

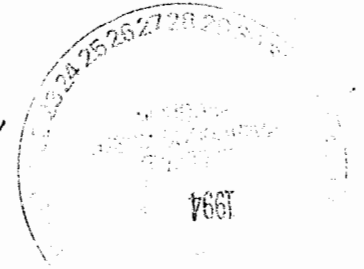


Bloomfield Refining Company

A Gary Energy Corporation Subsidiary



ENTERED



January 10, 1994

Mr. Ed Horst  
New Mexico Environment Department  
525 Camino de los Marquez  
P. O. Box 26110  
Santa Fe, New Mexico 87502



XVII

RE: RCRA Semi-Annual Groundwater Report  
NMD 089 416 416

*Pod*  
*2nd*  
*impoundments*

Dear Mr. Horst:

Enclosed please find the sampling and analysis results from the groundwater monitoring wells associated with our hazardous waste water treatment system. Since the groundwater is being extensively evaluated under the RCRA 3008(h) order, we have only analyzed for hydrocarbon indicator parameters for those wells that do not show free product.

Please call me if you need any additional information.

Sincerely,

Chris Hawley  
Environmental Manager

CH/jm

Enclosure

cc: Dave Roderick  
Joe Warr  
John Goodrich

Bloomfield Refining Company  
Groundwater Data

	Units	Up-gradient		Down-gradient		
		MW-21 12/93	RW-15 12/93	MW-20 12/93	MW-9 12/93	RW-18 5/93
HC Contm. Indicators						
Benzene	mg/l	0.253		0.027		
Toluene	mg/l	0.000		0.002		
Ethylbenzene	mg/l	0.057		0.005		
Xylenes (Total)	mg/l	0.067		0.003		
Contamination						
pH	s.u.					
pH	s.u.					
pH	s.u.					
pH	s.u.					
Specific Conductance						
Specific Conductance						
Specific Conductance						
Specific Conductance						
Total Organic Carbon	mg/l	NOT ANALYZED SEE RESULTS OF RCRA 3008h	NOT SAMPLED FREE PRODUCT	NOT ANALYZED SEE RESULTS OF RCRA 3008h	NOT SAMPLED FREE PRODUCT	NOT SAMPLED FREE PRODUCT
Total Organic Carbon	mg/l					
Total Organic Carbon	mg/l					
Total Organic Carbon	mg/l					
Total Organic Carbon	mg/l					
Total Organic Halogen	mg/l					
Total Organic Halogen	mg/l					
Total Organic Halogen	mg/l					
Total Organic Halogen	mg/l					
Groundwater Levels						
Elevation - TOP	ft	5518.64	5533.32	5516.44	5519.70	5527.05
Depth to Water	ft	19.77		18.31		
Elevation - GW	ft	5498.87		5498.13		
HC Thickness	ft	0.00		0.00		
Elevation - Liquid	ft	5498.87		5498.13		
Total Depth fr TOP	ft	30.93	43.40	27.18	33.90	40.95

**PURGEABLE AROMATICS****Bloomfield Refining Co.**

Project ID:	Bloomfield, NM	Report Date:	12/27/93
Sample ID:	MW - 21	Date Sampled:	12/13/93
Lab ID:	4341	Date Received:	12/13/93
Sample Matrix:	Water	Date Analyzed:	12/27/93
Preservative:	Cool, HCl		
Condition:	Intact		

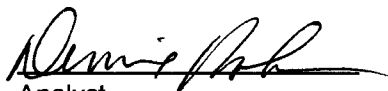
Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	253	2.50
Toluene	ND	2.50
Ethylbenzene	57.2	2.50
m,p-Xylenes	26.6	5.00
o-Xylene	40.8	2.50

ND - Analyte not detected at the stated detection limit.

<b>Quality Control:</b>	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Toluene-d8	97	88 -110%
	Bromofluorobenzene	97	86 -115%

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

**PURGEABLE AROMATICS****Bloomfield Refining Co.**

Project ID:	Bloomfield, NM	Report Date:	12/28/93
Sample ID:	MW - 20	Date Sampled:	12/13/93
Lab ID:	4342	Date Received:	12/13/93
Sample Matrix:	Water	Date Analyzed:	12/27/93
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	56.3	0.50
Toluene	ND	0.50
Ethylbenzene	5.02	0.50
m,p-Xylenes	1.42	1.00
o-Xylene	0.74	0.50


ND - Analyte not detected at the stated detection limit.

<b>Quality Control:</b>	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Toluene-d8	101	88 -110%
	Bromofluorobenzene	100	86 -115%

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
Analyst

  
Review

**Purgeable Aromatics****Duplicate Analysis**

Lab ID: 4341Dup  
 Sample Matrix: Water  
 Preservative: Cool, HCl  
 Condition: Intact

Report Date: 12/27/93  
 Date Sampled: 12/13/93  
 Date Received: 12/13/93  
 Date Analyzed: 12/27/93

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	253	259	208 - 304
Toluene	ND	ND	NA
Ethylbenzene	57.2	58.8	38 - 78
m,p-Xylenes	26.6	26.3	NE
o-Xylene	40.8	41.3	NE

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

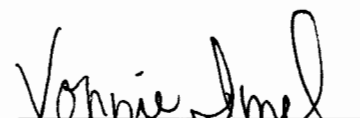
NE - Duplicate acceptance range not established by the EPA.

	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
<b>Quality Control:</b>	Toluene-d8	101	88 - 110%
	Bromofluorobenzene	101	86 - 115%

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
 Analyst

  
 Review

**Purgeable Aromatics****Matrix Spike Analysis**

Lab ID: 4339Spk  
 Sample Matrix: Water  
 Preservative: Cool, HCl  
 Condition: Intact

Report Date: 12/27/93  
 Date Sampled: 12/13/93  
 Date Received: 12/13/93  
 Date Analyzed: 12/20/93

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	15	ND	15.0	100%	39 - 150
Toluene	15	ND	15.1	101%	46 - 148
Ethylbenzene	15	ND	15.8	105%	32 - 160
m,p-Xylenes	30	ND	30.4	101%	NE
o-Xylene	15	ND	15.2	101%	NE

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

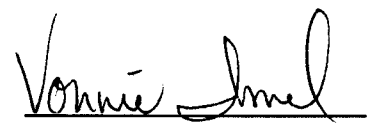
NE - Spike acceptance range not established by the EPA.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Toluene-d8	102	88 - 110%
	Bromofluorobenzene	99	86 - 115%

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
 Analyst

  
 Review

**Purgeable Aromatics****Matrix Spike Analysis**

Lab ID: MBSpk  
 Sample Matrix: Water  
 Preservative: NA  
 Condition: NA

Report Date: 12/27/93  
 Date Sampled: NA  
 Date Received: NA  
 Date Analyzed: 12/21/93

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	9.75	97%	39 - 150
Toluene	10	ND	9.98	100%	46 - 148
Ethylbenzene	10	ND	10.0	100%	32 - 160
m,p-Xylenes	20	ND	20.1	100%	NE
o-Xylene	10	ND	9.82	98%	NE

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.


