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Operable Unit 3 – Soil Gas Interim Remedial Measure Work Plan, Former Grumman Settling Ponds, Bethpage, New York Site #1-30-003A

February 16, 2007

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Site #1-30-003A

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1. Introduction

This Operable Unit 3 (OU3) Soil Gas Interim Remedial Measure (soil gas IRM) Work Plan (Plan) was prepared by ARCADIS of New York, Inc. (ARCADIS) on behalf of Northrop Grumman Systems Corporation (Northrop Grumman), and is being submitted pursuant to the Order On Consent (Consent Order or CO) Index # W1-0018-04-01 that was executed by the New York State Department of Environmental Conservation (NYSDEC) and Northrop Grumman, effective July 4, 2005 (NYSDEC 2005). The present day Bethpage Community Park property (Park), which the NYSDEC has termed the "Former Grumman Settling Ponds Area" and designated as OU3, is referred to herein as the Site. The Park has been owned and operated by the Town of Oyster Bay since 1962.

The CO allows the implementation of Interim Remedial Measures (IRMs) for OU3. In response to NYSDEC's December 22, 2006 letter to Northrop Grumman, Northrop Grumman has elected to implement a soil gas mitigation system as an IRM. Northrop Grumman has also elected to implement a groundwater treatment system IRM, a Work Plan for which will be submitted to the NYSDEC at a later date.

This Work Plan is organized into the following sections:

- Section 2 provides a brief description of the Site, its history and environmental setting, as well as a summary of the soil gas data obtained, to date, from the on-going OU3 Remedial Investigation (RI).
- Section 3 presents the pertinent Preliminary Applicable or Relevant and Appropriate Requirements (ARARs)/New York State Standards, Criteria, and Guidelines (SCGs).
- Section 4 summarizes the soil gas IRM rationale and objectives.
- Section 5 provides a description of the soil gas IRM remedial technology and system description.
- Section 6 describes the pre-design work proposed, including additional investigation and pneumatic conductivity testing.
- Section 7 describes the design and technical specifications that will be provided to the NYSDEC for the proposed soil gas IRM.

- Sections 8 thru 11 provide information regarding the Quality Assurance Project Plan (QAPP), Health & Safety Plan (HASP), Operation, Maintenance and Monitoring Manual (OM&M Manual), and Citizen Participation Plan (CPP), respectively.

- Section 12 provides the proposed soil gas IRM schedule.

- Sections 13 thru 15 summarize information regarding the soil gas IRM permit requirements, closure strategy, and engineering certification.

- Section 16 provides the list of references cited in this Plan.

The following appendices are also included in this Plan:

- Appendix A – Summary of Soil Gas Data Collected by the Town of Oyster Bay, Bethpage Community Park.

- Appendix B –Pre-Design Investigation Program.

- Appendix C – Pneumatic Conductivity Test Work Plan.

- Appendix D – Draft OM&M Manual Outline.

2. Site Description and Background

The following subsections of this Plan summarize details regarding the Site description, location, history, and environmental setting. Much of the information related to site description and background that is presented herein was originally presented in the December 2003 Field Report - Town of Oyster Bay, Bethpage Community Park, Investigation Sampling Report, prepared by Dvirka & Bartilucci Consulting Engineers (D&B) on behalf of Northrop Grumman.

2.1 Site Description

The Site is bordered by Cherry Avenue Extension and the Robert Plan Company Building to the north, Stewart Avenue and Bethpage High School to the east, the Former Plant 24 Access Road and residential areas to the south, and a second Robert Plan Company Building (the former Northrop Grumman Plant 24) to the west. Other properties owned by Northrop Grumman, including the McKay Field property, ball fields

and former nursery area are located to the west. The Site location is shown on Figure 2-1. The adjoining streets and properties, as well as current site features and structures are shown on Figure 2-2.

