UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

VIA ELECTRONIC MAIL

April 11, 2024

Bruce Thompson
de maximis, inc.

Re**:** EPA Approval of *Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas)* memo*,* for the Nuclear Metals Inc. Superfund Site, Concord, Massachusetts, dated April 10, 2024

Dear Mr. Thompson:

EPA has completed its review of de maximis' memo, *Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas)* (the "Memo"), dated April 10, 2024. The Memo is subject to the terms and conditions specified in the Consent Decree (CD) for Remedial Design / Remedial Action (RD/RA) for the Nuclear Metals Inc. Site, which has an effective date of December 6, 2019.

The Memo was revised in response to EPA's comments submitted on April 4, 2024. EPA has reviewed and hereby approves the *Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas)* memo for the Nuclear Metals Inc. Superfund Site. The Memo covers the proposed for decommissioning of 28 wells in the Courtyard and Holding Basin Areas ahead of the 2024 construction season at the Nuclear Metals Inc. Superfund Site. Well decommissioning activities are approved to begin as planned on April 15, 2024.

If there is any conflict between the Performance Standards as stated in the Work Plan and the Performance Standards as stated in the CD and statement of work (SOW), the CD and SOW shall control.

Please do not hesitate to contact me at (617) 918-1435 or at nierenberg.kara@epa.gov should you have any questions in this regard.

Sincerely,

Kara Nierenberg
Remedial Project Manager

Superfund Emergency Management Division
Massachusetts Section

cc: Garry Waldeck, MassDEP
Andy Schkuta, AECOM
Todd Majer, de maximis
Jessie McCusker, de maximis
Christine Taddonio, de maximis
Mark Kelley, H&A

de maximis, inc.
200 Day Hill
Road Suite 200
Windsor, CT 06095
(860) 298-0541

April 10, 2024

Ms. Kara Nierenberg
Remedial Project
Manager EPA Region 1
5 Post Office Square, Suite
100 Mail Code OSRR 07-4
Boston, MA 02109-3912

Subject: **Nuclear Metals, Inc. Site, Concord, Massachusetts**
Remedial Design / Remedial Action
Wells Decommissioning

Dear Ms. Nierenberg:

Attached for your review and approval, please find the revised *Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas) Memorandum*, including response to comments received from the Environmental Protection Agency (EPA) on April 4, 2024.

Please contact me if you have any questions,

Sincerely,

Bruce Thompson
Project Coordinator

Enclosure

EPA Comments on Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas),
Nuclear Metals Inc., Concord, Massachusetts, dated April 4, 2024

1. There are inconsistencies between the wells marked to be abandoned on Table 1 and Figure 1 (including within the insets on Figure 1). The following comments have attempted to identify the inconsistencies. Please review what is presented in Table 1 and Figure 1 for consistency and provide EPA with the following:
    a. a list of wells to be abandoned prior to Courtyard, Holding Basin, and Building E remedial activities;
    b. a list of wells to be protected and maintained during remedial action;
    c. well location;
    d. current use;
    e. reason for abandonment; and
    f. proposed plan for well replacement (if known).

    Response: Table 1 and Figure 1 were updated accordingly.

2. The following wells are marked to be abandoned on Figure 1; however, they are not included on Table 1. Please edit Table 1 and Figure 1 accordingly.
    a. HB-11
    b. MW-S18,
    c. MW-S20
    d. TPZ-RI-S03
    e. TPZ-RI-01
    f. MW-BS7-2
    g. IP-1-1
    h. IP-2-3
    i. MW-S62
    j. MW-S63
    k. MW-SD63
    l. GZW-7
    m. GZW-7S

    Response: Table 1 and Figure 1 were updated accordingly. Groundwater monitoring wells, MW-S18, MW-S20, TPZ-RI-S03 and TPZ-RI-01 will be abandoned during future Remedial Action activities.

3. Though not explicitly stated, Table 1 and Figure 1 suggest that the following wells will be protected and maintained during remedial activities. Please confirm if this information is correct, provide an explanation for retaining these

wells, and edit the Table/Figure accordingly.

a. MW-S16
b. PZ-7
c. MW-8A
d. MW-SD61
e. MW-SD62A

Response: Table 1 and Figure 1 were updated accordingly. Well PZ-7 is presumed destroyed, if located during remedial activities of the Courtyard, the well will be properly abandoned. In addition, MW-BS7-2 will be protected and maintained during the Courtyard remedial activities.

4. As shown on Figure 1 – Holding Basin Area Inset Map, monitoring wells HB-442 and HB- 400 are not marked as "previously abandoned" or "proposed abandonment". Please confirm the status if these wells and edit Figure 1 and Table 1 appropriately.

   Response: Boreholes HB-442 and HB-400 were not established as observation wells. Figure has been adjusted as appropriate. Table 1 and Figure 1 were updated accordingly.

5. The original request to abandon wells in April 2024 came as an email from de maximis on 3/1/24 and included a possibility that the monitoring wells (MW-11, MW-T10, MW- SD10, MW-BS10) and former production well (SW-2A) near Building E would also be abandoned. Except for MW-11, which is noted as previously abandoned, Table 1 and Figure 1 do not include any of these wells to be protected or abandoned. Please revise Table 1 and Figure 1 to correctly reflect the plans for the Building E area wells.

   Response: Wells MW-T10, MW-SD10, MW-BS10 and SW-2A will be maintained during Courtyard and Building E Remediation Action activities. These monitoring wells will remain part of the site-wide groundwater monitoring program.

6. Table 1 lists that wells MWT-24 and MW-S07 as having no current use; however, Table 1e from *the May 2022 – April 2023 Annual Groundwater Monitoring Report* includes these two wells in the Comprehensive Groundwater Sampling round. Please edit Table 1 as necessary.

   Response: Table 1 was updated accordingly.

7. Table 1 lists wells HA20-CMT-1, HA20-CMT-2, HA20-CMT-4, HA20-CMT-5, and HA20- CMT-6 with current use only as "water levels"; however, Table 1e from *the May 2022 – April 2023 Annual Groundwater Monitoring Report* includes these five wells in the Comprehensive Groundwater Sampling round.

Please edit Table 1 as necessary.

Response: Table 1 was updated accordingly.

8. Please include a final, approved copy of the *Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas)* Memo as an attachment to the revised Phase 1 RAWP once EPA has approved the Memo.

   Response: The approved *Wells Proposed for Decommissioning (Courtyard and Holding Basin Area) memorandum* will be attached to the revised Phase 1 RAWP.

HALEY & ALDRICH, INC.
465 Medford St.
Suite 2200
Boston, MA 02129
617. 886. 7400

TECHNICAL MEMORANDUM

Revised 10 April 2024
26 March 2024
File No. 0131884-003

TO: *de maximis, inc.*
Bruce Thompson

FROM: Haley & Aldrich, Inc.
Dale Salinger, Principal Technician
Mark Kelley, P.E., Senior Hydrogeologist

SUBJECT: Wells Proposed for Decommissioning (Courtyard and Holding Basin Areas)
Nuclear Metals, Inc.
Concord, Massachusetts

The purpose of this memorandum is to provide information on wells proposed for decommissioning in the Courtyard and Holding Basin Areas ahead of the 2024 construction season at the Nuclear Metals, Inc. (NMI) Site. This work is proposed to be completed starting 15 April 2024 before remedial activities within the Courtyard Area and before in-situ sequestration (ISS) drilling within the Holding Basin area. The attached table lists the 28 wells that are proposed to be decommissioned, including the well ID, current well uses, and the reason for decommissioning the well. Locations of wells proposed for decommissioning, previously decommissioned wells, and wells remaining on site are shown on the attached plan. Monitoring well installation reports for the 28 wells proposed for decommissioning are also included as Attachment A.

Attachments:

Table 1 – Summary of Wells Proposed for Decommissioning
Figure 1 – Groundwater Exploration Location Plan
Attachment A – Monitoring Well Installation Reports

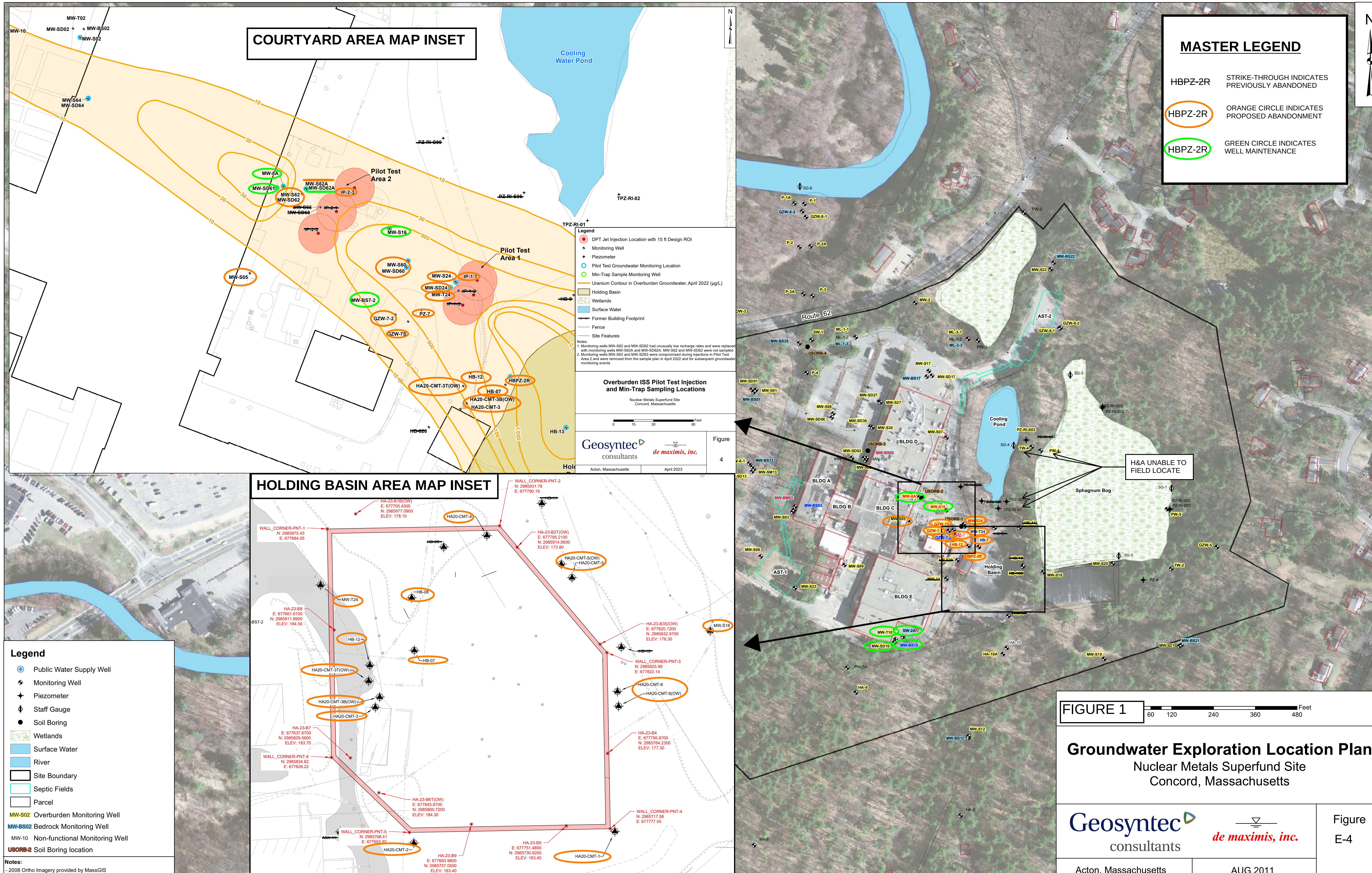
c: *de maximis, inc.*; Attn: Todd Majer, Jessie McCusker, and Christine Taddonio

TABLE

TABLE 1
SUMMARY OF WELLS PROPOSED FOR DECOMMISSIONING
NUCLEAR METALS, INC.
CONCORD, MASSACHUSETTS

Well ID	Well Location	Current Use	Reason for Abandonment	Proposed Future Plan for Well Location
MW-S62A	Courtyard	semiannual, annual, comprehensive sampling	Within courtyard excavation area	Future well locations to be determined post remedial action on a phase by phase basis
MW-SD62	Courtyard	none		
MW-S62	Courtyard	none		
MW-S05	Courtyard	none		
MW-S60	Courtyard	semiannual, annual, comprehensive sampling		
MW-SD60	Courtyard	semiannual, annual, comprehensive sampling		
GZW-7-2	Courtyard	semiannual sampling		
MW-S24	Courtyard	semiannual, annual, comprehensive sampling		
MW-SD24	Courtyard	semiannual, annual, comprehensive sampling		
MW-T24	Courtyard	semiannual, annual, comprehensive sampling		
IP-1-1	Courtyard	ISS Pilot study injection point		
IP-2-3	Courtyard	ISS Pilot study injection point		
GZW-7S	Courtyard	semiannual, comprehensive sampling		
PZ-7	Courtyard	none	Unable to locate/destroyed	
HBPZ-2R	Holding Basin	semiannual, annual, comprehensive sampling	Within holding basin (HB) ISS injection area	
HA20-CMT-3B(OW)	Holding Basin	semiannual, annual, comprehensive sampling		
HA20-CMT-3T(OW)	Holding Basin	semiannual, annual, comprehensive sampling		
HA20-CMT-3	Holding Basin	annual sampling		
HB-12	Holding Basin	semiannual, annual, comprehensive sampling		
HB-07	Holding Basin	none		
HB-08	Holding Basin	none		
HA20-CMT-2	Holding Basin	comprehensive Groundwater Sampling		
HA20-CMT-1	Holding Basin	comprehensive Groundwater Sampling		
HA20-CMT-6	Holding Basin	comprehensive Groundwater Sampling		
HA20-CMT-6(OW)	Holding Basin	semiannual, annual, comprehensive sampling		
HA20-CMT-5	Holding Basin	comprehensive Groundwater Sampling		
HA20-CMT-5(OW)	Holding Basin	semiannual, annual, comprehensive sampling		
HA20-CMT-4	Holding Basin	comprehensive Groundwater Sampling		
MW-S16	Courtyard	semiannual, Comprehensive sampling	To be Maintained (Monitoring of the plume)	
MW-8A	Courtyard	semiannual, annual, comprehensive sampling		
MW-SD61	Courtyard	semiannual, annual, comprehensive sampling		
MW-SD62A	Courtyard	semiannual, annual, comprehensive sampling		
MW-BS7-2	Courtyard	comprehensive sampling		
MS-SD10	Building E	semiannual, comprehensive sampling		
MW-BS10	Building E	semiannual, annual, comprehensive sampling		
MW-T10	Building E	semiannual, comprehensive sampling		
SW-2A	Building E	semiannual, comprehensive sampling		