NE - Spike acceptance range not established by the EPA.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Toluene-d8	98	88 - 110%
	Bromofluorobenzene	86	86 - 115%

**Reference:** Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**

  
 Analyst

  
 Review

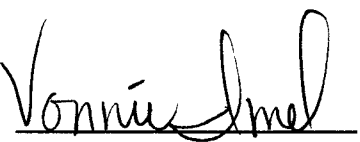
**PURGEABLE AROMATICS****Quality Control Report****Method Blank Analysis**Sample Matrix: Water  
Lab ID: MB34330Report Date: 12/27/93  
Date Analyzed: 12/27/93

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.20
Toluene	ND	0.20
Ethylbenzene	ND	0.20
m,p-Xylenes	ND	0.40
o-Xylene	ND	0.20

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Toluene-d8	101	88 -110%
	Bromofluorobenzene	100	86 -115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

**Comments:**  
Analyst  
Review



BLOOMFIELD REFINING COMPANY NMD 089 416 416  
Groundwater Sampling and Analysis Plan

GENERAL

Bloomfield Refining Company has been undergoing a groundwater quality assessment program since the early 1980's. This has led to the development of a groundwater remediation program being administered under the auspices of the New Mexico Oil Conservation Division. Under this program and other findings, BRC has determined that the groundwater underlying the facility and to some extent underlying some BLM property to the southwest contains contamination as a result of product releases from the facility. The contamination varies from measurable product floating on the water table to dissolved contamination only. In the area of the SOWP and NOWP, the subject of this plan, this contamination is significant to the extent that the analytical requirements under 40 CFR 265.92 will not be of much value in determining whether or not a release has occurred from the SOWP and/or NOWP, however the requirements are being met until such time as another plan is submitted and approved by the appropriate governmental agency.

During 1986, background groundwater quality was established for the overall facility. This data is tabulated in a report titled "A Final Report on Section 3013 Administrative Order Work Elements". It is included in the RCRA - Groundwater Monitoring File.

On September 25, 1990 units identified as the SOWP and NOWP, see Part A application, became regulated because of the TC rule for benzene concentrations. For purposes of meeting the requirement of a groundwater monitoring system for these units, monitoring wells RW-15 and MW-21 were established as up-gradient wells and monitoring wells MW-20, MW-9, and MW-18 were established as down-gradient wells. Installation data for these wells is in Attachment 1.

SAMPLE COLLECTION

Schedule

First Quarter	Last 3 months 1991
Second Quarter	1st 3 months 1992
Third Quarter	2nd 3 months 1992
Fourth Quarter	3rd 3 months 1992

Subsequent schedule to be determined based on groundwater remediation requirements.

BLOOMFIELD REFINING COMPANY      NMD 089 416 416  
Groundwater Sampling and Analysis Plan

Parameters  
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Sample parameters for each quarter is shown in Attachment 2.

Sample collection methods  
-----

Monitoring wells will be purged using a down hole stainless steel pump. Once purging is completed, samples will be obtained using a bailer unless floating products interfere to the extent that a representative sample of the water can not be obtained. In this case the down hole pump will be used to collect the sample. All sampling equipment will be washed with analconox soap solution and rinsed with distilled water between sampling events and monitoring wells.

pH and conductivity will be determined in the field. Samples for determination of dissolved metals will be filtered in the BRC laboratory using appropriate filter media.

A log book will be maintained for sampling events.

Sample preservation and shipment  
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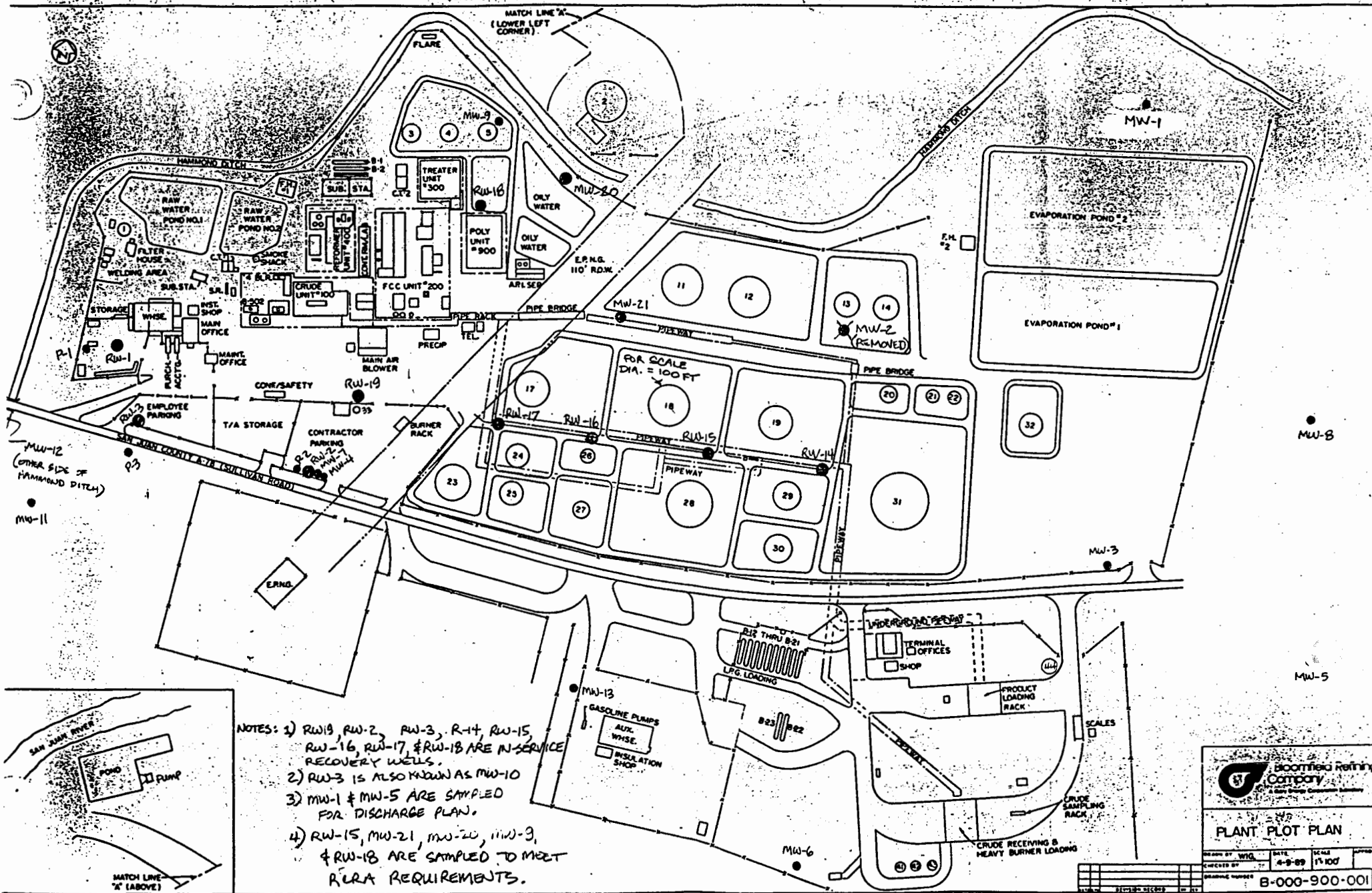
Samples will be immediately preserved, packed in coolers (with ice), and immediately delivered to the laboratory. Preservation requirements are noted in Attachment 3.

