GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Pre-Characterization Work Plan

Nyack MGP Site
Nyack, New York
NYSDEC Site # 3-44-046

Submitted To:
Orange and Rockland Utilities, Inc.
390 West Route 59
Spring Valley, NY 10977

Submitted By:
GEI Consultants, Inc., P.C.
1301 Trumansburg Road, Suite N
Ithaca, NY 14850
607-216-8955

November 25, 2013
Revised December 4, 2013
Project 1330710-*-1001

James Edwards, C.P.G.
Senior Geologist

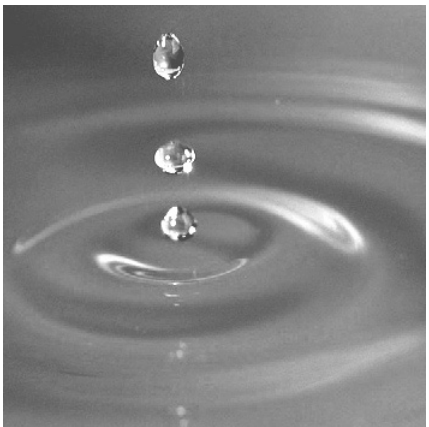


Table of Contents

JHE:mlr

H:\WPROC\Project\O&R\Nyack Soil Sediment Pre-Char Disposal_1330710\Pre-Characterization Work Plan 11.25.13\Text\Nyack Soil Sediment Pre-Characterization Work Plan 11.25.13, rev12.4.13.docx

1. Soil and Sediment Pre-Characterization Sampling and Analyses

The purpose of the Pre-Characterization Sampling and Analysis Plan is to develop a waste characterization profile for soil and sediment in the remedial areas of Operable Unit 2 (OU2) of the Nyack Manufactured Gas Plant (MGP) site. The soil and sediment remedial areas are shown on Figures 1, 2 and 3.

1.1 Scope of Work

Soil Borings – ISS Areas

Four soil borings (PC1-PC4) will be advanced in the soil removal areas where ISS will be performed along the shoreline of the Hudson River. The locations of the borings are shown on Figures 1 and 2. The number of soil borings has been determined from the sampling frequency required by two potential disposal facilities including:

- Bayshore Recycling – 75 Crows Mill Road, Keasby, NJ; and
- Clean Earth – 7 Steel Road, Morrisville, PA.

The facilities and the analytical requirements for each facility are summarized in Table 1. Included in Appendix A is the information regarding sample analyses and frequency, provided by each of the two disposal facilities.

The borings will be advanced using rotosonic drilling methods. The rotosonic drilling method was selected due to the anticipated difficult drilling in the soil removal areas due to the presence of rip rap and shoreline cobbles.

Pre-Characterization Soil Boring Depth Rationale

Borings will be advanced to the depths indicated on Table 1. The boring depths for the ISS samples PC1 through PC4 is based on a 33% spoils return over the total depth of the column. The returns also referred to as swell will be removed and disposed to achieve final restoration elevations along with the first 2 feet of soil to get to the working ISS platform elevation. Sediment sampling depth is based on the existing elevation for the planned remedial dredge depth plus 1 foot to account for any survey variations. If refusal is experienced prior to achieving the target depth, the boring will be offset slightly, and a new boring will be advanced. Each soil boring sample will be continuously logged for visual impacts and soil type, screened for volatile organic vapors with a photo-ionization detector (PID), and photographed.

A composite sample of soil sample will be collected from the sampled interval. In addition to the composite sample, discrete (grab) samples will also be taken from each soil boring. The grab and composite samples and the analyses to be performed is summarized in Table 2. Borings will be grouted upon completion.

Soil Borings – Dredge Area 1

Three soil borings (PC5-PC7) will be advanced in Dredge Area 1 (Figures 2 and 3). The samples will be collected from this area with the rotosonic drill rig because of the sample locations on the end of the jetty are not accessible with the vibracore sediment sampling boat. The number of borings has been determined from the sampling frequency required by the two disposal facilities indicated above. The analytical requirements for these borings are summarized in Table 1.

Each soil boring sample will be continuously logged for visual impacts and soil type, screened for volatile organic vapors with a photo-ionization detector (PID), and photographed. A composite sample of soil sample will be collected from the sampled interval. In addition to the composite sample, discrete (grab) samples will also be taken from the borings, as summarized in Table 2. Boreholes will be grouted upon completion.

Sediment Vibracores

Nineteen vibracores (PC5-PC23) will be advanced in Sediment Removal Areas shown on Figure 3. The number of vibracore samples has been determined from the sampling frequency required by the disposal facilities (Bayshore Recycling, and Clean Earth). The target depths of the vibracore samples will vary depending on which area is being sampled. The anticipated target depths for each sediment removal area is summarized on Table 1. The disposal facilities and the analytical requirements are summarized on Table 2. Included in Appendix A is information from each facility regarding the number of required samples, and the analyses to be performed.

1.2 Laboratory Analyses

The samples will be analyzed by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (NYSDOH ELAP)-certified laboratory. As required by the disposal facilities (Appendix A), the samples will be analyzed for the following parameters:

- VOCs by EPA SW 8260
- SVOCs by EPA SW 8270
- TAL Metals by EPA SW 6000/7000

- Cyanide by EPA SW 9013/901A
- TCLP VOCs by EPA SW 1311/8260
- TCLP SVOCs by EPA SW 1311/8270
- TCLP Metals by EPA SW 1311/6010B
- Total PCBs by EPA 8082
- Ignitability by EPA 1010/1030
- Corrosivity by EPA 9040C/9045
- Reactivity (Cyanides and Sulfides) by EPA SW846 Chapter 7.3
- Sulfur by ASTM D129
- Mercury by EPA 7471
- EPH NJDEP 10/08 (8/2010 Rev. 3) Extractable Petroleum Hydrocarbons
- Hexavalent Chromium Soil Method 3060A/7196
- EOX by EPA 9230B
- TPH by EPA 8015 GRO/DRO
- TCLP VOCs by EPA SW 1311/8260

1.3 Sampling Frequency

The frequency of the sampling for each media will be determined by the volume of each media to be addressed during remediation, and by the requirements of each disposal facility. This information is summarized in Table 2 and in Appendix A.