FIGURE


COURTYARD AREA MAP INSET
Cooling Water Pond
Pilot Test Area 2
Pilot Test Area 1
Legend
DPT Jet Injection Location with 15 ft Design ROI
Monitoring Well
Piezometer
Pilot Test Groundwater Monitoring Location
Min-Trap Sample Monitoring Well
Uranium Contour in Overburden Groundwater, April 2022 (µg/L)
Holding Basin
Wetlands
Surface Water
Former Building Footprint
Fence
Site Features
Overburden ISS Pilot Test Injection and Min-Trap Sampling Locations
Nuclear Metals Superfund Site Concord, Massachusetts
Geosyntec consultants
de maximis, inc.
Figure
4
Acton, Massachusetts
April 2023
HOLDING BASIN AREA MAP INSET
MASTER LEGEND
HBPZ-2R STRIKE-THROUGH INDICATES PREVIOUSLY ABANDONED
HBPZ-2R ORANGE CIRCLE INDICATES PROPOSED ABANDONMENT
HBPZ-2R GREEN CIRCLE INDICATES WELL MAINTENANCE
N
Route 62
Cooling Pond
Sphagnum Bog
Holding Basin
BLDG A
BLDG B
BLDG C
BLDG D
BLDG E
AST-1
AST-2
H&A UNABLE TO FIELD LOCATE
Legend
Public Water Supply Well
Monitoring Well
Piezometer
Staff Gauge
Soil Boring
Wetlands
Surface Water
River
Site Boundary
Septic Fields
Parcel
MW-S02 Overburden Monitoring Well
MW-BS02 Bedrock Monitoring Well
MW-10 Non-functional Monitoring Well
USORB-2 Soil Boring location
Notes:
- 2008 Ortho Imagery provided by MassGIS
- Base map data and environmental data layers obtained from MassGIS
FIGURE 1
Feet
60 120 240 360 480
Groundwater Exploration Location Plan
Nuclear Metals Superfund Site
Concord, Massachusetts
Geosyntec consultants
de maximis, inc.
Figure
E-4
Acton, Massachusetts
AUG 2011

ATTACHMENT 1
Monitoring Well Installation Reports

Boring and Monitoring Well Construction Log

Client: NMT	Project No. BRoo10C	Location: Concord, Mass	Sheet 1 of 2
Geosyntec Inspector: Andrew Kelley		Date: 9/23/2020	Geosyntec consultants
Weather: 60s Sunny	Borehole Diameter: 6"	Drilling Method: Sonic	
Drilling Co. Cascade	Rig Type: Terrasonic 150C	Driller Rob Maillet	
Depth to water: 60	Depth to Refusal:	Total Depth: 85'	Log of Boring SISD-62A

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		0			5.3/10	(0-10) (0-2.2) DK brown, Lt moisture, loose, organics, fine SAND (TOPSOIL) no odors or stains. (2.2-2.95) Brown, Lt moisture, loose, poorly sorted SAND med grained - pebble, no odor or stains. (2.95-3.7) Lt brown, soft, loose, fine SAND w/ little silt, iron oxide stain @ 3.3. (3.7-4.6) Lt brown, tight, stiff SILT w/ some clay, iron oxide staining throughout, Lt moisture. (4.6-5.3) Brown, Lt moisture, loose, fine-med SAND, no odor or stains.
WL in SI62: 60.60 SD62: 60.60		10				
		15			5/10	(10-20) (0-0.7) SAA (3.7-4.6). (0.7-1.8) Redolish-DK brown, fine-coarse SAND w/ trace silt, small-med concretions, loose, Lt moisture. (1.8-2.5) Lt brown, med-coarse SAND w/ some pebbles, loose, Lt moisture. (2.5-3.0) Lt grayish-brown, loose, fine SAND, well sorted, Lt moisture. (3.0-5.0) Lt grayish-brown, loose, med grained SAND w/ pebbles, v. Lt iron oxide staining.
		20				
		25				
60sel used between 20-40 ft bgs		30			8.9/10	(20-30) (0-1.8) Lt grayish-Brown, Lt moisture, loose, fine SAND & SILT w/ some iron oxide staining. (1.8-3.2) Lt grayish-Brown, tight, SILT, Lt moisture, heavy iron oxide staining. (3.2-5.6) Grayish brown, well sorted med-grained SAND, loose, Lt moisture, trace coarse grained sand, no staining. (5.6-6.4) DK gray, clayey SILT, w/ little pebbles, Lt moisture, no stains. (6.4-8.9) Brn/Lt gray, fine-med SAND w/ some gravels, loose, no staining.
		35				
WL @ SI62: 60.60 SD62: 60.60		40			8.1/10	(30-40) (0-3.6) Grayish brown, moist loose loose coarse grained SAND, well sorted, no stains. (3.6-5.4) Lt grayish-brown, Lt moisture, poorly sorted fine SAND to pebble, no stains, loose. (5.4-6.4) Lt grayish-brown, silty SAND w/ some pebbles, loose, some small concretions Lt moisture no stains. (6.4-7.8) Lt grayish-brown, clayey SILT, Lt moisture, moderate iron oxide staining, stiff. (7.8-8.1) Brown, moist, loose, fine-med SAND, Lt staining.
		45				
		50				

Notes:

Boring and Monitoring Well Construction Log

Sheet 2 of 2

Client: NMT Project No. BROOOC Location: Concord, MASS

Geosyntec consultants

Geosyntec Inspector: Andrew Kelley Date: 9/23/2020

Weather: 60s Sunny Borehole Diameter: 6" Drilling Method: Sonic

Drilling Co. Cascade Rig Type: Terrasonic 150 Driller Rob Maillet

Depth to water: 60' Depth to Refusal: Total Depth: 85'

Log of Boring SD-62A

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		40			7.6/10	(40-50) (0-2.8) ~~Lt grey~~ (MK) Grayish-brown, moist, loose, med grained SAND-pebble, no stains. (2.8-4.8) Lt grayish brown, Lt moisture, loose, fine-med grained SAND, with little pebble, V minor iron oxide & DK gray stains (2.8-3.0) (4.8-7.6) Lt gray, dry, fine SAND to cobble, small concretions, no staining, loose.
		45				
		50			6.4/10	(50-60) (0-1.1) Gray, moist, loose, med-coarse SAND w/ some pebbles, little clay & silt, moderate concretions, no stains. (1.1-2.9) Brown, loose, moist, fine-med SAND, small concretions, little silt, & no stains. (2.9-6.4) Lt gray, Lt moisture, loose, fine-coarse SAND w/pebbles, no stains.
		55				
		60			9/10	(60-70) (0-9) Lt grayish-brown, moist, loose well sorted fine-med SAND w/ trace silt, heavy iron oxide staining @ 3.2.
		65				
		70			9.3/10	70-80 (0-9.3) Lt grayish-brown, moist, loose, well sorted fine SAND w/ silt, no staining.
		75				
		80			5/5	(80-85) (0-2.1) Brown, moist, fine-medium SAND, trace silt, no stains (2.1-5.0) Grayish-brown, moist, tight/stiff, Clayey SILT, little to no staining.
		85				
		90				
		95				
		100				

275 gal used today up to 60'

WL @ S62: 60.60
SD62: 60.60

400 gal used from total today

425 gal used, SD Set to 85'

WL @ S62: 60.55
SD62: 60.55

Notes:

Boring and Monitoring Well Construction Log

Sheet 1 of 2

Client: NMT | Project No. BROOROC | Location: Concord, MASS

Geosyntec consultants

Geosyntec Inspector: Andrew Kelley | Date: 8/25/2020

Weather: | Borehole Diameter: 6"&8" | Drilling Method: SONIC

Drilling Co. Cascade | Rig Type: BL Mini Sonic 100C | Driller Dennis Lee

Depth to water: | Depth to Refusal: | Total Depth: 90'

Log of Boring: MW-56/SB62

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		0			4.2/10	(0-10') @ (1.6'). 5x background level radiation 12,000 counts per min. (0-0.7) DK brown, top soil, silty SAND, roots & trace pebbles. (0.7-2.0) Brown, moist, fine-med SAND. (2.0-2.9) Orangish-brown med-grained SAND, Lt moisture, little gravel. (2.9-4.2) Beige, Lt moisture, silty-fine SAND. with minor iron oxide staining.
		10			5.3/10	(10-20'). (0-0.6) Wet brown, Sandy SILT. (0.6-3.0') Yellowish-Brown, moist, loose, med-coarse grained SAND with trace pebbles. (3.0-4.0') Yellowish-brown, moist, fine SAND with some silt, no odors or staining. (4.0-5.3) Beige, dry, silty SAND, fine grained sand, with med-large concretions.
		20			9/10	(20-30'). Brown, loose, fine SAND, well-sorted (0-1.3) Lt moisture, no odor or stains. (1.3-3.8') Orangish-Brown, Lt moisture, Sandy SILT, with heavy iron oxide staining. (3.8-5.5') orangish brown med-coarse SAND, Lt moisture, med iron oxide stains. (5.5-5.8) SAA (1.3-3.8'). (5.8-6.8) SAA (3.8-5.5'). (6.8-9.0') Beige, Lt moisture, med grained SAND with some iron oxide staining.
75 gal used so far		30				
		35			8.1/10	(30-40'). (0-3') Tan/Brown, Lt moisture, coarse SAND w/ little gravel, no odor or stains. (3-8.1') Grayish-brown, SILT w/ some fine sand, Lt moisture, mod iron oxide staining throughout, heaviest @ 8'.
250 gal used so far		40			6/10	(40-50') (0-3.4) Brown, moist coarse sand w/ little gravel, loose, no stains. (3.4-6.0) Dry, beige, gravelly SAND; fine sand-pebbles, ~~coarse~~ small concretions, no odor or stains.
350 gal used so far		45				
		50				

Notes:

Boring and Monitoring Well Construction Log

Sheet 2 of 2

Client: NMS	Project No. BRoogoc	Location: Concord, MASS	Geosyntec consultants
Geosyntec Inspector: Andrew Kelley		Date: 8/25/2020	
Weather:	Borehole Diameter: 6&8"	Drilling Method: Sonic	
Drilling Co. Cascade	Rig Type:	Driller Denis Lee	
Depth to water:	Depth to Refusal:	Total Depth: 90'	Log of Boring MW-SG2/SDG2

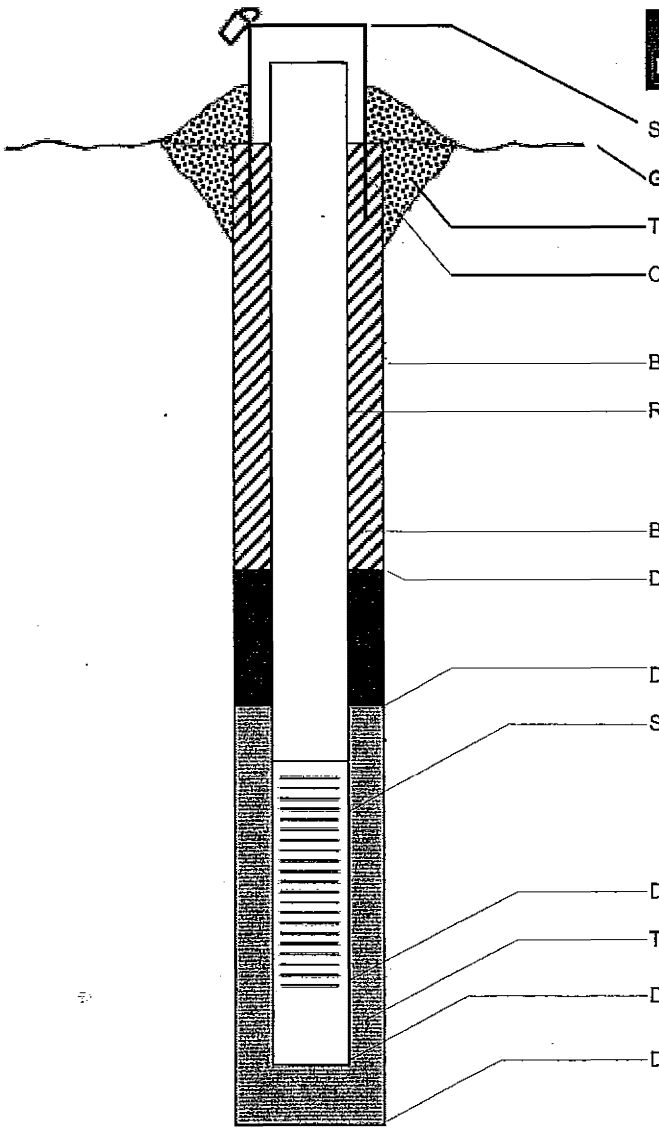
Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
500 gal used so far. 125 gal recovered		50			5.4/10	(50-60'). (0-1.2) Brown, moist, med-coarse SAND w/ some gravel, no odor or stains (1.2-2.2) Dry, beige, fine SAND w/ gravels & small concretions, no odors or stains. (2.2-5.4') Yellowish-brown, moist, med grained SAND w/ trace gravels, no odor or stains.
		60			9.2/10	(60-70'). (0-6.5') Grayish-brown, moist, well sorted, med-grained SAND, loose, no odors or staining. (6.5-9.2) Grayish-Brown, moist, tight, silty SAND, no odors or staining.
625 gal used so far. 125 gal recovered		70			8/10	(70-80'). (0-1.2) Grayish-brown, moist, well-sorted, med grained SAND, tight, no odors or stains. (1.2-2.7) SAA (0-1.2') but loose. (2.7-8.0) Grayish-Brown, moist, tight, silty SAND, med iron oxide staining @ (7-7.6').
675 gal used today. 125 gal recovered		80			6.3/10	(80-90') SAA (2.7-8.0) for (0-4.2') with staining heavier @ (3-4.2'). (4.2-6.3') DK gray, gravelly CLAY (TILL), cobbles up to 3.5" in diameter, minor iron oxide staining @ 4.4. (Slough in the first 1-2').
		90				
		45				
		50				

Notes:

Monitoring Well Construction Diagram

GeoSyntec Consultants | MACTEC

Client:	de maximis	AOI:	16-Groundwater	Date Installed:	12/8/2004
Project No:	3617037023	Boring No:	3022	Installation contractor:	Dragin
Field Technician:	C. Ross	Well ID:	MW-S05	Development method:	