The present-day Park is operated by the Town of Oyster Bay (TOB or Town) and is comprised of approximately 18 acres. The Park, up to about mid-2006, was open year-round and contained two swimming pools, an ice rink, offices, parking lot, picnic and playground areas, tennis courts, paddleball courts, basketball court, shuffleboard courts, horseshoe pits, baseball field, bicycle rack areas, and a stormwater recharge basin. Freon, which we believe is attributable to the Town's operation of the ice rink, has been found in soil gas and groundwater samples collected at the Park. Currently the Park is closed to the public to allow the Town to implement a soil IRM and redevelopment of the Park, including construction of a new ice rink. Adjoining the Park property to the south is the former Plant 24 Access Road Property, which is a partially asphalt-paved/partially grassed area that runs east-west along the Park southern boundary. The former Plant 24 Access Road Property is owned by Northrop Grumman.

2.2 Park History

The December 2003 report prepared by D&B provides a detailed description of the Site and its history (D&B 2003). Table 2-1 provides a summary of soil gas data collected by ARCADIS during the on-going OU-3 RI and Figure 2-2 shows the locations of the soil gas sampling points. Appendix A summarizes the soil gas data collected by the Town at the Park.

2.3 Environmental Setting

This section of the Plan provides a brief, physical description of the Site, the local geology, and the area hydrogeology.

The Site is approximately 120 feet above mean sea level and, topographically, is generally flat. In general, the geology at the Site, from land surface down to the basal Magothy Formation, consists primarily of sand with interbedded lenses of silt, clay, and gravel. The uppermost sequence of these sediments is part of the Upper Pleistocene glacial outwash deposits, while the lower geologic sequence comprises the Magothy Formation. The Upper Pleistocene deposits in this area of Long Island tend to be coarser than the underlying upper portion of the Magothy Formation. Within the Magothy Formation, the deposits tend to become finer with depth, except for the basal

Magothy, where coarse sand and gravel deposits are more prevalent. Vertical profile borings drilled at the Site indicate the presence of a low permeability zone (LPZ) that consists of interbedded slit, clay, and sandy silts and clays. The upper surface of the LPZ was encountered from approximately 36 to 46 feet below land surface (ft bls) and ranging in thickness from approximately 1 ft to greater than 20 ft, and underlies most of the Site between the recharge basin and the ball field, as well as the western portion of the parking lot. A more detailed description of the Site geology is provided in the March 2006 OU3 Remedial Investigation/Feasibility Study (RI/FS) Work Plan prepared by ARCADIS.

The principal aquifers underlying the project area are the Upper Glacial deposits and Magothy Formation; these hydrogeologic units are in direct hydraulic connection with each other. Groundwater in the Upper Glacial deposits and Magothy Formation occurs under unconfined conditions at and near the Site (although the Magothy Formation in other areas of Long Island can exhibit semi-confined conditions; the degree of confinement increases with depth due to stratification caused by numerous silt and clay lenses). Within the project area, the average horizontal hydraulic conductivity of the Upper Glacial deposits is approximately 270 feet per day (ft/d); with an anisotropy of approximately 10:1 (horizontal to vertical, respectively). The average horizontal hydraulic conductivity of the Magothy Formation in the project area is approximately 50 ft/d, with an anisotropy ratio of approximately 100:1 (horizontal to vertical, respectively) (Geraghty & Miller, Inc. 1994).

Depth to groundwater at the Site is approximately 55 ft bls. Water-level elevation data collected in the area of the Site indicate a resultant direction of shallow groundwater flow that is horizontally south-southeasterly and vertically, slightly downward. The on-site stormwater recharge basin may produce local, water-table mounding during intense storm events, however no data currently exist to verify this. Perched water is present above the LPZ described above.

3. Preliminary ARARs/SCGs

The selection of ARARs/SCGs for the soil gas IRM will be consistent with the requirements of the NCP (USEPA 1990) and USEPA Guidance (USEPA 1988). In addition, New York State regulatory guidance, such as the Technical Guidance for Site Investigation and Remediation, Technical and Operational Guidance Series Memoranda, and Technical and Administrative Guidance Memorandum (TAGM), and related guidance documents will be considered in the evaluation/selection process. ARARs/SCGs can be characterized as chemical-specific, action-specific, or location-

specific requirements. Chemical-specific ARARs/SCGs are health-based or risk-based numerical values that may define acceptable exposure levels and can be used in establishing remediation goals. Location-specific ARARs/SCGs are restrictions based on the concentrations of hazardous substances or the conduct of activities in a specific area. Action-specific ARARs/SCGs are technology- or activity-based requirements or limitations on actions to be taken with respect to the hazardous waste.