Analytical Procedures  
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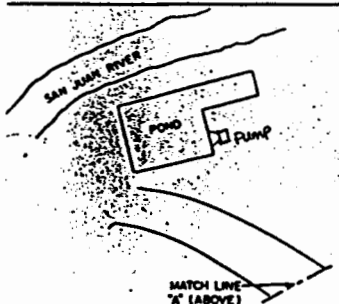
Analytical procedures are noted in Attachment 4.

Chain of custody control  
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Chain of custody control will be utilized. (see Attachment 5 for a typical chain of custody form)



- NOTES:
- 1) RW-19, RW-2, RW-3, RW-4, RW-15, RW-16, RW-17, & RW-18 ARE IN-SERVICE RECOVERY WELLS.
  - 2) RW-3 IS ALSO KNOWN AS MW-10
  - 3) MW-1 & MW-5 ARE SAMPLED FOR DISCHARGE PLAN.
  - 4) RW-15, MW-21, MW-20, MW-9, & RW-18 ARE SAMPLED TO MEET R/LRA REQUIREMENTS.



**Bloomfield Refining Company**  
 A B.P. GROUP COMPANY MEMBER

**PLANT PLOT PLAN**

DESIGNED BY	WIG	DATE	4-9-89	SCALE	1" = 100'
CHECKED BY					
DRAWING NUMBER: B-000-900-001					

ATTACHMENT 1

Groundwater Well  
Installation Data

## BLOOMFIELD REFINING COMPANY

## GROUNDWATER MONITORING/RECOVERY WELL DATA

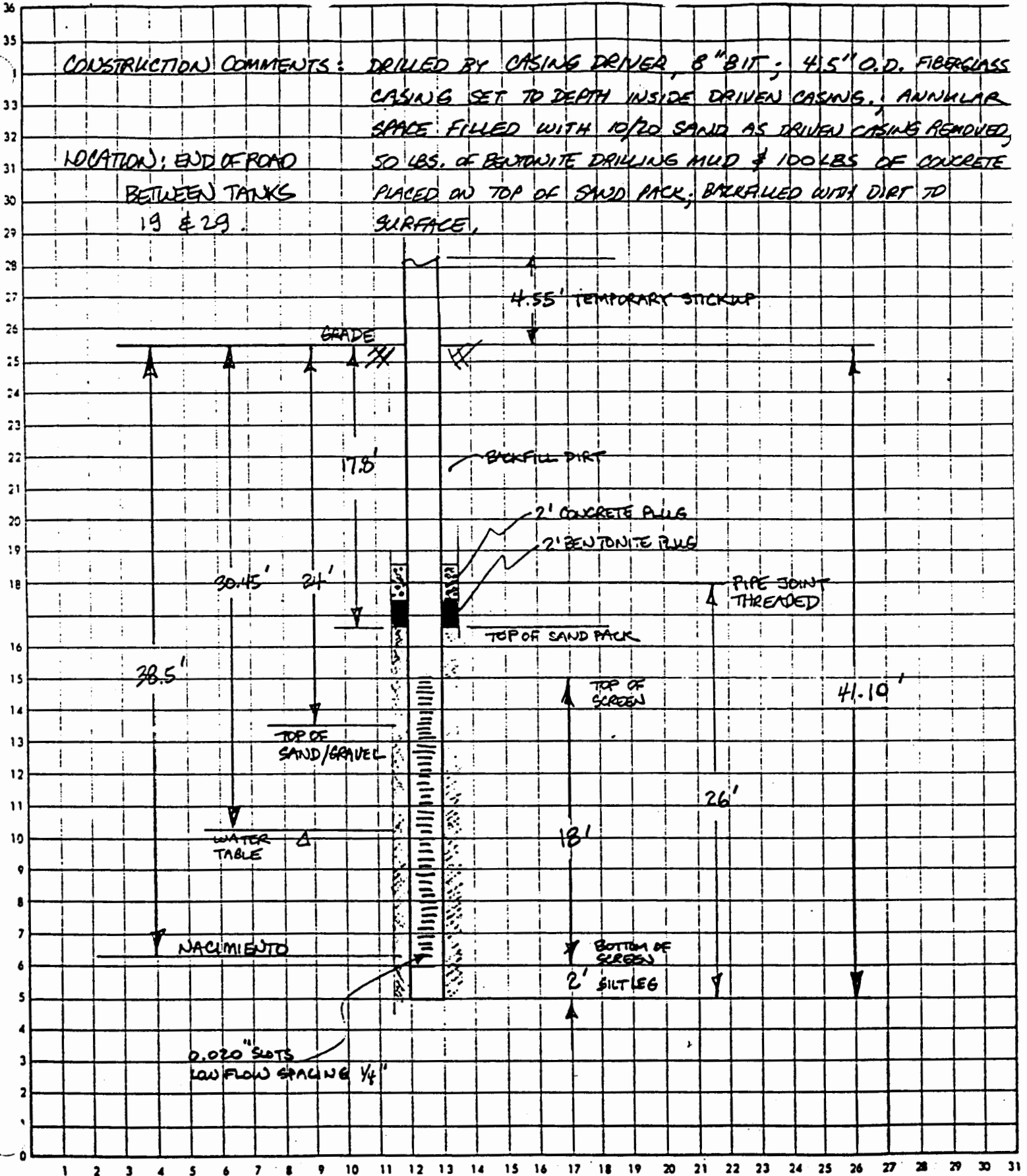
WELL NUMBER	ELEVATION T.O.P. (FT)	STICKUP (FT)	ELEVATION GRADE (FT)	APPROX EW ELEV	TOTAL	ELEVATION TOP OF SCREEN	ELEVATION BOTTOM OF SCREEN	ELEVATION TOP OF GRAVEL	ELEVATION TOP OF NACIMIENTO	INSTALLATION DATE
					DEPTH OF CASING FR. TOP					
MW-1	5515.77	1.7	5514.07	5499	24.65	5511.12	5491.12	5502.07	5492.07	02/08/84
MW-2	5519.45	1.5	5517.95	5501	26.90	5512.55	5492.55	5502.95	5492.95	02/08/84
MW-3	5535.85	1.0	5534.85	5503	39.35	5516.50	5496.50	5507.85	5494.85	02/09/84
MW-4	5524.30	1.4	5522.90	5500	32.50	5511.80	5491.80	5507.90	5490.90	02/09/84
MW-5	5545.10	1.0	5544.10	5503	51.61	5513.49	5493.49	5509.10	5494.10	02/06/84
MW-6	5551.23	1.6	5549.63	DRY	49.63	5521.60	5501.60	5508.63	5500.63	02/07/84
MW-7	5524.09	1.1	5522.99	5500	62.11	5473.98	5463.98	5505.99	5490.99	02/25/86
MW-8	5531.12	1.0	5530.12	5502	34.94	5518.18	5498.18	5510.12	5496.12	02/28/86
MW-9	5519.70	1.7	5518.00	5499	33.99	5507.71	5487.71	5503.00	5489.70	03/03/86
RW-1	5525.92	1.4	5524.52	5500	40.98	5507.12	5491.52	5506.52	5491.92	08/31/88
P-1	5524.62	0.8	5523.82	5499	42.45	5503.32	5487.32	5503.82	5487.32	08/30/88
RW-2	5523.48	0.5	5522.98	5500	38.03	5506.98	5491.28	5507.98	5490.98	08/29/88
P-2	5523.73	0.8	5522.93	5501	38.33	5506.33	5491.03	5509.93	5491.43	08/29/88
RW-3	5516.86	1.4	5515.46	5499	33.93	5504.93	5484.93	5505.46	5492.46	03/04/86
P-3	5507.20	0.8	5506.40	5499	22.80	5500.85	5490.40	5506.40	5492.40	09/01/88
MW-11	5506.83	3.6	5503.23	5497	24.73	5498.23	5488.23	5503.23	5493.23	07/31/87
MW-12	5498.36	2.5	5495.86	5489	14.22	5491.86	5481.86	5495.86	5485.85	08/01/87
MW-13	5538.42	3.3	5535.12	5501	53.00	5509.59	5493.82	5508.12	5490.12	09/03/88
RW-14	5533.97	1.9	5532.07	5502	43.00	5510.97	5492.97	5508.07	5493.57	08/06/90
RW-15	5533.32	1.7	5531.62	5501	43.40	5509.92	5491.92	5512.62	5496.62	08/07/90
RW-16	5531.99	1.8	5530.19	5500	43.10	5508.99	5490.89	5511.19	5492.69	08/07/90
RW-17	5530.43	1.6	5528.83	5501	41.55	5508.88	5490.88	5503.83	5493.53	08/07/90
RW-18	5527.05	3.6	5523.45	5500	40.95	5506.10	5488.10	5504.45	5494.45	08/08/90
RW-19	5527.08	1.5	5525.58	5500	36.70	5510.38	5492.38	5505.58	5492.58	08/09/90
MW-20	5516.44	1.8	5514.64	5499	27.18	5506.25	5491.25	5504.14	5490.64	09/13/91
MW-21	5518.64	1.6	5517.04	5500	30.93	5504.71	5489.71	5505.04	5492.54	09/16/91