UNITS OF MEASURE

Depth	ft	Diameter	in	Length	ft

Stick-up of Casing above ground surface:	0	ft
Ground Surface (GS) elevation:		ft
Type of surface protection:	Concrete / Roadbox	
Casing material	steel	
Casing ID:	8	in
Borehole diameter	8.25	in
Riser material	PVC	
Riser ID:	2	in
Riser lenght:	62.3	ft
Backfill material:	bentonite cement grout	
Depth of top of seal (below GS):	57	ft
Seal material:	1/4" Bentonite Pellets	
Depth of bottom of seal (below GS)	60.2	ft
Screen material:	PVC	
Screen ID:	2	in
Screen slot size:	0.01	in
Screen lenght:	10	ft
Depth of bottom of screen (below GS):	72.3	ft
Type of sandpack:	No.1 FilterPro Sand	
Depth of sediment sump with plug	72.5	ft
Depth of bottom of borehole (below GS)	73	ft

Comments:

Boring and Monitoring Well Construction Log

Client: NMI	Project No. BROOK10C	Location: CONCORD, MA	Sheet 1 of 2	Geosyntec consultants
Geosyntec Inspector: G. Marjiw		Date: 09/01/20		engineers | scientists | innovators
Weather: 60s-70, clear	Borehole Diameter: 6"	Drilling Method: SONIC		
Drilling Co. Cascade	Rig Type: Terra Sonic	Driller Robert Mailler		
Depth to water:	Depth to Refusal:	Total Depth:	Log of Boring MW-S60	

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		0			4.8/10	0-0.35 Asphalt. 0.35-1.4 Yellowish brown, moist, loose, fine to coarse SAND, little rounded fine gravel. 1.4-1.9 Dark brown, moist, loose, fine to coarse sand, some rounded fine to medium gravel. 1.9-2.5 Brownish gray, moist, loose, fine SAND, some rounded fine gravel, trace silt. 2.5-3.7 Brownish gray, moist, loose, medium SAND, some fine and coarse sand, trace subangular fine gravel. 3.7-4.00 SAA, Brown 4.0-4.8 Brownish gray, moist, soft, SILT, some fine sand.
		5				
		10				
		15			7.5/10	0-1.6 Gray, moist, loose, fine SAND, some silt and rounded fine gravel, trace medium and coarse sand. 1.6-2.2 Gray, moist, soft, SILT and fine SAND, 2.2-3.4 Brown, moist, loose, fine SAND, some silt, 3.4-4.5 Gray, moist, soft, SILT, some fine sand. 4.5-7.5 Brownish gray, moist, loose, medium SAND, some rounded fine gravel, little fine and coarse sand, trace coarse rounded gravel.
		20				
		25			7/10	0-1.1, Gray, dry, pulverized ROCK, some silt and fine sand. 1.1-3.6, Orangish brown, dry, loose, medium SAND, some fine and coarse sand, trace subangular medium gravel. 3.6-7.0 Grey, dry, loose, fine to coarse sand, some GREEN rock fragments, little rounded fine to medium gravel, micaceous
		30				
		35			9.5/10	0-6 Light grey, dry, loose, fine to coarse SAND, some silt and pulverized rock flour, trace angular fine gravel. 6-9.5 Greyish brown, moist, loose, fine SAND, some medium sand and rounded fine gravel, trace silt.
		40				
		45			6/10	0-2.5 Grey, dry-to moist, loose, medium-to fine SAND, some coarse sand, little rounded medium gravel and pulverized rock flour. 2.5-4.5 Brownish gray, moist, loose, fine SAND, some medium sand and rounded fine gravel. 4.5-5.6 SAA, grey. 5.6-6.0 SAA (2.5-4.5) wet.
		50				

Notes:

Boring and Monitoring Well Construction Log

Sheet 2 of 2

Client :	**Project No.**	**Location:**	Geosyntec consultants
Geosyntec Inspector:		**Date :** 1	engineers | scientists | innovators
Weather:	**Borehole Diameter:** AS PAGE 1	**Drilling Method:**	
Drilling Co.	**Rig Type:** SAME	**Driller**	
Depth to water :	**Depth to Refusal:**	**Total Depth :**	**Log of Boring** MW-560

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		50			8.6/10	(0-5.7) Brownish gray, wet, loose, medium to fine SAND, little silt, micaceous.
		60				5.7-8.6 SAA, gray.
		65			4.3/5	0-1.9 Grayish brown, wet, loose, fine SAND, little silt. Dark gray staining; micaceous
						1.9-4.3 Grayish brown, wet, loose, fine SAND, little silt, micaceous
		15				
		20				
		25				
		30				
		35				
		40				
		45				
		50				

Notes:

Project Name: NMI	**Project No.**	BR0090C	Sheet 1 of 1
Geosyntec Inspector: D. Jensen	**Drilling Method:**	Sonic	Geosyntec consultants
Weather: Overcast/sunny 50s	**Date :**	10/28/20	
Drilling Co. Cascade	**Driller:**	Kevin Smith	
Date/Time Started: 10/28/20 0830	**Date/Time Completed:**	10/28/20 1700	
Total Depth : 85 ft bgs	**Delay/Standby:**	NA	
Depth to water : ~50 ft bgs	**Depth to Refusal:**	NA	Log of Boring: TS+SB-02/MW-SD60

Well Construction	Depth (feet)	Soil Sample	Rad. Screening	Recovery	Sample Description and Boring Notes
	0			5.0/10	0-0.5 ft orangish brown dry silty SAND fine-coarse, trace fine gravel & cobble 0.5-5 ft light brown dry SAND fine-med, w/ silt
	10			9.5/10	0-1.0 ft light grey silty SAND fine-coarse, trace fine gravel 1.0-3.0 ft light grey dry SILT, trace fine sand orange staining 3.0-4.2 ft orangish brown dry SAND fine-coarse 4.2-5.8 ft grey dry SILT firm 5.8-8.2 ft orangish brown dry SAND fine-coarse, w/ fine gravel, trace coarse gravel and cobble 8.2-9.5 ft light grey dry silty SAND fine-med, trace coarse sand & fine-coarse gravel
	20			9.0/10	0-1.0 ft grey wet (drilling water) silty SAND fine-med, with coarse sand, trace fine-coarse gravel 1.0-1.8 ft SAA except Dry 1.8-5.5 ft light brown SAND fine-med, trace coarse sand, fine-coarse gravel orange staining at 4.0-4.5 ft 5.5-5.9 ft grey dry silty SAND fine-coarse, with fine-coarse gravel 5.9-7.0 ft light grey dry sandy SILT with fine-coarse gravel and cobble 7.0-8.3 ft grey dry SILT firm 8.3-9.0 ft light grey silty SAND fine-med, trace coarse sand, fine-med gravel
	30			9.0/10	0-2.0 ft grey wet (drilling water) sandy SILT fine-coarse sand, trace fine gravel 2.0-9.0 light brown dry silty SAND fine, trace coarse gravel gravel/sand layer at 6.6-6.8 ft orange staining
	40			9.3/10	0-2.0 ft light brown SAND fine-med, with coarse sand trace fine gravel, wet to moist (drilling water) 2.0-2.4 ft grey & light brown dry silty SAND fine, with cobbles 2.4-9.3 ft SAA except no cobble
	50			7.5/10	0-0.7 ft brown wet (drilling water) SAND fine, micaceous 0.7-2.4 ft SAA except moist 2.4-5.7 ft SAA except with silt 5.7-7.5 ft Grey moist sandy SILT fine sand
	59 60			9.6/10	0-9.6 ft light brown wet SAND, fine, with SILT, trace med sand micaceous, orange staining
	64 70			10.5/10	0-1.2 ft ~~brown wet SAND, with SILT~~, SAA (DJ 11/29/20) 1.2-6.7 ft brown wet SAND fine-coarse, with fine-coarse gravel and cobbles, trace silt 6.7-8.0 ft grey wet SILT firm 8.0-10.5 grey wet SAND fine-med, with silt micaceous and orange staining
	79 80			2.5/5	0-0.7 ft brown wet sandy Gravel with cobbles 0.7-2.5 ft Grey ~~silty~~ moist silty SAND with cobbles, dense (Till)
	81 85				End Boring

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

Nuclear Metals

Concord, Massachusetts

Boring No. GZW-7
Page 1 of 4
File No. 7875.20
Chkd. By:

Boring Co.	GZA Drilling, Inc.		Casing	Sampler	Groundwater Readings				
Foreman	Rich Jones	Type	HW	Split Spoon	Date	Time	Depth	Casing	Stab. Time
GZA Rep.	David Adilman:lr	I.D./O.D.	4.0"/4.5"	2.0"/2.5"	3/16/92	0800	54.1'	76'	16 Hours
Date Start	3/12/92 End 3/20/92	Hammer Wt.	300 lb.	140 lb.					
Location	See Exploration Location Plan	Hammer Fall	30 in.	30 in.					
G.S.Elev.	Datum	Other	HSA = 4.5" ID						

DEPTH	CASING	BLOWS	No.	Pen./ Rec.	Depth (Ft.)	Blows/ 6"	OVM/GEIG Field Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
			S-1	24/13	0-2	3-4	ND/<.05	Loose, light brown, medium to coarse SAND, trace Silt, black Cinders, rounded Gravel (dry).	Medium-Coarse SAND	1. 2.	
						5-6					
5			S-2	24/24	5-7	5-6	ND/<.05	Top 15": Medium dense, light brown, fine SAND-SILT (laminated). Bottom 9": Medium dense, light brown-gray, fine to medium SAND (sl. moist).	5' ± Fine SAND-SILT 6.3' ±		1.5" PVC Riser 0-68'
						9-10					
10			S-3	24/14	10-12	5-5	ND/<.05	Medium dense, light brown, medium to coarse SAND, trace Gravel, (rounded) (dry).	Medium-Coarse SAND		
						6-7					
5			S-4	24/22	15-17	7-6	ND/<.05	Medium dense, light brown-yellow brown, medium SAND, little coarse SAND (in lenses), trace Gravel (dry).	15' ±		Grout 3-63'
						6-7					
0			S-5	24/14	20-22	8-9	ND/<.05	Medium dense, light brown-yellow brown, medium SAND, little(+) coarse Sand-rounded Gravel (dry).	Medium SAND		
						10-10					
5			S-6	24/18	25-27	9-9	ND/<.05	Top 5": Medium dense, light brown-olive gray, medium SAND, some coarse Sand-Gravel. Bottom 13": Same - no coarse SAND-GRAVEL.			1/2" Barcad Casing 0-111.5'
						13-20					

1. Refer to note 1 on boring log GZW-6.
2. Four-inch protective casing cemented in place with 3-foot stickup.

Note: Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Boring No. GZW-7

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

Nuclear Metals

Concord, Massachusetts

Boring No. GZW-7
Page 2 of 4
File No. 7875.20
Chkd. By:

DEPTH	GWS	Sample Information: No.	Pen./Rec.	Depth (Ft.)	Blows/6"	OVM/GEIG Field Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
		S-7	24/24	30-32	13-18	ND/<.05	Dense, very light-light brown, fine SAND-SILT (Silty Sand) (some laminated) 4" brown-gray SILT (dry).	SILTY SAND		
					20-32			31.6'		
								SILT		
35								35.6'		
		S-8	24/24	35-37	25-25	ND/<.05	Top 6": Very dense, olive, gray SILT (sl. moist) very dense, light brown, fine to medium SAND (dry) (*some iron staining in Silt).			1/2" Barcad Casing 0-111.5'
					30-32					
40								Fine-Medium SAND		
		S-9	24/20	40-42	12-16	ND/<.05	Dense, gray-light brown-rust, (laminated) fine to medium SAND (dry).			1.5" PVC Riser 0-69'
					19-23					
45								45'		
		S-10	24/20	45-47	9-16	ND/<.05	45-46': Dense, olive SILT-fine SAND (Silty Sand). 46-47': Very dense, light brown-rust (mottled-laminated) fine to medium SAND (dry).	Silt-fine SAND 46'		
					21-29					
50		S-11	24/20	50-52	14-19	ND/<.05	Dense, light brown-rust (mottled and laminated) medium SAND (dry).		3.	Grout 3-63'
					21-22					
55		S-12	24/9	54-56	40-32	ND/<.05	Very dense, light brown, fine to medium SAND, little(-) Silt (wet).	Fine-Medium SAND		
					34-39					
60		S-13	24/13	59-61	30-25	ND/<.05	Very dense, light brown, fine to medium SAND (wet).			Bentonite Seal 63-66'
					23-29					

3. Run out of augers at 50'. Pull augers, run 4" (HW) casing to 35'. Drive and wash down to 50' (15' blow in). Using 300 lb. hammer. Wash water from NMI spicket. Recirculating drill H_2O. Pounded casing to 54' (not 55' due to tub height). Continue sampling.

ati tion lines represent approximate boundaries between soil types, transitions may be gra... ...
din... ave been made at times and under conditions stated. Fluctuations of groundwat... ...
er than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

Nuclear Metals

Concord, Massachusetts

Boring No. GZW-7
Page 3 of 4
File No. 7875.20
Chkd. By:

DEPTH	CASING & BLOWS	Sample No.	Pen./Rec.	Depth (Ft.)	Blows/6"	OVM/GEIG Field Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
		S-14	24/12	64-66	20-21	ND/<.05	Dense, brown, fine to medium SAND, little(-) coarse Sand, trace Silt (rust stained lenses).	Fine-Medium SAND		
					40-40					
70		S-15	24/12	69-71	18-19	ND/<.05	Dense, yellow-brown, medium to coarse SAND, some(+) Gravel (schist and quartz) (wet).	70' ±		1.5" PVC Wellscreen 68-78' (GZW-7-1)
					21-23					
75		S-16	24/15	74-76	19-23	ND/<.05	Dense, light brown-brown, medium to coarse SAND and(-) fine GRAVEL, trace Silt.	Medium-Coarse SAND	4.	Filter Sand 66-80'
					25-28					
80		S-17	24/12	79-81	29-32	ND/<.05	Very dense, brown, fine to medium SAND, trace Silt, trace Gravel (wet) mica present (80-81') = medium SAND.	80' ±		
					52-52			Fine-Medium SAND		
								82.5' ±	5.	
85		S-18	24/16	85-87	47-47	ND/<.05	Very dense, olive-olive gray, SILT, some fine to coarse Sand-Gravel, trace(+) Clayey Silt (TILL).			Alternating Layers of Sand/ Bentonite 80-97'
					73-41					
90		S-19	24/13	90-92	30-32	ND/<.05	Very dense, olive-olive gray, Clayey SILT-fine SAND, little(-) coarse Sand-Gravel (moist) (TILL).	GLACIAL TILL		1/2" Barcad Casing 0-111.5'
					43-138					
95		S-20	10/10	95-95.7	100-100/4"	ND/<.05	Very dense, olive-olive gray SILT-fine SAND, some medium to coarse Sand, trace Gravel.			
					RATE MIN/FT			98'	6.	Bentonite Seal 97-101.5'
		C-1	60/36	98-99	2.3		GNEISS: Black/white - light = granodiorite - dark = biotite rich, tonalite	99' BEDROCK		
				99-100	1			TILL		

4. With casing at 74' and stabilized for 3 days, water level in casing at 54'. Assumed level of water table because still in sand.
5. At 82.5', refusal of 4" casing. Drill ahead with 3-13/16" roller bit and drill water. Drilling and sampling, boring staying open. Drive 4" to 84, then drill ahead and sampling again.
6. Very hard at 98' -- little penetration with roller bit. Pull roller bit. Telescope 3" (NW) casing through HW to 91'. Spin casing with spin shoe to 98.6', (0.6' into rock), clean out borehole (last ~75 gallons H_2O).

