FPM group _____ Engineering and Environmental Science

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VIA EMAIL

September 15, 2014

Ms. Alicia Barraza
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7016

Re: **Work Plan for Additional Remedial Investigation Activities**
34-11 Beach Channel Drive, NYSDEC BCP Site #C241141
Far Rockaway, Queens, New York
FPM File No. 1087g-13-05

Dear Alicia:

This letter work plan has been prepared by FPM Group (FPM) as per our discussion on August 27, 2014 and presents the proposed scope of additional Remedial Investigation (RI) activities as requested by the New York State Department of Environmental Conservation (NYSDEC) in your July 25, 2014 letter. Based on this discussion we understand that the NYSDEC has not yet made a Significant Threat determination for this Site and some of the additional information is needed to make this determination. Also, additional information is needed to delineate the extent of impacted soil detected at depth in boring RIB-2 during the RI and to assess stratigraphy in this area.

Please note that all procedures will be in accordance with the procedures in the NYSDEC-approved RI Work Plan for this site and are incorporated into this letter work plan by reference.

The proposed scope of work to perform the additional activities required to complete the RI is as follows:

- Additional investigation will be performed in the RIB-2 boring area on Lot 24 (see attached Figure 1 for locations), including use of a cone penetrometer (CPT) device to further evaluate the stratigraphy. The CPT work would be performed instead of the membrane interface probe (MIP) referenced in your letter as it is anticipated to provide more definitive information regarding stratigraphic details which we understand to be key to evaluating the distribution of subsurface impacts at this site. Additional information concerning CPT testing is attached to this work plan. We propose to perform CPT testing at a minimum of six locations surrounding the RIB-2 location, as shown on the attached Figure 1. At each location the CPT probe will be advanced to a total depth of approximately 40 feet, with

continuous recording of tip resistance and sleeve friction. The recorded data will be used to evaluate the configuration of the fill, shallow sand, shallow clay, intermediate sand, and deep clay in the subsurface. CPT testing may be extended further away from the RIB-2 location if necessary to locate the edge of the shallow clay, which we understand occurs between RIB-2 and RIB-1. The location of each CPT test will be recorded using a hand-held GPS unit and the relative elevation of each CPT location will be surveyed with respect to the established site datum. The CPT probe will be decontaminated between CPT locations and the CPT locations will be sealed with bentonite grout after each is completed. The stratigraphic information obtained from CPT testing will be integrated with the existing stratigraphic information from the RI soil borings to further assess subsurface stratigraphic conditions that affect the distribution of impacts in the subsurface;

- Soil sampling will be performed at three locations surrounding RIB-2, as shown on Figure 1. These locations may be adjusted based on the results of the CPT testing. The objective of the sampling is to delineate the extent of chlorinated volatile organic compounds (CVOCs) detected in soil at the RIB-2 location. As COVCs were not detected in soil at any of the nearby onsite borings (RIB-1, RIB-3, or RIB-4) at other than trace levels, it is our understanding that delineation activities will be limited to the proximity of RIB-2. At each location the soil will be continuously sampled from grade to the top of the deep clay (approximately 40 feet below grade). The soils will be visually examined and screened as described in the RI Work Plan. Soil samples will be obtained for laboratory testing from four intervals in each boring, including the fill, the shallow sand, the top of the shallow clay (if present) and the top of the deep clay. The samples will be managed as per the RI Work Plan, with testing for VOCs, as described below;

- Soil vapor will be sampled at six onsite locations (see Figure 1) in the same manner that soil vapor sampling was performed during the RI;

- Groundwater sampling will be performed at all of the onsite wells (see the attached Figure 3.3.3.1 for locations), with the samples tested for Target Compound List (TCL) VOCs. Groundwater sampling for TCL VOCs will also be performed at two offsite wells (MW-8I and MW-9I) due to the previous chlorinated VOC detections in these wells. Metals testing (dissolved and total) will also be performed for the samples from two onsite wells (MW-5S and MW-6S) as historic groundwater sampling showed metals detections on Lot 14. Geochemical parameters that are typically monitored during well purging (temperature, pH, conductivity, and dissolved oxygen) will be recorded during well purging and evaluated in the revised RI Report;

- All samples will be collected in accordance with the approved RI Work Plan and associated documents. Quality assurance/quality control (QA/QC) samples, Category B lab reports, data usability summary reports (DUSRs), and NYSDEC electronic data deliverables (EDDs) will be provided. All samples will be analyzed by laboratories certified by the New York State Department of Health; and

- Following the receipt of the additional RI data, FPM will revise the previously-submitted RI Report to include the newly-acquired information and to address the General Comments noted in the NYSDEC's July 25, 2014 letter. The revised RI Report will be submitted to the NYSDEC for review and approval. The laboratory data EDDs will also be prepared and submitted to the NYSDEC.

