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ENVIRONMENT

Mr. Steven Scharf, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Subject:
Phase 2 Remedial Investigation Work Plan Addendum No. 1, Former Grumman Settling Ponds (Operable Unit 3, - Bethpage Community Park), Bethpage, New York.

Date:
April 25, 2006

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David Stern

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Our ref:
NY0013480806.00003

Dear Mr. Scharf:

ARCADIS has prepared this Work Plan Addendum No. 1 for Phase 2 of the Remedial Investigation (RI) at the Former Grumman Settling Ponds (Operable Unit 3, - Bethpage Community Park), Bethpage, New York Site. This Work Plan Addendum No. 1 presents the rationale and scope of the portion of the OU3 RI that will be performed using Cone Penetrometer Testing Units (CPTU)/Membrane Interface Probes (MIP). The NYSDEC-approved revised RI/FS Work Plan, dated March 8, 2006 contained the option to implement CPTU/MIP testing as a means to define the potential source(s) of volatile organic compounds (VOCs) impacts and further refine the conceptual site model (CSM), as further detailed below.

Rationale

Table 1 provides the details of the proposed CPTU/MIP soil borings. Figure 1 depicts the proposed locations of the CPTU/MIP borings. Additionally, the approximate extent of the upper surface of the local clay unit encountered during previous phases of the RI (and discussed in the revised RI/FS Work Plan) is shown on Figure 1. Sampling above and within the clay is necessary to confirm the absence or presence of VOCs and, if needed, obtain additional information pertaining to clay morphology and physical characteristics. This information will assist in the evaluation of the CSM (i.e., if there are VOCs in the clay, and if the morphology and physical characteristics of the clay are such that it could act as a source of groundwater VOCs). The CPTU/MIP soil borings will therefore be focused along an alphanumeric grid overlying and adjacent to the clay and within the area suspected to contain source-strength VOCs. The density of CPTU/MIP soil borings is greatest nearest Phase 2B RI vertical profile boring (VPB) VP-27, which exhibited the highest concentration of VOCs in soil and groundwater (see Appendix E of the revised RI/FS Work Plan). The CPTU/MIP soil borings will provide a continuous profile of soil type (through a variety of soil characteristics) and source-strength VOC concentrations.

After completion of the CPTU/MIP soil borings and evaluation of the results, the MIP testing results and the plan for follow-up soil borings drilling via hollow-stem auger and sampling of soil via split-spoons will be prepared and submitted to NYSDEC in a subsequent RI Work Plan Addendum. Therefore, the Phase 2B RI soil boring drilling (i.e., Soil Borings CL-1 to CL-14 as proposed in Table 1 of the revised RI/FS Work Plan) will not be performed as proposed, rather the number/depth of Phase 2BRI soil borings and samples will be modified to collect a representative number of soil samples for laboratory analysis (i.e., VOCs, total organic carbon, and selected geotechnical analysis) from specific intervals to confirm the MIP results. Additionally, the location, number, and depth of piezometers will be determined and proposed, based on the MIP results. The work plan for modified Phase 2B RI soil boring drilling and piezeometer installation will be provided to NYSDEC in a subsequent Phase 2 RI Work Plan Addendum.

Scope of Work

A total of 29 CPTU/MIP soil borings are proposed (see Table 1 and Figure 1). The number and location of CPTU/MIP soil borings may be modified and additional CPTU/MIP soil borings may be drilled, as data are obtained, to achieve the objectives (see the revised RI/FS Work Plan for Phase 2 RI objectives). The estimated surveyed coordinates will be determined prior to drilling. Once completed, the locations will be surveyed using a licensed surveyor.

The Sampling and Analysis Plan (SAP) associated with the CPTU/MIP soil borings consists of Appendices A through D of the revised RI/FS Work Plan (incorporated herein by reference) and includes the following:

- The FSP (Appendix A) defines sampling and data gathering methods consistent with NYSDEC DER-10 and the "Field Methods Compendium," OSWER Directive 9285.2-11 (draft June 1993).

- The QAPP (Appendix B) describes the quality assurance and quality control protocols necessary to achieve the initial data quality objectives.

- The HASP (Appendix C) protects persons at and near the site during performance of the RI/FS (in accordance with 29 CFR 1910).

- The CPP (Appendix D) was developed in accordance with New York Environmental Conservation Law, hazardous waste site regulations (6 NYCRR Part 375) and Citizens Participation in New York's Hazardous Waste Site Remediation Program: A Guidebook (NYSDEC 1998).

In addition to the above, the components of the SAP are also consistent with the requirements of NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2002).

We appreciate NYSDEC expedited review of this work plan addendum. If you have any questions, please feel free to contact us.

Sincerely,

ARCADIS G&M, Inc.

David E. Stern
Senior Hydrogeologist

Carlo San Giovanni

Carlo San Giovanni
Project Manager

Copies:
John Cofman, Northrop Grumman Corporation
Larry Leskovjan, Northrop Grumman Corporation

Table 1. Proposed CPTU/MIP Soil Borings, Former Grumman Settling Ponds (Operable Unit 3 - (Bethpage Community Park), Bethpage, New York.

