On-Site Monitoring Well Installation Summary Report

Naval Weapons Industrial Reserve Plant (NWIRP)

Bethpage, New York

Northern Division
Naval Facilities Engineering Command

Contract Number N62472-94-D-0398

Delivery Order 033B

October 2000

100019/P

ON-SITE MONITORING WELL INSTALLATION SUMMARY REPORT

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP) BETHPAGE, NEW YORK

Submitted to:
Northern Division
Environmental Branch Code 18
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090

Via:
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Langhorne, PA 19047-1829

Submitted by:
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CONTRACT NUMBER N62472-94-D-0398
DELIVERY ORDER 033B

October 2000

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1.0 INTRODUCTION

This report summarizes the installation of 12 new monitoring wells and the rehabilitation of one existing monitoring well located on the property owned by Northrop Grumman (hereinafter referred to as "on-site wells") at the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, in Bethpage, New York. The wells were installed to complete a monitoring network to satisfy requirements set forth in the Operable Unit No. 2 groundwater record of decision (ROD) for the U.S. Navy-owned NWIRP Bethpage and Northrop Grumman Corporation sites. Tetra Tech NUS, Inc., (TtNUS) performed the work under subcontract to Foster Wheeler Environmental Corporation for the U.S. Navy Northern Division (NORTHDIV) under Delivery Order (DO) 033B of Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-94-D-0398.

1.1 SCOPE OF WORK

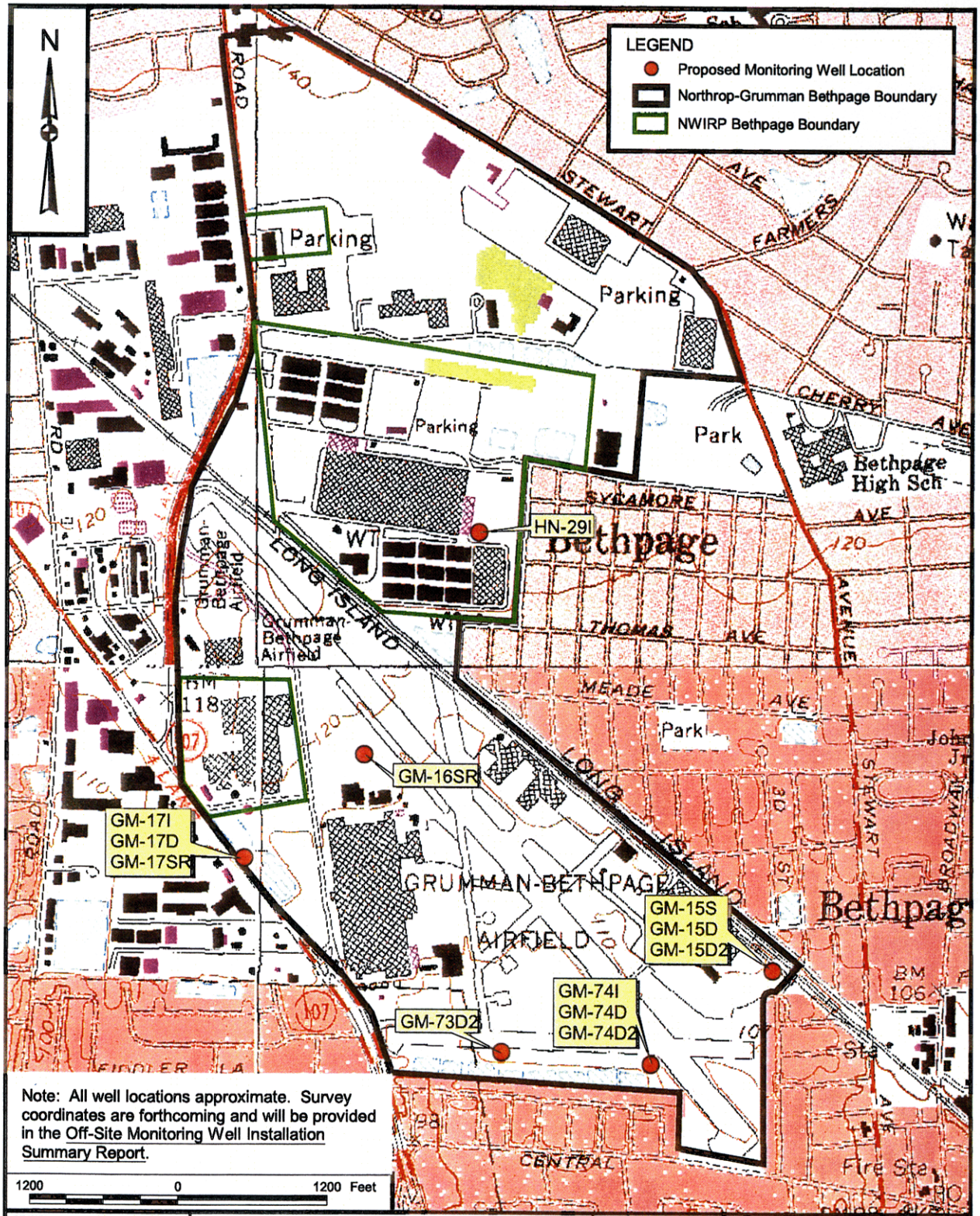
Twelve monitoring wells (GM-15S, GM-15D, GM-15D2, GM-17I, GM17D, GM-73D2, GM-74I, GM-74D, GM-74D2, GM-16SR, GM-17SR) were drilled and installed, and one existing monitoring well (HN-29I) was rehabilitated by well development. Figure 1-1 illustrates the approximate locations of these wells. Of the 12 new wells, two wells (GM-16SR and GM-17SR) replaced two existing wells (GM-16S and GM-17S, respectively) which had gone dry. A summary of well constructions for the on-site wells is provided in Table 1.

One additional on-site well (GM-18D) is proposed for installation but has not been installed yet. The property was transferred to another owner and therefore a property access assessment was required. Boring and well construction for this well will be provided in the Off-Site Well Installation Summary Report, to be prepared after completion of the off-site field work, currently in progress.

[Note: Surveying of the wells will be completed at the end of the off-site field project. Well coordinates and elevations for all on-site and off-site wells will be provided in the Off-Site Well Installation Summary Report.]

1.2 REPORT FORMAT

This report presents the methodology and field logs for the installation and rehabilitation of the on-site wells. Section 1.0 provides a brief introduction and summary of the scope of work. Field methodologies for well installation and rehabilitation are provided in Section 2.0. Monitoring well construction diagrams, boring logs, borehole geophysical logs, and well development sheets for each well are provided in Section 3.0.



Note: All well locations approximate. Survey coordinates are forthcoming and will be provided in the Off-Site Monitoring Well Installation Summary Report.

1200 0 1200 Feet

DRAWN BY: J. LAMEY — DATE: 9/12/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER: N0565	OWNER NO.: —
CHECKED BY: — — DATE: —		APPROVED BY: — — DATE: —	
COST/SCHEDULE-AREA	ON-SITE MONITORING WELL LOCATIONS NWIRP BETHPAGE, NEW YORK	APPROVED BY: — — DATE: —	
SCALE: AS NOTED		DRAWING NO.: FIGURE 1-1	REV: 0

P:\GIS\NWIRP_BETHPAGE\APR\BETHPAGE.APR ON-SITE MONITORING WELLS 9/12/00 JAL

2.0 WELL DRILLING AND INSTALLATION

This section describes the field methodologies for installation and rehabilitation of the on-site monitoring wells. The work was performed in accordance with the Work Plan for Monitoring Well Installation, Naval Weapons Industrial Reserve Plant, Bethpage, New York (TtNUS, May 2000). All work was performed from March through July 2000. Uni-Tech Drilling Company, Inc. (UTD), of Malaga, New Jersey, drilled, installed, and rehabilitated the wells under subcontract to TtNUS. Aqua Terra Geophysics, Inc., of Bellport, New York, under subcontract to UTD, performed the borehole geophysical logging.

2.1 DRILLING METHODOLOGY

The boreholes for the on-site wells were advanced using either hollow stem augering or mud rotary drilling techniques.

2.1.1 Hollow Stem Augering

Due to the sandy nature of the upper aquifer and the potential for heaving sands, well boreholes less than 150 feet deep were advanced using hollow stem augering techniques. Five wells (GM-15S, GM-17I, GM-74I, GM-16SR, and GM-17SR) were advanced using hollow stem augering techniques. The hollow stem augers had an inside diameter (ID) of 6 ¼ inches and outside diameter (OD) of 9 inches, except for the augers used for the advancement of GM-17SR which had an ID of 9 ¼ inches and an OD of 14 inches. The dimensions of the augers allowed for split-spoon sampling during borehole advancement and installation of 4-inch diameter well material through the augers.

2.1.2 Mud Rotary

Well boreholes greater than 150 feet deep were advanced using mud rotary techniques. Wells GM-15D, GM-15D2, GM-17D, GM-73D2, GM-74D, and GM-74D2 were advanced using mud rotary drilling techniques. Well boreholes were 8 inches in diameter. Boreholes for wells GM-15D2, GM-17D, GM-73D2, and GM-74D2 were reamed to 11 inches in diameter to approximately 60 to 70 feet to allow for installation of temporary, polyvinyl chloride (PVC) surface casing, due to sloughing of the upper borehole. Drilling mud consisted of potable water and polymer-free sodium bentonite. All drilling mud was contained and recirculated in a baffled, high capacity mud pan.

2.2 SOIL SAMPLING

Soil samples were collected from well borings for lithology description only. The depths and frequencies of soil sampling were as follows:

- For well GM-73D2 and the new well cluster (GM-74I, GM-74D, and GM-74D2), where no wells existed previously, the deepest wells (GM-73D2 and GM-74D2) were advanced first and sampled at 10-foot intervals from 10 feet below land surface (bls) to 10 feet above the top of the proposed screened interval. Samples were then collected at 5-foot intervals across the screened interval to the total depth of the well. The two shallower wells (GM-74I and GM-74D) were advanced following the deepest well and sampled at 2- to 5-foot intervals from 10 feet above the top of the proposed screened interval to the total depth of the well.

- For the wells in the clusters GM-15 and GM-17 where wells existed previously, the deepest wells (GM-15D2 and GM-17D) were advanced first and sampled at 10-foot intervals from the total depth of the existing well in the cluster to 10 feet above the proposed screened interval. Samples were then collected at 5-foot intervals across the screened interval to the total depth of the well. The remaining wells in the clusters (GM-15D and GM-17I) were sampled only from 10 feet above the top of the proposed screened interval to the total depth of the well.

- For the two replacement wells (GM-16SR and GM-17SR) and the shallowest well (GM-15S) from the GM-15 well cluster, soil samples were collected at 10-foot intervals from approximately 10 feet above the top of the proposed screened interval to the total depth of the well.

Soil samples were collected using 2-inch diameter split-spoon samplers according to American Standard of Test Methods (ASTM) D-1586. Depths not sampled were logged for lithology based on the drilling cuttings brought to the surface by the augers or entrained in the drilling mud. The frequency of description of the drilling cuttings was at the discretion of the field geologist.

2.3 BOREHOLE GEOPHYSICAL LOGGING

Borehole geophysical logs were recorded in the deepest wells (GM-15D2, GM-17D, GM-73D2, and GM-74D2) installed. Following advancement to the total well depth of each well boring to be logged, the drilling tools were withdrawn from the borehole. A geophysical probe was then run down the borehole and back up. The geophysical data was recorded using a Mount Sopris MGX II digital logger. The probe was multi-function and recorded a natural gamma ray log, as well as single point resistivity, and standard potential logs.

Geophysical borehole log printouts are provided for the logged wells in Section 3.0.

2.4 MONITORING WELL INSTALLATION

After advancement of the well borings to the appropriate depths, monitoring wells were installed to the depths indicated in Table 1. In borings advanced with hollow stem augers, well screens and riser pipe were lowered through the augers to the appropriate depths. Backfill material was filled in around the well screen and riser as the augers were slowly withdrawn from the borehole. In borings advanced using mud rotary techniques, the mud in the screened interval was thinned to the fullest extent possible prior to well installation. Well material was then installed in the open borehole to the appropriate depth.

Wells shallower than 150 feet were constructed of 4-inch diameter, Schedule 40, National Sanitation Foundation-approved polyvinyl chloride (PVC) well screen and riser pipe. Wells deeper than 150 feet were constructed of 4-inch diameter, Schedule 80, National Sanitation Foundation-approved polyvinyl chloride (PVC) well screen and riser pipe. All well screens had slot sizes of 0.010 inches. Threaded bottom caps were fitted to the bottom of each well. All pipe sections and bottom caps were flush-jointed and flush-threaded. In wells deeper than 200 feet, well centralizers were installed at an interval approximately 40 to 50 feet.

Primary filter packs were installed in the annuli around the well screens to the depths indicated in Table 1. The filter packs consisted of FilterPro #0 quartz sand installed using a tremie pipe. Filter packs were installed to depths as follows:

- Shallow wells: minimum of 5 feet above the top of the screen
- Intermediate wells: minimum of 5 feet above the top of the screen
- Deep wells: minimum of 10 feet above the top of the screen
- D2 wells: minimum of 20 feet above the top of the screen.

Secondary filter packs of finer sand (FilterPro #1 quartz sand) than the primary filter pack were installed in the annulus around the well riser above the primary filter pack to the depths indicated in Table 1. The secondary filter packs were installed to depths as follows:

- Shallow wells: minimum of 1 foot above the top of the primary filter pack
- Intermediate wells: minimum of 1 foot above the top of the primary filter pack
- Deep wells: minimum of 10 feet above the top of the primary filter pack
- D2 wells: minimum of 15 feet above the top of the primary filter pack.

A 2- to 4-foot thick bentonite seal was installed above the secondary filter pack. The annulus above the bentonite seal was grouted with Volclay© high-solids bentonite slurry. Both the bentonite seal and

bentonite slurry were installed using a tremie pipe. [Note: In well GM-17I, approximately 85.5 feet of augers were grouted in place from 4 to 89.5 feet after breaking during retraction from the borehole. The bottom of the augers are above the top of the bentonite seal. Encapsulation of the augers in the grout was agreed upon by TtNUS, Arcadis-Geraghty and Miller, and the New York State Department of Environmental Control (NYSDEC).]

All wells were completed at the surface with a 9-inch diameter steel curb box, set in a 2-foot by 2-foot by 0.5-foot thick concrete pad. A layer of fine sand was installed above the grout slurry and inside the curb box to allow for drainage of water from the curb box. The tops of all well risers were set approximately 8 inches below grade. Lockable gripper caps were installed on all well riser tops.

2.5 MONITORING WELL DEVELOPMENT

The monitoring wells were developed to remove drilling mud and fine formation particles from the well filter packs. Monitoring wells were developed no sooner than 24 hours after installation. Development was accomplished using two methods: airlifting, mechanical surging, and pumping with a submersible pump for deep wells, and pumping and mechanical surging with a submersible pump for shallow and intermediate depth wells.

Monitoring wells screened in deep zones (i.e., D, D2, and D3 suffixed wells) were developed using a combination of air lifting, mechanical surging, and pumping with a submersible pump. A threaded, 2-inch diameter steel eductor pipe with a dual surge block assembly (i.e., two rubber swabs set approximately 3 feet apart along a length of perforated steel pipe) was installed in the wells with the surge block set at the base of the well screen. A ¾-inch diameter polyethylene airline was inserted in the eductor pipe to a depth above the top of the well screen. The deep wells were developed at 2- to 5-foot intervals in the screened interval using a combination of mechanical surging (vertical movement of the surge block by a truck-mounted mechanical device) and air lifting. Once the screened interval was completely developed using this technique, the pipe was removed from the well and development continued using a submersible pump. The submersible pump was placed approximately 50 feet below the static water level in order to remove the stagnant water from above the well screen. When the water became clear, the inside of the well casing was rinsed with water from the pump discharge, and the pump was slowly raised through the water column (with the pump running) until it was at or near the static water level. Pumping ceased and development was complete when the water level stabilized, all traces of drilling mud were removed, and the well produced clear, sediment-free water. The well cap was cleaned and rinsed with deionized water and placed back onto the well riser.

Monitoring wells screened in the shallow and intermediate zones were developed by pumping and mechanical surging with a submersible pump. The pump was initially placed approximately five feet from

the bottom of the well in order to remove any sediment that potentially had settled on the bottom. Once the sediment was removed from the bottom of the well, the pump was lowered to the bottom of the screen. Pumping continued from the bottom and the pump was periodically raised and lowered manually along the entire length of the screen. When the screened interval was developed completely, the inside of the well casing was rinsed with water from the pump discharge. The pump was then raised slowly through the water column above the screen until it was at or near the static water level. Pumping continued at this interval to remove stagnant water from above the screen. Pumping ceased and development was complete when the water level stabilized, and the well produced clear, sediment-free water. The well cap was cleaned and rinsed with deionized water and placed back onto the well riser.

Field water quality parameters of pH, specific conductance, temperature, dissolved oxygen, and turbidity were monitored and recorded periodically throughout well development. In compliance with NYSDEC policy, all wells , except for well GM-74D2, were developed until turbidity was less than 50 nephelometric turbidity units (NTUs). Every effort was made to develop well GM-74D2 to a measured turbidity of less than 50 NTUs; however, the 50 NTU criterion was unattainable in the well due to the lithology of the formation screened (clay and clayey/silty sand). In this case, turbidity was stabilized to approximately 70 to 80 NTUs, and development was deemed complete.

All development fluids were containerized and stored at the decontamination area for proper disposal to the POTW.

3.0 WELL LOG SHEETS

This section is a compilation of the field forms associated with each well. Forms for each well (except HN-29I) include the following:

- Boring log
- Monitoring well construction diagram
- Well development sheet
- Borehole geophysical logs (wells GM-15D2, GM-17D, GM-73D2, and GM-74D2 only).

Only a well development record is provided for well HN-29I, as it was rehabilitated by well development and not replaced.

A summary of well constructions, including date of installation, drilling and development method, screened intervals, total depths, filter pack depth, borehole diameter, well diameter and material, and geophysical logging, is provided in Table 1.

TABLE 1
ON-SITE MONITORING WELL CONSTRUCTION
NWIRP, BETHPAGE, NEW YORK

Well Designation	Date Installed	Drilling Method	Development Method	Screened Interval (ft bls)	Total Well Depth (ft bls)	Top of Gravel Pack (ft bls)	Top of Fine Sand (ft bls)	Nominal Borehole Diameter (inches)	Well Diameter (inches) and Casing Material	Gamma Logged	Remarks
ON-SITE MONITORING WELLS											
GM-15S	05/16/00	HSA	Submersible Pump	70-80	80	65	64	9	4 Sch. 40 PVC	N	Clustered with existing well GM-15I
GM-15D	05/09/00	MR	Air Lift/ Submersible Pump	332-342	342	322	316	8	4 Sch. 80 PVC	N	
GM-15D2	05/05/00	MR	Air Lift/ Submersible Pump	536-556	556	516	506	11 to 60 ft bls 8 from 60 to 556 ft bls	4 Sch. 80 PVC	Y	
GM-17I	05/23/00	HSA	Submersible Pump	99.5-119.5	199.5	94	93	9	4 Sch. 40 PVC	N	Clustered with existing well GM-17S
GM-17D	04/26/00	MR	Air Lift/ Submersible Pump	278-298	298	264.5	259.5	11 to 70 ft bls 8 from 70 to 298 ft bls	4 Sch. 80 PVC	Y	
GM-73D2	03/31/00	MR	Air Lift/ Submersible Pump	532-552	552	510	498	11 to 70 ft bls 8 from 70 to 552 ft bls	4 Sch. 80 PVC	Y	
GM-74I	05/17/00	HSA	Submersible Pump	94-114	114	86	82	9	4 Sch. 40 PVC	N	
GM-74D	04/19/00	MR	Air Lift/ Submersible Pump	295-305	305	281	275	8	4 Sch. 80 PVC	N	
GM-74D2	04/12/00	MR	Air Lift/ Submersible Pump	542-562	562	521	511	11 to 70 ft bls 8 from 70 to 562 ft bls	4 Sch. 80 PVC	Y	
REPLACEMENT MONITORING WELLS											
GM-16SR	05/18/00	HSA	Submersible Pump	55-65	65	49.5	48.5	9	4 Sch. 40 PVC	N	Replacement well for GM-16S
GM-17SR	05/25/00	HSA	Submersible Pump	60-70	70	55	54	14	4 Sch. 40 PVC	N	Replacement well for GM-17S
HN-29I*	05/25/00**	HSA	Submersible Pump	120-130	130	120	119	8	4 Sch. 40 PVC	N	Existing well HN-29I

NOTE: All well screen slot sizes 0.010 inches.

* Existing well HN-29I was rehabilitated by well development only.
** Date of redevelopment.

HSA	hollow-stem auger
MR	mud rotary
ft bls	feet below land surface
ft msl	feet relative to mean sea level
NA	not applicable

Well designation suffixes correspond to the following depth zones:

S	Shallow (+50 - +40 feet mean sea (msl))
I	Intermediate (+40 - -50 feet msl)
D	Deep (-50 - -365 feet msl)
D2	Deep 2 (-365 - -530 feet msl)

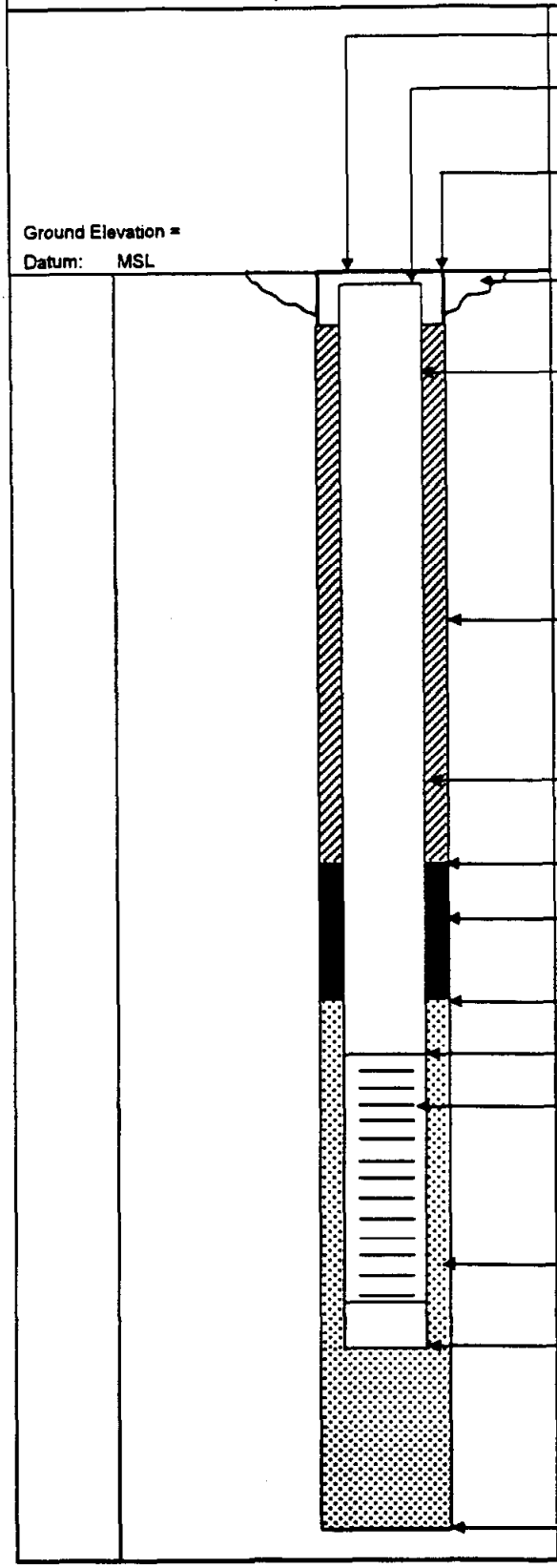
GM-15S

Tetra Tech NUS, Inc.

WELL No.: GM-15S

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-15S
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-16-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	H.S. Auger	NORTHING:	
GEOLOGIST:	S. Petrosko	DEV. METHOD:	Sub. Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 40, Flush Joint, Threaded PVC

Borehole Diameter: 9-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 61 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 64 FT

Elevation / Depth of Top of Screen: 70 FT

Type of Screen: Schedule 40 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 65FT/FilPro Quartz No. 0 Sand to 64 FT

Elevation / Depth of Bottom of Screen: 80 FT

Elevation / Depth of Bottom of Filter Pack: 80 FT

Type of Backfill Below Well: N/A

Elevation / Total Depth of Borehole: 80 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0208
DRILLING COMPANY: Uni-Tech Drilling Co. Inc
DRILLING RIG: CME-85
BORING NUMBER: GM-15S
DATE: 05-15-00
GEOLOGIST: S. Pekala
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
1351	4						asphalt pavement	hand auger first 4 FT					
1352 / 1404	5							EQA=1	—	0.0	0.0	0.0	—
1406 / 1408	9					dk.br.	m. to c. sand, sm. poorly sorted well rounded to subrounded gravel	dump EQA=2	0.0	0.0	0.0	—	P
								"chemical-like" odor noted emanating from cuttings					
1409 / 1412	14							EQA=3	—	0.0	0.0	0.0	—
1412 / 1417	19					br.	gravelly m. to c. sand	dump EQA=4	0.0	0.0	0.0	0.0	SP
1417 / 1420	24							EQA=5	—	0.0	0.0	0.0	—

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 5 FT Auger Casts, 0.5' Auger Bit, Auger Casts: 6.25" I.D., 9" O.D. Samples from 0 to 49' collected wit auger flights at ground surface. Air monitor with PE Photovac 2020 PID

Drilling Area Background (ppm): —

Converted to Well: Yes X No ____ Well I.D. #: GM-15S

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0204
PROJECT NUMBER: N0565, 0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc
DRILLING RIG: CME-85
BORING NUMBER: GM-15S
DATE: 05-15-00
GEOLOGIST: S. Pelcake
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
1420 1427	29					br.	m. to c. sand, sm. well rounded to subrounded gravel	dump EOB=6	0.0	0.0	0.0	0.0	SP
								"chemical-like" odor persists					
1428 1433	34							EOB=7	—	0.0	0.0	0.0	—
							Abundant 1g. diameter gravel noted in returns b/w 34-39' (BGS)						
1434 1437	39					dk.br.	m. to c. sand + well rounded, poorly sorted gravel → sm 2" ϕ	EOB=8	0.0	0.0	0.0	0.0	GW
	4/3						fm. color changing to dk. br.						
1438 1440	44							EOB=9	—	0.0	0.0	0.0	—
							mostly						
1442 1444	49					dk.br.	m. to c. sand, sm. fine gravels (most ⅛" - ¼" ϕ)	EOB=10	0.0	0.0	0.0	0.0	SP
							fm. color changing to br./ dk. br., coarser gravel increases b/w 49-54' (BGS)						
1446 1447	54							EOB=11	—	0.0	0.0	0.0	—

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br = brown, wh = white, gy = gray, or = orange, bk = black, rd = red, dk = dark, lt = light, var = variegated, tr = trace = 0 > 11%, sm = some = 11 - 30%, Gd, sediment (ie sands) = 31 - 50%, + / and = equal proportions, ϕ = diameter

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-15S

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: CME-55
BORING NUMBER: GM-15S
DATE: 05-15-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
1449 / 1459	59	/					fm. returns finer bkn 54-59' (B65) → less	add potable	—	0.0	0.0	0.0	—
		/					coarse gravel	water to borehole					
		/						EOA: 12					
		/											
1459 / S-1	60	12 / 23	22		V. stiff	gy.	7" silty/clayey f. sand with blk. laminae	moist/wet	0.0	0.0	0.0	0.0	ML
@ 1509	62	19 / 21	24		V stiff	dk. gy.	15" dense clay	damp					CH/OH
		/											
		/											
		/											
S-2 @	65	14 / 16	11.5		medense to stiff	dk. br-gy.	2" f. to m. sand	wet EOA: 13	0.0	0.0	0.0	0.0	
1535	67	36 / 38	24		hard to dense	var.	3.5" interbedded c. to f. c. sand / silty sand	damp/wet					SM/SP
		/					clay beds + inclusions vr. br. / brick red. / Hyg. / dk gy.						CH
		/				var.	6" m. to c. sand, silty near top to sm. fines	damp/wet					
		/					near bottom 2 H. gy clay interbeds						
		/					(~0.25") near top						
		/					vr. br. / brick red / H. br.						
S-3 @	70	100 / —	0					no recovery →	—	0.0	0.0	0.0	—
1556	72	— / —	24					drive shoe and spoon					
		/						EOA: 14					
S-4 @	72	100 / 6"/5"	5.5		V. dense	dk. br-gy.	f. to c. sand, sm. fines, tr. f. gravel	wet	0.0	0.0	0.0	0.0	SW
1604	74	— / —	24		—								
		/											
		/											
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes X No

Well I.D. #: GM-15S

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-15S
DATE: 05-15-00
GEOLOGIST: S. Perkins
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ**	USCS*
S-5 @	75	100/6in-4"	2		V. dense	brn	m. to v.c. sand + f. gravel	wet	0.0	0.0	0.0	0.0	SP
1620	77	—	24		—			EOH=15					
S-6 @	78	100/6in-4"	—		V. dense	M.br.	silty f. to m. sand, tr. f. gravel	wet/sat.	0.0	0.0	0.0	0.0	SM
1633	80	—	24		—			pass. entirely lay					
1635	80							EOH=16	—	0.0	0.0	0.0	
				TD=80 FT									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-15S

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15S
Site: NWIRP Bethpage - CTO 0200
Date Installed: 05-16-00
Date Developed: 06-01-00
Dev. Method: submersible pump
Pump Type: Myers sub. pump (4") 0.5 hp

Depth to Bottom (ft.): 80 FT (BGS)
Static Water Level Before (ft.): 47.91 FT
Static Water Level After (ft.): 48.03 FT
Screen Length (ft.): 10 FT
Specific Capacity: 1.58 (from 1509 to 1711) = 10/6.34
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekpko, B. Baer, T. Musser
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0200 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.) initial pump depth ≈ 79 FT (BGS)	Q (GPM)
1042	7.64	—	47.91	16.9	5.82	0.173	>1100	v. cloudy, brown	—
1048	—	—	—	—	—	—	—	W.L. drawdown into screen, lower Q	7.5
1052	8.50	—	51.30	16.5	5.63	0.128	>1100	v cloudy; brn-gy	—
1053	—	—	—	—	—	—	—	lower pump to bottom of well	—
1113	5.87	—	48.79	19.1	5.54	0.125	170	brn-gy tint, increase Q	10
1123	9.21	—	62.63	16.7	5.57	0.126	230	brn-gy tint	—
1126	~~8~~ SP 06-01-00	—	—	—	—	—	—	surge screen interval for 2 minutes w/ pump	—
1129	8.37	—	61.67	16.3	5.56	0.127	>1100	v. cloudy brn-gy	—
1139	11.13	—	61.60	16.8	5.47	0.127	200	brn-gy. tint	10
1149	7.45	—	61.77	16.8	5.46	0.128	36	surge 5 FT section of screen w/ pump	—
1152	6.75	—	61.85	16.3	5.48	0.125	>1100	end surge @ 1150 v. cloudy, brn-gy	—
1157	8.33	—	61.95	16.3	5.44	0.127	150	brn-gy. tint	—
1201	9.75	—	60.51	16.5	5.39	0.124	40	v lt. gy tint	—
1204	—	—	—	—	—	—	—	surge bottom 5 FT of screen w/ pump	—
1205	9.43	—	59.97	16.4	5.46	0.127	>1100	end surge v. cloudy, brn-gy	—
1209	8.32	—	60.14	16.4	5.42	0.128	190	brn-gy. tint	—
1212	8.97	—	60.19	16.3	5.45	0.129	45	v. lt. gy. tint	—
1216	9.75	—	60.21	16.4	5.4-	0.125	26	v. lt. tint	—

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 6M-15S
Site: NWIRP Bethpage - (CTO 0208)
Date Installed: 05-16-00
Date Developed: 06-01-00
Dev. Method: submersible pump
Pump Type: Mars sub. Pump (4") 0.5 hp

Depth to Bottom (ft.): 80 FT (BGS)
Static Water Level Before (ft.): 47.41 FT
Static Water Level After (ft.): 48.03 FT
Screen Length (ft.): 10 FT
Specific Capacity: 1.58 (from 1509 to 1611) = 10/6.34
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekpko, B. Baer, T. Mussop
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)	Q (GPM)
1218	—	—	—	—	—	—	—	stop development → mechanically surge well. continue development	—
1303	—	—	—	—	—	—	—		—
1305	8.11	—	64.47	17.3	5.46	0.129	310	brn-gy tint	10
1310	9.33	—	64.62	16.6	5.48	0.129	60	v. H. gy. tint	—
1312	—	—	—	—	—	—	—	surge bottom 5' of well screen w/ pump	—
1314	9.01	—	64.52	16.6	5.50	0.134	>1100	end surge v. cloudy, brn-gy	—
1319	10.10	—	64.81	16.4	5.44	0.130	120	H. brn-gy tint	—
1323	9.81	—	64.81	16.3	5.40	0.129	16	V. H. tint	—
1337	10.88	—	64.75	16.3	5.39	0.130	5.7	clear	—
1341	11.12	—	64.87	16.5	5.48	0.119	130	1340 → pull pump up to ~74 FT (BGS)	—
1345	7.47	—	64.94	16.5	5.35	0.126	37	v. H. gy. tint	—
1348	—	—	—	—	—	—	—	surge top 5' of well screen w/ pump	—
1349	—	—	—	—	—	—	—	end surge	—
1358	9.33	—	61.88	16.5	5.44	0.129	25	v. H. tint	—
1400	—	—	—	—	—	—	—	surge top 5' of well screen w/ pump	—
1402	10.14	—	61.30	16.3	5.50	0.131	750	cloudy, brn-gy	—
1405	7.91	—	61.34	16.3	5.46	0.129	45	v. H. gy. tint	—
1406	—	—	—	—	—	—	—	surge top 5' of well screen w/ pump	—

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15S
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-16-00
Date Developed: 06-01-00
Dev. Method: submersible pump
Pump Type: mar sub. pump (4") 0.5 hp

Depth to Bottom (ft.): 80 FT (BGS)
Static Water Level Before (ft.): 47.91 FT
Static Water Level After (ft.): 48.03 FT
Screen Length (ft.): 10 FT
Specific Capacity: 1.58 (from 1504 to 1811): 10/6.34
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekpko, B. Baer, T. Muzzo
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - OH Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1407	—	—	—	—	—	—	—	end surge
1408	7.07	—	—	16.3	5.47	0.133	500	cloudy, brn-gy
1411	~~9.56~~ 9.856	—	—	~~14.7~~ 16.4	5.43	0.126	40	v. lt. gy tint; surge top 5' of well screen w/ pump
1412	—	—	—	—	—	—	—	
1413	—	—	—	—	—	—	—	end surge
1414	5.44	—	—	16.2	5.41	0.128	160	brn-gy. tint
1417	6.97	—	—	16.1	5.43	0.126	27	v. lt. tint; surge top 5' of well screen w/ pump
1418	—	—	—	—	—	—	—	
1419	—	—	—	—	—	—	—	end surge
1420	5.19	—	—	16.3	5.49	0.132	230	brn-gy tint
1421	—	1200	—	—	—	—	—	hydraulically surge well - stop pump
1509	8.53	~~48.04~~ SL 06-01-00	48.09	17.6	5.39	0.128	55	v. lt. gy. tint
1512	11.10	Q̄ = 5.7 gpm	56.20	16.7	5.37	0.127	45	as above; surge top 5' of well screen w/ pump
1514	—	↓	—	—	—	—	—	
1515	—	↓	—	—	—	—	—	end surge
1516	7.34	↓	—	17.1	5.50	0.134	190	brn-gy tint
1519	7.58	↓	54.37	16.7	5.43	0.128	260	as above
1521	7.59	↓	—	16.5	5.41	0.129	75	v. lt. gy tint

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15S
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-15-00
Date Developed: 06-01-00
Dev. Method: submersible pump
Pump Type: Myers Sub. pump (4") 0.5 hp

Depth to Bottom (ft.): 80 FT
Static Water Level Before (ft.): 47.91 FT
Static Water Level After (ft.): 48.03 FT
Screen Length (ft.): 10 FT
Specific Capacity: 1.58 (from 1509 to 1811) = 10/6.34
Casing ID (in.): 4-Inch

Responsible Personnel: S. Pekpko, B. Boer, T. Moiseyo
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1524	—	Q=5.7 GPM	—	—	—	—	—	surge top 5' of well screen with pump
1525	—	↓	—	—	—	—	—	end surge
1527	9.07		—	16.7	5.44	0.131	>1100	v. cloudy, brn-gy
1532	10.08		55.10	16.9	5.45	0.130	210	brn-gy tint
1537	7.81		55.14	16.7	5.40	0.131	60	v. lt gy tint
1539	—		—	—	—	—	—	surge top 5' of well screen with pump
1540	—		—	—	—	—	—	end surge
1542	7.91		53.72	16.8	5.54	0.133	>1100	v. cloudy, brn-gy
1547	9.62		54.30	16.9	5.50	0.129	110	lt. brn-gy tint
1552	9.76		54.35	16.9	5.46	0.129	27	v. lt. tint
1555	—		—	—	—	—	—	surge top 5' of well screen with pump
1556	—		—	—	—	—	—	end surge
1557	9.82		53.24	16.8	5.58	0.140	500	cloudy, brn-gy
1602	7.95		53.27	16.8	5.45	0.130	220	brn-gy tint
1607	7.61		53.26	16.6	5.47	0.132	65	v. lt. gy. tint
1610	~~10.46~~ SP 06-01-00		—	—	—	—	—	surge top 5' of well screen w/ pump
1611	—		—	—	—	—	—	end surge
1612	10.48	↓	54.31	16.5	5.52	0.143	800	cloudy, brn-gy

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15S	Depth to Bottom (ft.): 80 FT (BGS)	Responsible Personnel: S. Pekpka, B. Baer, T. Mussop
Site: NWIRP Bethpage - CTO 0208	Static Water Level Before (ft.): 47.91 FT	Drilling Co.: Uni-Tech Drilling Co., Inc.
Date Installed: 05-16-00	Static Water Level After (ft.): 48.03 FT	Project Name: CTO 0208 - Off Site Drilling
Date Developed: 06-01-00	Screen Length (ft.): 10 FT	Project Number: N0565.0200
Dev. Method: Submersible pump	Specific Capacity: 1.58 (from 1509 to 1811) = 10/6.34	
Pump Type: Myers Submersible pump (4") 0.5 hp	Casing ID (in.): 4-Inch	

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1616	8.32	Q = 5.7 gpm	54.35	16.6	5.48	0.129	>1100	v. cloudy, brn-gy
1626	10.57	↓	54.37	16.7	5.55	0.130	~~>1100~~ 800	v. cloudy, brn-gy
1635	5.85		54.41	16.7	5.46	0.131	230	brn-gy tint
1641	6.84		54.45	16.7	5.50	0.129	75	v. lt. gy tint
1646	5.28		—	16.5	5.37	0.132	45	as above
1651	5.19		54.41	17.1	5.43	0.133	26	v. lt. tint
1656	9.17		54.42	16.5	5.45	0.130	13	clear
1701	6.90		—	16.6	5.43	0.131	7.9	clear
1706	4.83		54.43	16.5	5.41	0.132	5.9	clear
1711	6.65	↓	54.43	16.4	5.38	0.132	5.5	clear
1713	—	1900	—	—	—	—	—	Pull pump through standing water column; conclude development

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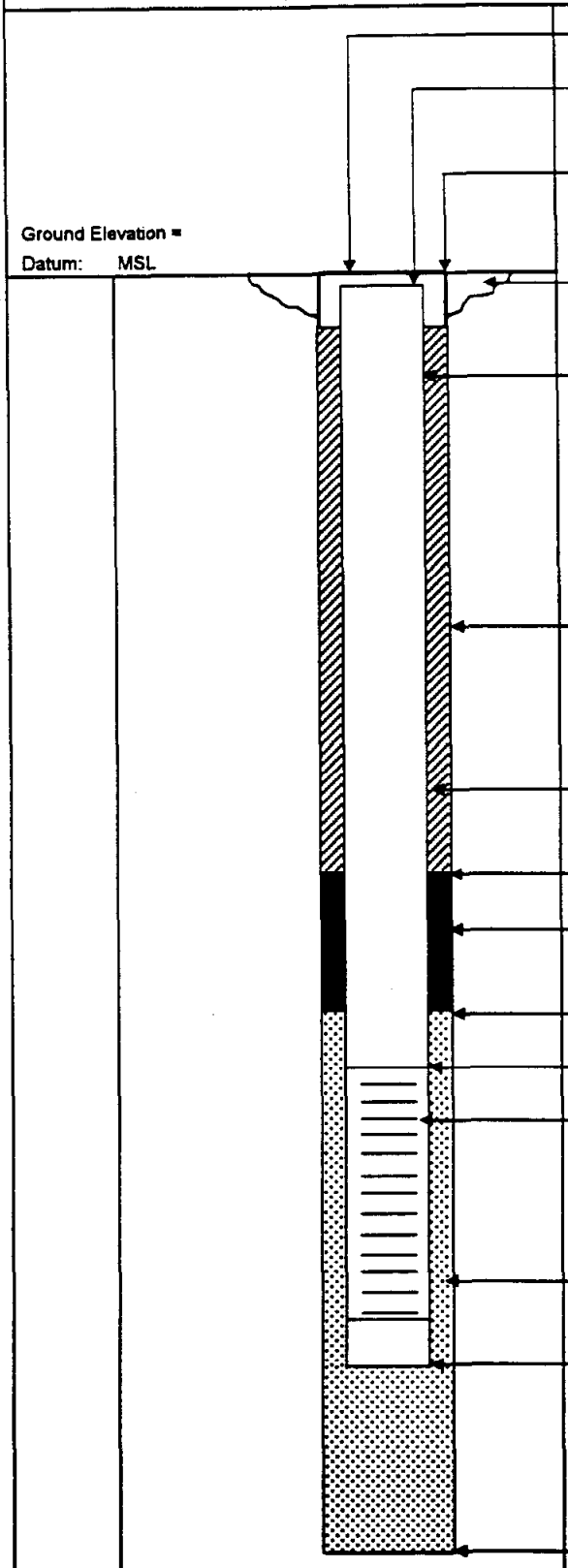
GM-15D

Tetra Tech NUS, Inc.

WELL No.: GM-15D

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-15D
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-09-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pelepko	DEV. METHOD:	Air Lift / Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80, Flush Joint, Threaded PVC

Borehole Diameter: 8-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 313.5 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 316 FT

Elevation / Depth of Top of Screen: 332 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 322 FT / FilPro Quartz No. 0 Sand to 316 FT

Elevation / Depth of Bottom of Screen: 342 FT

Elevation / Depth of Bottom of Filter Pack: 344.5 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 350 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-06-00/05-07-00/05-08-00
GEOLOGIST: S. Petrake
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	Remarks	PID Reading (ppm): Sample	PID Reading (ppm): Sampler BZ	PID Reading (ppm): Borehole	PID Reading (ppm): Drillers BZ	USCS *
05-06							asphalt pavement	hand auger first 3 FT					
05-07 0836	3												
0840	10					var.	c. to v.c. sand + well rounded to subangular gtz. +	1/8" to 1" Ø	0.0	0.0	0.0	0.0	GP
							granitic gravel						
							H. br. - br. / Hgy - gy. / blk.						
0843 0855	20					var.	c. to v.c. sand + well rounded to subrounded gtz. gravel	1/8" to 1/2" Ø	0.0	0.0	0.0	0.0	
							H. br. - br. / H. gy. / wt.	attach 8" x 10'					
0858 0902	23						thicken drilling mud	reamer					
05-07 0904 05-08 0804	30					var.	c. to v.c. sand, sm. well rounded to subangular gtz.	add potable water / thicken	0.0	0.0	0.0	0.0	SP
							gravel (1/8" to 1/4" Ø)	mix / recirculation borehole					
							H. br. / H. gy / wt.	0750 - advance					
0807	37						add potable water	tools + recond. 0755 - dc sand mud					
0806 0812	39						as above + thicken mud	0759 - thicken mud / recond.					
0814	40					var.	c. to v.c. sand + well rounded to angular gtz.	1/8" to 1/2" Ø	BG	BG	BG	BG	GP
							gravel						
0817 ?	43						H. gy. / wt. / H. br. - dk. br.	add potable water / recond.					
? 0826	47							add potable water / recond.					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

05-08 am 0.0-0.3

Drilling Area Background (ppm):

Remarks: 8" mud Rotary Drilling; 8" x 10' Reamer, 8" x 1' Drag bit Stroke = 20 FT. All samples wet / muddy from drilling mud. Air monitor with PE Photovac 2020 PID. samples from 10 FT to 280 FT collected from circulation mud using Straicore

Converted to Well: Yes X No

Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0208
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-150
DATE: 05-08-00
GEOLOGIST: S. Rekpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ*	USCS*
0829 0841	50					var.	c. to v.c. sand + well rounded to subangular gtz. gravel	0831- add potable water/rec'vd.	BG	BG	BG	BG	GP
0844	52						add Sm. potable water	EOR=1 1/8": 1/4" ø					
							H. gy/ lt. br./wt./ blk./ bk.	driller reports "clay-like"					
								drilling at ~52'					
0848	60					dk gy. bk.	clay, Sm. sand + gravel as above (var.)		0.0	0.0	0.0	0.0	CH/OH
													SP
								driller reports "mat. clay-like"					
								drilling ended at 64'					
0851 0857	70					var.	same as above, equal percentages of clay + sand + gravel + sandy clay	EOR=2	0.0	0.0	0.0	0.0	CH/OH
													CL/SP
							lt. br. / gy. / blk. / br. / wt.						
0858	77							cont. potable water					
0859	80					var.	c. to v.c. sand + well rounded to subangular gtz. gravel,	1/8" to 1/4" ø	0.0	0.0	0.0	0.0	GP
							Sm. dk. gy / blk. / H. br. clay + sandy clay						CH/OH
							H. gy. / H. br. - br. / blk. / wt.						CL
0900 0905	90					var.	same as above with less gravel (Sm.)	EOR=3	0.0	0.0	0.0	0.0	SP
													CH/OH
													CL

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, wt. = white, gy. = gray, or. = orange, blk = black, bk. = pink, rd. = red, dk. = dark, H. = light, var. = variegated, tr. = trace = 0 > 11%, Sm = 11-30%, adjective (ie sandy) = 31-50%, + / and = equal percentages, ø = diameter

Drilling Area Background (ppm): 0.0-0.3

Converted to Well: Yes X No

Well I.D. #: GM-150

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-15D
DATE: 05-08-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
0908	100					lt.br. lt.gy.	c. to v.c. sand, tr. lt.gy. clay + f. gravel	0907-desand mud: m. to	0.0	0.0	0.0	0.0	SP
						wt.		v.c. sand + gravel in					CH
								de-sander					
								driller reports a "hole" clay near [illegible]					
0910 0926	110						c. to v.c. sand, sm. var. clay/sandy clay +	EOR=4	0.0	0.0	0.0	0.0	SP
							slightly coarser gravel →	1/8" to 1/4" ⌀					OH/CH
							lt.br./lt.gy.-dk.gy./bk.	0914-thicken mud/recond.					CL
								0924-de-sand mud					
0931	120						c. to v.c. sand + var. clay/sandy clay, tr.	add sm. water	0.0	0.0	0.0	0.0	?
							subrounded to subangular qtz. gravel	1/8" to 1/4" ⌀					OH/CH
							bk./dk.gy./lt.br./or.br.						CL
0933 0940	130					lt.gy. lt.br.	same as above with slightly coarser gravel →	1/4" to 1/2" ⌀	0.0	0.0	0.0	0.0	SP
							(well rounded to subangular)	EOR=5					OH/CH
							br./dk.gy./bk.	add sm. water					CL
								0939-f. to m. sand, tr. c.					
								sand + lt. gravel in de-sander					
0941	140						c. to v.c. sand, sm. lt.gy. clay/sandy clay, tr.		0.0	0.0	0.0	0.0	SP
							well rounded to subangular qtz. gravel	1/8" to 1/4" ⌀					CH/CL

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: note: sample strainer screen mesh too wide to hold f. to m. sands (>0.5 mm).

