID_001113A** SeqNo: **2640**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.65	0.10	2	0	82.5	65	132	0			
Benzene	1.03	0.050	1	0	103	77	122	0			
Toluene	1.02	0.050	1	0	102	81	115	0			
Ethylbenzene	1.01	0.050	1	0	101	84	117	0			
Xylenes, Total	3.07	0.050	3	0	102	84	116	0			

Sample ID: **LCSD** Batch ID: **R142** Test Code: **SW8021** Units: **mg/Kg** Analysis Date: **11/13/00** Prep Date:
Client ID: Run ID: **PIDFID_001113A** SeqNo: **2641**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.62	0.10	2	0	81.0	65	132	1.65	1.83	28	
Benzene	1.03	0.050	1	0	103	77	122	1.03	0	27	
Toluene	1.02	0.050	1	0	102	81	115	1.02	0	19	
Ethylbenzene	1	0.050	1	0	100	84	117	1.01	0.995	10	
Xylenes, Total	3.12	0.050	3	0	104	84	116	3.07	1.62	13	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **bs 40ng** Batch ID: **R136** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/10/00** Prep Date:
Client ID: Run ID: **THOR_001110A** SeqNo: **3138**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8.68	1.0	8	0	108	74	119	0			
Chlorobenzene	8.204	1.0	8	0	103	72	123	0			
1,1-Dichloroethene	8.256	1.0	8	0	103	71	123	0			
Toluene	8.334	1.0	8	0	104	73	123	0			
Trichloroethene	8.02	1.0	8	0	100	69	130	0			

Sample ID: **bsd 40ng** Batch ID: **R136** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/10/00** Prep Date:
Client ID: Run ID: **THOR_001110A** SeqNo: **3139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8.368	1.0	8	0	105	74	119	8.68	3.66	21	
Chlorobenzene	7.962	1.0	8	0	99.5	72	123	8.204	2.99	22	
1,1-Dichloroethene	8.512	1.0	8	0	106	71	123	8.256	3.05	20	
Toluene	7.986	1.0	8	0	99.8	73	123	8.334	4.26	23	
Trichloroethene	7.94	1.0	8	0	99.2	69	130	8.02	1.00	23	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: **LCS-55** Batch ID: **55** Test Code: **SW8310** Units: **µg/L** Analysis Date: **11/19/00** Prep Date: **11/8/00**
Client ID: Run ID: **HPLC_001118A** SeqNo: **3331**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	22.52	2.5	40.4	0	55.8	44	79	0			
Acenaphthylene	25.67	2.5	40.4	0	63.5	48	88	0			
Acenaphthene	26.62	2.5	40.4	0	65.9	51	88	0			
Fluorene	2.84	0.80	4.1	0	69.3	55	92	0			
Phenanthrene	2.31	0.60	3.07	0	75.2	70	96	0			
Fluoranthene	1.6	0.30	1.92	0	83.3	76	101	0			
Pyrene	3.19	0.30	3.85	0	82.9	77	101	0			
Benzo(a)pyrene	0.22	0.020	0.253	0	87.0	67	127	0			
Benzo(g,h,i)perylene	0.49	0.030	0.553	0	88.6	80	112	0			

Sample ID: **LCSD-55** Batch ID: **55** Test Code: **SW8310** Units: **µg/L** Analysis Date: **11/19/00** Prep Date: **11/8/00**
Client ID: Run ID: **HPLC_001118A** SeqNo: **3332**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	21.07	2.5	40.4	0	52.1	44	79	22.52	6.68	35	
Acenaphthylene	23.58	2.5	40.4	0	58.4	48	88	25.67	8.47	36	
Acenaphthene	25.1	2.5	40.4	0	62.1	51	88	26.62	5.88	30	
Fluorene	2.65	0.80	4.1	0	64.6	55	92	2.84	6.92	30	
Phenanthrene	2.32	0.60	3.07	0	75.6	70	96	2.31	0.432	17	
Fluoranthene	1.63	0.30	1.92	0	84.9	76	101	1.6	1.86	13	
Pyrene	3.25	0.30	3.85	0	84.4	77	101	3.19	1.86	13	
Benzo(a)pyrene	0.23	0.020	0.253	0	90.9	67	127	0.22	4.44	17	
Benzo(g,h,i)perylene	0.51	0.030	0.553	0	92.2	80	112	0.49	4.00	17	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS** Batch ID: **R69** Test Code: **E300** Units: **mg/Kg** Analysis Date: **11/10/00** Prep Date: **11/8/00**
Client ID: Run ID: **WC_001110A** SeqNo: **1595**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	2.755	0.30	3	0	91.8	85	115	0			
Chloride	5.464	0.30	6	0	91.1	85	115	0			
Fluoride	0.537	0.30	0.6	0	89.5	85	115	0			
Nitrogen, Nitrate (As N)	2.893	0.30	3	0	96.4	85	115	0			
Nitrogen, Nitrite (As N)	1.107	0.30	1.2	0	92.2	85	115	0			
Phosphorus, Dissolved Orthophosphate	5.33	1.5	6	0	88.8	85	115	0			
Sulfate	11.21	1.5	12	0	93.4	85	115	0			