Proposed CPTU/MIP Boring ID	Latitude (Office Hand Held GPS)	Longitude (Office Hand Held GPS)	Land Surface Elevation (1) (ft msl)
C-9	40.45.353	73.29.307	126.46
C-8	40.45.346	73.29.302	126.97
D-6	40.45.346	73.29.296	128.26
D-10 (6)	40.45.365	73.29.286	127.07
E-4	40.45.306	73.29.288	126.82
E-7	40.45.333	73.29.292	127.55
E-9	40.45.347	73.29.282	111.96
E-11	40.45.373	73.29.274	127.09
F-5	40.45.317	73.29.275	126.06
F-8	40.45.337	73.29.268	112.2
F-10 (6)	40.45.362	73.29.262	126.55
G-3	40.45.300	73.29.270	126.77
G-6	40.45.321	73.29.258	125.88
G-9	40.45.347	73.29.266	111.46
H-3	40.45.298	73.29.260	126.53
H-4	40.45.306	73.29.254	126.02
H-7	40.45.331	73.29.248	126.05
H-10	40.45.356	73.29.241	126.12
I-2	40.45.289	73.29.246	126.56
I-3	40.45.302	73.29.237	126.04
I-4	40.45.304	73.29.248	125.98
I-5	40.45.314	73.29.239	126.01
I-8	40.45.337	73.29.236	126.42
J-3	40.45.293	73.29.237	126.22
J-4	40.45.304	73.29.235	125.7
J-6	40.45.319	73.29.221	124.99
J-9	40.45.344	73.29.226	125.72
K-6	40.45.322	73.29.221	124.49
K-7	40.45.332	73.29.218	124.86

See footnotes on last page

Table 1. Proposed CPTU/MIP Soil Borings, Former Grumman Settling Ponds (Operable Unit 3 - (Bethpage Community Park), Bethpage, New York.

Notes:

bmp	below measuring point
msl	mean sea level
CPTU	Cone Penetration Testing Unit
MIP	Membrane Interface Probe
PID	Photoionization Detector
FID	Flame Ionization Detector
ECD	Electron Capture Detector

(1) Boring ID's based on alphanumeric grid, shown on Figure 1.

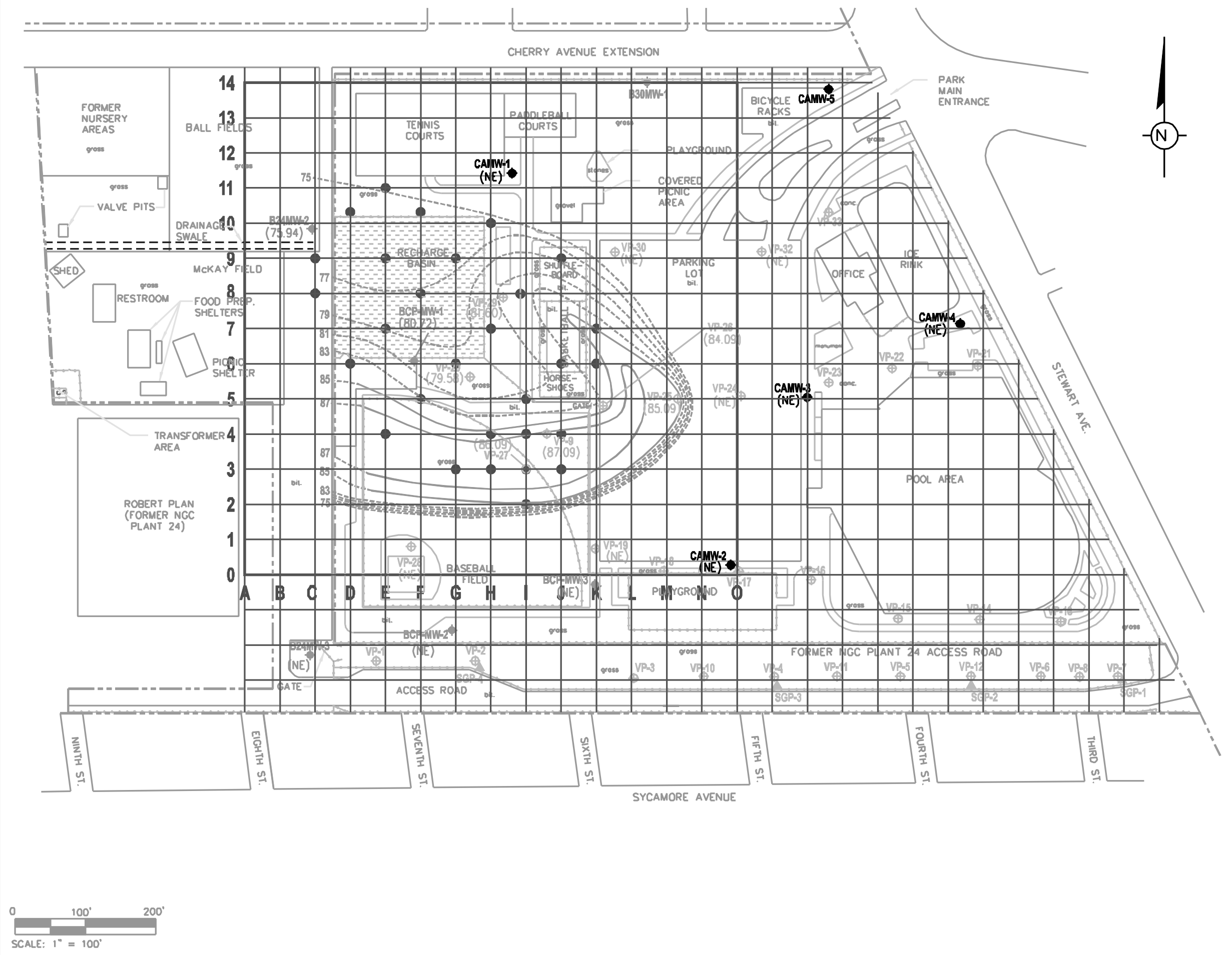
(2) Land surface and lower/upper clay surface elevation data are estimated using the measuring point elevation of Wells BCP-MW-1 and CAMW-1. The total depths of borings located within the recharge basin are estimated using an assumed basin depth of 30 ft bls.