Drilling Area Background (ppm): 0.3

Converted to Well: Yes X No ____ Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-08-00
GEOLOGIST: S. Pelkovic
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Sample	PID Sampler BZ	PID Borehole**	PID Driller BZ**	USCS *
0942 / 0947	15.0					lt.br. / br.	c. to v.c. sand, sm. to gravel + var. clay/	EOR=6	0.0	0.0	0.0	0.0	SP
						lt.gy.	sandy clay						CH/CL
							lt.br./dk.gy./br./lt.gy.						
0944	16.0						same as above with sm. lt.gy. clay/sandy clay		0.0	0.0	0.0	0.0	SP
													CH/CL
0950 / 1005	17.0					lt.gy. / lt.br.	c. to v.c. sand, tr. lt.br./lt.gy./dk.gy. clay/sandy clay	0952-thicken mud/recond.	0.0	0.0	0.0	0.0	SP
							+ f. gravel	borehole					CH/CL
								EOR=7					
1008	18.0						c. to v.c. sand, sm. br./br.-gy. clay/sandy clay,		0.0	0.0	0.0	0.0	SP
							tr. f. gravel						CH/CL
1012 / 1030	19.0					lt.br.- br.	clay + sandy clay, sm. lt.gy. c. to v.c. sand +	1015-add potable water/de-sand	0.0	0.0	0.0	0.0	CH/CL
							v.c. mica crystals	mud 1019-thicken mud/recond. borehole					SP
								EOR=8					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: ______

Drilling Area Background (ppm): 0.0-0.3

Converted to Well: Yes X No ____ Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565-0200
DRILLING COMPANY: Hi-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-08-00
GEOLOGIST: S. Akpoko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
1035	200					H.gy. H.br.	C. to U.C. sand, tr. f. gravel + H.gy./or.br. clay/sandy		0.0	0.0	0.0	0.0	SP
							clay						CH/CL
1040 1103	210					H.gy. H.br.	C. to U.C. sand + var. clay/ sandy clay, tr. f. gravel,	1045 - de-sand mud, add sm.	0.0	0.0	0.0	0.0	SP
						H.br.	Sm. U.C. mica crystals	water EOR=9					CH/CL
							Sm. or-br. ldk br. hard Fe-oxide cemented sand	1049 - well flowing at rod break → thicken mud + record. borehole					
1106	220					H.gy. H.br.	C. to U.C. sand, sm. clay + mica crystals	poor sample return	0.0	0.0	0.0	0	? CH
1110 1356	230						C. to U.C. sand + mica crystals, sm. var. clay +	thicken mud,	0.0	0.0	0.0	0.0	SP
							tr. f. gravel	record. borehole, de-sand mud					CH
							H.gy./Br.gy./or.br.	EOR=10					
1357	240						C. to U.C. sand + mica crystals tr. gravel + clay/						SP
						Dr.gy.	sandy clay						CH/CL

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 6 3

Converted to Well: Yes X No

Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Vin-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-OE-00
GEOLOGIST: J. Perkins
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ*	USCS*
1354 1407	250					var.	c. to v.c. sand + mica + f. gravel + clay/sandy clay	poor sample returns	0.0	0.0	0.0	0.0	SP
							H.gy/ H.br. / br. gy. / wt.	EOR=11					CH/CL
1408	260					var.	same as above + dk. br. Fe-oxide cemented		0.0	0.0	0.0	0.0	SP
							sand (hard)						CH/CL
1410 1414	270					var.	same as above with increased clay/sandy clay	EOR=12	0.0	0.0	0.0	0.0	SP
							+ no gravel						CH/CL
1420	280					H.br. H.gy.	clay/sandy clay + c. to v.c. sand + dk. br./dk br.		0.0	0.0	0.0	0.0	CH/CL
							Fe-oxide cemented sand (hard)						SP
1421 S-1	285	41/60	14		v. dense	var.	9" f. to med. gr. sand	reconditioning borehole/de-sand	0.0	0.0	0.0	0.0	SP
@ 1505	287	47/57	24		v dense		H.br./H.gy./br.gy./br.	add sm. water					
								1446 - thicken mud					
								5' gravel/clay/ sandy clay/ sand lay					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Drilling Area Background (ppm): 0.0-0.3

Converted to Well: Yes X No Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: NU565.0206
DRILLING COMPANY: Vail-Tech Drilling Co. Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-06-00
GEOLOGIST: S. Rekate
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
1514													
1538	290					H.gy.	C. to v.c. sand + gr. br./ br. Fe-oxide cemented	1514-record. borehole	0.0	0.0	0.0	0.0	SP
							sand (hard), sm. v.c. Mica crystals	EOR=13					
1539	300						c. to v.c. sand, blk. hygrite, gr.br./dk. brn. hard Fe-oxide	poor sample	0.0	0.0	0.0	0.0	SP
							cemented sand, mica crystals, sm. br. gy. clay	returns					CH
1541/1552	310						Same as above, clays increasing + var.		0.0	0.0	0.0	0	0
							dk. gy./br. gy./or. br.	EOR=14					CH
S-2 @	320	21/24	24		v. stiff		11" f. sandy/silty clay to clayey/silty f. sand with	2.5" muddy	0.0	0.0	0.0	0.0	CL
1606	322	29/32	24		hard to		H. br. staining + gr. mottling	clay + gravel log					ML
					v. dense	br.gy	4.5" dense clay	fm. sand					CH
						H.gy.	6" silty f. sand, hard br. Fe-oxide cemented sand	comp. in shoe					SM
							frags. 3" from bottom of sample, sm. v. br. mottling						
S-3 @	325	64/100	17.5		v. dense	br. to dk. br.	3" hard Fe-oxide cemented	11.5" log →	0.0	0.0	0.0	0.0	SP
1634	327	cur. 4" —	24		—		sand + m. sand	br.gy. m. sand to muddy					
						M. gy.	3" f. to mostly m. sand	sand + clay					
?	330							EOR=15					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Drilling Area Background (ppm): 2 3

Converted to Well: Yes X No Well I.D. #: GM-15D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - GTO 0206
PROJECT NUMBER: 00565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D
DATE: 05-08-00
GEOLOGIST: S. Pekala
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
S-4 @	332	100/-	6		v. dense to hard	br. gy.	f. to mostly m. sand with 0.5" clay / clayey interbed		0.0	0.0	0.0	0.0	SP
1711	334	-/-	24		—		approx. 1" from top of sample						CH/SC
		/					sm. dk. br. Fe-oxide cemented sand frags.						
		/											
S-5 @	336	45/100	10.5		v. dense to hard	br. gy.	mostly m. sand with 0.25" gy. clay interbed +	trm. mod.1	0.0	0.0	0.0	0.0	SP
1731	339	cuttings 5"/-	24		—		dk. br. Fe-oxide cemented sand in middle of	cemented in shoe					CH
		/					sample interval						
		/											
		/											
S-6 @	340	57/100	11		v. dense	br. gy.	5" mostly m. sand		0.0	0.0	0.0	0.0	SP
1754	342	cuttings 5"/-	24		—	lt. gy & lt. br.	6" f. to m. sand						
		/					clayey lamination + hard dk. br. Fe-oxide cemented						SC
		/					sand fragments in middle of sample interval						
		/											
1806	350	/					reconditioning borehole for	EOR=16	—	0.0	0.0	0.0	
		/		T.D.=350'			10 minutes						
		/											
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* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.003

Converted to Well: Yes X No _____ Well I.D. #: GM-15D

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage- CTO 0208
Date Installed: 05-09-00
Date Developed: 05-30-00 →
Dev. Method: Air Lift Direct; Surge; Pump
Pump Type: 3" Grundfos 1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.99 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-Inch

Responsible Personnel: S. Pekpka, B. Barr, T. Mussap
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1353	9.61	Q=17.8 GPM	34.97	16.2	6.60	0.359	>1100	v. cloudy brown PID:0.0
1403	10.07	↓	118.80	13.7	6.11	0.187	>1100	cloudy, brown, PID:0.0
1413	9.35		123.40	13.5	6.00	0.166	>1100	as above
1423	9.30		124.15	13.2	5.96	0.160	750	as above
1433	10.54		125.05	13.1	5.86	0.159	650	brn-gray tint, PID:0.0
1443	10.38		125.61	13.2	5.95	0.156	450	as above
1453	10.12		125.97	13.1	5.84	0.155	320	as above
1503	9.92		126.20	13.0	6.06	0.156	250	lt. brn-gray tint, PID:0.0
1513	9.58		126.60	13.0	5.95	0.150	190	as above
1521	—		—	—	—	~~0.151~~ SP 05-30-00	—	mechanically surge well from 335 FT to ~~340~~ 341 FT
1526	9.06		—	13.1	5.88	0.151	>1100	v. cloudy, brown, PID:0.0
1531			—	—	—	~~0.150~~ SP 05-30-00	—	end surge
1536	8.82		124.76	13.0	5.88	0.150	240	lt. brn-gray tint PID:0.0
1546	7.73	↓	124.78	13.1	5.94	0.153	140	as above
1551	—	2100 / Q = 17.8 GPM	—	—	—	—	—	turn off air compressor → hydraulically surge well
15-30 1559	—		54, rising	—	—	—	—	—
15-31 0831	9.52	Q=27.3 GPM	50.97	15.2	6.08	0.253	85	v. lt. gy tint, PID=0.0
0841	10.58	↓	103.90	13.2	6.5-	0.154	170	lt. brn-gray tint, PID:0 ←

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-09-00
Date Developed: 05-11-00 →
Dev. Method: Air Lift (Direct); Surge; Pump
Pump Type: 3" Grundfos; 1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.94 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-Inch

Responsible Personnel: S. Pekopku, B. Bacr, T. Muscop
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - OU Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0851	10.37	$\bar{Q}$ = 27.3 GPM	104.35	12.9	6.36	0.154	65	v. lt. gray tint, PID = 0.5
0901	9.40	↓	104.56	12.8	6.16	0.153	50	as above, PID = 0.4
0911	9.35	↓	104.66	12.7	6.00	0.153	40	as above
0915	—	↓	—	—	—	~~0.153~~ 50 gpm	—	mechanically surge well from 336 FT to 341 FT
0921	9.06	↓	—	12.8	5.96	0.153	310	brn-gray tint, PID = 0.3
0925	—	↓	—	—	—	—	—	end surge
0931	9.23	↓	104.80	12.6	5.86	0.151	55	v. lt. gray tint, PID = 0.2
0941	9.58	↓	105.10	12.6	5.88	0.153	50	as above
0948	9.98	4200	~56.3, rising rapidly	12.7	5.89	0.154	37	as above, no PID reading
—	—	—	—	—	—	—	—	turn off air compressor → hydraulically surge well
1031	—	—	Remarks:	—	—	—	—	continue air lifting
1033	10.09	$\bar{Q}$ = 35.6 GPM	brn-gray tint; PID = 0.0	13.1	5.94	0.156	310	mechanically surge well from 336 FT to 341 FT
1038	10.29	↓	95.73	12.9	5.87	0.155	230	end surge, brn-gy. tint PID = 0.0
1045	8.64	↓	96.15	12.7	5.83	0.152	60	v. lt. gray tint, PID = 0.0
1050	9.40	↓	96.34	12.7	5.79	0.151	38	as above
1055	9.01	↓	96.41	12.7	5.79	0.153	35	as above, no PID reading
1056	—	↓	—	—	—	—	—	move surge block assembly up to 335.5 FT to 338.5 FT
1059	9.65	↓	—	12.7	5.74	0.152	30	v. lt. tint, PID = 0.0

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-09-00
Date Developed: 05-30-00 →
Dev. Method: Air Lift/Inject; Sub Pump
Pump Type: 3" Grundfos
1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.94 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-Inch

Responsible Personnel: S. Pekpko, B. Baer, T. Muscap
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1101	—	Q̄ = 35.6 GPM	—	—	—	—	—	mechanically surge well from 333.5 FT to 338.5 FT
1105	9.38	↓	—	12.8	5.79	0.151	150	H. brn-gy tint; PID = 0.0
1107	9.45		92.86	12.8	5.84	0.154	150	end surge; as above
1117	9.22		93.22	12.8	5.78	0.152	34	v. H. gray tint, PID - 0.0
1120	8.56		—	13.0	5.77	0.153	130	mechanically surge well from 333.5 FT to 338.5 FT
1126	—		—	—	—	—	—	end surge
1129	8.62		89.78	12.8	5.72	0.154	55	v H. gy tint; PID = 0.0
1135	9.76		90.07	12.8	5.71	0.154	40	as above
1138	—	↓	—	—	—	—	—	mechanically surge well from 333.5 FT to 338.5 FT
1140	9.13	6300	—	13.0	5.73	0.154	140	turn off air compressor → hydraulically surge well
1308	—	Q̄ = 33.3 GPM	—	—	—	—	—	mechanically surge well from 333.5 FT to 338.5 FT
1313	9.93		—	14.5	5.87	0.157	260	brn-gy tint; PID = 0.0
1315	—		—	—	—	—	—	end surge
1318	10.27		79.47	13.4	5.81	0.153	50	v H. gy tint; PID = 0.3
1325	10.60		—	13.3	5.75	0.153	35	as above; PID = 0.4
1330	9.08		80.03	13.1	5.71	0.154	27	v. H. tint; PID = 0.4
1333	—		—	—	—	—	—	move surge block assembly up to 333 FT to 336 FT
1336	10.80	↓		13.2	5.7	0.148	27	v. H. tint; PID = 0.4

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-09-00
Date Developed: 05-30-00
Dev. Method: Air Lift Pump; Surge Block
Pump Type: 3" Grundfos
1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.99 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekoske, B. Baer, T. Marsop
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~) SP 05-31-00 GS	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1336	—	Q = 33.3 GPM	—	—	—	—	—	mechanically surge well from 331 to 336 FT
1340	8.84		—	13.2	5.73	0.153	130	lt. brn-gy tint; PID = 0.4
1343	—		—	—	—	—	~~70~~ SP 05-31-00	end surge
1346	9.71		75.71	13.1	5.67	0.153	70	v. lt. gy tint; PID = 0.4
1351	9.75		—	13.1	5.64	0.153	36	as above
1352	~~9.~~ SP 05-31-00		—	—	—	—	—	mechanically surge well from 331 to 336 FT
1355	8.74		—	13.1	5.70	0.149	140	lt. brn-gy. tint; PID: 0.4
1359	—		—	—	—	—	—	end surge
1400	9.42		72.30	13.1	5.63	0.150	160	lt. brn-gy tint; PID: 0.4
1405	10.47		71.43	13.0	5.66	0.153	25	v. lt. tint; PID = 0.4
1410	8.98		—	13.1	5.62	0.153	22	as above
1411	—	8400	—	—	—	—	—	turn off air compressor → hydraulically surge well
1454	—	Q = 36.2 GPM	—	—	—	~~9.~~ SP 05-31-00	—	continue air lifting
1457	9.13		66.61	13.7	5.75	0.151	330	brn-gy. tint; PID: 0.4
1502	10.83		66.77	13.3	5.71	0.152	35	v. lt. gy tint; PID = 0.2
1505	—		—	—	—	—	—	mechanically surge well from 331 FT to 336 FT
1507	10.22		—	13.3	5.66	0.154	230	brn-gy. tint; PID = 0.2
1510	—		—	—	—	—	—	end surge

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-09-00
Date Developed: 05-30-00 →
Dev. Method: Air Lift / Mixed; Sub. Pump
Pump Type: 3" Grundfos
1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.99 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekoko, B. Baer, T. Mousse
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1511	10.23	Q=3.62 GPM	65.10	13.1	5.68	0.152	75	v. lt. gy tint; PID=0.3
1516	10.83	↓	65.20 ~~67.90~~	13.1	5.69	0.149	20	v. lt. tint; PID=0.4
1521	10.46		65.33	13.1	5.66	0.149	15	as above
1524	—		—	—	—	—	—	move surge block assembly up to 330.5 FT to 333.5 FT
1529	9.60		—	13.1	5.66	0.149	13	v. lt. tint; PID=0.4
1531	—		—	—	—	—	—	mechanically surge well from 328 FT to 333.5 FT
1534	8.45		—	13.1	5.65	0.150	120	lt. brn-gy tint; PID=0.4
1536	—		—	—	—	—	—	end surge
1539	10.50		—	13.0	5.64	0.151	30	v. lt. tint; PID=0.4
1540	—		—	—	—	—	—	mechanically surge well from 328 FT to 333.5 FT
1543	8.86		—	13.0	5.63	0.151	75	v. lt. gy tint; PID=0.4
1545	10.53		—	13.1	5.62	0.150	100	end surge; as above
1550	10.54		—	13.0	5.62	0.150	21	as above
1552	9.82	↓	—	13.0	5.66	0.155	15	as above;
5-31 —	—	10500	—	—	—	—	—	turn off air compressor; hydraulically surge well
06-01 0819	6.03	Q=16 GPM	50.62	16	5.63	0.271	>1100	begin development with sub. pump, pump depth ≈ 70'
0829	6.06	—	54.63	14.5	5.68	0.187	>1100	v. cloudy, brown
0839	5.11	Q=15 GPM	54.63	13.9	5.(	0.136	40	v. lt. gy. tint

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D
Site: NWIRP Bethpage - CTO 0208
Date Installed: 05-09-00
Date Developed: 05-30-00 → 06-01-00
Dev. Method: Air Lift (Direct; Sub Pump)
Pump Type: 3" Grundfos 1" Black PE Tubing

Depth to Bottom (ft.): 342 FT (BGS)
Static Water Level Before (ft.): 34.99 FT
Static Water Level After (ft.): 49.72 FT
Screen Length (ft.): 10 FT
Specific Capacity: 3.72 (during pumping)
Casing ID (in.): 4-Inch

Responsible Personnel: S. Pekpka, B. Baer, T. Mussap
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - OU Site Drilling
Project Number: N0565.0200

Time	Dissolved Oxygen (mg/L)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below ~~TOC~~ GS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0849	9.04	Q≈15 GPM	54.64	14.0	5.01	0.157	25	v. lt. tint
0859	7.18	↓	54.65	13.9	4.94	0.156	23	v. lt. tint
0904	5.74	↓	54.65	14.0	4.95	0.155	19	v. lt. tint
0909	—	11300	—	—	—	—	—	end development → pull pump though remainder of standing water column.

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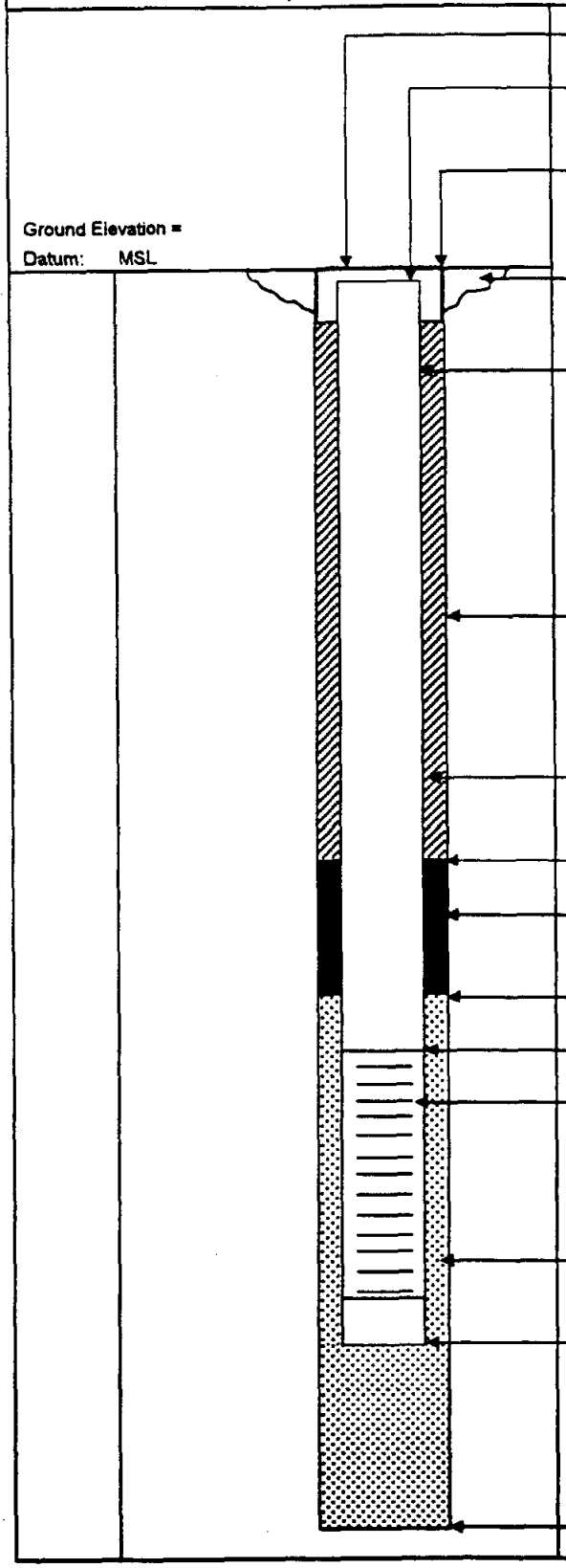
GM-15D2

Tetra Tech NUS, Inc.

WELL No.: GM-1502

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-1502
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-08-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pekopko	DEV. METHOD:	Air Lift / Sub. Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80, Flush Joint, Threaded PVC

Borehole Diameter: 11-Inch to 60 FT
8-Inch to 570 FT

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 502 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 506 FT

Elevation / Depth of Top of Screen: 536 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 516 FT / FilPro Quartz No. 0 Sand to 506 FT

Elevation / Depth of Bottom of Screen: 556 FT

Elevation / Depth of Bottom of Filter Pack: 557 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 570 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0208
DRILLING COMPANY: Unitech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 04-26-00
GEOLOGIST: S. Parapko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
0917	3						asphalt pavement	hand auger first 3 FT					
0920	10					var.	well rounded to subangular qtz. gravel + c. to v.c.	1/8" - 1/4" ϕ	0.0	0.0	0.0	0.0	GP
							sand						
							H. br. - br. / ox. - br. / H. gy. / blk.						
0922 0933	20					var.	gravelly c. to v.c. sand, qtz. + granitic gravels;	1/4" - 1" ϕ	0.0	0.0	0.0	0.	?
							well rounded to subangular	thicken / recond. mud					
							H. br. - dk. br. / H. gy. - gy. / blk.	0931 - advance 8" x 10' reamer					
0938 0942	29						losing mud	add potable water + bentonite					
0943 0952	30					var.	well rounded to angular qtz. + granitic gravel +	1/8" - 1/4" ϕ	0.0	0.0	0.0	0.0	GP
							c. to v.c. sand	0944 - thicken mud / recond.					
							wt. / H. gy. - gy. / H. br. - br. / blk.						
								add water at 37 FT					
0957 1009	39						losing mud	add water / thicken mud					
1010	40					var.	c. to v.c. sand, sm. well rounded to subangular qtz.	1/8" - 1/2" ϕ	0.0	0.0	0.0	0.0	SP
							gravel						
							H. gy. - gy. / H. - br. / pk. / rd. / blk.						
							smoother drilling, poss. interbedded clay below						
							44 FT						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 8" Mud Rotary drilling; 8" 10' Reamer, 9" x 1' Drag bit Drilling Area Background (ppm): 0
Stroke = 20 FT. All samples collected from drilling mud. Air monitor with PE Photovac 2020 PID. Samples from 10 FT to 40 FT collected from circulating mud using sampler.

Converted to Well: Yes X No _____ Well I.D. #: GM-1502

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0585.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 04-26-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole**	Drillers BZ**	USCS*
1014 1029	50					var.	c. to u.c. sand, sm. well rounded to subangular qtz. gravel	1/8" - 1/4" ϕ	0.0	0.0	0.0	0.0	SP
							lt.gy - gy/wt./lt.br.-dk.br./bk.	add water, thicken mud, recondition EOR=1					
1035 1304	60					dk.gy bk.	clay	driller reports	0.0	0.0	0.0	0.0	OH
						var.	sm. c. to u.c. sand + 1/8" to 1/2" ϕ well rounded to sub-angular qtz. gravel	"clay-like" drilling since N55 FT					SP
							wt./lt.gy./lt.br.	1034 - add potable water @ 57 FT					
1308 1313	70					var.	c. to u.c. sand, tr. 1/8" to 1" ϕ subrounded to angular qtz. gravel	driller reports "gravel-like"	0.0	0.0	0.0	0.0	SP
							sm. lt.gy.-dk.gy./bk. clay	drilling down 60 FT					
							lt.gy.-gy./bk./lt.br.-br.	add water, recon. EOR=2					
1316	80					var.	c. to u.c. sand, sm. 1/8" to 1/4" ϕ well rounded to angular qtz. gravel, tr. or.-br. clay		0.0	0.0	0.0	0.0	SP
							wt./lt.gy.-gy/lt.br.-dk.br.						
1319 1322	90					var.	c. to u.c. sand, tr. 1/8" to 1/4" ϕ subrounded to angular qtz. gravel + dk.gy/bk. clay	recondition EOR=3	0.0	0.0	0.0	0.0	SP
							wt./lt.br./lt.gy.-gy.						
1324	100							recondition	—	0.0	0.0	0.0	—

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br.=brown, wt=white, gy.=gray, or.=orange, bk.=black, gy.=gray, rd.=red, dk.=dark, lt.=light, var.=variegated, sm.=11-30%, tr.=0>11%, subangular (i.e. sandy)= 31-50%, +/and=equal percentages; ϕ=diameter

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-1502

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CN 0208 | BORING NUMBER: GM-15D2
PROJECT NUMBER: N0565.S1200 | DATE: 05-02-00
DRILLING COMPANY: Hai-Tech Drilling Co., Inc. | GEOLOGIST: S. Akpan
DRILLING RIG: Failing 1500 | DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**	USCS*
S-1 @	100	31/31	15.5		dense	var.	c. to v.c. sand, silty/clayey	lost mud over weekend; no	BG	BG	BG	BG	SP
1027	102	42/31	24		dense		top of sample (< 0.25" thick)	collapse of 30 → mix mud +					SM/SC
							trace increasing near bottom of sample → sm. silt/clay	recondition					
							br.-gy./M.-gy./M.-br./pk.	7.5" muddy sand + gravel log					
S-2 @	110	16/32	12.5		v. stiff	br. to br.-gy	dense clay, tr. gravel	driller reports	BG	BG	BG	BG	CH
1047	112	65/71	24		hard	dk.-gy	approx 3" from bottom of sample	"clay-like" drilling btw 100 FT to 110 FT					OH
								trap broken					
								EOR = 4					
S-3 @	120	50/100	4		v. dense	rd. br.-gy	2" f. to m. sand, sm.	2" M.-gy-dk.-gy/	BG	BG	BG	BG	?
1106	122	over 5" —	24		—		silt/clay lames	rd. mottled clay → lay?					
								sandy near bottom					
								"sand-like" drilling					
S-4 @	130	16/16	8		m. dense	var.	4.5" silty f. to m. sand	3.5" clay lay	BG	BG	BG	BG	SM
1122	132	5/5	24		loose		or.-br./M.-gy./M.-br./pk.	1123 - add potable water					
								EOR = 5					
S-5 @	140	7/8	18		loose	gy.	silty to clayey f. to m. sand	2" clay lay	BG	BG	BG	BG	SM/SC
1134	142	8/9	24		loose		with laminated clay interbeds (br./bk.)						CL/OH
							lamince to ~ 1" thick beds	trap broken					
							bk./pk. mottling						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: note: sample strainer screen mesh too wide to hold f.-m. sands (>0.5 mm). overcream borehole with 11" x 11" bit to 60 FT (BGS). Set 8" temp. surface casing to ~54 FT (BGS).

Drilling Area Background (ppm): a. 3.9

Converted to Well: Yes X No ____ Well I.D. #: GM-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D2
DATE: 05-02-00
GEOLOGIST: S. Pelcpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Sample	PID Sampler BZ	PID Borehole**	PID Driller BZ	USCS *
S-6 @	150	72/100	6		hard	lt. gy br.	dense clay; sandy near	EOR = 6	BG	BG	BG	BG	CH/CL
1145 1302	152	over 4" / –	24		—		bottom → possibly all log *						
								1309 - add potable water + thicken mud / recirculation					
S-7 @	160	100 / –	8.5		v. dense	br.gy. or. br.	2.5" mostly m. sand with	6" clay log	BG	BG	0.0	0.0	SP
1321	162	– / –	24		—		thin (~0.25") lt. gy. clay interbeds						CH
S-8 @	170	100 over	6		v. dense	br. gy	1" mostly m. sand, sm.	5" clay log	0.0	0.0	0.0	0.0	SP
1339	172	5" / –	24		—		silt/clay	EOR = 7					
S-9 @	180	44/51	18		dense	var.	12" f. to m. sand, sm.	6" clay +	0.0	0.0	0.0	0.0	SP
1352	182	100 over 4"	24		v. dense		silt/clay	m. to c. sand log					
							br.-gy. / lt. br. / or.-br.						
S-10 @	190	54/100	11		v. dense	pk., brick rd.	mostly m. sand, sm.	1" clay log	BG	0.0	0.0	0.0	SP
1412	192	over 4" / –	24		—		silt/clay	EOR = 8					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0-0.4

Converted to Well: Yes X No ____ Well I.D. #: GM-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0505.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 05-02-00
GEOLOGIST: S. Arlotto
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ*	USCS*
S-11 @	200	40/50	14		dense	var.	f. to m. sand, sm.	add potable	BG	0.0	0.0	0.0	SP
1430	202	100/-	24		v. dense		clayey silty interbeds (laminae to ~1/4" thick)	water thicken mud					SM/SC
							H. gy. / H. br. - br. / or. - br. / bk. / brick rd.						
S-12 @	210	3/61	15		dense	var.	14" f. to m. sand, tr.	1" clay +	BG	0.0	BG	0.0	SP
1454	212	57/74	24		V. dense		clayey silty micr laminae	sandy clay lens					SM/SC
							sm. silt/clay layer over bottom 1/2 of sample	EUR=9					
							gy. / H. br. / br. gy. / or. - br. / rd. / bk.						
S-13 @	220	11/20	17		m. dense & v. stiff	or. br. H. br.	silty / clayey f. to m.		BG	BG	BG	0	V SM
1515	222	26/29	24				sand with silt/clay laminae (bk. / H. gy.)						CH/OH
S-14 @	230	26/28	13		m. dense	or. br. H. br.	10" mostly f. to m. sand,	3" clay +	BG	0.0	0.0	0.0	SP
1540	232	29/35	24		m dense		sm. silty / clayey laminae (or. - br. / bk. lens.)	sandy clay lay					SM/SC
								EUR=10					
S-15 @	240	17/17	11		V. stiff	dk. gy.	V. dense clay + silty	clump	BG	0.0	0.0	0.0	CL/OH
1553	242	28/31	24		V. stiff		clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0 - 0.9

Converted to Well: Yes X No

Well I.D. #: GM-1502

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 112058
PROJECT NUMBER: N0585 U200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D2
DATE: 05-02-00 / 05-03-00
GEOLOGIST: S. Akpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ**	USCS*
S-16 @	250	51/100	5		V. dense	br.	4" mostly m. sand	1600- recondition	0.0	0.0	0.0	0.0	SP
1611	252	—/—	24		—			borehole					
								1" clay lay					
								EOR=11					
S-17 @	260	100/—	5		hard	dk. yy.	dense clay (laminated	1620- recondition	0.0	0.0	0.0	0.0	CH/CH
1647	262	—/—	24		—		rd. / Hyy. / br. near bottom).	1630- thicken mud + recond.					SC
							clayey sand near bottom + fr. gravel						
						*	Sample appears to be all lay						
S-18 @	270	100/—	8		V. dense	H.br. br.-yy.	6" f. to mostly m. sand	1658- recondition	0.0	0.0	0.0	0.0	SP
1706	272	—/—	24		—			borehole					
								2" clay lay					
								EOR=12					
05-02 S-19 @ 05-03 0406	280	42/100	13.5		V. dense	rd. br.	3" laminated clayey/silty f. to m. sand + v. thin	no reported borehole	0.0	0.0	0.0	0.0	SM
	282	over 3"/—	24		—	H.yy.	sand interbeds	collapse overnight					SC
						H.br. br.	6" f. to m. sand, s.m. wt. / H.br. clayey/silty laminae	0840 - recondition					SP
								borehole let sand mud					
								4.5" clay + sandy clay lay					
S-20 @	290	33/100	5		V. dense to hard	H.br. br. br.	1.5" mostly m. sand grading to dense H.yy.	3.5" lay as previous	0.0	0.0	0.0	0.0	SP
0925	292	over 3"/—	24		—		to bk. clay						CH/CH
								EOR=13					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0-0.4

Converted to Well: Yes X No _____ Well I.D. #: GM-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: 6M-15D2
DATE: 05-03-00
GEOLOGIST: S. Arkoko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
S-21 @ 0940	300	43/67	13		V. dense	lt. br. br.-gy.	10.5" f. to m. sand	2.5" clay + sandy clay lay	0.0	0.0	0.0	0.0	SP
	302	100 blows 5"	24		V. dense								
							fm. material compacted in shoe	driller reports poss. clay below					
								~306 FT (BGS)					
S-22 @ 0958	310	47/66	17		V. dense	var.	15" f. to m. sand, tr.		0.0	0.0	0.0	0.0	SP
	312	67/71	24		V. dense		lt. br. / bk. clayey / silty inclusions / laminae, etc.	hard Fe-oxide cemented sand					SM/SC
							silt / clay lines at top + bottom of sample	frags. at top of sample					
							lt. br. / lt. gy. / var. br.	2" lay at previous EOR = 14					
S-23 @ 1018	320	58/100	8		V. dense	br. gy. lt. br.	f. to mostly m. sand, tr.	fm. material	0.0	0.0	0.0	0.0	
	322	— / —	24		—		br. clayey / silty lamination in middle of sample	compacted in shoe →					SM/SC
								0.25" laminated br. / lt. gy. / bk. clayey / silty bed at bottom of sample					
S-24 @ 1044	330	44/100	10.5		hard to V. dense	lt. br.	2" dense clay bed	1040 - well flushing out	0.0	0.0	0.0	0.0	CH
	332	over 5" / —	24		—	var.	8.5" f. to mostly m. sand	rod break; reconnection					SP
							lt. gy. / lt. br. to br. / or. - br.	borehole					
								1052 - thicken mud					
								fm. material compacting in shoe					
S-25 @ 1112	340	100 blows 5"	2		hard to V. dense	lt. br.	1" clay bed (dense)	EOR = 15	0.0	0.0	0.0	0.0	CH
	342	— / —	24		—	br.-gy.	1" f. to m. sand						SP
							* sample appears to be entirely lay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No

Well I.D. #: 6M-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 05-03-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-26 @	350	72/100	9.5		V. dense	M. br.	1" f. to m. sand	sample circulation	0.0	0.0	0.0	0.0	SP
1131	352	over 4" / —	24		—	dk. gy. to lt. br.	2.5" dk. gy./or. br. clayey/	mud → c. to v.c. sand, lignite,					SM/SC
		/					silty f. to m. sand	gravel, + M. gy. clay					
		/						6" clay, sandy clay + gravel log					
S-27 @	360	100 / over 5"	2		hard to V. dense	var.	1" dense clay	EOR=18	0.0	0.0	0.0	0.0	CH/CH
1154 1324	362	— / —	24		—		M. br./lt. br. gy./dk. gy.						
		/				br. gy.	1" m. to c. sand						SP
		/					* sample appears to be						
		/					entirely log						
S-28 @	370	100 / over 5"	9.5		hard to V. dense	var	1" sandy clay to clayey sand gy./M. br./bk.	1336 - well flowing	0.0	0.0	0.0	0.0	CL/SC
1342	372	— / —	24		—	M. br. br. gy.	5.5" f. to mostly m. sand	slightly wet rod break					SP
		/						3" lag as @					
		/						350 FT (BGS) EOR=17					
		/						tm. material comp. in shoe					
S-29 @	380	100 / —	5		V. dense	br. gy.	1" mostly m. sand, sm. silt/clay lenses	1356 - add water	0.0	0.0	0.0	0.0	SP
1422	382	— / —	24		—			water/lithology mud/ record.					
		/						1405 - repeat as @ 1356 +					
		/						de-sand mud					
		/						4" lag as previous					
S-30 @	390	100 / —	9		V. dense	br. gy. lt. br.	5" m. to c. sand, sm. M. gy./or.-br. clayey/silty inclusions	1430 - de-sand	0.0	0.0	0.0	0.0	SP
1440	392	— / —	24		—		near bottom of sample	mud + record. borehole					SM/SC
		/						4" lag as previous					
		/						tm. material comp. in shoe					
		/						EOR=18					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-1502

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0218
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D2
DATE: 05-03-00
GEOLOGIST: S. Pelcake
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ**	USCS*
S-31 @	400	100 blows	7		hard to v. dense	var.	3" f. sandy/silty clay to clayey/silty sand to 0.5"	H155-add potable water /	0.0	0.0	0.0	0.0	CL/SM
1508	402	—	24		—		lt. gy. clay bed lt.br. lor./or.br./gy.	thicken mud / recond. borehole					SC/CH
						Hgy.	4" f. to m. sand, sm. silt/clay lines	1507 - de-sand					SP
							fm. mat'l comp. in shoe	mud					
S-32 @	410	100 for 4"	9		v. dense	lt.br. lt.gy.	5.5" f. to m. sand, tr. clayey/silty inclusions	3.5" clay +	0.0	0.0	0.0	0.0	SP
1527	412	—	24		—	br.gy.		sandy clay / clay					SM/SC
							fm. mat'l comp. in shoe	1527 - de-sand mud, add potable					
								water 1535 - thicken					
								mud / recond. borehole					
S-33 @	420	100	5		V dense	br.gy.	C. to V.C. sand	EQR=19 1552 - de-sand	0.0	0.0	0.0	0.0	
1544	422	—	24		—		clayey/silty lt.gy. inclusion at bottom of sample	mud					SM/SC
								fm. mat'l comp. in shoe					
S-34 @	430	72/100	17.5		hard	br.gy.	15.5" v. dense clay	2" gravel +	0.0	0.0	0.0	0.0	CL/CH
1615	432	4" —	24		—		f. sandy/silty lenses near top of sample (lt.gy./or.br.)	sandy clay + clay lay					
								trap broken					
								driller reports "clay-like"					
								drilling b/w 430 - 440 FT					
S-35 @	440	57/100	15		hard	dk.-gy.	V. dense clay, sm. thin	EQR=20 1630 - add	0.0	0.0	0.0	0.0	CH/OH
1644	442	3" —	24		—		gy. silty f. sand interbeds	potable water + recondition					ML
							or. br. silty f. sand interbed 3" from bottom of sample	1635 - de-sand mud					
							interbeds laminae to < 0.5" thick	driller reports "sand-like" drilling b/w					
								445 FT (BGS)					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 25-03-00 / 05-04-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-36 @	450	72/100	10.5		V. dense	lt. br. lt. gy.	1" silty f. to m. sand	1700 - de-sand mud	0.0	0.0	0.0	0.0	SM
1710	452	over 2" / —	24		—	lt. gy.	5.5" f. to m. sand, sm. silt/clay fines	fm. mat'l comp. in shoe EQR=21					SP
S-37 @	460	100/—	6.5		V. dense	lt. gy.	4.5" f. to v.c. sand, tr.	2" clay +	0.0	0.0	0.0	0.0	SW
05-03 1730	462	—/—	24		—		f. gravel, tr. silty/clayey inclusions + lt. br. mottling	sandy clay lag.					
05-04 0757							dk. gy./lt. gy. silty/clayey 6 inches at top of S sample.	fm. mat'l comp. in shoe					
								lost mud to fm. overnight; no borehole collapse					
S-38 @	470	100/6in 4"	11		v. dense	lt. gy.	0.5" silty f. sand	0615 - thicker	0.0	0.0	0.0	0.0	SM
0640	472	—/—	24		—	br. gy.	1.5" mostly m. to c. sand	mud, reverse - backed					SP
								9" br. / dk. gy. clay lag EQR=22					
S-39 @	480	100/6in 5"	8		v. dense to hard	br. gy.	4" c. to v.c. sand, tr. f. gravel, sm. lt. gy. clay	4" lag as	0.0	0.0	0.0	0.0	SP
0903	482	—/—	24		—		inclusions	previous w/ tr. gravel					CH
						dr.-br. lt. gy.	0.25" laminated clay bed near bottom of sample						
							→ clayey sand grading to clay						
S-40 @	490	100/6in 4"	14		V. dense	lt. gy. br. gy.	4" m. to v.c. sand, tr. f. gravel + clayey	10" lag as	0.0	0.0	0.0	0.0	SW
0931	492	—/—	24		—		inclusions	previous					SC
								fm. mat'l comp. in shoe EQR=23					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-1502

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-15D2
DATE: 05-04-00
GEOLOGIST: S. Pelgaks
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**	USCS*
S-41 @	500	45/100	17		V. dense	lt.gy. br.gy.	7" mostly m. sand	0450 - de-sand mud	0.0	0.0	0.0	0.0	SP
0454	502	cuttings 3" / —	24		—			10" clay + sandy clay + gravel lag					
		/											
		/											
S-42 @	510	52/100	8.5		V. dense	lt.gy. br.gy.	1.5" mostly m. sand (coarsening with depth	1022 - add potable water / thicken mud	0.0	0.0	0.0	0.0	SP
1019	512	cuttings 5" / —	24		—		to m. to c. sand, sm. white silt/clay fines	7" muddy					
		/					at top of sample	lag as previous					
		/					piece of 0.25" Ø well rounded qtz gravel in	EOR = 24					
		/					sample						
S-43 @	520	100/6in 3"	24		V. dense	br.gy.	2" mostly m. sand, tr. c. lt.gy. sand + fine	1044 - de-sand	0.0	0.0	0.0	0.0	SP
1045	522	— / —	24		—		gravel + lt.gy. clay inclusions	spoon full of gravelly to sandy mud lag (22")					
		/											
		/											
		/											
S-44 @	530	100/6in 5"	11		V. dense	br.gy. lt.gy.	5" mostly m. to c. sand, tr. gravel	6" lag as	0.0	0.0	0.0	0.0	SP
1122	532	— / —	24		—			previous + clay					
		/						EOR = 25					
		/						fm. mud ramp. in shoe					
		/											
S-45 @	535	100/6in 3"	6.5		hard to V. dense	br.gy.	3" mostly m. to c. sand	3.5" lag as	0.0	0.0	0.0	0.0	SP
1141	537	— / —	24		—	lt.gy. br.	no.25" clayey sand to clay interbed	previous					SC/CL
		/											
		/											
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-15D2

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: NES05.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-1502
DATE: 05-04-00
GEOLOGIST: S. Akpoko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-46 @	540	100 / 6"s"	0		—		no sample recovery		0.0	0.0	0.0	0.0	—
1224	542	— / —	24		—								
		/											
		/											
S-47 @	545	100 / —	10		v. dense	br.-gy.	1" c. to v.c. sand, sm. silt/clay lenses + well rounded gravel	4" sand, clay, + gravel lost	0.0	0.0	0.0	0.0	SP
1245	547	— / —	24		—		rounded to subangular gravel	0.25" - 1" Ø					
		/											
		/											
		/											
S-48 @	550	100 / 6"s"	4		v. dense	br.-gy.	4" m. to c. sand	1310 - well flowing oil	0.0	0.0	0.0	0.0	SP
1328	552	— / —	24		—			rod break; thick mud + gravel					
		/						borehole EOR: 26					
		/						fm. mud / comp. in shoe					
		/											
S-49 @	555	100 / 6"s"	3.5			br.-gy.	3.5" m. to c. sand, sm. or. br. clayey sand +		0.0	0.0	0.0	0.0	SP / SC
1351	557	5" / —	24				0.25" H.gy. clay interbed						CH
		/					sm. 0.25" to 1" Ø well rounded to subrounded gravel						
		/											
		/											
S-50 @	558	52 / 100	14			br.-gy.	9" m. to c. sand, tr. v.c.	1418 - de-sand mud	0.0	0.0	0.0	0.0	SP
1421	560	— / —	24				sand, f. gravel	fm. mud / comp. in shoe					
		/				vari.	5" interbedded clay/clayey	driller reports					CH / SP
		/					to silty sand + m. to c. sand fining downwards	"sand-like" drilling blw					SM / SC
		/					to clean f. or f. to m. sand or. br. lt. gy./ pk. / lt. br.	560' - 570' —> beds < ~1"					
1487	570	/		TD: 570			thin mud / de-sand mud / recondition borehole		—	0.0	0.0	0.0	

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No Well I.D. #: GM-1502

AQUA TERRA GEOPHYSICS INC.
GROUNDWATER/DRILLING CONSULTING
16 STATION ROAD # 8
BELLPORT, NEW YORK 11713
(631) 286-7699

BOREHOLE: GM-15D2
LOGS:
NATURAL GAMMA
S. POINT RESISTANCE
SPONT. POTENTIAL

PROJECT: CTO-0208 OFFSITE DRILLING
CLIENT: NWIRP BETHPAGE
LOCATION: GRUMMAN S. RECHARGE BASINS

DATE: MAY 4, 2000
COUNTY/COUNTRY: NASSAU
STATE/PROVINCE: NEW YORK

BOREHOLE DATA

DRILLING CONTRACTOR: UNI-TECH DRILLING CO. INC.
ELEV: DEPTH REF: LAND SURFACE

CUSTOMER TD: 570 FT.
LOGGER TD 558 FT.

