



TETRA TECH NUS, INC.

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N91192.AR.000689
NIROP FRIDLEY
5090.3a

PITT-04-4-003

April 1, 2004

Project Number 6966

Mr. Alonzo J. Fernandez
County of Anoka
Contracts Administration
1440 Bunker Lane Blvd. NW
Andover, Minnesota 55304

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order 0003

Subject: Naval Industrial Reserve Ordnance Plant Fridley
Monitoring Wells License Agreement Application

Dear Mr. Fernandez:

Thank you once again for assisting us in the installation of up to five groundwater monitoring wells in the East River Road Median. As we discussed, these study efforts are being conducted in an effort to improve the efficiency of the groundwater pumping system installed at the Naval Industrial Reserve Ordnance Plant in Fridley. The system is designed to extract approximately 800 gallons per minute of groundwater. By improving our understanding of the subsurface lithology, we are able to target our pumping capacity to specific below-ground depths, thereby intercepting the most contaminated groundwater.

During our discussion about our desire to install the additional wells, per our recent letter to Mr. Doug Fisher, I believe you requested that we provide additional information about the existing wells already installed within the highway median or Anoka County Riverfront Park. The attached material should address your questions.

Tetra Tech NUS has been a Navy contractor at this site since 1995. Therefore, prior to that time, there are some gaps in our knowledge of the site, as reflected on the attached spreadsheet. Since 1995, the Navy has also worked with additional contractors at this site including Morrison Knudsen and CH2MHill. CH2MHill in turn contracted with Parsons Engineering Science for some activities.

Since 1995, there have been three tracts of monitoring wells installed, as described on License Agreements also attached to this letter. The wells are depicted on the attached figure, with the exception of the wells identified in (3) below. All the wells installed to support (3) below are in a fairly concentrated area in the vicinity of PES-BG-1 and PES-MW-1 which are shown on the figure and which are included in (3) below.

- (1) Third calendar quarter of 1999 – Twenty-four (24) groundwater monitoring wells: Seven (7) in the shallow drift aquifer (approximately 40 feet below ground surface [bgs]), nine (9) in the intermediate drift aquifer (approximately 90 feet bgs), five (5) in the deep drift aquifer (approximately 120 feet bgs), and three (3) in the bedrock aquifer (approximately 170 feet bgs). These wells were installed per a License Agreement signed September 16, 1999 by



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Contracts Administration
April 1, 2004 - Page 2

Director of Parks and Recreation, Mr. John VonDeLinde. The copy of the Agreement I have does not have a contract number.

- (2) Third calendar quarter of 1999 – Six (6) groundwater monitoring wells in the East River Road median : Two (2) in the shallow drift aquifer, two (2) in the intermediate drift aquifer, and two (2) in the deep drift aquifer. These wells were installed per a License Agreement signed October 12, 1999 by Chairman of the County Board of Commissioners, Mr. Dan Erhart. The Agreement is number 990559.
- (3) Third calendar quarter of 2001 – Three (3) injection wells in the shallow drift aquifer, nine (9) monitoring wells in the shallow drift aquifer, and three (3) contingency monitoring wells in the shallow drift aquifer. These wells were installed per a License Agreement signed June 11, 2001 by Director of Parks and Recreation, Mr. John VonDeLinde. The Agreement is number 2001-0191.

In addition, the United States Geological Survey (USGS) has installed several wells as shown on the spreadsheet, for which I have incomplete information. Wells installed and owned by United Defense are also shown on the map because we have this information available. United Defense and the Navy are separate entities and this information is being provided for reference only.

If you need additional information, including addressing some of the gaps on the attached spreadsheet, please let me know and I will inquire if the Navy or other sources has additional information.

Also, I believe that we agreed that there would be a benefit to us being able to show the Anoka County Riverfront Park boundary on a map such as the attached figure, and that you were going to assign staff to email us material to do this (email: sladicm@ttnus.com). Once we receive the data, we will work with you to see if it is more beneficial to you for us to overlay the boundary on our drawing, or to overlay the monitoring wells locations on your drawing.

Please let me know if we can be of further assistance.

Sincerely,

Mark Sladic, P.E.
Project Manager

- c: Dan Owens, NAVFACENCOM
Venky Venkatesh, CH2MHill
Wayne Hanson, NAVSEA
D. Wroblewski, TtNUS (cover letter only)
M. Perry, TtNUS (CTO 0003 file copy)



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SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS

NIROP FRIDLEY, ANOKA PARK, and UDLP

Page 1 of 2

Well #	Coordinates		Date of Installation	Bore Hole	Well Casing		Screen			Screen	Ground Surface	Top Casing	Bottom of	Screened		Screened		Hydrogeologic Zone	Well Driller	PERMIT Signature or Contract Number
	Northing	Easting		Diameter (Inches)	Diameter (Inches)	Casing Material	Diameter (Inches)	Screen Material	Screen Slot Size (Inches)	Screen Length (feet)	Elevation (GSE) above MSL*	Elevation (TOC) above MSL*	Boring (feet BGS**)	Depth (feet BGS**)	Top	Bottom	Top			
NIROP Shallow Wells (owned by US Navy)																				
17-S	1078334.2	2810647.6	6-Feb-86	8	2	Galvanized	2	Stainless	10 slot	10	833.30	835.48	36***	26.0	36.0	807.30	797.30	shallow unconsolid.	Bergerson-Caswell	
18-S	1077681.3	2810943.8	6-Feb-86	8	2.5	Galvanized	2	Stainless	10 slot	10	831.54	833.86	37.75***	27.8	37.8	803.79	793.79	shallow unconsolid.	Bergerson-Caswell	
19-S	1076907	2811292.3	17-Jan-86	8	2	Galvanized	2	Stainless	10 slot	10	831.80	834.18	42***	32.5	42.5	799.30	789.30	shallow unconsolid.	Bergerson-Caswell	
26-S	1077373.26	2811079.94	27-Jan-92	6	2	Black Iron	2	Stainless	10 slot	10	NA	834.06	41	30.0	40.0	NA	NA	shallow unconsolid.	Renner & Son	
27-S	1077339.94	2810651.09	11-Oct-91	6	2	Black Iron	2	Stainless	10 slot	10	NA	832.74	50	40.3	50.3	NA	NA	shallow unconsolid.	Renner & Son	
MS-36S	1078064.6	2810911	19-Oct-99	9	2	Carbon Steel	2	Stainless	10 slot	10	832.10	834.8	43.0	32.0	42.0	800.10	790.10	shallow unconsolid.	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-41S	1077643.6	2811096.3	18-Oct-99	9	2	Carbon Steel	2	Stainless	10 slot	10	832.41	834.82	42.0	31.0	41.0	801.41	791.41	shallow unconsolid.	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-43S	1078030.2	2810514.6	29-Sep-99	9	2	Carbon Steel	2	Stainless	10 slot	10	832.56	834.42	38.0	27.0	37.0	805.56	795.56	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-44S	1077742.3	2810688.2	30-Sep-99	9	2	Carbon Steel	2	Stainless	10 slot	10	831.83	833.53	35.0	24.0	34.0	807.83	797.83	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-45S	1077511.3	2810902.1	1-Oct-99	9	2	Carbon Steel	2	Stainless	10 slot	10	830.23	832.13	34.0	23.0	33.0	807.23	797.23	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-46S	1077383	2810918	12-Oct-99	9	2	Carbon Steel	2	Stainless	10 slot	10	829.81	831.67	35.0	24.0	34.0	805.81	795.81	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-47S	1077155.5	2810771.7	28-Sep-99	9	2	Carbon Steel	2	Stainless	10 slot	10	832.93	834.83	39.0	28.0	38.0	804.93	794.93	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-49S	1076948	2810934.4	29-Sep-99	9	2	Carbon Steel	2	Stainless	10 slot	10	832.24	834.16	39.0	28.0	38.0	804.24	794.24	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-52S	1076638.9	2811395.4	14-Oct-99	9	2	Carbon Steel	2	Stainless	10 slot	10	831.10	833.14	39.0	28.0	38.0	803.10	793.10	shallow unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
USGS 3	1079497.8	2809979.7	?	?	2	PVC	2	PVC	10 slot	10	831.85	834.24	43.0	32.5	42.5	799.35	789.35	shallow unconsolid.	USGS	
USGS 4	1078747.5	2810095.6	?	?	2	PVC	2	PVC	10 slot	10	829.37	831.84	43.0	33.0	43.0	796.37	786.37	shallow unconsolid.	USGS	
USGS 5	1078265.2	2810259.3	?	?	2	PVC	2	PVC	10 slot	10	830.51	832.86	43.0	32.5	42.5	798.01	788.01	shallow unconsolid.	USGS	
NIROP Intermediate Wells (owned by US Navy)																				
4-IS	1077684.6	2810929	22-Dec-87	8	2?	Black Iron?	2	Stainless	10 slot	10	831.61	833.34	75.0	65.0	75.0	766.6	756.6	middle unconsolid.	?	
15-IS	1077383.6	2811074.6	27-Jan-92	6	2	Black Iron	2	Stainless	10 slot	10	830.81	833.67	76.0	65.0	75.0	765.8	755.8	middle unconsolid.	Renner & Son	
16-IS	1077348.97	2810651.51	11-Oct-92	6	2	Black Iron	2	Stainless	10 slot	10	NA	832.77	87	75.17	85.17	NA	NA	middle unconsolid.	Renner & Son	
MS-36I	1078060	2810913	10-Nov-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.08	834.7	81.0	70.5	80.5	761.58	751.58	middle unconsolid.	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-41I	1077639.8	2811098.1	3-Nov-99	6	2	Carbon Steel	2	Stainless	10 slot	15	832.30	834.82	90.0	75.0	90.0	757.30	742.30	middle unconsolid.	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-42I	1078339.4	2810639.5	1-Nov-99	6	2	Carbon Steel	2	Stainless	10 slot	10	833.47	835.33	65.0	42.5	52.5	790.97	780.97	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-43I	1078034	2810511	22-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	15	832.57	834.32	80.3	65.0	80.3	767.57	752.27	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-44I	1077746.2	2810684.9	28-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	831.78	833.62	80.0	70.0	80.0	761.78	751.78	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-45I	1077507.1	2810906.7	30-Sep-99	6	2	Carbon Steel	2	Stainless	10 slot	10	830.32	832.07	90.0	79.8	90.0	750.52	740.32	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-46I	1077387.3	2810915.7	29-Sep-99	6	2	Carbon Steel	2	Stainless	10 slot	10	829.68	831.61	85.1	74.9	85.1	754.78	744.58	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-47I	1077169.8	2810770.3	6-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.84	834.55	81.0	69.0	79.2	763.84	753.64	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-49I	1076953.4	2810930.4	3-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	15	832.17	834.02	85.0	69.7	84.9	762.47	747.27	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-51I	1076909.8	2811285.7	31-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	831.72	833.66	75.0	65.0	75.0	766.72	756.72	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
MS-52I	1076643	2811391.6	30-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	831.17	833.25	80.0	69.0	79.0	762.17	752.17	middle unconsolid.	Boart-Longyear	John VonDeLinde / 9/16/99
NIROP Deep Wells (owned by US Navy)																				
7-D	1078349	2810640.4	5-Feb-86	10	4	Galvanized	4	Stainless	10 slot	10	833.15	835.61	120***	105.0	115.0	728.15	718.15	deep unconsolidated	Bergerson Caswell	
8-D	1077697.9	2810936.2	17-Feb-86	10	4	Galvanized	4	Stainless	10 slot	10	831.43	833.92	133***	115.0	125.0	716.43	706.43	deep unconsolidated	Bergerson Caswell	
9-D	1076917.3	2811287.5	14-Jan-86	10	4	Galvanized	4	Stainless	10 slot	10	831.70	834.22	130***	111.3	121.3	720.40	710.40	deep unconsolidated	Bergerson Caswell	
15-D	1077393.54	2811070.24	27-Jan-92	6	?	Black Iron	2	Stainless	10 slot	20	NA	834.01	133.75	113.75	133.75	NA	NA	deep unconsolidated	Renner & Sons	
16-D	1077357.71	2810652.04	16-Oct-91	6	2	Black Iron	2	Stainless	10 slot	20	NA	833.08	115.0	94.0	114.0	NA	NA	deep unconsolidated	Renner & Sons	
MS-36D	1078055.1	2810915.1	9-Nov-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.13	834.79	132.0	121.5	131.5	710.63	700.63	deep unconsolidated	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-41D	1077635	2811100.5	2-Nov-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.32	834.89	135.0	122.0	132.0	710.32	700.32	deep unconsolidated	Boart-Longyear	990559 (Dan Erhart / 10/12/99)
MS-43D	1078037.7	2810507.7	15-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.73	834.27	112.5	101.2	111.4	731.53	721.33	deep unconsolidated	Boart-Longyear	John VonDeLinde / 9/16/99
MS-44D	1077750.1	2810681.6	27-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	831.71	833.58	121.5	108.0	118.0	723.71	713.71	deep unconsolidated	Boart-Longyear	John VonDeLinde / 9/16/99
MS-47D	1077184.1	2810769.5	5-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.56	834.51	133.0	120.2	130.4	712.36	702.16	deep unconsolidated	Boart-Longyear	John VonDeLinde / 9/16/99
MS-49D	1076959.1	2810926.9	3-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	10	832.08	833.87	127.5	117.2	127.4	714.88	704.68	deep unconsolidated	Boart-Longyear	John VonDeLinde / 9/16/99
MS-52D	1076647	2811387.8	29-Oct-99	6	2	Carbon Steel	2	Stainless	10 slot	15	831.24	833.27	139.0	123.0	138.0	708.24	693.24	deep unconsolidated	Boart-Longyear	John VonDeLinde / 9/16/99
NIROP Bedrock Wells (owned by US Navy)																				
MS-48PC	1077339	2810662.6	21-Oct-99	9.63	2	Carbon Steel	2	Stainless	10 slot	15	829.90	831.5	166.5	150.0	165.3	679.90	664.60	Prairie du Chein	Boart-Longyear	John VonDeLinde / 9/16/99
MS-50PC	1076735.2	2811110	16-Oct-99	9.63	2	Carbon Steel	2	Stainless	10 slot	15	831.76	833.88	171.0	155.0	170.0	676.76	661.76	Prairie du Chein	Boart-Longyear	John VonDeLinde / 9/16/99
MS-53PC	1077365	2811070.6	25-Oct-99	9.63	2	Carbon Steel	2	Stainless	10 slot	15	830.38	832.64	170.0	151.4	166.9	678.98	663.48	Prairie du Chein	Boart-Longyear	John VonDeLinde / 9/16/99

SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS
NIROP FRIDLEY, ANOKA PARK, and UDLP