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GEOENVIRONMENTAL, INC.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164
(617) 969-0050

Nuclear Metals

Concord, Massachusetts

Boring No. GZW-7
Page 4 of 4
File No. 7875.20
Chkd. By:

DPTH	GS	Sample Information: No.	Pen./Rec.	Depth (Ft.)	Blows/6"	OVM/GEIG Field Test Data	Sample Description & Classification	Stratum Description	RMKS	Equipment Installed
				100-101	2		Dark sections show schistosity. 99-100': Olive, Clayey SILT-Silty CLAY, some Gravel (TILL). RQD = 26/36 = 72% Only 3 fractures, 2 at 45° 1 at 60° Slight-heavy iron staining in fractures.		7.	Bentonite Seal 97-101.5'
				101-102	2.1					
				102-103	3.5					
		C-2	60/54	103-104	9.8				8.	
				104-105	4.9		C-2: GNEISS, black-white wide bands. (2) horizontal, (1) 60° fractures. RQD = 50.3/54 = 93%			1/2" Barcad Casing 0-111.5'
05				105-106	4.2					
				106-107	6.5					
				107-108	5.0					
		C-3	60/51	108-109	3.5		GNEISS, black-white banded pegmatite zones. (2) fractures at 109'-60° at 110'-60°. 1" thick zone heavily weathered. RQD = 50/51 = 98%.		9.	Filter Sand 101.5 - 122'
				109-110	4.1					
10				110-111	3.5			GNEISS (BEDROCK) w/pegmatite		
				111-112	3.0					
				112-113	3.1					
		C-4	48/65	113-114	5.4		GNEISS, black-white banded black sections - schistosic fractures = 1" zone at 116.2 60° at 114.6. RQD = 63.5/65 = 98%		10	Barcad 111.5-113' (GZW-7-2)
				114-115	3.3					
15				115-116	3.2					
				116-117	2.9					
				117-118	3.3					
		C-5	60/54	118-119	3.7		GNEISS, black-white banded with pegmatite zones. Fratures between color bands, lighter material = finer grained. RQD = 53/54 = 98%			
20				119-120	4.3					
				120-121	3.7					
				121-122	4.2				11	
							Bottom of Boring at 122 feet			
25										
30										

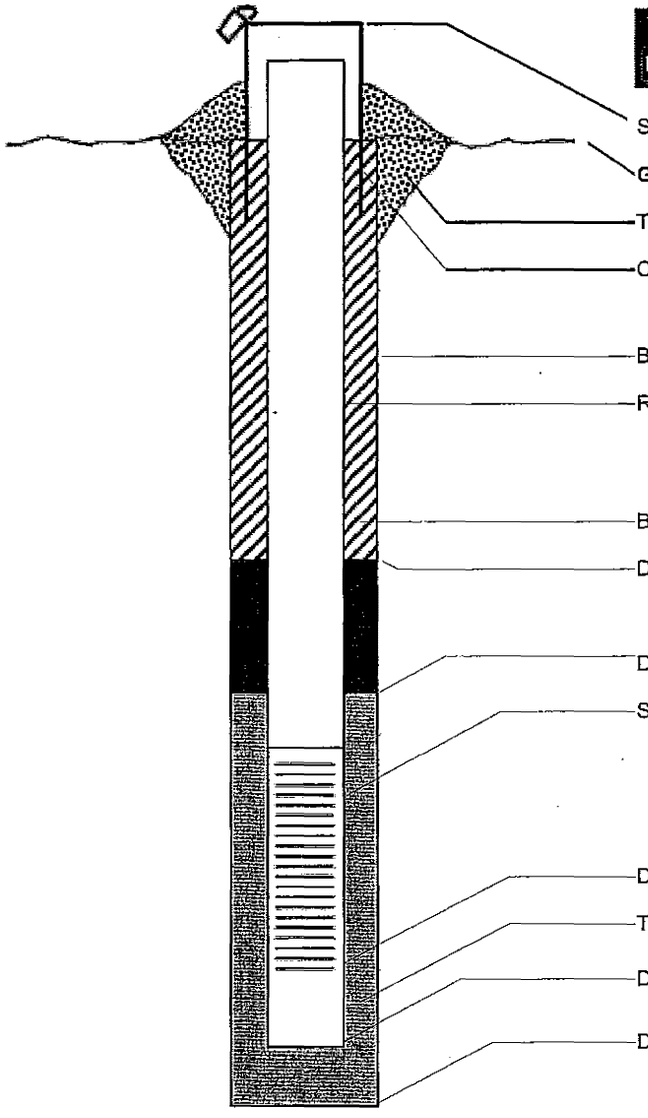
7. Begin coring at 98'.
8. 12" piece stuck in bottom of C-2 core barrel, had to break.
9. Start of C-3 -- not coring; had to remove core barrel and replace worn bit with new bit.
10. C-4 penetrated only 4' -- upon retrieval, more core in barrel than run, picked up material from last run C-3.
11. Perform packer test on rock. Install Barcad 111.5-113', sand rock socket, seal top of rock and install well as illustrated.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

Monitoring Well Construction Diagram

GeoSyntec Consultants | MACTEC

Client:	de maximis	AOI:	16-Groundwater
Project No:	3617037023	Boring No:	0
Field technician:	C. Ross	Well ID:	MW-S24
Date Installed:	11/22/2004		
Installation contractor:	Dragin		
Development method:			



UNITS OF MEASURE

Depth: ft | Diameter: in | Length: ft

Stick-up of Casing above ground surface:	0	ft
Ground Surface (GS) elevation:	185.7	ft
Type of surface protection:	Concrete / Roadbox	
Casing material	steel	
Casing ID:	8	in
Borehole diameter	8.25	in
Riser material	PVC	
Riser ID:	2	in
Riser lenght:	53.8	ft
Backfill material:	bentonite cement grout	
Depth of top of seal (below GS):	49.7	ft
Seal material:	1/4" Bentonite Pellets	
Depth of bottom of seal (below GS)	51.7	ft
Screen material:	PVC	
Screen ID:	2	in
Screen slot size:	0.01	in
Screen lenght:	10	ft
Depth of bottom of screen (below GS):	63.8	ft
Type of sandpack:	No.1 FilterPro Sand	
Depth of sediment sump with plug	64	ft
Depth of bottom of borehole (below GS)	65	ft

Comments:

Boring and Monitoring Well Construction Log

Sheet 1 of 2

Client: NMI | Project No. BR00906 | Location: CONCORD, MA

Geosyntec consultants
engineers | scientists | innovators

Geosyntec Inspector: A. Kelley, G-Hanjiru | Date: 08/31/20

Weather: 70s, clear | Borehole Diameter: 6" | Drilling Method: Sonic

Drilling Co. CASCADE | Rig Type: Terrel Sonic | Driller Robert Maillet

Depth to water: ~41' | Depth to Refusal: N.A | Total Depth: 80'

Log of Boring MW-SD24

Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		0			5.3/10	0-0.7 Asphalt fragments 0.7-1.95 Grayish brown, moist, loose, fine SAND, some medium sand and rounded fine gravel. 1.95-2.8 Grayish brown, moist, loose, medium to coarse SAND, little fine sand, 2.8-3.65 SAA 0.7-1.95 2.65-3.9 SAA 0.7-1.95 Dark brown 3.9-5.3 Grayish brown, moist, loose, fine SAND, some silt, little coarse sand and rounded fine gravel
		5				
		10				
		15			5.1/10	0-2 Brown, moist, loose, ~~fine~~ medium to coarse SAND, little fine sand, little organic plant matter 2-3.6 Yellowish brown, moist, loose, fine SAND 3.6-4.45 Reddish brown, moist, loose, fine to medium SAND ~~trace~~ some silt, trace cobble 4.45-5.1 Light gray (GRAY), loose, moist, fine to medium sand, some angular fine gravel, trace silt.
		20				
		25			7.3/10	0-1.4 Dark brown, moist, SILT, some fine sand, trace rounded fine gravel 1.4-3 Light gray, moist, loose, medium to fine SAND, some rounded fine gravel. 3-4.9 Light gray, moist, soft, SILT, little fine sand, 4.9-6.9 Light gray, moist, loose, fine SAND, some silt. 6.9-7.3 Brownish gray, moist, loose, fine to medium SAND, little silt and rounded fine gravel.
		30				
		35				
		40			3.3/10	~~0-1.3~~ 0-0.9 Dark brown, moist, soft, SILT, some fine sand, 0.9-2.6 Gray, moist, loose, fine to medium SAND, some rounded medium Gravel, trace cobble 2.6-3.3 Orangish gray, moist, loose, fine to medium ~~SAND~~, some silt, medium concretions, little iron oxide staining.
		45			5.7/11	0-1.75 Dark gray to black, moist, loose, fine SAND, some silt. 1.75-2.4 Greyish orange, moist, loose, fine SAND, some silt. 2.4-4.9 Light gray, moist, loose, fine SAND, some silt, trace cobble (~4.5") 4.9-5.7 Gray, moist, loose, fine SAND, some silt, little rounded fine gravel
		50				

Notes:

Boring and Monitoring Well Construction Log

Sheet 2 of 2

Client :	Project No.	Location:	Geosyntec consultants
Geosyntec Inspector:		Page 1	
Weather:	Borehole Diameter: AS	Drilling Method:	
Drilling Co.	Rig Type: SAME	Driller	
Depth to water :	Depth to Refusal:	Total Depth :	Log of Boring MW-3D24

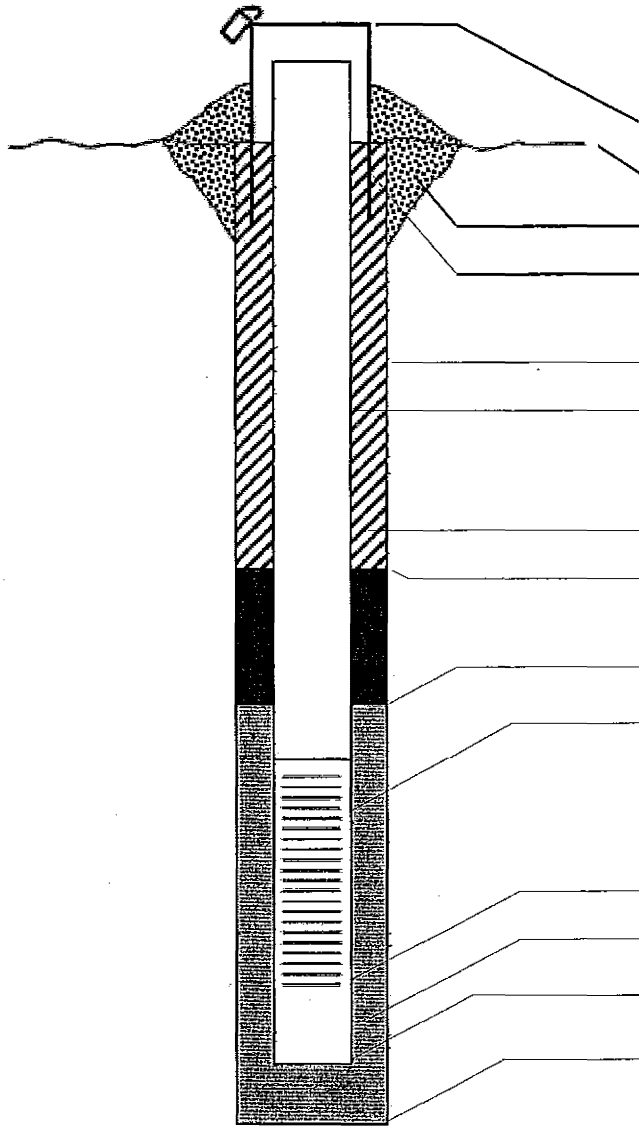
Well Construction	WL	Depth (feet)	Soil Samples	PID	recovery	Sample Description and Boring Notes
		50			1.3/9	0-1.3, Gray, ~~moist~~ wet, loose, fine to medium SAND, little silt (NKN)
		60				
		~~60~~			0/10	NO recovery 60-70'. Driller reports
		70				
		~~80~~			10/10	0-5 Brownish gray, wet, loose, fine SAND, some medium sand, micaceous, light iron oxide staining 5-6.6 Brownish gray, wet, loose, fine SAND, some rounded fine gravel, some silt, 6.6-7.5 Brownish grey, wet, soft, SILT, some fine sand, Iron oxide staining at 6.9 7.5-9.0 Reddish brown, wet, loose, medium to coarse SAND, little fine sand. 9.0-10 Greenish gray, wet, firm, SILT, some rounded and angular fine to medium gravel, little fine sand (Till?)
		25				
		30				
		35				
		40				
		45				
		50				

Notes:

Monitoring Well Construction Diagram

GeoSyntec Consultants | MACTEC

Client: de maximis	AOC: 16-Groundwater	Date Installed: 11/19/2004
Project No: 3617037023	Boring No: 4011	Installation contractor: Dragin
Field Technician: C. Ross	Well ID: MW-T24	Development method:



UNITS OF MEASURE					
Depth	ft	Diameter	in	Length	ft

Stick-up of Casing above ground surface:	0	ft
Ground Surface (GS) elevation:	185.5	ft
Type of surface protection:	Concrete / Roadbox	
Casing material	steel	
Casing ID:	8	in
Borehole diameter	8.25	in
Riser material	PVC	
Riser ID:	2	in
Riser lenght:	79.5	ft
Backfill material:	bentonite cement grout	
Depth of top of seal (below GS):	81	ft
Seal material:	1/4" Bentonite Pellets	
Depth of bottom of seal (below GS)	84.3	ft
Screen material:	PVC	
Screen ID:	2	in
Screen slot size:	0.01	in
Screen lenght:	4	ft
Depth of bottom of screen (below GS):	89.5	ft
Type of sandpack:	No.1 FilterPro Sand	
Depth of sediment sump with plug	90	ft
Depth of bottom of borehole (below GS)	91	ft

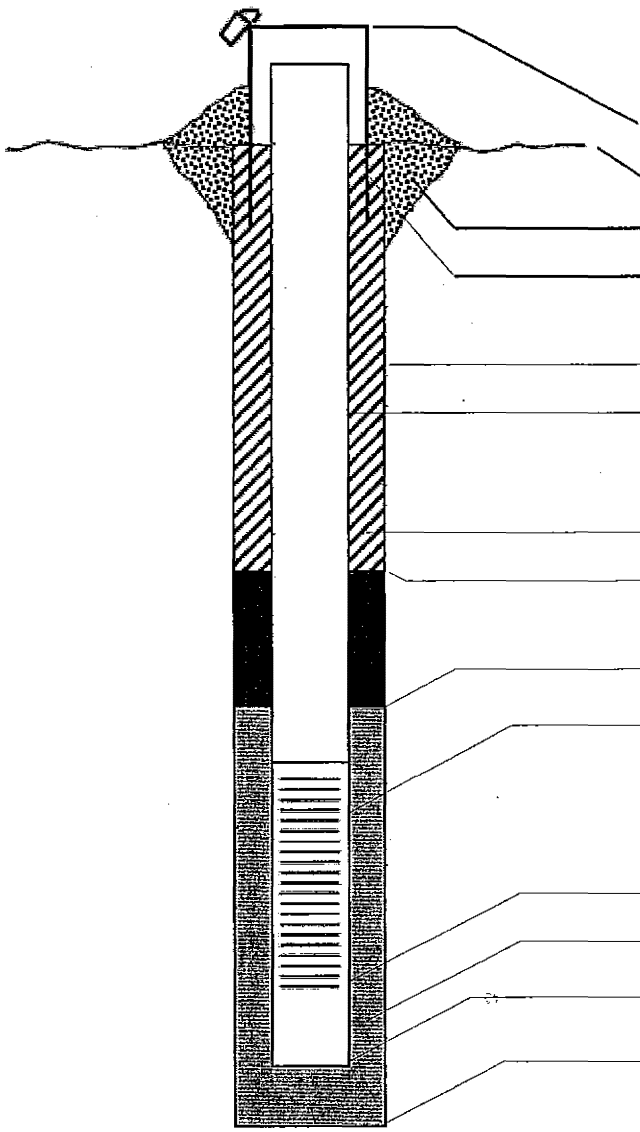
Comments:

Refusal on bedrock at 91 ft bgs; bentonite pellet seal constructed on rock from 91 to 90 ft bgs, then sandpack. Wellscreen is 4 feet long.

Monitoring Well Construction Diagram

GeoSyntec Consultants | MACTEC

Client:	de maximis	AOI:	16-Groundwater	Date Installed:	11/18/2004
Project No:	3617037023	Boring No:	0	Installation contractor:	Dragin
Field Technician:	M. Apfelbaum	Well ID:	MW-S07	Development method:	



UNITS OF MEASURE

Depth: ft | Diameter: in | Length: ft

Stick-up of Casing above ground surface:	0	ft
Ground Surface (GS) elevation:	190.800	ft
Type of surface protection:	Concrete / Roadbox	
Casing material	steel	
Casing ID:	8	in
Borehole diameter	8.25	in
Riser material	PVC	
Riser ID:	2	in
Riser lenght:	59	ft
Backfill material:	bentonite cement grout	
Depth of top of seal (below GS):	55	ft
Seal material:	1/4" Bentonite Pellets	
Depth of bottom of seal (below GS)	57.3	ft
Screen material:	PVC	
Screen ID:	2	in
Screen slot size:	0.01	in
Screen lenght:	10	ft
Depth of bottom of screen (below GS):	69	ft
Type of sandpack:	No.1 FilterPro Sand	
Depth of sediment sump with plug	69	ft
Depth of bottom of borehole (below GS)	105	ft

Comments:

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02464

Starmet

Concord, Massachusetts

Boring No. HB-PZ-2R
Page No. 1 of 2
File No. 7875.64
Checked By:

			Casing	Sampler
Drilling Co.	GZA Drilling, Inc.			
Foreman	Barry Wordell	Type	HSA to 45'	Split Spoon
GZA Rep.	Sue Bator	I.D./O.D.	3-3/4"-7-1/8"	1-3/8"/2"
Date Start	03/09/00 End 03/10/00	Hammer Wt.	5" Coring 45'	140#
Location	See Exploration Location Plan	Hammer Fall	52.5'	30"
GS. Elev.	Datum	Other	300# Hammer	

Groundwater Readings

Date	Time	Depth	Casing	Stab. Time
03/13/00	0930	40.8'	Out (OW)	60 Hrs.

DEPTH	CASING	BLOWS	Sample Information: No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Test Data	Sample Description & Classification	Stratum Description	NOTES	Protective Stickup
5								NO SAMPLES COLLECTED FROM 0-39'	FINE TO MEDIUM SAND. LITTLE FINE TO MEDIUM GRAVEL	1	Cement 0-1'
10											2" PVC Riser 0-51'±
15											Backfill 1-31.5'
20											
25											

Notes:

1. Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

GZA GeoEnvironmental, Inc.
Engineers/Scientists

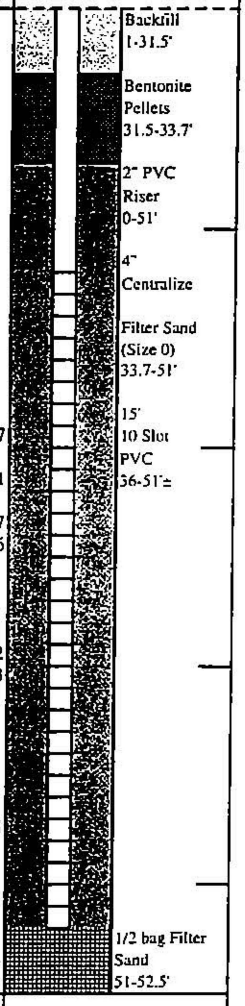
320 Needham Street
Newton Upper Falls, Massachusetts 02464

Starmet

Concord, Massachusetts

Boring No. HB-PZ-2R
Page No. 2 of 2
File No. 7875.64
Checked By:

DEPTH	CASING	BLOWS	Sample Information: No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Test Data	Sample Description & Classification	Stratum Description	NOTES
								NO SAMPLES COLLECTED FROM 0-39'		
35										
									39'	
40			S-1	24/4	39–41	7-6		Brown, fine to coarse SAND, some fine to medium Gravel, trace(-) Silt.		7
						8-6				1
			S-2	24/3	41–43	9-6		Brown, fine to coarse SAND, some fine to medium Gravel, trace(-) Silt.		7
	218					6-7				6
45			S-3	24/9	44–46	9-24		Brown, fine to coarse SAND, little fine to medium Gravel, trace(-) Silt.	FINE TO COARSE SAND, SOME GRAVEL	2
	240					21-26				3
			S-4	24/3	46–48	21-26		Black, gray and white COBBLE (stuck in tip).		
						28-84				
	220		S-5	24/6	48-50	21-15		Brown, fine to coarse SAND and fine to coarse GRAVEL, trace(-) Silt.		5
50						16-10				
			S-6	18/0	51-52.5	62-65		No recovery.		4
						60				
								Bottom of Boring at 52.5'.		
55										
60										



Notes:
1. Water table encountered at approximately 41'.
2. HSA used until depth of 45', running sands necessitated casing, samples <45' may not be undisturbed.
3. Approximately 65 gallons of water lost in boring with HSA.
4. Approximately 160 gallons of water and 6 cups vanflow (drilling mud additive) lost in boring with casing.
5. 2" spoon used to sample.
6. Casing blows not recorded 0'-45' because augers had started hole.
7. Material suspected as dropped during 45' HSA.

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

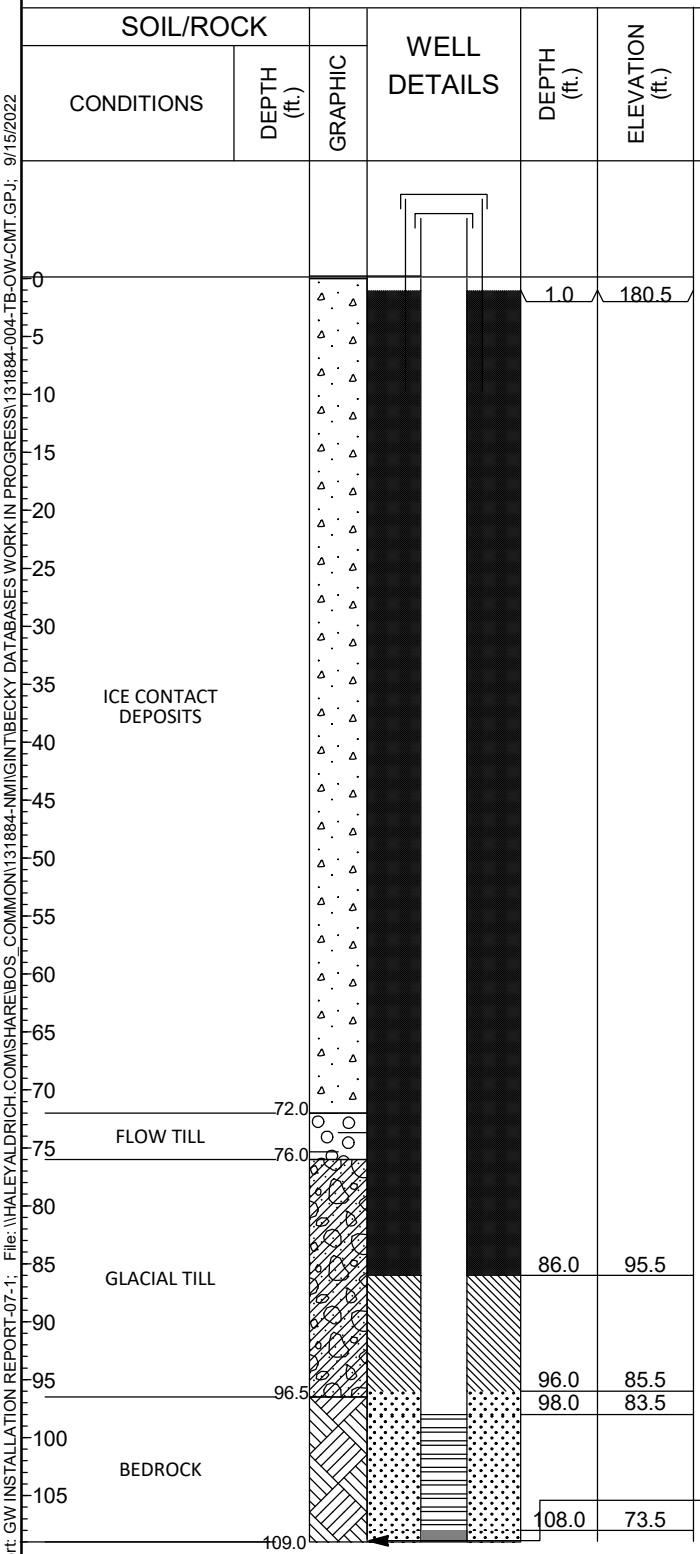
HALEY ALDRICH

Well No. HA20-CMT-3B(OW)
Boring No. HA20-CMT-3B(OW)

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	R. Maillette
Initial Water Level (depth bgs)	ft

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

File No.	131884-004
Date Installed	08 Jan 2021
H&A Rep.	D.M. Palleiko
Location	N 2985858.92 E 677671.6452
Ground El.	181.5
Datum	NGVD, 1929



WELL CONSTRUCTION DETAILS

Type of protective cover	Guard Pipe
Height of Guard Pipe above ground surface	3.0 ft
Height of top of riser above ground surface	2.8 ft
Type of protective casing	Guard Pipe
Length	5.0 ft
Inside diameter	4.0 in.
Depth of bottom of Guard Pipe	2.0 ft
Type of riser pipe	Sch. 40 PVC
Inside diameter of riser pipe	2.0 in.
Depth of bottom of riser pipe	98.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Grout	1.0	85.0
Bentonite	86.0	10.0
	-	-

Diameter of borehole	6.0 in.
Depth to top of well screen	98.0 ft
Type of screen	Machine slotted Sch 40 PVC
Screen gauge or size of openings	0.010/10 slot
Diameter of screen	2.0 in.
Type of Backfill around Screen	#0 Sand
Depth to bottom of well screen	108.0 ft
Bottom of silt trap	109.0 ft
Depth of bottom of borehole	109.0 ft

COMMENTS:

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

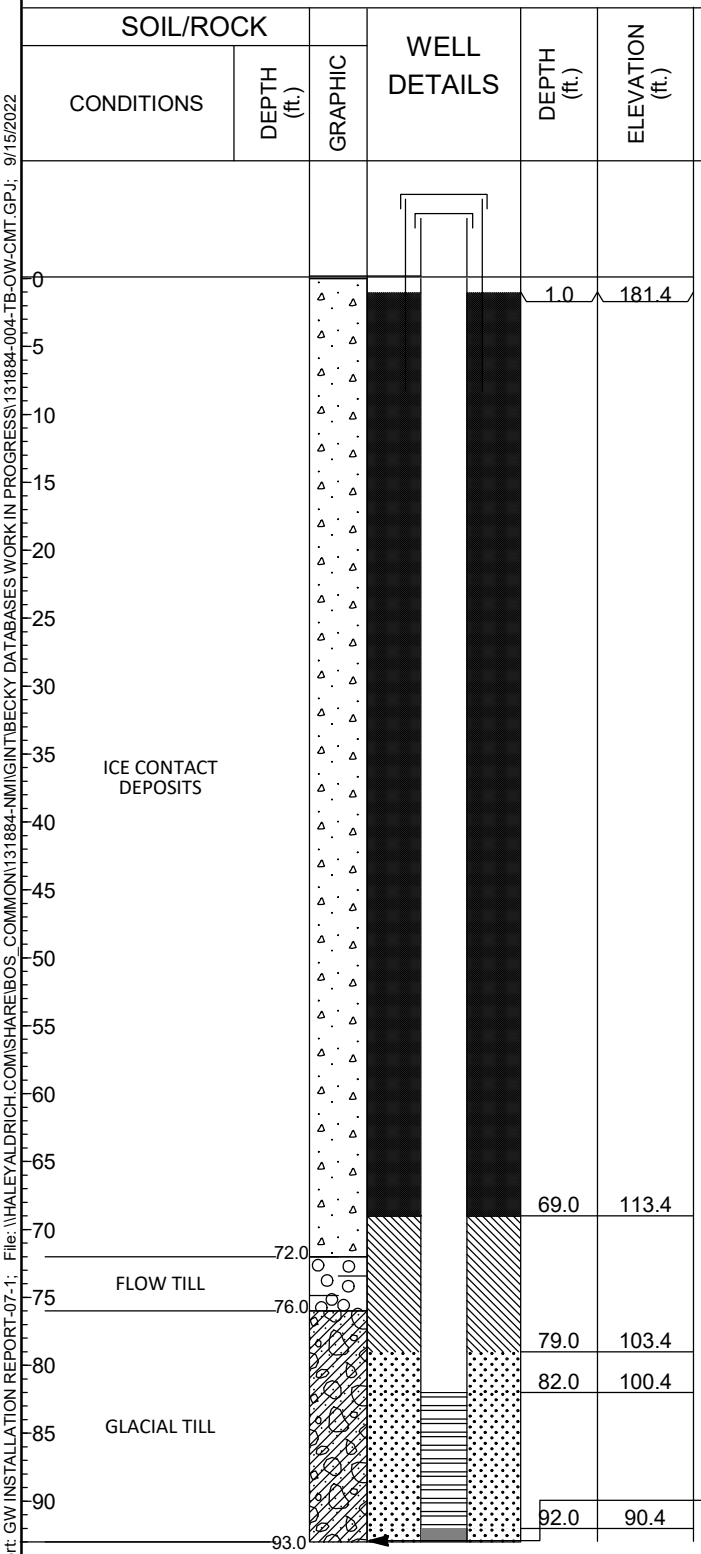
Well No. HA20-CMT-3T(OW)
Boring No. HA20-CMT-3T(OW)

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	R. Maillette
Initial Water Level (depth bgs)	ft

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	11 Jan 2021
H&A Rep.	D.M. Palleiko
Location	N 2985871.609 E 677669.132
Ground El.	182.4
Datum	NGVD, 1929



WELL CONSTRUCTION DETAILS

Type of protective cover	Guard Pipe
Height of Guard Pipe above ground surface	2.6 ft
Height of top of riser above ground surface	2.4 ft
Type of protective casing	Guard Pipe
Length	5.0 ft
Inside diameter	4.0 in.
Depth of bottom of Guard Pipe	2.4 ft
Type of riser pipe	Sch. 40 PVC
Inside diameter of riser pipe	2.0 in.
Depth of bottom of riser pipe	82.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Grout	1.0	68.0
Bentonite	79.0	10.0
	-	-

Diameter of borehole	6.0 in.
Depth to top of well screen	82.0 ft
Type of screen	Machine slotted Sch 40 PVC
Screen gauge or size of openings	0.010/10 slot
Diameter of screen	2.0 in.
Type of Backfill around Screen	#0 Sand
Depth to bottom of well screen	92.0 ft
Bottom of silt trap	93.0 ft
Depth of bottom of borehole	93.0 ft

COMMENTS:

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-3

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985853.904 E 677666.3042
Ground El. Datum	181.6

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
FILL	0			Grout to grade	
	5				
	10				
ICE CONTACT DEPOSITS	14.0				
	15				
	20				
	25				

HALEY ALDRICH

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-3

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985853.904 E 677666.3042
Ground El. Datum	181.6

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35				
	40				
	45			Bentonite Pellets	~~bottom of grout 45.0~~ top of bentonite pellets 45.0
	50				
	55				~~bottom of bentonite pellets 55.9~~ top of sand 55.9
				Top of Screen 57.9 Channel 1 58.0-58.3 Bottom of Screen 58.4 Bentonite Pellets	

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-3

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985853.904 E 677666.3042
Ground El. Datum	181.6

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	60				bottom of sand 60.9 top of bentonite pellets 60.9
	65				
FLOW TILL	70	70.0			
	75				
GLACIAL TILL		76.0			
	80				bottom of bentonite pellets 82.5 top of sand 82.5
	85			Top of Screen 84.9 Channel 2 85.0-85.3 Bottom of Screen 85.4 Bentonite Pellets	bottom of sand 87.5 top of bentonite pellets 87.5

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-3

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985853.904 E 677666.3042
Ground El. Datum	181.6

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
GLACIAL TILL...*continued*...	90				
TOP OF ROCK 76.5 FT	95				
BEDROCK	96.5				
	100				bottom of bentonite pellets 99.9 top of sand 99.9
				Top of Screen 101.9 Channel 3 and 6 102.0-102.3 Bottom of Screen 102.4 Bentonite Pellets	
	105				bottom of sand 104.4 top of bentonite pellets 104.4
	110				bottom of bentonite pellets 111.9 top of sand 111.9
				Top of Screen 112.9 Channel 4 113.0-113.3 Bottom of Screen 113.4 Bentonite Pellets	
	115				bottom of sand 116.4 top of bentonite pellets 116.4

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NM\IGINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

HALEY ALDRICH

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-3

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985853.904 E 677666.3042
Ground El. Datum	181.6

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	120				bottom of bentonite pellets 121.9 top of sand 121.9
	125			Top of Screen 123.9 Channel 5 124.0-124.3 Bottom of Screen 124.4 Bentonite Pellets	bottom of sand 126.4 top of bentonite pellets 126.4
	130				
	135				
	140				bottom of bentonite pellets 142.3 top of sand 142.3
	145			Top of Screen 145.4 Channel 7 145.5-145.7 Bottom of Screen 145.7	bottom of sand 145.7

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NM\IGINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164

Starmet Corporation

Concord, Massachusetts

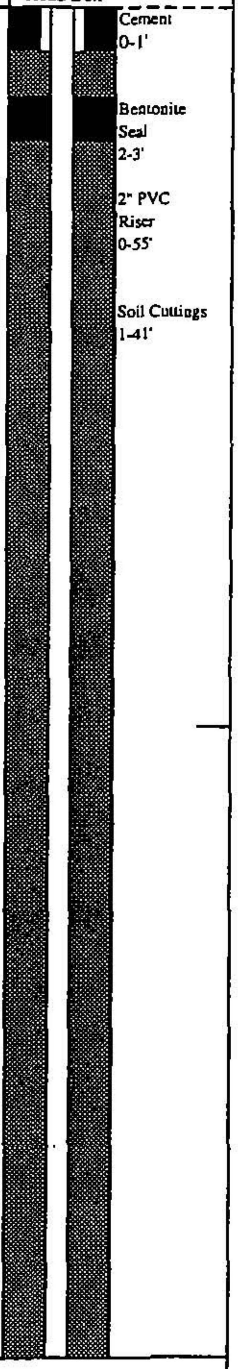
Boring No. HB-12
Page No. 1 of 2
File No. 7875.61
Checked By: SRH

			Casing	Sampler
Drilling Co.	GZA Drilling, Inc.			
Foreman	Norm Stuttard	Type	HSA	Split Spoon
GZA Rep.	Paul Lockwood	I.D./O.D.	4-3/4"/7-1/4"	1-3/8"/2"
Date Start	10/2/98 End 10/5/98	Hammer Wt.	-	140#
Location	See Exploration Location Plan	Hammer Fall	-	30"
Surf. Elev.	Datum	Other		

Groundwater Readings				
Date	Time	Depth	Casing	Stab. Time

DEPTH	CASING	BLOWS	Sample Information No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Test Data	Sample Description & Classification	Stratum Description	NOTES
			S-1	24/6	0-2	4-6	0.03	Medium dense, brown, fine to coarse SAND, trace(+) Gravel, Silt.		
						8-1				
5			S-2	24/13	5-7	10-10	0.05	Medium dense, brown, fine to coarse SAND, trace(+) Gravel.	FILL	
						10-9				
10			S-3	24/18	10-12	14-11	0.03	Medium dense, light brown, fine to coarse SAND, trace(+) Silt, trace(-) Gravel.		
						15-15			12' ±	
			S-4	24/23	15-17	19-27	0.05	Very dense, brown, fine SAND and SILT.	FINE SAND AND SILT	
						23-21				
20			S-5	24/23	20-22	12-24	0.08	Very dense, brown, fine SAND and SILT.		
						32-25			23.5' ±	
25			S-6	24/16	25-27	16-25	0.05	Very dense, light brown, fine to coarse SAND, trace(+) Gravel, trace(-) Silt.	FINE TO COARSE SAND	
						32-34				
			S-7	17/10	30-31.5	27-31	0.05	Very dense, light brown, fine to coarse SAND, some		

Road Box



Notes:

1. Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.
2. Field test data represents radiation measured by a Model 3 Ludlum Geiger Counter, units are in mREMS/hour. Background readings ranged from 0.02-0.04 mREMS/hour.

GZA GeoEnvironmental, Inc.
Engineers/Scientists

320 Needham Street
Newton Upper Falls, Massachusetts 02164

Starmet Corporation

Concord, Massachusetts

Boring No. HB-12
Page No. 2 of 2
File No. 7875.61
Checked By: SRH

DEPTH	CASING	BLOWS	Sample Information: No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Test Data	Sample Description & Classification	Stratum Description	NOTES
		S-7	17/10	17/10	30-31.5	27-31	0.05	Very dense, light brown, fine to coarse SAND, some Gravel, trace(-) Silt.	GRAVELLY FINE TO COARSE SAND	
						100/5"			32'±	
35		S-8	12/6	35-36	23-100/6"	0.03	Very dense, light brown, fine to coarse SAND, trace(-) Silt.			
40		S-9	24/13	40-42	32-41	0.05	Very dense, light brown, fine to coarse SAND, trace(+) Gravel.	FINE TO COARSE SAND		
						35-39				
45		S-10	24/16	45-47	23-27	0.05	Wet, very dense, brown, fine to coarse SAND, trace(-) Gravel.			
						32-26			48'±	
50		S-11	24/24	50-52	17-35	0.11	Wet, very dense, brown, fine to coarse SAND, little Gravel.	GRAVELLY FINE TO COARSE SAND		
						65-85			53'±	
55		S-12	18/18	55-56.5	11-24		Wet, very dense, brown, fine to coarse SAND, trace(-) Gravel.	FINE TO COARSE SAND		
						100/6"				
								Bottom of Boring at 57'.		
60										

Bentonite Seal 41-43'
Filter Sand 43-57'
2" PVC Wellscreen 45-55'

Notes:

GOLDBERG-ZOINO & ASSOCIATES, INC.
320 NEEDHAM ST, NEWTON UPPER FALLS, MA.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
Nuclear Metals Inc.
Concord, Massachusetts

REPORT OF BORING No. HB-7
SHEET 1 OF 2
FILE No. A-3646.2
CHKD. BY

BORING Co. D.L. Maher Co.
FOREMAN T. Pelezar
GZA ENGINEER M. Hall (slk)

BORING LOCATION See location plan
GROUND SURFACE ELEVATION _____ DATUM _____
DATE START 6-27-83 DATE END 6-29-83

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 15 in.
CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 in.
CASING SIZE: 2½" OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft.)	CASING (bl/ft)	SAMPLE No.	SAMPLE PEN. (in) / REC.	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION (1) Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
						Fine to coarse SAND, trace Silt	2	FINE TO COARSE SILTY SAND (FILL)
5	10	S-1	24/1	5-7	14-28-15-9	Bituminous concrete	3	
	15							
	12							
	12							
	15							
10	21	S-2	24/8	10-12	62-18-15-14	Dense brown fine to medium SAND, little Silt, trace fine Gravel (Fill)	4	11.0'
	16							MEDIUM TO DENSE SILT
	13							13.0'
	18					Medium dense grayish-brown SILT, trace (-) fine Sand. Conductivity 33.9		
	20							
15	8	S-3	24/6	15-17	21-18-29-34	Dense brown fine to medium SAND, little Silt, trace fine Gravel. Conductivity 15.4		DENSE BROWN FINE TO COARSE SAND
	9							
	9							
	17							
	18							
20	13	S-4	24/3	20-22	19-10-10-11	Medium dense brown fine to coarse SAND, trace Silt, trace fine Gravel. Conductivity 24.5		
	16							
	19							
	23							
	22							
25	17	S-5	18/4	25-26.5	30-34-39	Very dense brown fine to medium to coarse SAND, some fine Gravel, trace Silt. Conductivity 22.2	5	
	18							
	15							
	22							28.5'
	30							
30	10	S-6	24/18	30-32	7-15-10-11	Medium dense brown fine SAND, trace (-) Silt. Conductivity 13.9		MEDIUM DENSE FINE SAND
	16							
	17							
	24							34.0'
	48							

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT.	DENSITY	BLOWS/FT.	DENSITY
0-4	V. LOOSE	< 2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
>50	V. DENSE	15-30	V. STIFF
		>30	HARD

REMARKS: (1) Conductivity measurements performed on equal mixture of soil and distilled water using an Extech digital conductivity meter.
(2) Description of wash sample 1-5'.
(3) No Conductivity test taken.
(4) Both samples in same jar.
(5) Piece of metal in wash at 28'±.