Sample ID: **LCSD** Batch ID: **R69** Test Code: **E300** Units: **mg/Kg** Analysis Date: **11/10/00** Prep Date: **11/8/00**
Client ID: Run ID: **WC_001110A** SeqNo: **1596**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	2.687	0.30	3	0	89.6	85	115	2.755	2.50	15	
Chloride	5.307	0.30	6	0	88.4	85	115	5.464	2.92	15	
Fluoride	0.523	0.30	0.6	0	87.2	85	115	0.537	2.64	15	
Nitrogen, Nitrate (As N)	2.808	0.30	3	0	93.6	85	115	2.893	2.98	15	
Nitrogen, Nitrite (As N)	1.078	0.30	1.2	0	89.8	85	115	1.107	2.65	15	
Phosphorus, Dissolved Orthophosphate	5.382	1.5	6	0	89.7	85	115	5.33	0.971	15	
Sulfate	10.91	1.5	12	0	90.9	85	115	11.21	2.70	15	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011039
Project: Nancy Hartman #1E

QC SUMMARY REPORT

Sample Duplicate

Sample ID: **0011039-01C** Batch ID: **R59** Test Code: **E300** Units: **mg/L** Analysis Date: **11/8/00** Prep Date:
Client ID: **MW#1** Run ID: **WC_001108A** SeqNo: **1586**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.2	0.10	0	0	0	0	0	0.2	0	15	
Nitrogen, Nitrate (As N)	ND	0.10	0	0	0	0	0	0	0	15	
Nitrogen, Nitrite (As N)	ND	0.10	0	0	0	0	0	0	0	15	
Phosphorus, Dissolved Orthophosphate	ND	0.50	0	0	0	0	0	0	0	15	
Sulfate	2.9	0.50	0	0	0	0	0	3	3.39	15	

Sample ID: **0011039-01C** Batch ID: **R69** Test Code: **E300** Units: **mg/L** Analysis Date: **11/10/00** Prep Date:
Client ID: **MW#1** Run ID: **WC_001110A** SeqNo: **1590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	90	1.5	0	0	0	0	0	89	1.12	15	H

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011083
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **rb 5ml** Batch ID: **R156** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/20/00** Prep Date:

Client ID: Run ID: **THOR_001120A** SeqNo: **2917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.0									
Bromobenzene	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon Tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chloroethane	ND	2.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
2-Chlorotoluene	ND	1.0									
4-Chlorotoluene	ND	1.0									
cis-1,2-DCE	ND	1.0									
cis-1,3-Dichloropropene	ND	1.0									
1,2-Dibromo-3-chloropropane	ND	2.0									
Dibromochloromethane	ND	1.0									
1,2-Dibromoethane (EDB)	ND	1.0									
Dibromomethane	ND	2.0									
1,2-Dichlorobenzene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
Dichlorodifluoromethane	ND	1.0									
1,2-Dichloroethane (EDC)	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3-Dichloropropane	ND	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011083
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

2,2-Dichloropropane	ND	1.0
1,1-Dichloropropene	ND	1.0
Ethylbenzene	ND	1.0
Hexachlorobutadiene	ND	1.0
Isopropylbenzene	ND	1.0
4-Isopropyltoluene	ND	1.0
Methyl tert-butyl ether (MTBE)	ND	1.0
Methylene Chloride	ND	3.0
n-Butylbenzene	ND	1.0
1-Methylnaphthalene	ND	2.0
2-Methylnaphthalene	ND	2.0
n-Propylbenzene	ND	1.0
Naphthalene	ND	2.0
sec-Butylbenzene	ND	1.0
Styrene	ND	1.0
tert-Butylbenzene	ND	1.0
Tetrachloroethene	ND	1.0
Toluene	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
trans-1,2-DCE	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
Trichlorofluoromethane	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0
1,1,1-Trichloroethane	ND	1.0
1,1,2-Trichloroethane	ND	1.0
Vinyl chloride	ND	2.0
1,2,3-Trichloropropane	ND	2.0
1,2,4-Trimethylbenzene	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0
Xylenes, Total	ND	1.0