Well #	Coordinates		Date of Installation	Bore Hole	Well Casing	Casing Material	Screen	Screen Material	Screen Slot Size (inches)	Screen Length (feet)	Ground Surface	Top Casing	Bottom of Boring (feet BGS**)	Screened		Screened		Hydrogeologic Zone	Well Driller	PERMIT Signature or Contract Number
	Northing	Easting		Diameter (inches)	Diameter (inches)		Elevation (GSE) above MSL*				Elevation (TOC) above MSL*	Depth (feet BGS**)		Top	Bottom	Top	Bottom			
NIROP ACP vegetable oil pilot test installation/monitoring wells (owned by US Navy)																				
PES-CW-1	1077292.34	2810688.61	2001	8	2	PVC	2	PVC	10 slot	10	829.08	832.01	40.0	30.0	40.0	799.08	789.08	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-CW-2	1077241.06	2810724.03	2001	8	2	PVC	2	PVC	10 slot	10	829.98	833.02	40.0	30.0	40.0	799.98	789.98	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-CW-3	1077201.40	2810746.93	2001	10	2	PVC	2	PVC	10 slot	10	832.61	835.47	40.0	30.0	40.0	802.61	792.61	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-1	1077362.21	2810890.30	2001	10	3	PVC	3	PVC	20 slot	10	829.70	832.49	70.0	35.0	45.0	794.70	784.70	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-2	1077352.27	2810878.68	2001	10	3	PVC	3	PVC	20 slot	10	829.73	832.41	62.0	35.0	45.0	794.73	784.73	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-3	1077339.78	2810863.09	2001	10	3	PVC	3	PVC	20 slot	10	830.06	832.80	40.0	30.0	40.0	800.06	790.06	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-4	1077322.01	2810840.52	2001	10	3	PVC	3	PVC	20 slot	10	829.85	832.57	40.0	30.0	40.0	799.85	789.85	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-5	1077284.98	2810784.14	2001	10	3	PVC	3	PVC	20 slot	10	829.71	832.60	40.0	30.0	40.0	799.71	789.71	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-6	1077372.83	2810880.57	2001	10	3	PVC	3	PVC	20 slot	10	829.70	832.41	60.0	35.0	45.0	794.70	784.70	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-7	1077350.12	2810897.94	2001	10	3	PVC	3	PVC	20 slot	10	829.80	832.58	70.0	40.0	50.0	789.80	779.80	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-8	1077358.53	2810860.67	2001	10	3	PVC	3	PVC	20 slot	10	829.84	832.64	40.0	30.0	40.0	799.84	789.84	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-MW-9	1077337.02	2810878.06	2001	10	3	PVC	3	PVC	20 slot	10	830.12	832.85	40.0	30.0	40.0	800.12	790.12	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-INJ-1	1077383.53	2810894.67	2001	10	3	PVC	3	PVC	20 slot	10	829.58	832.42	70.0	35.0	45.0	794.58	784.58	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-INJ-2	1077371.16	2810902.34	2001	10	3	PVC	3	PVC	20 slot	10	829.91	832.87	70.0	40.0	50.0	789.91	779.91	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-INJ-3	1077357.98	2810909.59	2001	10	3	PVC	3	PVC	20 slot	10	829.98	832.71	70.0	40.0	50.0	789.98	779.98	shallow unconsolid.	Bergerson-Caswell	2001-0191 VonDeLinde / 6/11/01
PES-BG-1	1077399.33	2810906.22	2001	10	3	PVC	3	PVC	20 slot	10	829.88	832.75	74.0	34.0	44.0	795.88	785.88	shallow unconsolid.	Bergerson-Caswell	
BG-2	1077370.12	2810927.87	2001	10	3	PVC	3	PVC	20 slot	10	829.70	832.73	74.0	34.0	44.0	795.70	785.70	shallow unconsolid.	Bergerson-Caswell	
BG-3	1077374.94	2810942.41	2001	10	3	PVC	3	PVC	20 slot	10	829.72	832.56	74.0	34.0	44.0	795.72	785.72	shallow unconsolid.	Bergerson-Caswell	
UNITED DEFENSE LP WELLS LOCATED IN ANOKA PARK (owned by United Defense; information provided for reference only)																				
FMC-20	1076609.6	2811238	6-Oct-81	9	4	Black Steel	4	Stainless	20 slot	5	831.30	833	38	33.0	38.0	801.0	796.0	Shallow alluvium	Stevens	
FMC-21	1076337.65	2811173.35	4-Mar-82	7	2	?	2	Stainless	10 slot	4	?	833.00	42	38.0	42.0	795.0	791.0	Shallow alluvium	Stevens	
FMC-35	1076204.24	2811631.36	29-Jan-83	7	4	Black Steel	4	Galvanized	10 slot	35	?	832.15	60	25.0	60.0	807.0	772.0	Shallow alluvium	Stodola	
FMC-37	1075738.8	2811646.92	28-Jun-83	?	4	?	4	Galvanized	10 slot	70	?	830.45	110	40.0	110.0	790.0	720.0	Deep alluvium	Stevens	
FMC-38	1075557.81	2810945.03	24-Jun-83	?	4	?	4	Galvanized	10 slot	108	?	826.81	128	20.0	128.0	807.0	699.0	Deep alluvium	Stevens	
FMC-39	1076347.35	2811174.26	27-Jun-83	?	4	?	4	Galvanized	10 slot	89	?	832.08	134	45.0	134.0	787.0	698.0	Deep alluvium	Stevens	
FMC-40	1077232.64	2811163.47	23-Jun-83	?	4	?	4	Stainless	10 slot	91	?	833.93	137	46.0	137.0	788.0	697.0	Deep alluvium	Stevens	
FMC-43	1076358.14	2811175.86	20-Jul-83	?	4	?		Open Bore Hole			?	831.897	178	158.0	178*	674.0	654.0	Bedrock	Stevens	
FMC-45	1076094.08	2811651.57	30-Apr-84	?	4	Galvanized	4	Galvanized	10 slot	60	?	830.47	110	50.0	110.0	778.0	718.0	Deep alluvium	Stevens	
FMC-53	1076300.06	2811574.14	22-Sep-87	7.875	4	Black Steel	4	Stainless	10 slot	99.5	?	831.10	135	35.5	135.0	795.5	696.0	Deep alluvium	Renner	
FMC-54	1076543.53	2811450.08	24-Sep-87	7.875	4	Black Steel	4	Stainless	10 slot	75.5	?	832.50	140	64.5	140.0	768.5	693.0	Deep alluvium	Renner	
MISCELLANEOUS USGS WELLS LOCATED IN ANOKA PARK																				
MWW3	1080870.0	2810307.9	7-Jul-87	8	?	Galvanized	1.5	Galvanized	10 slot	4	834.22	836.14	?	35.15	39.15	799.07	795.07	?	?	
MWW4	1076549.7	2811440.8	8-Jul-87	8	2.0	Galvanized	1.5	Galvanized	10 slot	4	829.21	832.01	57	51	55	778.21	774.21	?	?	
MWW5	1076550.2	2811445.1	?	?	?	?	?	?	?	3?	829.37	831.39	?	26?	29?	803.37?	800.37?	?	?	
MWW6	1076544.6	2811210.2	8-Jul-87	8	2.0	Galvanized	2.0	Stainless	10 slot	3	828.50	831.05	35	24	27	804.50	801.50	?	?	
MWW12	?	?	11-Jul-87	8	2.0	Galvanized	1.5	Galvanized	10 slot	4	830.40	833.40	60	56	60	774.40	770.40	?	?	
MWW13	1077406.5	2810854.9	11-Jul-87	8	2.0	Galvanized	2.0	Stainless	10 slot	3	830.27	833.33	30	27	30	803.27	800.27	?	?	
Notes:																				
? = information unclear or incomplete				S - shallow well boring				* = MSL, mean sea level												
NA = not available				I - Intermediate well boring				** = BGSLs, below ground surface												
MS - monitoring well				D - deep well boring				*** = calculated based upon RMT summary data sheet												
MW - monitoring well				PC - Prairie du Chien well boring																
FMC - FMC monitoring well				AT - extraction well (Navy)																
UD - United Defense LP monitoring well				RW - recovery well (UDLP)																

Anoka County Contract No. _____

LICENSE AGREEMENT

THIS LICENSE AGREEMENT is made and entered into this _____ day of _____, 1999, by and between the County of Anoka, a political subdivision of the State of Minnesota, 2100 Third Avenue, Anoka, Minnesota 55303, hereinafter referred to as the "Property Owner," and the United States of America, by and through the Department of the Navy, hereinafter referred to as the "Licensee."

In consideration of the mutual promises contained herein, the parties agree as follows:

I. GRANT OF LICENSE; DESCRIPTION OF PREMISES

Property Owner hereby grants to the Licensee a license to install twenty-seven (27) groundwater monitoring wells of the type depicted in Exhibit A hereto, which wells will be on property comprising Anoka County Riverfront Park. The wells will range in depth from approximately 20 to 150 feet below land surface and will be located in Anoka County Riverfront Park as depicted in Exhibit B hereto. The Licensee shall also be entitled to install 2-foot by 2-foot by 6-inch concrete pads around each well site and four 4-inch diameter concrete filled steel protective posts around each well site. Licensee shall have the right to periodically monitor the wells after installation to include the taking of water level readings and water samples for laboratory analysis.

II. RESPONSIBILITIES OF LICENSEE

A. Licensee shall assume all costs related to the installation, monitoring, and maintenance of the monitoring wells.

B. Licensee shall assume and pay all costs related to the abandonment of and the removal of the monitoring wells. The wells shall be abandoned in accordance with the Minnesota Department of Health guidelines.

C. Licensee shall restore the surface of the ground affected by the installation of the monitoring wells to its original or like condition after the monitoring wells are removed.