1.4 Data Transmittal

Borelogs and sediment core logs from the pre-characterization sampling will be prepared to show the results of the physical observations. A figure will be prepared to show final sample locations. GEI will review the laboratory results following receipt from the laboratory. A data transmittal package will then be prepared to transmit the logs, the figure, and the data as directed by O&R.

Tables

Table 1
Soil and Sediment Pre-Characterization Summary
Nyack MGP Site OU2

Purpose	Boring Location and Sample ID	Northing	Easting	Sample Type	Approximate Ground Surface Elevation (feet NAVD88)	Target Elevation (feet NAVD88)	Total Depth of Sample (feet bgs)
Soil Pre-Characterization for Excavation	PC1	823141.10	653369.82	Soil Sample via Rotosonic Drill	3.50	33% of ISS depth	5
	PC2	823091.31	653454.80		4.00	33% of ISS depth	3
	PC3	823039.99	653484.35		4.00	33% of ISS depth	7
	PC4	822940.42	653380.95		5.00	33% of ISS depth	6
Sediment Pre-Characterization for Dredging	PC5	823021.15	653514.38	Sediment Sample via Rotosonic Drill	0.75	-9	11
	PC6	823051.91	653537.59		-0.50	-9	10
	PC7	823091.04	653516.58		0.25	-9	11
	PC8	823163.05	653413.24	Sediment Sample via Vibracore	-2.50	-8	7
	PC9	823196.58	653462.33		-4.00	-8	5
	PC10	823138.94	653473.00		-4.00	-8	5
	PC11	823129.09	653530.83		-5.00	-8	4
	PC12	823083.56	653568.95		-5.00	-8	4
	PC13	823034.34	653613.72		-6.00	-8	3
	PC14	823040.29	653571.38		-5.25	-8	4
	PC15	822996.70	653572.34		-5.50	-8	4
	PC16	822994.13	653491.62		-2.50	-7	6
	PC17	822981.06	653471.92		-2.50	-7	6
	PC18	822961.84	653442.16		-2.50	-7	6
	PC19	822940.44	653421.19		-2.50	-7	6
	PC20	822939.34	653470.41		-4.00	-7	4
	PC21	822914.53	653413.72		-3.00	-7	5
	PC22	822873.64	653495.97		-4.00	-6	3
	PC23	822873.64	653421.46		-4.00	-6	3
	PC24	823023.88	653721.07		-11.00	-14	4

Notes:
bgs - below ground/sediment surface
Total Depth determined using the approximate ground surface elevation and target elevation; 1 foot of depth was added to account for any potential error in interpolating the ground surface contours, and then the depths were rounded up to the nearest foot (dredge areas only).

Table 2
Soil and Sediment Pre-Characterization Summary
Facility and Analytical Requirements
Nyack MGP OU2

ISS Summary

	Area (SF)	Depth (FT)	Volume (CF)	Volume (CY)	Weight (TON)	# of Samples BSM 5 pt comp	# of Samples Morrisville Grab (TPH)	Grab (TOX)	Grab (TCLP VOC)	5 pt comp	**# of Samples 5 pt comp**
ISS Area Total	--	--	46,033	1,704.93	2,898.37	4	10	10	2	2	**4**

Dredge Area Summary

		Area (SF)	Depth (FT)	Volume (CF)	Volume (CY)	Weight (TON)	# of Samples BSM 5 pt comp	# of Samples Morrisville Grab (TPH)	Grab (TOX)	Grab (TCLP VOC)	5 pt comp	**5 pt comp**
Area	1	--	--	--	1,385.00	2,077.50	3	8	8	2	2	**3**
Area	2	--	--	--	3,837.00	5,755.50	8	17	17	4	4	**8**
Area	3	--	--	--	1,834.00	2,751.00	4	9	9	2	2	**4**
Area	4	--	--	--	1,307.00	1,960.50	3	7	7	2	2	**3**
Area	5	--	--	--	699.00	1,048.50	2	5	5	1	1	**2**
Area	6	--	--	--	125.00	187.50	1	3	3	1	1	**1**
				Total	9,187.00						**Total**	**21**

(0.5' added to account for over dredge)

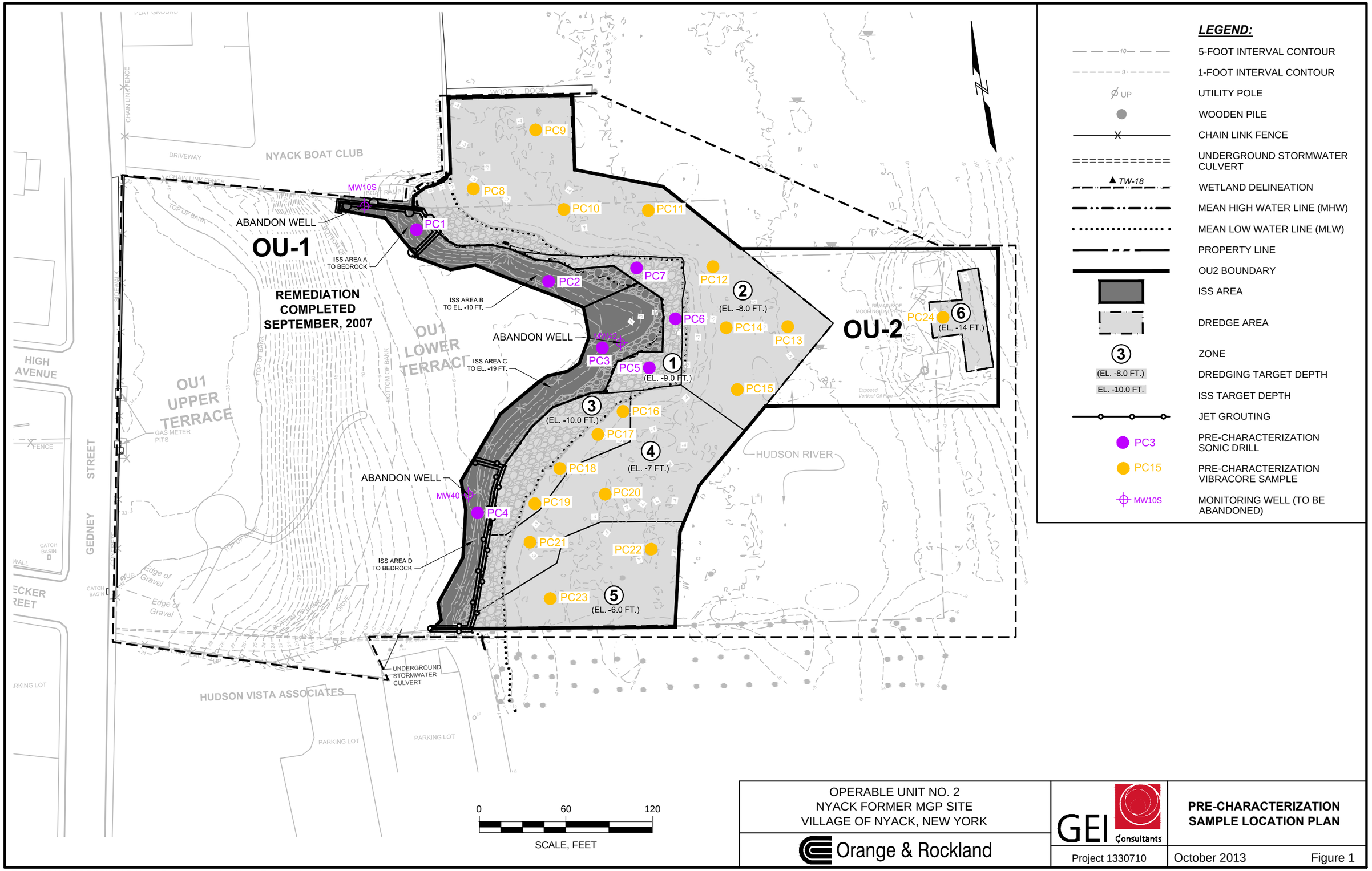
Facility		
BSM	5 pt comp	every 500 CY
Morrisville	Grab	1st 90 ton, 2nd 90 ton, and every 375 ton thereafter
	Grab	every 1500 tons
	5 pt comp	every 1500 ton