RUN	BIT RECORD			CASING RECORD		
NO.	Bit Size	From	To	Size/Wgt/Thk.	From	To
1	12 IN.	0 FT.	60 FT.	8" STEEL	0 FT.	60 FT.
2	8 IN.	60 FT.	T. DEPTH			
3						

DRILL METHOD: MUD ROTARY
HOLE MEDIUM: DRILLING FLUID
VISCOSITY:

DATE DRILLED: 5/00
FLUID LEVEL: 0 FT.
WEIGHT:

TIME SINCE CIRC: 1 HR.
MUD TYPE: BENTONITE
Rm: at Deg

GENERAL DATA

LOGGED BY: BENJAMIN A. RICE
WITNESS: SETH PELEPKO & DAVE STERN

OTHER SERVICES:
UNIT/TRUCK: MT. SOPRIS MGX2/1

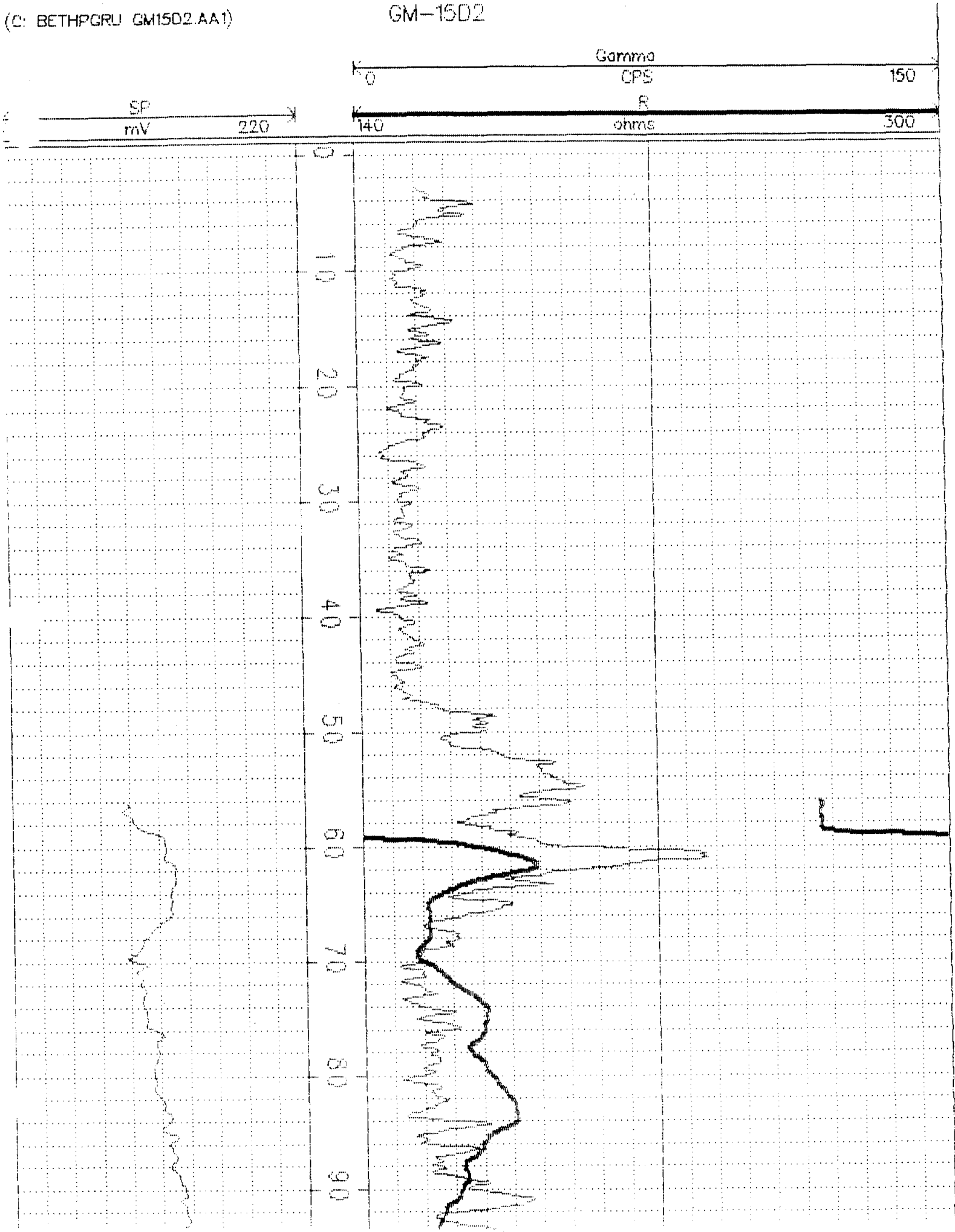
LOGGING DATA

LOG FUNCTION	RUN NO.	EQUIPMENT			LOGGING		DETECTOR	SOURCE		LOGGED INTERVAL			COMMENTS
		MODEL	PROBE S.N.	UPHOLE S.N.	DIG INT FEET	SPEED FT/MIN	TYPE	TYPE	SIZE CBq	FROM	TO	INT. FEET	
N. GAMMA	1	SMCA	2201	1123	.10	20	NaI			3	558	555	W.A. = 2
SP-R	2	SMCA	2201	1123	.10	25				60	558	498	

DIGITAL FILE NAME(S):
REMARKS:

(C: BETHPGRU GM1502.AA1)

GM-1502



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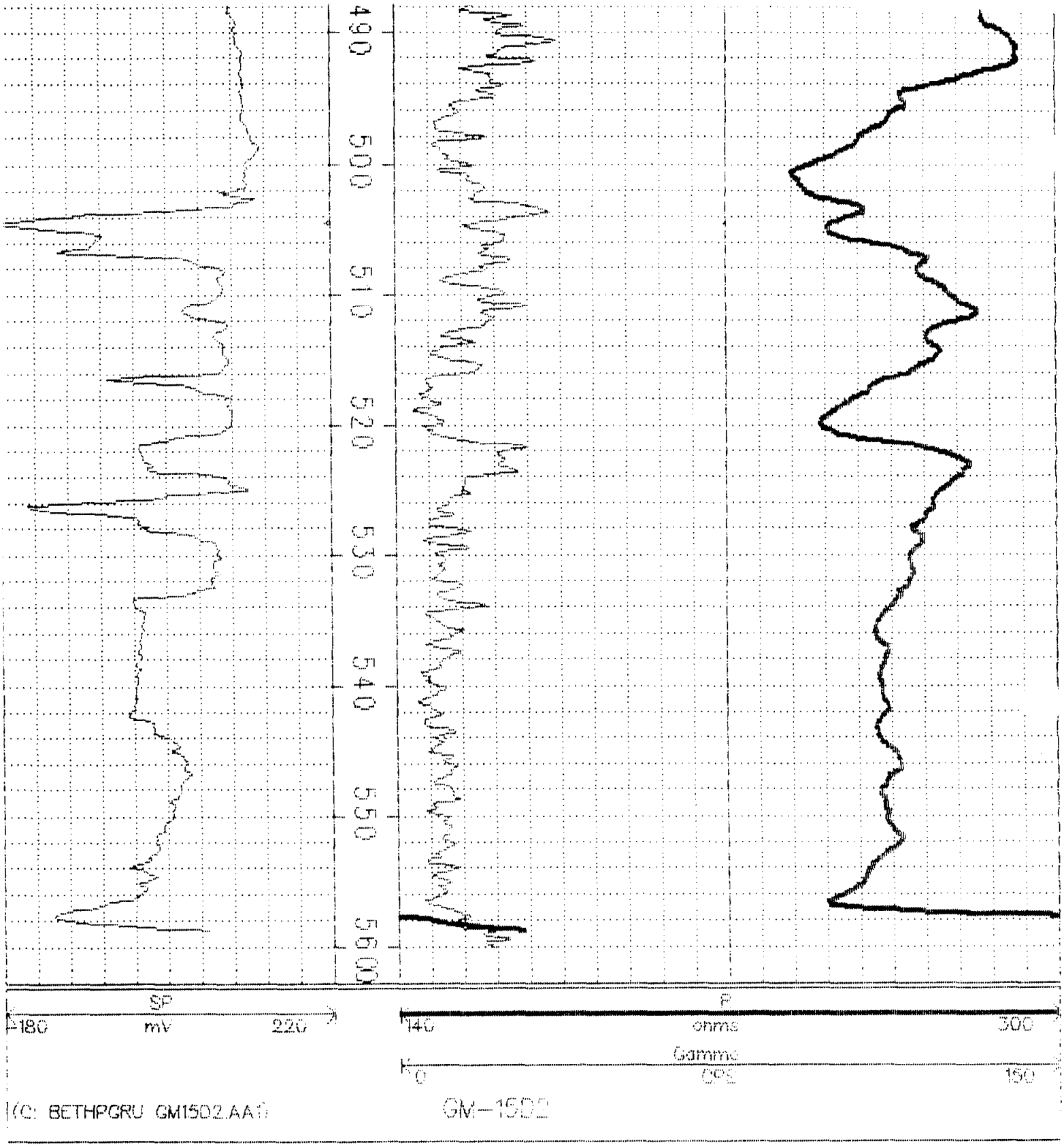
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(C) BETHPGRU GM1502.AA1
GM-1502

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D2 | Depth to Bottom (ft.): 556 (BGS) | Responsible Personnel: S. NEIL, B. BAZE, J. BLEMMINGS
Site: NWIRP BETHPAGE | Static Water Level Before (ft.): 56.45 | Drilling Co.: UNI-TECH
Date Installed: 5/5/00 | Static Water Level After (ft.): 52.44 | Project Name: OFF-SITE DRILLING
Date Developed: 6/5-7/00 | Screen Length (ft.): 20 | Project Number: N0565.0200
Dev. Method: AIRLIFT and | Specific Capacity: 10 (59.8-5.45 @ 35 GPM)
Pump Type: SUBMERSIBLE | Casing ID (in.): 4

GPM

Time	~~Estimated Sediment Thickness~~ (SW) (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. ~~below TOC~~ BGS) (GW)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1104	35	—	56.45	—	—	—	—	BEGIN DEV = 5 FT FROM BOTTOM.
1105	35	—	—	15.3	7.42	.292	>1100	MURKY; GRAY/BRN. DO: 10.20.
1108	↓	—	60.3	—	—	—	—	WATER LEVEL ONLY.
1112	↓	—	60.5	12.9	7.23	.096	>1100	MURKY; GRAY/BRN. DO: 11.44.
1113	—	—	—	—	—	—	—	STOP DEV TO MOVE PIPE TO BOTTOM.
1115	35	—	—	—	—	—	—	RESUME DEV.
1117	↓	—	60.7	12.6	6.72	.095	>1100	MURKY; GRAY/BRN. DO: 11.33.
1121	↓	—	60.7	12.4	6.55	.095	>1100	SAME. DO = 11.21. STOP DEV TO LOWER PIPE.
1123	↓	—	—	—	—	—	—	REMOVE 5 FT SECTION OF PIPE AND REPLACE IT W/ A 3FT SECTION.
1149	↓	—	57.5	—	—	—	—	RESUME DEV.
1150	↓	—	—	13.6	6.51	.095	>1100	MURKY; GRAY/BRN. DO = 11.12.
1152	↓	—	60.1	—	—	—	—	WATER LEVEL ONLY.
1158	↓	—	~~60.2~~	12.8	6.36	.092	>1100	MURKY; GRAY/BRN. DO = ~~10.99~~ 11.29 (GW)
1204	↓	—	60.2	12.5	6.42	.091	>1100	SAME. DO = 10.99.
1210	↓	—	—	12.4	6.43	.089	700	V. CLOUDY; BRN. DO = 10.79
1216	↓	—	60.2	12.4	6.31	.088	600	SAME. DO = 10.75. PD = 1.1.
1221	↓	—	—	12.3	6.34	.088	400	CLOUDY; BRN. DO = 11.02.
1227	↓	—	—	12.3	6.35	.087	330	SAME. DO = 10.94

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D2 | Depth to Bottom (ft.): 556 (665) | Responsible Personnel: S. NTIL, B. BAER, J. BLEMMINGS
Site: NWIRP BETHPAGE | Static Water Level Before (ft.): 56.45 | Drilling Co.: UNI-TECH
Date Installed: 5/5/00 | Static Water Level After (ft.): 52.44 | Project Name: OFF-SITE DRILLING
Date Developed: 6/5- | Screen Length (ft.): 20 | Project Number: N0565.0200
Dev. Method: AIR LIFT and | Specific Capacity:
Pump Type: SUBMERSIBLE | Casing ID (in.): 4

GPM

Time	~~Estimated Sediment Thickness~~ (SN) (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (SWL) (Ft. ~~below TOC~~ BGS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1234	35	2200	60.2	12.2	6.34	.087	280	CLOUDY/BRN. DO = 10.61. STOP DEV TO TRANSFER WATER.
1354	41	—	57.9	—	—	—	—	RESUME DEV. BEGIN SURGING BOTTOM 3 FT.
1402	↓	—	60.3	13.5	6.31	.086	>1100	STOP SURGING. MURKY/BRN. DO = 10.82.
1408		—	—	12.8	6.36	.087	650	V. CLOUDY/BRN. DO = 10.78.
1413		—	—	12.6	6.35	.086	330	CLOUDY/BRN. DO = 10.56
1419		—	60.4	12.6	6.34	.086	220	SAME. DO = 10.78.
1423		—	—	12.4	6.32	.086	170	SAME. DO = 10.55
1428		—	—	12.3	6.31	.086	140	SAME. DO = 10.65. BEGIN SURGING.
1436		—	—	12.3	6.31	.087	550	2ND SURGING. CLOUDY/BRN. DO = 10.69.
1440		—	—	12.1	6.28	.086	220	CLOUDY/BRN. DO = 10.52.
1445		—	—	12.1	6.26	.086	140	SAME. DO = 10.77
1448	↓	2200	60.3	12.1	6.26	.086	120	SAME. DO = 10.78. STOP DEV TO TRANSFER WATER
1531	35	—	(SW) ~~57~~ 57.6	—	—	—	—	RESUME DEV. BEGIN SURGING.
1539	↓	—	59.8	12.6	6.24	.086	800	STOP SURGING V. CLOUDY/BRN. DO = 10.91.
1544		—	—	12.3	6.21	.086	280	CLOUDY/BRN. DO = 10.61.
1549		—	—	12.2	6.17	.086	130	CLEARING. DO = 10.38.
1551		—	—	12.0	6.16	.086	100	SAME. DO = 10.37.
1[illegible]	↓	—	—	—	—	—	—	BEGIN SURGING.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-1502 | Depth to Bottom (ft.): 356 (BGS) | Responsible Personnel: S. NEIL, B. BAZE, J. BEMMANES
Site: NWIRP BETHPAGE | Static Water Level Before (ft.): 56.45 | Drilling Co.: UNI-TECH
Date Installed: 5/5/00 | Static Water Level After (ft.): 52.44 | Project Name: OFF-SITE DRILLING
Date Developed: 6/5- | Screen Length (ft.): 20 | Project Number: N0565.0200
Dev. Method: AIRLIFT and | Specific Capacity:
Pump Type: SUBMERSIBLE | Casing ID (in.): 4

GPM

Time	~~Estimated~~ Sediment ~~Thickness~~ (SD) (~~Ft.~~)	Cumulative Water Volume (Gal.)	Water Level Readings (WL) (Ft. ~~below TOC~~ BGS)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1604	35	—	—	—	—	—	—	STOP SURGING.
1605	↓	—	—	12.1	6.16	.086	290	CLOUDY. DO = 10.82.
1610		—		11.9	6.14	.086	140	CLEARING. DO = 10.56.
1615		—	—	11.9	6.13	.085	80	CLEARING. DO = 10.54.
1619		—	59.7	11.8	6.11	.085	65	CLEARING. DO = 10.18.
1624		—	59.8	11.9	6.09	.085	55	SAME. DO = 10.31.
1629		—	—	11.8	6.08	.085	40	CLEARING. DO = 10.24.
1630	↓	2200	—	—	—	—	—	STOP DEV. FOR TODAY.
1634	—	—	56.7	—	—	—	—	WATER LEVEL ONLY.
6/6/00 0806	—	—	56.0	—	—	—	—	W.L. BEFORE RESUMING DEV.
0809	37	—	60.7	14.6	5.93	.104	45	CLEAR. DO = 8.76.
0815	↓	—	—	—	—	—	—	BEGIN SURGING NEXT 3' INTERVAL.
0824		—	—	12.5	6.02	.084	380	V. FINE SAND. STOP SURGING. DO = 9.79. CLOUDY.
0829		—	—	12.2	5.97	.083	120	CLEARING. DO = 9.53. BEGIN SURGING
0835		—	—	12.1	5.86	.082	120	STOP SURGING. DO = 9.58.
0845		—	59.3	12.0	5.86	.084	60	CLEARING. DO = 9.58. BEGIN SURGING
(SD) ~~0849~~ 0854		—	59.3	11.9	5.90	.083	150	V. FINE SAND. END SURGING. DO = 9.38.
0900	↓	—	—	11.8	5.90	.084	45	CLEARING. DO = 9.49.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-1502 | Depth to Bottom (ft.): 56 (BGS) | Responsible Personnel: SUNEIL, B. BAER, J. BENNINGS
Site: NWIRP BETHPAGE | Static Water Level Before (ft.): 56.45 | Drilling Co.: UNI-TECH
Date Installed: 5/5/00 | Static Water Level After (ft.): 52.44 | Project Name: OFF-SITE DRILLING
Date Developed: 6/5- | Screen Length (ft.): 20 | Project Number: N0565.0200
Dev. Method: AIR LIFT and | Specific Capacity: ____
Pump Type: SUBMERSIBLE | Casing ID (in.): 4

GPM

Time	~~Estimated~~ Sediment ~~Thickness~~ (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings ~~(Ft. below TOC)~~ (FT BGS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0906	37	—	—	11.8	5.88	.083	36	CLEAR. DO = 9.41.
0908	37	2200	—	—	—	—	—	STOP DEVELOPMENT TO EMPTY TANKS
1003	37	—	—	—	—	—	—	RESUME DEV. BEGIN SURGING NEXT INTERVAL.
1010	↓	—	—	12.8	5.91	.082	450	END SURGING. CLOUDY. DO = 9.93. V. FINE SAND.
1016		—	—	12.5	5.97	.082	90	CLEARING. DO = 9.70.
1020		—	—	12.2	6.04	.082	60	CLEARING. DO = 9.41. BEGIN SURGING
1030		—	59.5	12.1	6.07	.081	120	STOP SURGING. CLOUDY. DO = 9.41.
1034		—	—	12.2	6.12	.082	40	BEGIN SURGING. DO = 9.52.
1042		—	—	12.3	6.11	.082	110	END SURGING. DO = 9.88. V. FINE SAND.
1047		—	—	12.2	6.11	.082	36	CLEARING. DO = 9.56.
1049		—	—	—	—	—	—	BEGIN SURGING NEXT 3' INTERVAL.
1057		—	—	12.2	6.11	.082	390	END SURGING. CLOUDY. DO = 9.95. V. FINE SAND.
1102	↓	2200	59.7	12.3	6.14	.082	50	DO = 9.86. CLEARING. STOP DEV. TO EMPTY TANKS.
1312	32	—	—	—	—	—	—	RESUME DEVELOPING. BEGIN SURGING
1320	↓	—	—	13.7	6.11	.081	360	END SURGING. CLOUDY. DO = 9.82.
1325		—	—	12.8	6.19	.081	80	CLEARING. DO = 9.66. BEGIN SURGING
1335	↓	—	59.5	13.0	6.15	.082	130	END SURGING. CLOUDY. DO = 10.03.
13		—	—	12.8	17	.082	39	CLEAR. DO = 9.94.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D2 | Depth to Bottom (ft.): 556 (BGS | Responsible Personnel: S. NEIL, B. BAER, J. BEMMINGS
Site: NWIRP BETHPAGE | Static Water Level Before (ft.): 56.45 | Drilling Co.: UNI-TECH
Date Installed: 5/5/00 | Static Water Level After (ft.): 52.44 | Project Name: OFF-SITE DRILLING
Date Developed: 6/5- | Screen Length (ft.): 20 | Project Number: N0565.0200
Dev. Method: AIR LIFT and | Specific Capacity:
Pump Type: SUBMERSIBLE | Casing ID (in.): 4

GM

Time	~~Estimated Sediment Thickness~~ (SV) (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (SV) (Ft. ~~below TOC~~ BGS)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1343	32	—	—	—	—	—	—	BEGIN SURGING 5-8' INTERVAL.
1351	|	—	—	12.7	6.16	.082	240	END SURGING. CLOUDY. DO= 10.11.
1356	|	—	—	12.4	6.17	.082	36	CLEAR. DO= 9.72. BEGIN SURGING
1406	|	—	—	12.3	6.18	.082	110	END SURGING. CLOUDY. DO= 9.68.
1412	|	—	—	12.3	6.16	.082	30	CLEAR. DO= 9.61, BEGIN SURGING
1420	↓	2200	59.8	12.2	6.19	.082	70	CLEAR. DO= 9.39. END SURGING.
—	—	—	—	—	—	—	—	STOP DEV TO EMPTY TANKS.
1507	32	—	56.2	—	—	—	—	RESUME DEV. BEGIN SURGING.
1516	|	—	—	13.0	6.20	.082	110	END SURGING. CLOUDY. DO= 9.71.
1522	|	—	59.6	12.4	6.20	.082	38	CLEAR. DO= 9.77.
1524	|	—	—	—	—	—	—	MOVE UP TO THE 2-5 FT INTERVAL BEGIN SURGING.
1532	|	—	—	12.4	6.20	.082	39	END SURGING. CLEAR. 9.51 (DO)
1536	|	—	—	12.1	6.19	.082	30	CLEAR. DO= 9.38.
1538	|	—	—	—	—	—	—	MOVE TO FINAL INTERVAL (0-2'). BEGIN SURGING.
1547	|	—	—	12.2	6.19	.083	33	END SURGING. CLEAR. DO= 9.62.
1553	|	—	—	12.0	6.19	.082	20	DO= 9.31. CLEAR
1554	|	—	—	—	—	—	—	BEGIN MOVING SURGE BLOCK THRU THE SCREENED INTERVAL TO BOTTOM.
1600	↓	—	—	11.9	6.17	.083	260	ON THE BOTTOM. CLOUDY. DO= 9.79.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D2
Site: NWIRP BETHPAGE
Date Installed: 5/5/00
Date Developed: 6/5-
Dev. Method: AIR LIFT and
Pump Type: SUBMERSIBLE GPM

Depth to Bottom (ft.): 556 (BGS)
Static Water Level Before (ft.): 56.45
Static Water Level After (ft.): 52.44
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 4

Responsible Personnel: S. NEIL, B. BAER, J. BLEMMINGS
Drilling Co.: UNI-TECH
Project Name: OFF-SITE DRILLING
Project Number: N0565.0200

Time	~~Estimated Sediment Thickness (Ft.)~~	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. ~~below TOC~~ BGS) (SW)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1607	32	—	—	11.8	6.12	.083	65	CLEARING. DO = 9.47.
1611	↓	—	—	11.7	6.11	.083	31	CLEAR. DO = 9.19.
1615		—	—	11.8	6.12	.083	26	CLEAR. DO = 9.05.
1616	↓	2200	—	—	—	—	—	STOP DEVELOPMENT WITH AIR LIFT. WILL USE SUBMERSIBLE ON 6/7/00
1625	—	—	56.1	—	—	—	—	WATER LEVEL ONLY.
6/7/00 1050	14	—	(SW) ~~55.8~~ 54.3	—	~~6.57~~	—	—	WATER LEVEL W/ PUMP IN WELL.
1052		—	55.0	15.3	~~3.79~~ (SW)	.237	>1100	MURKY - BRN/GRAY. DO = 3.79.
1058		—	—	14.4	6.73	.211	>1100	SAME. DO = 2.17.
1106		—	55.0	13.2	7.23	.156	>1100	SAME. DO = 2.26.
1111		—	—	12.9	6.21	.088	850	V. CLOUDY - BRN. DO = 4.56.
1117		—	—	12.9	5.83	.082	400	CLOUDY - BRN. DO = 4.71.
1122		—	54.7	12.7	5.60	.080	170	CLOUDY BRN. DO = 4.89.
1127		—	—	12.7	5.51	.078	85	CLEARING. DO = 4.94.
1131		—	—	12.7	5.51	.078	70	SAME. DO = 4.76.
1135		—	—	12.7	5.49	.078	50	CLEARING. DO = 4.71.
1139		—	—	12.7	5.50	.079	80	DO = 4.97.
1144		—	54.7	12.7	5.50	.079	35	DO = 5.02. CLEAR.
11[illegible]	↓	—	—	13.5	36	.104	>1100	MURKY BROWN. PUMP AT STATIC. DO = 5.7

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-15D2
Site: NWIRP BETHPAGE
Date Installed: 5/5/00
Date Developed: 6/5-
Dev. Method: AIR LIFT and GPM
Pump Type: SUBMERSIBLE

Depth to Bottom (ft.): 556 (BGS)
Static Water Level Before (ft.): 56.45
Static Water Level After (ft.): 52.44
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 4

Responsible Personnel: S. NEIL, B. BAKER, J. BLEMMINGS
Drilling Co.: UNI-TECH
Project Name: OFF-SITE DRILLING
Project Number: N0565.0200

Time	~~Estimated Sediment Thickness~~ SAND (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings SAND (Ft. ~~below TOC~~ BGS)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1155	14	–	–	12.7	5.64	.079	38	DO=5.22. CLEAR.
1158	↓	~	–	12.7	5.50	.078	29	DO=5.14. CLEAR.
1202	↓	950	–	12.6	5.46	.079	21	DO=5.08. END DEVELOPING

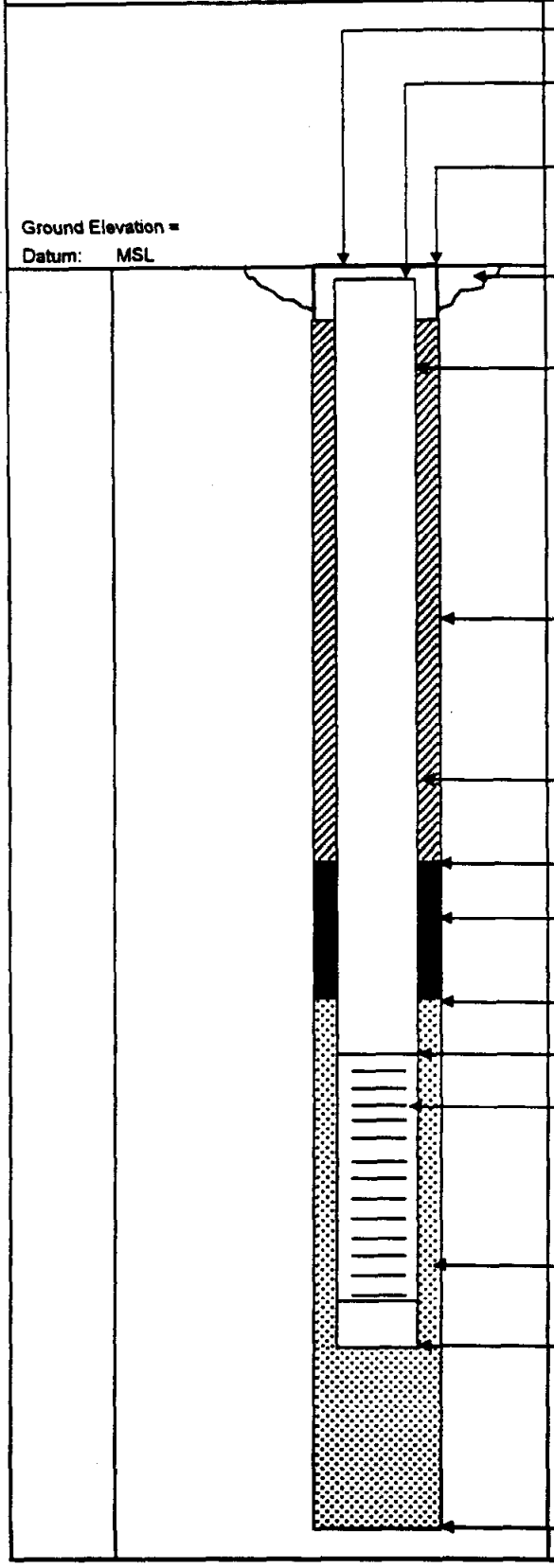
GM-17I

Tetra Tech NUS, Inc.

WELL No.: GM-17I

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-17I
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-23-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	H.S. Auger	NORTHING:	
GEOLOGIST:	S. Rokosh	DEV. METHOD:	Sub. Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 40, Flush Joint, Threaded PVC

Borehole Diameter: 9-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 91 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 93 FT

Elevation / Depth of Top of Screen: 99.5 FT

Type of Screen: Schedule 40 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: Fil Pro Quartz No.1 Sand to 94 FT / Fil Pro Quartz No. 0 Sand to 93 FT

Elevation / Depth of Bottom of Screen: 119.5 FT

Elevation / Depth of Bottom of Filter Pack: 119.5 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 125 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: NU565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: CME-55
BORING NUMBER: GM-17I
DATE: 05-22-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ	USCS**
1003	1.5							hand auger to 1.5 FT (BGS)					
1005/1011	4												
1013/1015	5							EQA=1	BG	BG	BG	BG	—
1017/1019	10					br.	gravelly m. to c. sand, gravel w.r. to s.r. + poorly sorted	damp EQA=2	BG	BG	BG	BG	SP
1021/1023	15							EQA=3	BG	BG	BG	BG	—
1025/1027	20					br.	m. to v.c. sand + gravel as above	EQA=4	BG	BG	BG	BG	—
1029/1031	25							EQA=5	—	0.0	0.0	0.0	—
1032/1034	30					br.	Same as at 10 FT (BGS)	EQA=6	0.0	0.0	0.0	0.0	SP
?/1038	35							EQA=7	—	0.0	0.0	0.0	—
1039/1041	40					br.	m. to c. sand + w.r. to s.r. poorly sorted gravel	EQA=8	0.0	0.0	0.0	0.0	SP
1043/1045	45							EQA=9	—	0.0	0.0	0.0	—
1046/1048	50					br.	Same as above	EQA=10	0.0	0.0	0.0	0.0	SP

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 5 FT Auger Costs: 6.25" I.D./9" O.D. 0.5' Auger Bit, Air monitor with PE PI 2020 PID = malfunctioning due to humid conditions. Samples from 0 to 50 FT collected from auger flights at ground surface.

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-17I

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: UniTech Drilling Co. Inc
DRILLING RIG: CME-95

BORING NUMBER: GM-17I
DATE: 05-22-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
1049 / 1052	55							EOA=11	—	0.0	0.0	0.0	—
1053 / 1055	60					or.br.	m. to c. sand + w.r. to s.a. poorly sorted gravel	damp EOA=12	0.0	0.0	0.0	0.0	SP
1056 / 1058	65						Soil moisture increasing, sand clumping on auger flights	EOA=13	—	BG	BG	BG	—
1059 / 1102	70					br.	m. to mostly c./v.c. sand, sm. mostly f. gravel	wet EOA=14	BG	BG	BG	BG	SP
1103 / 1107	75							EOA=15	—	0.0	0.0	0.0	—
1108 / 1109	80					br.	m. to mostly c./v.c. sand, sm. w.r. to s.a. gravel	wet EOA=16 1/8"-1/2" ϕ	BG	BG	BG	BG	SP
1110 / 1112	85							EOA=17	—	BG	BG	BG	—
1113 / 1117	90					br.	m. to c. sand, sm. w.r. to s.r. f. gravel	wet EOA=18	BG	BG	BG	BG	SP
1118 S-1	95	6 / 8	1		loose	lt.br.	m. to mostly c. sand	EOA=19 add potable	BG	BG	BG	BG	SP
@ 1302	97	13 / 17	24		m.dense			water before collect S.Spoon + before drilling to 100					
								sat.					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, gy = gray, or. = orange, wt = white, s.r. = subrounded, s.a. = subangular, w.r. = well rounded, lt = light, dk = dark, ϕ = diameter, tr. = trace = 0-11%, sm. = some = 11-30%, adjective (ie gravelly) = 31-50%, + (and) = equal %'s

Drilling Area Background (ppm): 0710

Converted to Well: Yes X No ____ Well I.D. #: GM-17I

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206 BORING NUMBER: GM-17I
PROJECT NUMBER: N0565.0206 DATE: 05-22-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pekpke
DRILLING RIG: CME-85 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
S-2 @	100	21/40	8		m. dense to dense	lt. br.	m. to c. sand, tr. v.c. sand / f. gravel	sat. EVA=20	0.0	0.0	0.3	0.3	SP
1314	102	35/55	24		dense	↓		↓ add potable water					
S-3 @	105	15/6	3.5		m. dense to loose	↓	same as above	↓ EVA=21	0.0	0.0	0.0	0.0	SP
1328	107	10/16	24		m. dense			add potable water					
S-4 @	110	100	0		—			no recovery →	—	—	—	—	—
1337	112	over 3" —	24		—			drive second spoon					
		—											
S-5 @	110	37/100	11.5		dense to v. dense	↓	m. to v.c. sand, tr. f. gravel	↓ EVA=22	0.0	0.0	0.0	0.0	
1341	112	over 4"	24		—			add potable water before collecting s. spoon					
S-6 @	115	100 / 5"	23		v. dense	↓	m. to v.c. sand, sm. f. gravel	↓ EVA=23	256	BG	BG	BG	SP
1353	117	— —	24		—		prob. heaving sand resulting in greater recovery	add potable water					
S-7 @	120	12/12	9		m. dense	↓	mostly m. to c. sand coarsening with depth to m. to v.c. sand + w.r. to s.r. gravel	↓ EVA=24	BG	BG	BG	BG	SP
1408	122	22/31	24		m. dense	dk. br., lt. wt.		1/8" to 1/2" ϕ					
								add potable water					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: ______ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-17I

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0216
PROJECT NUMBER: N0165.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-17I
DATE: 05-22-00
GEOLOGIST: S. Pekko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	Remarks	PID Reading (ppm): Sample	PID Reading (ppm): Sampler BZ	PID Reading (ppm): Borehole*	PID Reading (ppm): Driller BZ**	USCS *
S-6 @	123	37/20	3		dense	Hbr, Hyg	m. to v.c. sand, sm. wr. to s.f. gravel	SAT. bc "sticky"	BG	BG	BG	BG	SP
1421	125	12/15	24		medense	gy.		clayey sand on lower 1/2 of s. spoon exterior					
								1/8" to 1/2" ø					
1430	125							EOB=25	-	BG	BG	BG	-
				T.D.=125'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0>10

Converted to Well: Yes X No _____ Well I.D. #: GM-17I

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-12-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp sub pump.

Depth to Bottom (ft.): 119.5 FT (BGS)
Static Water Level Before (ft.): 48 FT (TOC)*
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20 SP 07-13-00
Specific Capacity: ~~[illegible]~~ (14/(48.17-48)) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Petoske, W. Walsh, E. Blommers
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

*0.67 FT stickup on well.

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1408	Q = 14.1		48.00	—	—	—	—	—	begin development pump depth @ 119 FT (BGS)	
1410	↓	↓	48.48	19.3	6.12	0.120	7.04	>1100	cloudy, wl.-br.; PID = 0.0	
1419			48.50	19.8	6.25	0.118	6.14	13.9	clear; surge 5 FT well section w/ pump	(119'-114')
1420			—	—	—	—	—	—	end surge	
1422			48.50	19.4	6.22	0.119	6.28	>1100	cloudy, wl. br.; PID = 0.0	
1426			48.50	19.5	6.16	0.118	5.99	27.3	clear	
1428			—	—	—	—	—	—	surge 5 FT well section w/ pump	(119'-114')
1429			—	—	—	—	—	—	end surge	
1430			—	19.6	6.17	0.118	5.86	>1100	cloudy, wl. br.	
1432			—	19.5	6.13	0.118	5.59	276	br. tint	
1436			48.49	19.6	6.21	0.119	5.80	18.8	clear; PID = 0.0	
1437			—	—	—	—	—	—	surge 5' well section w/ pump	(119'-114')
1438			—	—	—	—	—	—	end surge	
1440			—	19.6	6.16	0.118	6.14	>1100	cloudy, wl. br.; PID = 0.0	
1442			48.49	19.5	6.17	0.119	5.90	86	lt. br. tint	
1444			—	—	—	—	—	—	surge 5' well section w/ pump	(119'-114')
1445			—	—	—	—	—	—	end surge	
1447	↓	↓	48.49	19.6	6.18	0.119	5.68	1083	cloudy; wl-br.; PID = 0.0	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-12-00
Dev. Method: submersible pump
Pump Type: 1-inch 0.5 hp sub pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 48.00 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Pelgato, W. Waugh, E. Blumings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1449	Q=14.1		48.50	19.6	6.18	0.119	5.59	37.6	v. H. br. tint	
1451			—	—	—	—	—	—	surge 5' well section w/ pump	(119'-114')
1452			—	—	—	—	—	—	end surge	
1454			—	19.6	6.20	0.119	5.57	780	br. tint; PID = 0.0	
1458			—	19.6	6.12	0.119	5.59	16.5	clear	
1459			—	—	—	—	—	—	surge 5' well section w/ pump	(119'-114')
1500			—	—	—	—	—	—	end surge	
1502			48.49	19.7	6.18	0.119	5.41	579	br. tint; PID = 0.0	
1505			48.49	19.7	6.15	0.118	5.44	17.1	clear	
1507			—	—	—	—	—	—	surge 5' well section w/ pump	(114'-114')
1508			—	—	—	—	—	—	end surge	
1510			48.48	19.7	6.17	0.120	5.59	>1100	cloudy, or.-br.	
1513			48.49	19.8	6.15	0.114	5.03	31.1	v. H. br. tint	
1516			—	—	—	—	—	—	pull pump up to ~114' surge 5' well section with pump	(114'-104')
1517			—	—	—	—	—	—	end surge	
1519			—	19.7	6.12	0.119	6.06	>1100	v. cloudy, or. br.; PID = 0.0	
1521			—	19.7	6.14	0.118	5.29	279	H. br. tint	
1524				19.6	6.11	0.118	5.56	68.6	v. H. br. tint	

Tetra Tech NUS, Inc. MONITORING WELL DEVELOPMENT RECORD

Well: GM-17 I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-12-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5 hp Sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 48 FT (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Pelepko, W. Wagle, E. Blumming
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

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Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1526	$\bar{Q}$=14.1	1100	—	—	—	—	—	—	Stop development → surge well hydraulically
1604	$\bar{Q}$=10.2	↓	—	—	—	—	—	—	continue development. Surge 5' section of well w/ pump (114'-109')
1605	↓		—	—	—	—	—	—	end surge
1607			—	20.4	6.10	0.118	6.12	>1100	v. cloudy, or.-br., PID=0.0 SP 07-12-00
1614			48.17	20.7	6.12	0.120	6.41	310	~~lt.~~ br. tint
1618			48.18	20.6	6.16	0.120	4.91	94.2	lt. br. tint; PID=0.0
1619			—	—	—	—	—	—	surge 5' section of well w/ pump (114'-109')
1620			—	—	—	—	—	—	end surge
1622			—	19.7	6.13	0.119	6.61	>1100	v. cloudy, or.-br.
1632			48.19	20.3	6.14	0.119	5.10	216	br. tint
1634			—	—	—	—	—	—	pumping rate seems
—			—	—	—	—	—	—	lower; surge water through pump to free
—	↓		—	—	—	—	—	—	any sediments
1645	~4 GPM		—	—	—	—	—	—	manually measure flow rate → very slow; pump
—	$\bar{Q}$=10.2		—	—	—	—	—	—	possibly blocked with sediment
1648			—	20.5	6.23	0.119	5.62	689	or.-br. tint
1651			—	—	—	—	—	—	drop pump back down to 119 FT; Q increase noticeably
1653	↓	↓	—	19.6	6.33	0.120	5.76	>1100	~~v.~~ cloudy, or.-br.

SP 07-12-00

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-12-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5hp Sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 46 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.09 - 46) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. McKelvey, W. Waugh, E. Hemming
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1656	Q = 10.2		—	19.7	6.12	0.118	5.55	34.2	v. lt. brn.; surge 5' section of well	(114'-109')
1657			—	—	—	—	—	—	set pump at ~114' and surge	
1701			—	19.6	6.16	0.120	5.60	546	appears to be pumping clear	
1705	15		—	—	—	—	—	—	manual flow rate	
1706	Q = 10.2		—	19.7	6.15	0.119	5.03	32.7	surge 5' section of well w/ pump	(114'-109')
1707			—	—	—	—	—	—	end surge	
1709			—	19.7	6.06	0.119	5.84	71100	cl. br., cloudy	
1714			48.50	19.6	6.04	0.119	5.22	80.1	lt. br. tint	
1717			—	—	—	—	—	—	surge 5' section of well w/ pump	(114'-109')
1720			—	19.7	6.07	0.119	5.65	71100	cloudy, cl. br.	
1726			—	19.6	6.17	0.119	5.07	29.0	surge 5' well section w/ pump	(114'-109')
1727			—	—	—	—	—	—	end surge	
1730			48.51	19.6	6.15	0.119	5.24	944	cloudy, v.l.-br.	
1736			48.51	19.8	6.15	0.119	5.02	19.8	clear	
1737			—	—	—	—	—	—	surge 5' section of well w/ pump	(114'-109')
1738			—	—	—	—	—	—	end surge	
1741			—	19.7	6.14	0.119	5.20	757	v. br. tint; PID=0.0	
1744			—	19.7	6.11	0.119	5.30	61.3	surge 5' section of well	(114'-109')

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-12-00
Dev. Method: Submersible pump
Pump Type: 4 inch 0.5 hp Sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 46 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(46.67 - 46) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Arapka, W. Waugh, E. Benning
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1745	Q = 10.2		—	—	—	—	—	—	end surge	
1748			—	19.7	6.12	0.119	5.45	972	cloudy, or. br.	
1751			48.52	19.7	6.09	0.119	4.62	61.1	H. br. tint	
07-12-00 1752		2200	—	—	—	—	—	—	stop development → hydraul. surge only	
07-13-00 0742	Q = 14.7		—	—	—	—	—	—	resume development will hydraul. surge 5' well section w/ pump	(114'-104')
0743			—	—	—	—	—	—	end surge	
0746			—	19.8	5.66	0.165	6.53	605	or.-br. tint; PID = 0.0	
0750			—	19.6	5.93	0.121	5.80	62.4	H. br. tint	
0752			—	—	—	—	—	—	surge 5' well section w/ pump end surge at 0753	(114'-104')
0756			—	19.6	6.02	0.120	5.69	629	or.-br. tint	
0800			48.53	19.7	6.02	0.118	5.65	46.6	v. H. br. tint	
0803			—	—	—	—	—	—	pull pump up to ~ 104' surge 5' well section w/ pump.	(104'-104')
0804			—	—	—	—	—	—	end surge	
0807			—	19.6	6.06	0.119	6.11	927	cloudy, or.-br.	
0811			—	19.7	6.04	0.120	5.66	78.7	H. br. tint	
0813			—	—	—	—	—	—	surge 5' well section w/ pump	(104'-104')
0816			48.62	19.7	6.02	0.121	6.60	>1000	cloudy, or.-br.	
0825			48.61	19.9	6.03	0.121	6.17	19.8	clear	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-12I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5 hp Sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 48 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Rapka, W. Waugh, E. Ammerman
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
0825	Q=14.7		—	—	—	—	—	—	surge 5' section of well w/ pump	(109'-104')
0826			—	—	—	—	—	—	end surge	
0829			—	19.8	6.09	0.120	5.45	607	vr.-br. tint	
0835			—	19.9	6.05	0.119	5.25	40.5	surge 5' well section w/ pump	(109'-104')
0838			—	19.8	6.05	0.119	5.67	1006	cloudy, br.-br.	
0841			48.59	19.8	6.16	0.120	5.59	104.6	v. lt. br. tint	
0846			48.59	19.9	6.16	0.119	5.31	21.6	clear	
0848			—	—	—	—	—	—	surge 5' well section w/ pump	(109'-104')
0851			—	19.9	6.18	0.119	6.42	755	br.-br. tint	
0856			—	19.9	6.15	0.120	6.43	41.8	v. lt. br. tint	
0857		3300	—	—	—	—	—	—	stop development → hydrofracture with surge well continue development + surge	
0944	Q=14.2		—	—	—	—	—	—		
0946			—	20.6	6.06	0.121	7.04	594	5' section of well w/ pump br.-br. tint	(109'-104')
0953			—	20.4	6.11	0.119	7.34	37.1	v. lt. tint	
0954			—	—	—	—	—	—	surge 5' well section w/ pump	(109'-104')
0955			—	—	—	—	—	—	end surge	
0958			—	20.1	6.12	0.120	6.41	478	vr.-br. tint	
1003			48.58	20.1	6.13	0.121	6.13	30.5	v. lt. tint, PID=0.0	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-13-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 46 (TOC)
Static Water Level After (ft.): 46.09 (TOC) 7-13-00
Screen Length (ft.): 20
Specific Capacity: 14/(46.67 - 46) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Akpoto, W. Ways, E. Blemmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1005	Q = 14.2		—	—	—	—	—	—	surge 5' well section w/ pump	(104'-104')
1007			—	—	—	—	—	—	end surge	
1010			46.60	20.0	6.24	0.120	5.92	459	cloudy, or.-br.	
1014			46.59	20.0	6.21	0.120	6.19	57	v.lt. br. tint	
1018			—	—	—	—	—	—	surge 5' section of well w/ pump	(104'-104')
1021			—	20.0	6.17	0.121	5.76	587	or.-br. tint	
1024			—	20.0	6.11	0.119	5.46	98.5	lt. br. tint	
1028			—	—	—	—	—	—	surge 5' well section w/pump	(104'-104')
1029			—	—	—	—	—	—	end surge	
1032			46.59	19.9	6.24	0.121	5.96	400	or.-br. tint	
1036			46.60	19.9	6.20	0.120	5.42	40	7-13-00 v. lt. br. tint, surge 5 FT section of well	(104'-104')
1037			—	—	—	—	—	—	end surge	
1040			—	—	—	—	—	—	pump shut off briefly to backwash with surged well	
1043			46.59	20.0	6.23	0.120	5.72	209	lt. br. tint	
1046			46.57	20.0	6.21	0.120	5.48	37.6	v. lt. br. tint; surge 5' well section w/ pump	(104'-104')
1047			—	—	—	—	—	—	end surge	
1050			—	20.0	6.21	0.120	5.21	589	or.-br. tint	
1053			—	19.9	6.28	0.120	5.61	98.6	lt. br. tint	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-13-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 48 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekaka, W. Wagh, E. Bkmmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1056	Q̄ = 14.2		—	20.0	6.22	0.120	5.36	22.6	surge 5' section of well w/ pump clear	(109'-104')
1057			—	—	—	—	—	—	end surge	
1100			—	20.0	6.20	0.120	5.74	524	or-br. tint	
1104			48.60	20.2	6.21	0.121	5.59	44.3	v. lt. tint	
1105		4450	—	—	—	—	—	—	stop development → hydraulically surge well	
1223	Q̄ = 13.8		—	—	—	—	—	—	continue development	
1224			—	20.7	6.06	0.119	8.40	160	lt. br. tint	
1228			—	20.5	6.21	0.120	6.78	21.1	clear pull pump up to 104' + surge 5' well section	(104'-99')
1229			—	—	—	—	—	—	end surge	
1232			48.62	20.6	6.20	0.120	5.84	869	cloudy, or.-br.	
1236			48.62	20.3	6.13	0.121	5.60	113	lt. br. tint	
1241			48.62	20.3	6.27	0.121	6.03	22.7	surge 5' section of well clear; PID=0.0	(104'-99')
1244			—	20.3	6.20	0.120	5.38	>1100	cloudy, or.-br.	
1248			—	20.2	6.22	0.121	5.56	97.1	lt. br. tint	
1249			—	—	—	—	—	—	surge 5' well section w/ pump	(104'-99')
1252			48.61	20.5	6.23	0.120	5.62	839	cloudy, or.-br.	
1256			48.62	20.3	6.27	0.121	5.81	96.4	lt. br. tint, surge 5' well section	(104'-99')
1257			—	—	—	—	—	—	end surge	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 46 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(46.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Pekoko J. Fuori, E. Blemmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1300	Q=13.8		—	20.2	6.18	0.118	5.17	619	or.-br. tint	
1304	↓		—	20.3	6.21	0.120	5.83	71.5	lt. br. tint	
1305			—	—	—	—	—	—	Surge 5' section of well w/ pump	(104'-99')
1308			48.62	20.3	6.18	0.121	5.51	579	or.-br. tint	
1312			48.63	20.3	6.19	0.120	6.26	61.1	lt. br. tint	
1313			—	—	—	—	—	—	Surge 5' section of well w/ pump	(104'-99')
1316			—	20.1	6.13	0.120	5.73	572	or. br. tint	
1320			48.62	20.4	6.12	0.120	5.53	67.1	lt. br. tint	
1321			—	—	—	—	—	—	Surge 5' well section w/ pump	(104'-99')
1322			—	—	—	—	—	—	end surge	
1325			48.61	20.4	6.13	0.118	5.13	501	or.-br. tint	
1330			48.62	19.9	6.14	0.121	5.63	26.8	clear	
1331			—	—	—	—	—	~~off~~ SP 07-13-00	lower pump to ~119'	
1333			—	19.4	6.20	0.100	5.81	>1100	cloudy, or. br.	
1336			—	19.7	6.21	0.121	5.54	34.1	v. lt. tint	
1340			—	19.6	6.22	0.120	6.13	24.9	clear	
1344			—	20.6	6.23	0.117	6.14	22.5	clear	
1349	↓	↓	—	—	—	—	—	—	pull pump up to ~ ~~48~~ 50'	

SP 07-13-00

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17I
Site: NWIRP Bethpage
Date Installed: 05-23-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4" 0.5 hp sub. pump

Depth to Bottom (ft.): 119.5 (BGS)
Static Water Level Before (ft.): 48 (TOC)
Static Water Level After (ft.): 48.09 (TOC)
Screen Length (ft.): 20
Specific Capacity: 14/(48.67-48) = 20.9
Casing ID (in.): 4-inch

Responsible Personnel: S. Alopka, J. Evans, E. [illegible]
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1350	$\bar{Q} = 13.8$	5650	—	22.1	6.77	0.118	5.57	60.1	Stop development → hydraulically surge well
1457	$\bar{Q} = 16$	↓	—	23.8	6.60	0.123	5.88	58.0	lt. br. tint
1502	↓	↓	—	20.7	6.62	0.121	6.15	654	v. lt. br. tint
1508	↓	↓	—	20.6	6.36	0.121	5.16	17.2	clear
1513	↓	↓	—	20.2	6.32	0.121	6.77	6.16	clear
1518	↓	↓	48.67	20.6	6.28	0.121	5.87	5.53	clear
1521	↓	6050	—	—	—	—	—	—	development complete
1532	—	—	48.09	—	—	—	—	—	final water level → rising slowly

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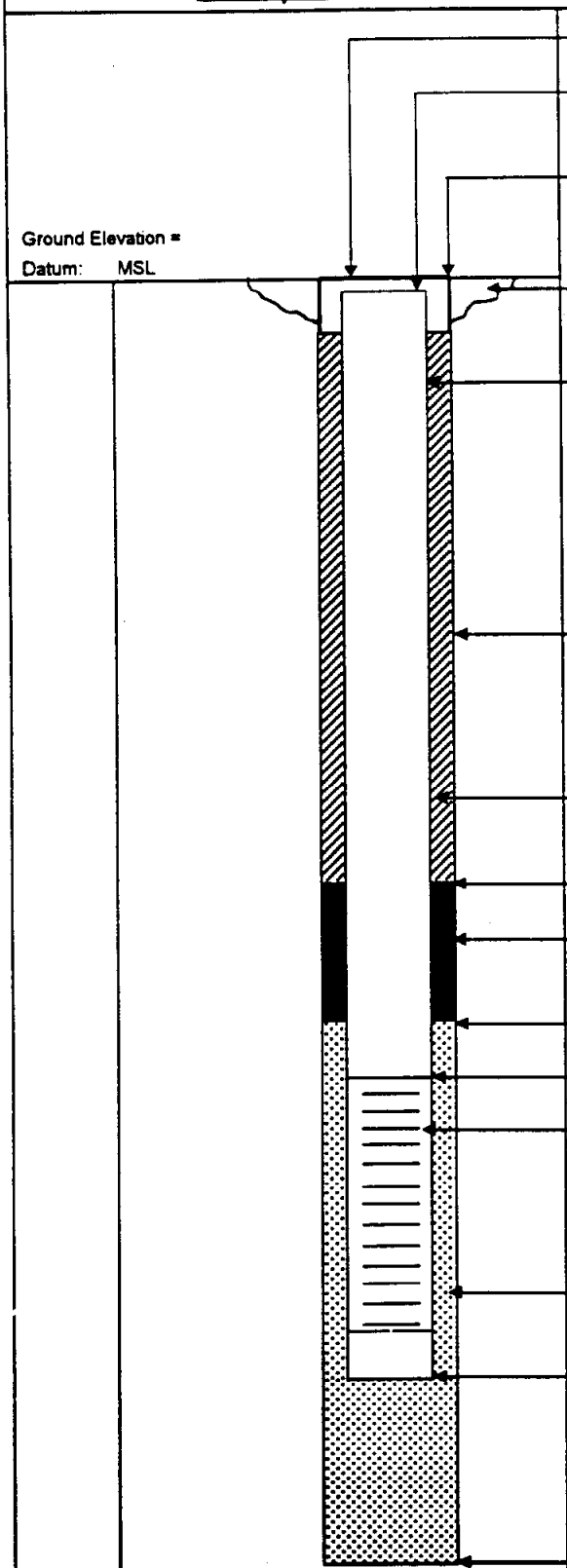
GM-17D

Tetra Tech NUS, Inc.