(3) CPTU/MIP Soil borings will terminate at the bottom of the on-site clay unit.

(4) MIP screening will be performed continuously from land surface to total boring depth.

(5) CPTU/MIP soil borings will be screened using a combination of PID, FID, and ECD.

(6) These CPTU/MIP soil borings will be installed outside the recharge basins as close to node locations D-10 and F-10 as possible.



EXPLANATION

— - - —	NORTHROP GRUMMAN CORPORATION PROPERTY LINE
—•—•—•—	FENCE
▨	BASIN
●	PROPOSED CPTU/MIP BORINGS
bit.	BITUMINOUS PAVEMENT
BCP-MW-3 ●	EXISTING MONITORING WELL
VP-1 ⊕	COMPLETED PHASE 1 RI VERTICAL PROFILE BORING (BY ARCADIS)
SGP-1 ▲	COMPLETED PHASE 1 RI SOIL GAS POINT (BY ARCADIS)
(87.085)	CLAY UPPER SURFACE ELEVATION IN FT MSL (APPROXIMATE).
79 ——	LINE OF EQUAL CLAY UPPER SURFACE ELEVATION IN FT MSL (DASHED WHERE INFERRED)
NE	CLAY NOT ENCOUNTERED
FT MSL	FEET RELATIVE TO MEAN SEA LEVEL
FT BLS	FEET BELOW LAND SURFACE
CPTU	CONE PENETROMETER TESTING UNIT
MIP	MEMBRANE INTERFACE PROBE

NOTES:

1. WELL, SGP, AND VPB 21 TO 33 LOCATIONS ARE APPROXIMATE.
2. DEPTH TO TOP OF CLAY LAYER DEPICTED RANGES FROM APPROXIMATELY 38 TO 46 FT BLS.
3. FOR VPB'S WITH NO THICKNESS SHOWN, CLAY LAYER IS LESS THAN 1 FOOT OR NOT PRESENT.
4. CLAY RANGED IN COLOR FROM GRAY, TAN, BEIGE, BROWN, GREEN, PINK, AND BLACK AND EXHIBITED MEDIUM TO HIGH PLASTICITY.
5. LOCATIONS OF WELLS INSTALLED BY THE TOWN OF OYSTER BAY ARE BASED ON THE 2005 REPORTS, LOCATIONS ARE APPROXIMATE (H2M 2005a;b).
6. CPTU/MIP BORINGS ARE INITIALLY PROPOSED ALONG SELECTED GRID NODES. ACTUAL LOCATIONS AND NUMBER OF BORINGS WILL DEPEND ON FIELD CONDITIONS.
7. GRID BOX DIMENSIONS ARE 50-FT SQUARE.
8. PROJECT DATUM: WGS 84.

DRAWING REFERENCE:
DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS 2003

Date\Time : $(edtime, $(getvar,date),DDD"," DD MON YYYY - H:MMam/pm)
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REV. ISSUED DATE DESCRIPTION

SEAL

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PROJECT TITLE
OPERABLE UNIT 3
FORMER GRUMMAN SETTLING PONDS
BETHPAGE, NEW YORK

PROJECT MANAGER C. SAN GIOVANNI	DEPARTMENT MANAGER M. WOLFERT	LEAD DESIGN PROF.	CHECKED BY D. STERN
SHEET TITLE SITE PLAN SHOWING PROPOSED CPTU/MIP BORINGS		TASK/PHASE NUMBER 00003	DRAWN BY E. HUGHES
		PROJECT NUMBER NY001348.0806	FIGURE 1