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011083
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Method Blank

Surr: 1,2-Dichloroethane-d4	8.462	0	10	0	84.6	65	114	0
Surr: 4-Bromofluorobenzene	9.896	0	10	0	99.0	74	122	0
Surr: Dibromofluoromethane	8.542	0	10	0	85.4	65	113	0
Surr: Toluene-d8	8.72	0	10	0	87.2	60	123	0

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *04-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011083
Project: Nancy Hartman #1E

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: **bs 40ng** Batch ID: **R156** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/20/00** Prep Date:
Client ID: Run ID: **THOR_001120A** SeqNo: **2915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8.774	1.0	8	0	110	74	119	0			
Chlorobenzene	7.608	1.0	8	0	95.1	72	123	0			
1,1-Dichloroethene	8.342	1.0	8	0	104	71	123	0			
Toluene	7.578	1.0	8	0	94.7	73	123	0			
Trichloroethene	7.778	1.0	8	0	97.2	69	130	0			

Sample ID: **bsd 40ng** Batch ID: **R156** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **11/21/00** Prep Date:
Client ID: Run ID: **THOR_001120A** SeqNo: **2916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8.628	1.0	8	0	108	74	119	8.774	1.68	21	
Chlorobenzene	7.848	1.0	8	0	98.1	72	123	7.608	3.11	22	
1,1-Dichloroethene	8.432	1.0	8	0	105	71	123	8.342	1.07	20	
Toluene	7.606	1.0	8	0	95.1	73	123	7.578	0.369	23	
Trichloroethene	8.012	1.0	8	0	100	69	130	7.778	2.96	23	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

QUALITY ASSURANCE REPORT
Hall Environmental

Laboratory ID Range: 00-37515-1-3
Report Date: November 29, 2000

Major Ions	Method	RPD_1	$Spike_2$	Analyst	Date Analyzed
Calcium	EPA 200.7	0.0	101	jal	11-13-00
Magnesium	EPA 200.7	0.4	106	jal	11-13-00
Sodium	EPA 200.7	1.0	97	jal	11-13-00
Potassium	EPA 200.7	0.6	100	jal	11-13-00
Trace Metals					
Aluminum	EPA 200.8	7.4	102	ts	11-15-00
Arsenic	EPA 200.8	0.0	111	ts	11-15-00
Barium	EPA 200.8	0.1	98	ts	11-15-00
Boron	EPA 200.8	-	105	ts	11-15-00
Cadmium	EPA 200.8	0.0	97	ts	11-15-00
Chromium	EPA 200.8	0.0	100	ts	11-15-00
Cobalt	EPA 200.8	0.0	108	ts	11-15-00
Copper	EPA 200.8	2.7	108	ts	11-15-00
Iron	EPA 200.7	1.0	100	jal	11-13-00
Lead	EPA 200.8	0.9	107	ts	11-15-00
Manganese	EPA 200.8	6.7	107	ts	11-15-00
Mercury	EPA 200.8	0.0	107	ts	11-15-00
Molybdenum	EPA 200.8	2.8	101	ts	11-15-00
Nickel	EPA 200.8	7.7	107	ts	11-15-00
Selenium	EPA 200.8	0.0	107	ts	11-15-00
Silver	EPA 200.8	0.0	100	ts	11-15-00
Zinc	EPA 200.8	0.6	107	ts	11-15-00

NOTES:

(1) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.

(2) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

dmc: r:\reports\clients2000\hall_environmental_analysis_lab\liquid\qa\37515-1-3.xls

TRACKING NO. PAGE NO.

37515R0[illegible]06

Hall Environmental
Analysis Laboratory

December 04, 2000

Jeff Blagg
Blagg Engineering
110 North 4th St.
Bloomfield, NM 87413
TEL: (505) 632-1199
FAX (505) 632-3903

RE: Nancy Hartman #1E Order No.: 0011039

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 14 samples on 11/7/00 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Senior Project Manager
Nancy McDuffie, Assistant Laboratory Manager

Hall Environmental
Analysis Laboratory

December 04, 2000

Jeff Blagg
Blagg Engineering
110 North 4th St.
Bloomfield, NM 87413
TEL: (505) 632-1199
FAX (505) 632-3903

RE: Nancy Hartman #1E

Order No.: 0011083

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 4 samples on 11/16/00 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Senior Project Manager
Nancy McDuffie, Assistant Laboratory Manager