WELL No.: GM-17D

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-17D
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	04-26-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pelepko	DEV. METHOD:	Air Lift Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80, Flush Joint, Threaded PVC

Borehole Diameter: 11-Inch to 70 FT
8-Inch to 340 FT

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 257 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 259.5 FT

Elevation / Depth of Top of Screen: 278 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 264.5 FT/FilPro Quartz No. 0 Sand to 259.5 FT

Elevation / Depth of Bottom of Screen: 298 FT

Elevation / Depth of Bottom of Filter Pack: 340 FT

Type of Backfill Below Well: N/A

Elevation / Total Depth of Borehole: 340 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0205
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-17D
DATE: 04-20-00
GEOLOGIST: S. Palepka
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	Remarks	PID Reading (ppm): Sample	PID Reading (ppm): Sampler BZ	PID Reading (ppm): Borehole*	PID Reading (ppm): Driller BZ**	USCS *
1309	2.5							hand auger first 2.5 FT					
1313	10					wt., lt-br to br.	c. to v.c. sand + wellrounded to subrounded gtz gravel	1/8" to 1/2" ϕ	0.0	0.0	0.0	0.0	GP
1317 1346	20					var.	same as above	attach 8"x 10' reamer	0.0	0.0	0.2	0.1	?
							wt./lt-gy./lt.-br. to br.						
1346 1420	30					wt., lt-gy.	same as above	mostly 1/4" ϕ	0.0	0.0	0.0	0.0	GP
						lt.-br.		gravels thicken mud					
								to 1 1/4" pebbles; recondition					
								~4FT borehole caliper on rod					
								change					
1432	40					lt-gy to gy.	c. to v.c. sand, sm. wellrounded to subangular gravel (gtz.)	1/8" to 1/2" ϕ	0.0	0.0	0.0	0.0	GP
						lt.-br.		losing mud to formation					
1437	45												
1443								thicken mud, recondition borehole					
1444	50							EOR = 1					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 8" Mud Rotary Drilling; 8"x 10' Reamer 8"x 1' Drag Bit
Stroke = 2.0 FT All samples wet laundry from drilling mud, Air monitor with PE photovac 2020 PID. 10FT - 40 FT samples collected from circulating mud using strainer

Drilling Area Background (ppm): 0

Converted to Well: Yes X No _____ Well I.D. #: GM-17D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: UniTech Drilling Co, Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-170
DATE: 04-20-00/04-21-00/04-24-00
GEOLOGIST: S. Alepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-1 @ 1514	50	100/4.5"	17		v. dense	var.	well rounded to angular qtz. + granitic gneissic gravels	5 FT borehole collapse at	0.0	0.0	0.0	0.0	GW
	52	—	24		—		H.-gy. to gy./H. br. to br./or.-br./	rod change → recondition					
							pk./bk.	borehole EOR=1					
							1/4" to 1.5" ϕ	losing mud to formation					
S-2 @ 1615	60	24/26	18		m. dense	H.-gy. to gy.	well rounded to angular gravel as above, sm.	1/8" to 1" ϕ	0.0	0.0	0.0	0.0	GW
	62	100/—	24		v. dense	H.-br. to br.	rd.-br. silt/clay + c. to v.c. sand ↳ near bottom	4 FT collapse at rod change →					
								recondition borehole					
							driller reports large ϕ gravels in return circulation	losing mud					
S-3 @ 1645	70	100/4.5"	24		v. dense	H.-br. to dk.-br. wt.	same as above	1/8" to 1.5" ϕ	0.0	0.0	0.0	0.0	GW
04-20	72	—	24		—			EOR=2					
04-21						H.-gy. pk.							
S-4 @ 0835	80	9/10	8		loose	var.	well rounded to subangular 1/4" ϕ qtz. gravel coarsening		0.0	0.0	0.0	0.0	GW
	82	8/10	24		loose		with depth to 0.5" to 1" ϕ qtz./granitic gravel						
							H. br. - dk. br./H. gy. - gy./						
							wt./bk.						
04-21 S-5 @ 0845	90	21/100	7		m. dense to v. dense	var.	well rounded to angular qtz. gravels (1/4" to 1" ϕ)	driller reports 2 FT collapse	0.0	0.0	0.0	0.0	GW
04-24	92	—	24		—		1.5" ϕ qtz. gravel lodged	over weekend					
							in shoe	0822 - at depth, recondition					
							pk./wt./H. gy. - gy./H. br. -	borehole EOR=3					
							dk. br.	3FT collapse at rod change;					
							driller reports "gravel-like" drilling	thicken mud + recondition					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Abbreviations: br. = brown, wt. = white, gy. = grey, or. = orange, bk. = black, pk. = pink, rd. = red, dk. = dark, H. = light, var. = variegated, sm. = 11-30%, tr. = 0>11%, radioactive (if sandy) = 31-50%, + / and = equal percentages; ϕ = diameter

Converted to Well: Yes X No _____ Well I.D. #: GM-170

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-17D
DATE: 04-24-00
GEOLOGIST: S. Rakpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-6	100	41/35	?		dense	br., dk. br.	well rounded to angular 1/8" Ø to 1" Ø qtz gravel,	4.5 FT collapse	0.0	0.0	0.0	0.0	GW
@ 0414	102	55/100	24		v. dense	gy., wt.	tr. c. to v.c. sand	at rod change 0907--thicker					
		/					2" Ø qtz. gravel locked in shoe + trap full of gravel;	mud; recondition borehole					
		/					Tr. M. brn silty clayey f. to m. sand sticking to gravel						
S-7	110	56/100	11		V. dense	wt. M. gy.	well rounded to subangular	driller	0.0	0.0	0.0	0.0	GP
@ 0950	112	-/-	24		—	gy. dk. br.	qtz. gravel (0.5" to 1" Ø)	reports "gravel-like" drilling					
		/					br. lrd./wt. clayey/silty gravel + m. to c. sand in trap → damp	persists EOR=4					
		/											
		/											
S-8 @ 1025	120	25/38	12		M. dense	var.	same as above with (1/4" to 1.5" Ø granitic gravels → 10"	1007 - thicker	0.0	0.0	0.0	0.0	I
	122	43/50	24		dense		wt. / lt. gy. - gy. / bk. / dk. br. / rd.	mud; recondition borehole					
		/				M.-br.	2" m. to v.c. sand, sm. 1/8" to 1/4" Ø gravels + silt / clay →						
		/					compacted in shoe						
		/											
S-9 @ 1114	130	15/15	11.5		Stiff	br.	6.5" v. dense clayey/sandy silt, micaceous, san.	5" gravel lay	0.0	0.0	0.0	0.0	ML
	132	100/-	24		hard		weathered gravels (brittle) + wt. / dk. br. mottling	damp / dry					
		/					same material as above	1045 - thicker mud; recondition					
		/					compacted in shoe	1050 - ~4.5 FT collapse;					
		/						thicker mud + recondition EOR=5					
S-10 @ 1135	140	53/100	24		V. dense	br.	muddy sands, gravels, + sandy clay		0.0	0.0	0.0	0.0	SP
	142	-/-	24		—	br. wt.	c. to v.c. sand, sm. 1/4" to 1/8" Ø gravel + silt / clay	driller reports					
		/				M.-gy.	compacted in shoe	"sand-like" drilling					
		/						btw 130' to 140'					
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: not: Sample strainer screen mesh too wide to hold f. to m. sands (> 0.5mm)

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-17D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Tri-Tech Drilling Co Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-17D
DATE: 04-24-00
GEOLOGIST: S. Rakpko
DRILLER: T. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
S-11 @	150	50/100	7		v. dense	br.	2" m. to v.c. sand, sm. 1/2" to 0.5" ϕ gravel +	5" gravel + sandy clay	0.0	0.0	0.0	0.0	SP
1249	152	over 3" —	24		—		silt/clay → compacted in shoe	lay					
								EOR = 6					
S-12 @	160	13/55	15.5		hard	gy. bk. -	8.5" interbedded dense clay + silty f. sandy clay	7" gravel + sandy clay lay	0.0	0.0	0.0	0.0	ML/CL
1306	162	100 over 5"	24		hard	gy. bk.	+ silty f. sand → appears laminated	damp					OH
							lignite-rich 3" from bottom						
							driller reports "sand/clay" interbedded drilling b/w						
							150' - 180'						
S-13 @	170	18/36	15		m. dense	H. - gy.	9" silty f. to m. sand with clayey laminae	4" clay/sandy clay + gravel lay	0.0	0.0	0.0	0.0	SM
1331	172	100 over 3"	24		v. dense		H.-br./or.-br. banding + mottling						
						br. - gy.	clay + gravel → 2"	EOR = 7					
						bk.							
S-14 @	180	42/100	8		v. dense	or. - br.	4" mostly m. to c. sand, sm. silt/clay + 0.25"	4" clay/sandy clay + gravel lay	0.0	0.0	0.0	0.0	SP
1353	182	over 4" —	24		—		H. gy. clay interbed						
								driller reports "silt/f. sand-like" smooth drilling b/w					
								180' - 190'					
S-15 @	190	40/40	9		dense	var.	5" f. to m. sand with thin clayey/silty interbeds	4" sand (m. to c.), sandy clay +	0.0	0.0	0.0	0.0	SP
1411	192	100 over 5"	24		v. dense		+ laminae	gravel lay					SM/SC
							H. br./gy./lt. gy./bk.	EOR = 8					
							driller reports "sand + gravel-like" drilling b/w 190' - 200'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No Well I.D. #: GM-17D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N2565.0200
DRILLING COMPANY: Mi-Tech Drilling Co Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-170
DATE: 04-24-00
GEOLOGIST: S. Pekala
DRILLER: T. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
S-16 @	200	56/100	6		v. dense & hard	lt.-br. or. br.	4" mostly m. sand with 0.25" silty clay interbed	2" muddy sand + gravel	0.0	0.0	0.0	0.0	SP
1435	202	over 3" —	24		—			log					CL
S-17 @	210	100/—	5		v. dense	br. - gy.	m. to c. sand, sm. 0.25" Ø, well rounded	bit chattering	0.0	0.0	0.0	0.0	SP
1500	212	—/—	24		—		qtz. gravel	"sand-like" drilling from					
						or.-br. / lt.-gy.	clayey lense in middle of sample	200' - 220'					
								1455 - thicker mud + recondition					
								EOR=9					
S-18 @	220	45/53	20		hard	or.-br.	13" interbedded dense clay + clayey f. sand + sandy	1506 - thicker mud + recondition	0.0	0.0	0.0	0.0	
1520	222	100/over 4"	24		med to v. dense	br.	clay						
						dk.-gy.	7" interbedded dense clay / f. to m. sand / silty	→ compacted					CH/SM
						gy.-blk.	sand	in shoe → lignitic near					SP
							bedding thickness ≈ 1.5" to laminae	bottom					
S-19 @	230	25/21	13.5		m. dense	or.-br.	6.5" f. to m. sand with	softer, "clayey"	0.0	0.0	0.0	0.0	SP
1546	232	46/62	24		v. dense	br., lt.-gy.	sm. thin clayey / silty interbeds (≤1" thick)	drilling					SM/SC
						lt. br.	7" silty sand + laminated	→ compacted					SM
							clayey beds (blk. / gy. / lt.-br.)	in shoe; trap broken					
								EOR=10					
S-20 @	240	100/—	4		v. dense	lt. br. to	f. to m. sand, sm. silt lay	→ compacted in shoe	0.0	0.0	0.0	0.0	SP
1602	242	—/—	24		—	or. to brick red.	piece of gravel + clayey / silty laminae at top of sample						
								bit chattering "sand-like"					
								drilling from 230' - 250'					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-170

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage-CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-17D
DATE: 04-24-00
GEOLOGIST: S. Pekala
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ**	USCS*
S-21 @ 1738	250 / 252	12/8 9/15	12 / 24		stiff to loose / stiff to m. dense	dk. gy. / H.-br. or.-br.	2" clay w/ br. lamina; 5'm. to c. sand fining to mostly m. sand with	1610 - lose circulation; approx. 500 to	0.0	0.0	0.0	0.0	CL / SP/CH
						H.-gy.	clay + clayey/silty interbed (reg. lgr.-br. lbk.)	1000 gallons mud out of					SM/SC
						H.-gy.	5" interbedded f. to c. sand + sandy clay +	zone					SP/CL
							clay + clayey/silty sand	EOR=11					CH/SM
							individual beds < 1" thick, sm. laminated						SC
S-22 @ 0852	1750 / 265 / 262	45/100 / -	12 / 24		v. dense / —	gy.	5" mostly m. sand, sm. or.-br. lbk. clayey/silty micro laminae	7" gravel, clay, + sandy clay lay	0.4	0.0	0.0	0.0	SP
						or.-br.	thin (cloudy) v. hard fe-oxide cemented sand at bottom of sample	0939 = recondition bucket / add water					
S-23 @ 0911	270 / 272	18/62 100/6in2"	13 / 24		dense / v. dense	var.	2" silty mostly m. sand or.-br. / H.-br. lbk. 0.5" laminated bk./gy. / or.-br. clayey/silty f. to m. sand	losing sm. water / driller reports	0.0	0.0	0.1	0.0	SM / SM/SC
						or.-br. or.-gy.	5.5" mostly m. to c. sand (gravel)	"gravel-like" drilling → bit chattering (260 FT to 300 FT)					SP
								EOR=12					
S-24 @ 0929	280 / 282	100/- -/-	5.5 / 24		v. dense to hard / —	br.-gy.	m. to c. sand, sm. 0.25" to 1.5" @ well rounded to angular gry. gravel + red./ or.-br. mottling		0.0	0.0	0.0	0.0	SP
						var.	0.5" clayey bed in middle of sample						SC
							or.-br. / lbk. / gy.						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Drilling Area Background (ppm): 0.0-0.2

Converted to Well: Yes X No Well I.D. #: GM-17D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage-CTO 0206
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-170
DATE: 04-25-00
GEOLOGIST: S. Pekarko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Drillers BZ**	USCS*
S-25 @	290	70/100	7		v. dense	var.	f. to mostly m. sand v. hard cr.-br. Fe-cmt	losing sm. water	0.0	0.0	0.0	0.0	SP
1012	292	cont 5" / —	24		—		cemented sand fragments in middle of sample	well flowing at rod break					
							H.-br. lor.-br. / H.-gy.	0950 - reconditioned					
							v.c. sand + gravel lay on top of sample	0955 - thicken mud + recondition					
S-26 @	295	65/100	8		v. dense	br.-gy.	7" mostly m. sand	EOR=13 1" gravel	0.0	0.0	0.0	0.0	SP
1034	297	cont 5" / —	24		—			lay on top of sample					
								(1" Ø)					
S-27 @	300	35/100	8		v. dense to hard	H.-gy. H.-br.	1.5" f. to m. sand with cr.-cr. interbedded		0.0	0.0	0.0	0.0	
1051	302	cont 4" / —	24		—	H.-gy.	clayey/silty laminae 0.25" clay bed						SC/CH
						br.-gy. H.-gy.	3.75" f. to m. sand, sm. silt						SP
							fr. cr.-br. / blk. mottling						
						cr.-br. blk. H.-gy.	0.5" clayey/silty fine sand play in shoe → laminated						SM/SC
S-28 @	305	21/41	19		hard	H.-gy.	10" dense clay	sandy clay	0.0	0.0	0.0	0.0	CH
1107	307	100 cont 4"	24		hard to v. dense	H. br. br.-gy.	9" interbedded dense clay + f. sandy/silty clay + V.	play (composite) in shoe					CH/CL
						cr. br. H.-gy.	thin f. to m. sand beds (~1" thick)						SP
S-29 @	310	45/100	10		v. dense	gy. br.-gy.	5.5" m. to c. sand	4.5" H.-gy	0.0	0.0	0.0	0.0	SP
1128	312	cont 4" / —	24		—	H.-gy.		dense clay lay					
								EOR=14					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-170

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0260
DRILLING COMPANY: Hai-Tech Drilling Co, Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-170
DATE: 04-25-00
GEOLOGIST: S. Petrakis
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-30	315	100/6"/5"	17		V. dense	m. br. gy.	11" f. to m. sand, sm. silt to silty	6" clay + gravel lay	0.0	0.0	0.0	0.0	SP/SM
@ 1156	317	-/-	24		—	or. br. blk. rd.	1" @ gravel + lt. br. clayey bed approx. 2.5" from bottom of sample	1143 thicken mud/recondition					SC
S-31 @	320	40/45	16		dense	lt. br. gy.	same as above with tr. lt. br./blk. clayey	5" clay + sandy clay	0.0	0.0	0.0	0.0	SM/SM
1210	322	49/53	24		V. dense	or. br.	laminae + no gravel	+ gravel lay					SC
S-32 @	325	45/100	7		V. dense to hard	br. gy. lt. br.	m. to c. sand, sm. blk./lt. gy. clay inclusions	1230-add d water	0.0	0.0	0.0	0.0	SP/CH
1245	327	-/-	24		—		+ or.-br. mottling						CH
							thin 0.25" clayey bed 1.5" from bottom of sample	1235-thicken mud + recondition					SC
								1" clay/sandy clay lay					
S-33 @	328	18/21	21.5		M. dense	var.	silty/clayey f. to m. sand	1.5" clay	0.0	0.0	0.0	0.0	SM
1304	330	45/63	24		V. dense		becoming cleaner over bottom 2.5" of sample	+ c. sandy clay lay					SP/SP
							sample is laminated to bedded						
1315	340	-/-					recondition borehole for approx. 10 minutes						
				T.D.=340									

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0-0.2

Converted to Well: Yes X No

Well I.D. #: GM-170

AQUA TERRA GEOPHYSICS INC.
GROUNDWATER/DRILLING CONSULTING
16 STATION ROAD # 8
BELLPORT, NEW YORK 11713
(631) 286-7699

BOREHOLE: GM-17D
LOGS:
NATURAL GAMMA
S. POINT RESISTANCE
SPONT. POTENTIAL

PROJECT: CTO-0208 OFFSITE DRILLING
CLIENT: NWIRP BETHPAGE
LOCATION: GRUMMAN S. RECHARGE BASINS

DATE: APRIL 25, 2000
COUNTY/COUNTRY: NASSAU
STATE/PROVINCE: NEW YORK

BOREHOLE DATA

DRILLING CONTRACTOR: UNI-TECH DRILLING CO. INC.
ELEV: DEPTH REF: LAND SURFACE

CUSTOMER TD: 340 FT.
LOGGER TD 340 FT.

RUN	BIT RECORD			CASING RECORD		
NO.	Bit Size	From	To	Size/Wgt/Thk.	From	To
1	12 IN.	0 FT.	70 FT.	8" STEEL	0 FT.	70 FT.
2	8 IN.	70 FT.	T. DEPTH			
3						

DRILL METHOD: MUD ROTARY
HOLE MEDIUM: DRILLING FLUID
VISCOSITY:

DATE DRILLED: 4/00
FLUID LEVEL: 0 FT.
WEIGHT:

TIME SINCE CIRC: 1 HR.
MUD TYPE: BENTONITE
Rm: at Deg

GENERAL DATA

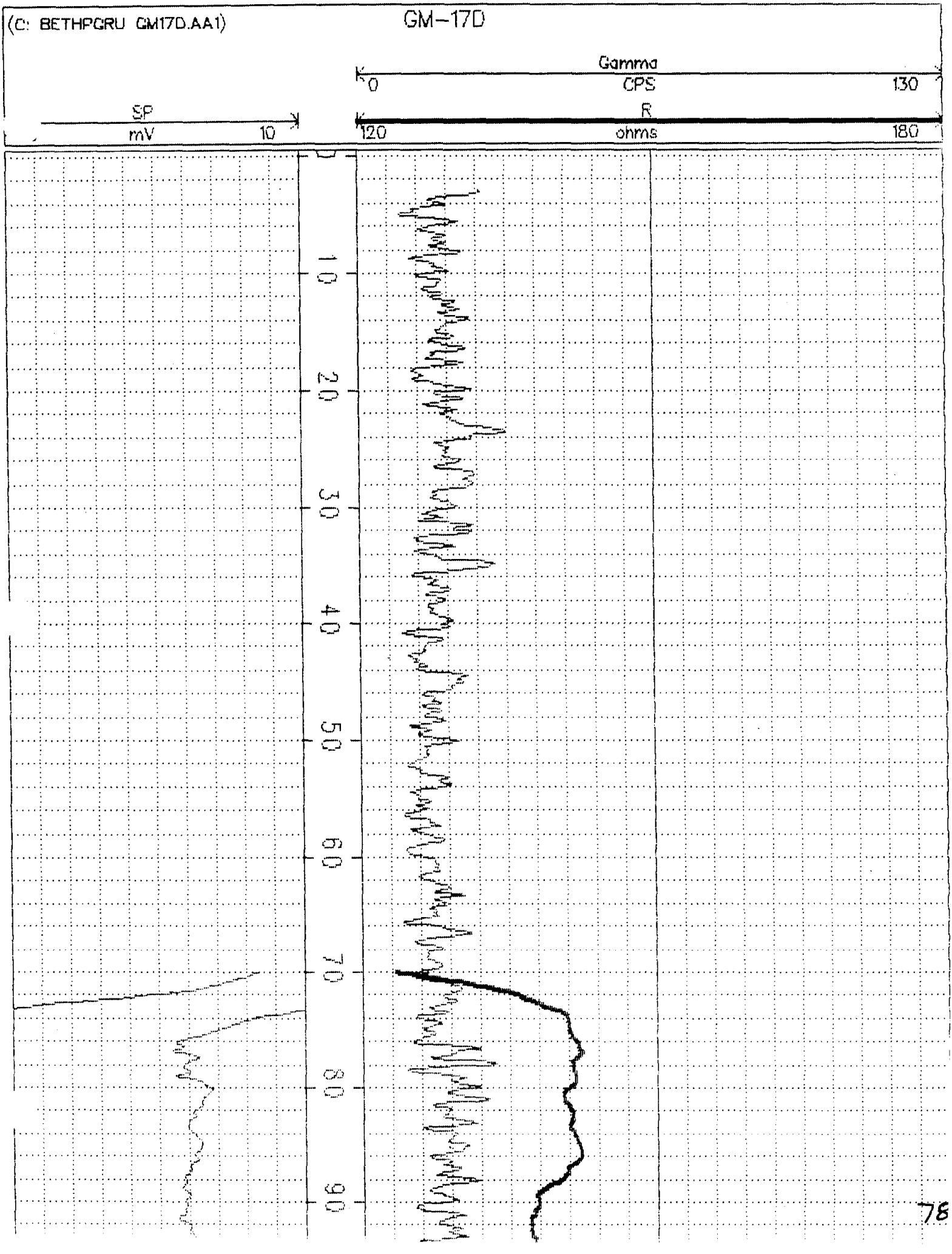
LOGGED BY: BENJAMIN A. RICE
WITNESS: SETH PELEPKO & DAVE STERN

OTHER SERVICES:
UNIT/TRUCK: MT. SOPRIS MGX2/1

LOGGING DATA

LOG FUNCTION	RUN NO.	EQUIPMENT MODEL	PROBE S.N.	UPHOLE S.N.	LOGGING DIC INT FEET	SPEED FT./MIN	DETECTOR TYPE	SOURCE TYPE	SOURCE SIZE GBq	LOGGED INTERVAL FROM	TO	INT. FEET	COMMENTS
N. GAMMA	1	SMCA	2201	1123	.10	20	NaI			3	340	337	W.A. = 2
SP-R	2	SMCA	2201	1123	.10	28				70	340	270	

DIGITAL FILE NAME(S):
REMARKS: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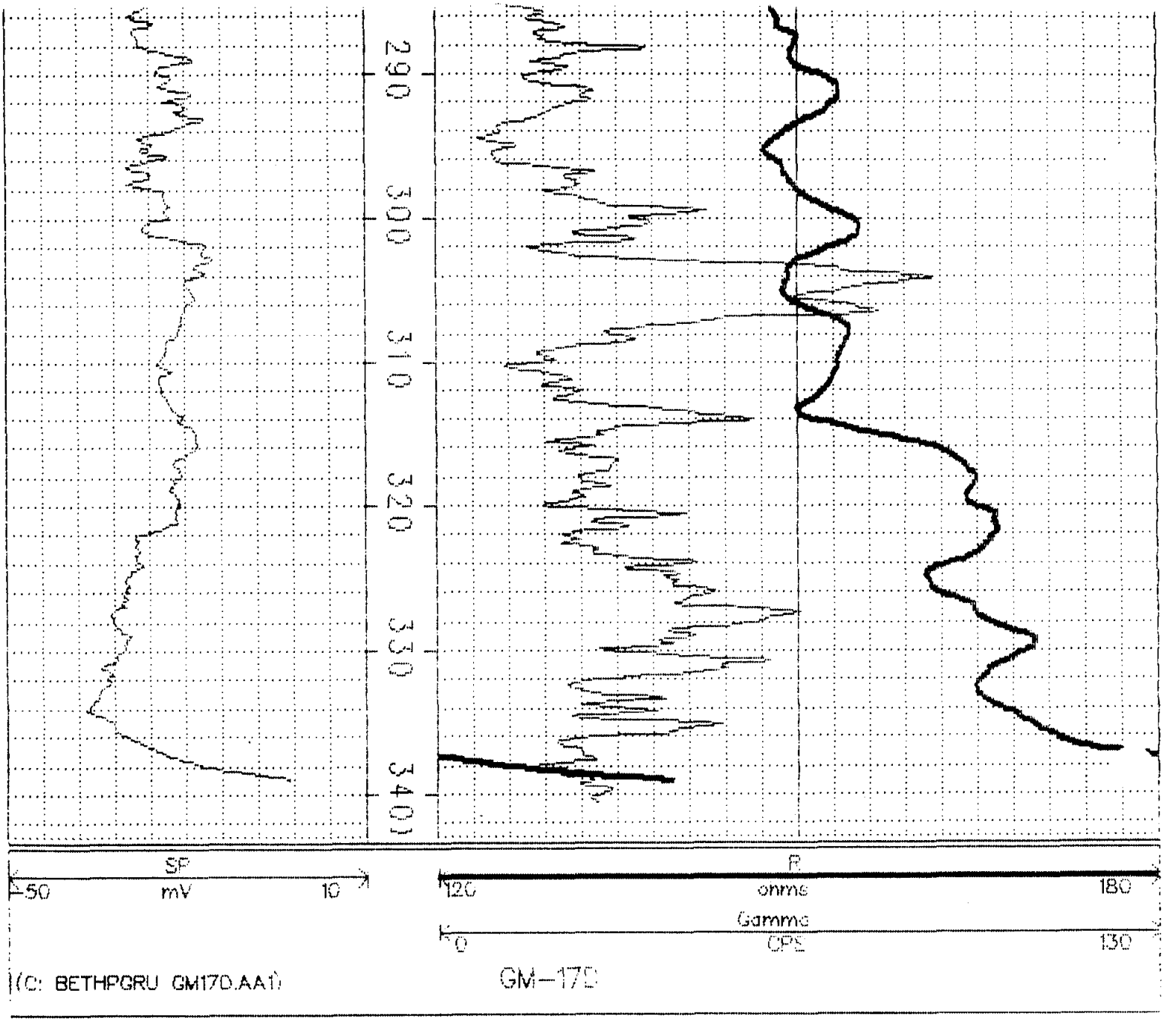
GM-17D
Gamma
0
CPS
130
SP
mV
10
R
120
ohms
180
0
10
20
30
40
50
60
70
80
90

90
100
110
120
130
140
150
160
170
180
190

190
200
210
220
230
240
250
260
270
280
290


290
300
310
320
330
340
SP
-50
mV
10
R
120
ohms
180
Gamma
0
CPS
150
(C: BETHPGRU GM170.AA1)
GM-172

475/13

(14)

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of ____

Well: GW-17D
Site: NWIRP Bethpage
Date Installed: 04/24/00
Date Developed: 06/12/00
Dev. Method: Surge/Air
Pump Type: 3" Grundfos Submersible Cplm

Depth to Bottom (ft.): 298'
Static Water Level Before (ft.): 52.27
Static Water Level After (ft.): 52.25'
Screen Length (ft.): 20'
Specific Capacity: 13 GPM/ft → during pumping
Casing ID (in.): 4.0

Responsible Personnel: M. Healy (TENUS) B. Burr/J. Blamings
Drilling Co.: UTD
Project Name: NWIRP Bethpage
Project Number: N0585-0200

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1450					6.4	0.11	off scale	Sediment in sample cont
1500			57.4					Swab 293 - 297
1515		41						Surging 7.8 gpm/ft.
1525		30.4	~~30.9~~ 57.4		6.27	0.14		Turbidity off scale.
1530					6.09	0.102		
1542					6.13	0.104		
1545								Tanks full Stopped.
6-13-00								
0800							off scale	Static 53.7 (TOC)
0813		36		16.4	5.77	0.168		55.9 16.4 gpm/ft.
0828		28.3	55.7					10 min surge 14.1 gpm
0834				15.9	5.88	0.99	210	(3' stroke)
0838				15.9	5.99	0.099	160	
0841			55.7	15.9	6.03	0.098	150	
0849				15.4	6.01	0.099	120	
0854								Tanks full = 2,200 gal 40 gpm
090								Empty tanks

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GW-17D
Site: NW IRP Bethpage
Date Installed: 04/26/00
Date Developed: 06/12 → 6/13
Dev. Method: Surge/Air.
Pump Type: ____

Depth to Bottom (ft.): 298
Static Water Level Before (ft.): 52.2
Static Water Level After (ft.): ____
Screen Length (ft.): 20'
Specific Capacity: ____
Casing ID (in.): 4

Responsible Personnel: M. Healey B. Bear J Blemings
Drilling Co.: Uni-Tech Drilling Co. Inc.
Project Name: CTO 0208 off site Drilling
Project Number: N0565-0200

Time	GPm ~~Estimated~~ Sediment ~~Thickness~~ ~~(Ft.)~~	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0935		4400						Started surging (5' stroke)
0949								Stopped surging
0952	28.9		55.55	15.9	6.07	0.099	260	8.6 gpm/ft.
0958				15.9	6.05	0.097	120	
1001			55.60	15.9	5.93	0.097	100	
1006				15.9	5.92	0.098	85	
1013				16.0	6.04	0.097	75	
1022			55.6	15.9	6.05	0.098	70	
1030				15.9	6.05	0.098	60	
1034		6600		~~16.~~ 16.0	6.05	0.098	60	Tanks full
1116					~~5.99~~	~~0.098~~ mil		Started pumping
1126				16.4	5.99	0.098	90	
1131			55.55	16.2	6.07	0.097	65	
1140				16.2	6.11	0.097	55	
1146				16.1	5.84	0.096	50	
1152			55.55	16.1	5.95	0.097	45	
1201				16.0	5.88	0.097	40	
1210		8800		16.1	5.80	0.098	38	Tanks full

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GW-17D
Site: NWI PP Batavia
Date Installed: 4/26/00
Date Developed: 6/13 →
Dev. Method: Surge/Air
Pump Type: ____ GPM

Depth to Bottom (ft.): 298
Static Water Level Before (ft.): 52.2
Static Water Level After (ft.): ____
Screen Length (ft.): 20
Specific Capacity: ____
Casing ID (in.): 4

Responsible Personnel: M. Healy / B Baer J Blaming
Drilling Co.: Uni-Tech Drilling Co
Project Name: CTO 0208
Project Number: N 0565-0200

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0847		9,800						Set Sub 293'-290'
0900							>1000	water turb. & High SS
0913				16.8	5.8	0.099	110	
0913				16.4	5.80	0.099	70	Started Surging 5' Stick
								@ 0914 water cloudy
								stopped @ 0917
0923			55.4'	15.9	5.75	0.098	75	
0926				15.9	5.89	0.098	55	
0931				15.9	5.79	0.099	55	
0935				15.9	5.87	0.098	40	
0938				15.8	5.82	0.098	36	
0941				15.9	5.89	0.098	32	
0946				15.7	5.88	0.098	31	
0947								Moved sub to
								290 - 293' 5' stick.
12:45								12:45 Surged 5' stick.
1305								Cloudy water.
1311				16.5	6.20	0.099	50	

fd

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GW-17D
Site: NWIRP Bethpage
Date Installed: 4/21/00
Date Developed: 6/13 -
Dev. Method: Surge/Bail
Pump Type: ____

Depth to Bottom (ft.): 298
Static Water Level Before (ft.): 52.2
Static Water Level After (ft.): ____
Screen Length (ft.): 20'
Specific Capacity: ____
Casing ID (in.): 4

Responsible Personnel: M. Healey / Baer, J. Blemings
Drilling Co.: Uni-Tech Drilling Co
Project Name: CTO-0208
Project Number: N0565-0200

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1316		(11,000)		16.4	5.97	0.098	35	290-293
1320				16.2	6.03	0.097	30	
1325				16.2	6.02	0.098	28	
								287-240 @ 1325
1330			55.75					Cloudy water
1335				~~5.80~~ 16.2	5.80	0.097	55	
								1336 Surging 1341
1344			55.71	16.2	5.85	0.098	45	
1350		13,200		16.0	5.89	0.099	23	9.5 gpm/ft.
1445								Surge 5' stroke
1505				16.7	5.81	0.099	16	284 - 287
1506								Surge 5' stroke
1508								Cloudy (stopped surge
1510			55.5	16.4	5.81	0.098	34	
1515				16.4	5.96	0.098	19	
1516								281 - 284 Surge
1522				16.2	5.78	0.098	60	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GW-17D
Depth to Bottom (ft.): 298
Responsible Personnel: M. Henley B. Baer J. Blomingdale
Site: NWIRP Bethpage
Static Water Level Before (ft.): 52.2
Drilling Co.: Uni-Tech Drilling Co.
Date Installed: 04/26/00
Static Water Level After (ft.): [illegible]
Project Name: CTO 0208 off-site Drilling
Date Developed: 06/12 —
Screen Length (ft.): 20'
Project Number: N0565-0200
Dev. Method: Surge/Air
Specific Capacity:
Pump Type:
Casing ID (in.): 4

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1525				16.2	5.82	0.098	20	
1528				16.2	5.89	0.097	16	
1529								Surge (5' stroke)
1534								Stop Surging
1535		15,400		16.3	6.00	0.099	36	Tank Full ~ 130 ft
		16,400						Pumped 1,000 gals while
								lower swab to Bottom of
								hole in ~~[illegible]~~ purge.
			53.6					6-15-00 @ 0825

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GW-17D
Site: NWIRP Bethpage
Date Installed: 04/26/00
Date Developed: 6/12 - 6/15
Dev. Method: Surge/Air
Pump Type: ____

Depth to Bottom (ft.): 298
Static Water Level Before (ft.): 53.6
Static Water Level After (ft.): ____
Screen Length (ft.): ____
Specific Capacity: ____
Casing ID (in.): ____

Responsible Personnel: M. Hanley, B. Baer, J. Blevins
Drilling Co.: Uni-Tech Drilling Co
Project Name: Cto 0208 Off-Site Drilling
Project Number: N0565 - 0200

Time 6/15/00	~~Estimated Sediment Thickness (Ft.)~~ GPM	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1125			53.5					static after swab removal
1144	Pumping Started							
1147	15gpm		54.3					water cloudy
1155				17.5	5.81	0.111	50	
1158				17.1	5.79	0.104	50	
1200				17.1	5.65	0.100	55	
1204				16.9	5.63	0.101	45	
1213	16.6		54.1	17.1	5.68	0.101	35	33.2 gpm/ft
1220				17.1	5.80	0.10	27	
1223				17.3	5.72	0.098	20	
1226				17.1	5.73	0.100	20	
1230				17.2	5.74	0.100	16	
1235								Stopped pumping
1238			53.25					
1240			53.25					

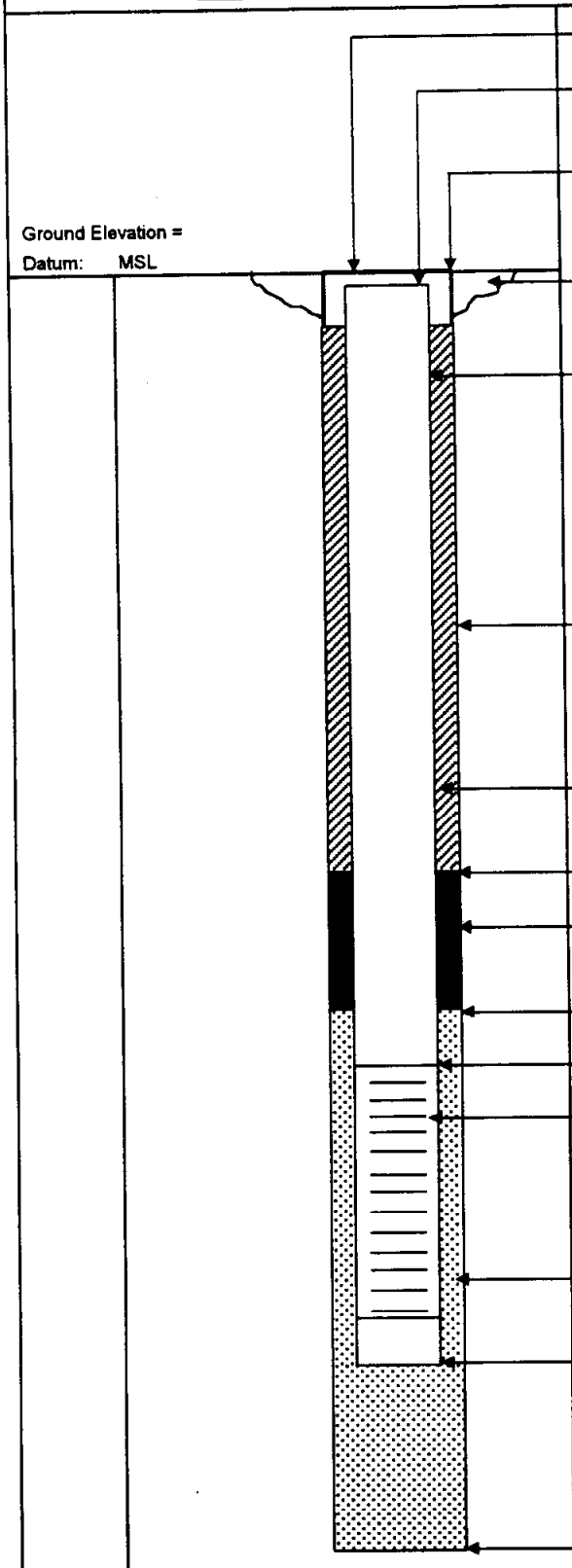
GM-73D2

Tetra Tech NUS, Inc.

WELL No.: GM-73D2

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-73D2
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	03-31-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pelepko	DEV. METHOD:	Air Lift/Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80, Flush-Joint, Threaded PVC

Borehole Diameter: 11-Inch to 70 Feet; 8-Inch to 570 Feet

Type of Backfill: Volclay Bentonite Grout (High Solids Clay Grout)

Elevation / Depth of Seal: 496 FT

Type of Seal: Nat. Gran. 30 Mesh Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 498 FT

Elevation / Depth of Top of Screen: 532 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: Fil Pro Quartz No. 1 Sand to 510 FT / Fil Pro Quartz No. 0 Sand to 498 FT

Elevation / Depth of Bottom of Screen: 552 FT

Elevation / Depth of Bottom of Filter Pack: 569 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 570 FT

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-21-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1450	2*	/							hand auger * first 2 feet				
		/											
		/											
		/											
S-1 @	10	5/8	3/24		loose	var.	m. to c. sand + gravel (rounded qtz. gravels)	SP	wet / muddy	0.0	0.0	0.0	0.0
1324	12	37/32			dense		lt brn, brn-gray, gray		sm. orange Fe-oxide staining				
		/											
		/											
		/											
S-2 @	20	14/20	11/24		med. dense	brn	m. to v.c. sand + gravel (gravel + fractured	SP		0.0	0.0	0.0	0.0
1515	22	21/42			↓		gravel over top 3" of sample)						
		/											
		/											
		/											
S-3 @	30	50/6" over 5"	5/24		v. dense	var.	rounded to subrounded qtz. + granitic gravels,	GP		0.0	0.0	0.0	0.0
1544	32	—/—			—		sm. sand						
		/					brn, white, pink, gray, black						
		/											
		/											
S-4 @	40	50/—	4/24		v dense	var.	rounded, subrounded to subangular quartz	GP	↓	0.0	0.0	0.0	0.0
1620	42	—/—			—		gravels, tr. sand						
		/					brn, lt. brn, white, gray, dk. red						
		/											
S-5 @	50	50/—	0/24		v. dense		no recovery → poss. coarse gravels preventing	—	EOR=1	—	—	—	—
1638	52	—/—			—		sample acquisition						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 8" Mud Rotary Drilling; 8" x 10' Reamer, 8" x 1' Drill Bit (Drag Bit); Stake = 20 FT
note: all cuttings wet / muddy from drilling mud var. = variegated

Converted to Well: Yes X No ____ Well I.D. #: GM-7302

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-21-00 / 03-22-00 / 03-23-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-6 @	60	12/22	7.5/24		med. dense	lt. brn to brn-gray	f. to m. sand, sm. silt (gravel lay at top of sample)	SP	wet / muddy	0.0	0.0	0.0	0.0
1718	62	36/33			dense				poss. transition to Upper Magothy Fm.				
03-21-00 / 03-22-00 1320													
S-7 @	70	8/11	4/24		stiff	org-brn to gray	silty/clayey f. to m. sand. Interbedded	SC/ML	wet / muddy sm. black	0.0	0.0	0.0	0.0
1356	72	50 for 3"			hard	gray	gray clay laminae near bottom of sample (0.25" or less)	CL	mottling EOR = 2				
03-22-00 / 03-23-00 1025													
S-8 @	80	8/18	5/24		stiff	var.	sandy clay, rounded to subrounded gtz. gravel	CL		0.0	0.0	0.0	0.0
1037	82	27/33			V. stiff		at top + bottom of sample						
							gray, org.-brn, black, brn (laminated)						
S-9 @	90	13/11	16.5/24		stiff	gray var.	clay silty/clayey f. sand	CH/ML	EOR = 3	0.0	0.0	0.0	0.0
1055	92	9/8			stiff	gray	org.-brn, black, gray (3") 3" silty/clayey f. to m. sand → sm. pink/black mottling	ML					
						gray var.	0.5" clay bed silty f. sand + clayey laminae gray, org.-brn, blk	CH/ML					
S-10 @	100	4/3	16/24		soft	gray	2" clay	CH		0.0	0.0	0.0	0.0
1110	102	2/2			V. soft	var.	10" alternating sandy clay to clayey/silty f. sand lt. brn, org.-brn, pink	CL/ML					
						var.	4" clayey/silty f. sand org.-brn, gray, TC black	ML					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Overcram borehole with 11" bit to 70 FT (BGS). Install 8" Temporary casing to 69 FT (BGS).

Converted to Well: Yes X No _____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-23-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-11 @	110	50/—	6/24		v. dense	org-brn to	mostly m. sand	SP	wet/muddy	0.0	0.0	0.0	0.0
1125	112	—/—			—	gray	(gray clay bag at top)		EOR=4				
S-12 @	120	28/50	8/24		dense	gray	3" clay bag ?	CH		0.0	0.0	0.0	0.0
1139 1248	122	over 5"/—			—	var.	mostly m. sand, sm.	SP					
							silt + clayey/silty laminae						
							M. brn, org.-brn, gray						
S-13 @	130	10/50	7/24		stiff to v. dense	gray to blk	clayey/silty sand + clay, piece of ang gravel	ML	EOR=5	0.0	0.0	0.0	0.0
1254	132	over 5"/—			—	M. brn to brn-gray	mostly m. sand	SP					
S-14 @	140	50/over 5"	6.5/24		v. dense	gray	2" clay + sandy clay →	CL		0.0	0.0	0.0	0.0
1316	142	—/—			—	var.	4.5" mostly m. sand	SP					
							M. brn, brn-gray, gray, org.-brn						
S-15 @	150	50/over 4"	7/24		v. dense to hard	M. brn to	6" mostly m. sand	SP	EOR=6 ↓	0.0	0.0	0.0	0.0
1341	152	—/—			—	brn-gray							
						org-brn	1" laminated clay bed	CH					
						to gray							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Air monitoring conducted using PE Photovac 2020 PID; Modified Classification conventions: tr. = trace = 0 to 10%; sm. = some = 11 to 30%; adjective ie. 'silty/clayey' = 31% to 50% silt + clay; + = approx. equal percentages

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-23-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-16 @	160	50 / over 4"	6/24		hard to v. dense	M. brn	sandy clay / clayey sand with 0.25" clay	CL/SC	wet/muddy	0.0	0.0	0.0	0.0
1404	162	— / —			—	to gray	interbed (3")						
		/				M. brn	3" mostly m. sand	SP					
		/				to brn-gray							
S-17 @	170	90 / —	1/24		hard	Var.	sandy clay, sm. gravel,	CL	EOR=7	0.0	0.0	0.0	0.0
1519	172	— / —			—		+ hard compacted sand (platy) → lag?						
		/					brn, gray, M. brn						
		/											
		/											
S-18 @	180	31 / 23	24/24		V. stiff	gray to brn	10.5" sandy clay + clay, sm. gravel → lag?	CL		0.0	0.0	0.0	0.0
1538	182	25 / 18			V. stiff	Var.	9.5" silty / clayey f. to m. sand	ML					
		/					M. brn, org-brn, gray, pink						
		/				gray	4" silty/clayey f. to m. sand	ML					
		/											
S-19 @	190	45 / 50	8.5/24		hard to dense	Var.	3" sandy clay → lag? brn-gray, org.-brn,	CL	EOR=8	0.0	0.0	0.0	0.0
1558	192	over 3" / —			—	Var.	black, gray 0.5" laminated clay bed	CH					
		/					gray, black, org.-brn						
		/				gray	5" mostly m. sand	SP					
		/											
S-20 @	200	28 / 50	1/24		hard	Var.	sandy clay + clay → lag?	CL	↓	0.0	0.0	0.0	0.0
1615	202	over 2" / —			—		gray, org.-brn, M. brn						
		/											
		/											
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-24-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-21 @	210	34/50	10/24		hard	brn-gray	1" sandy clay → clay?	CL	wet/muddy	0.0	0.0	0.0	0.0
0813	212	over 4"/—			—	var.	9" silty/clayey f. to m. sand	ML	EUR=2				
							brn-gray, gray, H. brn, sm. org.-brn mottling						
S-22 @	220	52/50	11/24		v. dense to hard	var.	5.75" interbedded f. to m. sand / clayey/silty	SP/ ML		0.2	0.0	0.0	0.0
0830	222	over 3"/—			—		f. to m. sand, clay, + sandy clay	CL					
							org.-brn, brn-gray, H. brn, gray						
						gray	0.25" clay bed	CH					
						var.	4" f. to m. sand with clay + clayey/silty	SP					
							inclusions coarsening to mostly m. sand	ML/ CL					
							org.-brn, gray, dk. brn, black						
S-23 @	230	34/38	14/24		hard	org-brn	2.5" clayey/silty f. to m. sand w/ interbedded	ML		0.0	0.0	0.0	0.0
0834	232	50 for 4"			hard		brn-gray/black clay laminae	CL	2" sandy clay				
						gray	0.5" clay bed	CH	clay @ top of sample				
						org.-brn	3" clayey/silty sand w/ 0.5" brn-gray/black	ML	EUR=10				
							laminated clay interbed	CL					
						brn-gray black	0.75" laminated clay bed	CL					
						var.	5.25" clayey silty f. to m. sand	ML					
							gray, brn-gray, H.-brn, org.-brn						
S-24 @	240	5/5	0/24		—	—		—	no recovery	—	0.0	0.0	0.0
0926	242	4/5			—	—		—					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No _____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-24-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-25 @	250	64/—	0/24		—	—		—	no recovery	—	0.0	0.0	0.0
0945	252	—/—			—	—		—	EOR=11				
S-26 @	260	8/19	7/24		Stiff	var.	3" clayey/silty f. to m. sand	ML	wet/muddy	0.0	0.0	0.0	0.0
1005	262	50 over 3"			hard		gray, brn-gray, sm. ory-brn mottling						
						gray to ory-brn	1.5" laminated clay bed	CL					
						ory-brn	2.5" clayey/silty f. to m. sand	ML					
S-27 @	270	43/50	5/24		dense to hard	gray	f. to m. sand with black & gray clayey/silty	SP/ML	EOR=12	0.0	0.0	0.0	0.0
1024	272	over 5" —/—			—		laminae near bottom of sample						
							sm. ory.-brn mottling + silt/clay						
S-28 @	280	47/50	9.5/24		hard	var.	5" clayey/silty f. to m. sand with black	ML		0.0	0.0	0.0	0.0
1048	282	over 5" —/—			—		clayey laminae gray, brn-gray, H. brn						
						ory-brn to brn	4.5" clayey/silty f. to m. sand	ML					
							laminated thin gray/ black clay bed at top of sample						
S-29 @	290	14/68	6/24		hard	gray to brn-gray	f. to m. sand, sm.	SP	EOR=13	0.0	0.0	0.0	0.0
1115	292	over 5" —/—				gray	gray/black/ory.-brn clayey/silty laminae	ML					
S-30 @	300	50 over 3"	0/24		—	—		—	no recovery		0.0	0.0	0.0
1155	302	—/—			—	—		—					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208
PROJECT NUMBER: N5174-0500
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-73D2
DATE: 03-24-00 / 03-27-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-31 @	310	6 / 21	1/24		silty to	brn-gray to	silty/clayey f. to m. sand	ML	wet/muddy	0.0	0.0	0.0	0.0
1230	312	50 / over 5"			hard	org.-brn			driller reports increasing				
		/							mud loss to formation				
		/							EOR=14				
S-32 @	320	64 / —	0/24		—	—			no recovery	—	0.0	0.0	0.0
1314	322	— / —			—	—							
		/											
03-24-00		/											
03-27-00 1622		/											
		/											
S-33 @	330	10 / 50	4/24		m. dense	var.	f. to m. sand, sm. silt/clay	SP	wet/muddy	0.0	0.0	0.0	0.0
1642	332	over 4" / —			—		brn-gray, M. brn, gray, org.-brn		EOR=15				
		/											
		/											
		/											
S-34 @	340	50 / over 5"	5/24		V. dense	var.	as above	SP		0.0	0.0	0.0	0.0
1700	342	— / —			—		brn-gray, M. brn, org. brn near bottom of sample						
		/											
		/											
		/											
S-35 @	350	50 / over 4"	4/24		v. dense to hard	var.	as above to clayey/ silty f. sand with	SP/ ML	EOR=16 ▼	0.0	0.0	0.0	0.0
1720	352	— / —			—		black clayey/silty laminae		driller reports				
		/					brn-gray, M. brn, org.-brn		hard drilling between 340 and				
		/					thin brn-gray/black laminated clay bed at	CL	350 FT (BGS)				
		/					bottom of sample.						
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-27-00 / 03-29-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-36 @	360	50 / over 9"	4.5/24		hard to v. dense	gray	0.25" clay bed	CH	wet/muddy	0.0	0.0	0.0	0.0
1739	362	— / —			—	brn-gray	silty/clayey f. to m. sand to f. to m.	ML					
						lt. brn	sand near bottom of sample	SP					
S-37 @	370	60 / —	4/24		hard	gray to	silty/clayey f. sand with interbedded gray	ML	EOR=17	0.0	0.0	0.0	0.0
1883	372	— / —			—	brn-gray	clay laminae near top of sample	CL					
03-27-00													
03-28-00 0958													
S-38 @	380	75 / 100	11.5/24		v. dense to hard	lt. brn	9.5" f. to m. sand, sm. silt/clay with red brn.	SP	↓ computed sand	0.0	0.0	0.0	0.0
1024	382	over 4" / —			—	to brn-gray	gray + black clay interbeds near top of	CH	in shoe				
							interval (0.25" to 0.5" thick)						
						gray	1" f. to m. sand	SP					
						gray-brn	1" f. sand, sm. silt/clay	SP					
S-39 @	390	45 / 56	19/24		dense to hard	lt. brn	2" f. to m. sand → lag?	SP	wet/muddy	0.0	0.0	0.0	0.0
1055	392	100 / over 5"			—	brn-gray	17" v. dense clay	CL	dump/muddy				
									EOR=18				
									dense clay in				
									shoe				
S-40 @	400	56 / 100	4.5/24		V. dense	lt. brn to	f. to m. sand, sm. silt/clay, gray-brn	SP	wet/muddy	0.0	0.0	0.0	0.0
1140	402	over 3" / —			—	brn-gray	mottling near bottom of sample						
									driller reports hard drilling				
									between 390 and 400 FT (BGS)				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-7302

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-73D2
PROJECT NUMBER: N5174-0500 DATE: 03-28-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-41 @	410	56/44	0/24		—	—		—	no recovery →	—	0.0	0.0	0.0
1209	412	38/28			—	—		—	Trap missing				
									EOR=19				
S-42 @	420	28/21	0/24		—	—		—	no recovery	—	0.0	0.0	0.0
1315	422	18/15			—	—		—					
S-43 @	430	100/over 5"	4.5/24		hard to v. dense	brn-gray	1" clay → clay?	CL	wet/muddy	0.0	0.0	0.0	0.0
1358	432	—/—			—	to gray			EOR=20				
						var.	3.5" f. to m. sand, sm. clayey/silty	SP/ML					
							lenses						
							M. brn, brn-gray, dry-brn						
S-44 @	440	100/over 5"	8/24		hard to v. dense	M. brn to	2.5" sandy clay → clay?	CL		0.0	0.0	0.0	0.0
1426	442	—/—			—	brn-gray	1" clay bed	CH					
						dry-brn	4.5" m. to v.c. sand, sm. silt/clay	SP					
						to M. brn							
S-45 @	450	40/100	16/24		dense to hard	gray	v. dense silty clay + clay	CL	damp/muddy	0.0	0.0	0.0	0.0
1454	452	over 5"/—			—		f. to c. sand log near	SW	v. dense clay				
							top of sample		in shoe				
									driller reports hard drilling				
									below 450 FT (BGS). EOR=21				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage-CTO 0208
PROJECT NUMBER: N5174-0500
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-73D2
DATE: 03-28-00 / 03-29-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-46 @	460	50/50	6/24		hard to dense	brn-gray	0.5" silty clay bed	CL	damp to	0.0	0.0	0.0	0.0
1522	462	45/35			—	var.	mostly m. sand, sm. silt / clay	SP	wet / muddy				
							dry. -brn, lt brn, brn-gray						
S-47 @	470	100/our	1/24		hard	brn-gray	clay + sandy clay → log?	CL	wet / muddy	0.0	0.0	0.0	0.0
1651	472	5"/—			—	to gray		CH	EOR-22				
S-48 @	480	100/our	1/24		hard	brn-gray	as above	CL		0.0	0.0	0.0	0.0
1714	482	4"/—			—	to gray		CH					
03-28-00 / 03-29-00	0900												
S-49 @	490	100/our 5"	0/24		—			—	no recovery	—	0.0	0.0	0.0
0923	492	—/—			—			—	EOR-23				
S-50 @	500	100/our 3"	6/24		v. dense to hard	brn-gray	3" f. to c. sand browning clayey / silty near	SW/SC	wet / muddy	0.0	0.0	0.0	0.0
0956	502	—/—			—	dk gray	bottom of interval / 0.25" clay bed to	CH					
						org-gray to gray	clayey sand / sandy clay	CL/SC	compacted sand in shoe				
							2" m. to v.c. sand,	SW					
							sm. f. gravel						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

Tetra Tech NUS, Inc.