CALCULATION SHEET

RI-14

CONSTRUCTION COMMENTS: DRILLED BY CASING DRIVER, 8" BIT; 4.5" O.D. FIBERGLASS CASING SET TO DEPTH INSIDE DRIVEN CASING. ANNULAR SPACE FILLED WITH 10/20 SAND AS DRIVEN CASING REMOVED, 50 LBS. OF BENTONITE DRILLING MUD & 100 LBS. OF CONCRETE PLACED ON TOP OF SAND PACK; BACKFILLED WITH DIRT TO SURFACE.

LOCATION: END OF ROAD BETWEEN TANKS 19 & 29.

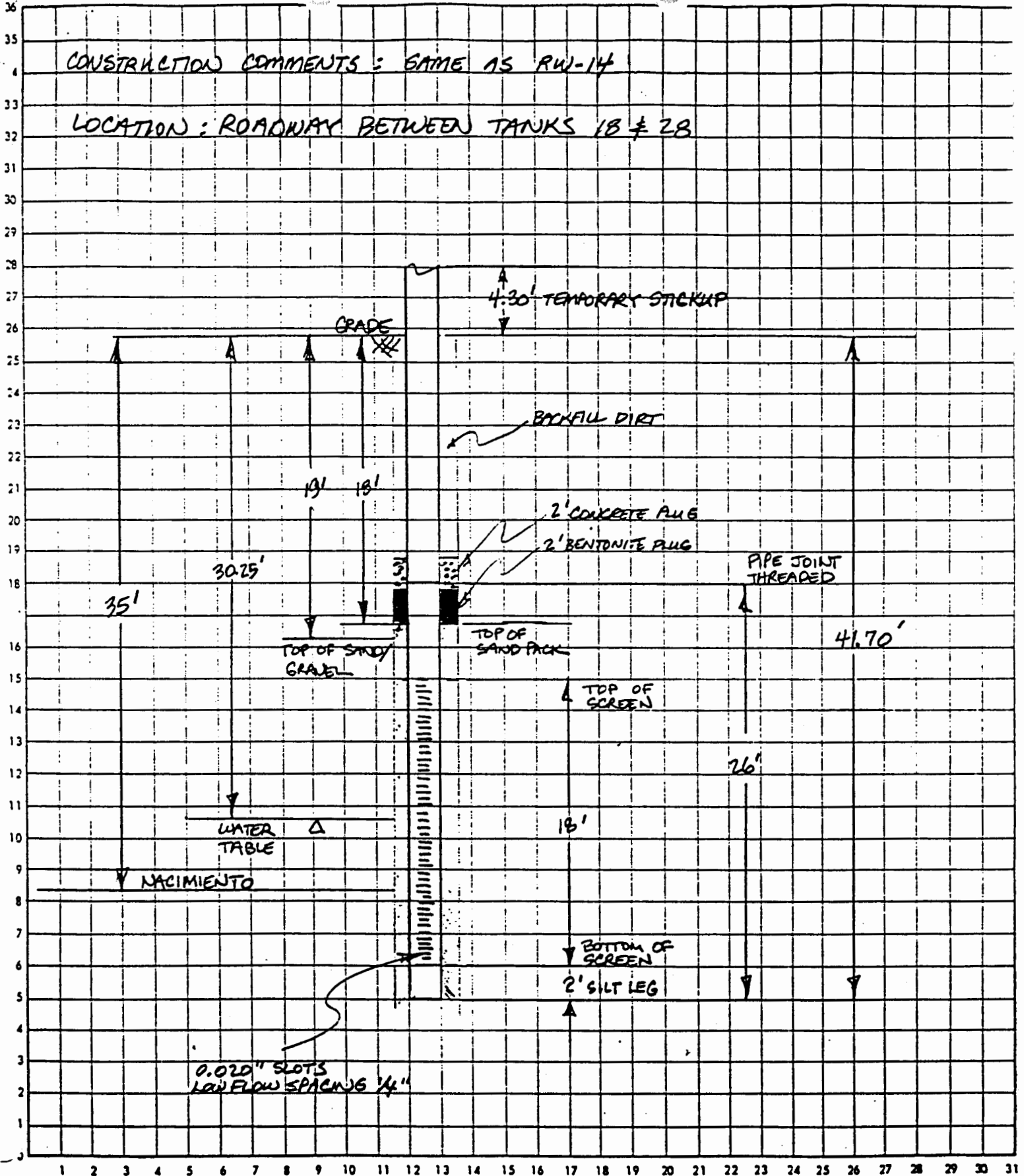


INITIALS CH PROJECT No. GROUNDWATER RECOVERY - PHASE II, AFE 9146  
 DATE 8-9-90 SUBJECT RECOVERY WELL 14  
 DATE OF INSTALLATION: 8-6-90 SHEET 1 OF 6

