2nD Phase Radium Samples

Monitoring Well Sampling

Attached are the proposed list of wells around GM-15S and Bethpage Water District Plant 4. Prior to sampling, depth to water will be measured at each well. All wells will then be purged and sampled using a submersible pump, or an alternative method, depending on the observed depth to groundwater and logistical issues. Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters (i.e., pH, dissolved oxygen, etc. as described in the USEPA low-flow sampling requirements) will be collected using a water quality meter with flow-through cell until parameters stabilized before samples are collected.

Samples will be analyzed for Radium 226/228, Isotopic Uranium and Isotopic Thorium. For this effort, Gross Alpha and Gross Beta analysis are not recommended as these are normally utilized as screening methods used as potential triggers for the need for the above analysis and are not reliable sources of information compared to isotopic results.

Wells to be sampled for Radiological Parameters:

GM-15S

Upgradient from GM-15

HN-40 S,I (Navy OU2)

TT-304 S,I,D (Navy OU2)

TT-307 S,I,D (Navy OU2)

MW-107-1 (Northrop Grumman OU3)

Side gradient from GM-15

GM-19 S,I (Northrop Grumman OU2)

GM-74 I,D, D2 (Northrop Grumman OU2)

MW-109-3 (Northrop Grumman OU3)

MW-111-4 (Northrop Grumman OU3)

Dowgradient from GM-15

Well 19 (Northrop Grumman OU2)

GM-37 D, D2 (Northrop Grumman OU2)

GM-79 I,D (Navy OU2)

GM-71D2 (Navy OU2)

MW-7 (Northrop Grumman OU3)

Analytical Laboratory

All groundwater samples collected will be submitted to Lab (state contract lab), located in. Lab is a NYSDOH ELAP certified laboratory meeting specifications for documentation, reduction and reporting.

Reporting Limit

For the well sampling effort at the NG site, here are the proposed analysis methods and reporting limits (RL).

- Isotopic Uranium : DOE HASL-300 U-02 RL = 0.5 pCi/L
- Isotopic Thorium : DOE HASL-300 Th-01 RL = 0.5 pCi/L
- Radium-226 : EPA Method 903.1 RL = 1.0 pCi/L
- Radium-228: EPA Method 904.0 RL = 1.0 pCi/L

Sample Handling and Analysis

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples as well as sampling packaging and shipping procedures.

Field Sample Handling

The types of containers, volumes needed, and preservation techniques for the aforementioned testing parameters are presented in Table 1.

Sample Custody Documentation

The purpose of documenting sample custody is to confirm that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis.

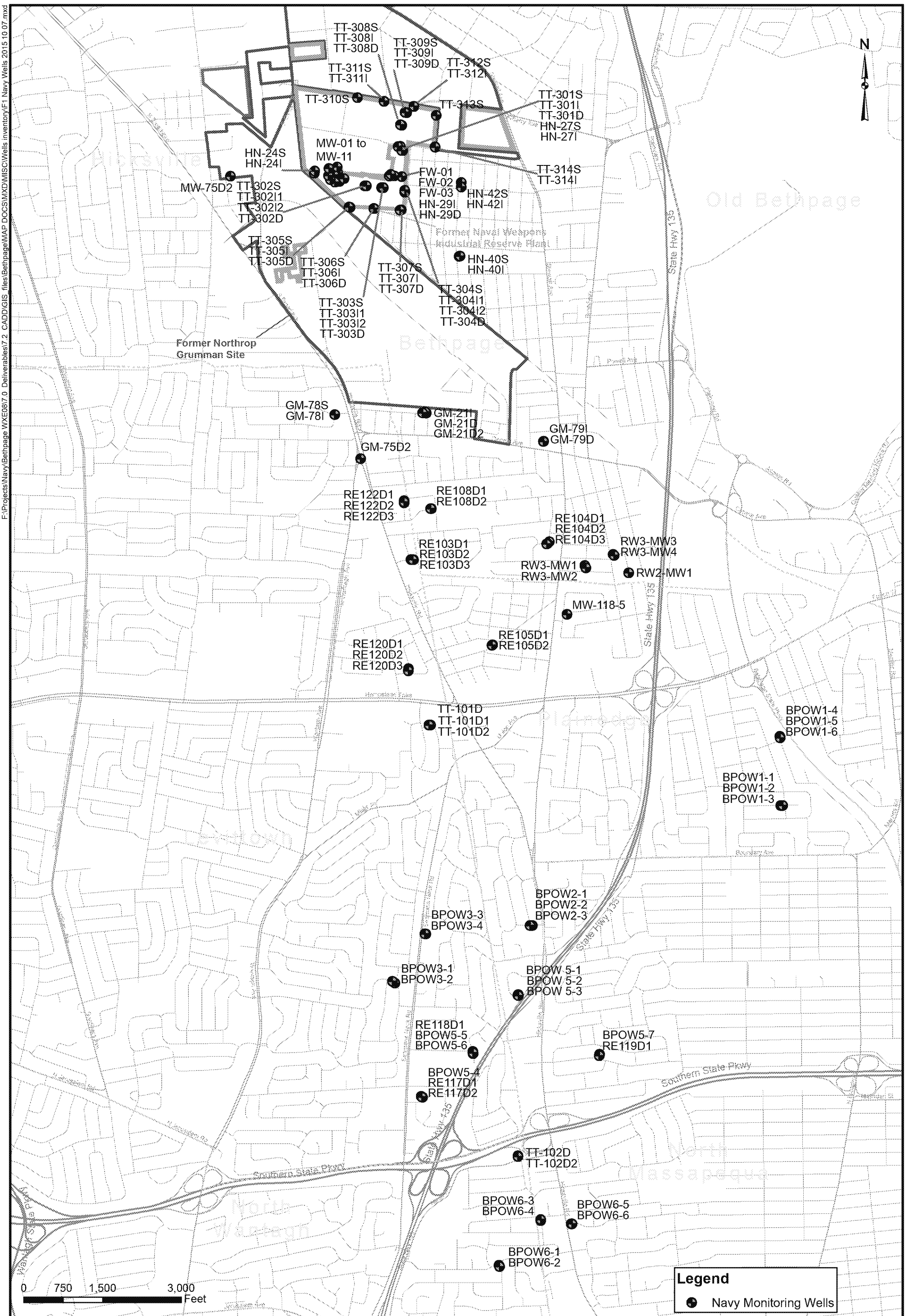
Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels will be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