D. The results of all groundwater sampling collected from the property will be made available to the Property Owner upon request and at no cost, after appropriate laboratory analysis and validation have been completed. Additionally, upon request, and upon providing a suitable container, the Property Owner may obtain a portion ("split sample") of any groundwater sample taken for the purpose of independent laboratory analysis at Property Owner's own expense.

III. INDEMNIFICATION

The Property Owner shall not be liable to the Licensee, its agents, employees, customers, contractors, patrons, visitors, invitees, vendors or guests, or any other individual, corporation, or other type of business concern or governmental body for any claim, loss, judgments, costs, injury, death or damage as a result of the construction, operation, maintenance, or removal of the monitoring wells granted by this License Agreement. Licensee agrees to and shall indemnify, hold harmless and defend the Property Owner, its elected officials, employees, and agents against any claim, loss, judgments, costs, injury death or damages, including attorney's fees, that the Property Owner may incur as a result of or related to the placement, construction, operation, maintenance, or removal of the monitoring wells.

IV. ACCESS TO MONITORING WELLS

Property Owner grants permission to Licensee, or a representative thereof, access to the property to install, monitor, repair, remove and to and retrieve samples/readings from the monitoring wells.

IN WITNESS WHEREOF, the parties hereto have set their hands on the date so indicated.