The initial list of ARARs/SCGs developed for this soil gas IRM includes the following:

- Annual Guidance Criteria (AGC) and Short-Term Guidance Criteria (SGC) per the NYSDEC Division of Air Resources-1 (DAR-1) Guidelines for the Control of Toxic Ambient Air Contaminants dated 1991, and the AGC/SGC Tables dated December 22, 2003.

- Air Guideline Values per the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

4. IRM Objectives

The specific objectives of the soil gas IRM are:

- To mitigate the off-site migration of non-Freon related VOCs in the on-site soil gas through the implementation of a soil gas control system along the former Plant 24 Access Road property south of the Park.

- To comply with applicable NYSDEC Standards, Criteria and Guidelines (SCGs).

5. Technology and System Description

The soil gas IRM will use subsurface depressurization technology to mitigate soil gas along the former Plant 24 Access Road Property south of the Park. This section provides a general description of the subsurface depressurization technology and a brief, general system description of the soil gas IRM. More details of the soil gas IRM will be provided in later phases of the design.

5.1 Technology Description

Subsurface depressurization technology is an in-situ technology that is used to control volatile organic compound (VOC) soil gas in the unsaturated (vadose) zone. Typically, subsurface depressurization systems induce airflow in the subsurface with an applied vacuum, generated by an above-grade blower or alternate passive means (e.g., barometric pumping, wind turbines, etc.) via a series of depressurization points, thus pulling in soil gas from the surrounding vadose zone. Depressurization points can be vertical or horizontal wells. The extracted soil gas may then be treated above ground, if needed, prior to atmospheric discharge.

5.2 General System Description

Based on available data, the soil gas IRM will likely consist of the following major components at locations shown on Figure 5-1.:

- Vertical Extraction Wells – A series of vertical extraction wells (herein after referred to as depressurization wells) will be installed along the former Plant 24 Access Road property south of the Site to extract vapors from the vadose zone soils (soil gas). The number of depressurization wells, well spacing, and well construction details will be based on the results of pneumatic conductivity testing (see Section 6.2 of this Plan) and will be fully-developed during later design phases.

  Based on results of the on-going RI, there is a horizontally-oriented LPZ along, at least a portion of, the southern Site boundary. The approximate location and orientation of this LPZ, based on available data, is shown on Figure 5-2 which is a geologic cross section of the area. The depth to the water table in this area is approximately 55 ft bls. Additional pre-design investigations, described in Section 6.1 herein, are continuing to better delineate the LPZ.

  As the name implies, the LPZ soils will likely restrict/prevent air flow from above the LPZ soils into wells screened below the LPZ. Therefore, two sets of depressurization wells may be needed where this LPZ is present to induce negative pressure throughout the vadose zone across the southern Site property boundary. One set of wells would be installed in the vadose zone soils above the LPZ and the other set of wells would be installed in the vadose zone soils below the LPZ. Where the LPZ is not present, only one set of wells would be used.

- Depressurization System – Active extraction blowers (e.g., electrically powered) and/or alternate extraction technologies (e.g., barometric pumping, wind turbines, etc.) will be needed to generate negative pressure within the vadose zone and to push extracted soil gas through the emission control system, if required.

- Emission Control System – Prior to atmospheric discharge, the extracted soil gas will be treated, if required, to be compliant with applicable NYSDEC discharge requirements. Conceptually, the emission control system will consist of treatment using either vapor phase granular activated carbon (VPGAC) or potassium-permanganate impregnated zeolite (KMnO4) or possibly a combination of both. The emission control units (ECUs) will be located on Northrop Grumman property.