BORING LOG

7350 0.2-10.0

PROJECT NAME: NWIRP Bethpage-CTO 0208 BORING NUMBER: GM-~~74~~D2
PROJECT NUMBER: N5174-0500 DATE: 07-29-00
DRILLING COMPANY: Uni-Tech Drilling Co., Inc. GEOLOGIST: S. Pelepko
DRILLING RIG: Failing 1500 DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-51 @	510	100/ over 5"	7.5/24		hard to v. dense	brn-gray	4" gravelly to sandy	CL	wet/muddy	0.0	0.0	0.0	0.0
1030	512	—/—			—	to gray	clay → log ?		EOR=24				
						brn-gray	3.5" mostly m. sand, tr. v.c. sand, f. gravel	SP					
S-52 @	520	65/100	7.5/24		hard to v dense	brn-gray	16.5" muddy sand + gravel + sandy clay	SC/CL		0.0	0.0	0.0	0.0
1116	522	over 3"/—			—		log						
						var.	1" clayey/silty mostly m. sand brn-gray, gray, black	SC/SM					
							2" mostly m. sand, sm silt/clay + 0.25" rounded	SP					
							wet gravels at top of interval → some			0.0	0.0	0.0	0.0
						brn-gray to gray	4.5" mostly m. sand	SP					
S-53 @	530	100/ over	5/24		hard to v. dense	gray	0.5" clay bed	CH	EOR=25	0.0	0.0	0.0	0.0
1154	532	5"/—			—	brn-gray	4.5" silty/clayey f. to c. sand, sm. f. gravels near top of sample	SM/SC					
S-54 @	535	100/—	6/24		hard to v. dense	brn-gray	1" clay bed grading to	CH		0.0	0.0	0.0	0.0
1220	537	—/—			—	to dk. gray	clayey/silty sand	SM/SC					
						gray to brn-gray	5" f. to m. sand, sm. silt/clay	SP					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: GM-7302

Tetra Tech NUS, Inc.

BORING LOG

73 SP 03-30-00

PROJECT NAME: NWIRP Bethpage-CTO 0208
PROJECT NUMBER: N5174-0500
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-~~74~~D2
DATE: 03-29-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-55 @	540	52/100	10/24		hard to v. dense	brn-gray	gravelly to sandy clay → clay? (2")	CL	wet/muddy	0.0	0.0	0.0	0.0
1254	542	over 4" —			—	to gray							
						gray	6" m to c. sand fining downwards to f. to c.	SW					
							Sand, fr. brn-gray mottling						
S-56 @	545	100/over 5"	5.5/24		hard to v. dense	brn. gray	3" f. to m. sand, s.m	SP		0.0	0.0	0.0	0.0
1305	547	— —			—		Silt/clay, brooming clayey/silty	ML					
							1" rounded qtz. gravel bed, sm. silt/sand	GP	0.25" gravel				
						var.	clay 1.5" f. sand w/	SP					
							clayey/silty lenses + 0.25" brn-gray laminated clay interbed	ML					
S-57 @	550	60/100	10/24		hard to v. dense	brn-gray	2" gravelly to sandy clay	CL		0.0	0.0	0.0	0.0
1405	552	over 3" —			—	½ brn	clay 6" f. to m. sand w/	SP					
						to brn.	black/brn-gray/org-brn clayey/silty seam	ML					
						gray	1" thin bottom of sample						
S-58 @	555	100/over 5"	6/24		hard to v. dense	brn-gray	2" clayey/silty f. to m.	ML		0.0	0.0	0.0	0.0
1438	557	— —			—		Sand 0.25" ø rounded qtz. gravel near bottom of interval	GP					
						½ brn	4" f. to m. sand, sm. gray-brn mottling	SP					
						to brn-gray							
S-59 @	558	52/48	0/24		—	—		—	no recovery	—	0.0	0.0	0.0
1509		53/60			—	—		—	driller reports hard zone below 560. Lose drilling mud below hard zone.				
1525	570								TD=570				

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: GM-73D2

AQUA TERRA GEOPHYSICS INC.
GROUNDWATER/DRILLING CONSULTING
16 STATION ROAD # 8
BELLPORT, NEW YORK 11713
(631) 286-7699

BOREHOLE: MW-73D2
LOGS:
NATURAL GAMMA
S. POINT RESISTANCE
SPONT. POTENTIAL

PROJECT: CTO-0208 OFFSITE DRILLING
CLIENT: NWIRP BETHPAGE
LOCATION: GRUMMAN S. RECHARGE BASINS

DATE: MARCH 29, 2000
COUNTY/COUNTRY: NASSAU
STATE/PROVINCE: NEW YORK

BOREHOLE DATA

DRILLING CONTRACTOR: UNI-TECH DRILLING CO. INC.
ELEV: 110 MSL DEPTH REF: LAND SURFACE

CUSTOMER TD: 570 FT.
LOGGER TD568 FT.

RUN	BIT RECORD			CASING RECORD		
NO.	Bit Size	From	To	Size/Wgt/Thk.	From	To
1	12 IN.	0 FT.	70 FT.	8" STEEL	0 FT.	70 FT.
2	8 IN.	70 FT.	T. DEPTH			
3						

DRILL METHOD: MUD ROTARY
HOLE MEDIUM: DRILLING FLUID
VISCOSITY:

DATE DRILLED: 3/00
FLUID LEVEL: 0 FT.
WEIGHT:

TIME SINCE CIRC: 1 HR.
MUD TYPE: BENTONITE
Rm: at Deg

GENERAL DATA

LOGGED BY: BENJAMIN A. RICE
WITNESS: SETH PELEPKO & DAVE STERN

OTHER SERVICES:
UNIT/TRUCK: MT. SOPRIS MGX2/1

LOGGING DATA

LOG FUNCTION	RUN NO.	EQUIPMENT MODEL	PROBE S.N.	UPHOLE S.N.	LOGGING DIG INT FEET	SPEED FT/MIN	DETECTOR TYPE	SOURCE TYPE	SIZE GBq	LOGGED INTERVAL FROM	TO	INT. FEET	COMMENTS
N. GAMMA	1	5MCA	2201	1123	.10	20	NaI			3	566	563	W.A. = 2
SP-R	2	5MCA	2201	1123	.10	25				70	566	496	

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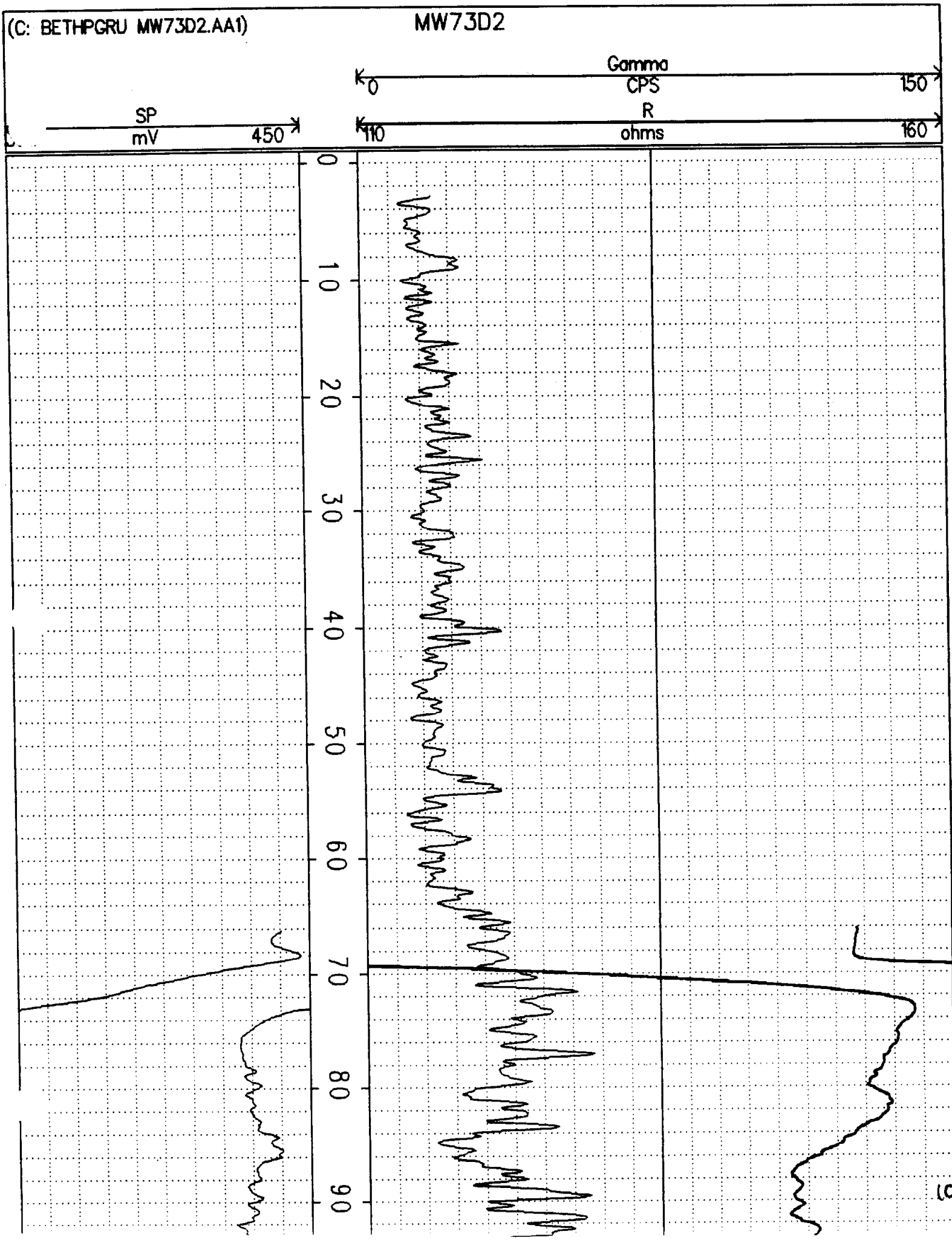
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SP
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80
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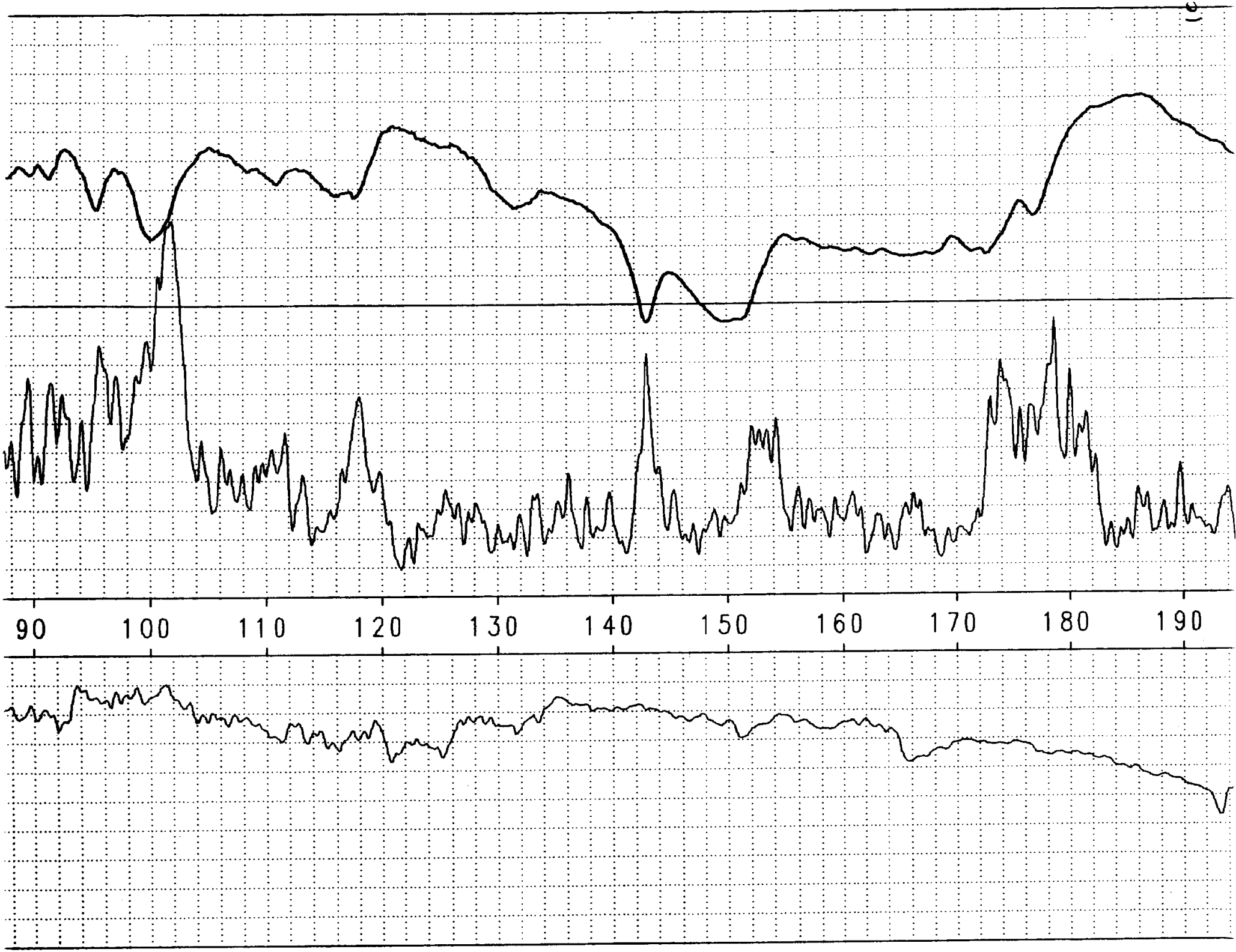
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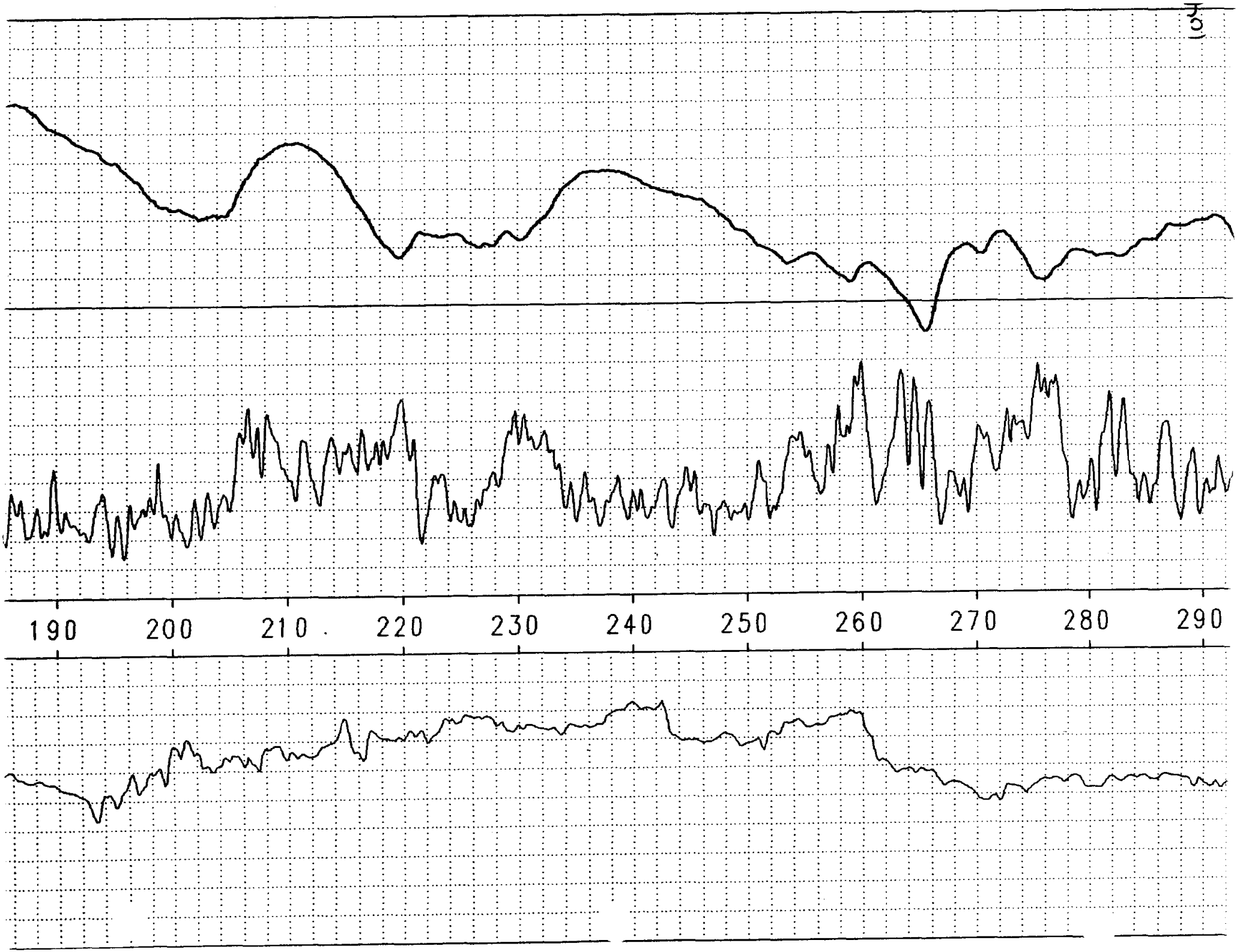
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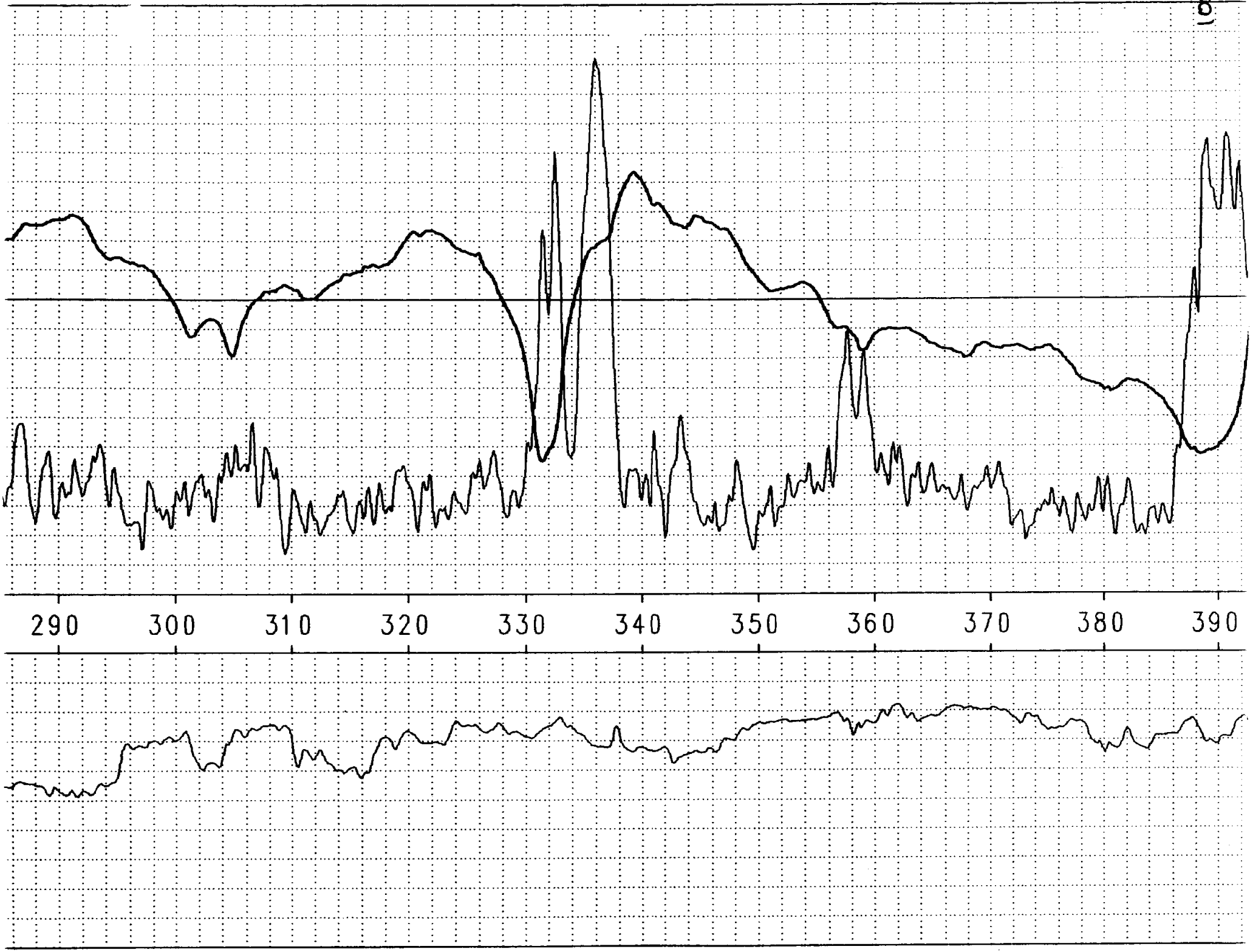
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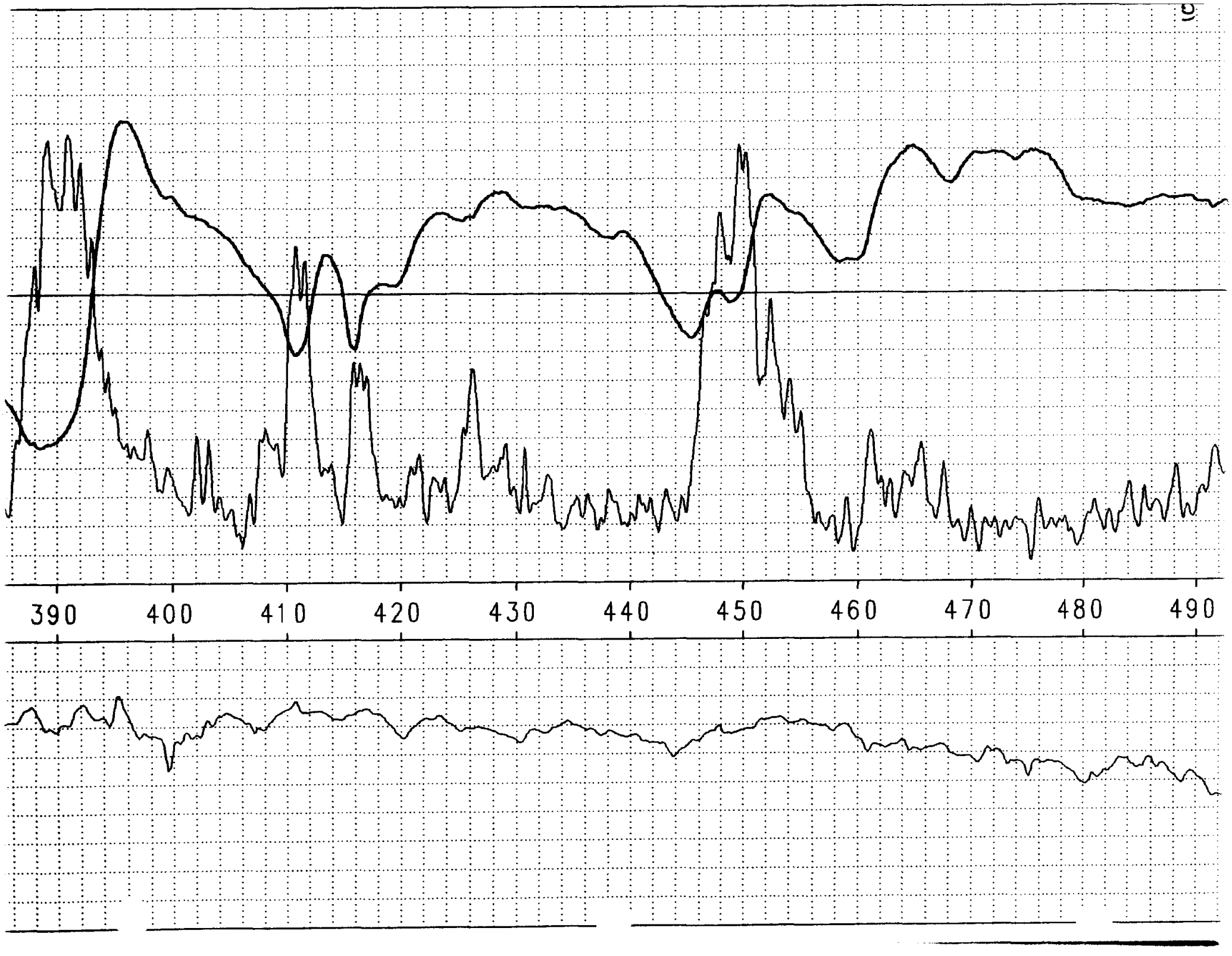
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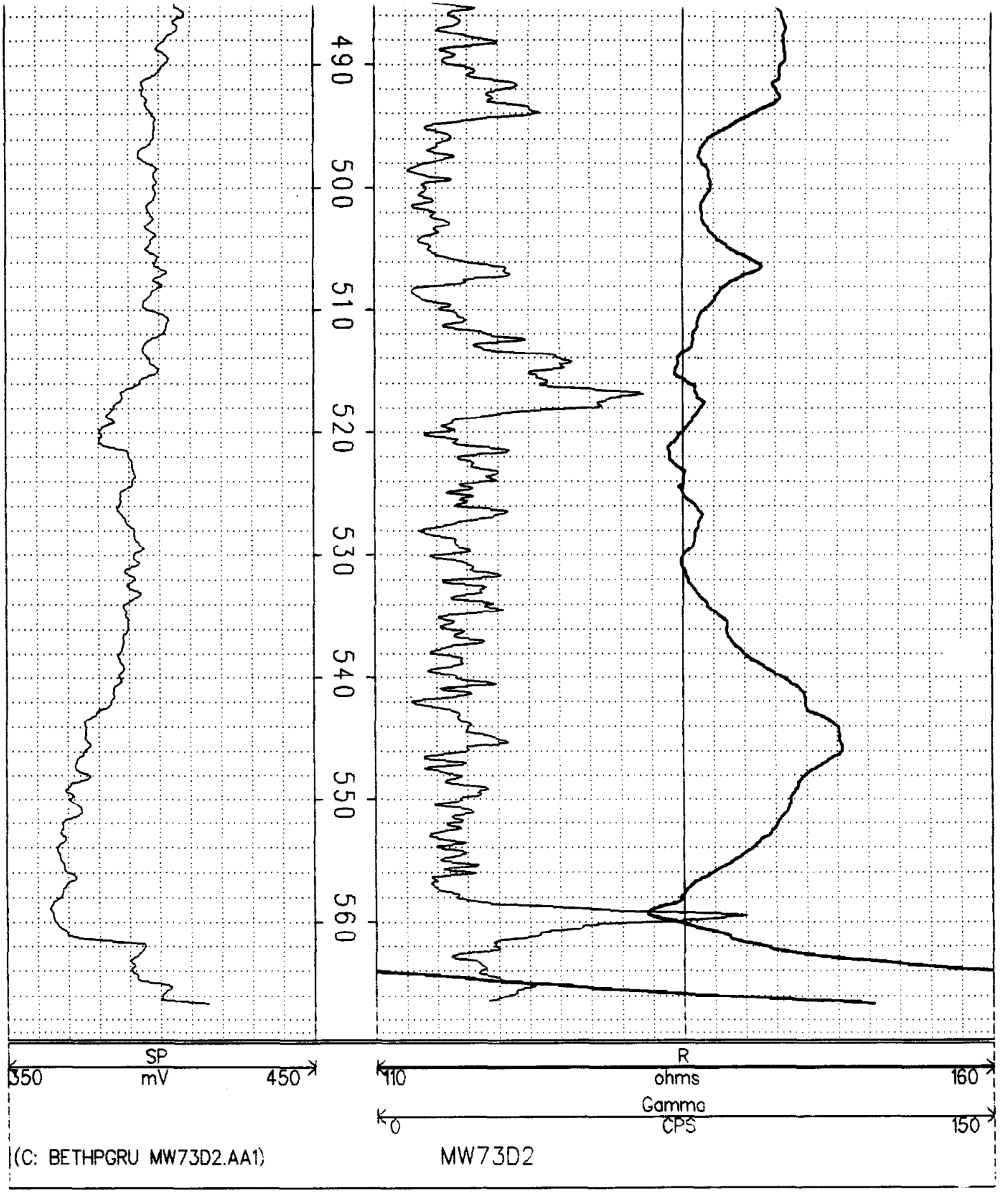
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SP
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mV
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R
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ohms
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Gamma
0
CPS
150
(C: BETHPGRU MW73D2.AA1)
MW73D2

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of 9 (10) (EN)

Well: GM-7302
Site: NWIRP Bethpage
Date Installed: 03-30-00
Date Developed: 04-04-00 → 5/9-14/00
Dev. Method: Air lift/Air Injection/Surge/Mech. surge + hydraulic surge
Pump Type: 3" Grundfos

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): 59.94 (TIC)
Static Water Level After (ft.): 50.62 (TIC)
Screen Length (ft.): 20
Specific Capacity: 23.3
Casing ID (in.): 4

Responsible Personnel: S. Pelyako / S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

S.C. Specific capacity

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1706	33			—	—	—	—	—	1" blank PE discharge line set ~300 FT (BGS)
1721	33	500		—	—	—	—	—	stop air → surge well
1728	36	500		—	—	—	—	—	continue development
1735	36	752		12.8	6.19	0.217	10.78	>999	v. cloudy, brn-gray
1742	36	1000		—	—	—	—	—	stop air → surge well
1746	41	1000		—	—	—	—	—	continue development
1750	41	1164		12.7	5.75	0.160	10.63	>999	v. cloudy, brn-gray
1754	41	1328		—	—	—	—	—	PID over discharge = 4.7 ppm
—	—	—		—	—	—	—	—	→ slow instrument response, poss. due to humidity
1805	41	1779		12.4	5.76	0.137	10.73	962	cloudy, brn-gray
1813	41	2100		—	—	—	—	—	conclude development
1402	0	0	47.30	—	—	—	—	→	WL (EN) BEGIN DEVELOPMENT
1405	70		—	~~7.43~~ 18.4	7.43	.153	9.84	75	Cloudy
1415	↓		—	15.5	7.24	.162	11.10	>999	v. cloudy - brown/gray
1419	↓		~~0.75~~ —	14.9	7.16	.155	10.57	>999	v. cloudy - brown/gray
1485	↓		0.20	15.3	7.12	.143	11.49	504	" " 23.3
1427	↓	—	—	—	—	—	—	—	Surge well - continue air
1437	↓		—	14.9	6.99	.135	11.58	>999	Stop Surge - v. cloudy Brn/Gray

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2 | Depth to Bottom (ft.): 552 (865) | Responsible Personnel: SCOTT NAIL
Site: NWIRP Bethpage | Static Water Level Before (ft.): | Drilling Co.: Uni-Tech Drilling Company, Inc.
Date Installed: 3/30/00 | Static Water Level After (ft.): | Project Name: Off Site Drilling - CTO 0208
Date Developed: 4/4/00; 5/9-10/00 | Screen Length (ft.): 20 | Project Number: N5174-0500
Dev. Method: AIR LIFT | Specific Capacity:
Pump Type: AIR COMPRESSOR | Casing ID (in.): 4

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1445	70	—	50.0	14.8	6.92	.128	11.09	366	Cloudy, brownish (LIGHT).
1454	↓	2200	—	14.7	6.88	.126	11.40	184	Clearing brownish (LIGHT). Stop pumping to empty tanks.
1553	60	—	47.45	—	—	—	—	—	Begin development.
1555	60	—	—	15.8	6.85	.124	10.34	108	Clearing v. light brown.
1602	60	—	—	—	—	—	—	—	Cloudy lgt brown
1605	60	—	49.80	15.0	6.36	.123	11.34	181	Cloudy v. lgt brown.
1615	60	—	—	14.7	6.42	.121	11.36	58	Clearing v lgt brown.
1616	60	—	—	—	—	—	—	—	surge - still pumping
1626	60	—	—	14.7	6.48	.122	11.18	393	end surge - cloudy, LGT BROWN
1629	60	—	—	—	—	—	—	102	Cloudy, v. LGT BROWN
1641	60	—	—	14.0	6.45	.118	11.09	96 (SD)	Recal Horiba; Clearing v. LGT BRN
1646	60	— (SD)	—	14.9	5.51	.133	10.47	96	Clearing - Cloudy (v. LIGHT).
1649	60	~~4400~~ 4400 (SD)	—	14.0	5.82	.119	10.89	67	Clearing; Stop to empty tanks
1705	—	—	47.50 (SD)	—	—	—	—	—	water level only
5/10/00 0747	—	—	47.40	—	—	—	—	—	Begin development
0751	55	0	—	13.5	5.86	.122	11.02	79	v. Light Brown - begin surge
0801	↓	—	—	13.0	5.93	.127	9.79	293	Cloudy, Light Brown.
0806	↓	—	—	—	—	—	—	—	Less Cloudy; PID = 5.1

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-11/00
Dev. Method: AIR LIFT
Pump Type: ____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): ____
Static Water Level After (ft.): ____
Screen Length (ft.): 20
Specific Capacity: ____
Casing ID (in.): 4

Responsible Personnel: S. NAIK
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0810	55	—	49.90	12.5	5.94	.121	10.71	77	Clearing.
0816	55	—	—	12.5	5.98	.121	10.68	61	Clearing.
0823	55	—	—	12.5	5.44	.116	9.39	48	Clearing
0830	55	—	—	12.4	5.48	.116	9.63	39	Clearing.
0837	55	2200	50.00	12.3	5.57	.116	9.51	37	Clearing. Stop pumping to dumpwater.
0933	70	—	47.50	12.7	5.76	.119	9.64	302	Cloudy. Begin development.
0935	↓	—	—	—	—	—	—	—	Begin surging.
0945	↓	—	—	12.4	5.81	.119	10.54	240	End surge. Cloudy v. ugt BAN
0948	70	—	—	—	—	—	—	—	PID = 13.7.
0955	↓	—	—	12.3	5.85	.113	11.25	42	Clearing. Begin surge.
1005	↓	—	—	12.3	5.75	.119	10.94	106	Cloudy. End surge.
1009	↓	—	49.80	12.3	5.74	.113	11.14	47	Clearing. Begin Surge.
1019	↓	—	—	12.3	5.71	.116	10.51	77	End surge.
1024	↓	2200	—	12.2	5.71	.113	10.83	45	Clearing. End puming to dumpwater.
1115	50	—	47.6	13.0	5.79	.118	10.68	43	Begin pumping.
1117	↓	—	—	—	—	—	—	—	~~Begin surging~~. move to next interval
1121	↓	—	—	12.5	5.73	.121	9.66	197	Cloudy.
1127	↓	—	—	12.4	5.70	.118	9.93	69	Clearing. Begin Surging.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00, 5/9-11/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1137	50	—	—	12.3	5.69	.119	9.70	121	End surge. Cloudy.
1143	50	—	—	12.3	5.63	.117	9.17	45	Clearing. Begin surge.
1153	50	—	—	12.3	5.65	.118	9.34	71	End surge. Clearing.
1158	50	—	—	12.2	5.64	.117	9.64	36	Clearing
1203	50	—	—	12.2	5.64	.117	9.29	25	Clearing. water level = 50.00'
1205	50	—	—	—	—	—	—	—	Move to next interval.
1208	50	—	—	12.2	5.67	.128	9.88	436	Cloudy
1213	50	—	—	12.3	5.69	.120	9.84	63	Clearing.
1214	50	2200	—	—	—	—	—	—	Stop development to empty tanks.
1357	—	—	47.50	—	—	—	—	—	Start development.
1400	53	—	—	13.5	5.80	.127	9.93	35	Clearing.
1402	53	—	—	—	—	—	—	—	Begin surge.
1412	53	—	—	12.6	5.97	.124	9.42	211	End surge. Cloudy
1418	↓	—	50.00	12.5	5.88	.120	9.95	51	Clearing.
1420		—	—	—	—	—	—	—	Begin surge.
1430		—	—	12.5	5.85	.123	9.71	100	End surge. Cloudy.
1437		—	—	12.5	5.83	.120	9.53	29	Clearing.
1442	↓	—	—	12.4	5.81	.120	9.82	22	Clearing.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7302
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-12/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1445	53	—	—	—	—	—	—	—	Move to next interval
1448	↓	—	—	12.4	5.80	.123	9.77	143	Cloudy.
1455	↓	2200	—	12.4	5.80	.123	9.85	23	Clearing.
1456	—	—	—	—	—	—	—	—	Stop pumping to empty tanks.
1539	57	—	47.50	13.5	5.91	.126	9.15	19	Begin pumping. Clearing
1541	↓	—	—	—	—	—	—	—	Begin surging.
1551	↓	—	—	—	—	—	—	—	Stop surging.
1553	↓	—	—	12.8	5.86	.125	9.59	159	Cloudy.
1558	↓	↓	—	12.6	5.81	.123	9.89	46	Clearing.
1600	↓	—	—	—	—	—	—	—	Begin Surging.
1610	↓	—	—	—	—	—	—	—	End surging.
1612	↓	—	—	12.6	5.82	.118	9.76	90	Some cloudiness.
1613	↓	—	—	—	—	—	—	—	Begin surging.
1620	↓	—	—	—	—	—	—	—	End surging.
1622	↓	—	—	12.4	5.80	.122	9.25	73	Some cloudiness.
1626	↓	—	—	12.5	5.78	.122	9.89	39	Some cloudiness.
1630	↓	—	50.20	12.4	5.78	.122	9.54	19	Clearing.
1632	↓	—	—	—	—	—	—	—	Move to next interval.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7302
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-11/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NAIK
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1634	57	—	—	12.3	5.73	.123	9.20	46	Clearing.
1636	↓	—	—	12.3	5.74	.123	9.26	113	Cloudy.
1640	↓	—	—	12.3	5.75	.123	9.43	31	Clearing.
1641	↓	2300	50.10	—	—	—	—	—	End development to dump drums.
5/11/00 0735	—	—	—	—	—	—	—	—	Begin development
0740	55	—	47.20	—	—	—	—	—	Begin surging.
0745	↓	—	47.50	13.5	6.58	.156	10.51	534	Cloudy, Light brown
0750	↓	—	—	13.2	6.23	.142	10.53	244	End surging; cloudy
0754	↓	—	—	13.1	6.13	.131	10.38	89	Clearing.
0756	↓	—	—	—	—	—	—	—	Begin surging
0801	↓	—	—	13.1	5.25	.127	10.98	121	Slight Cloudiness.
0806	↓	—	—	13.0	5.51	.127	10.67	81	Clearing. End surging
0809	↓	—	—	—	—	—	—	—	PID = 11.2
0811	↓	—	—	12.8	5.49	.125	10.97	38	Clearing.
0815	↓	—	—	12.9	5.56	.125	10.86	22	Clearing.
0817	↓	—	—	—	—	—	—	—	Move to next interval.
0819	↓	—	—	12.9	5.68	.131	11.37	271	Cloudy, light brown.
0822	↓	—	50.20	12.8	5.72	.126	11.52	53	Clearing.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-10/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 552 (565)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0825	55	—	—	—	—	—	—	—	Begin surging.
0830	↓	—	—	13.0	5.74	.121	11.07	88	Some cloudiness
0835	↓	—	—	12.9	5.65	.125	11.47	59	End surging.
0839	↓	—	—	12.8	5.66	.125	11.72	25	Clearing
0840	↓	—	—	—	—	—	—	—	Begin surging.
0843	↓	—	—	12.8	5.62	.126	11.38	24	Clearing.
0844	↓	2,200	50.30	—	—	—	—	—	End surging - tanks are full. Stop development.
0926	50	—	—	14.0	5.82	.131	10.68	43	Begin pumping
0928	↓	—	—	—	—	—	—	—	Begin surging.
0938	↓	—	—	13.4	5.73	.126	10.60	77	End surging. Cloudy
0944	↓	—	50.20	13.2	5.72	.124	10.75	29	Clearing.
0948	↓	—	—	13.1	5.73	.124	10.82	21	Clearing.
0949	↓	—	—	—	—	—	—	—	Move to next interval.
0951	↓	—	—	13.1	5.60	.133	11.32	22	Clearing.
0952	↓	—	—	—	—	—	—	—	Begin surging.
1002	↓	—	—	13.3	5.69	.127	10.60	107	End surging. Cloudy
1005	↓	—	—	13.3	5.61	.121	10.87	43	Clearing.
1007	↓	—	—	—	—	—	—	—	Begin surging.

711

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-11/00
Dev. Method: Air Lift
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. Nagle
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1017	50	—	—	13.3	5.61	.124	10.67	55	End surging. Some cloudiness.
1020	↓	—	—	13.3	5.67	.124	10.91	31	Clearing.
1024	↓	—	—	13.2	5.68	.125	10.82	17	Clearing.
1026	↓	—	—	—	—	—	—	—	Move up to next interval.
1028	↓	—	—	13.3	5.72	.134	10.35	31	Clearing.
1033	↓	2,200	51.40	13.2	5.76	.125	10.88	17	Clearing. Stop development to empty tanks
1124	—	—	~~49.10~~	—	—	—	—	—	water level before pumping.
1125	48	—	—	—	—	—	—	—	Begin pumping & surging
1135	↓	—	—	14.3	5.65	.121	10.31	68	Slight cloudiness. End surging
1139	↓	—	—	13.6	5.72	.124	10.80	39	Clearing. Begin surging.
1149	↓	—	—	13.9	5.72	.123	10.34	49	End surging.
1153	↓	—	—	13.6	5.73	.123	10.44	23	Clearing.
1154	↓	—	—	—	—	—	—	—	Begin surging.
1200	↓	—	—	13.5	5.69	.123	10.76	30	Clearing.
1204	↓	—	—	13.5	5.71	.121	10.50	27	End surging.
1208	↓	—	—	13.5	5.72	.124	10.73	14	Clearing.
1210	↓	—	—	—	—	—	—	—	Move to bottom and surge.
1214	↓	—	—	13.5	5.68	19	10.41	59	

S11

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-12/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NAIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1219	48	–	–	13.2	5.66	.118	10.66	26	Clearing. End Surging
1222	↓	–	–	–	–	–	–	–	Begin Surging.
1224	↓	–	–	13.3	5.68	.117	10.77	17	End Surging. Clearing.
1229	↓	2200	52.00	13.4	5.69	.117	10.54	19	Stop development to dump water
1354	–	–	48.00	–	–	–	–	–	Raise surge block above the well screen to refill/flower head.
1403	–	–	–	–	–	–	–	9	Air lift 6 times then lower surge block to the bottom
1404	70	–	–	–	–	–	–	–	Begin pumping
1406	↓	–	–	~~13.5~~ (SW)	5.87	.122	10.67	28	Clearing.
1409	↓	–	–	13.6	5.91	.120	10.88	30	Clearing
1412	↓	900	–	13.6	5.94	.120	10.69	19	Clearing. End air lift development for this well.
5/12/00 0829	–	–	50.53	–	–	–	–	–	Begin pursing water from above screen ~25 ft below water.
0830	15	–	51.87	15.7	6.02	.159	10.85	14	CLEAR. 16.6 (GPM)
0835	↓	–	51.95	15.1	6.11	.163	7.03	9.0	CLEAR
0842	↓	–	51.99	15.3	6.11	.169	5.86	7.3	CLEAR
0847	↓	–	51.98	13.9	6.01	.153	5.91	23	Slight cloudiness.
0852	↓	–	51.98	13.4	5.47	.146	4.89	90	Cloudy
0857	↓	–	51.96	13.2	5.47	.133	5.71	36	Clearing.
0902	↓	–	51.96	13.2	5.39	.127	6.02	31	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-73D2
Site: NWIRP Bethpage
Date Installed: 3/30/00
Date Developed: 4/4/00; 5/9-12/00
Dev. Method: Air Lift
Pump Type: _____

Depth to Bottom (ft.): 552 (BGS)
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. Nagle
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM) 16.6 GPM	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0907	15	–	51.96	13.1	5.35	.124	6.20	29	V. SLIGHT CLOUDINESS
0914	↓	–	51.97	13.0	5.38	.122	6.46	23	CLEARING
0921	↓	–	51.96	13.0	5.38	.121	6.95	21	
0930	↓	1,000	51.96	13.0	5.34	.121	7.06	18	CLEARING
1207	–	–	50.62	–	–	–	–	–	Water level measurement.
									Development is complete.

L11

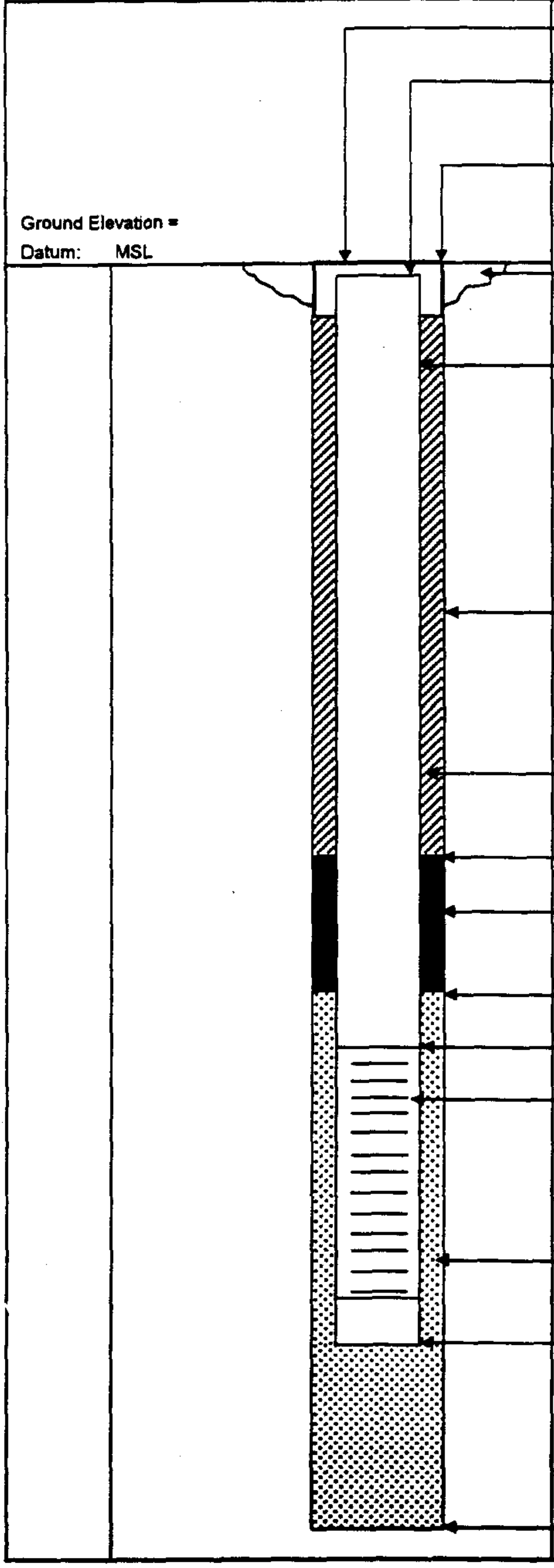
GM-74I

Tetra Tech NUS, Inc.