COUNTY OF ANOKA

By: [Signature]
John VonDelinde
Director of Parks and Recreation

Dated: 9-16/99

UNITED STATES OF AMERICA,
BY AND THROUGH THE
DEPARTMENT OF THE NAVY

By: [Signature]
Patrick K. Morrow

Its: Naval Sea Sys. Command
Tech. Rep. Office

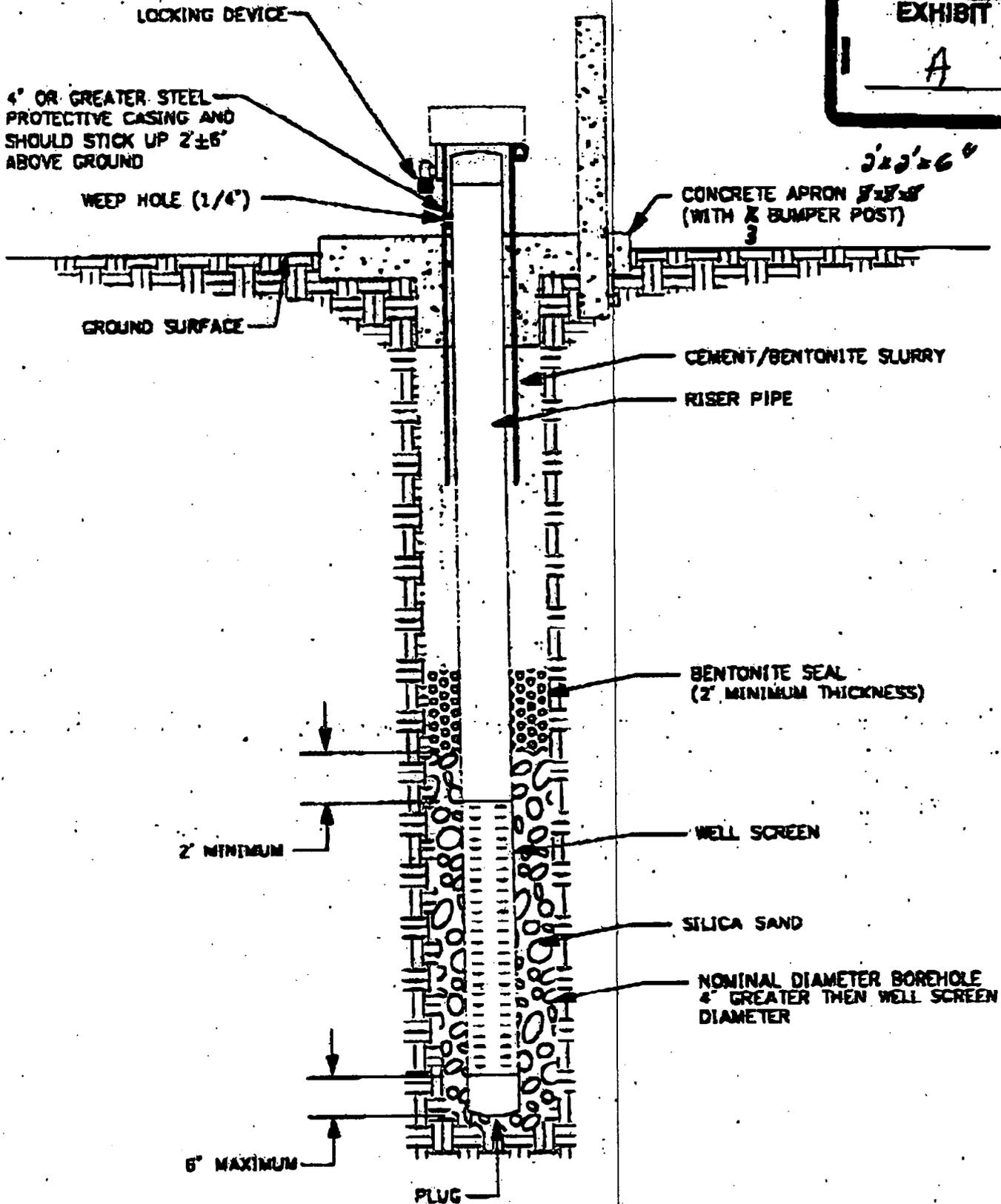
Dated: 9/16/99

APPROVED AS TO FORM

By: _____
Dan Klint
Assistant County Attorney

Dated: _____

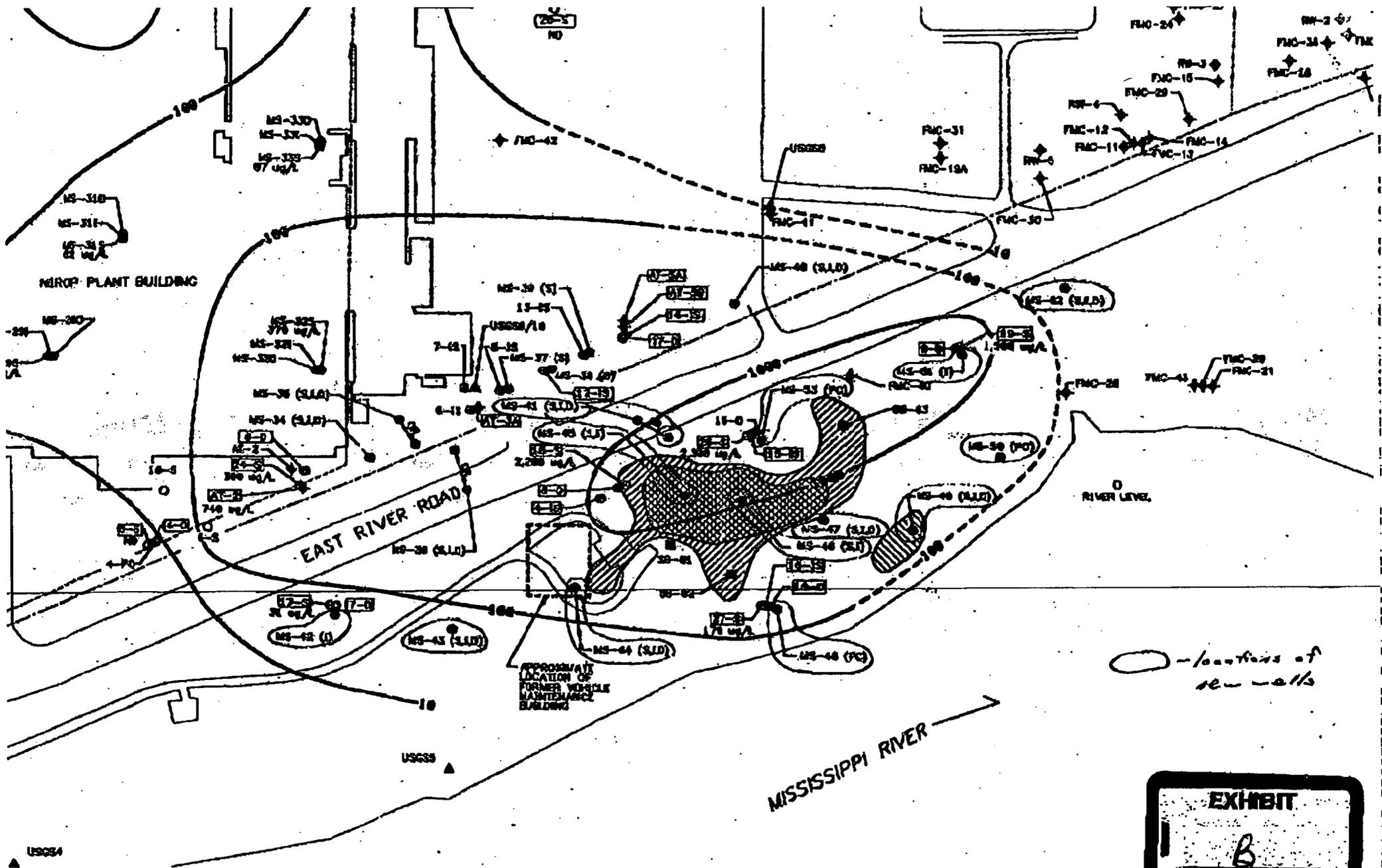
EXHIBIT
A



TYPICAL STICK-UP CONSTRUCTION
UNCONFINED AQUIFER MONITORING WELL

FIGURE 2-1

Attachment 1



○ - locations of new wells

EXHIBIT

B

LICENSE AGREEMENT

THIS LICENSE AGREEMENT is made and entered into this 14th day of September, 1999, by and between the County of Anoka, a political subdivision of the State of Minnesota, 2100 Third Avenue, Anoka, Minnesota 55303, hereinafter referred to as the "Property Owner," and the United States of America, by and through the Department of the Navy, hereinafter referred to as the "Licensee."

In consideration of the mutual promises contained herein, the parties agree as follows:

I. GRANT OF LICENSE; DESCRIPTION OF PREMISES

Property Owner hereby grants to the Licensee a license to install up to six (6) groundwater monitoring wells, in two clusters of three wells each, of the type depicted in Exhibit A hereto. These wells will range in depth from 15 to 140 feet below land surface and will be located in the grassy median between the northbound and southbound lanes of East River Road as depicted in Exhibit B hereto. The Licensee shall also have the right to install 3-foot by 9-foot by 6-inch concrete pads around each well site and nine 4-inch by 4-inch wooden protective posts cased in concrete around each monitoring well. The wells themselves shall be of a breakaway design as approved by the Minnesota Department of Health. The Licensee shall also have the right to enter the property for periodic monitoring of the wells after installation to include the taking of water level readings and water samples for laboratory analysis.

II. RESPONSIBILITIES OF LICENSEE

A. Licensee shall assume all costs related to the installation, monitoring, and maintenance of the monitoring wells.

B. Licensee shall assume and pay all costs related to the abandonment of and the removal of the monitoring wells. The wells shall be abandoned in accordance with the Minnesota Department of Health guidelines.

C. Licensee shall restore the surface of the ground affected by the installation of the monitoring wells to its original or like condition after the monitoring wells are removed.

D. The results of all groundwater sampling collected from the property will be made available to the Property Owner upon request and at no cost, after appropriate laboratory analysis and validation have been completed. Additionally, upon request, and upon providing a suitable container, the Property Owner may obtain a portion ("split sample") of any groundwater sample taken for the purpose of independent laboratory analysis at Property Owner's own expense.

III. INDEMNIFICATION

The Property Owner shall not be liable to the Licensee, its agents, employees, customers, contractors, patrons, visitors, invitees, vendors or guests, or any other individual, corporation, or other type of business concern or governmental body for any claim, loss, judgments, costs, injury, death or damage as a result of the construction, operation, maintenance, or removal of the monitoring wells granted by this License Agreement. Licensee agrees to and shall indemnify, hold harmless and defend the Property Owner, its elected officials, employees, and agents against any claim, loss, judgments, costs, injury death or damages, including attorney's fees, that the Property Owner may incur as a result of or related to the placement, construction, operation, maintenance, or removal of the monitoring wells.

IV. ACCESS TO MONITORING WELLS

Property Owner grants permission to Licensee, or a representative thereof, access to the property to install, monitor, repair, remove and to and retrieve samples/readings from the monitoring wells.

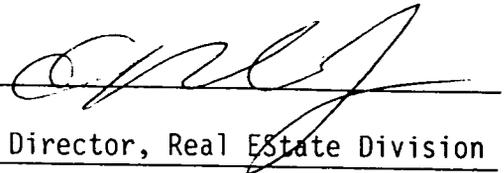
IN WITNESS WHEREOF, the parties hereto have set their hands on the date so indicated.

COUNTY OF ANOKA

By: 
Dan Erhart, Chairman
County Board of Commissioners

Dated: 10-12-99

UNITED STATES OF AMERICA,
BY AND THROUGH THE
DEPARTMENT OF THE NAVY

By: 
Its: Director, Real Estate Division

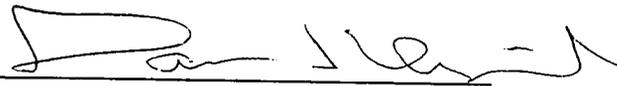
Dated: SEPTEMBER 28, 1999

ATTEST

By: 
John "Jay" McLinden
County Administrator

Dated: 10-12-99

APPROVED AS TO FORM

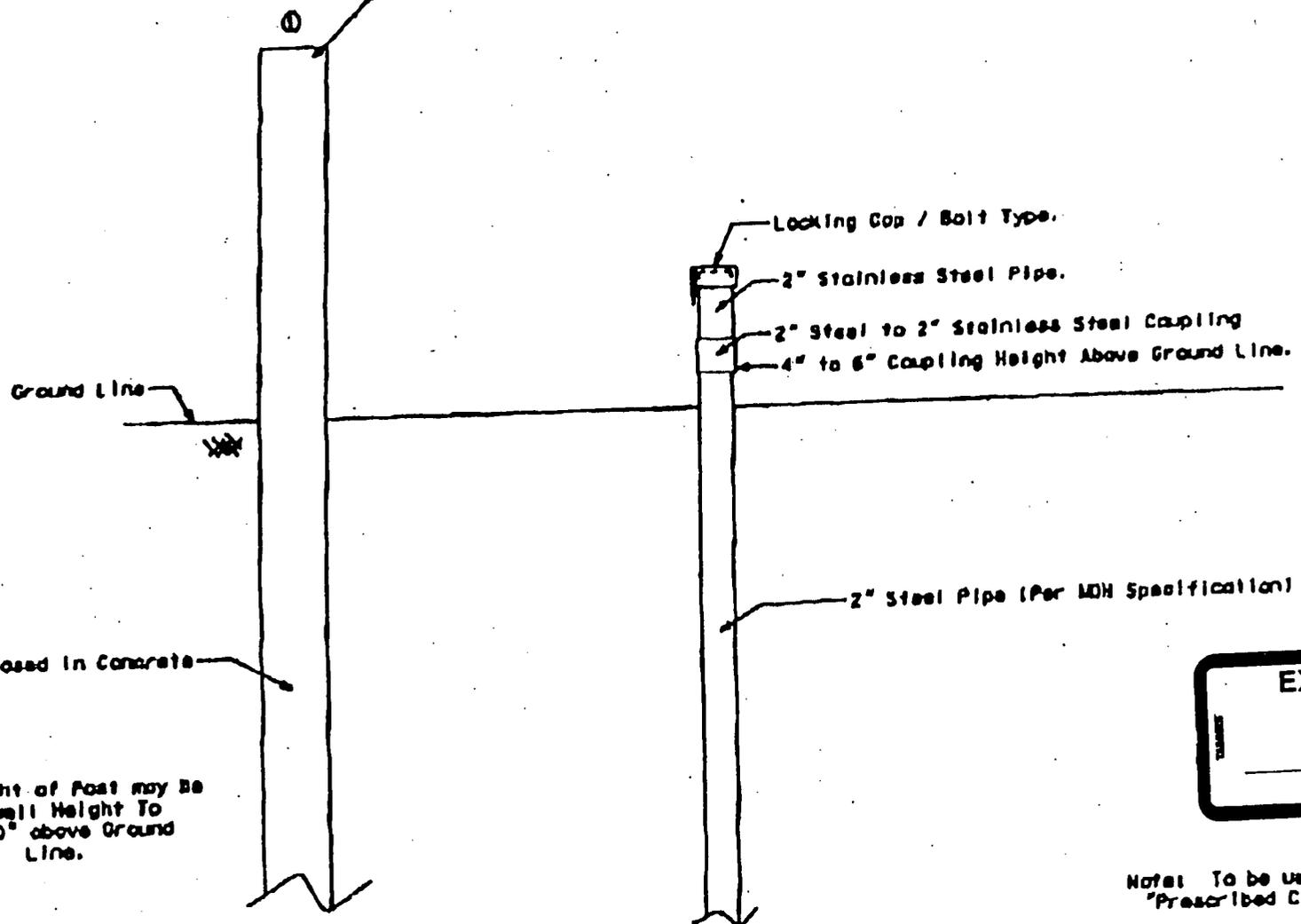
By: 
Dan Klint
Assistant County Attorney

Dated: 10-14-99



Max. 3 Post to be Used
Nominal 4" X 4" Wood Protection Post

Break - A - Way Monitoring Well Installation With 2" Steel Well Casing Pipe.