- Piping – Piping between the extraction wells and the blowers will be subsurface and installed using conventional trenching and backfilling methods. Piping between the blower and the emission control system, if required, will be exposed above ground.

- Treatment Shed – The blowers and the majority of the process equipment, system instrumentation and electrical controls will be housed in a treatment shed located on Northrop Grumman property.

Details of the treatment system will be provided in future design packages.

6. Pre-Design Work

This section presents the Pre-design work that will be undertaken to assist with the design of the soil gas IRM and further investigate soil gas south, west and east of the Park.

6.1 Investigatory Work

To assist with the design of the soil gas IRM and further investigation of soil gas, the following pre-design work will be undertaken:

- Limited soil gas sampling will be performed to investigate soil gas east, west and south of the Park and to refine the scope of the soil gas IRM.

- A series of Cone Penetrometer (CPT) borings will be drilled across the former Plant 24 Access Road south of the Park to help delineate the LPZ in this area,

which needs to be incorporated in the design of the soil gas IRM. This work will also provide preliminary information regarding perched water, where LPZ soils are present.

- If perched water is found during the CPT boring program noted above, piezometers will be installed, monitored and sampled to provide additional data.

More detailed information concerning these items is provided in Appendix B.

6.2 Pneumatic Conductivity Testing

To help determine site-specific design values for critical parameters, a pneumatic conductivity testing program will be performed. The pneumatic conductivity tests will be performed in the vadose zone above and below the identified LPZ. Information obtained from this testing program will be used to determine the following:

- Number, location, and sizing of vapor control wells, and
- Proper sizing of piping, blowers, and ECUs.

Details of the testing program are provided in Appendix C.

7. Design and Technical Specifications

The following design submittals for the soil gas IRM will be provided to the NYSDEC:

- A preliminary design submitted at the 50 to 75 percent completion level,
- A 95 percent completion submittal of the design plans and specifications, and
- A final design submittal of the plans and specifications signed and stamped by a professional engineer licensed to practice in New York State.

The schedule for submittals is provided in Figure 12-1.

8. Quality Assurance Project Plan

A QAPP will be prepared and presented in the 95 percent design submittal.

9. Health and Safety Plan

A Health and Safety Plan (HASP) will be prepared and presented in the 95 percent design submittal.

10. Operation, Maintenance, and Monitoring (OM&M) Manual

A system OM&M Manual will be prepared and presented in the 95 percent design submittal. An outline of the OM&M Manual is provided in Appendix D.

11. Citizens Participation Plan

A Citizens Participation Plan (CPP) for the OU3 project was prepared by ARCADIS as part of the March 2006 OU3 RI/FS Work Plan, Appendix D, and was approved by the NYSDEC. The referenced CPP summarizes the public participation objectives and activities to be conducted throughout the OU3 RI/FS process, including the conduct of an IRM. This OU3 CPP is included in this Plan by reference.

In general, the activities specified in the CPP for implementation of an IRM include the following:

- Preparation of an IRM Work Plan and submittal of the plan to NYSDEC for approval.
- Upon NYSDEC approval of the IRM Work Plan, a public availability session will be conducted prior to implementation of the IRM.
- The final IRM Work Plan will be placed in the document repositories, and a mailing will be sent out to the Contact List that announces the availability of the Work Plan, provides the date/time of the availability session, and includes a Fact Sheet that describes the IRM.

12. Project Schedule

A schedule of project milestones is provided as Figure 12-1.

The schedule was developed to meet the NYSDEC goal of having the soil gas IRM operational by the end of August 2007. However, Northrop Grumman cannot commit to meeting this deadline due to the many circumstances beyond their control, but will

target completion by the dates shown on the schedule. The attached schedule illustrates the task milestones associated with the project and how they are related. Deviations from the assumed task durations and potential impacts on other tasks along the critical path, may delay the start-up of the system.

A critical path method construction schedule will be provided in the 95 percent design report.