Composite Sample Analysis List

EPH	
Total VOCs	8260B
Total SVOCs	8270C/8270D
Total PCBs	8080/8082A
Total Metals PPM*	6010B
Sulfur	ASTM D129
TCLP Metals*	1311/6010
Ignitability	1010A/1030
Corrosivity	9040C/9045D
Reactivity (Cyanides and Sulfides)	SW846 Ch. 7.3
TCLP SVOCs	1311/8270D
TCL Total Metals**	6000/7000

* RCRA + Copper, Nickel, and Zinc
**Including Hex Chrome, and Cyanide

Figures



LEGEND:

- 5-FOOT INTERVAL CONTOUR
- 1-FOOT INTERVAL CONTOUR
- UTILITY POLE
- WOODEN PILE
- CHAIN LINK FENCE
- UNDERGROUND STORMWATER CULVERT
- WETLAND DELINEATION
- MEAN HIGH WATER LINE (MHW)
- MEAN LOW WATER LINE (MLW)
- PROPERTY LINE
- OU2 BOUNDARY
- ISS AREA
- DREDGE AREA
- ZONE
- (EL. -8.0 FT.) DREDGING TARGET DEPTH
- EL. -10.0 FT. ISS TARGET DEPTH
- JET GROUTING
- PC3 PRE-CHARACTERIZATION SONIC DRILL
- PC15 PRE-CHARACTERIZATION VIBRACORE SAMPLE
- MW10S MONITORING WELL (TO BE ABANDONED)