CALCULATION SHEET

CONSTRUCTION COMMENTS: SAME AS RW-14

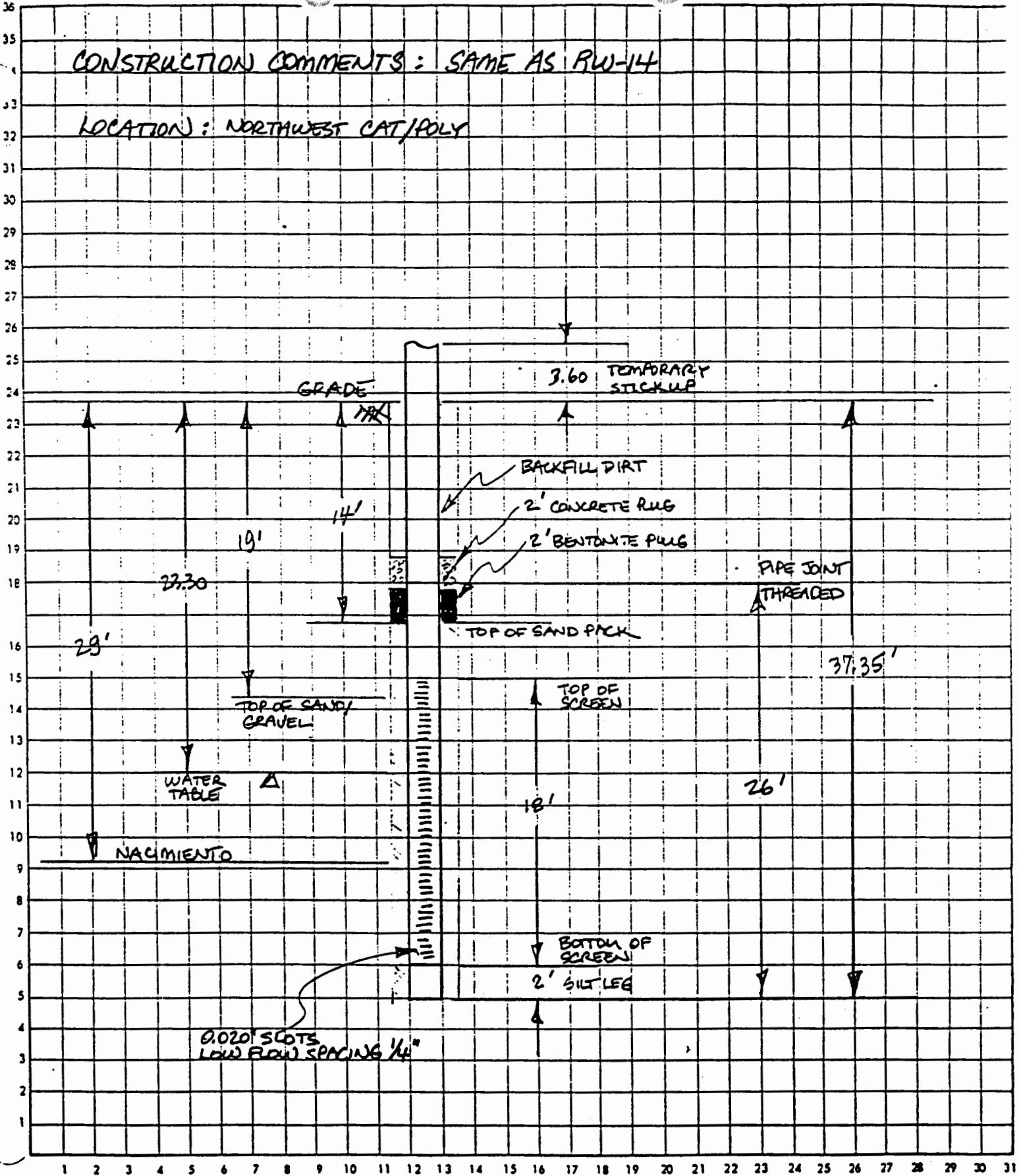
LOCATION: ROADWAY BETWEEN TANKS 18 & 28



INITIALS CH PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE 9146  
 DATE 8-9-90 SUBJECT RECOVERY WELL 15  
 DATE OF INSTALLATION: 8-7-90 SHEET 2 OF 6