All samples being shipped off-site for analysis must be accompanied by a properly completed chain of custody form (provided by the State contract Lab). The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for laboratory pick up and/or shipment with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

Sample Shipment

Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public.



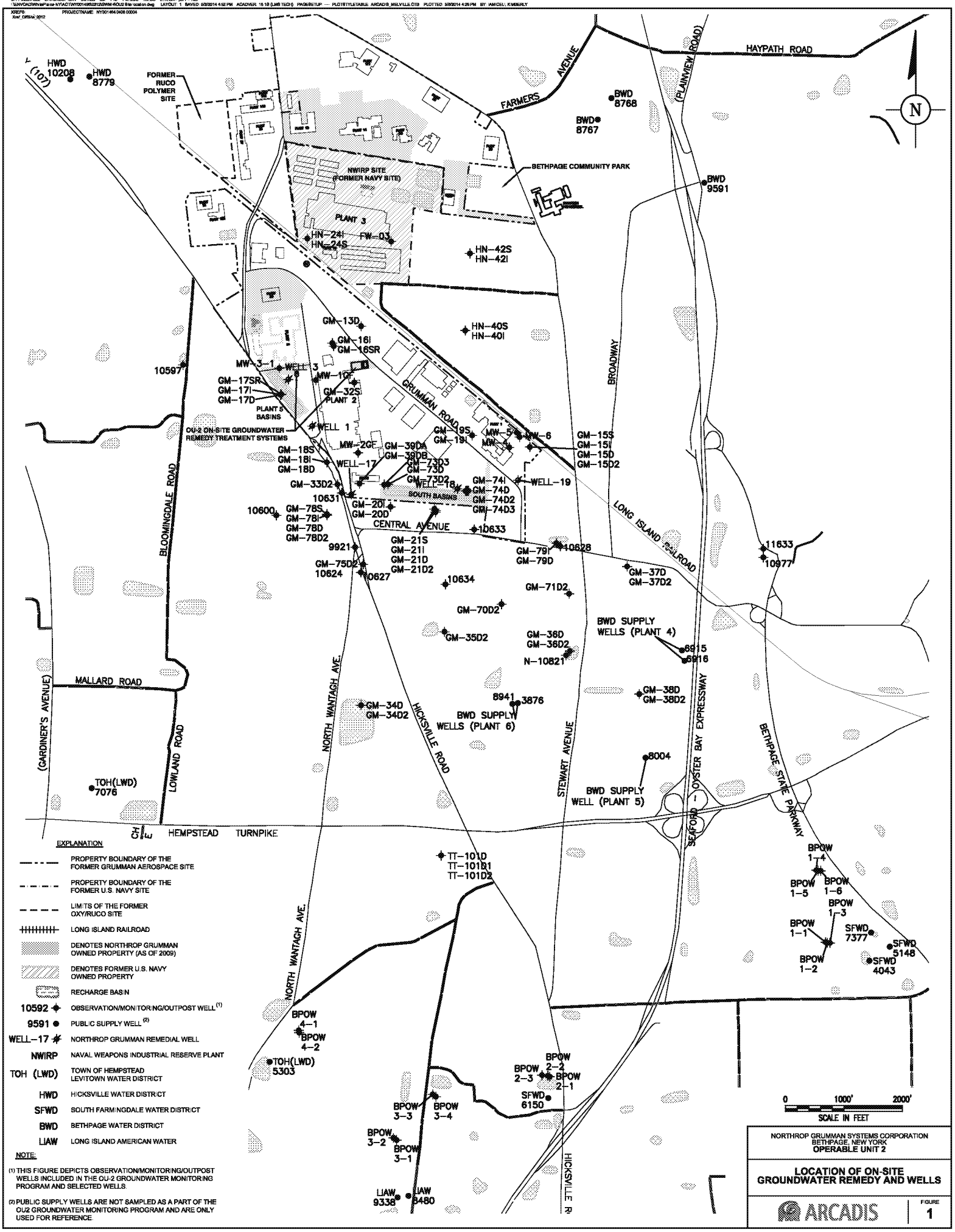
F:\Projects\Navy\Bethpage WXE08\7.0_Deliverables\7.2_CADD\GIS_files\Bethpage\MAP_DOCS\MXD\MISC\Wells inventory\F1_Navy Wells 2015 10 07.mxd