OPERABLE UNIT NO. 2
NYACK FORMER MGP SITE
VILLAGE OF NYACK, NEW YORK

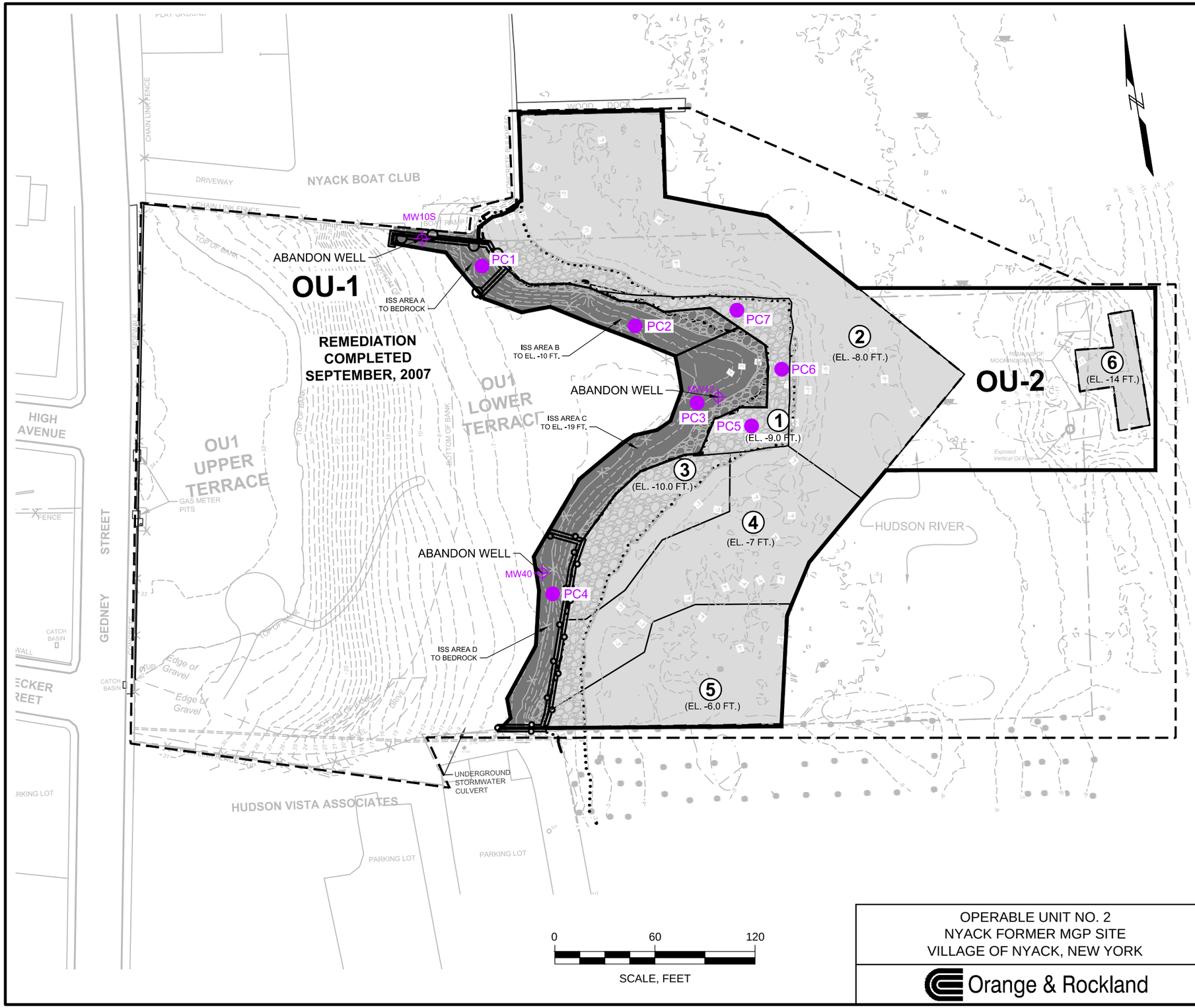
Orange & Rockland

GEI Consultants

PRE-CHARACTERIZATION SAMPLE LOCATION PLAN

Project 1330710 | October 2013 | Figure 1

I:\Project\ORANGE & ROCKLAND\Nyack\Precharacterization\Nyack-Precharacterization.dwg



LEGEND:

- 5-FOOT INTERVAL CONTOUR
- 1-FOOT INTERVAL CONTOUR
- UTILITY POLE
- WOODEN PILE
- CHAIN LINK FENCE
- UNDERGROUND STORMWATER CULVERT
- TW-18 — WETLAND DELINEATION
- MEAN HIGH WATER LINE (MHW)
- MEAN LOW WATER LINE (MLW)
- PROPERTY LINE
- OU2 BOUNDARY
- ISS AREA
- DREDGE AREA
- 3 — ZONE
- (EL. -8.0 FT.) — DREDGING TARGET DEPTH
- EL. -10.0 FT. — ISS TARGET DEPTH
- JET GROUTING
- PC3 — PRE-CHARACTERIZATION SONIC DRILL
- MW10S — MONITORING WELL (TO BE ABANDONED) - FINAL LOCATION PROVIDED UPON MOBILIZATION

OPERABLE UNIT NO. 2
NYACK FORMER MGP SITE
VILLAGE OF NYACK, NEW YORK

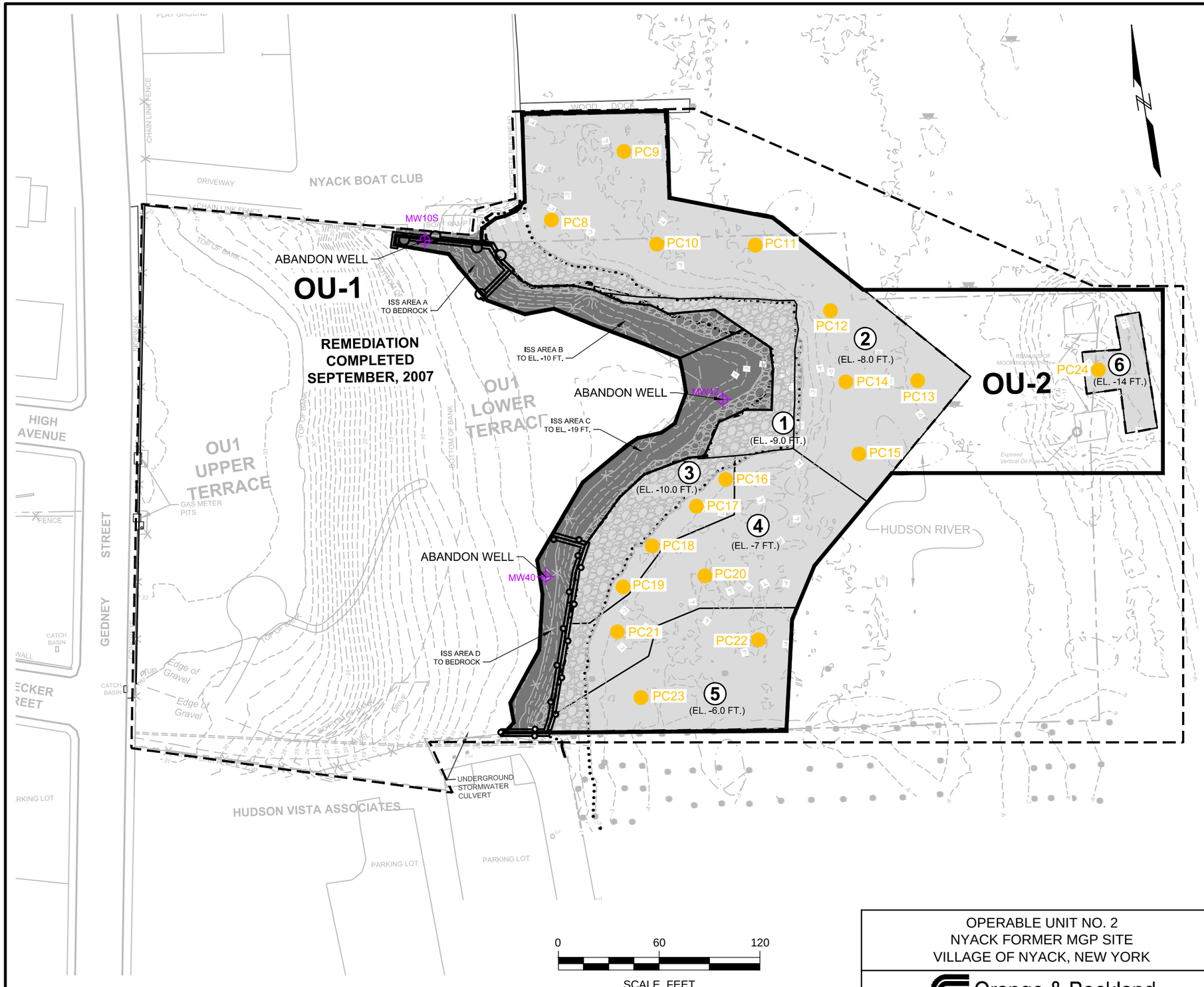
Orange & Rockland

GEI Consultants

PRE-CHARACTERIZATION SAMPLE LOCATION PLAN ISS AREAS

Project 1330710 | October 2013 | Figure 2

I:\Project\ORANGE & ROCKLAND\Nyack\Precharacterization\Nyack-Precharacterization.dwg