Please confirm that the above-described scope of work is acceptable. If you have any questions, please do not hesitate to email or call me at (631) 737-6200, ext. 228.

Very truly yours,

Stephanie O. Davis
Senior Project Manager
Vice President

SOD:sod
Attachments

Cc: Alan Knauf, Esq.
James Rigano, Esq.

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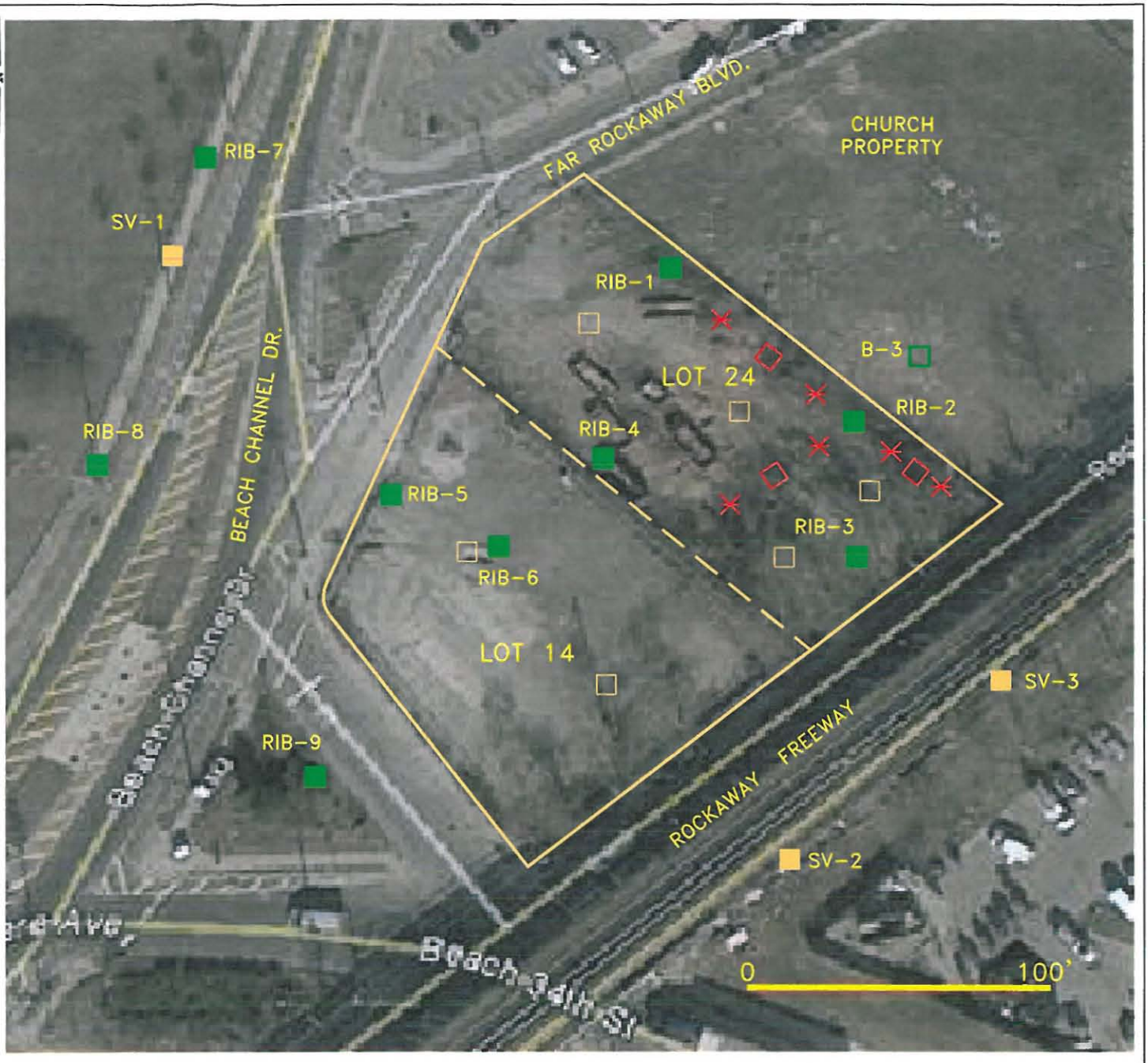

LEGEND:

- SOIL BORING LOCATION
- SOIL VAPOR SAMPLE LOCATION
- PREVIOUS SOIL BORING LOCATON
- PROPOSED CPT LOCATIONS
- PROPOSED ADDITIONAL SOIL BORINGS
- PROPOSED ADDITIONAL SOIL VAPOR SAMPLES