89

① Height of Post may Be
From well Height To
Max 50" above Ground
Line.

EXHIBIT
A

Note: To be used in MVDOT
"Prescribed Clear Zones"

Method approved by
Mn/Dept of Health

LICENSE AGREEMENT

THIS LICENSE AGREEMENT is made and entered into this 13 day of June, 2001, by and between the County of Anoka, a political subdivision of the State of Minnesota, 2100 Third Avenue, Anoka, Minnesota 55303, hereinafter referred to as the "Property Owner," and the United States of America, by and through the Department of the Navy, hereinafter referred to as the "Licensee."

In consideration of the mutual promises contained herein, the parties agree as follows:

I. GRANT OF LICENSE; DESCRIPTION OF PREMISES

Property Owner hereby grants to the Licensee a license to install certain injection, groundwater monitoring and contingency monitoring wells of the nature and type described hereinafter on property comprising a portion of the Anoka County Riverfront Park located in the City of Fridley, County of Anoka, State of Minnesota. The area in which the wells shall be installed is depicted in Exhibit A, which is attached hereto and incorporated herein.

II. DESCRIPTION OF WELLS

Pursuant to the terms of this License, the Licensee may install up to three injection wells, nine groundwater monitoring wells and three contingency monitoring wells at the locations identified in Exhibit A. The wells shall be designed and constructed in accordance with the specifications described in Exhibit B, which is attached hereto and incorporated herein.

III. LIMITED PURPOSE/USE OF WELLS

Licensee shall use the wells for the sole purpose of conducting a pilot-scale test of vegetable oil injection for the in-situ bioremediation of chlorinated solvents in groundwater at the Anoka County Riverfront Park as outlined in the executive summary letter dated February 21, 2001, from Todd Wiedemeier and Mary Stauffer, of Parsons Engineering Science, Inc., to Jeff Perry, Anoka County Parks and Recreation Department, a copy of which is attached hereto and incorporated herein as Exhibit C. Furthermore, the wells shall be installed and all tests of the vegetable oil injection shall be done in accordance with the Work Plan for Field Application to Enhance In-Situ Bioremediation

of Chlorinated Solvents Via Vegetable Oil Injection at the Naval Industrial Reserve Ordinance plant in Fridley, Minnesota, prepared for the Naval Facilities Engineering Command, Southern Division, by Parsons Engineering Science, Inc., dated February 2001 (hereinafter "work plan"), a copy of which is on file and of record in the office of the Director of the Anoka County Parks and Recreation Department.

IV. PRIOR APPROVALS

Prior to constructing the wells and implementing any actions described in the work plan, the Licensee shall obtain all necessary approvals from the Minnesota Pollution Control Agency, United States Environmental Protection Agency, and/or other local authorities that may have jurisdiction over the installation and/or implementation of the activities described in the work plan.

V. RESPONSIBILITIES OF LICENSEE

A. Licensee shall assume all costs related to the installation, monitoring, and maintenance of the wells.

B. Licensee shall assume all costs related to the implementation of the activities described in the work plan.

C. Licensee shall assume and pay all costs related to the abandonment of and the removal of the wells. The wells shall be abandoned in accordance with the Minnesota Department of Health guidelines.

D. Licensee shall restore the surface of the ground affected by the installation of the wells to its original or like condition after the wells are removed.

E. The results of all groundwater sampling collected from the property will be made available to the Property Owner upon request and at no cost, after appropriate laboratory analysis and validation have been completed. Additionally, upon request, and upon providing a suitable container, the Property Owner may obtain a portion ("split sample") of any groundwater sample taken for the purpose of independent laboratory analysis at Property Owner's own expense.

VI. INDEMNIFICATION

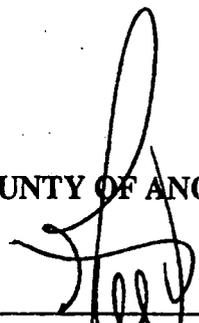
The Property Owner shall not be liable to the Licensee, its agents, employees, customers, contractors, patrons, visitors, invitees, vendors or guests, or any other individual, corporation, or other type of business concern or governmental body for any claim, loss, judgments, costs, injury, death or damage as a result of the construction, operation, maintenance, or removal of the monitoring wells granted by this License Agreement. Licensee agrees to and shall indemnify, hold harmless and defend the Property Owner, its elected officials, employees, and agents against any claim, loss, judgments, costs, injury death or damages, including attorney's fees, that the Property Owner may incur as a result of or related to the placement, construction, operation, maintenance, or removal of the monitoring wells.

VII. ACCESS TO WELLS

Property Owner grants permission to Licensee, or a representative thereof, access to the property to install, monitor, repair, remove and to retrieve samples/readings from the wells and to conduct those activities described in the work plan.

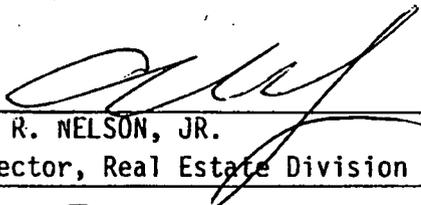
IN WITNESS WHEREOF, the parties hereto have set their hands on the date so indicated.

COUNTY OF ANOKA

By: 
John VonDelande
Director of Parks and Recreation

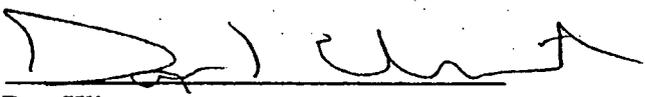
Dated: 06-11/01

UNITED STATES OF AMERICA,
BY AND THROUGH THE
DEPARTMENT OF THE NAVY

By: 
E. R. NELSON, JR.
Its: Director, Real Estate Division

Dated: June 4, 2001

APPROVED AS TO FORM

By: 
Dan Klint
Assistant County Attorney

Dated: 6-13-01

dk\contract\2001\usnavy-parks-veg-la (5/10/01)