LEGEND:

- 5-FOOT INTERVAL CONTOUR
- 1-FOOT INTERVAL CONTOUR
- UTILITY POLE
- WOODEN PILE
- CHAIN LINK FENCE
- UNDERGROUND STORMWATER CULVERT
- WETLAND DELINEATION
- MEAN HIGH WATER LINE (MHW)
- MEAN LOW WATER LINE (MLW)
- PROPERTY LINE
- OU2 BOUNDARY
- ISS AREA
- DREDGE AREA
- ZONE
- (EL. -8.0 FT.) DREDGING TARGET DEPTH
- EL. -10.0 FT. ISS TARGET DEPTH
- JET GROUTING
- PC15 PRE-CHARACTERIZATION VIBRACORE SAMPLE
- MW10S MONITORING WELL (TO BE ABANDONED)

PC #	NORTHING	EASTING
8	823163.05	653413.24
9	823196.58	653462.33
10	823138.94	653473.00
11	823129.09	653530.83
12	823083.56	653568.95
13	823034.34	653613.72
14	823040.29	653571.38
15	822996.70	653572.34
16	822994.13	653491.62
17	822981.06	653471.92
18	822961.84	653442.16
19	822940.44	653421.19
20	822939.34	653470.41
21	822914.53	653413.72
22	822873.64	653495.97
23	822873.64	653421.46
24	823023.88	653721.07

OPERABLE UNIT NO. 2
NYACK FORMER MGP SITE
VILLAGE OF NYACK, NEW YORK

Orange & Rockland

GEI Consultants

PRE-CHARACTERIZATION VIBRACORE LOCATION PLAN

Project 1330710 | October 2013 | Figure 3

I:\Project\ORANGE & ROCKLAND\Nyack\Precharacterization\Nyack-Precharacterization.dwg

Appendix A

Sample Analysis and Frequency

Clean Earth Sampling Protocol
Southeast PA (Morrisville)

PARAMETERS	TPH	TOX	TCL TOTAL METALS *Chromium and Cyanide*	TCLP METALS *RCRA*	IGNITABILITY	CORROSIVITY (PH)	REACTIVITY - SULFIDE AND CYANIDE	PCBs	TCLP VOLATILE ORGANICS *for Non Virgin Sources*	TCLP SEMI VOLATILE ORGANICS *Run for Non Virgin Sources*	
METHODS (1)		8015M	9023	6000/7000	1311/6010	1030	9045D	SW846 CHAPTER 7.3	8082A	1311/8260B	1311/8270D
	FREQUENCY										
LIGHT END HYDROCARBONS	Grab - 1st 90 tons; 2nd 90 tons; every 180 tons thereafter	**X**	**X**								
	Grab - Every 900 tons									**X**	
	5 point grab composite 1st 900 tons and every 900 tons thereafter			**X**	**X**	**X**	**X**	**X**	**X**		**X**
Limit		*<45,000		End Use Criteria	Below RCRA Toxicity Level	Negative	>2 - <12.5	Sulfide <500 Cyanide <250	<4	Below RCRA Toxicity Level	Below RCRA Toxicity Level
HEAVY END HYDROCARBONS	Grab - 1st 90 tons; 2nd 90 tons; every 375 tons thereafter	**X**	**X**								
	Grab - Every 1500 tons									**X**	
	5 point grab composite 1st 1500 tons and every 1500 tons thereafter			**X**	**X**	**X**	**X**	**X**	**X**		**X**
Limit		*<45,000		End Use Criteria	Below RCRA Toxicity Level	Negative	>2 - <12.5	Sulfide <500 Cyanide <250	<4	Below RCRA Toxicity Level	Below RCRA Toxicity Level

* If TPH is >10,000 ppm a PADEP Form U must be submitted

(1) The methods provided are standard EPA methods. The method revisions are subject to change and the most current method should always be utilized by the laboratory.

This is to be used as a guideline for sampling. Sampling frequencies and parameter requirements may be modified at the discretion of the CE Approval staff based items such as site history, levels of contamination and/or source of contamination, etc.

BAYSHORE
Soil Management, LLC

Material Sampling and Laboratory Guide

Site Type Petroleum Contaminated Soil	Sampling Frequency & Testing Requirments	EPH	Home Gen Cert	Total VOCs 8260B	PP Metals 6010B	Paint Filter 9095	SVOCs 8270C	PCBs 8080	Sulfur	Pesticides	TCLP
Residential < 20 CY/30T	1 sample per 30T	X	X								
Residential > 20CY/30T	1 Composite Sample per 800 CY / 1200T			X	X	X					**
	1 Composite Sample per 100CY / 150T	X									
Commercial	1 Composite Sample per 800 CY / 1200T			X	X	X					**
	1 Composite Sample per 100CY / 150T	X									
Coal Tar / MGP soil	1 Composite per every 500 CY/ 750T	X		X	X		X	X	X		**
Unknown Source / Historic or Urban Fill	1 Composite Sample per 800 CY / 1200T			X	X*	X	X	X		X	**
	1 Composite Sample per 100CY / 150T	X									
Street Sweepings	1 Composite Sample per 800 CY / 1200T			X	X*	X	X	X		X	**
	1 Composite Sample per 100CY / 150T	X									
Potable Water T.R. / CFM	1 Composite Sample per 800 CY / 1200T	X		X	X*	X	X	X		X	**

* TAL or NJSRS Metals List required
** TCLP will be required for any parameter which exceeds the RCRA 20X Rule

Acceptance of all projects are subject to the completion and review of a completed "PROFILE SHEET", the criteria noted above, and approval as granted by Bayshore Soil Management, LLC.

At the discretion of the facility, additional analysis may be required for project acceptance. Soils originating from substations/generating stations, analysis for PCBs and SVOCs are requested.

It should be noted that soil with moisture content in excess of 18% per ASTM Standard Test Method D 2216-05, will be subject to a surcharge.

The amount of debris acceptable is 1% by volume; and any stone, brick, block and/or concrete should be 12 inch minus.