GZA
NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING No. HB-7

GOLDBERG-ZOINO & ASSOCIATES, INC.
320 NEEDHAM ST, NEWTON UPPER FALLS, MA.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
Nuclear Metals Inc.
Concord, Massachusetts

REPORT OF BORING No. HB-7
SHEET 2 OF 2
FILE No. A-3646.2
CHKD. BY

DEPTH (ft.)	CASING (bl/ft)	SAMPLE No.	SAMPLE PEN. (in)/REC.	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
	22	S-7	24/15	35-37	94-30-29-28	Very dense grayish brown fine to coarse SAND, trace fine Gravel, trace Silt. Conductivity 17.6'	6	
	20							
	20							
	22							
	28							
40	27	S-8	12/3	40-41	20-79	Very dense brown fine to coarse SAND, trace fine Gravel, trace Silt. Conductivity 9.7'		VERY DENSE FINE TO COARSE SAND
	23							
	24							
	34							
45	31							
	34	S-9	24/6	45-47	97-40-32-25	Very dense brown fine to coarse SAND and GRAVEL, trace Silt. Conductivity 103.7'		
	37							
	47							
	40							
50	41							
		S-10	4/2	50-50.3	100/4"	Very dense brown fine to coarse SAND, trace Silt. Conductivity 24.9'	7	
55	89	S-11	8/3	55-55.7	152-55/2"	Very dense brown medium to coarse SAND, little Silt, trace fine Gravel. Conductivity 12.1'		
	63							
	54							
	62							
	75							
60		S-12	6/5	60-60.2	207/6"	Very dense brown medium to coarse SAND and GRAVEL, little Silt		60.5'
		S-12A		60.3-60.5		S-12A: Very dense brown fine to medium SAND and GRAVEL, little Clayey Silt of slight plasticity. Conductivity 56.6'		VERY DENSE SAND AND GRAVEL
								64.0' (?)
65	137	S-13	6/6	65-65.6	105/6"	Very dense brown fine to medium SAND, trace (-) Silt. Conductivity 18.6'		VERY DENSE FINE TO MEDIUM SAND
	130							
	191							
	261							
	278							70.0'
70	163	S-14	6/3	70-70.6	134/6"	Very dense brown fine to medium SAND, some Clayey Silt of slight plasticity, trace fine Gravel. Conductivity 22.8'		VERY DENSE FINE TO MEDIUM SAND SOME SILT
	114							
	119							
	166							
75	359	S-15	12/8	74-75	40-86	Very dense brown fine to medium SAND, some Clayey Silt of slight plasticity. Conductivity 615		75.3'
						Bottom of boring at 75.3' (Refusal)		

REMARKS:

(6) Piece of gravel caught in spoon sampler
(7) Well installed at completion of boring, 1¼" PVC pipe.
Screen 61.0-74.0
Bentonite seals 74.0-75.3', approximately 59.0'-60.0', 0-1'

GOLDBERG-ZOINO & ASSOCIATES, INC.
320 NEEDHAM ST, NEWTON UPPER FALLS, MA.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
Nuclear Metals Inc.
Concord, Massachusetts

REPORT OF BORING No. HB-8
SHEET 1 OF 3
FILE No. A-3646.2
CHKD. BY

BORING Co. D.L. Maher Co.
FOREMAN T. Pelezar
GZA ENGINEER Mary Hall (slk)

BORING LOCATION See location plan
GROUND SURFACE ELEVATION _____ DATUM _____
DATE START 6-20-83 DATE END 6-22-83

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 15 in.
CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 in.
CASING SIZE: 2½" OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
6-21	8a.m.	30+	30'	18 hrs. (1)
6-22	8a.m.	27.8	20'	18 hrs.
6-23	8a.m.	32.9	0'	18 hrs.

DEPTH (ft.)	CASING (bl/ft)	SAMPLE No.	SAMPLE PEN. (in) / REC.	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION — CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
5		S-1	24/0	5.0-7.0	1-2-5-6	No recovery		
		S-1A	24/3	7.0-9.0	5-5-4-3	Loose brown medium to coarse SAND, trace Silt. (Fill) Conductivity 74.1		MEDIUM TO COARSE SAND (FILL)
	5							
10	4							
	5							
	6							
	7							
	6							
	8							
15	21	S=2	24/2	14.0-16.0	7-8-10-16	Medium dense brown medium to coarse SAND, little fine Gravel, trace Silt (Fill). Conductivity 57.3		
	16							
	17							
	19							
	21							
20	10	S-3	24/3	20.0-22.0	6-7-7-8	Medium dense brown fine to medium SAND, trace fine Gravel, trace Silt (Fill). Conducitvity 20.4		23.0' (?)
	21							
	18							
	15							
	24							
25	21	S-4	24/4	25.0-27.0	18-17-19-20	Dense brown SILT, trace fine Sand. Conductivity 34.0		DENSE SILT
	26							
	21							
	24							
30	25	S-5	24/½	30.0-32.0	11-16-16-19	Dense brown SILT, trace fine Sand		
		S-5A	24/15	30.0-32.0	4-8-15-25	Dense brown SILT, trace fine Sand. Conductivity 37.5	2	32.0'

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT.	DENSITY	BLOWS/FT.	DENSITY
0-4	V. LOOSE	<2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
>50	V. DENSE	15-30	V. STIFF
		>30	HARD

REMARKS:
(1) No water in hole but soil at bottom was wet.
(2) Both samples in same jar.

GZA

NOTES: 1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GOLDBERG-ZOINO & ASSOCIATES, INC.
320 NEEDHAM ST, NEWTON UPPER FALLS, MA.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
Nuclear Metals Inc.
Concord, Massachusetts

REPORT OF BORING No. HB-8
SHEET 2 OF 3
FILE No. A-3646.2
CHKD. BY

DEPTH (ft.)	CASING (bl/ft)	SAMPLE No.	SAMPLE PEN./REC. (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION
	12	S-6	24/2	35-37	10-8-12-12	Medium dense medium to coarse SAND, little Silt, little fine Gravel. Conductivity 8.8		
	13							
	20							
	21							
	25							
40	16	S-7	24/3	40-42	22-19-15-16	Dense brown fine to coarse SAND, some fine Gravel, little Silt. Conductivity 16.9		DENSE FINE TO COARSE SAND, LITTLE GRAVEL
	18							
	20							
	36							
	30							
45	30	S-8	24/2	45-47	15-10-9-10	Medium dense brown fine to coarse SAND, little fine Gravel, trace Silt. Conductivity 23.7	3	
	26							
	27							
	26							
	37							
50	74	S-9	18/15	50-52	25-49-100	Very dense brown fine to coarse SAND, trace fine Gravel, trace Silt. Conductivity 79.0	4	
	55							
	61							
	52							
	48							
55	34	S-10	24/2	55-57	61-38-35-32	Very dense brown fine to coarse SAND, little fine Gravel, trace Silt. Conductivity 16.0	3	
	40							
	57							
	58							
60	48	S-11	15/15	59-60.2	29-70-162/3"	Very dense brown fine to medium SAND, trace fine Gravel, trace Silt. Conductivity 170.0		
	81							
	66							62.0'
	77							
	64							
	76							
65	72	S-12	24/15	65-67	24-25-29-33	Very dense brown fine SAND, trace Silt. Conductivity 81.5		VERY DENSE FINE SAND
	59							
	61							
	66							
70	58	S-13	18/15	69-70.5	57-84/12	Very dense brown fine SAND, trace Silt	4	
	131						5	
	87							
	58							73.0'
	85							
	75							

REMARKS:
(3) Piece of gravel caught in spoon.
(4) Casing moved down 6" while taking sample.
(5) No conductivity reading taken.

GZA

GOLDBERG-ZOINO & ASSOCIATES, INC.
320 NEEDHAM ST, NEWTON UPPER FALLS, MA.
GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS

PROJECT
Nuclear Metals Inc.
Concord, Massachusetts

REPORT OF BORING No. HB-8
SHEET 3 OF 3
FILE No. A-3646.2
CHKD. BY

DEPTH (ft.)	CASING (bl/ft)	SAMPLE No.	SAMPLE PEN. (in)/REC.	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
	204	S-14	20/20	75-76.7	10-59-99-67/2"	Very dense gray SILT & CLAY of low plasticity, some fine to coarse Sand, trace fine Gravel. (Till) Conductivity 810.	6	VERY DENSE GLACIAL TILL 77'
	280					Bottom of boring at 77' (Refusal)		
80								
85								
90								

REMARKS:

(6) Well installed at bottom of boring. 1½" PVC pipe. Screen 61.0'-76.0'. Bentonite seals 76.0'-77.0', 0-1'
PVC pipe moved up approximately 3' while removing casing.

(7) Refer to note 1 on Log HB-7 for description of conductivity testing procedure.

GZA

BORING No. HB-8

HALEY ALDRICH

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-2

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985760.827 E 677653.9087
Ground El. Datum	187.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
FILL	0			Grout to grade	
	5				
	10				
	15				
	20				
ICE CONTACT DEPOSITS	22.0				
	25				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-2

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985760.827 E 677653.9087
Ground El. Datum	187.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35				
	40				bottom of grout 43.0
	45			Bentonite Pellets	
	50				top of bentonite pellets 53.0
	55				bottom of bentonite pellets 59.3 top of sand 59.3

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-2

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985760.827 E 677653.9087
Ground El. Datum	187.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	60			Top of Screen 61.4 Channel 4 and 1 61.5-61.8 Bottom of Screen 61.9 Bentonite Pellets	bottom of sand 63.9 top of bentonite pellets 63.9
	65				
GLACIAL TILL	66.0				
	70				
	75				
	80				bottom of bentonite pellets 83.4 top of sand 83.4
TOP OF ROCK 85.5 FT	85				bottom of sand 85.0 top of bentonite pellets 85.0
BEDROCK	85.5			Top of Screen 85.4 Channel 5 and 2 85.5-85.8 Bottom of Screen 85.9 Bentonite Pellets	bottom of bentonite pellets 89.4 top of sand 89.4

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-2

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985760.827 E 677653.9087
Ground El. Datum	187.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	90			Top of Screen 91.4 Channel 3 91.5-91.8 Bottom of Screen 91.9 Bentonite Pellets	bottom of sand 93.9 top of bentonite pellets 93.9
	95				
	100				
	105				
	110				
	115				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-2

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	10 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985760.827 E 677653.9087
Ground El. Datum	187.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	120				bottom of bentonite pellets 120.9 top of sand 120.9
				Top of Screen 122.9 Channel 6 123.0-123.3 Bottom of Screen 123.4 Bentonite Pellets	
	125				bottom of sand 125.4 top of bentonite pellets 125.4
	130				bottom of bentonite pellets 133.4 top of sand 133.4
	135				bottom of sand 135.6
BOTTOM OF EXPLORATION 135.6 FT	135.6			Top of Screen 135.4 Channel 7 Bottom of Screen 135.6	

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-1

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	06 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985714.75 E 677779.6621
Ground El. Datum	177.1

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS	0			Grout to grade	
	5				
	10				
	15				
	20				
	25				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-1

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	06 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985714.75 E 677779.6621
Ground El. Datum	177.1

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35				
	40				
	45			Bentonite Pellets	bottom of grout 45.0 top of bentonite pellets 45.0
	50				bottom of bentonite pellets 52.0 top of sand 52.0
	55			Top of Screen 55.9 Channel 1 56.0-56.3 Bottom of Screen 56.5 Bentonite Pellets	

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-1

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	06 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985714.75 E 677779.6621
Ground El. Datum	177.1

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
GLACIAL TILL	60.0				bottom of sand 60.0 top of bentonite pellets 60.0
					bottom of bentonite pellets 63.0 top of sand 63.0
				Top of Screen 64.9 Channel 2 65.0-65.3 Bottom of Screen 65.4 Bentonite Pellets	
					bottom of sand 68.0 top of bentonite pellets 68.0
					bottom of bentonite pellets 70.7 top of sand 70.7
BEDROCK	72.0				
				Top of Screen 72.9 Channel 3 and 6 73.0-73.3 Bottom of Screen 73.4 Bentonite Pellets	
					bottom of sand 77.0 top of bentonite pellets 77.0
					bottom of bentonite pellets 83.0 top of sand 83.0
				Top of Screen 85.9 Channel 5 86.0-86.3 Bottom of Screen 86.4 Bentonite Pellets	
					bottom of sand 88.0 top of bentonite pellets 88.0

60 65 70 75 80 85

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-1

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	06 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985714.75 E 677779.6621
Ground El. Datum	177.1

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	90				bottom of bentonite pellets 91.0 top of sand 91.0
	95			Top of Screen 94.3 Channel 6 94.4-94.7 Bottom of Screen 94.8	bottom of sand 94.8

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-6

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985799.469 E 677818.2195
Ground El. Datum	177.3

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
FILL	0			Grout to grade	
	5				
	10				
	15				
ICE CONTACT DEPOSITS	16.0				
	20				
	25				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-6

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985799.469 E 677818.2195
Ground El. Datum	177.3

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35				
	40				
	45				
				Bentonite Pellets	bottom of grout 48.0 top of bentonite pellets 48.0
	50				
	55				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-6

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985799.469 E 677818.2195
Ground El. Datum	177.3

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	60				bottom of bentonite pellets 48.0 top of sand 63.0
	65			Top of Screen 65.0 Channel 65.1-65.4 Bottom of Screen 65.5 Bentonite Pellets	bottom of sand 67.5 top of bentonite pellets 67.5
FLOW TILL	68.0				
GLACIAL TILL	70				
TOP OF ROCK 76.5 FT	75				bottom of bentonite pellets 75.0 top of sand 75.0
BEDROCK	76.5			Top of Screen 77.0 Channel 4 and 1 77.1-77.4 Bottom of Screen 77.5 Bentonite Pellets	bottom of sand 79.5 top of bentonite pellets 79.5
	80				bottom of bentonite pellets 81.0 top of sand 81.0
	85			Top of Screen 83.0 Channel 3 83.1-83.4 Bottom of Screen 83.5 Bentonite Pellets	bottom of sand 85.5 top of bentonite pellets 85.5

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-6

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985799.469 E 677818.2195
Ground El. Datum	177.3

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	90				
	95				bottom of bentonite pellets 97.5 top of sand 97.5
	100			Top of Screen 99.5 Channel 5 99.6-99.9 Bottom of Screen 100.0 Bentonite Pellets	bottom of sand 102.0 top of bentonite pellets 102.0
	105				
	110				
	115				bottom of bentonite pellets 116.0 top of sand 116.0
				Top of Screen 118.0 Channel 6 118.1-118.3 Bottom of Screen 118.5	

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-6

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez/F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Dec 2020
H&A Rep.	A. Midgley
Location	N 2985799.469 E 677818.2195
Ground El. Datum	177.3

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	120			Bentonite Pellets	bottom of sand 120.5 top of bentonite pellets 120.5
					bottom of bentonite pellets 123.3 top of sand 123.3
	125			Top of Screen 125.3 Channel 7 Bottom of Screen 126.5	bottom of sand 126.5