WELL No.: GM-74I

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-74I
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-17-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	H.S. Auger	NORTHING:	
GEOLOGIST:	S. Pekako	DEV. METHOD:	Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 40, Flush Joint, Threaded PVC

Borehole Diameter: 9-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 80 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 82 FT

Elevation / Depth of Top of Screen: 94 FT

Type of Screen: Schedule 40 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 86 FT / Fil Pro Quartz No. 0 Sand to 82 FT *

Elevation / Depth of Bottom of Screen: 114 FT

Elevation / Depth of Bottom of Filter Pack: 114 FT

Type of Backfill Below Well: Collapsed Formation Material. * Pass-caved the mat'l above No. 1 Sand

Elevation / Total Depth of Borehole: 120 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Vai-Tech Drilling Co., Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-74I
DATE: 05-16-00
GEOLOGIST: S. Rekapalli
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
1623	4							hand auger to 4 FT (BGS)					
1624/1636	5							EOA=1	-	0.0	0.0	0.0	
1637/1640	10					br.	m. to c. sand, sm. wll rounded to subrounded poorly sorted gravel	dump EOA=2	0.0	0.0	0.0	0.0	SP
1642/1643	15							EOA=3	-	0.0	0.0	0.0	
1644/1647	20					br.	same as above	EOA=4	0.0	0.0	0.0	0.0	
1648/1649	25							EOA=5	-	0.0	0.0	0.0	
1651/1652	30					br.	same as above, gravel well rounded to subangular	EOA=6	0.0	0.0	0.0	0.0	SP
1653/1654	35							EOA=7	-	0.0	0.0	0.0	
1656/1658	40					br.	m. to v.c. sand, tr. mostly f. gravel	EOA=8	0.0	0.0	0.0	0.0	SP
1659/1701	45							EOA=9	-	0.0	0.0	0.0	
1703/1705	50					br.	same as at 30 FT (BGS)	EOA=10 moist/wet	0.0	0.0	0.0	0.0	SP

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 5 FT Auger Cuts: 6.25" ID / 9" O.D. O.5' Auger Bit. BIC unit with PE Photovac 2020 PID. Samples from 0 to 54 FT collected from auger flights at ground surface.

Drilling Area Background (ppm): 0.

Converted to Well: Yes X No

Well I.D. #: GM-74I

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-74I
DATE: 05-16-00 / 05-17-00
GEOLOGIST: S. Polepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Sample	PID Sampler BZ	PID Borehole**	PID Driller BZ**	USCS*
1706 / 1707	55							EOA=11	–	0.0	0.0	0.0	
1709 / 1710	60					br.	m. to c. sand, tr. v.c. sand + f. gravel	sat. EOA=12	0.0	0.0	0.0	0.0	SP
1711 / 1713	65							EOA=13	–	0.0	0.0	0.0	
1714 / 1715	70					br.	mostly m. to c. sand, sm. fines + tr. f. gravel	sat. EOA=14	0.0	0.0	0.0	0.0	SP
1716 / 1718	75							EOA=15	–	0.0	0.0	0.0	
1719 / 1722	80					br.	same as above, sm. fines + f. gravel	sat. EOA=16	0.0	0.0	0.0	0.0	SP
05-16 1723 / 05-17 S-1	84	100/–	4		v. dense	lt. br. to	poorly sorted well rounded to subrounded gravel,	sat. EOA=17	0.0	0.0	0.0	0.0	GW
@ 0840	86	–/–	24		–	dk. br.	sm. m. to c. sand + fines	muddy gravel + sand key at top of sample					
							add potable water after collecting spoon						
								1/8" to 1.5" ⌀					
S-2 @	89	30/40	19		dense	br.	9.5" mostly m. to c. sand, tr. f. gravel → most 1/4"-1/2" ⌀	sat. EOA=18	0.0	0.0	0.0	0.0	SP
0858	91	50/70	24		v. dense	lt. gy. or. br.	3" clayey/silty f. to m. sand → laminated/banded						SM/SC
						var.	6.5" mostly m. sand + tr. black/lt. gy. clayey/silty laminae	add potable water after collecting spoon					SP
							or./var. br./lt. br./gy.						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, gy. = gray, or. = orange, bk. = black, dk. = dark, lt. = light, var. = variegated, sm. = 11-30%, tr. = 0-10%, adjective (ie sandy) = 31-50%, + / and = equal percentages, ⌀ = diameter

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-74I

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - C70 0208
PROJECT NUMBER: N0565-0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: CME-45
BORING NUMBER: GM-74I
DATE: 05-17-00
GEOLOGIST: S. Akpoko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ*	USCS*
S-3 @	94	12/15	10.5		m. dense	Hbr. to br.	mostly m. to c. sand, tr. f. gravel	SM. EOA=19	0.0	0.0	0.0	0.0	SP
0921	96	19/27	24										
		/											
		/											
S-4 @	99	21/27	24		▼	▼	same as above with	EOA=20	0.0	0.0	0.0	0.0	SP
0932	101	32/33	24		dense	or. br.	2 silty f. to m. sand ignimbrite near bottom of sample interval → H. gy.						SM
		/											
		/					sm. fmg near bottom of interval						
		/											
S-5 @	104	21/27	18		m dense	▼	m. to c. sand fining downwards to mostly	EOA=21	0.0	0.0	0.0	0.0	
0945	106	29/35	24		dense		m. sand, tr. f. gravel						
		/											
		/											
		/											
S-6 @	109	32/47	24		dense	Hbr.	mostly m. to c. sand, tr. f. gravel	EOA=22	0.0	0.0	0.0	0.0	SP
0950	111	100 for 3"	24		V. dense								
		/											
		/											
		/											
S-7 @	112	34/100	0		—	—		EOA=22	—	0.0	0.0	0.0	—
1016	114	over 4" / —	24		—			no recovery					
		/											
		/											
		/											
1038	120	/		T.D.=120'				cuttings to 120 FT (BGS)					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: pulled added downhole after driving split-spoon at all sample intervals

Drilling Area Background (ppm): 0.

Converted to Well: Yes X No

Well I.D. #: GM-

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP BETHPAGE
Date Installed: 5/17/00
Date Developed: 6/7
Dev. Method: SUBMERSIBLE PUMP
Pump Type: _____ GPM
Depth to Bottom (ft.): 114
Static Water Level Before (ft.): 41.51
Static Water Level After (ft.): _____
Screen Length (ft.): 10 20 (30)
Specific Capacity: _____
Casing ID (in.): 4
Responsible Personnel: S. NEIL, B BARR, J. BLEMINGS
Drilling Co.: UNI-TECH
Project Name: OFF-SITE DRILLING
Project Number: N0565.0200

Time	~~Estimated Sediment Thickness~~ SW (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1524	14	–	41.51	14.5	6.89	.140	>1100	BEGIN DEVELOPMENT - MURKY/ GRAY-BRN. DO = 6.46
1530	↓	–	74.7	14.8	6.64	.130	600	V. CLOUDY-BRN. DO = 6.21.
1535		–	74.9	14.8	6.59	.122	170	CLEARING. DO = 6.61.
1540		–	74.8	14.5	6.38	.114	120	SAME. DO = 6.85.
1545		–	74.8	14.4	6.31	.111	100	SAME. DO = 7.04.
1547		–	–	–	–	–	–	SURGE BOTTOM 5 FT W/ PUMP.
1550		–	74.5	14.5	6.33	.108	550	V CLOUDY-BRN. DO = 7.21.
1555		–	74.8	14.5	6.32	.104	130	CLOUDY-BRN. DO = 7.28.
1600		–	74.9	14.6	6.28	.101	40	CLEARING. DO = 7.25. SURGE W/ PUMP.
1605		–	74.5	14.4	6.25	.099	110	SAME. DO = 7.27.
1609		–	–	14.4	6.21	.098	70	CLEARING. DO = 7.25. SURGE W/ PUMP.
1615		–	73.0	14.5	6.23	.096	85	SAME. DO = 7.09.
1621		–	73.2	14.5	6.18	.095	55	CLEARING DO = 7.13. SURGE W/PUMP.
1626		–	72.9	14.5	6.16	.095	90	SLIGHTLY CLOUDY DO = 6.74.
1630		–	–	14.4	6.09	.095	60	CLEARING. DO = 7.25.
1634		–	72.9	14.4	6.07	.095	50	SAME. DO = 7.15.
1638		–	–	14.3	6.07	.094	40	CLEARING. DO = 7.04.
1643	↓	–	72.9	14.3	6.04	.094	40	SAME. DO = 7.18. MOVE PUMP TO MID-SCREEN.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP BETHPAGE
Date Installed: 5/17/00
Date Developed: 6/7
Dev. Method: Submersible Pump
Pump Type: _____
Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 41.51
Static Water Level After (ft.): _____
Screen Length (ft.): 10 20 (SA)
Specific Capacity: _____
Casing ID (in.): 4
Responsible Personnel: S. NTIL, B. BAER, J. BEMINGS
Drilling Co.: UNI-TECH
Project Name: OFF-SITE DRILLING
Project Number: N0565.0200

Time	Estimated ~~Sediment Thickness~~ (SA) (Ft.) GPM	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1648	14	—	73.0	14.3	6.04	.094	40	AT MID-SCREEN. CLEAR. DO = 7.23. SURGE W/ PUMP.
1652	↓	—	72.5	14.4	6.01	.092	>1100	MURKY-BRN/GRAY. DO = 7.37.
1654	↓	1300	—	—	—	—	—	STOP DEV FOR TODAY.
0755	15	—	41.36	14.2	5.29	.159	800	RESUME DEV @ MID-SCREEN. DO = 7.41.
0800		—	71.37	14.2	5.69	.101	170	CLOUDY. DO = 6.69.
0805		—	71.95	14.3	5.63	.095	85	CLEARING. DO = 6.72. SURGE W/ PUMP.
0810		—	72.2	14.3	5.62	.093	>1100	MURKY. DO = 7.13.
0815		—	72.2	14.3	5.60	.093	170	CLOUDY. DO = 6.61.
0820		—	—	14.2	5.69	.092	95	CLEARING. DO = 6.72.
0825		—	72.3	14.2	6.71	.091	65	CLEARING. DO = 6.74.
0826		—	72.3	—	—	—	—	WATER LEVEL. SURGE W/ PUMP.
0830		—	—	14.3	5.66	.091	800	V. CLOUDY. DO = 7.32.
0836		—	71.9	14.2	5.69	.091	100	CLEARING. DO = 6.61.
0840		—	—	14.2	5.67	.091	75	CLEARING. DO = 6.42. SURGE W/ PUMP.
0845		—	—	14.2	5.72	.091	95	SLIGHTLY CLOUDY. DO = 6.48. W/ SURGE PUMP.
0851		—	—	14.2	5.67	.090	140	SAME. DO = 6.37.
0855		—	71.2	14.2	5.68	.090	90	CLEARING. DO = 6.47.
0	↓	—	—	14.3	68	.090	65	CLEARING. DO = 6.36.

6/8/00

2 of 3

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NNIRP BETHPAGE
Date Installed: 5/5/00
Date Developed: 6/7-
Dev. Method: SUBMERSIBLE PUMP
Pump Type: ____

Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 41.51
Static Water Level After (ft.): ____
Screen Length (ft.): ~~10~~ (SN) 20
Specific Capacity: (SN) ~~GPM~~
Casing ID (in.): 4

Responsible Personnel: S. NEIL, B. BAER, J. BLEMINGS
Drilling Co.: UNI-TECH
Project Name: OFF-SITE DRILLING
Project Number: N0565.0200

Time	~~Estimated Sediment Thickness~~ (SN) ~~(Ft.)~~ GPM	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0904	15	—	—	14.2	5.66	.090	45	CLEARING. DO = 6.49.
0908	|	—	71.2	14.2	5.65	.090	38	CLEAR. DO = 6.33
0909	|	—	—	—	—	—	—	MOVE PUMP TO BOTTOM.
0912	|	—	—	14.3	5.63	.090	45	CLEAR. DO = 6.44
0913	↓	1,200	—	—	—	—	—	STOP TO EMPTY TANKS.
0938	—	—	41.34	—	—	—	—	WATER LEVEL.
0947	11	—	—	—	—	—	—	RESUME DEV. PUMP ON BOTTOM.
0949	|	—	—	14.6	5.79	.091	120	CLOUDY. DO = 7.27.
0955	|	—	70.0	14.5	5.73	.091	75	CLEARING. DO = 6.80.
1000	↓	—	—	14.6	5.73	.090	40	CLEARING. DO = 6.69. MOVE PUMP TO STATIC
1001	—	—	—	—	—	—	—	TURN PUMP OFF TO SET PUMP @ STATIC.
1007	11	—	—	13.4	6.34	.118	500	V. CLOUDY/GRN. DO = 6.98
1012	|	—	—	14.7	6.05	.090	160	CLOUDY. DO = 8.42
1017	|	—	—	14.5	5.76	.089	85	CLEARING DO = 8.68.
1022	|	—	—	14.7	5.71	.089	50	CLEARING. DO = 7.91.
1028	|	—	—	14.7	5.70	.089	40	CLEARING DO = 7.51.
1030	↓	500	—	—	—	—	—	~~END DEVELOPMENT FOR THIS WELL~~ (SN)
1040	—	—	41.35	—	—	—	—	END W.L. NEED TO DEVELOP UPPER TEN FT OF SCREEN.

HP1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 5-5-00
Date Developed: 6-15-00
Dev. Method:
Pump Type: 4in. Sub. Cpm

Depth to Bottom (ft.): 113' (PVC)
Static Water Level Before (ft.): 41.5
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity:
Casing ID (in.): 4in.

Responsible Personnel: M. Healey B Baur J. Blemings
Drilling Co.: UIC
Project Name: CTO 0208 off-site Drilling
Project Number: N 0565 -0200

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
								0.0ppm PID
1539								Started pumping
1542	15.0		70' + Falling					Cloudy
1548								Turned Back pump
1555			69.3	16.6	6.16	0.097	90	Water Rising.
1600	15.0		69.3	16.2	6.04	0.096	65	
1605				16.2	6.07	0.097	60	
1608				15.5	6.09	0.094	55	
1611				15.4	6.06	0.095	45	
1615								Surged + moved pump up 5'
1622				15.8	6.12	0.093	85	From Bottom of well
1626				15.7	6.00	0.092	50	
1629				15.3	5.92	0.092	45	
1630								Surged well
1643				15.6	6.09	0.090	60	
1649				15.4	5.91	0.091	55	
1652				15.2	5.86	0.091	37	
1655		1,100		15.1	5.70	0.091	33	

SP1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 5-5-00
Date Developed: 6-16-00
Dev. Method: Pumping/Surge
Pump Type: 4in Submersible

Depth to Bottom (ft.): 113' (PVC)
Static Water Level Before (ft.): 41.5
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity:
Casing ID (in.): 4in.

Responsible Personnel: M. Healy, B. Baer, J. Blemings
Drilling Co.: UTD Co.
Project Name: CTO 0208 off-site drilling
Project Number: N 0565-0200

Time	~~Estimated Sediment Thickness (Ft.)~~ GPM	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ___)	Turbidity (NTU)	Remarks (odor, color, etc.)
0756		4,100						Started pump @
0803				15.4	5.35	.121	80	Bottom
0807				15.0	5.54	0.093	65	
0812			76.6					Reduced Flow
0813				15.0	5.68	0.092	55	
								Moved pump to 10' from
0815								Bottom + Surged 3' stroke
0826	13 gpm		64.25	15.5	5.72	0.085	140	0.57 gpm/foot
0833				15.0	5.62	0.088	75	Pump @ 103'
0836				15.0	5.68	0.090	70	
0838				~~15.3~~	~~5.70~~	~~0.088~~	m.k	Surged well
0848				15.3	5.7	0.088	90	
0854				15.4	5.64	0.089	65	
0856								Surged well
0907				15.4	5.66	0.089	85	
0911				15.3	5.58	0.085	70	
0915				15.3	5.54	0.089	60	
0918				15.7	5.56	0.088	50	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 5-5-00
Date Developed: 6-16-00
Dev. Method: Pumping/Surging
Pump Type: 4" Submersible GPM

Depth to Bottom (ft.): 113' (PVC)
Static Water Level Before (ft.): 41.5
Static Water Level After (ft.): _____
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4 in.

Responsible Personnel: M. Healey B. Baer J. Blamey
Drilling Co.: UTD Co.
Project Name: CTO 0208 off-Site Drilling
Project Number: N 0565-0200

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0923		5,200		15.2	5.69	0.088	55	Stopped pump
1000								Started pumping
1006	15.7 gpm	~~15.7 min~~	66.35	15.7	5.59	0.089	90	10' off Bottom 103'
1014			67.40	15.6	5.66	0.089	75	0.63 gpm/ft.
1015								Surged well
1022				15.5	5.67	0.087	70	
1026				15.4	5.49	0.085	50	
1032				15.5	5.56	0.088	50	
1033								Surged well very
								Cloudy water
1044				15.9	5.65	0.085	55	
1045								Surged well very
1050	Surged							Cloudy Water
			Surged well at 5 min			suspended with pump @		103' to 105'
		6,300	Water is getting ~~Better~~ faster			but still		Cloudy
			Water clears faster after each Surge but is still					
			over the 50 NTU			more development if needed.		

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: 07-11-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp pump

Depth to Bottom (ft.): 114 FT (BGS)
Static Water Level Before (ft.): 43.37 FT (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 4-inch

Responsible Personnel: S. Arlippio, J. Evans, W Waugh, E. Blemmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0905	15	—	43.37	15.2	7.39	0.123	6.71	>1100	cloudy, sl. br. PID=0.0
0916	Q=14.4	—	—	14.8	6.97	0.094	9.60	170	pump depth @ 113.5 FT (BGS) H. br.-gy tint, PID: 0.0
0925		—	67.51	14.7	6.89	0.092	9.41	74.4	v. H. gy tint
0931		—	—	—	—	—	—	—	mechanically surge bottom 4 FT of well screen with pump.
0932		—	—	—	—	—	—	—	end surge
0934		—	—	14.6	6.68	0.091	9.73	171	H. br.-gy. tint, PID=0.0
0939		—	67.02	14.4	6.44	0.090	8.96	59.0	v. H. tint, PID=0.0
0943		—	—	14.2	6.28	0.091	9.45	57.8	as above
0944		—	—	—	—	—	—	—	pull pump up 5 FT to ~108.5 FT + surge well (108.5 FT - 103.5 FT)
0945		—	—	—	—	—	—	—	end surge
0946		—	—	14.2	6.09	0.090	9.21	429	br-gy tint, PID=0.0
0951		—	67.28	14.1	6.09	0.089	9.87	65.2	v. lt. tint PID=0.0
0953		—	—	—	—	~~0.089~~ SP 07-11-00 ~~0.086~~	—	—	surge well from 108.5 FT to 103.5 FT
0954		—	—	—	—	—	—	—	end surge
0955		—	—	14.3	5.92	0.088	10.96	451	gy. br. tint, PID=0.0
0958		—	—	14.0	5.90	0.089	9.35	90.7	v. H. gy. tint, PID=0.0
1001		—	—	14.0	5.85	0.089	9.18	63.2	v. H. tint, PID=0.0
1004	↓	—	—	13.9	5.81	0.088	9.63	38.8	v. H. tint, PID=0.0

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: ~~06-07-00~~ 07-11-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp pump

Depth to Bottom (ft.): 114 FT (BGS)
Static Water Level Before (ft.): 43.37 FT (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5-43.4) = 0.83
Casing ID (in.): 4-inch

Responsible Personnel: S. Peloquin, J. Evans, N. Walsh, E. Blummings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
									pull SP 07-11-00
1006	Q = 14.9	↓	—	—	—	—	—	SP —	pump up to ~103.5 FT, surge well from
1007	↓	↓	—	—	—	—	07-11-00	103.5	~~103.5~~ FT to ~~103.5 FT~~ 98.5 FT end surge
1008	↓	↓	67.27	14.4	5.84	0.089	8.97	274	lt. br. gy. tint, PID = 0.0
1012	↓	1000	—	—	—	—	—	—	water tank at capacity, stop development → hydraul. surge well
1156	Q = 15.2	↓	—	—	—	—	—	—	continue well development
1157	↓	↓	—	—	—	—	—	—	→ surge well with pump end surge (103.5'-98.5')
1200	↓	↓	—	16.5	5.83	0.089	10.45	>1100	cloudy, v. br.
1210	↓	↓	—	15.2	6.16	0.089	9.75	530	br-gy. tint
1224	↓	↓	—	15.0	5.92	0.089	8.97	214	lt. br. gy. tint
1232	↓	↓	67.26	15.0	5.97	0.096	8.97	144	lt. br. gy. tint
1244	↓	↓	67.27	15.0	6.25	0.089	9.77	91.8	v. lt. gy. tint
1248	↓	↓	—	—	—	—	—	—	surge well with pump ~4 FT interval (103.5' to 98.5')
1249	↓	↓	—	—	—	—	—	—	end surge
1253	↓	↓	66.71	15.0	6.19	0.088	9.27	195	lt. br. gy. tint
1259	↓	↓	—	14.8	5.93	0.088	9.23	121	as above
1302	↓	2000	—	—	—	—	—	—	stop development; hydraulically surge well.
1351	Q = 14.9	↓	—	—	—	—	—	—	continue development
1352	"	↓	—	—	—	—	—	—	surge 5 FT section of screen with pump.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: ~~06~~ 07-11-00
Dev. Method: Submersible Pump
Pump Type: 4" 0.5 hp sub. pump

Depth to Bottom (ft.): 114 FT (BGS)
Static Water Level Before (ft.): 43.37 FT (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5 - 43.4) = 0.83
Casing ID (in.): 4-Inch

Responsible Personnel: S. Petepka, J. Evans, W. Walsh, E. Blomberg
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

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Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1353	Q̄ = 14.9		—	—	—	SP 07-11-00 ~~0.086~~	—	—	end surge
1355			65.60	16.2	6.43	0.088	10.70	496	br.-gy. tint
1400			—	15.4	6.18	0.087	9.79	407	as above
1410			65.81	15.5	6.22	0.089	10.85	175	lt. br.-gy. tint
1415			65.82	15.2	6.04	0.087	9.42	123	as above
1425			—	15.6	5.92	0.086	8.95	97.9 ~~97.9~~	v. lt. gy. tint (97.9 NTU)
1426			—	~~15.6~~	~~5.92~~	~~0.086~~	~~8.95~~	~~97.9~~ ~~15.6~~	surge 5 FT section of well with pump
1427			—	—	—	SP 07-11-00	—	—	end surge
1429			65.59	14.6	5.84	0.087	9.39	207	lt. br.-gy. tint
1433			—	14.7	5.85	0.087	9.02	118	v. lt. gy. tint
1435			—	—	—	—	—	—	surge 5 FT section of well with pump
1436			—	—	—	—	—	—	end surge
1438			65.62	14.6	5.83	0.087	9.93	234	lt. br. gy. tint
1443			—	14.8	5.98	0.088	9.33	103.4	v. lt. gy. tint
1448			65.70	14.5	5.80	0.087	8.85	90.4	as above
1453		↓	—	14.7	5.84	0.087	9.31	73.4	v. lt. tint
1458	↓	3000	65.70	14.8	5.81	0.087	9.15	62.4	as above
—	—	"	—	—	—	—	—	—	stop development, [illegible], surge well.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 6M-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: 07-11-00
Dev. Method: Submersible pump
Pump Type: 4 inch 0.5 hp sub. pump

Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 43.37 (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5-43.4) = 0.83
Casing ID (in.): 4-inch

Responsible Personnel: S. Petapko, J. Evans, W. Waugh, E. Blemmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1612	Q=14.7		—	—	—	—	—	—	continue development surge 5 FT screen section w/ pump	(103.5' - 98.5')
1613			—	—	—	—	—	—	end surge	
1615			64.39	16.2	5.95	0.086	11.13	364	br.-gy tint	
1620			64.52	15.2	5.89	0.086	9.67	155	lt. br.-gy tint	
1625			64.54	15.1	5.88	0.086	9.72	109.9	as above	
1630			—	15.0	5.80	0.086	9.32	85.5	v. lt. gy. tint	
1631			—	—	—	—	—	—	surge 3 FT section w/ pump 103.5' - 100.5'	
1632			—	—	—	—	—	—	end surge	
1634			—	14.8	5.74	0.086	10.07	359	br. gy. tint	
1644			64.69	14.6	5.83	0.087	10.73	81.2	v. lt. gy. tint	
1649			64.75	14.6	5.77	0.086	9.66	61.6	as above	
1654			—	14.4	5.73	0.087	9.09	55.1	as above	
1656									pull pump up to 98.5 FT surge well w/ pump.	(98.5 - 95.5')
1659			64.58	14.4	5.73	0.087	9.32	474	br-gy. tint	
1705			—	14.4	5.70	0.087	9.27	97.5	v. lt. gy. tint	
1706			—	—	—	—	—	—	surge 5 FT section w/ pump	(98.5' - 93.5')
1707			—	—	—	—	—	—	end surge	
1709			—	14.3	5.61	086	8.73	314	br. gy tint	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: 07-11-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5hp sub. pump

Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 43.37 (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5 - 43.4) = 0.83
Casing ID (in.): 4-inch

Responsible Personnel: S. Arko, J. Evans, W. Waugh, E. Blemings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1715	Q = 14.7		—	14.3	5.64	0.087	8.51	92	v. H. gy tint	
1720			—	14.1	5.66	0.087	8.64	65.1	as above	
1725			—	14.2	5.67	0.086	9.37	61.1	as above	
1726		↓	—	—	—	—	—	—	lower pump to depth (114')	
1730	↓	4160	—	—	—	—	—	—	stop development	
0812	Q = 14.1		—	—	—	—	—	—	resume development → surge 5' section of well w/ pump	(98.5' - 93.5')
0813			—	—	—	—	—	—	end surge	
0816			61.31	15.1	5.60	0.100	8.42	895	cloudy, brown, PID = 0.0	
0826			—	14.5	5.55	0.088	8.49	104	v. H. gy tint	
0831			—	14.3	5.52	0.086	8.36	83.9	as above ; PID = 0.0	
0833			—	—	—	—	—	—	surge 5' section of well w/ pump	(98.5' - 93.5')
0834			—	—	—	—	—	—	end surge	
0836			—	14.3	5.54	0.086	7.97	309	H. br. gy. tint	
0841			61.77	14.1	5.55	0.086	7.68	113	v. H. gy tint	
0844			61.78	14.2	5.53	0.086	8.20	87.3	as above	
0846			—	—	—	—	—	—	surge 5' section of well w/ pump	(98.5' - 93.5')
0847			—	—	—	—	—	—	end surge	
0849	↓	↓	—	14.1	5.53	0.086	8.09	263	H. br. gy. tint	

-11-00
-12-00

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: 07-12-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp Sub. pump

Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 43.37 (TIC)
Static Water Level After (ft.): 42.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5 - 43.4) = 0.83
Casing ID (in.): 4-inch

Responsible Personnel: S. Petrakis, J. Evans, W. Waugh, F. Blakeney
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0855	$\bar{Q}$ = 14.1		—	14.1	5.67	0.086	7.18	85.2	v. H. yy. odor, PID=0.0
0856			—	—	—	—	—	—	surges' section of well with pump (98.5'-93.5')
0859			—	—	—	—	—	—	end surge
0901			61.63	14.0	5.53	0.086	8.10	180	H. Br. yy. tint
0912			—	14.0	5.60	0.085	7.20	63.5	v. H. tint
0914			—	—	—	—	—	—	surge 5' section of well screen (98.5'-93.5')
0915			—	—	—	—	—	—	end surge
0917			—	14.0	5.56	0.086	8.51	172	H. Br. yy tint
0920			—	—	—	—	—	83.7	v. H. yy. tint
0923			—	13.9	5.55	0.086	8.01	69.3	v. H. tint, PID=0.0
0926			—	14.0	5.52	0.085	8.25	58.5	as above
0929			—	14.0	5.52	0.085	8.22	54.5	as above
0930		5250	—	—	—	—	—	—	Stop development
1022	$\bar{Q}$ = 15.4		—	—	—	—	—	—	lower pump to ~113.5 FT, continue development
1026			61.02	15.3	5.52	0.087	8.45	78.3	v. H. yy. tint
1036			61.07	14.7	5.55	0.085	8.60	49.5	v. H. tint, PID=0.0
1046			61.15	14.9	5.62	0.085	7.62	44.2	as above
1047			—	—	—	—	—	—	pull pump through water column.

(33)

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74I
Site: NWIRP Bethpage
Date Installed: 05-17-00
Date Developed: 07-12-00
Dev. Method: submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): 114 (BGS)
Static Water Level Before (ft.): 43.37 (TIC)
Static Water Level After (ft.): 43.11 (TIC)
Screen Length (ft.): 20
Specific Capacity: 15/(61.5-43.4) = 0.83
Casing ID (in.): 4-inch

Responsible Personnel: S. Akpoko, J. Evans, E. Brimming, W. Walsh
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1049	15.4	↓	—	—	—	—	—	—	set pump at ~63 FT spout
1052	↓		—	14.5	5.55	0.086	8.35	132	lt. brgy. tint
1102			61.47	15.0	5.63	0.086	7.11	48.8	v. lt. tint
1112		↓	61.49	15.0	5.62	0.085	7.76	42.6	as above
1114	↓	6,050	—	—	—	—	—	—	development complete
1126	—	—	43.11	—	—	—	—	—	final water level

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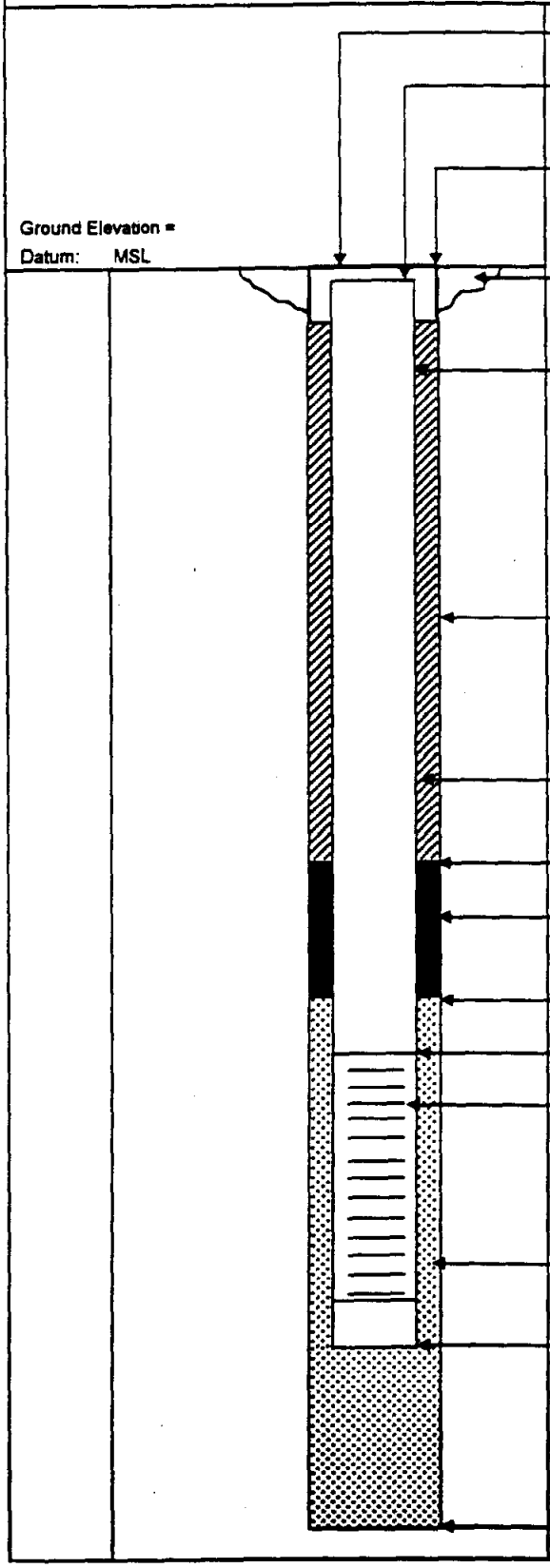
GM-74D

Tetra Tech NUS, Inc.

WELL No.: GM-74D

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-74D
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	04-19-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pekpko	DEV. METHOD:	Airlift/Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80, Flush Joint, Threaded PVC

Borehole Diameter: 8-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 272.5 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 275 FT

Elevation / Depth of Top of Screen: 295 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 281 FT/FilPro Quartz No. 0 Sand to 275 FT

Elevation / Depth of Bottom of Screen: 305 FT

Elevation / Depth of Bottom of Filter Pack: 305 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 310 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-74D
DATE: 04-14-00 / 04-17-00
GEOLOGIST: S. Petrako
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler B2	Sampler	Driller B2	USCS *
04-14 —								hand auger - first 2 FT					
04-17 1055	2												
1101	10					br. or-br.	c. to v.c. sand + well rounded to subrounded qtz. gravel is	1/8" to 1/4" ϕ	0.0	0.0	0.0	0.0	GP
						M.-gy.							
1104 1117	20					var.	c. to v.c. sand, tr. gravel	attach 8" x 10' reamer	0.0	0.0	0.0	0.0	
							br. / M.-br. / M.-gy. lwt.						
1120 1131	30					var.	same as at 10 FT (BGS)	1/8" to 1/2" ϕ	0.0	0.0	0.0	0.0	GP
							M.-gy. / gy. / M.-br. / wt.	approx. 5 FT					
								borehole collapse at rod change; recondition borehole					
								large ϕ gravel in mud pan					
1137 1155	40					var.	same as above, sm. gravel	1/8" to 1/4" ϕ	0.0	0.0	0.0	0.0	GP
								EOR=1					
1158 1328	50					var.	same as above, sm. subangular gravel + M.-br. clay	1/8" to 1/4" ϕ	0.0	0.0	0.3	0.0	

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 8" mud Rotary Drilling; 8" x 10' Reamer, 8" x 1' Drag Bit. Drilling Area Background (ppm): 0.0
Stroke = 20 FT. All samples wet / muddy from drilling mud. Air monitor with PE Photovac 2020 PID. Samples collected from circulating mud using strainer.

Converted to Well: Yes X No ____ Well I.D. #: GM-74D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-74D
DATE: 04-17-00
GEOLOGIST: S. Pekala
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole	Driller BZ**	USCS *
1332	60					wt., H.-gy.	C. to V.C. sand, sm. well rounded to subangular qtz. gravel +	1/8" to 1/4" Ø	0.0	0.0	0.0	0.0	SP/CH
						H.-br.	H. gy. clay						
1337 1345	70						same as above, tr. gravel	1/8" to 1/4" Ø	0.0	0.0	0.0	0.0	SP/CH
								EOR=2					
1346	80						C. to V.C. sand, tr. H.-gy. clay		0.0	0.0	0.0	0.0	SP/CH
1346 1413	90						C. to V.C. sand, tr. well rounded to subangular qtz.	1/8" to 1/4" Ø	0.0	0.0	0.0	0.0	SP
							gravel	EOR=3					
								losing mud to formation					
1414	100						C. to V.C. sand, sm. gravel		0.0	0.0	0.0	0.0	SP
1415	110					var.	sandy clay H.-br. lor.-br. lgy./br.-gy.	EOR=4	0.0	0.0	0.0	0.0	CL

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, wt. = white, gy. = gray, or. = orange, bk. = black, pk. = pink, rd. = red, dk. = dark, H. = light, var. = variegated, sm. = 11-30%, tr. = 0>1% adjective (i.e. sandy) = 31-50 %, +/and = equal per centages, Ø = diameter

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-74D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-740
DATE: 04-17-00
GEOLOGIST: S. Akpoko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole	Driller BZ**	USCS *
—	120					—	no sample		—	0.0	0.0	0.0	—
							driller reports clay beginning at approx. 127 FT (BGS)						
1444	130					—	no sample	EOR=5	—	0.0	0.0	0.0	—
1449	140					dk. gy, bk.	clay, tr. sand + f. gravel	driller reports poss. interbedded clay/sand with more common or thicker clay sequences	0.0	0.0	0.0	0.0	CH/ CL
							driller reports "sand-like" drilling from ~139 FT to 142 FT (BGS)						SP
							driller reports "sand-like" drilling at ~149 FT (BGS)						
1454 1503	150						same as above	EOR=6	0.0	0.0	0.0	0.0	CH/ OH
													SP
1507	160					gy. to bk.	clay, tr. c. to v.c. sand		2.0	0.0	0.0	0.0	CH/ OH
							driller reports "clay-like" drilling from ~158 FT (BGS) to 162 FT (BGS)						SP
							drilling like sand below 162 FT (BGS) → bit chattering						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: note: sample strainer screen mesh too wide to hold f. to m. sands (> 0.5 mm).

Drilling Area Background (ppm): [0]

Converted to Well: Yes X No ____ Well I.D. #: GM-740

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-74D
DATE: 04-17-00
GEOLOGIST: S. Petapko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	Remarks	PID Reading (ppm): Sample	PID Reading (ppm): Sampler BZ	PID Reading (ppm): Borehole	PID Reading (ppm): Drillers BZ**	USCS *
1509													
1527	170					var.	clay	EOR = 7	0.0	0.0	0.0	0.0	CH/OH
							rd.-br. / M.-br. / dk.-gy. to bk						
1528	180					—	no sample	driller reports "sand + gravel like" drilling	—	0.0	0.0	0.0	—
1530						M.-gy. to dk.-gy.	C. to V.C. sand, sm. M.-br. / bk. clay, tr. gravel	1/8" to 1/4" Q	0.0	0.0	0.0	0.0	SP
1541	190												
						gy.	driller reports poss. finer sands, less bit chattering	EOR = 8					CH/OH
1543	200					M.-gy. M.-br.	C. to V.C. sand, sm. var. clay		0.0	0.0	0.0	0.0	SP
							bk. / dk.-gy. / rd.-br.						CH/OH
1545							C. to V.C. sand, sm. var. clay	mostly f. to m. sands in mud de-sander	0.0	0.0	0.0	0.0	SP
1551	210												
							M.gy. - dk-gy. / bk. / M.-br.						CH/OH
								EOR = 9					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-74D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565. 0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-740
DATE: 04-17-00
GEOLOGIST: S. Akers
DRILLER: T. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler @2	Borehole	Driller @2	USCS *
1552	220					M-gy M-br.	C. to V.C. sand + var. clay, tr. f. gravel	"sand like" drilling → bit	0.0	0.0	0.0	0.0	SP
							M.-dk.-gy./blk./or.-br./M.-br.	chattering					CH/OH
1553 1602	230						same as above	mud de-sander	0.0	0.0	0.0	0.0	SP
								sample = mostly					CH/OH
								f. to m. sand					
								EOR=10					
1603	240						same as above + sm. V.C. mica crystals		0.0	0.0	0.0	0.0	
													OH
1605 1612	250						C. to V.C. sand + or.-br. sandy clay, sm. V.C.	EOR=11	0.0	0.0	0.0	0.0	SP
							mica crystals, tr. f. gravel						CL
							C. to V.C. sand, sm. V.C.		0.0	0.0	0.0	0.0	SP
1613	260						mica crystals, + var.						
							clay						CH/OH
							M.-br./dk.-gy./blk./or.-br.						
								mud de-sander					
								sample = mostly					SP
04/17 1615 04-18 1038		270					same as above w/ var. sandy clay	f. to m. sand	0.0	0.0	0.0	0.0	CL
								EOR=12					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.

Remarks:

Converted to Well: Yes X No _____ Well I.D. #: GM-740

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-74D
DATE: 04-18-00
GEOLOGIST: S. Akpaka
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
1042	280					var.	clay, tr. sand		0.0	0.0	0.0	0.0	CH/OH
							br.-gy./dk.-gy./blk./or.-br.						
1044 S-1	285	50/40	12		hard	var.	3" clay grading to sandy clay		0.0	0.0	0.0	0.0	CH/CL
@ 1105	287	46/44	24		dense		dk.-gy/rd.-br./or.-br./						
						var.	9" silty f. to m. sand with thin clayey						SM
							interbeds (2 1" thick) gy./or.-br./lt.-br./tr. blk. mottling						
S-2 @	287	60/50	11		V. dense	var.	9" silty f. to m. sand	2" rd.-brn clay bed	0.0	0.0	0.0	0.0	SM
1120	289	50/45	24		dense		thin gy/blk/lt.-br/or.-br. laminated clayey bed near bottom of interval	at top → log?					
							gy./or.-br./lt.-br.						
S-3 @	289	45/27	10		dense	lt.-br. br.-gy.	6.5" silty f. to m. sand	0.5" dk.-gy./ red-br./or.-br.	0.0	0.0	0.0	0.0	SM
1136	291	37/45	24		dense to hard	var.	3" clayey/silty mostly m. sand with interbedded clay (laminae to 0.25" thick)	clay + piece of 1" ø gravel at top → log?					SM/SC CL
							or.-br./lt.-br./gy./blk./rd.-br.						
S-4 @	291	27/32	3.5		V. stiff	or.-br. blk.	0.25" clayey/silty sand 0.25" gy. clay bed		0.0	0.0	0.0	0.0	SM/CH
1156	293	36/42	24		hard	var.	3" laminated silty lt. sandy clay						CL
							or.-br./blk./lt.-br.						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No

Well I.D. #: GM-74D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NIWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-74D
DATE: 04-18-00
GEOLOGIST: S. Prikpke
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**	USCS*
S-5 @ 1209	293	26/31	8		m. dense	or.-br. to	clayey/silty f. to m. sand	1.5" clay lag at top	0.0	0.0	0.0	0.0	SM/SC
	295	45/61	24		v. dense to hard	H.-br.	interbed	of sample					CL
							2 pieces 1" to 1.5" ϕ gravel at bottom of sample	runny silty sand in trap					
S-6 @ 1223	295	32/41	10		dense to hard	or.-br.	5" m. to c. sand, tr. v. thin clayey/silty beds +	1.5" clay lag at top of	0.0	0.0	0.0	0.0	SP
	297	58/62	24		v. dense to hard		H.-gy. clay inclusions	sample					SM/SC
						or.-br. to gy.	3.5" m. to c. sand with interbedded thin clay beds (0.25" to 0.5" thick)						CH
S-7 @ 1240	297	24/31	4		m. dense to v. stiff	or.-br. to	2" mostly m. sand with sm. H.-gy. clay inclusions	2" clay + gravel lag at top	0.0	0.0	0.0	0.0	
	299	46/55	24		v. dense to hard	br.-gy.		of sample					
S-8 @ 1257	299	37/100	8		v. dense to hard	gy. or.-br.	mostly m. sand with gy. blk. clay laminae/inclusions		0.0	0.0	0.0	0.0	SP
	301	5"/—	24		—	H.-br.	over top 3" of sample						CH
S-4 @ 1308	301	47/100	5		v. dense	or.-br.	2.5" f. to m. sand with	2.5" clay lag at top	0.0	0.0	0.0	0.0	SP
	303	4"/—	24		—	H.-gy.	clayey/silty micro-laminae	of sample					SM/SC

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): [0]

Converted to Well: Yes X No

Well I.D. #: GM-74D

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565, 0200
DRILLING COMPANY: UniTech Drilling Co., Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-740
DATE: 04-18-00
GEOLOGIST: S. Alcorn
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Baghole*	Drillers BZ**	USCS *
S-10 @	303	37/50	5		dense to hard	org.	f. to m. sand, sm. silt / clay with 0.25" gy. clay		0.0	0.0	0.0	0.0	SP
1325	305	100 / wet 5"	24		v. dense to hard		interbed sand cleaner, H.-br.						CH
							near bottom of interval						
1335	310						circulate mud, reconditon borehole, thin mud,						
				T.D. = 310									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No

Well I.D. #: GM-740

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-740
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: —

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

	Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
5/24/00	1446	—	—	51.24	—	—	—	—	—	PID = 1.1
	1456	—	—	—	—	—	—	—	—	BEGIN TO SET PIPE.
5/23/00	0820	33	—	51.20	—	—	—	—	—	BEGIN DEVELOPMENT.
	0821	↓	—	—	14.1	6.26	.145	9.91	>1100	GRAY/BRN MURKY.
	0826		—	57.00	15.3	6.17	.095	9.70	>1100	SAME. PUMPING FROM BOTTOM
	0832		—	57.20	15.3	6.18	.093	9.75	>1100	SAME.
	0836		—	—	15.3	6.16	.092	10.22	>1100	SAME. BEGIN SURGING THE PULL SCREEN.
	0845		—	56.40	15.3	6.17	.093	10.52	>1100	END SURGING. ON BOTTOM. MURKY. GRAY/BRN.
	0853		—	56.40	15.4	6.18	.092	10.16	700	V. CLOUDY. BROWN.
	0900		—	—	15.4	6.22	.092	10.24	500	SAME.
	0908		—	—	15.4	6.22	.091	10.15	390	CLOUDY.
	0915		—	56.40	15.4	6.20	.091	9.88	360	SAME.
	0921		—	—	15.4	6.23	.092	9.61	340	SAME.
	0927	↓	2,200	—	15.4	6.24	.092	10.20	300	SAME. STOP DEVELOPMENT TO EMPTY TANKS.
	1027	39	—	51.20	15.2	6.21	.094	10.25	>1100	RESUME DEV.
	1035	↓	—	—	15.5	6.12	.091	10.02	450	CLOUDY.
	1040		—	56.50	15.6	6.16	.091	9.86	320	CLOUDY.
	1043	↓	—	—	—	—	—	—	—	BEGIN SURGING BOTTOM 2'.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1053	39	–	56.30	15.7	6.15	.092	10.52	750	END SURGING. V CLOUDY.
1100	↓	–	–	15.8	6.16	.091	10.33	310	CLOUDY.
1104	↓	–	–	15.8	6.18	.091	10.03	250	SAME.
1108	↓	–	–	15.8	6.16	.091	10.21	200	SAME.
1110	↓	–	–	–	–	–	–	–	BEGIN SURGING (BOTTOM 2').
1120	↓	–	56.30	15.9	6.20	.091	10.32	120	END SURGING. CLOUDY.
1124	↓	2200	–	15.9	6.17	.091	10.20	140	CLOUDY. STOP DEV. TO EMPTY TANKS.
1304	40	–	51.40	–	–	–	–	–	RESUME DEV. BEGIN SURGE.
1314	↓	–	56.20	16.3	6.23	.091	10.47	190	END SURGE. CLOUDY.
1319	↓	–	–	16.0	6.23	.091	10.20	170	CLOUDY.
1324	↓	–	–	15.9	6.19	.091	10.49	120	CLEARING.
1329	↓	1000	–	15.8	6.21	.091	10.29	120	SAME. STOP DEV. TO EMPTY 10,000 gal. TANK.
1410	37	–	51.20	15.4	6.14	.093	10.94	90	RESUME DEV.
1415	↓	–	56.30	15.5	6.21	.091	10.13	120	CLOUDY.
1419	↓	–	–	15.5	6.21	.091	10.01	90	SAME.
1423	↓	–	–	15.5	6.22	.091	10.61	70	SAME.
1427	↓	–	–	15.5	6.21	.091	10.79	70	SAME
1432	↓	–	–	15.5	6.22	.091	9.70	70	SAME

S71

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: —

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1435	37	—	56.30	15.5	6.19	.091	9.89	65	SAME. BEGIN SURGING NEXT INTERVAL (8-6 FT)
1445	↓	—	—	15.5	6.24	.092	9.56	210	END SURGE. CLOUDY.
1450		—	—	15.5	6.22	.091	9.74	45	CLEARING.
1452		—	—	—	—	—	—	—	BEGIN SURGING (8-6').
1502		—	—	15.4	6.19	.091	10.38	290	CLOUDY. END SURGING.
1506		—	52.20	15.4	6.17	.091	10.21	65	CLEARING.
1508		—	—	—	—	—	—	—	BEGIN SURGING.
1512	↓	2300	—	—	—	—	—	—	STOP SURGING - EMPTY TANKS
1516	—	—	51.30	—	—	—	—	—	W.L.
1700	35	—	—	—	—	—	—	—	RESUME DEV. BEGIN SURGING.
1710	↓	—	—	15.8	6.29	.090	10.60	>1100	END SURGING. V. MURKY.
1715		—	—	15.8	6.08	.090	9.78	130	CLOUDY.
1719		—	—	15.7	6.12	.091	9.75	50	CLEARING. BEGIN SURGING.
1729		—	—	15.6	6.20	.090	10.33	550	CLOUDY. END SURGING.
1734		—	—	15.6	6.16	.091	9.78	90	CLEARING.
1738		—	55.90	15.5	6.15	.091	9.87	33	CLEARING.
1740		—	—	—	—	—	—	—	BEGIN SURGING NEXT INT. (4-6')
1750	↓	—	—	15.5	6.15	.090	9.95	380	CLOUDY.