Bayshore Soil Management, LLC
75 Crows Mill Rd
Keasbey, NJ 08832
P: 732.738.6000 * F: 732.738.1950

Appendix B

Community Air Monitoring Plan

GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Appendix E

Community Air Monitoring Plan

Nyack MGP Site
Nyack, New York
NYSDEC Site # 3-44-046

Submitted To:
Orange & Rockland Utilities, Inc.
3 Old Chester Road
Goshen, NY 10924

Submitted By:
GEI Consultants, Inc.
1301 Trumansburg Road, Suite N
Ithaca, NY 14850

March 2012
Project #: 121640-1001

James Edwards
Project Geologist

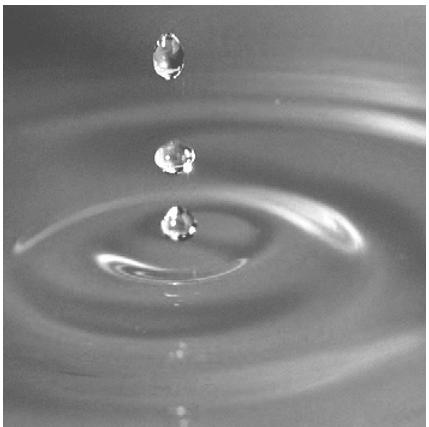


Table of Contents

Abbreviations and Acronyms

CAMP	Community Air Monitoring Plan
COC	Compounds of Concern
GEI	GEI Consultants, Inc.
HASP	Health and Safety Plan
MGP	Manufactured Gas Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&R	Orange & Rockland Utilities, Inc.
PAH	Polycyclic Aromatic Hydrocarbons
PDI	Pre-Design Investigation
PID	Photo-ionization Detector
ppm	Parts per Million
SVOC	Semi-Volatile Organic Compounds
VOC	Volatile Organic Compounds
$\mu g/m^3$	Micrograms per cubic meter

1. Introduction

This Community Air Monitoring Plan (CAMP) will be implemented during the Pre-Design Investigation (PDI) of the Orange & Rockland Utilities, Inc. (O&R) Nyack Manufactured Gas Plant (MGP) site, located in Nyack, New York. A CAMP is required by the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) at sites where ground-intrusive activities may result in airborne release of compounds of concern (COC). Towards that end, community air monitoring will be performed for total volatile organic vapors (VOCs), and for particulates (dust).

The Nyack MGP site is located between Gedney Street and the Hudson River in Nyack, New York. This CAMP applies to the PDI phase of work for the Nyack MGP site. The PDI field work is scheduled to be performed in the spring of 2012. The PDI field work involves the advancement of subsurface soil borings, and sediment sampling. Community air monitoring will be performed during the drilling of soil borings.

The objectives of this CAMP are to:

- Ensure that the airborne concentrations of COC are minimized to protect the community.
- Provide an early warning system so that potential emissions can be controlled on site at the source.
- Measure and document the concentrations of airborne COC to confirm compliance with the specified limits.

This CAMP is a companion document to GEI's site-specific Health and Safety Plan (HASP). The HASP is a separate document and is directed primarily toward protection of on-site workers within the designated work zones.

2. Air Monitoring Equipment, Methods, and Action Levels

This section provides instructions for performing the CAMP activities. Discussed are the COC to be monitored, the equipment to be used, where sampling is to be performed, and the action limits. For the Nyack MGP site, community air monitoring will be performed for total VOCs and particulates (dust) during the drilling of soil borings.

In addition to the community air monitoring, work/exclusion zone monitoring will be performed during work activities where impacted soil or groundwater may be encountered. The exclusion zone air monitoring requirements, equipment, and action levels are described in the site-specific HASP for this project. Note, however, that the work zone air monitoring and the community air monitoring are conducted as part of the overall site control program. When work zone VOC or particulate readings are found to exceed the downwind CAMP limits, the field staff will check the upwind and downwind air monitoring instruments to assess whether control measures will be required.

2.1 Monitoring Locations

Two community air monitoring locations will be established at the start of each workday – one upwind of the work area, and one downwind of the work area/exclusion zone. The purpose of the upwind station will be to determine the background concentration of VOCs and particulates at the worksite. The downwind monitoring station will be used to assess compliance with the NYSDEC/NYSDOH specified action limits for VOCs and particulates. The upwind VOC and dust measurements will be subtracted from the downwind measurements in order to compare the downwind instrument readings to the CAMP action levels.

The location of the each monitoring station will be noted on the ***Community Air Monitoring Daily Data Sheet*** (Daily Data Sheet) [Attachment A]. The locations of the instruments may be changed during the day to adapt to changing wind directions. Each location will be noted on the Data Sheet, along with the start and stop time at each location. Field personnel will be prepared to move the equipment to multiple locations in the event that there is little wind, if the wind direction changes frequently, or if there is a change to the location of the most sensitive downwind receptor location.

Where the work area is less than 20 feet from the nearest occupied building, the downwind air monitoring station will be positioned at the air intake for the building or at the most sensitive exposure point for the downwind receptors. Background measurements inside the building will be made prior to the start of work. If exceedances of the action levels are

measured at the outside wall of the building, additional measurements will be made inside the building using portable meters.

If necessary, precautions to minimize the release of VOCs and particulates will be taken at the work zone, and engineering or work controls used to protect the downwind receptor. These controls for minimizing releases from the work zone are discussed in Section 3.

2.2 Air Monitoring Equipment

The monitoring instruments will be calibrated at the start of each workday, and again during the day if the performance of an instrument is in question. The time and method of calibration will be noted on the Daily Data Sheet. Both the photo-ionization detectors (PIDs) and particulate meters will be mounted on a tripod in a vented protective case, and programmed to record 15-minute averages. A monitoring technician will check the instrumentation at each of these locations regularly during the work-day to check that they are operating properly.

2.2.1 VOC Monitoring Equipment

VOC monitoring will be performed using PIDs (RAE Systems MiniRAE™ or equivalent) equipped with a 10.2 or 10.6 eV bulb. The instruments will be set to record 15-minute running average concentrations. The PIDs will be equipped with an audible alarm to indicate an exceedance of the action level of 5 ppm total VOCs.

2.2.2 Particulate (Dust) Monitoring Equipment

Particulate monitoring will be performed using meters set to measure 10 micron and finer particulates (PM-10). Particulates will be monitored using an MIE DataRAM DR-2000l, TSI DustTrak™, or equivalent. The equipment used will be set to record 15-minute running average concentrations, for comparison to the action levels.

In addition to the instrument readings, fugitive dust migration will be visually assessed during all work activities, and the observations recorded. Per NYSDEC requirements, visible dust migration will not be allowed. If visible dust is observed to be migrating from the work zone, the work will be stopped and dust control measures implemented.