CONSTRUCTION COMMENTS: SAME AS RW-14

LOCATION: NORTHWEST CAT/POLY

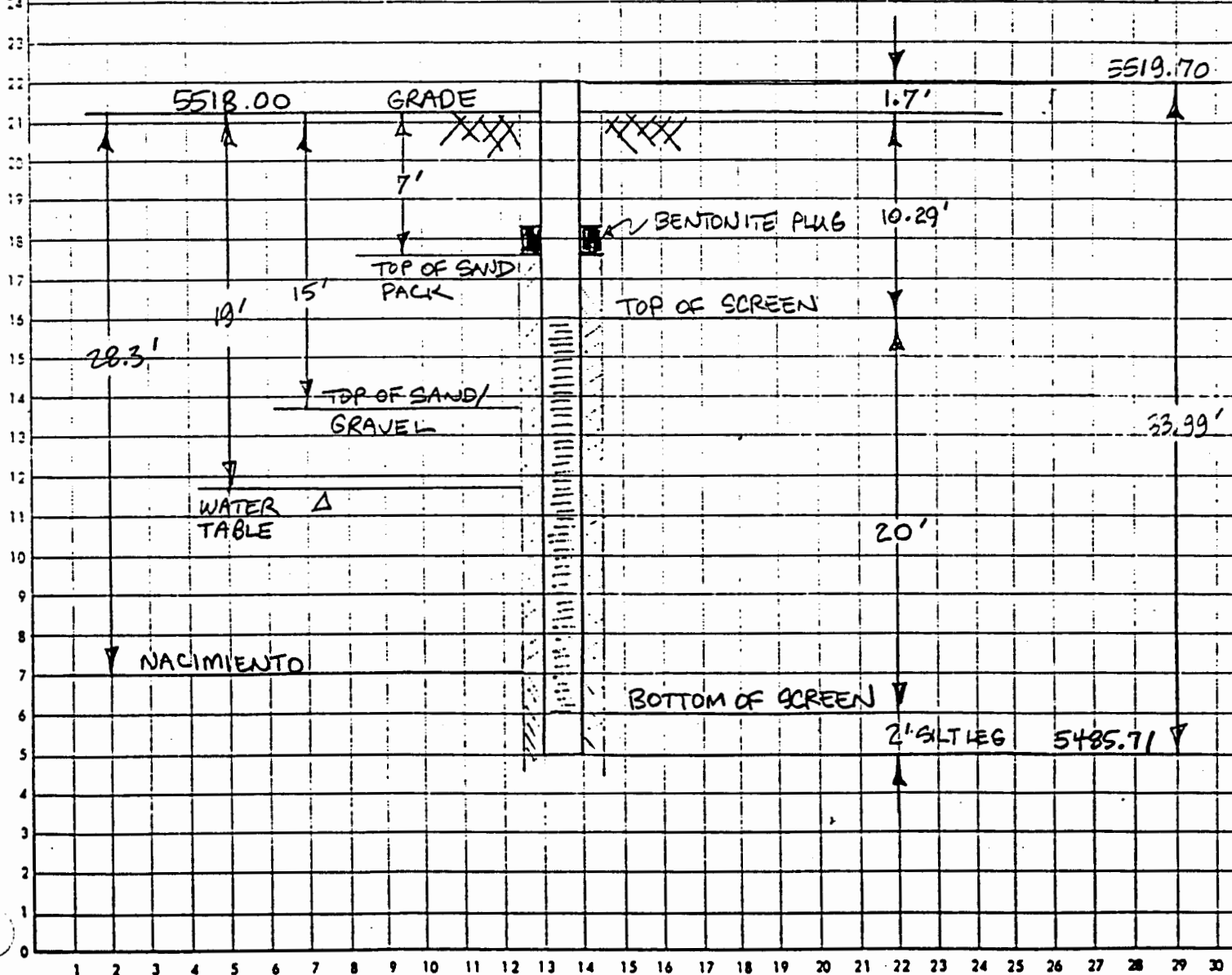


INITIALS CH PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE. 9146  
 DATE 8-9-90 SUBJECT RECOVERY WELL 18  
 DATE OF INSTALLATION: 8-8-90 SHEET 5 OF 6



CONSTRUCTION COMMENTS: DRILLED UTILIZING DRILLING MUD THEN THOROUGHLY DEVELOPED. BOTTOM OF CASING TO THE TOP OF SCREEN IS 6" I.D. STAINLESS STEEL, REST OF CASING TO SURFACE IS 6" SCH. 40 PVC. TOP OF CASING HAS CONCRETE SURFACE SEAL AND STEEL PIPE WITH LOCKING WD, CASING PROTECTOR (NOT SHOWN).

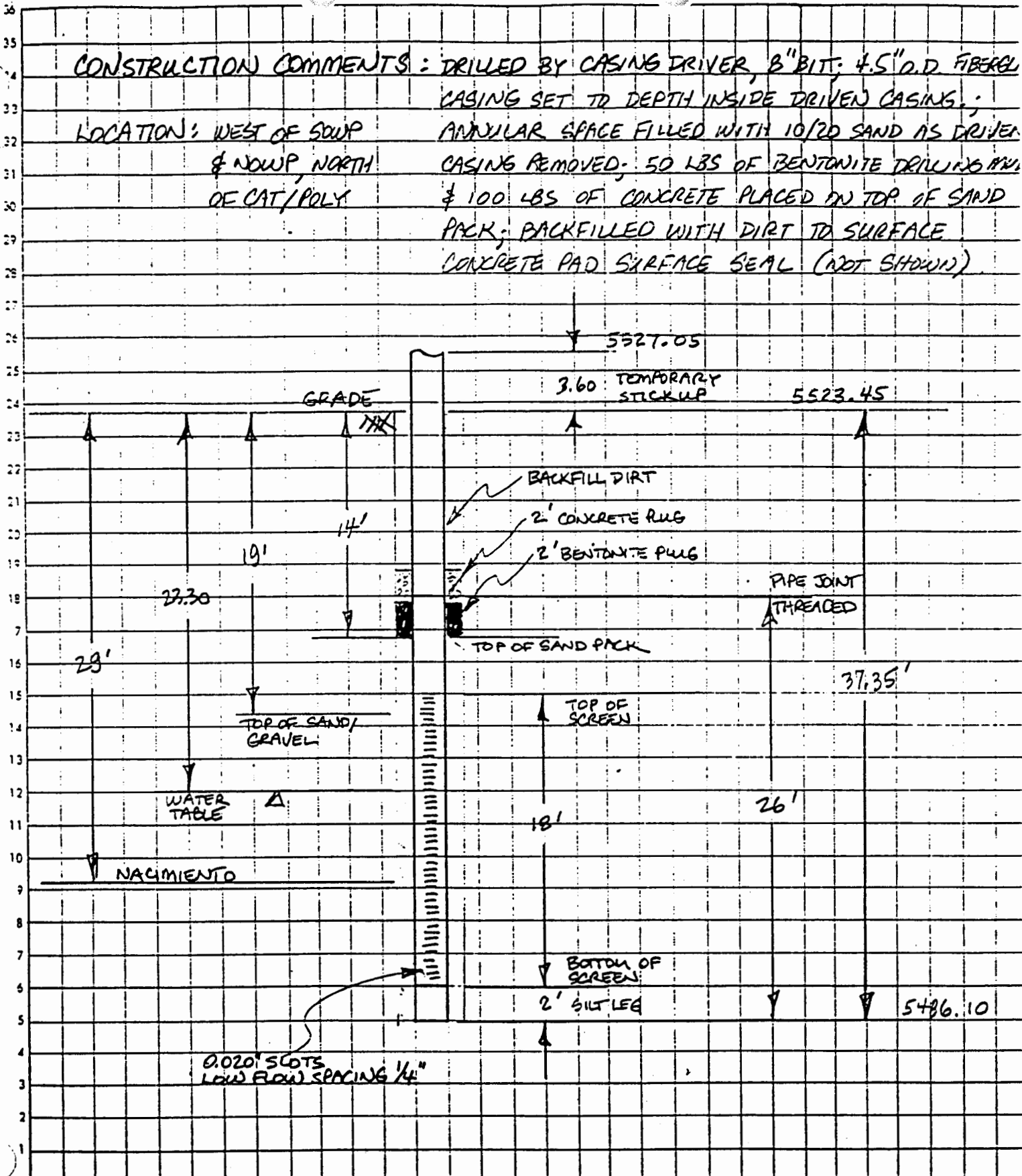
LOCATION: NEAR TANKS, NORTHWEST OF NOWP.



INITIALS MA PROJECT NO. GROUNDWATER MONITORING - SOWP & NOWP  
 DATE 9-17-91 SUBJECT MW-9  
 DATE OF INSTALLATION: 3-3-86 SHEET 1 OF 1

CONSTRUCTION COMMENTS: DRILLED BY CASING DRIVER, 8" BIT, 4.5" O.D. FIBERGLASS CASING SET TO DEPTH INSIDE DRIVEN CASING.; ANNUAL SPACE FILLED WITH 10/20 SAND AS DRIVER CASING REMOVED; 50 LBS OF BENTONITE DRILLING MUD & 100 LBS OF CONCRETE PLACED ON TOP OF SAND PACK; BACKFILLED WITH DIRT TO SURFACE CONCRETE PAD SURFACE SEAL (NOT SHOWN)