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FIGURE 1
PROPOSED ADDITIONAL SAMPLE LOCATIONS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date: 9/11/2014

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ZEBRA

Subsurface Sampling, Injection and Data Collection for Environmental Professionals

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Direct Sensing Services

- Membrane Interface Probe
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- Hydraulic Profiling Tool
- Electrical Conductivity
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Direct sensing info sheet
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HPT Overview Paper
Direct Sensing Power Point
CPT info sheet
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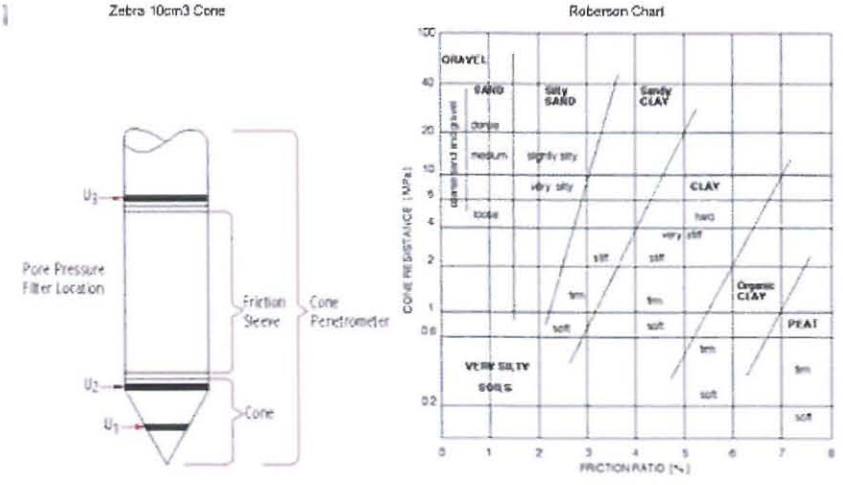
Cone Penetration Test

The cone penetration test (CPT) is an in situ testing method used to determine the geotechnical engineering properties of soils and delineating soil stratigraphy. The test method consists of pushing an instrumented cone tip first into the ground at a controlled rate (usually 2 centimeters/second). The resolution of the CPT in delineating stratigraphic layers is related to the size of the cone tip, with typical cone tips having a cross-sectional area of either 10 or 15 cm². Most modern electronic CPT cones now also employ a pressure transducer with a filter to gather pore water pressure data. The filter is usually located either on the cone tip (the so-called U1 position), immediately behind the cone tip (the most common U2 position) or behind the friction sleeve (U3 position). Pore water pressure data aids determining stratigraphy and is primarily used to correct tip friction values for those effects. CPT testing which also gathers this piezometer data is called CPTU testing. CPT and CPTU testing equipment generally advances the cone using Direct Push hydraulic rams using screwed-in anchors as a counter-force.