2.3 Monitoring Action Levels and Responses

The action levels and responses for VOCs and particulates are presented in Table 1.

Table 1. Air Monitoring Response Levels and Actions

VOCs	
Response Level	**Actions**
>1 ppm at the wall of an occupied structure or at an air intake	▪ Check the indoor air concentration and compare with background measurements taken previously
>5 ppm above background for 15-minute average	▪ Temporarily halt work activities ▪ Continue monitoring, especially inside of occupied structures ▪ If VOC levels decrease (per instantaneous readings) below 5 ppm over background, work activities can resume
Persistent levels >5 ppm over background but <25 ppm	▪ Halt work activities ▪ Identify source of vapors ▪ Corrective action to abate emissions ▪ Continue monitoring ▪ Resume work activities if VOC levels 200 feet downwind of the property boundary or half the distance to the nearest potential receptor is <5 ppm for a 15-minute average
>25 ppm at the perimeter of the work area	▪ Shut down work

Particulates	
Response Level	**Actions**
>100 µg/m^3 above background for 15-minute average or visual dust observed leaving the site	▪ Apply dust suppression ▪ Continue monitoring ▪ Continue work if downwind PM-10 particulate levels are <150 µg/m^3 above upwind levels and no visual dust leaving site
>150 µg/m^3 above background for 15-minute average	▪ Stop work ▪ Re-evaluate activities ▪ Continue monitoring ▪ Continue work if downwind PM-10 particulate levels are <150 µg/m^3 above upwind levels and no visual dust leaving site

Sources:

- NYSDOH Community Air Monitoring Plan, December 2009, as published in NYSDEC DER-10, Appendix 1A, 2010.
- Fugitive Dust and Particulate Monitoring, NYSDEC DER-10, Appendix 1B, 2010.
- Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures, NYSDOH.

All data will be downloaded to a computer on a daily basis and saved for review. The data will be provided to the NYSDEC and/or the NYSDOH upon request at any stage of the project.

If VOC or particulate action levels are observed to be exceeded during the work day, the event, the source, and corrective actions taken will be recorded on the Daily Data Sheet and reported to the on-site NYSDEC representative. If an on-site representative is not present,

exceedances will be noted in the daily report to the NYSDEC project manager within one business day.

Table 2. Emergency Contacts and Telephone Numbers

Fire, Police, Ambulance		911
NYSDEC Contact	Elizabeth Lukowski – Project Manager	(518) 402-9564 (office)
GEI Contacts	James Edwards – Project Geologist Garrett Schmidt – Field Team Leader	(607) 592-6786 (cell) (607) 793-3463 (cell)
O&R Contact	Maribeth McCormick – Project Manager	(845) 783-5534 (office) (914) 557-1361 (cell)

2.4 Odor Monitoring

The field investigation personnel will record observations of odors generated during the RI field activities. When odors attributable to the exposing of impacted media are generated in the work area during intrusive activities, such as soil borings or excavation of test pits, observations will also be made at the downwind limit of the MGP site. The observations will be made to assess the potential for significant odors reaching on-site receptors or being transmitted off site. The downwind odor monitoring will be performed in conjunction with the PID and dust monitoring program described in this CAMP.

Upon detection of odors at the site perimeter, site controls, starting in the work area, will be implemented. The site controls described in Section 3 will be used to assist with odor mitigation. Note that the goal of the Odor Mitigation Plan is to minimize and to prevent, where practicable, the off-site migration of odors. Due to the short distances between any work area at the site and the on-site receptors property line, site controls will be implemented proactively when odors are detected in the breathing zone at any work area.

There are no action levels specified for odors. In the event that odors persist at the downwind receptors or property line after control measures are carried-out, the odor conditions will be discussed with the O&R and NYSDEC project managers.

3. Control Procedures

This section outlines the procedures to be used to control VOCs, odors, and particulates that may be generated during the PDI field activities. The investigation program will be conducted using two principal PDI techniques that may generate odors: test pit excavations and subsurface soil borings. The remainder of this section is intended to provide site managers, representatives of the NYSDEC and NYSDOH, and the public with information summarizing typical odor control options, and to provide some guidance for their implementation. A description of potential sources of odors and methods to be used for odor control are presented in the following sections.

3.1 Potential Sources of Odors and VOCs

Generally, the residuals encountered at former MGP sites are well defined. They are related to residual coal tar-like materials and petroleum, and principally contain VOCs, polycyclic aromatic hydrocarbons (PAHs), and a number of inorganic constituents, including metal-complexed cyanide compounds, and metals. Constituents of MGP tar or petroleum products can produce odor emissions during investigation activities when they are unearthed during backhoe test pits and soil borings. When this occurs, VOCs and light-end semi-volatile organic compounds (SVOCs) can volatilize into the ambient air. Some MGP residuals can cause distinctive odors that are similar to mothballs, roofing tar, or asphalt driveway sealer. It is important to note that the CAMP will provide for continual monitoring of VOCs and particulates during the field work to monitor for any potential release of constituents which may exceed the exposure limits for downwind receptors.

3.2 General Site Controls

Several general excavation or drilling procedure site controls that will be implemented include:

- Every effort will be made to minimize the amount of time that impacted material is exposed to ambient air at the site.
- Drill cuttings from the hollow-stem auger borings will be containerized as soon as possible during completion of each soil boring.
- Meteorological conditions are also a factor in the generation and migration of odors. Some site activities may be limited to times when specific meteorological conditions prevail, such as when winds are blowing away from a specific receptor.

4. Documentation and Reporting

The attached Daily Data Sheet will be filled-out each day to record all of the details of the CAMP work. The form will be used to record the following information:

- Date and weather, with significant changes noted which may affect the positioning of the meters or recording of the data.
- Calibration results for the instruments.
- Locations of the upwind and downwind monitoring stations, and any changes made to the locations during the day to adjust for changing work locations or wind directions.
- Any significant readings made during the day, such as exceedances which occur and their causes.

Additional information will be noted in the project field book(s), as necessary.

The electronic measurements from the PIDs and dust meters will be downloaded each day, reviewed, and archived. Exceedances of the action levels, if any, and the actions to be taken to mitigate the situations, will be discussed immediately with the on-site representatives, or reported within one business day to the NYSDEC project manager (if on-site NYSDEC oversight is not provided). The results of the daily CAMP monitoring will also be discussed in the daily written report to the NYSDEC project manager. Summaries of all air monitoring data will be provided to the NYSDEC or the NYSDOH upon request.