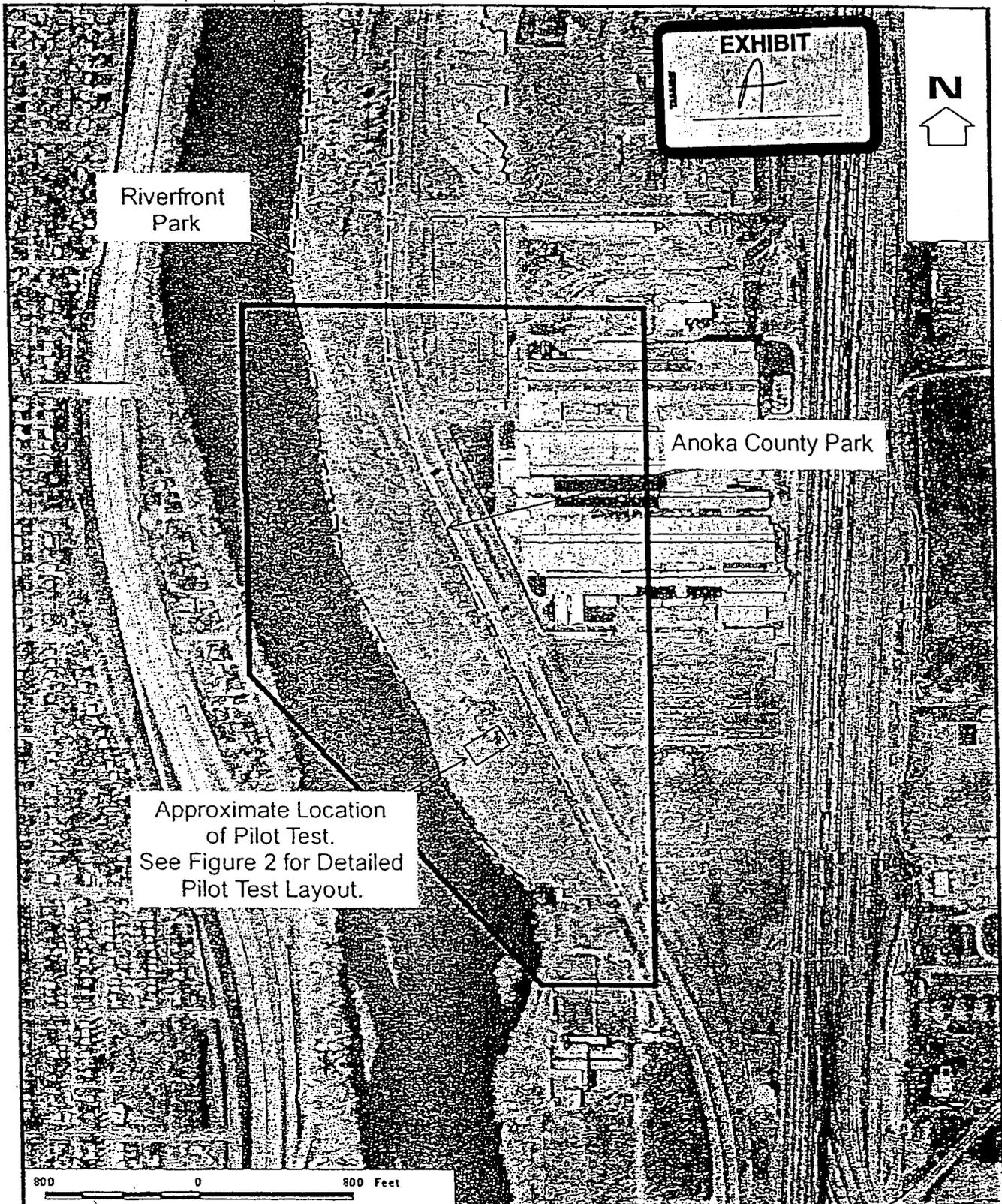


FIGURE 1
 LOCATION OF VEGETABLE OIL
 INJECTION PILOT TEST

PARSONS
 PARSONS ENGINEERING SCIENCE, INC.
 Denver, Colorado

Area Outlined on Figure 1

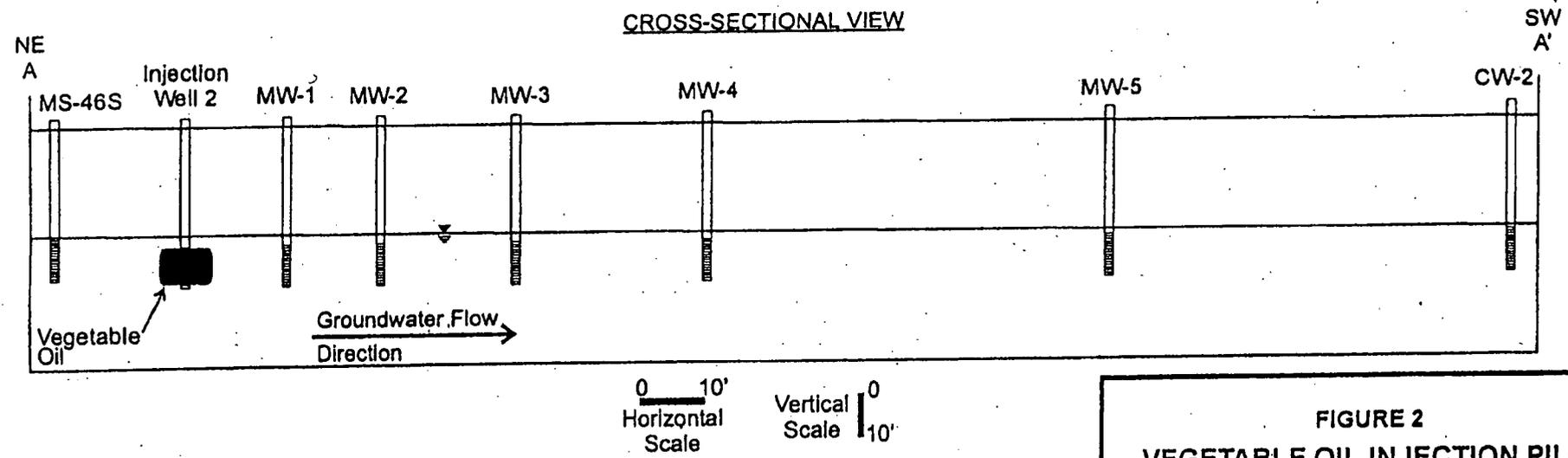
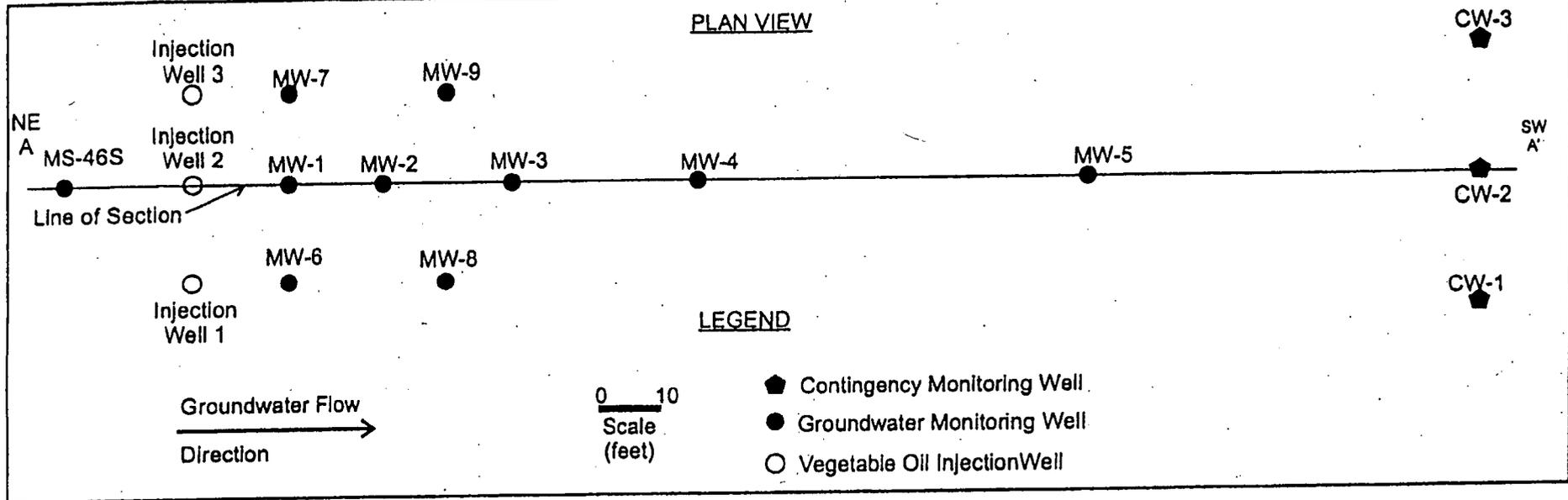