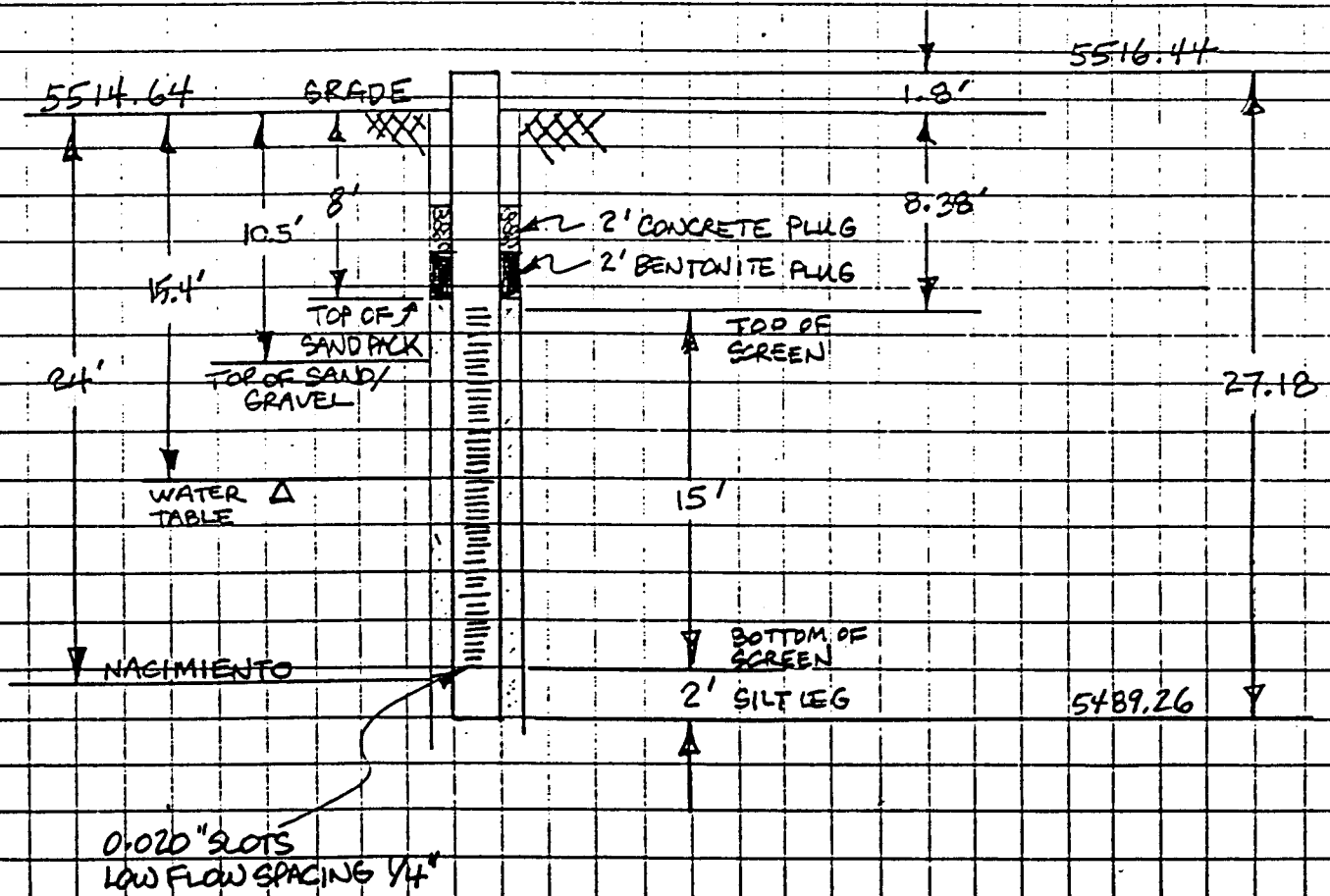
LOCATION: WEST OF SOWP & NOWP, NORTH OF CAT/POLY



INITIALS CA PROJECT NO. GROUNDWATER MONITORING - SOWP & NOWP  
 DATE 8-9-90 SUBJECT GROUNDWATER RECOVERY - OVERALL FACILITY  
 DATE OF INSTALLATION: 8-3-90 SHEET 5 OF 6

CONSTRUCTION COMMENTS: DRILLED BY CASING DRIVER 8" BIT, 4.5" O.D FIBERGLASS CASING SET TO DEPTH INSIDE DRIVER CASING; ANNULAR SPACE FILLED WITH 30/40 SAND AS DRIVER CASING REMOVED, 50 LBS OF BENTONITE DRILLING MUD & 100 LBS OF CONCRETE PLUG ON TOP OF SAND PACK; BACKFILLED WITH DIRT TO SURFACE.

CONCRETE PAD SURFACE SEAL (NOT SHOWN)