CAMP odor monitoring results will be recorded in the field log book and/or the Daily Data Sheet, and will also be available for review by the state agencies.

ATTACHMENT A

Community Air Monitoring Daily Data Sheet

Community Air Monitoring Daily Data Sheet

Date:

Site:

Project Number:

Weather:

Monitoring Start Time:

End Time:

Monitoring Station Location	Time (24 hour)	CAMP PID (ppm)	CAMP Particulate (mg/m3)	Wind Direction	Work Zone PID (ppm)	Work Zone Particulate (mg/m3)	Activity	Comments

Notes:

INSTRUMENT INFORMATION **Time** **Span and Agent**

PID Model: **Serial Number:** **Calibration:**

PID Model: **Serial Number:** **Calibration:**

Dust meter model: **Serial Number:** **Calibration:**

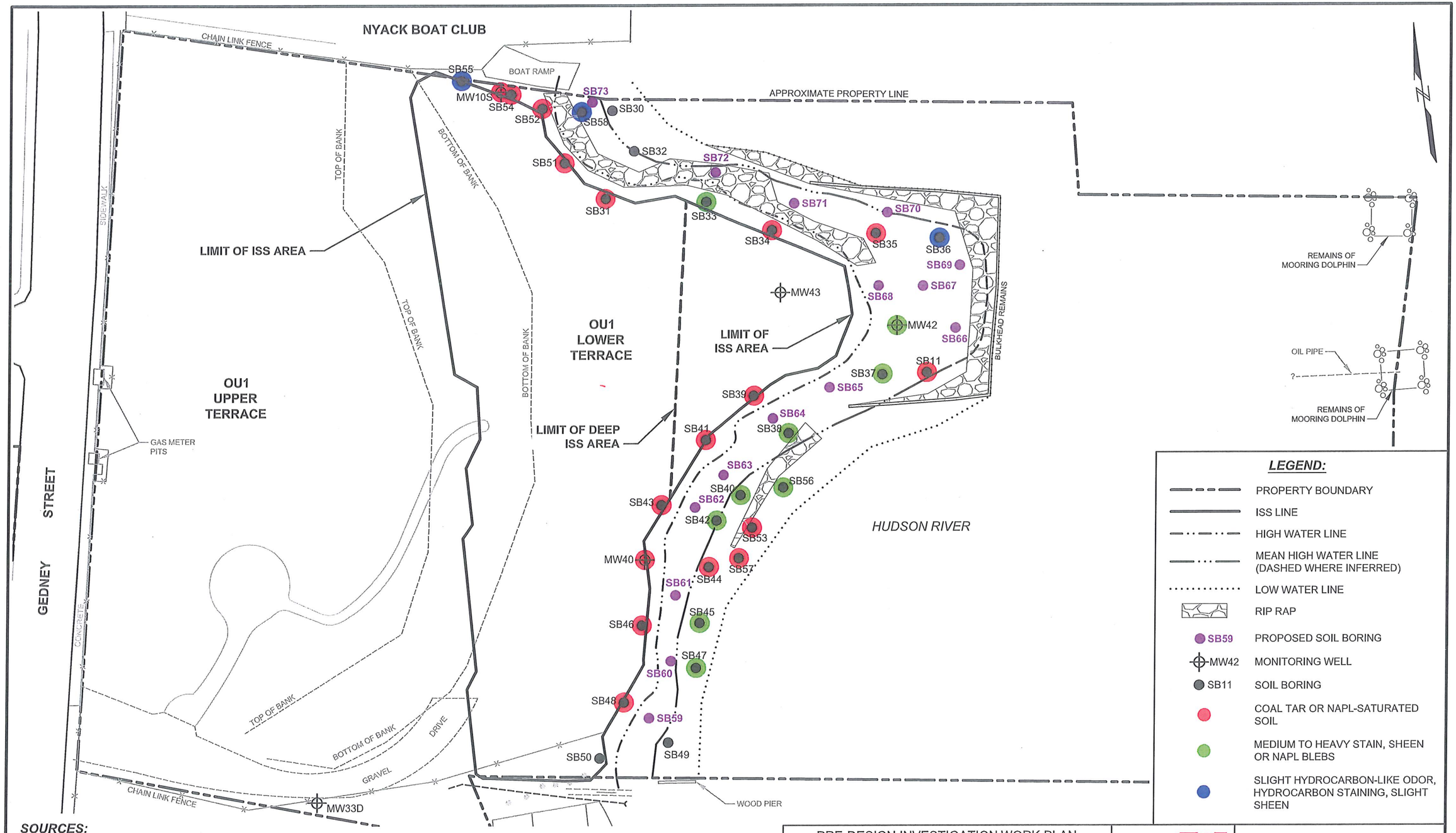
Dust meter model: **Serial Number:** **Calibration:**

Notes for Map on Reverse Side:

Circle Work Area. Show start and end times if there are multiple work areas.

↗ wind direction | **U** Upwind Station | **D** Downwind Station

Monitoring Completed By (print and sign): _____



SOURCES:

1. *FIGURE 4-1: VISIBLE IMPACTS, NYACK FORMER MGP* OF THE OU2 RI REPORT, PREPARED FOR ORANGE AND ROCKLAND UTILITIES, PREPARED BY AECOM, SCALE: 1" = 50', DATE: 04/22/09.
2. *FIGURE 2: PROPOSED SOIL BORING LOCATIONS* OF THE OU2 PRE-DESIGN INVESTIGATION WORK PLAN, PREPARED FOR ORANGE AND ROCKLAND UTILITIES, PREPARED BY ARCADIS, SCALE: 1" = 50', DATE: 2011.

PRE-DESIGN INVESTIGATION WORK PLAN
OPERABLE UNIT 2
NYACK FORMER MGP SITE
NYACK, NEW YORK

ORANGE AND ROCKLAND UTILITIES, INC.
SPRING VALLEY, NEW YORK

GEI Consultants

PREVIOUS AND PROPOSED SOIL BORING LOCATIONS

Project 121640-1001 | March 2012 | Figure 3

I:\Project\ORANGE & ROCKLAND\Nyack\PDI Work Plan\Drawings\2012-03\Nyack-PDIWP Figures.dwg