9h1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1755	35	–	–	15.5	6.15	.091	9.75	60	CLEARING. BEGIN SURGING.
1802	35	2,200	–	15.4	6.13	.090	10.06	210	CLOUDY. END SURGING
1803	35	–	–	–	–	–	–	–	STOP DEV. EMPTY TANKS - STOP FOR TODAY.
5/24/00 0755	28	–	50.90	15.0	6.06	.115	11.07	120	RESUME DEV.
0758	↓	–	–	–	–	–	–	–	BEGIN SURGE.
0808		–	55.00	15.7	6.34	.092	10.24	240	END SURGE. CLOUDY.
0812		–	–	15.6	6.25	.092	10.10	39	CLEARING. BEGIN SURGE.
0822		–	55.10	15.7	6.17	.091	10.23	150	END SURGING. CLOUDY.
0826		–	–	15.7	6.13	.091	10.02	31	CLEARING.
0830		–	–	15.7	6.11	.091	9.93	19	CLEAR. MOVE TO NEXT INTERVAL AND SURGE.
0840		–	–	15.8	6.09	.091	10.46	240	END SURGE - CLOUDY
0844		–	–	15.7	6.08	.091	9.85	39	CLEARING - BEGIN SURGE.
0854		–	–	15.7	6.06	.091	10.19	120	END SURGE. CLOUDY.
0858		–	–	15.7	6.08	.091	9.89	31	CLEAR.
0900		–	–	–	–	–	–	–	MOVE UP TO LAST 2 FT INTERVAL and SURGE.
0910		–	–	15.8	6.09	.091	9.96	120	END SURGE. CLOUDY.
0914		–	–	15.7	6.06	.091	10.26	39	CLEARING.
0915	↓		–	–	–	–	–	–	STOP DEV. TO EMPTY TANKS

LH1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: —

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1028	28	—	50.90	—	—	—	—	—	RESUME DEV. BEGIN SURGE.
1038	↓	—	55.60	16.3	6.10	.090	10.72	65	END SURGE.
1042	↓	—	—	16.0	6.07	.091	10.23	26	CLEAR.
1045	↓	—	—	—	—	—	—	—	LONGER PIPE TO EACH 2-AT INTERVAL - THEN TURN COMPRESSOR ON + OFF.
1050	↓	—	—	16.0	6.07	.092	10.01	65	PUMPING FROM BOTTOM.
1053	↓	—	—	16.0	6.04	.091	10.53	20	CLEAR
1057	↓	800	54.85	16.0	6.02	.091	10.16	16	END DEV. USING AIR LIFT.
1058	—	—	—	—	—	—	—	—	PREP FOR REMOVING PIPE.
1229	—	—	50.50	—	—	—	—	—	W.L. AFTER PIPE OUT.
1357	—	—	50.52	—	—	—	—	—	W.L. BEFORE GRUNDFOS.
1419	—	—	50.52	—	—	—	—	—	W.L. AFTER GRUNDFOS IN WELL.
1424	17	—	—	—	—	—	—	—	FLOW RATE INTO 5 gallon BUCKET.
1425	↓	—	—	15.1	6.72	.133	7.41	>1100	MURKY - GRAY/BRN.
1434	↓	—	52.28	17.5	6.68	.104	7.23	>1100	SAME.
1440	↓	—	52.27	17.3	5.91	.090	7.18	50	CLEARING.
1450	↓	—	—	17.4	5.81	.090	7.96	27	CLEAR.
1455	↓	—	—	17.3	5.74	.091	8.15	26	SAME.
1500	↓	—	—	17.2	5.71	.091	7.88	18	SAME.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D
Site: NWIRP Bethpage
Date Installed: 4/19/00
Date Developed: 5/23-24/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 305
Static Water Level Before (ft.): 51.24 (TOC)
Static Water Level After (ft.): 49.98 (TOC)
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1506	17	–	52.21	17.1	5.70	.090	8.57	31	PULL PUMP THROUGH THE WATER COLUMN TO STATIC.
1509	–	–	–	–	–	–	–	–	STOP PUMPING - GENERATOR PROBLEM
1519	17	–	–	–	–	–	–	–	RESUME PUMPING.
1522	↓	–	–	17.2	5.71	.090	8.76	15	PUMP AT STATIC, CLEAR
1526	↓	–	–	16.9	5.67	.090	8.65	12	CLEAR.
1530	↓	950	–	16.7	5.62	.090	8.95	13	SAME. END OF DEVELOPMENT
1535	–	–	–	–	–	–	–	–	FINAL W.L. = 49.98 FT.

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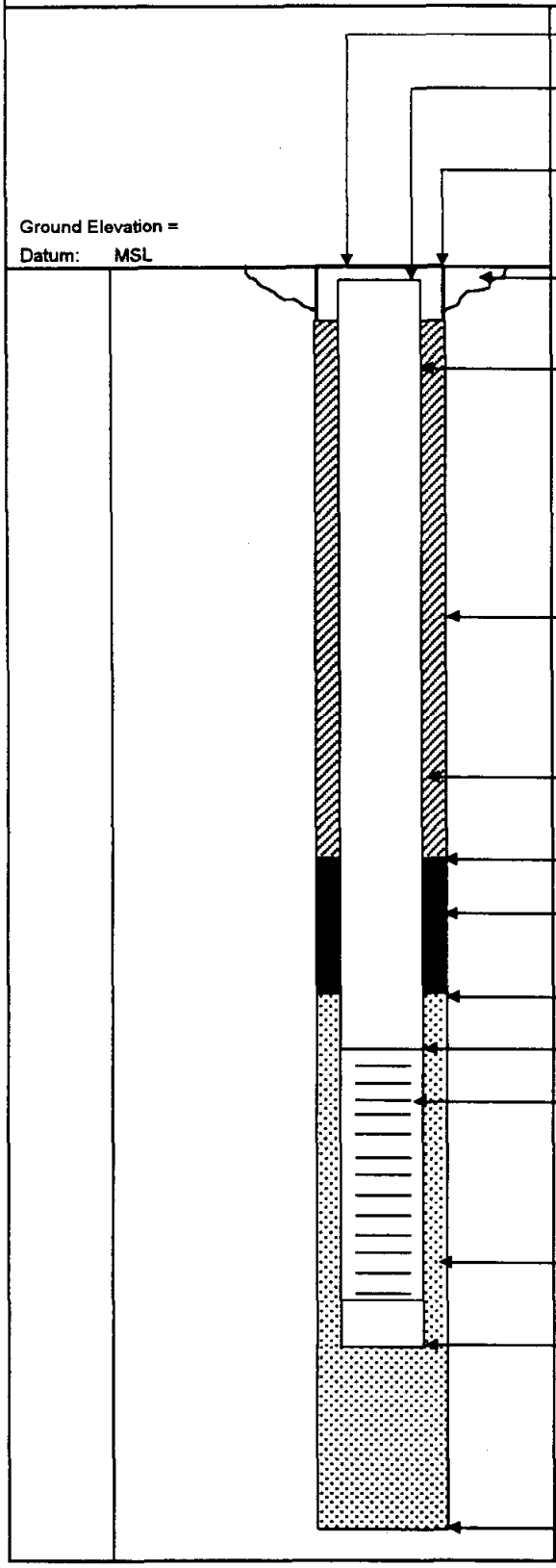
GM-74D2

Tetra Tech NUS, Inc.

WELL No.: GM-74D2

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-74D2
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	04-12-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	Mud Rotary	NORTHING:	
GEOLOGIST:	S. Pelepko	DEV. METHOD:	Air Lift/Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 80 Flush-Joint Threaded PVC

Borehole Diameter: 11-Inch to 70 Feet
8-Inch to 570 Feet

Type of Backfill: Volclay Bentonite Grout (High Solids Clay Grout)

Elevation / Depth of Seal: 506.5 FT

Type of Seal: Pure Gold (CETCO) Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 511 FT

Elevation / Depth of Top of Screen: 542 FT

Type of Screen: Schedule 80 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: Fill Pro Quartz No. 2 Sand to 521 FT / Fill Pro Qtz No. 0 Sand to 511 FT

Elevation / Depth of Bottom of Screen: 562 FT

Elevation / Depth of Bottom of Filter Pack: 563 FT

Type of Backfill Below Well: Collapsed Formational Material

Elevation / Total Depth of Borehole: 570 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-7402
DATE: 04-03-00/04-04-00
GEOLOGIST: S. Polepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
1736	3*							hand auger * first 3 FT					
S-1 @	10	10/27	11		m. dense	br to	5.5" well rounded to sub rounded poorly sorted	1/8" to 1.5" ɸ	0.0	0.0	0.0	0.0	GW
1743	12	36/31	24		dense	lt. gy	qtz. gravel, sm. m. to v.c. sand	where ɸ = approx. gravel					
						br	5.5" m. to c. sand, tr. f. gravel	diameter					SP
S-2 @	20	2/2	0		v. loose	wt., gy.,	well rounded to sub rounded poorly sorted	1/8" to 1.5" ɸ	0.0	0.0	0.0	0.0	[illegible]
1753	22	4/8	24		loose	br	qtz. gravel lodged in shoe	Driller reports v. coarse formational material → having difficulty lifting gravels/cleaning borehole					
04-03 1815													
04-04 S-3 @	30	100/over	24		v. dense	var.	as above (qtz. + granitic gravels)	1/4" to 1" ɸ	0.0	0.0	0.0	0.0	GW
0943	32	5"/—	24		—		gy./wt./or.-br./lt.-br. to dk. br./pk./bk.	poss. lag					
								EOR=1 ↓					
S-4 @	40	100/over	24		v. dense	var.	as above		0.0	0.0	0.0	0.0	GW
1016	42	3"/—	24		—								

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 8" Mud Rotary Drilling; 8" x 10' Reamer, 8" x 1' Drag Bit; Stroke = 20 FT; All samples wet (muddy) from drilling mud; Air monitor w/ PE Photo... 20; Color abbreviations: br. = brown, wt. = white, gy = gray, or. = orange, bk = black, pk. = pink

Drilling Area Background (ppm): 0

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Un-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-04-00
GEOLOGIST: S. Pelcaro
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ	USCS *
S-5 @	50	30/30	9		m dense	br.	m. to c. sand, clayey over top 1" of sample.	c. br. sand + wt.	0.0	0.0	0.0	0.0	SC/SP
1040	52	20/20	24		m. dense		fr. 1/4" to 1" ϕ gravel + or.-br. mottling	gravel lodged in shoe					
		/						EOR=2					
		/											
S-6 @	60	100/-	6		v. dense to hard	wt., lt.-	sub rounded to subangular poorly sorted qtz.	1/4" to 1.25" ϕ	0.0	0.0	0.0	0.0	GW
1055	62	-/-	24		—	gy./ dk.- br.	gravel, sm. lt.-br. sand + sandy clay						SP/CL
		/											
		/											
		/											
S-7 @	70	40/100	7.5		v. dense to hard	lt.- br.,	m. to c. sand with 0.5" gy./or.-br./br. sandy	EOR=3	0.0	0.0	0.0	0.0	SP
1131	72	over 4"	24		—	br.- gy.	clay/clay interbed + sm. well rounded to subrounded	1310 to 1350 →					CL/CH
1630		/					qtz. gravel → 5"	overream borehole					
		/				br.- gy.	2.5" m. to c. sand, brownish or.-br. + clayey/silty						SP/SC
		/					near bottom of interval						
0404 1645													
04.05 S-8 @	80	100 for 5"	4		v. dense to hard	wt., pk.,	well rounded to subrounded qtz. + granitic gravels	0.5" to 1.5" ϕ	0.0	0.0	0.0	0.0	GW
1048	82	-/-	24		—	gy, rd.	sm. lt.-br. sandy clay lay on top of interval						CL
		/											
		/											
		/											
		/			v. dense								
S-9 @	90	50/50	8		to hard	lt.- br.	2.5" f. to m. sand		0.0	0.0	0.0	0.0	SP
1113	92	100/-	24			lt.-br. wt.,	5" well rounded gravel, sm.	1/4" to 1" ϕ					GW
		/				lt.-gy., bk.	f. to m. sand/silt + lt.-gy. clay at top of interval						
		/				var.	f. to m. sand with inter-bedded clayey/silty	gy./bk./lt.-br. f. to m.					SP/ML
		/					laminae	composited SAND in shoe					
		/					or.-br./lt.-gy./dk.-gy./ lt.-br.	EOR=4					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: (color abbreviations continued: dk. = dark, lt. = light, var. = variegated; sm. = 11-30%, fr. = 07 10%, adjective = 31-50%, + and = equal percentages. Overream borehole with 11" bit to 70 FT (BGS). Install 8" Temp. Casing to ~69 FT (BGS)

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.022
DRILLING COMPANY: Uni-Tech Drilling Co, Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-05-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
S-10 @	100	100/-	8		v. dense to hard	var.	well rounded to angular (fractured) gravels with	1/4" to 1.5" Ø	0.0	0.0	0.0	0.0	GW/GH
1146	102	-/-	24		—		lt.-br. / lt.-gy. clay inclusion						
							or.-br. / wt. / lt.-dk. br. / rd. / pk. / blk. / lt.-gy.						
S-11 @	110	100/-	7.5		v. dense to hard	var.	same as above → 6.5"	EUR = 5	0.0	0.0	0.0	0.0	GW/GP
1204	112	-/-	24		—	or.-br. / lt.-br.	1" clayey silty f. to m. sand						ML
S-12 @	120	/	0			dk.-br.	sub angular gravel lodged in shoe	no recovery	0.0	0.0	0.0	0.0	
1343	122	/	24				Boring Log Continued on p. 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes X No

Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-06-00
GEOLOGIST: KC KILMARTIN
DRILLER: UNITECH - JIM EVANS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ**	USCS*
4-5	1750	40/40	0		hard		No recovery → clay ripped Trap out of spoon & sample	driller reports					CH
4-6	1753 @	35/51	24		hard		ran out. Cuttings are a grey, very GUMMY CLAY.	Tight zone + clay in					
	0820	133					Driller reports out of clay	cuttings ~127-130 FT	0.2	→	→		
							at 133	EOR=6					
	S-14	140	16/36		V. stiff		same problem as 130'. Sample		0.3	→	→		CH
	@	142	100/5		to hard		ripped Trap out of spoon or sample						
	0845						WAS LOST → NO RECOVERY. CUTTINGS STILL VERY GUMMY, WITH						
							some silt or very fine sand.						
							140 → 150 Driller reports STILL very soft & GUMMY						
	S-15	150	35/100/6	0		hard	AGAIN - NO recovery - Sample	EOR=7					CH
	@	152		24		—	Ripped Trap apart & LOST Sample.		0.3	→	→		CL
	0905						DRILLER: Formation STILL very soft & STICKY						
							155': possibly a little sandier (driller) less torque & bouncing						
	S-16	160	63/100/5	3		V. dense to hard	3" recovery = 2" light brn, MG sand		0.2	→	→		SP
	@	162		24		—	1" gray, very sticky CLAY						CH
	0935												
							DRILLER REPORTS FORMATION DRILLING MUCH SANDIER						
	S-17	170	48/100/6	9		dense to hard	9" recovery =	EOR=8	0.1	→	→		SP
	@	172		24		—	8" LT. BRN, MG TO CG SAND 1" gray, very STICKY CLAY						CH
	955												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): D.4 TO 0.2

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-7402
DATE: 04-06-00
GEOLOGIST: KC Kilmartin
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ	USCS *
180													
182		31/41	11"		dense		BANDED Beige, LT. BRN & DK GY Fine TO MG SAND		0.1	→			SP
@	S18	45/60	24"		V. dense								
1014													
190		63/51	17"		V. dense		4" DARK GY, CG SAND	EOR=9	0.1	→			SP
192	S19	25/10	24"		M. dense to V. dense		13" BANDED Dk. gy LT. BRN, & GY Fine TO SOME MG SAND,						SP
@							SOME V. thin, gy clayey STRINGERS. DOMINANTLY a FG- INTERVAL						ML
1038													
200		16/41	7"		M. dense to dense		Large pebble at TOP of Spoon		0.1	→			
202		100/3	24"		V. dense		MOSTLY LT. GY, relatively uniform MG SAND						
@	S20												
1054													
210		51/100/5	10"		V. dense		BANDED, Mainly gray &	EOR=10	0.2	→			SP
212			24"		—		LT. BN, FG TO MG SAND						
@	S21												
1112													
220		41/100/6	5"		dense to V. dense		Relatively uniform beige		0.1	→			SP
222	S22		24"		—		TO LT. GRAY MG. SAND						
@													
1330													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.2 → 0.

Converted to Well: Yes X No

Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Uni-Tech Drilling Co., Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-06-06
GEOLOGIST: KC Kilmurray
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Drillers BZ**	USCS*
230													
232	S-23	41/43	12"		hard to dense		1" STICKY GRAY CLAY	EUR=11	0.4			→	CH
@		100/5	24"		v. dense		2" MG-CG GRAY SAND						SP
1353							9" Banded LT. BRN, Beige, and						SP
							GRAY PG TO MG SAND						
240		65/100/4	10"		v. dense		3" MED. GY CG SAND		0.3			→	SP
242	S-24		24"		—		7" Brown, MG-CG SAND						SP
@													
1412													
250		15/50	16"		dense		4" DK Grey, MG-CG Sand		0.1			→	SP
252	S-25	50/50	24"		v. dense to hard		8" Brown SILTY, FG-MG	Predominantly					SM
@							Sand with clay STRINGERS	fine-grained					ML
1430							4" DK.GY TO Grayish Black,	INTERVAL					CL/CH
							STIFF TO SLIGHTLY STICKY CLAY	EUR=12					
260		35/100/6	13"		v. dense to hard		5" DK.GY CG SAND		0.0			→	SP
262	S-26		24"		—		5" LT.GY, MOSTLY MG SAND;						SP/CH
@							SOME CLAY = STICKY						
1448							3" V.LT.GY, V. STIFF CLAY						CL
270-272		35/100/6	10"		v. dense to hard		LT. BN. TO Grey, clayey &	NOTE: well was	0.0			→	SM/SC
[redacted]	S-27		24"		—		SILTY MG Sand; interbedded	flowing when					CH
@							with GREY, gummy/sticky Clay	rods were broken					
1517								at 270, Driller					
								recirculates to recondition BH.					
								EUR=13					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.2→0.4

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vantech Drilling Co. Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-06-00
GEOLOGIST: KC Kilmartin
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**	USCS*
280													
282	S-28	53/10/16	15"		hard		Grey, slightly sticky to		0.0			→	CH
@			24"		—		very stiff CLAY						CL
1541													
290								EUR=14					
292	S-29	40/60	12"		v. dense		Fairly uniform, LT. Grey		0.0			→	SP
@		100/100	24"		v. dense		Fine TO MG Sand						
1605													
300													
302	S-30	100/6	0"		—		No recovery - EMPTY Spoon		0.0			→	-
@			24"		—		? Trap is intact and						
1626							in good condition	NOTE: Well was					
								flowing at ROD break at 310,					
310		26/31	19"		v. stiff		DOMINANTLY a SILTY TO	Driller recirculates TO recondition BH					CL
312	S-31	35/41	24"		hard		f.G. Sandy clay with	EUR=15	0.0			→	ML
@							a few interfingers of						
1652							clayey SILT TO clayey fg Sand						
320	S-32	43/100/6	8"		hard to v. dense		3" grey, STICKY CLAY		0.0			→	CH
322			24"		—		5" bn TO grey, clayey						SC
@							fine TO MG Sand						
1720													
330	@		1730				DRILL TO 330, SHUT DOWN AT 1730 FOR DAY	EUR=16					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.2 / 0

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co., Inc.
DRILLING RIG: Failing 1500

BORING NUMBER: GM-7402
DATE: 04-07-00
GEOLOGIST: KC Kilmartin
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole*	Drilled BZ**	USCS*
END 4/6													
330													
START 4/7													
332	S-33	50/100/4	10"		v. dense to hard		V. Thinly bedded, gray, LT.	well was flowing	0.0	→			SM
@			24"		—		BN., and beige fine TO MS.	at pipe break TO					ML
1008							SILTY SAND; Clayey/ STICKY	Take Sample. MIXING More					
							IN SOME Thin (1") intervals	bentonite into MUD.					
340									0.0	→			OH
342	S-34	100/6	13"		hard		VERY STIFF, gray TO						
@			24"		—		blackish gray, dense clay						
1027													
350		100/6			hard		Lithology as above. very	EOR=17	0.0	→			OH
352	S-35		8"		—		Stiff, dense Clay						
@			24"				blackish gray TO gray						
1059							{ DRILLER REPORTS clay is						
							DRILLING V. STIFF & dry. }						
360		31/100/6	0"		hard		NO RECOVERY - clay		0.0	→			OH
362	S-36		24"		—		ripped TRAP & lost sample.						
@							DRILLER reports STILL Clayey						
1127													
370		22/47	1"		v. stiff		VERY Poor recovery. Clay	EOR = 18	0.0	→			OH
372	S-37	50/4	24"		hard		Ripped Trap.						
@							Lithology as above. very						
1234							stiff & dense grayish-						
							black TO gray clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No

Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co, Inc
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-07-00 / 04-10-00
GEOLOGIST: KC Kilmartin / S. Palepka
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
380													
382	S-38 @ 382	17/37	13"		v. stiff		DK Gray TO Grayish black,	DRILLER REPORTS SLOW + TOUGH	0.0	→			OH
@		50/2	24"		hard		very stiff & dense clay	DRILLING DUE TO THE CLAY "grabbing" the bit					
04-07 1317		/											
04-10 1453	382	/											
S-39 @ 1520	390	100/—	3		hard to v. dense	br.-gy.	dense clay grading to clayey/	driller reports easier drilling	0.0	0.0	0.0	0.0	CL
	392	—/—	24		—	to bk.	silty m. to c. sand (gray)	b/w 382' to 390' "drilling like sand"					SM/SC
		/						EUR=19					
		/											
S-40 @ 1540	400	30/40	9.5		hard to dense	gy.	2.5" sandy clay grading to clayey/silty mostly m. sand	compacted m. sand in shoe	0.0	0.0	0.0	0.0	CL
	402	100/over 5"	24		v. dense to hard		7" mostly m. sand with						SM/SC
		/					tr. gy. + bk. clayey/silty + clay interbeds (v. thin +						OH
		/					micro-laminae), sm. M-br. + or.-br. mottling						
		/											
S-41 @ 1601	410	26/41	12		hard to dense	dk.-gy.	0.5" clay bed (lay?)	EUR=20	0.0	0.0	0.0	0.0	CH
	412	100/over 5"	24		v. dense to hard	var.	11.5" m. to c. sand with tr. clayey/silty + clay						SP
		/					interbeds (micro laminae to v. thin)						SM/SC
		/					M.-gy./gy./bk./M.-br./						OH
		/					or.-br.						
S-42 @ 1625	420	66/100	6.5		hard to v. dense	dk.-gy.	2.5" clay bed (lay?)		0.0	0.0	0.0	0.0	CH
	422	over 2"/—	24			gy.	4" mostly m. sand						SP
		/				to M.-gy.							
		/											
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): [0]

Converted to Well: Yes X No

Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-10-00
GEOLOGIST: S. Rokpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
S-43 @	430	100 over 5"	5		hard to v. dense	dk.-gy.	1.5" clay bed (clay?)	compacted m.	0.0	0.0	0.0	0.0	CH
1650	432	- / -	24		—	gy.	3.5" mostly m. sand	sand in trap + shoe					SP
								EOR=21					
S-44 @	440	100 over 3"	1		hard	dk.-	clay/sandy clay (clay?)	trap broken	0.0	0.0	0.0	0.0	CH/CL
1711	442	- / -	24		—	gy.		driller reports					
								formation still behaving like					
								sand					
S-45 @	450	100 over 4"	4		hard to v. dense	dk.-gy.	1.5" clay + silty-to sandy clay (clay?), tr. gl.-br.	trap broken.	0.0	0.0	0.0	0.0	CH/CL
1737	452	- / -	24		—	to gy.	mottling	compacted m. to c. sand					
						gy.	2.5" m. to c. sand	in shoe					SP
								EOR = 22					
S-46 @	460	100 / -	9		hard to v. dense	dk.-gy.	3" interbedded clay/sandy clay/clayey m. to c. sand → lag?		0.0	0.0	0.0	0.0	CH/CL
1755	462	- / -	24		—	to gy.							SC
						var.	6" interbedded mostly m. sand/clayey/silty sand/						SP/SM
							clay → micro-laminae to thin bedded						SC/OH
							H. gy./lgy./bk./lt.-br./or.-br.						
S-47 @	470	43 / 100	12		hard to v. dense	dk.-gy. gy.	2" clay + sandy clay lag	trap broken	0.0	0.0	0.0	0.0	CH/CL
1822	472	- / -	24		—	gy.	10" clayey/silty f. to m.	EOR = 23					SM/SC
							sand, tr. bk. lpk. mottling + hard or.-br. Fe stained						
							inclusion						
1835	480												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____ Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No _____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co, Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-11-00
GEOLOGIST: S. Pekarko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-48 @	480	26/51	17		hard to dense	dk. yy. to bk.	5" sandy clay to clayey/silty mostly m. sand (clay?)	compact clayey/	BG	BG	1.7	BG	CL/ML
0935	482	100/—	24		hard to v. dense	yy., pk.,	7" interbedded f. to m. sand/clayey/silty f. to m. sand +	silty sand in shoe					SP/ML
						bk.	laminated clays → individual beds <1" thick	trap broken					CL
						yy.	3" silty f. to m. sand 2" as above ←						SM
S-49 @	490	100/—	7.5		hard to v. dense	dk. yy to bk.	2.5" sandy clay + clay lay 1.5" @ well rounded gravel	EOR=24	BG	BG	BG	BG	CL/GP
1001	492	—/—	24		—	yy.	5" mostly f. to m. sand. tr. c. to v.c. sand + M. yy. clay inclusions	losing mud → possible coarser material					SP
S-50 @	500	46/100	0		—		driller reports formation	no recovery →	—	BG	BG	BG	
1039	502	3"/—	24		—		"behaving like sand"	trap broken					—
S-51 @	510	109/—	0		—		driller reports possible	no recovery	—	BG	0.0	0.0	—
1122	512	—/—	24		—		clay zones "tight" between	trap intact					—
							502 FT and 516 FT (BGS); sandier below 516 FT	EOR=25					
S-52 @	520	100/—	3		hard to v. dense	dk. yy. to bk.	1.5" clay bed		0.0	0.0 to 0.1	0.0	0.0	OH
1156	522	—/—	24		—	yy. to bk.	1.5" f. to m. sand, brimming clayey/silty near bottom of interval						SP/ML

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: BG = PID reading falls within background range
High humidity possibly influencing PID readings

Drilling Area Background (ppm): 0.5

Converted to Well: Yes X No ____ Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: UniTech Drilling Co. Inc.
DRILLING RIG: Failing 1500
BORING NUMBER: GM-7402
DATE: 04-11-00
GEOLOGIST: S. Pelcak
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS *
S-53 @	530	17/21	7.5		m. dense v. silt	gy.	2" f. to m. sand, sm. c. sand, becoming clayey/silty near	trap broken	0.0	0.0	0.0	0.0	SP
1222	532	46/52	24		hard		bottom of interval	(compacted sandy clay					ML
		/				var.	alternating/interbedded dense clay to silty H. sandy	in shoe					CL
		/					clay	EOR=26					
		/					H. gy./br./H.-br./or.-br.						
S-54 @	535	100/—	3.5		hard to v. dense	var.	1" sandy clay to clayey/ silty f. to m. sand		0.0	0.0 to 0.2	0.0	0.0	CL/ML
1245	537	—/—	24		—		gy.-dk. gy/bk., sm. pk. mottling						
		/				gy.	2.5" mostly m. sand						SP
		/											
S-55 @	540	42/100	10		hard	var.	alternating/interbedded dense clay/silty H. sandy		0.1 to 0.2	0.1 to 0.2	0.0	0.0	CL/ML
1333	542	cuttings 4"/—	24		—		clay to clayey/silty sand						
		/					gy./pk./H.-br./or.-br./tr. bk. mottling						
		/											
		/											
S-56 @	545	100 cuttings	2		hard to v. dense	dk.-gy	clay grading to clayey/ silty mostly m. sand		BG	BG	BG	BG	OH
1355	547	—/—	24		—	to bk.	(lag?)	driller reports					SM/SC
		/						formation					
		/						drilling "like gravel" from					
		/						542 FT to					
S-57 @	550	100 cuttings	2		hard to v. dense	gy. to	same as above (lag?)	552 FT (BGS)	BG	BG	BG	BG	OH
1423	552	4"/—	24		—	bk.		EOR=27					SM/SC
		/					sample circulating mud	Using strainer → C. to					
		/					V.C. sand + f. gravel, sm. black lignite						
		/											
		/											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Drilling Area Background (ppm): 0.3-0.5

Converted to Well: Yes X No Well I.D. #: GM-7402

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Uni-Tech Drilling Co., Inc
DRILLING RIG: Failing 1500

BORING NUMBER: GM-7402
DATE: 04-11-00
GEOLOGIST: S. Pekpke
DRILLER: T. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole	Drillers BZ**	USCS*
S-58 @	555	30/30	3		v. stiff	var.	clay grading to clayey/silty m. to c.		BG	BG	BG	BG	CH
1443	557	100/6"	24		V. dense		sand	losing sm. drilling					SM/SC
							mud circulation sample same as at 550 FT (BGS)	mud = ↑ permeability					
							gy./dk-gy/br. lor.-br.						
S-59 @	558	100/wer	4		hard to v. dense	gr-gy br.	1" clay bed		BG	BG	BG	BG	OH
1522	560	6"/—	24		—	gy	silty f. to m. sand, sm.						SM
							or-br mottling						
							driller reports "sand-like"						
							drilling to 570 FT (BGS) bit chattering/bouncing						
1535	570							thin mud + develop borehole for approx. 1 HR					
				T.D.-570				EOR = 28					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No

Well I.D. #: GM-7402

AQUA TERRA GEOPHYSICS INC.
GROUNDWATER/DRILLING CONSULTING
16 STATION ROAD # 8
BELLPORT, NEW YORK 11713
(631) 286-7699

BOREHOLE: GM-74D2
LOGS:
NATURAL GAMMA
S. POINT RESISTANCE
SPONT. POTENTIAL

PROJECT: CTO-0208 OFFSITE DRILLING
CLIENT: NWIRP BETHPAGE
LOCATION: GRUMMAN S. RECHARGE BASINS

DATE: APRIL 11, 2000
COUNTY/COUNTRY: NASSAU
STATE/PROVINCE: NEW YORK

BOREHOLE DATA

DRILLING CONTRACTOR: UNI-TECH DRILLING CO. INC.
CUSTOMER TD: 570 FT.
ELEV: 110 MSL
DEPTH REF: LAND SURFACE
LOGGER TD 562 FT.

RUN	BIT RECORD			CASING RECORD		
NO.	Bit Size	From	To	Size/Wgt/Thk.	From	To
1	12 IN.	0 FT.	70 FT.	8" STEEL	0 FT.	70 FT.
2	8 IN.	70 FT.	T. DEPTH			
3						

DRILL METHOD: MUD ROTARY
DATE DRILLED: 4/00
TIME SINCE CIRC: 1 HR.
HOLE MEDIUM: DRILLING FLUID
FLUID LEVEL: 0 FT.
MUD TYPE: BENTONITE
VISCOSITY:
WEIGHT:
Rm: at Deg

GENERAL DATA

LOGGED BY: BENJAMIN A. RICE
OTHER SERVICES:
WITNESS: SETH PELEPKO & DAVE STERN
UNIT/TRUCK: MT. SOPRIS MGX2/1

LOGGING DATA

LOG FUNCTION	RUN NO.	EQUIPMENT			LOGGING		DETECTOR	SOURCE		LOGGED INTERVAL			COMMENTS
		MODEL	PROBE S.N.	UPHOLE S.N.	DIG INT FEET	SPEED FT/MIN	TYPE	TYPE	SIZE CBq	FROM	TO	INT FEET	
N. GAMMA	1	SMCA	2201	1123	.10	20	NaI			3	562	559	W.A. = 2
SP-R	2	SMCA	2201	1123	.10	25				70	562	492	

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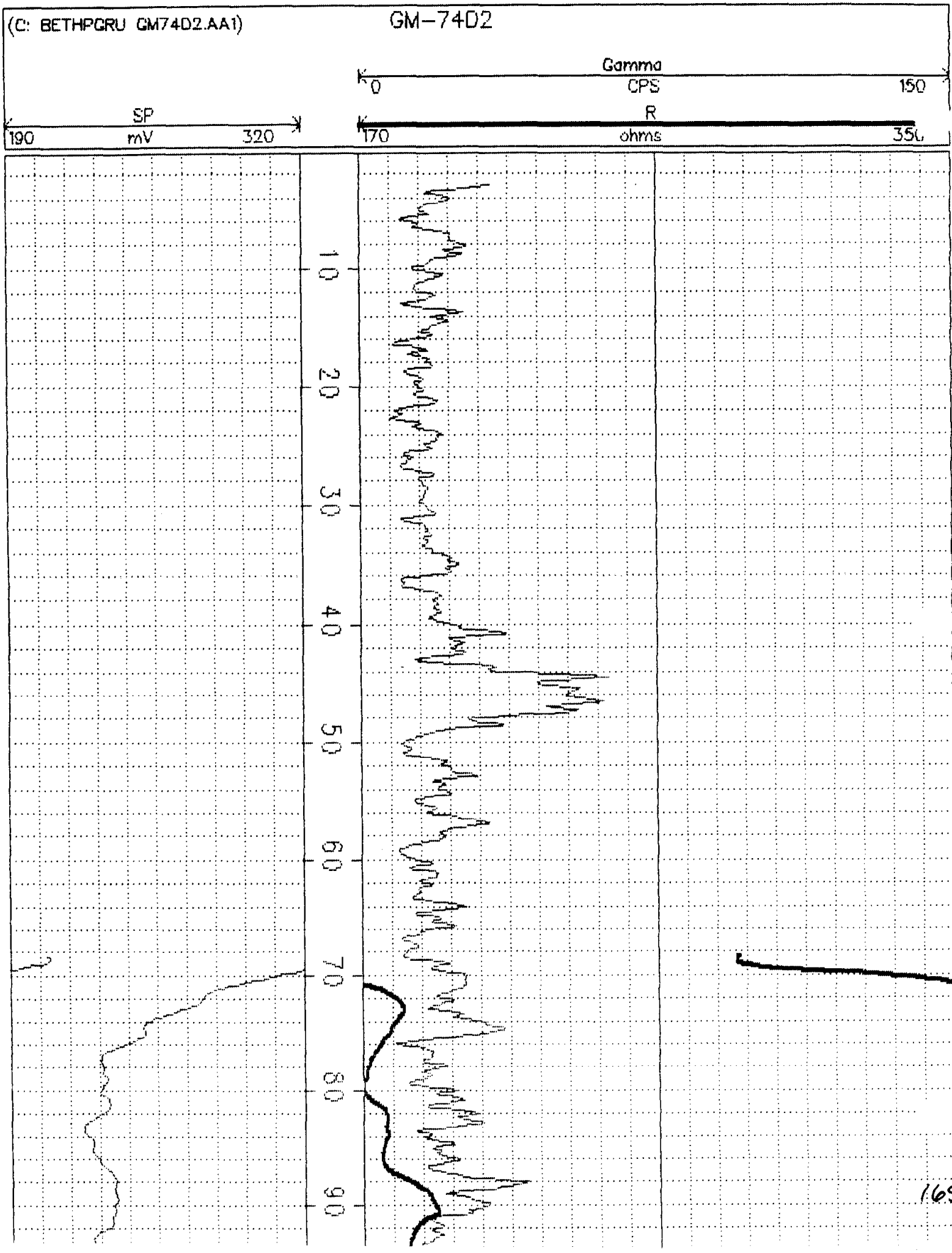
REMARKS: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GM-7402
Gamma
0
CPS
150
SP
190
mV
320
R
170
ohms
350
10
20
30
40
50
60
70
80
90

90
100
110
120
130
140
150
160
170
180
190

190
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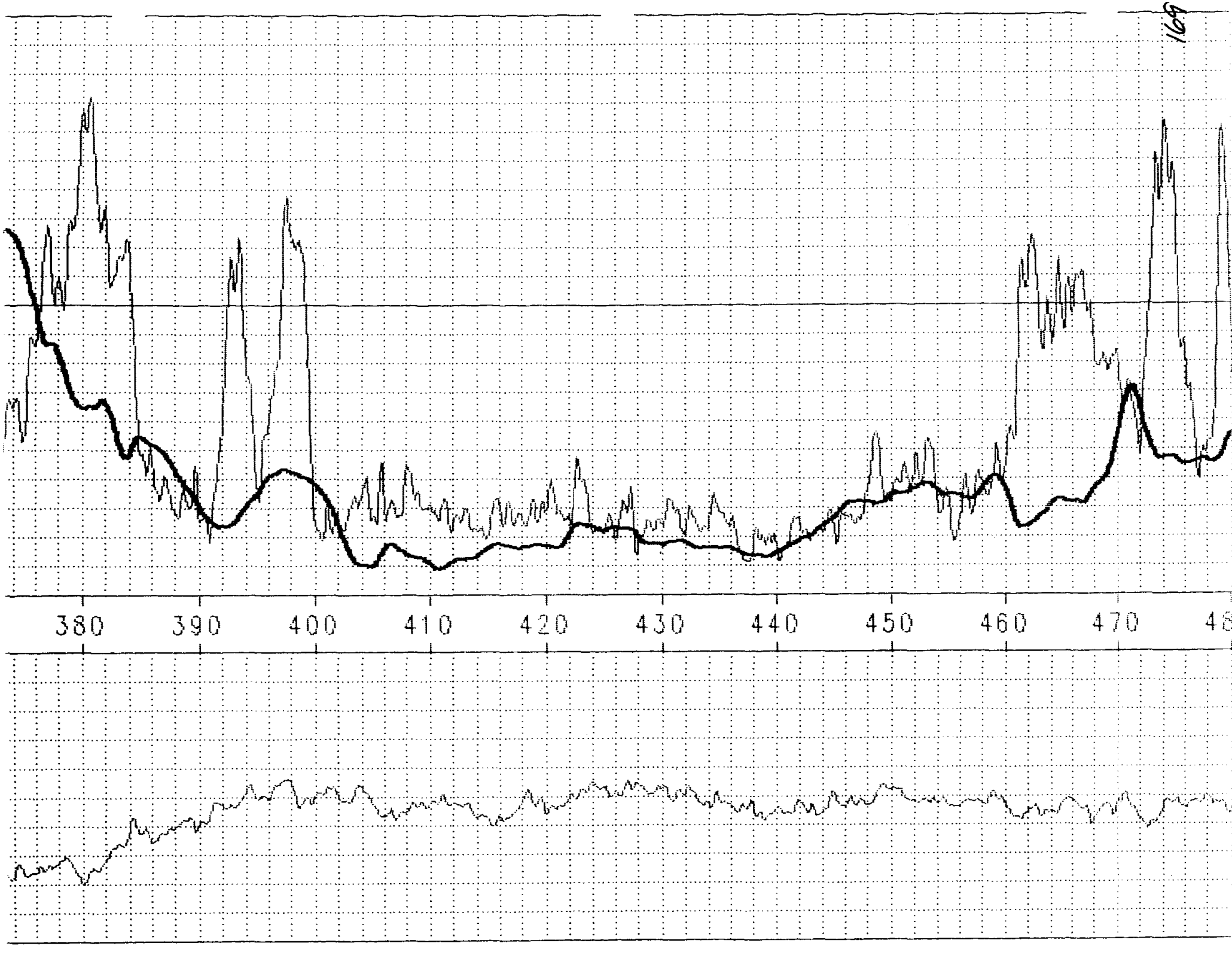
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420
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460
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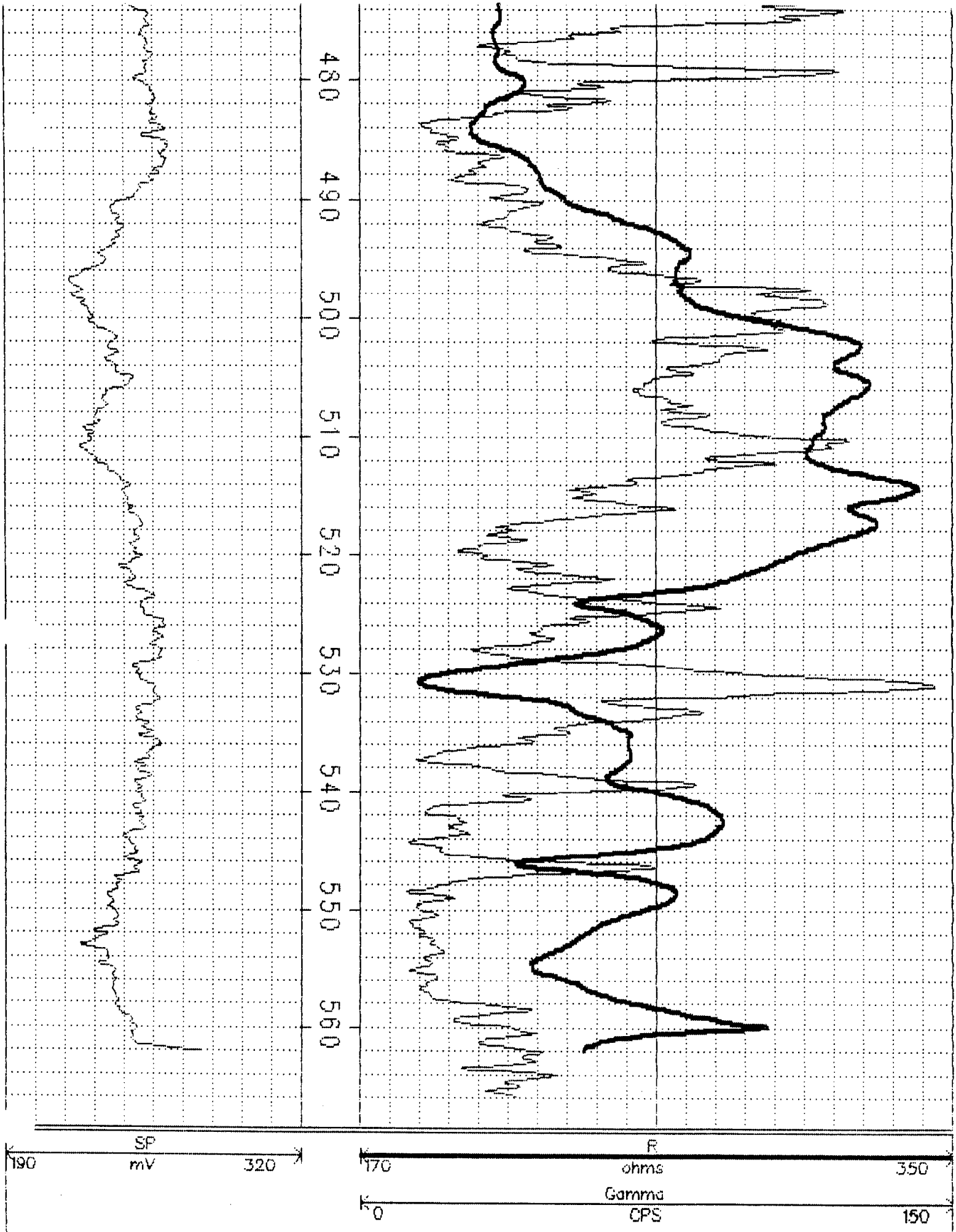
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490
500
510
520
530
540
550
560
SP
190
mV
320
R
170
ohms
350
Gamma
0
CPS
150
(C: BETHPGRU GM7402.AA1)

GM-7402

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7402
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIRLIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
—	—	—	20.10	—	—	—	—	—	PID = 2.6 PRIOR TO AIR INSTALLATION W.L. AFTER PIPE INSTALLATION
1516	—	—	20.10	—	—	—	—	—	NO FLOW - REMOVE ≈ 50 FEET OF CORE LINE.
1525	25	—	—	13.9	6.73	.353	2.60	>1100	BEGIN DEV; VERY DIRTY/ GRAY-BRN
1530		—	112	—	—	—	—	—	WATER LEVEL ONLY
1535		—	—	13.8	6.65	.440	10.57	>1100	VERY MURKY; GRAY/BRN
1537		—	109	—	—	—	—	—	WATER LEVEL ONLY
1541		—	105	13.2	6.95	.084	11.03	>1100	VERY MURKY - NO CHANGE
1547		—	—	—	—	—	—	—	NO CHANGE
1549		—	102.5	—	—	—	—	—	WATER LEVEL ONLY
1554		—	—	12.7	6.65	.068	11.83	>1100	STILL VERY MURKY
1556		—	100.5	—	—	—	—	—	WATER LEVEL ONLY
1603		—	102	12.6	6.46	.065	10.81	>1100	MURKY
1616		—	99.5	—	—	—	—	—	WATER LEVEL ONLY
1622		—	—	12.6	6.31	.064	11.34	>1100	MURKY
1633		—	97.5	12.5	6.28	.062	11.11	>1100	MURKY
1653	↓	2200	95	12.6	6.11	.061	11.73	>1100	MURKY; STOP TO EMPTY TANKS.
5/14/00 0734	—	—	63	—	—	—	—	—	W.LEVEL BEFORE DEVELOPMENT
0741	—	—	—	—	—	—	—	—	RESUME DEVELOPMENT

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0742	37	–	–	15.3	6.22	.091	10.83	>1100	MURKY. BRN/GRAY
0745	↓	–	68	–	–	–	–	–	BEGIN SURGING.
0751	↓	–	–	–	–	–	–	–	END SURGING.
0800	↓	–	–	13.0	6.51	.057	11.81	>1100	MURKY. BRN/GRAY
0809	↓	–	68.5	12.6	6.43	.057	11.79	650	V. CLOUDY. BRN.
0817	↓	–	–	12.5	6.41	.058	11.29	390	CLOUDY. BRN.
0823	↓	–	68.5	12.4	6.33	.057	10.69	300	SAME.
0829	↓	–	–	12.4	6.18	.055	11.06	270	SAME. BEGIN SURGING FIRST INTERVAL.
0837	↓	2200	–	12.3	6.29	.058	10.82	>1100	MURKY. STOP TO EMPTY TANKS.
0927	39	–	67	14.1	6.54	.062	11.74	>1100	MURKY. RESUME DEV.
0936	↓	–	67	12.9	6.32	.057	11.48	650	V. CLOUDY. BRN
0944	↓	–	67	12.9	6.15	.056	11.02	340	SAME. BEGIN SURGING.
0954	↓	–	–	12.6	6.28	.057	10.74	>1100	END SURGING. MURKY.
1002	↓	–	67.5	12.6	6.22	.057	10.90	520	V. CLOUDY. BRN.
1009	↓	–	–	12.5	6.24	.057	11.12	330	CLOUDY.
1016	↓	–	67.5	12.4	6.24	.057	10.93	310	SAME.
1023	↓	2200	–	12.3	6.21	.057	11.26	270	CLOUDY. STOP TO EMPTY TANKS.
1110	40	–	62	14.9	6.17	.059	10.92	280	RESUME BEGIN DEVELOPMENT.