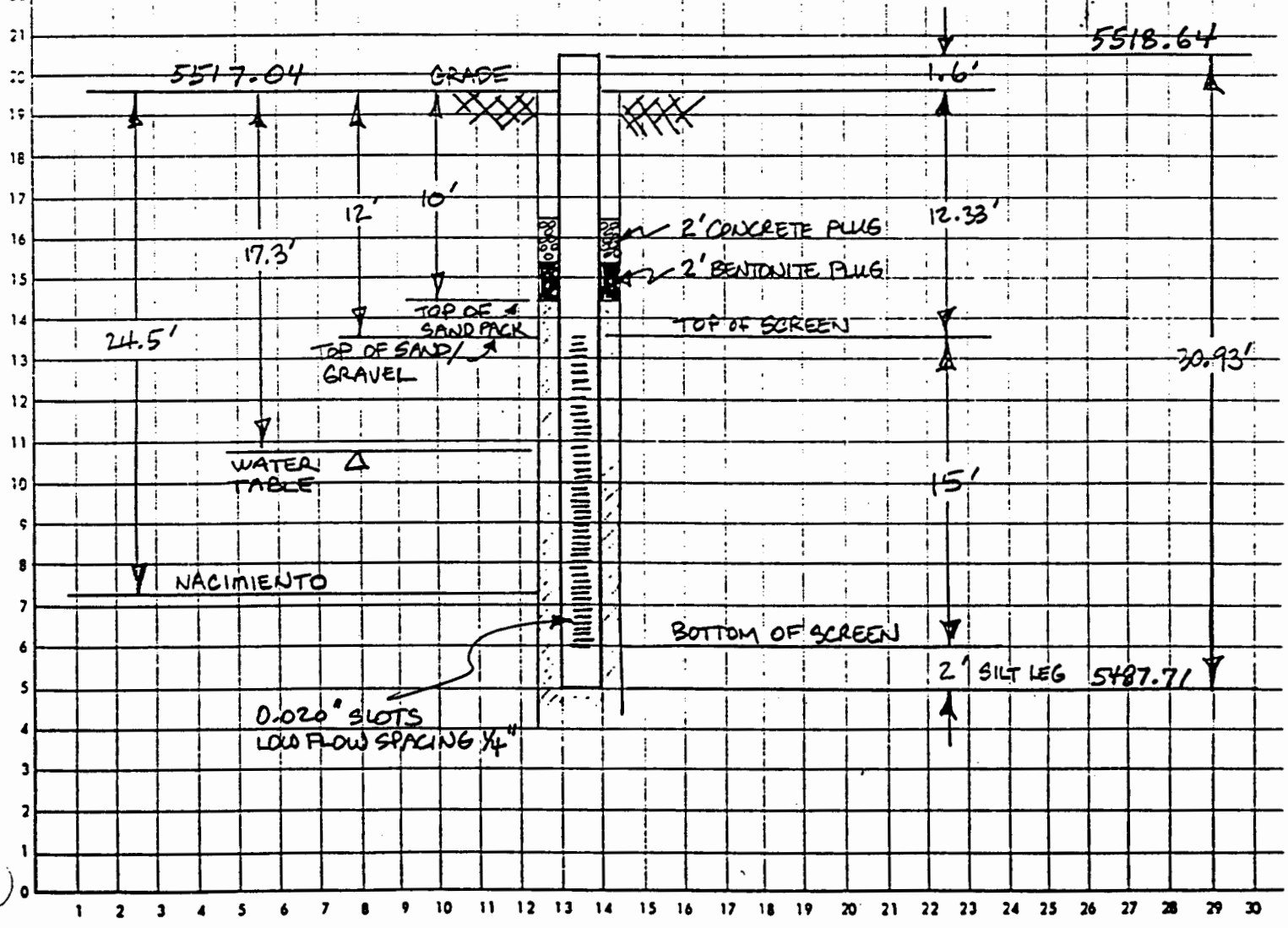


INITIALS CA PROJECT No. GROUNDWATER MONITORING - SOWP & NOWP  
 DATE 9-16-91 SUBJECT MW-20  
 DATE OF INSTALLATION: 9-13-91 SHEET 1 OF 2

CONSTRUCTION COMMENTS: DRILLED BY CASING DRIVER 3" BIT. 4.5" O.D. FIBERGLASS CASING SET TO DEPTH INSIDE DRIVEN CASING; ANNULAR SPACE FILLED WITH 30/40 SAND AS DRIVEN CASING REMOVED; 50 LBS OF BENTONITE DRILLING MUD & 100 LBS OF CONCRETE PLACED ON TOP OF SAND PACK; BACKFILLED WITH DIRT TO SURFACE.

LOCATION: ALONG PIPERACK SW FROM TR 11

CONCRETE PAD SURFACE SEAL (NOT SHOWN)



INITIALS CH PROJECT No. GROUNDWATER MONITORING - SOWP & NOWP  
 DATE 9-16-91 SUBJECT MW-21, UPGRADE FROM SOWP & NOWP  
 DATE OF INSTALLATION: 9-16-91 SHEET 2 OF 2

TABLE 3.3  
WELL LOG FOR MONITORING WELL NUMBER 9

Drilling Date: March 3, 1986

<u>Depth in Feet</u>	<u>Description</u>
0-5	Fill material, some rock
5-10	Sticky reddish brown silty clay
10-15	Lighter color silty clay, some pebbles
15-20	Lighter color silty clay, some pebbles
20-25	Cobbles, pebbles, sand
25-30	Cobbles, greenish clay, top of Nacimiento

Elevation of Top of Casing: 5519.70 feet

Total Depth of Casing: 33.99 feet

Description of Casing: Bottom of casing has a 2 foot stainless steel blank section for a silt trap followed by 20 feet of 6" I.D. stainless steel screen, followed by 6" I.D. schedule 40 PVC to the surface. The screened section of the hole was sanded to within 7 feet of the surface, a bentonite seal (1/2 bucket) was added and concrete was used for a surface seal.

ATTACHMENT 2

Sample Parameters

BLOOMFIELD REFINING COMPANY  
BASELINE GROUNDWATER DATA

	Units	MW-21 11/91	MW-20 11/91	MW-9 11/91	RW-18 11/91	RW-15 11/91
<b>HC Contm. Indicators</b>						
Benzene	mg/l	0.001	0.002	16.200	3.830	16.100
Ethyl Benzene	mg/l	0.011	0.000	0.309	0.000	1.780
Toluene	mg/l	0.000	0.000	8.700	0.000	23.700
Xylene (total)	mg/l	0.001	0.004	10.820	0.000	18.760
<b>Drinking Water Stds</b>						
Arsenic	mg/l	0.000	0.005	0.013	0.000	0.000
Barium	mg/l	0.000	0.000	1.600	1.100	0.800
Cadmium	mg/l	0.000	0.000	0.000	0.000	0.000
Chromium	mg/l	0.000	0.020	0.000	0.000	0.000
Lead	mg/l	0.000	0.000	0.000	0.000	0.000
Mercury	mg/l	0.000	0.000	0.000	0.000	0.000
Selenium	mg/l	0.000	0.000	0.000	0.000	0.000
Silver	mg/l	0.010	0.000	0.000	0.000	0.000
Nitrate (as N)	mg/l	0.000	0.000	0.000	0.000	0.000
Fluoride	mg/l	0.480	0.270	0.330	0.330	0.290
Coliform Bacteria	C/100ML	<1	<1	<1	<1	<1
Endrin	mg/l	0.000	0.000	0.000	0.000	0.000
Lindane	mg/l	0.000	0.000	0.000	0.000	0.000
Methoxychlor	mg/l	0.000	0.000	0.000	0.000	0.000
Toxaphene	mg/l	0.000	0.000	0.000	0.000	0.000
2,4-D	mg/l	0.000	0.000	0.052	0.000	0.000
2,4,5-T P (Silvex)	mg/l	0.000	0.000	0.000	0.000	0.000
Gross Alpha	pCi/l	<2	6+/-5*	<2	6+/-5*	<2
Gross Beta	pCi/l	<3	10+/-4	<3	5+/-4	<3
Radium 226	pCi/l	<0.6	<0.6	<0.6	<0.6	<0.6
Radium 228	pCi/l	<1	<1	<1	<1	<1
<b>Groundwater Quality</b>						
Iron	mg/l	0.810	0.590	5.380	0.060	2.610
Manganese	mg/l	6.230	3.860	3.220	4.690	4.590
Chloride	mg/l	481	193	123	228	730
Phenol	mg/l	0.000	0.000	0.115	0.044	0.059
Sodium	mg/l	604	398	471	492	750
Sulfate	mg/l	416	20	12	24	2

**BLOOMFIELD REFINING COMPANY  
BASELINE GROUNDWATER DATA**

	Units	MW-21 11/91	MW-20 11/91	MW-9 11/91	RW-18 11/91	RW-15 11/91
<b>Contamination</b>						
pH	s.u.	7.2	7.2	7.0	7.1	7.3
pH	s.u.	7.2	7.2	7.0	7.1	7.3
pH	s.u.	7.2	7.2	7.0	7.1	7.3
pH	s.u.	7.2	7.2	7.0	7.1	7.3
Specific Conductance		3600	2500	2300	2600	4000
Specific Conductance		3600	2500	2300	2600	4000
Specific Conductance		3600	2500	2300	2600	4000
Specific Conductance		3600	2500	2300	2600	4000
Total Organic Carbon	mg/l	12.1	19.6	58.7	50.9	27.6
Total Organic Carbon	mg/l	12.2	19.9	59.8	48.1	27.1
Total Organic Carbon	mg/l	12.3	19.6	66.6	48.4	26.9
Total Organic Carbon	mg/l	12.0	19.6	68.2	48.3	27.3
Totl Organic Halogen	mg/l	0.068	0.035	0.041	0.038	0.206
Totl Organic Halogen	mg/l	0.066	0.039	0.044	0.036	0.202
Totl Organic Halogen	mg/l	0.056	0.033	0.037	0.052	0.215
Totl Organic Halogen	mg/l	0.069	0.041	0.041	0.034	0.194

*Groundwater Elevations*