FIGURE 2
VEGETABLE OIL INJECTION PILOT TEST SYSTEM LAYOUT

PARSONS
PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

EXHIBIT
B

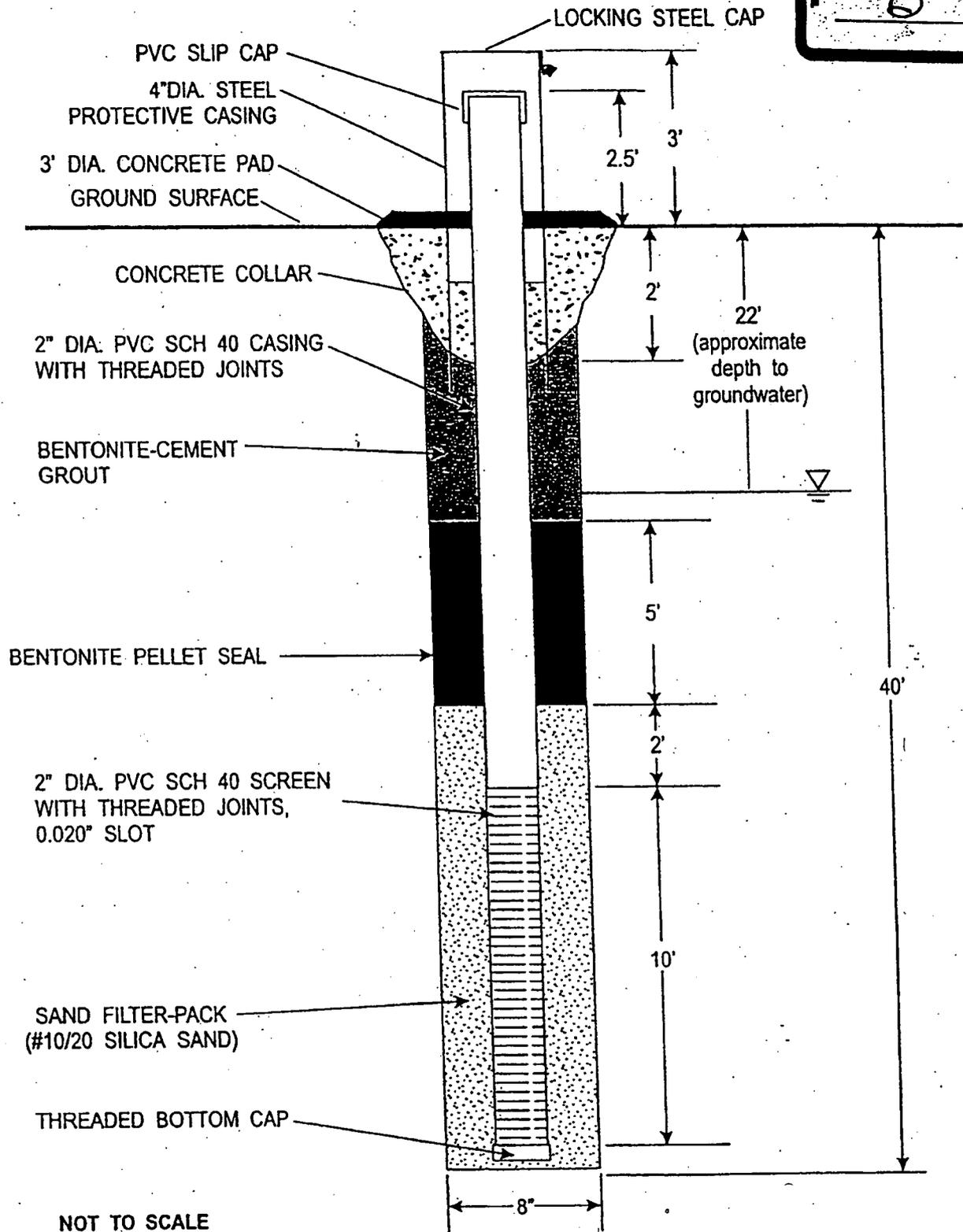
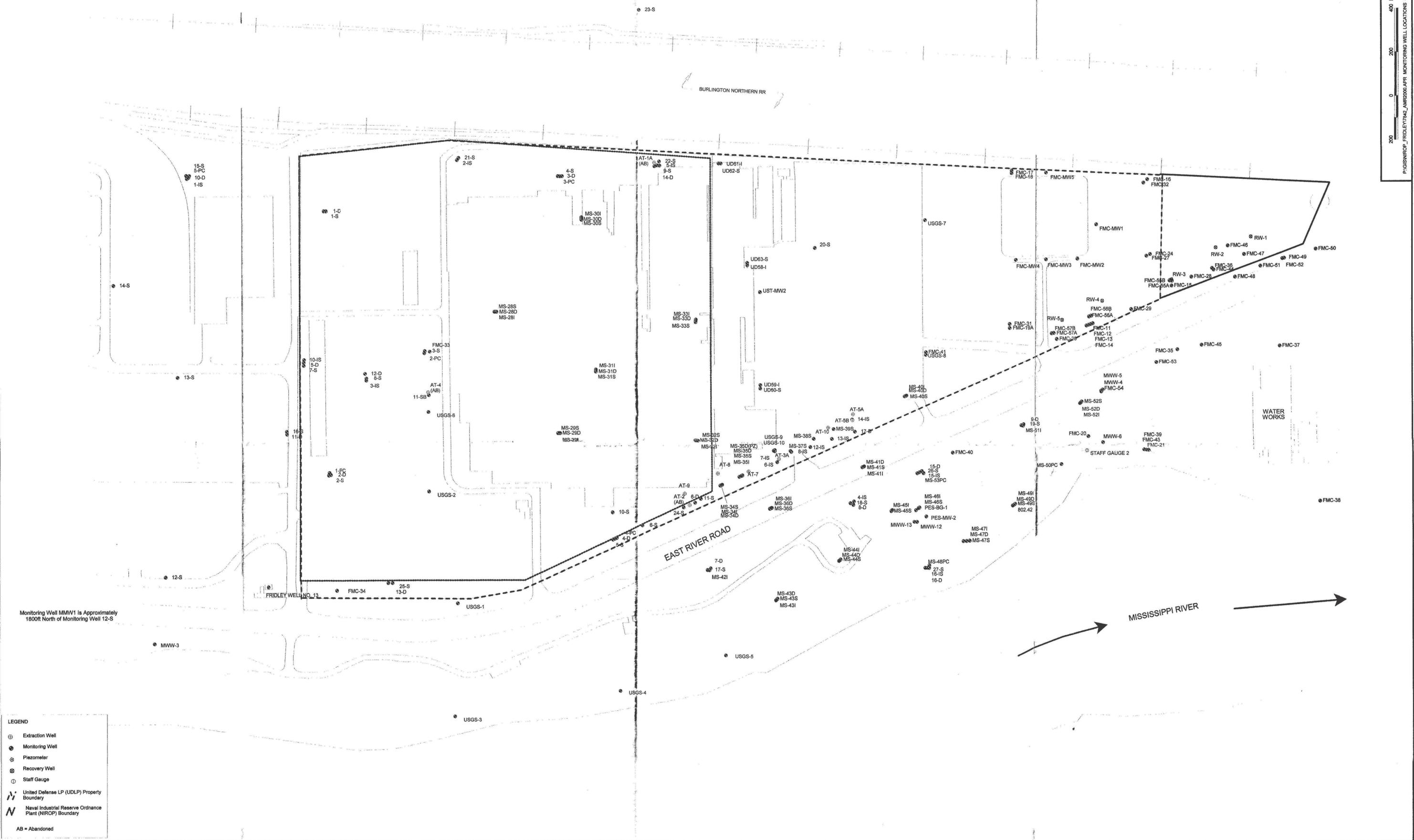


FIGURE 3
VEGETABLE OIL INJECTION AND
GROUNDWATER MONITORING WELL
CONSTRUCTION DETAIL
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado



PIGSSINROF_FRIDLEY742_AJME2000.APR MONITORING WELL LOCATIONS 80903.AJ
0 200 400 Feet



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	NO.	RELEASED FOR	BY	DATE

DRAWN BY: J. BELLONE DATE: 2/22/01
 CHECKED BY: B. BALKOVEC DATE: 7/08/03
 COST/SCHEDULE-AREA: _____
 SCALE: AS NOTED

Tetra Tech NUS, Inc.

MONITORING WELL LOCATION MAP
 NIROP FRIDLEY, MINNESOTA

CONTRACT NO. 7743	OWNER NO. 0284
APPROVED BY _____	DATE _____
APPROVED BY _____	DATE _____
DRAWING NO. FIGURE 2-1	REV. 0

000689308X