PL1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15 - 22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1117	40	–	–	13.6	6.23	.055	11.75	500	V. CLOUDY. BRN
1125	↓	–	67	13.4	6.16	.056	11.85	310	SAME. BEGIN SURGE.
1135	↓	–	–	13.1	6.19	.056	11.19	800	SAME. 2ND SURGE.
1143	↓	–	67.5	13.1	6.19	.056	11.51	310	CLOUDY. LGT BRN.
1150	↓	–	–	13.0	6.22	.056	11.54	270	SAME.
1157	↓	–	–	12.8	6.20	.056	11.06	240	SAME.
1205	↓	2200	67.5	12.8	6.17	.056	11.00	210	SAME. STOP TO EMPTY TANKS.
1323	42	–	62	15.0	6.11	.059	11.74	220	RESUME DEV.
1330	↓	–	66	13.5	6.20	.057	11.40	650	V. CLOUDY. BRN.
1337	↓	–	66	13.3	6.18	.056	11.06	310	CLOUDY. BRN.
1344	↓	–	–	13.0	6.21	.056	11.26	250	SAME.
1351	↓	–	–	12.8	6.17	.056	10.97	210	SAME.
1400	↓	–	–	12.9	6.15	.056	10.91	180	SAME.
1410	↓	–	66	12.8	6.15	.058	11.18	180	SAME.
1416	↓	2200	–	13.0	6.17	.057	10.78	160	SAME. STOP TO EMPTY TANKS
1458	37	–	62	14.2	6.14	.058	11.10	160	RESUME DEV.
1508	↓	–	66	12.8	6.19	.056	11.45	290	CLOUDY. BRN.
1519	↓	–	–	13.0	6.16	56	11.28	180	SAME.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15 - 22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NAIK
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1528	37	—	—	12.8	6.18	.057	11.40	160	CLOUDY - BROWN.
1538	↓	—	66	12.8	6.15	.056	11.26	130	SAME
1548		—	—	12.8	6.14	.056	11.38	150	SAME.
1550	↓	2200	—	—	—	—	—	—	STOP TO EMPTY TANKS.
1639	39	—	61.5	14.3	6.17	.059	11.83	140	RESUME DEVELOPMENT.
1649		—	—	13.2	6.21	.056	11.34	370	V. CLOUDY - BROWN
1659		—	65.5	12.9	6.30	.056	10.98	200	CLOUDY - BROWN
1709		—	—	12.7	6.28	.056	11.10	150	SAME
1714		—	65.0	12.5	6.24	.056	11.42	160	SAME
1719		—	—	12.4	6.25	.056	11.07	150	SAME; BOTTOM 5 FT. BEGIN SURGING.
1729		—	—	12.4	6.22	.054	10.88	750	V. CLOUDY; END SURGING
1735		2200	65	12.2	6.21	.054	10.45	250	CLOUDY - BROWN
1736	↓	—	—	—	—	—	—	—	STOP DEVELOPMENT TO EMPTY.
5/17/00 0726	38	—	60.5	14.5	6.61	.067	9.87	150	RESUME DEVELOPMENT
0737		—	65	12.4	6.75	.062	10.55	>1100	MURKY / BRWN - GRAY.
0738		—	—	12.3	6.58	.058	10.32	550	V. CLOUDY / BRWN - GRAY.
0744		—	—	12.1	6.49	.057	10.46	370	CLOUDY / BROWN.
0749	↓	—	—	12.0	6.40	.057	10.44	290	SAME

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIRLIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: J. NOLL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0753	39	—	65	—	—	—	—	—	BEGIN SURGING (BOTTOM INT.)
0803	↓	—	—	12.0	6.42	.056	10.13	750	END SURGING. V. CLOUDY - BRN
0809		—	—	12.0	6.33	.055	10.83	210	CLOUDY / LGT BRN
0814		—	—	11.9	6.24	.055	10.39	190	SAME
0819		—	—	12.0	6.20	.055	10.62	190	SAME
0824	↓	2200	—	12.0	6.19	.055	10.51	160	SAME. STOP DEVELOPMENT TO EMPTY TANKS.
0912	40	—	—	13.7	6.14	.059	10.41	160	RESUME DEVELOPMENT.
0916	↓	—	—	—	—	—	—	—	MOVE TO NEXT INTERVAL.
0917		—	—	12.8	6.21	.058	10.98	400	BEGIN SURGING.
0928		—	—	12.7	6.19	.057	11.15	550	V. CLOUDY - BRN.
0936		—	—	12.6	6.17	.056	11.55	120	CLOUDY - BRN.
0941		—	—	12.4	6.15	.057	10.45	110	SAME
0949		—	—	12.6	6.15	.056	10.82	100	SAME BEGIN SURGE.
0959		—	64.2	12.9	6.16	.056	11.29	750	SND SURGE. V CLOUDY
1005		—	—	12.7	6.12	.057	11.30	180	CLOUDY - BRN
1007	↓	2200	—	—	—	—	—	—	STOP TO EMPTY TANKS.
1107	39	—	60.2	15.5	6.32	.059	11.58	120	RESUME DEVELOPMENT.
1114	39	—	64	13.8	6.29	57	11.56	550	V. CLOUDY - BRN

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type:

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

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Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1119	39	—	—	13.6	6.26	.057	11.44	180	CLOUDY - BRN.
1124	↓	—	—	13.5	6.22	.056	11.12	340	V. CLOUDY - BRN
1125		—	—	—	—	—	—	—	BEGIN SURGING.
1135		—	—	13.5	6.26	.056	11.46	550	END SURGING.
1140		—	—	13.1	6.21	.056	11.60	130	CLOUDY - BRN
1145		—	—	13.1	6.22	.057	11.14	110	SAME
1150		—	—	13.0	6.18	.057	11.13	120	SAME ~~STOP TO ALLOW [illegible]~~ [illegible]
1155		—	—	13.0	6.16	.057	11.52	95	SAME
1159		—	—	13.1	6.18	.056	10.99	95	CLEARING
1204	↓	2200	—	12.9	6.20	.056	10.89	90	SAME
1336	35	—	—	—	—	—	—	—	RESUME DEVELOPMENT.
1337	↓	—	—	—	—	—	—	—	MOVE UP TO NEXT INTERVAL
1339		—	—	14.9	6.23	.062	12.22	>1100	MURKY - BRN/GRAY
1344		—	—	14.1	6.15	.054	11.58	220	CLOUDY - BRN
1350		—	—	13.9	6.18	.055	11.43	140	CLEARING - BRN
1356		—	—	13.7	6.18	.055	11.44	100	CLEARING - BRN
1357		—	—	—	—	—	—	—	BEGIN SURGING.
1407	↓	—	—	13.6	6.17	.055	11.82	750	END SURGING. V. CLOUDY - BRN

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7402
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: ____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: ____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1412	35	—	—	13.4	6.17	.056	11.25	130	CLOUDY
1417	↓	—	—	13.3	6.14	.056	11.66	90	CLEARING; BEGIN SURGE.
1427	↓	—	—	13.6	6.18	.055	11.35	330	END SURGE; V. CLOUDY.
1433	↓	2000	—	13.4	6.17	.056	10.92	90	CLEARING; STOP DEV. TO EMPTY TANKS.
1525	39	—	—	—	—	—	—	—	RESUME DEV. BEGIN SURGE.
1535	↓	—	—	14.2	6.14	.055	11.66	650	END SURGE; CLOUDY
1540	↓	—	—	13.6	6.11	.056	11.09	160	CLEARING.
1542	↓	—	—	—	—	—	—	—	BEGIN SURGE
1552	↓	—	—	13.7	6.18	.056	11.66	320	END SURGE; CLOUDY
1557	↓	—	—	13.2	6.17	.056	11.49	80	CLEARING
1602	↓	—	—	13.3	6.15	.056	11.28	65	CLEARING
1606	↓	—	—	13.2	6.17	.056	11.27	65	SAME
1610	↓	—	—	12.9	6.17	.056	10.94	55	CLEARING; MOVE TO NEXT INTERVAL
1612	↓	—	—	—	—	—	—	—	BEGIN SURGE
1621	↓	—	—	12.9	6.17	.055	10.98	200	END SURGE; CLOUDY
1622	↓	2200	—	—	—	—	—	—	STOP TO EMPTY TANKS
1708	33	—	—	—	—	—	—	—	RESUME DEV.
1711	33	—	—	14.0	6.09	.058	11.64	600	CLOUDY

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: —

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: —
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1716	33	—	—	13.5	6.11	.054	11.39	160	CLOUDY; BEGIN SURGE
1726		—	—	—	—	—	—	—	STOP SURGE. STOP PUMPING - COMPRESSOR PROBLEMS.
1728		—	—	13.5	6.12	.055	11.90	400	RESTART.
1733		—	—	13.5	6.12	.054	11.93	>1100	V. CLOUDY.
1738		—	—	13.0	6.12	.055	11.08	160	CLEARING
1743		—	—	13.1	6.11	.055	11.07	90	SAME. BEGIN SURGE
1753		—	—	13.0	6.15	.055	11.28	450	CLOUDY; END SURGE
1758		—	—	13.0	6.16	.055	10.79	110	CLOUDY
1759	↓	1700	—	—	—	—	—	—	STOP DEV. TO EMPTY TANKS.
5/18/00 0739	37	—	—	—	—	—	—	—	RESUME DEV. BEGIN SURGE.
0749		—	—	13.0	5.65	.094	11.58	950	END SURGE. V. MURKY - BRN
0754		—	—	12.7	5.69	.063	10.56	280	CLOUDY. ~~BEGIN SURGE~~ BSV
0758		—	—	12.4	5.62	.058	10.72	170	CLOUDY. BEGIN SURGE
0808		—	—	12.4	5.84	.057	10.48	200	CLOUDY. END SURGE
0812	↓	—	—	12.3	5.86	.057	11.05	100	CLOUDY
0814	—	—	—	—	—	—	—	—	STOP TO ALLOW OTHER DRILL CREW TO PASS.
0818	37	—	—	—	—	—	—	—	RESUME DEVELOPMENT
0820	37	—	—	12.3	5.78	.058	10.98	>1100	MURKY

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7402
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 28.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
0827	37	—	—	12.3	5.93	.056	10.52	120	CLEARING	
0831	↓	—	—	12.3	5.91	.056	11.05	90	CLEARING.	
0836		—	—	12.3	6.01	.056	10.06	75	CLEARING.	
0841	↓	2200	—	12.2	5.99	.052	10.95	80	SAME. STOP TO EMPTY TANKS.	
0942	37	—	—	13.7	5.95	.061	10.95	70	CLEARING. RESUME DEV.	RAIN BEGINS
0947	↓	—	—	12.7	6.10	.056	10.94	180	CLOUDY.	
0952		—	—	12.5	6.06	.056	11.41	140	CLEARING	
0956		—	—	12.4	6.06	.055	11.48	90	CLEARING.	
1000		—	—	12.3	6.05	.056	10.86	85	SAME.	
1004		—	—	12.2	6.01	.056	11.12	65	CLEARING.	RAIN ENDS.
1009		—	—	12.2	6.03	.056	10.94	65	SAME.	
1012		—	—	12.1	6.01	.056	10.94	70	SAME.	
1014		—	—	—	—	—	—	—	MOVE TO NEXT INTERVAL (A) THEN BEGIN SURGING.	
1024		—	—	12.3	6.03	.057	10.71	360	CLOUDY. END SURGING.	
1029		—	—	12.2	6.06	.056	10.49	120	CLEARING	
1033		—	—	12.2	6.07	.056	10.66	80	CLEARING. BEGIN SURGE.	
1042	↓	2200	—	12.4	6.09	.057	10.83	390	CLOUDY; STOP TO EMPTY TANKS	
1245	37	—	—	—	—	—	—	—	RESUME DEV. BEGIN SURGE	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: —

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: —
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1217	37	—	—	13.3	6.41	.058	11.05	260	END SURGE. CLOUDY.
1222	↓	—	—	12.8	6.29	.056	10.79	110	CLEARING.
1226		—	—	12.7	6.15	.056	11.54	70	CLEARING. BEGIN SURGE.
1236		—	—	13.1	6.13	0.057	11.78	160	END SURGE. CLOUDY.
1240		—	—	12.8	6.16	0.056	10.92	60	CLEARING.
1244		—	—	12.8	6.17	.056	10.83	55	SAME.
1249		—	—	12.7	6.12	.056	11.02	55	SAME. MOVE TO LAST INTERVAL (4 FT).
1251		—	—	—	—	—	—	—	BEGIN SURGING.
1301		—	—	12.9	6.14	.058	11.52	110	END SURGING. SLIGHT CLOUDY
1305		—	—	12.8	6.12	.057	11.18	55	CLEARING.
1307	↓	2200	—	—	—	—	—	—	STOP TO EMPTY TANKS.
1349	36	—	—	—	—	—	—	—	RESUME DEV. BEGIN SURGE.
1359		—	—	13.3	6.04	.057	11.78	170	END SURGING.
1405		—	—	13.0	6.08	.056	10.95	70	CLEARING. BEGIN SURGING.
1415		—	—	13.2	6.14	.057	11.28	75	END SURGING.
1419		—	—	12.9	6.12	.056	10.78	45	CLEARING
1423	↓	—	—	12.9	6.11	.057	10.88	40	SAME
1425		—	—	—	—	—	—	—	BEGIN LOWERING PUMP TO EACH INTERVAL.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-7402
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1433	36	—	—	12.9	6.20	.061	11.15	900	ON THE BOTTOM. MURKY.
1437	↓	—	—	13.0	6.13	.058	10.68	50	CLEARING.
1441	↓	—	—	12.8	6.10	.058	11.04	45	SAME.
1445	↓	2000	—	13.0	6.09	.057	10.83	40	SAME. STOP DEV. TO PULL PIPE FROM WELL.
5/19/00 0833	16	—	60.58	—	—	—	—	—	BEGIN PUMPING GW FROM GROUNDFOS MURKY. RAINING.
0836	↓	—	—	12.2	6.64	.219	6.03	>1100	MURKY. GRAY/BRN
0844	↓	—	60.24	15.6	6.90	.231	4.37	>1100	MURKY. GRAY/BRN.
0854	↓	—	—	13.3	7.12	.106	7.03	>1100	SAME.
0904	↓	—	57.72	12.9	6.01	.058	7.18	550	V. CLOUDY.
0912	↓	—	—	12.7	5.63	.056	8.71	230	CLOUDY.
0918	↓	—	57.77	12.6	5.53	.055	8.59	130	CLEARING.
0927	↓	—	57.78	12.6	5.49	.056	8.41	95	SAME.
0936	↓	—	—	12.6	5.49	.056	9.15	65	CLEARING.
0942	↓	—	57.78	12.6	5.44	.056	9.18	55	SAME.
0947	↓	—	—	12.6	5.39	.056	9.36	50	SAME.
0951	↓	—	—	12.5	5.36	.057	9.44	65	SAME.
0955	↓	—	—	12.5	5.40	.057	9.55	75	SAME.
1000	↓	1200	57.80	12.5	5.36	056	8.93	60	SAME.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-74D2
Site: NWIRP Bethpage
Date Installed: 4/12/00
Date Developed: 5/15-22/00
Dev. Method: AIR LIFT
Pump Type: _____

Depth to Bottom (ft.): 562
Static Water Level Before (ft.): 68.20 (TOC)
Static Water Level After (ft.): 55.85 (TOC)
Screen Length (ft.): 20
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1045	—	—	56.20	—	—	—	—	—	
1048	—	—	—	14.1	5.38	.057	7.76	50	BEGIN PUMPING.
1050	—	—	—	—	—	—	—	—	STOP PUMPING - GENERATOR ALARM.
1106	—	—	—	—	—	—	—	—	DEMOB FROM GM-74D2 FOR WEEKEND.
5/22/00 0844	—	—	55.62	—	—	—	—	—	PID = 0.0 W.L. BEFORE PUMP INSTALLATION
0903	16	—	55.67	12.8	5.31	.149	8.29	750	W.L. AFTER PUMP INSTALLATION. V. CLOUDY. BEGIN PUMPING.
0907		—	—	14.7	5.22	.064	8.03	100	CLEARING.
0911		—	57.57	15.9	5.20	.058	7.52	33	CLEARING.
0915		—	57.65	14.7	5.22	.057	7.59	28	CLEARING.
0919		—	57.67	13.5	5.21	.056	7.84	28	SAME. BEGIN TO RAISE PUMP TO STATIC.
0940		—	—	12.9	5.30	.053	8.06	190	AT STATIC. CLOUDY
0943		—	57.66	12.9	5.36	.054	8.40	130	CLEARING.
0947		—	57.67	12.8	5.41	.054	8.26	100	CLEARING.
0951		—	57.67	12.5	5.43	.055	8.77	70	SAME
0955		—	57.67	12.8	5.42	.054	8.63	80	SAME.
1000		800	57.67	12.6	5.42	.055	8.97	75	SAME. END DEVELOPMENT.
1010	—	—	—	—	—	—	—	—	W.L. 55.85

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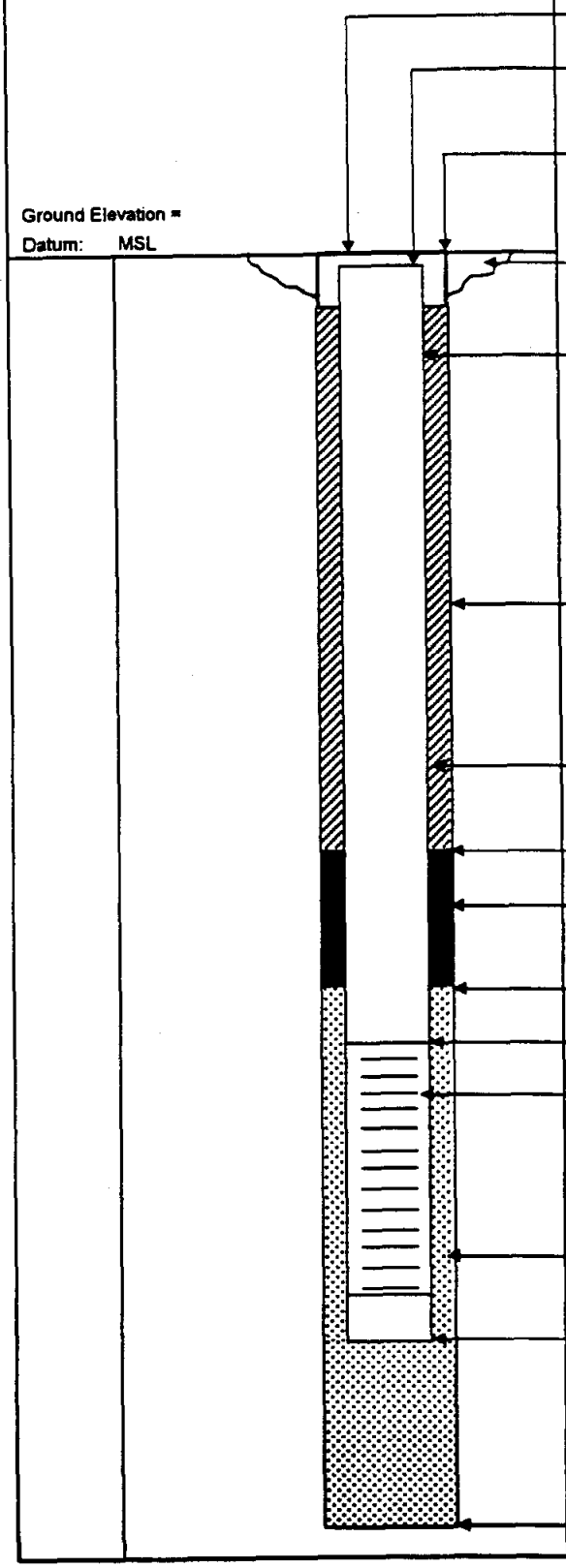
GM-16SR

Tetra Tech NUS, Inc.

WELL No.: GM-16SR

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-16SR
PROJECT No.:	N5174-0500	DRILLER:	J. Ellis	DATE COMPLETED:	05-14-99
SITE:	NWIRP Bethpage	DRILLING METHOD:	H.S. Auger	NORTHING:	
GEOLOGIST:	S. Polipka	DEV. METHOD:	Sub. Pump	EASTING:	



Elevation / Height of Top of Surface Casing: 0 FT

Elevation / Height of Top of Riser: 0.7 FT

I.D. of Surface Casing: 9-Inch

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 4-Inch

Type of Riser: 4-Inch x 10-Foot Schedule 40, Flush Joint, Threaded PVC

Borehole Diameter: 9-Inch

Type of Backfill: Volclay High Solids Bentonite Clay Grout

Elevation / Depth of Seal: 46.5 FT

Type of Seal: CETCO Pure Gold Polymer Free Bentonite Slurry

Elevation / Depth of Top of Filter Pack: 48.5 FT

Elevation / Depth of Top of Screen: 55 FT

Type of Screen: Schedule 40 PVC

Slot Size x Length: 0.010" x 10 FT

I.D. of Screen: 4-Inch

Type of Filter Pack: FilPro Quartz No. 1 Sand to 49.5 FT / FilPro Quartz No. 0 Sand to 48.5 FT

Elevation / Depth of Bottom of Screen: 65 FT

Elevation / Depth of Bottom of Filter Pack: 68 FT

Type of Backfill Below Well: N/A

Elevation / Total Depth of Borehole: 68 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: NUS65.0200
DRILLING COMPANY: Uni-Tech Drilling Co. Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-16SR
DATE: 05-18-00
GEOLOGIST: S. Pekpko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ	U S C S *
1015	2.5						concrete pavement	hand auger to 2.5 FT (BGS)					
						br.	silty clay → plugs lead auger						CL
1017 / 1025	5							EOA=1					
1027 / 1028	10					br.	m. to c. sand, sm. poorly sorted w.r. to s.r. gravel	dry/damp EOA=2	0.0	0.0	0.0	0.0	SP
[illegible] / 1034	15							EOA=3					
1035 / 1038	20					br.	gravelly m. to c. sand gravels poorly sorted + w.r. to s.r.	damp EOA=4 slight chemical odor → petro?	0.0	0.0	0.0	0.	
1038 / 1040	25							EOA=5					
1042 / 1044	30					↓	same as above	EOA=6	0.0	0.0	0.0	0.0	SP
							PID headspace on sample bag = 0.2 ppm @ 30 FT						
1045 / 1047	35							EOA=7					
1048 / 1049	40					↓	same as above	↓ EOA=8	—	0.0	0.0	0.0	SP
								PID poss. malfunctioning					
							PID headspace on sample bag @ 40 FT = 14.3 ppm						
1051 / 1055	45							EOA=9					
							less gravel in cuttings						
1057	50						soil moisture ↑ → sand starting to "clump" on flights	EOA=10					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 5 FT Auger Casts: 6.25" I.D./9" O.D. 0.5' Auger Bit. Air monitor with PE Photovac 2020 PID. Samples from 0 to 40 FT collected from auger flights at ground surface.

Drilling Area Background (ppm): [illegible]

Converted to Well: Yes X No ______ Well I.D. #: GM-16SR

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0208
PROJECT NUMBER: NUS65.0208
DRILLING COMPANY: Uni-Tech Drilling Co., Inc.
DRILLING RIG: CME-75
BORING NUMBER: GM-16SR
DATE: 05-16-00
GEOLOGIST: S. Pekpek
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	USCS*
S-1 @	50	14/50	7		m. dense to dense	lt. br.	m. to c. sand & well rounded to angular qtz & granitic	damp to wet	0.0	0.0	0.0	0.0	SP
1104	52	40/32	24		dense	wht.	gravel / fractured gravel	lg. ø gravel					
								ladyed in shoe					
S-2 @	55	21/22	24		m. dense	lt br.	m. to c. sand, tr. gravel	outside of split spoon	0.0	0.0	0.0	0.0	SP
1116	57	No Sample	24		v. dense			dripping → below W.T.					
								sat. EOA=8					
S-3 @	60	29/19	9		m. dense		same as above with br. gy. clayey inclusions	sat. EOA=12	23	BG	BG	BG	SP
1037	62	24/27	24		m. dense		new top of sample						SC
S-4 @	65	10/24	8		m. dense		m. to v.c. sand fining downwards to m. to c.	EOA=13	24	BG	BG	BG	SP
1151	67	40/42	24		dense	wht. - v. lt. gy.	sand, tr. f. gravel						
S-5 @	68	7/10	15		loose to stiff	br.	4" mostly m. to c. sand, sm. fines		30	BG	BG	BG	SP
1205	70	24/31	24	TD=70 FT	m. dense								
						lt. gy.	3.5" clay bed						CH
						br. gy. lt. br.	mostly m. to c. sand →						SP
							dk. br. band						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, gy. = gray, wh. = white, dk. = dark, lt. = light, san = sand = 11-30%, tr. = trace = 0 > 11%, adjective (ie gravelly) = 31-50%, and = equal percentages

Drilling Area Background (ppm): 4-6

Converted to Well: Yes X No ____ Well I.D. #: GM-16SR

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-165R
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/22/00
Dev. Method: SUBMERSIBLE PUMP
Pump Type: MYERS

Depth to Bottom (ft.): 65
Static Water Level Before (ft.): 52.53
Static Water Level After (ft.): 52.62
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1051	—	—	52.53	—	—	—	—	—	PID=0.0
1114	—	—	—	—	—	—	—	—	SET PUMP @ 5 FT. OFF BOTTOM.
1119	18	—	52.50	16.2	6.16	.194	7.97	>1100	BEGIN PUMPING BROWN.
1123	↓	—	58.98	16.2	6.09	.142	8.61	45	V. LGT BRN - CLEARING
1127	↓	—	58.98	16.2	6.03	.135	8.80	11	CLEAR
1130	↓	—	—	16.3	6.01	.133	9.11	>1100	ON BOTTOM - BRN.
1134	↓	—	58.97	16.1	5.98	.125	9.52	8.5	CLEAR. BEGIN SURGING W/ PUMP.
1137	↓	—	—	16.2	5.91	.127	9.61	>1100	END SURGE, BRN.
1140	↓	—	60.07	16.1	5.78	.121	9.68	37	CLEARING.
1143	↓	36	—	16.1	5.83	.122	8.97	7.6	CLEAR.
1148	—	—	—	—	—	—	—	—	STOP PUMP TO FIX HOSE.
1150	18	—	—	16.3	5.90	.127	8.86	700	BEGIN PUMPING. LGT BRN.
1154	↓	—	59.73	16.1	5.84	.121	8.61	17	CLEARING. PLACE PUMP ≈ 5 FT. FROM BOTTOM
1158	↓	—	—	16.2	5.84	.123	9.57	800	BRN - V. CLOUDY
1202	↓	—	—	16.1	5.88	.120	9.45	25	CLEARING. ~~MOVE PUMP TO THE BOTTOM & SURGE.~~ (SW)
1206	↓	—	59.91	16.1	5.83	.120	9.75	23	CLEARING. MOVE PUMP TO THE BOTTOM & SURGE
1209	↓	—	60.02	16.0	5.83	.119	9.15	700	CLOUDY - BRN
1214	↓	—	60.17	16.0	5.78	18	9.08	12	CLEAR. SURGE FROM BOTTOM

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-165R
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/22/00
Dev. Method: Submersible Pump
Pump Type: Myers

Depth to Bottom (ft.): 65
Static Water Level Before (ft.): 52.53
Static Water Level After (ft.): 52.62
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NAIK
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1217	18	—	60.44	16.0	5.74	.119	9.09	18	CLEAR. BEGIN SURGE.
1220		—	—	16.1	5.74	.120	9.41	>1100	AFTER SURGE. BRN MURKY
1222		—	60.56	16.1	5.69	.118	9.15	18	CLEAR
1226		—	—	16.0	5.69	.119	9.53	6.3	CLEAR. PULL PUMP ≈ 5 FT OFF BOTTOM
1231		—	—	16.1	5.71	.119	9.34	45	CLOUDY.
1234		—	59.61	16.1	5.70	.119	9.48	3.6	CLEAR.
1237		—	59.63	16.1	5.70	.119	9.27	0.7	CLEAR.
1241	↓	918	59.41	16.1	5.74	.119	9.01	0.8	CLEAR. END DEVELOPMENT
1250	—	—	52.62	—	—	—	—	—	FINAL W.L.
1704	—	—	52.53	—	—	—	—	—	BEGIN PUMPING - FIND EQ. OF STATIC.
1710	4.5	—	53.23	16.9	5.85	.120	9.42	220	PUMP SET ON BOTTOM - W.L. DROP AND RISING.
1714		—	—	17.2	5.93	.120	8.81	150	CLOUDY
1716		—	—	—	—	—	—	—	RAISE PUMP 10 FT - THEN SURGE TOP 5 FT OF SCREEN.
1722		—	53.68	17.1	5.95	.126	9.09	>1100	MURKY AFTER SURGING
1726		—	53.69	16.7	5.92	.122	9.61	90	CLOUDY.
1728		—	—	—	—	—	—	—	SURGE UPPER 5 FT OF SCREEN
1730		—	53.74	16.6	5.94	.119	9.28	>1100	MURKY AFTER SURGING.
1735	↓	—	53.63	16.7	5.87	.122	8.98	120	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-16SR
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/22/00
Dev. Method: SUBMERSIBLE PUMP
Pump Type: MYERS

Depth to Bottom (ft.): 65
Static Water Level Before (ft.): _____
Static Water Level After (ft.): _____
Screen Length (ft.): _____
Specific Capacity: _____
Casing ID (in.): _____

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1739	5	–	53.71	16.7	5.90	.123	9.12	36	BEGIN SURGING (TOP 5FT).
1741		–	53.62	17.0	5.84	.123	8.94	>1100	AFTER SURGING.
1746		–	53.58	16.7	5.80	.122	8.96	150	CLOUDY.
1749		–	53.58	16.7	5.86	.122	9.03	55	BEGIN SURGING
1753		–	53.71	16.9	5.84	.121	8.79	>1100	AFTER SURGING.
1757		–	53.71	16.7	5.79	.120	9.49	180	CLOUDY.
1801		–	53.73	16.6	5.86	.121	8.86	40	CLEARING.
1806		–	53.71	16.6	5.89	.122	8.63	18	CLEARING. BEGIN SURGING.
1812		–	53.62	16.6	5.81	.122	9.06	>1100	MURKY AFTER SURGING.
1815		–	53.61	16.7	5.74	.119	8.93	190	CLOUDY.
1819		–	53.62	16.6	5.79	.121	8.92	34	CLEARING
1824		–	53.62	16.5	5.87	.122	8.78	22	SAME
1827		–	53.62	16.6	5.89	.122	8.94	9.8	CLEAR
1830		–	53.62	16.6	5.88	.122	9.09	7.3	CLEAR
1833	↓	400	53.62	16.5	5.88	.122	9.07	8.7	CLEAR
1848	–	–	52.54	–	–	–	–	–	FINAL W.L.
		~~400~~ (S)							

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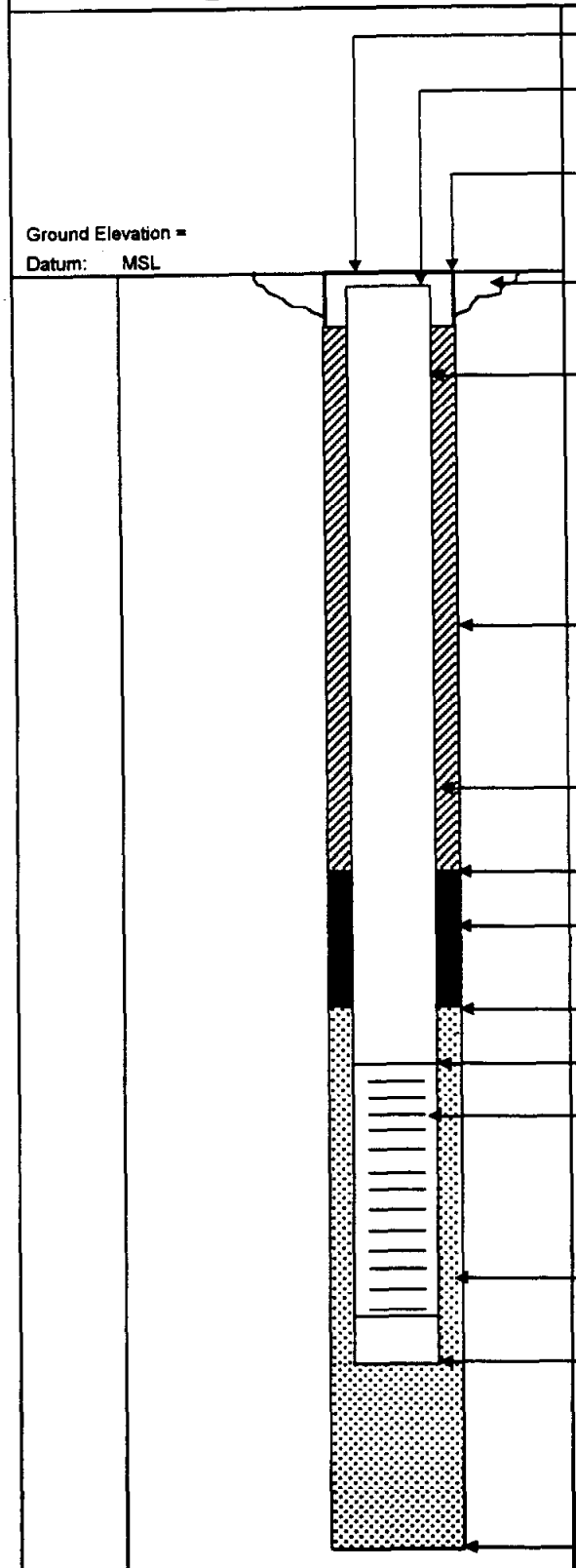
GM-17SR

Tetra Tech NUS, Inc.

WELL No.: GM-17SR

OVERBURDEN MONITORING WELL SHEET

PROJECT:	CTO 0208	DRILLING Co.:	Uni-Tech Drilling Co., Inc.	BORING No.:	GM-17SR
PROJECT No.:	N5174-0500	DRILLER:	J. Evans	DATE COMPLETED:	05-25-00
SITE:	NWIRP Bethpage	DRILLING METHOD:	H.S. Auger	NORTHING:	
GEOLOGIST:	S. Pelopka	DEV. METHOD:	Sub Pump	EASTING:	



Elevation / Height of Top of Surface Casing:	0 FT
Elevation / Height of Top of Riser:	0.7 FT
I.D. of Surface Casing:	9-Inch
Type of Surface Casing:	Steel
Type of Surface Seal:	Concrete
I.D. of Riser:	4-Inch
Type of Riser:	4-Inch x 10-Foot Schedule 40, Flush Joint, Threaded PVC
Borehole Diameter:	14-Inch
Type of Backfill:	Volclay High Solids Bentonite Clay Grout
Elevation / Depth of Seal:	51 FT
Type of Seal:	CETCO Pure Gold Polymer Free Bentonite Slurry
Elevation / Depth of Top of Filter Pack:	54 FT
Elevation / Depth of Top of Screen:	60 FT
Type of Screen:	Schedule 40 PVC
Slot Size x Length:	0.010" x 10 FT
I.D. of Screen:	4-Inch
Type of Filter Pack:	Fil Pro Quartz No. 1 Sand to 55 FT / Fil Pro Quartz No. 0 Sand to 54 FT
Elevation / Depth of Bottom of Screen:	70 FT
Elevation / Depth of Bottom of Filter Pack:	70 FT
Type of Backfill Below Well:	Collapsed Formational Material
Elevation / Total Depth of Borehole:	70.5 FT

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0200
DRILLING COMPANY: Vai-Tech Drilling Co., Inc.
DRILLING RIG: CME-85
BORING NUMBER: GM-175R
DATE: 05-25-00
GEOLOGIST: S. Pekala
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	Remarks	PID Reading (ppm): Sample	PID Reading (ppm): Sampler BZ	PID Reading (ppm): Borehole**	PID Reading (ppm): Drillers BZ**	USCS*
0922	3							hand auger to 3 FT (BGS)					
0924 / 0930	5							EA#:1	-	0.0	0.0	0.0	-
0932 / 0936	10					br.	m. to c. sand, sm. poorly sorted, w.c. to s.c. gravel	demo EA#:2	0.0	0.0	0.0	0.0	SP
0936 / 0941	15							EA#:3	-	0.0	0.0	0.0	-
0946 / 0946	20					br.	m. to c. sand & poorly sorted w.c. to s.c. gravel	EA#:4	0.0	0.0	0.0	0.	
0947 / 0950	25							EA#:5	-	0.0	0.0	0.0	-
0951 / 0954	30					br.	m. to c. sand, sm. 1/8" to 1/2" ø w.c. to s.c. gravel	EA#:6	0.0	0.0	0.0	0.0	SP
0955 / 0959	35							EA#:7	-	0.0	0.0	0.0	-
1001 / 1003	40					br.	gravelly m. to c. sand, gravel at at 20 FT (BGS)	EA#:8	0.0	0.0	0.0	0.0	SP
1005 / 1009	45							EA#:9	-	0.0	0.0	0.0	-

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 5 FT Auger Casts: 9.25" I.D. / 14" O.D., 0.5' Auger Bit, Air monitor with PE Photovac 2020 PID. Samples from 0 to 40 FT collected from auger flights at Ground Surface.

Drilling Area Background (ppm): 0

Converted to Well: Yes X No

Well I.D. #: GM-175R

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NWIRP Bethpage - CTO 0206
PROJECT NUMBER: N0565.0206
DRILLING COMPANY: Vai-Tech Drilling Co., Inc
DRILLING RIG: CME-55
BORING NUMBER: GM-17SR
DATE: 05-25-00
GEOLOGIST: S. Pelepko
DRILLER: J. Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	Remarks	PID Reading (ppm): Sample	Sample BZ	Borehole	Drilling BZ	USCS *
1016 S-1	50	7/15	15		loose to m. dense	br.	10" m. to v.c. sand + w.r. to s.r. gravel ("/4" to 1/2" ø)	wet / sat.	0.0	0.0	0.0	0.0	SP
@ 1029	52	25/25	24		m. dense		fining to mostly m. to c. sand	EOB = 10					
						dr. br. br.	5" mostly m. to c. sand, sm. fines, tr. v.c. sand & gravel						SP
S-2 @	55	11/26	19		m. dense	H. br	m. to c. sand, tr. v.c. sand & gravel	wet / sat.	0.0	0.0	0.0	0.0	SP
1041	57	31/30	24		dense			dk. br. 1" ø pebble near bottom of sample					
								EOB = 11					
S-3 @	60	7/12	24		loose to m. dense	H. br.	m. to mostly c. / v.c. sand, tr. 1/4" to 1" ø w.r. to s.r. gravel; fining to	wet / sat.	0.0	0.0	0.0	0.0	SP
1054	62	16/24	24		m. dense			2 small silt br. to dk gry clayey inclusions in middle of sample					CL
								EOB = 12					
S-4 @	65	10/13	21		loose to m. dense	H. br.	m. to v.c. sand, tr. w.r. to s.r. gravel; fining to	1/8" to 1" ø	0.0	0.0	0.0	0.0	SP
1106	67	19/26	24		m. dense		mostly m. to c. sand over bottom 2.5" of sample	wet / sat.					
							0.25" br clay bed 7" from bottom of sample	EOB = 13					CH
S-5 @	68	4/18	24		m. dense	H. br. br.	19" m. to c. sand, sm. w.r. to s.r. gravel	1/8" to 1" ø	0.0	0.0	0.0	0.0	SP
1114	70	27/33	24		m. dense to dense	H. br.	3" f. to mostly m. sand	wet / sat.					SP
						br. gry.	2" m. to c. sand with 2 0.25" laminated clay interbeds (dk. br. / br. / gry.)	EOB = 14					SP/CH
1135	70.5			TOB 70.5'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Abbreviations: br. = brown, gy = gray, or. = orange, H. = light, dk = dark, s.r. = subrounded, w.r. = well rounded, ø = diameter, tr. = trace = 0 > 11%, sm. = some = 11 - 30%, adjective (ie clayey) = 31 - 50%, +/and = equal percentages

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: GM-17SR

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-175R
Site: NWIRP Bethpage
Date Installed: 05-25-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5hp sub. pump

Depth to Bottom (ft.): 70 (BGS)
Static Water Level Before (ft.): 46.46 (TIC)
Static Water Level After (ft.): 46.50 (TIC)
Screen Length (ft.): 10
Specific Capacity: 13.6/(47.2-46.5) = 19.4
Casing ID (in.): 4-inch

Responsible Personnel: S. Pelpaka, J. Evans, E. Blemmings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1547	$\bar{Q}$=13.6		46.46	?					begin development pump depth ≈ 64.5 FT
1549			47.60	22.2	6.55	0.122	5.82	>1100	v. cloudy, br.
1554			47.00	22.6	6.42	0.122	6.29	19.3	surge 5' section of well w/ pump (64.5'-64.5')
1602			47.03	22.2	6.35	0.123	5.35	1042	cloudy, br.; PID=0.0
1607			47.03	22.2	6.46	0.122	6.11	19.6	surge 5' well section w/ pump, clear (69.5'-64.5')
1608			—	—	—	—	—	—	end surge
1611			—	22.3	6.35	0.122	5.90	73.3	lt. br. tint
1614			—	—	—	—	—	—	surge 5' well section w/ pump (69.5'-64.5')
1616			—	22.3	6.23	0.122	4.46	>1100	cloudy, br.
1620			47.04	22.4	6.16	0.120	6.60	20.2	clear
1621			—	—	—	—	—	—	surge 5' well section w/ pump (69.5'-64.5')
1624			—	22.3	6.24	0.120	5.93	37.6	v. lt. tint
1625			—	—	—	—	—	—	surge 5' well section w/ pump; set pump at ~64.5' (64.5'-~~64.5'~~ 59.5') SP 07-13
1626			—	—	—	—	—	—	end surge
1628			47.06	22.4	6.37	0.122	5.58	>1100	cloudy, br.
1632			47.06	22.3	6.32	0.121	5.76	67.4	lt. br. tint
1636			—	—	—	—	—	—	surge 5' well section w/ pump
1637			—	—	—	—	—	—	end surge

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17SR
Site: NWIRP Bethpage
Date Installed: 05-25-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4 inch 0.5 hp sub. pump

Depth to Bottom (ft.): 70 (BGS)
Static Water Level Before (ft.): 46.46 (TIC)
Static Water Level After (ft.): 46.50 (TIC)
Screen Length (ft.): 10
Specific Capacity: 13.6/(47.2-46.5) = 19.4
Casing ID (in.): 4-inch

Responsible Personnel: S. Arlington, J. Evans, E. Blanning
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1636	Q = 13.6	↓	—	22.1	6.22	0.122	6.34	71100	cloudy, lt.-br.	
1642	↓ SB 07-13-00	750	—	22.2	6.23	0.120	5.49	105.9	stop development; hydraulically surge well	
1721	Q = 13.6		—	—	—	—	—	—	continue development; surge 5 ft well section w/ pump	(64.5 - 59.5')
1722			—	—	—	—	—	—	end surge	
1725			—	22.4	6.43	0.124	5.74	>1100	cloudy, lt.-br	
1728			—	22.2	6.47	0.123	5.42	46.6	surge 5' well section with pump, PID = 0.0	(64.5' - 59.5')
1729			—	—	—	—	—	—	end surge	
1732			—	22.2	6.34	0.122	5.14	525	lt.-br. tint	
1737			47.07	22.2	6.24	0.122	5.78	27.6	clear	
1738			—	—	—	—	—	—	surge 5' well section w/ pump	(64.5' - 59.5')
1740			—	22.1	6.24	0.122	5.49	>1100	cloudy, lt.-br.	
1743			—	22.2	6.20	0.121	4.96	68.8	lt. br. tint	
1744			—	—	—	—	—	—	surge entire screen interval w/ pump & set pump	
—			—	—	—	—	—	—	at bottom of well ~ 69.5'	
1746			—	—	—	—	—	—	end surge	
1747			—	22.1	6.26	0.122	5.35	>1100	cloudy, lt.-br., PID = 0.0	
1750			—	22.0	6.22	0.122	5.34	60.8	lt. br. tint	
1751	↓	↓	—	—	—	—	—	—	surge 5' well section w/ pump, set pump @ ~ 64.5'	(69.5' - 64.5')

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17SR
Site: NWIRP Bethpage
Date Installed: 05-25-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): 70 (BGS)
Static Water Level Before (ft.): 46.46 (TOC)
Static Water Level After (ft.): 46.50 (TOC)
Screen Length (ft.): 10
Specific Capacity: 13.6/(47.2-46.5) = 19.4
Casing ID (in.): 4-inch

Responsible Personnel: S. Pokopec, J. Evans, E. Blumings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1752	$\bar{Q}$ = 13.6		—	—	—	—	—	—	end surge	
1754	↓	↓	—	21.8	6.20	0.122	5.21	32.2	lt. br. tint	
1757			—	22.2	6.19	0.121	5.00	23.0	clear	
1758			—	—	—	—	—	—	surge 5' well section w/ pump	(64.5'-59.5')
1800			—	22.2	6.15	0.122	5.68	313	lt. br. tint	
1804			47.07	22.2	6.30	0.122	5.00	18.4	clear	
1805			—	—	—	—	—	—	surge 5' well section w/ pump	(64.5'-59.5')
1807			—	22.0	6.29	0.122	5.27	112	lt. br. tint	
1811			—	22.1	6.20	0.122	5.57	14.5	clear	
1812			—	—	—	—	—	—	lower pump to ~69.5' → hard bottom noted by driller	
1814			—	22.0	6.18	0.122	5.41	118	lt. br. tint	
1818			—	22.2	6.17	0.122	4.98	10.56	clear	
1822			47.07	22.2	6.23	0.122	5.51	8.64	clear	
1825			—	—	—	—	—	—	pull pump up to ~49'	
1827			—	22.3	6.20	0.123	5.94	172	lt. br. tint	
1832			—	23.1	6.23	0.122	5.60	296	as above	
1833			—	—	—	—	—	—	pump rate has slowed noticeably; lower pump	
—	↓	↓	—	—	—	—	—	—	to ~51'; Q increases	

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: GM-17SR
Site: NWIRP Bethpage
Date Installed: 05-25-00
Date Developed: 07-13-00
Dev. Method: Submersible pump
Pump Type: 4-inch 0.5 hp sub. pump

Depth to Bottom (ft.): ~~69.5~~ 70 (BGS) SP 07-13-00
Static Water Level Before (ft.): 46.64 (TIC)
Static Water Level After (ft.): 46.50 (TIC)
Screen Length (ft.): 10
Specific Capacity: 13.6/(47.2-46.5)= 19.4
Casing ID (in.): 4-inch

Responsible Personnel: S. Alepa, J. Evans, E. Blemings
Drilling Co.: Uni-Tech Drilling Co., Inc.
Project Name: CTO 0208 - Off-Site Drilling
Project Number: N0565.0200

Time	Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1837	Q= 13.6	↓	—	22.1	6.15	0.122	5.70	31.6	v. lt. tint
1842	↓		—	22.0	6.22	0.122	5.52	6.56	~~6.5~~ clear SP 07-13-00
1847		↓	47.19	21.9	6.15	0.121	5.62	5.70	clear
1849	↓	1950	—	—	—	—	—	—	development complete
1900	~~46.5~~ SP 07-13-00	—	— 46.50	—	—	—	—	—	final water level

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HN-29I

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: HN 29I
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/25/00
Dev. Method: Submersible Pump
Pump Type: Myers

Depth to Bottom (ft.): 127.82 (TOC)
Static Water Level Before (ft.): 49.38 (TOC)
Static Water Level After (ft.): 49.42 (TOC)
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. Nesi
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
0844	—	—	49.38	—	—	—	—	—	PID = 5.8 SOFT BOTTOM.
0916	17	—	48.30	17.1	10.75	.640	10.11	9.3	BEGIN DEVELOPMENT; PUMP SET 5' OFF BOTTOM.
0921	17	85	120.07	—	—	—	—	—	PUMP ON BOTTOM; TURN OFF PUMP TO ALLOW RECHARGE.
0957	2	—	55.94	18.4	10.61	.405	10.08	75	RESUME DEVELOPMENT. WHITE SOLIDS
1003	2	—	65.17	18.1	10.52	.288	10.10	50	ADJUST FLOW RATE.
1008	0.5	22	—	18.8	10.31	.1235	9.35	32	UNSTABLE WATER LEVEL.
1014	↓	—	—	18.9	10.33	.236	8.91	50	SUSPENDED WHITE SOLIDS.
1015	↓	—	—	—	—	—	—	—	SURGE BOTTOM 5 FT W/ PUMP.
1019	↓	—	64.54	19.8	10.33	.245	8.97	42	WHITE SOLIDS.
1024	↓	—	64.19	20.5	10.22	.226	9.31	40	↓
1029	↓	—	64.10	20.0	10.16	.211	9.40	390	V. CLOUDY.
1030	↓	11	—	—	—	—	—	—	STOP PUMP TO ALLOW RECHARGE.
1100	0.5	—	50.94	—	—	—	—	—	RESUME PUMPING.
1104	↓	—	51.88	19.8	10.12	.212	8.21	>1100	MURKY - WHITE SOLIDS.
1109	↓	—	58.15	19.4	10.17	.216	9.36	>1100	SAME.
1117	↓	—	60.40	20.9	10.09	.206	8.67	600	V. CLOUDY. WHITE SOLIDS NOT SETTLING.
1120	↓	10	—	—	—	—	—	—	PUMP TURNED TO FULL CAPACITY
1132	17	204	—	—	—	—	—	—	TURN PUMP OFF TO ALLOW RECHARGE

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: HN 29I
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/25/00
Dev. Method: Submersible Pump
Pump Type: Myers

Depth to Bottom (ft.): 127.82 (TOC)
Static Water Level Before (ft.): 49.38 (TOC)
Static Water Level After (ft.): _____
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1147	5	–	~~77.44~~ (S)	18.7	10.17	.219	9.94	>1100	RESUME DEV. MURKY - BRN.
1150		–	–	–	–	–	–	–	SURGE W/ PUMP.
1152		–	91.70	18.2	9.81	.168	10.04	120	CLOUDY.
1157		–	93.42	18.5	9.76	.168	9.73	>1100	MURKY - BRN.
1207		–	99.78	18.7	9.48	.163	9.09	300	CLOUDY.
1213		–	101.87	18.7	9.50	.160	9.42	130	CLOUDY.
1215		–	–	–	–	–	–	–	SURGE BOTTOM 5' W/ PUMP
1217		–	102.58	18.5	9.48	.159	9.33	75	CLEARING.
1221		–	102.95	18.6	9.63	.164	8.96	>1100	MURKY - BRN.
1230		–	102.55	18.8	9.44	.156	9.36	220	CLOUDY.
1234		–	101.52	18.8	9.41	.158	9.62	70	CLEARING. SURGE BOTTOM 2'.
1238		–	100.89	18.8	9.45	.157	9.44	50	CLEARING
1241		–	100.10	18.9	9.51	.161	9.55	>1100	MURKY - BRN.
1245		–	98.00	19.0	9.45	.159	9.10	900	SAME.
1250		–	94.56	19.0	9.48	.158	9.70	320	CLEARING
1255		–	–	18.9	9.22	.148	9.24	70	CLEARING.
1300		–	93.77	18.6	9.11	.146	9.51	23	CLEAR.
1304	↓	330	–	–	–	–	–	–	STOP PUMPING

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: HN 29I
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/25/00
Dev. Method: Submersible Pump
Pump Type: Myers

Depth to Bottom (ft.): 127.82 (TOC)
Static Water Level Before (ft.): 49.38 (TOC)
Static Water Level After (ft.): _____
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. NEIL
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1416	5	–	50.04	–	–	–	–	–	RESUME DEVELOPING.
1417	↓	–	–	–	–	–	–	–	PUMPING FROM BOTTOM.
1419		–	61.30	18.7	9.21	.149	10.46	190	CLOUDY. ≈ 6" OFF BOTTOM.
1425		–	90.50	19.0	9.16	.149	10.25	200	CLOUDY.
1430		–	99.89	18.2	8.97	.145	9.83	80	CLEARING.
1435	↓	120	102.70	18.6	9.18	.153	9.41	100	DECREASE FLOW.
1439	4	–	101.21	18.7	9.31	.156	9.59	60	CLEARING
1444	↓	–	99.57	18.7	9.27	.152	9.38	27	CLEAR.
1445		–	–	–	–	–	–	–	MOVE PUMP TO MID-SCREEN and SURGE TOP 5' INTERVAL.
1449		–	95.90	19.0	9.21	.151	9.41	9.5	CLEAR - @ MID-SCREEN.
1453		–	95.03	19.0	8.75	.140	9.19	>1100	MURKY - BRN.
1458		–	–	19.1	8.96	.148	9.33	500	CLOUDY - BRN.
1503		–	–	18.9	8.91	.148	8.91	210	CLOUDY.
1508		–	–	18.8	9.03	.145	9.29	55	CLEARING.
1509		–	–	–	–	–	–	–	SURGE TOP 5' OF SCREEN.
1513		–	–	18.9	9.00	.147	9.61	39	CLEAR.
1518		–	92.83	19.1	8.93	.144	9.56	600	CLOUDY.
1523	↓	–	91.60	19.3	8.99	.149	9.40	220	CLOUDY.

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Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: HN 29I
Site: NWIRP Bethpage
Date Installed: _____
Date Developed: 5/25/00
Dev. Method: Submersible Pump
Pump Type: Mytis

Depth to Bottom (ft.): 127.82 (TOC)
Static Water Level Before (ft.): 49.38 (TOC)
Static Water Level After (ft.): _____
Screen Length (ft.): 10
Specific Capacity: _____
Casing ID (in.): 4

Responsible Personnel: S. Nigl
Drilling Co.: Uni-Tech Drilling Company, Inc.
Project Name: Off Site Drilling - CTO 0208
Project Number: N5174-0500

Time	Pump Flow Rate (GPM)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (mS/cm)	D.O. (mg/L)	Turbidity (NTU)	Remarks (odor, color, etc.)
1528	4	–	90.52	19.4	8.91	.144	8.97	75	CLEARING
1530	↓	–	–	–	–	–	–	–	SURGE TOP 5' OF SCREEN W/PUMP
1535		–	89.54	19.6	8.87	.146	8.91	30	CLEARING.
1540		–	88.72	19.6	8.81	.144	9.37	800	V. CLOUDY - BRN
1545		–	87.86	19.4	8.84	.146	9.16	220	CLOUDY.
1550		–	87.38	19.3	8.79	.143	9.50	85	CLEARING
1555		–	87.43	19.6	8.74	.144	9.38	60	SAME
1600		–	87.97	19.4	8.66	.141	9.52	29	CLEAR
1603	↓	330	–	–	–	–	–	–	END OF DEVELOPMENT.
–	–	1100	–	–	–	–	–	–	TOTAL VOLUME PURGED.

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