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

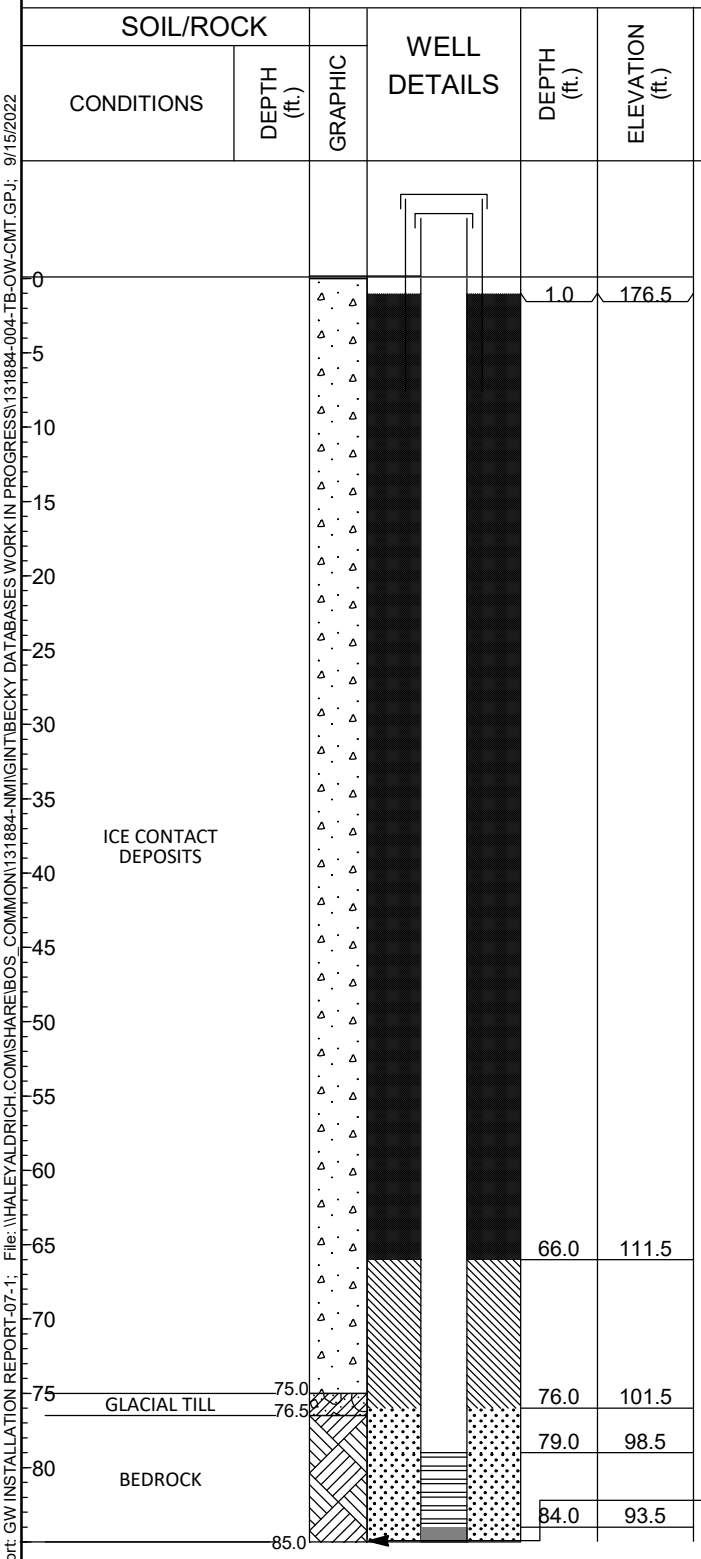
HALEY ALDRICH

Well No. HA20-CMT-6(OW)
Boring No. HA20-CMT-6(OW)

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	R. Maillette
Initial Water Level (depth bgs)	ft

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

File No.	131884-004
Date Installed	13 Jan 2021
H&A Rep.	D.M. Palleiko
Location	N 2985790.239 E 677815.007
Ground El.	177.5
Datum	NGVD, 1929



WELL CONSTRUCTION DETAILS

Type of protective cover	Guard Pipe
Height of Guard Pipe above ground surface	2.9 ft
Height of top of riser above ground surface	2.8 ft
Type of protective casing	Guard Pipe
Length	5.0 ft
Inside diameter	4.0 in.
Depth of bottom of Guard Pipe	2.1 ft
Type of riser pipe	Sch. 40 PVC
Inside diameter of riser pipe	2.0 in.
Depth of bottom of riser pipe	79.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Grout	1.0	65.0
Bentonite	66.0	10.0
	-	-

Diameter of borehole	6.0 in.
Depth to top of well screen	79.0 ft
Type of screen	Machine slotted Sch 40 PVC
Screen gauge or size of openings	0.010/10 slot
Diameter of screen	2.0 in.
Type of Backfill around Screen	#0 Sand
Depth to bottom of well screen	84.0 ft
Bottom of silt trap	85.0 ft
Depth of bottom of borehole	85.0 ft

COMMENTS:

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-5

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985880.983 E 677820.574
Ground El. Datum	173.5

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
FILL	0			Grout to grade	
ICE CONTACT DEPOSITS	2.0				
	5				
	10				
	15				
	20				
	25				

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-5

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985880.983 E 677820.574
Ground El. Datum	173.5

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35			Bentonite Pellets	bottom of grout 35.0 top of bentonite pellets35.0
	40				bottom of bentonite pellets 40.0 top of sand 40.0
	45			Top of Screen 44.9 Channel 1 45.0-45.3 Bottom of Screen 45.4 Bentonite Pellets	
	50				bottom of sand 50.0 top of bentonite pellets 50.0
	55				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-5

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985880.983 E 677820.574
Ground El. Datum	173.5

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	60				bottom of bentonite pellets 60.0 top of sand 60.0
	65			Top of Screen 64.9 Channel 2 65.0-65.3 Bottom of Screen 65.4 Bentonite Pellets	bottom of sand 68.0 top of bentonite pellets 68.0
FLOW TILL	70	70.0			bottom of bentonite pellets 70.6 top of sand 70.6
	75			Top of Screen 72.9 Channel 3 73.0-73.3 Bottom of Screen 73.4 Bentonite Pellets	bottom of sand 76.0 top of bentonite pellets 76.0
GLACIAL TILL TOP OF ROCK 77.8 FT BEDROCK		76.0 77.8			bottom of bentonite pellets 79.0 top of sand 79.0
	80			Top of Screen 81.9 Channel 4 82.0-82.3 Bottom of Screen 82.5 Bentonite Pellets	
	85				bottom of sand 86.0 top of bentonite pellets 86.0
					bottom of bentonite pellets 89.0 top of sand 89.0

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-5

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985880.983 E 677820.574
Ground El. Datum	173.5

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	90			Top of Screen 91.9 Channel 5 92.0-92.3 Bottom of Screen 92.4 Bentonite Pellets	bottom of sand 97.0 top of bentonite pellets 97.0
	95				
	100				
	105				
	110				bottom of bentonite pellets 113.0 top of sand 113.0
	115			Top of Screen 116.9 Channel 6 117.0-117.3 Bottom of Screen 117.4 Bentonite Pellets	

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-5

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	O. Gonzalez

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	15 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985880.983 E 677820.574
Ground El. Datum	173.5

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	120				bottom of sand 122.0 top of bentonite pellets 122.0
	125				bottom of bentonite pellets 125.0 top of sand 125.0
	130			Top of Screen 129.4 Channel 7 129.4-129.6 Bottom of Screen 129.6	bottom of sand 129.6

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

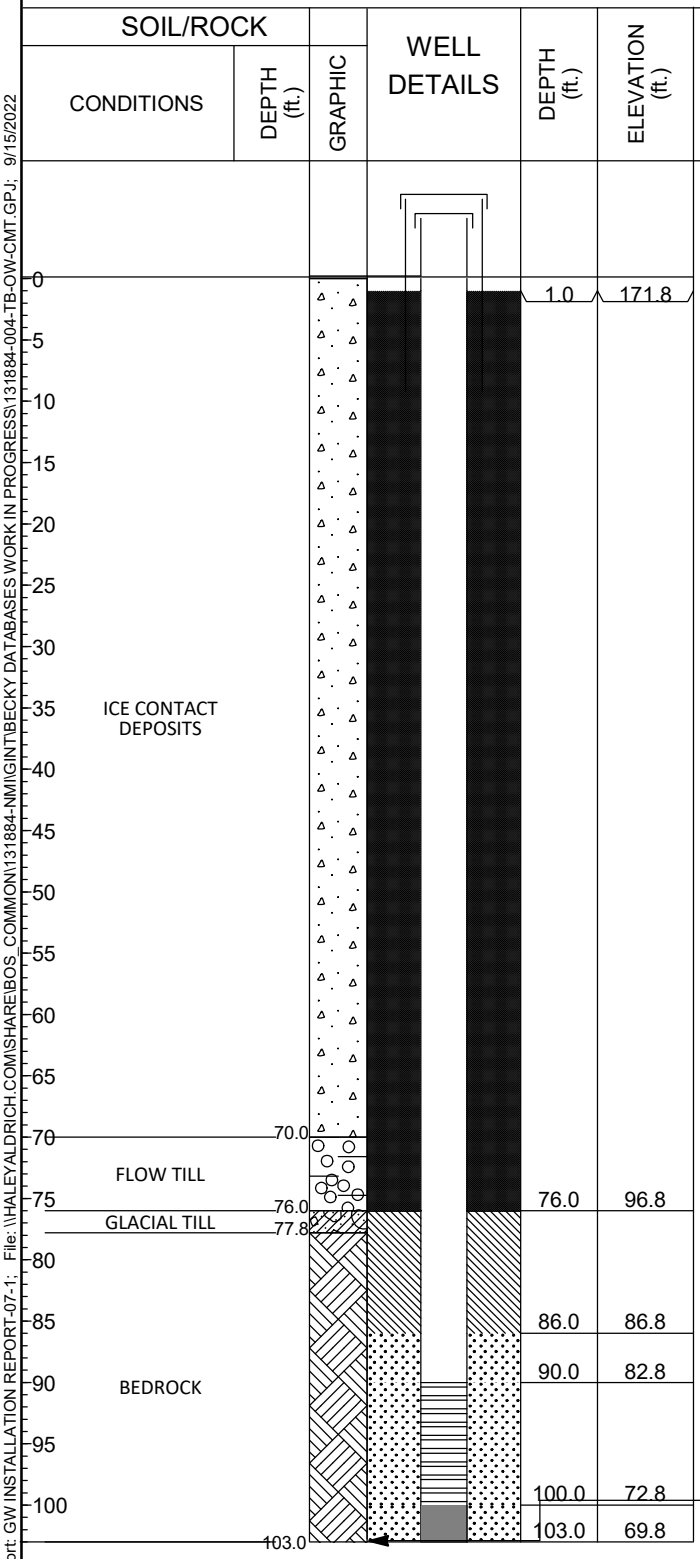
Well No. HA20-CMT-5(OW)
Boring No. HA20-CMT-5(OW)

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	R. Maillette
Initial Water Level (depth bgs)	ft

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	16 Jan 2021
H&A Rep.	D.M. Palleiko
Location	N 2985892.135 E 677817.646
Ground El.	172.8
Datum	NGVD, 1929



WELL CONSTRUCTION DETAILS

Type of protective cover	Guard Pipe
Height of Guard Pipe above ground surface	3.0 ft
Height of top of riser above ground surface	2.9 ft
Type of protective casing	Guard Pipe
Length	5.0 ft
Inside diameter	4.0 in.
Depth of bottom of Guard Pipe	2.0 ft
Type of riser pipe	Sch. 40 PVC
Inside diameter of riser pipe	2.0 in.
Depth of bottom of riser pipe	90.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Grout	1.0	75.0
Bentonite	76.0	10.0
	-	-

Diameter of borehole	6.0 in.
Depth to top of well screen	90.0 ft
Type of screen	Machine slotted Sch 40 PVC
Screen gauge or size of openings	0.010/10 slot
Diameter of screen	2.0 in.
Type of Backfill around Screen	#0 Sand
Depth to bottom of well screen	100.0 ft
Bottom of silt trap	103.0 ft
Depth of bottom of borehole	103.0 ft

COMMENTS:

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-4

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	13 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985929.262 E 677779.7947
Ground El. Datum	173.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS	0			Grout to grade	
	5				
	10				
	15				
	20				
	25				

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

Boring No. HA20-CMT-4

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	13 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985929.262 E 677779.7947
Ground El. Datum	173.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	30				
	35				
	40				
	45				bottom of grout 46.0
				Bentonite Pellets	top of bentonite pellets 46.0
	50				
	55				bottom of bentonite pellets 58.0 top of sand 58.0

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-4

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No. 131884-004
Date Installed 13 Jan 2021
H&A Rep. A. Midgley
Location N 2985929.262
E 677779.7947

Ground El. 173.9
Datum

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
ICE CONTACT DEPOSITS...*continued*...	60				
	65			Top of Screen 61.9 Channel 1 62.0-62.3 Bottom of Screen 62.4 Bentonite Pellets	bottom of sand 67.0 top of bentonite pellets 67.0
	70				
GLACIAL TILL	74.0				bottom of bentonite pellets 75.0 top of sand 75.0
	75				
	80			Top of Screen 78.9 Channel 2 79.0-79.3 Bottom of Screen 79.4 Bentonite Pellets	bottom of sand 84.0 top of bentonite pellets 84.0
	85				
TOP OF ROCK 88.0 FT BEDROCK	88.0				bottom of bentonite pellets 88.0 top of sand 88.0

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NM\IGINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022

CONTINUOUS MULTICHANNEL TUBING WELL INSTALLATION REPORT

HALEY ALDRICH

Boring No. HA20-CMT-4

Project	NUCLEAR METALS INC.
Location	CONCORD, MA
Client	DE MAXIMIS, INC.
Contractor	Cascade Drilling
Driller	F. Gardella

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No.	131884-004
Date Installed	13 Jan 2021
H&A Rep.	A. Midgley
Location	N 2985929.262 E 677779.7947
Ground El. Datum	173.9

Soil/Rock CONDITIONS	DEPTH (ft.)	GRAPHIC	Well Details	Borehole Backfill	Installation Comments
BEDROCK...*continued*...	90			Top of Screen 90.9 Channel 3 and 6 91.0-91.3 Bottom of Screen 91.4 Bentonite Pellets	
	95				bottom of sand 95.0 top of bentonite pellets 95.0
	100				bottom of bentonite pellets 100.0 top of sand0100.0
				Top of Screen 102.9 Channel 4 103.0-103.3 Bottom of Screen 103.4 Bentonite Pellets	
	105				bottom of sand 106.0 top of bentonite pellets0106.0
					bottom of bentonite pellets 109.0 top of sand
	110			Top of Screen 110.9 Channel 5 111.0-111.3 Bottom of Screen 111.4 Bentonite Pellets	
				Top of Screen 113.0 Channel 7 Bottom of Screen 113.2	

Report: CMT REPORT; File: \\HALEYALDRICH.COM\SHARE\BOS_COMMON\131884-NMI\GINT\BECKY DATABASES WORK IN PROGRESS\131884-004-TB-OW-CMT.GPJ; 9/12/2022