13. Permitting Requirements

Implementation of the soil gas IRM may require permits/permit equivalencies in accordance with applicable regulations. The need for these permits/permit equivalencies is also dependant on the activity being pursued. A brief discussion of the potential permits/permit equivalencies is provided herein.

To construct the subsurface depressurization system, the following permits/permit equivalencies may be required:

- Building Permit/permit equivalency (local authority).
- Electrical Permit/permit equivalency (local authority).

These permits/permit equivalencies will be obtained/applied for prior to system installation.

Prior to start-up of the subsurface depressurization system, the following permits/permit equivalency approvals will be obtained, if required:

- NYSDEC Air Discharge Permit/permit equivalency.
- NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit/permit equivalency or Publicly Owned Treatment Works (POTW) Discharge Permit/permit equivalency.

Technical approval to construct and a certificate to operate a process, exhaust, or ventilation system will be obtained from the NYSDEC through an Air Discharge Permit/permit equivalency. The permit will stipulate air discharge rates and the maximum concentrations of chemical constituents. It will also specify air sampling frequency and sample type.

During the subsurface depressurization process proposed, condensate (water) will be removed from the extracted soil gas via condensate knock-out tanks. Condensate disposal options, based on the expected quantity and quality of the condensate, will be assessed during the design phase of this project; if needed an application for a SPDES or POTW permit will be submitted.

14. Closure Strategy

IRM closure criteria will be specified in the OM&M Manual.

15. Engineering Certification

This statement certifies that this Plan has been prepared for the Former Grumman Settling Ponds, Nassau County Site # 1-30-003A OU3 (Bethpage Community Park), pursuant to the Order on Consent (Index # WI-0018-04-01) entered into between Northrop Grumman Systems Corporation and the New State Department of Environmental Conservation (NYSDEC) in July 2005.

ARCADIS of New York, Inc.

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NY PE License Number 073670

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New York State Department of Environmental Conservation (NYSDEC) Letter to Northrop Grumman, RE: Former Settling Ponds, NYSDEC Nassau County Site No. 1-30-003A (Bethpage Community Park) dated, December 22, 2006.

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Northrop Grumman Corporation (Northrop Grumman) Letter to New York State Department of Environmental Conservation (NYSDEC), RE: Former Settling Ponds, NYSDEC Nassau County Site No. 1-30-003A (Bethpage Community Park) dated, January 3, 2006.

Northrop Grumman Corporation (Northrop Grumman) Letter to New York State Department of Environmental Conservation (NYSDEC), RE: Former Settling Ponds, NYSDEC Nassau County Site No. 1-30-003A (Bethpage Community Park) dated, January 3, 2006.