NAVFAC

WELL LOCATION MAP

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D8013	WE08
APPROVED BY: EV	DATE: 10/7/2015
APPROVED BY: —	DATE: —
FIGURE NO. 1	REV 0


HAYPATH ROAD
FARMERS AVENUE
PLAINVIEW ROAD
HWD 10208
HWD 8779
FORMER RUCO POLYMER SITE
BWD 8768
BWD 8767
BETHPAGE COMMUNITY PARK
NWIRP SITE (FORMER NAVY SITE)
BWD 9591
PLANT 3
HN-24I
HN-24S
FW-03
HN-42S
HN-42I
HN-40S
HN-40I
GM-13D
GM-16I
GM-16SR
10597
MW-3-1
WELL 3
MW-1GF
GM-17SR
GM-17I
GM-17D
GM-32S
PLANT 2
PLANT 5 BASINS
OU-2 ON-SITE GROUNDWATER REMEDY TREATMENT SYSTEMS
WELL 1
GRUMMAN ROAD
BROADWAY
GM-19S
GM-19I
MW-5
MW-4
MW-6
GM-15S
GM-15I
GM-15D
GM-15D2
MW-2GF
GM-39DA
GM-39DB
GM-18S
GM-18I
GM-18D
WELL-17
GM-73D3
GM-73D
GM-73D2
WELL-18
SOUTH BASINS
GM-74I
GM-74D
GM-74D2
GM-74D3
WELL-19
GM-33D2
10631
GM-20I
GM-20D
10600
GM-78S
GM-78I
GM-78D
GM-78D2
CENTRAL AVENUE
10633
BLOOMINGDALE ROAD
LONG ISLAND RAILROAD
9921
GM-21S
GM-21I
GM-21D
GM-21D2
GM-79I
GM-79D
10628
11633
10977
GM-75D2
10624
10627
10634
GM-37D
GM-37D2
GM-71D2
GM-70D2
BWD SUPPLY WELLS (PLANT 4)
GM-35D2
GM-36D
GM-36D2
N-10821
8915
8916
MALLARD ROAD
(GARDINER'S AVENUE)
GM-34D
GM-34D2
8941
3876
BWD SUPPLY WELLS (PLANT 6)
GM-38D
GM-38D2
NORTH WANTAGH AVE.
HICKSVILLE ROAD
STEWART AVENUE
SEAFORD - OYSTER BAY EXPRESSWAY
BETHPAGE STATE PARKWAY
LOWLAND ROAD
8004
BWD SUPPLY WELL (PLANT 5)
TOH(LWD) 7076
HEMPSTEAD TURNPIKE
TT-101D
TT-101D1
TT-101D2
BPOW 1-4
BPOW 1-5
BPOW 1-6
BPOW 1-3
BPOW 1-1
BPOW 1-2
SFWD 7377
SFWD 5148
SFWD 4043
BPOW 4-1
BPOW 4-2
TOH(LWD) 5303
BPOW 2-2
BPOW 2-3
BPOW 2-1
SFWD 6150
BPOW 3-3
BPOW 3-4
BPOW 3-2
BPOW 3-1
LIAW 9338
LIAW 8480
HICKSVILLE RD
N
0 1000' 2000'
SCALE IN FEET
EXPLANATION
PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
LIMITS OF THE FORMER OXY/RUCO SITE
LONG ISLAND RAILROAD
DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2009)
DENOTES FORMER U.S. NAVY OWNED PROPERTY
RECHARGE BASIN
10592 OBSERVATION/MONITORING/OUTPOST WELL (1)
9591 PUBLIC SUPPLY WELL (2)
WELL-17 NORTHROP GRUMMAN REMEDIAL WELL
NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
TOH (LWD) TOWN OF HEMPSTEAD LEVITOWN WATER DISTRICT
HWD HICKSVILLE WATER DISTRICT
SFWD SOUTH FARMINGDALE WATER DISTRICT
BWD BETHPAGE WATER DISTRICT
LIAW LONG ISLAND AMERICAN WATER
NOTE:
(1) THIS FIGURE DEPICTS OBSERVATION/MONITORING/OUTPOST WELLS INCLUDED IN THE OU-2 GROUNDWATER MONITORING PROGRAM AND SELECTED WELLS.
(2) PUBLIC SUPPLY WELLS ARE NOT SAMPLED AS A PART OF THE OU2 GROUNDWATER MONITORING PROGRAM AND ARE ONLY USED FOR REFERENCE.
NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2
LOCATION OF ON-SITE GROUNDWATER REMEDY AND WELLS
ARCADIS
FIGURE 1