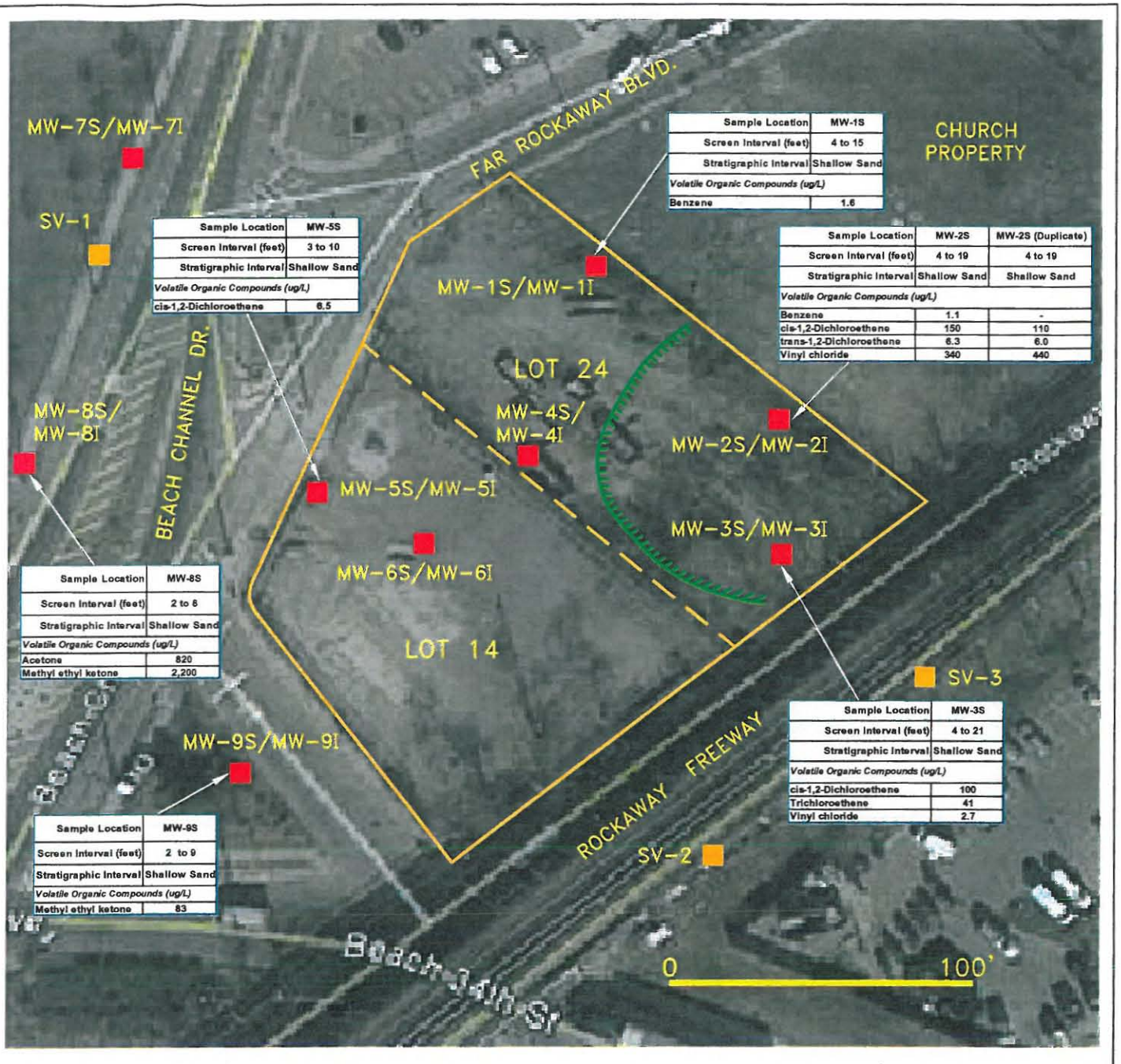

Zebra MIP/CPT probe

Additionally...

CPT for geotechnical applications was standardized in 1986 by ASTM Standard D3441 (ASTM, 2004). Later ASTM Standards have addressed the use of CPT for various environmental site characterization and groundwater monitoring activities. Particularly for geotechnical soil investigations, CPT is gaining popularity compared to standard penetration testing (SPT) as a method of geotechnical soil investigation by its increased accuracy, speed of deployment and reduced cost over other soil testing methods. The ability to advance additional insitu testing tools using **CPT and a direct push rig**, is accelerating this process.



Zebra 10cm cone with Robertson Chart



Sample Location	MW-1S
Screen Interval (feet)	4 to 15
Stratigraphic Interval	Shallow Sand
Volatile Organic Compounds (ug/L)	
Benzene	1.6

Sample Location	MW-5S
Screen Interval (feet)	3 to 10
Stratigraphic Interval	Shallow Sand
Volatile Organic Compounds (ug/L)	
cis-1,2-Dichloroethene	6.5

Sample Location	MW-2S	MW-2S (Duplicate)
Screen Interval (feet)	4 to 19	4 to 19
Stratigraphic Interval	Shallow Sand	Shallow Sand
Volatile Organic Compounds (ug/L)		
Benzene	1.1	-
cis-1,2-Dichloroethene	150	110
trans-1,2-Dichloroethene	6.3	6.0
Vinyl chloride	340	440

Sample Location	MW-8S
Screen Interval (feet)	2 to 8
Stratigraphic Interval	Shallow Sand
Volatile Organic Compounds (ug/L)	
Acetone	820
Methyl ethyl ketone	2,200

Sample Location	MW-3S
Screen Interval (feet)	4 to 21
Stratigraphic Interval	Shallow Sand
Volatile Organic Compounds (ug/L)	
cis-1,2-Dichloroethene	100
Trichloroethene	41
Vinyl chloride	2.7

Sample Location	MW-9S
Screen Interval (feet)	2 to 9
Stratigraphic Interval	Shallow Sand
Volatile Organic Compounds (ug/L)	
Methyl ethyl ketone	83

LEGEND:

- SHALLOW WELLS WITH EXCEEDANCES OF NYSDEC STANDARDS
- SOIL VAPOR SAMPLE LOCATION
- ELEVATED CHLORINATED VOCs

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FIGURE 3.3.3.1
SHALLOW GROUNDWATER DATA MAP

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C. | Checked By: B.C. | Date: 4/9/2014

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