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U.S. Environmental Protection Agency (USEPA), 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89.004. October.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP5-(7-7.5)	SGP5-(34-34.5)	SGP5-(49-49.5)	SGP6-(8-8.5)	SGP6-(34-34.5)
	Depth (ft bls):	7-7.5	34-34.5	49-49.5	8-8.5	34-34.5
	Date:	5/5/2006	5/5/2006	5/5/2006	5/2/2006	5/2/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		**59**	<360	**4,300**	<500	<480
Benzene		**5.4**	<19	**96**	<26	<26
Bromodichloromethane		<2	<41	<66	<55	<54
Bromoform		<3.1	<63	<100	<85	<83
Bromomethane		<1.2	<24	<38	<32	<31
1,3-Butadiene		**13**	**71**	**150**	**82**	<44
Carbon Disulfide		**11**	<47	<78	<65	**75**
Carbon Tetrachloride		**8.2**	**88**	**63**	<52	<50
Chlorobenzene		<1.4	<28	<46	<38	<37
Chloroethane		<2	<40	<66	<22	<21
Chloroform		<1.5	**68**	**73**	<40	<39
Chloromethane		<1.5	<31	<52	<43	<41
Dibromochloromethane		<2.6	<52	<84	<70	<68
Dichlorodifluoromethane		<3.7	<74	<120	<100	<99
1,1-Dichloroethane		<1.2	<25	<40	<33	**300**
1,2-Dichloroethane		<1.2	<25	<40	<33	<32
1,1-Dichloroethene		**1.5**	**26**	**52**	<33	<32
cis-1,2-Dichloroethene		<1.2	<24	<39	**520**	**480**
trans-1,2-Dichloroethene		<1.2	<24	<39	**83**	<32
1,2-Dichloroethene (total)		<1.2	<24	<39	**590**	**480**
1,2-Dichloropropane		<1.4	<28	<46	<38	<37
cis-1,3-Dichloropropene		<1.4	<28	<45	<37	<36
trans-1,3-Dichloropropene		<1.4	<28	<45	<37	<36
1,3-Dichloropropene (total) (a)		<1.4	<28	<45	<37	<36
Ethylbenzene		**2.5**	<26	<43	<36	<35
Freon 22		**5**	<53	<88	<74	<71
Freon TF		**2.5**	<47	<76	<63	<61
Methyl Butyl Ketone		<3.1	<61	<100	<86	<82
Methylene Chloride		<2.6	<52	<87	<73	<69
Methyl Ethyl Ketone		**12**	<44	**590**	**62**	<59
Methyl Isobutyl Ketone		<3.1	<61	<100	<86	<82
Styrene		<1.3	<26	<42	<35	<34
1,1,2,2-Tetrachloroethane		<2.1	<42	<68	<56	<55
Tetrachloroethene		**18**	**140**	**100**	**170**	**110**
Toluene		**21**	<23	**75**	<31	<30
1,1,1-Trichloroethane		**10**	**110**	**130**	**320**	**470**
1,1,2-Trichloroethane		<1.6	<33	<54	<45	<44
Trichloroethene		**230**	**4,600**	**3,700**	**7,500**	**4,200**
Vinyl Chloride		<0.77	<16	<25	<21	<20
Xylene (m,p)		**4.3**	<65	<110	<91	<87
Xylene (o)		**2.2**	<26	<43	<36	<35
Xylene (total)		**6.5**	<26	<43	<36	<35
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP5-(7-7.5)	SGP5-(34-34.5)	SGP5-(49-49.5)	SGP6-(8-8.5)	SGP6-(34-34.5)
	Depth (ft bls):	7-7.5	34-34.5	49-49.5	8-8.5	34-34.5
	Date:	5/5/2006	5/5/2006	5/5/2006	5/2/2006	5/2/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
Total VOCs:		**412.1**	**5,515**	**9,329**	**18,656**	**6,115**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

	Sample ID:	SGP6-(49-49.5)	SGP7-(7-7.5)	SGP7-(34-34.5)	SGP7-(49-49.5)	SGP8-(7-7.5)
	Depth (ft bls):	49-49.5	7-7.5	34-34.5	49-49.5	7-7.5
	Date:	5/2/2006	5/3/2006	5/3/2006	5/3/2006	5/4/2006
Constituent	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		**1,900**	<1200	<950,000	<5,900	**290**
Benzene		**61**	<64	<51,000	<320	**380**
Bromodichloromethane		<110	<130	<110,000	<670	<27
Bromoform		<170	<210	<170,000	<1,000	<41
Bromomethane		<62	<78	<62,000	<390	<16
1,3-Butadiene		**350**	<110	<88,000	<550	**110**
Carbon Disulfide		<130	**160**	**240,000**	<780	**78**
Carbon Tetrachloride		<100	<130	<100,000	<630	<25
Chlorobenzene		<74	<92	<74,000	<460	<18
Chloroethane		<42	<130	<42,000	<260	<26
Chloroform		<78	<98	<78,000	<490	<20
Chloromethane		<85	<100	<83,000	<520	<21
Dibromochloromethane		<140	<170	<140,000	<850	<34
Dichlorodifluoromethane		<200	<250	<200,000	<1,200	<49
1,1-Dichloroethane		**400**	**9,300**	<65,000	<400	**280**
1,2-Dichloroethane		<65	<81	<65,000	<400	<16
1,1-Dichloroethene		**520**	<79	<63,000	<400	<16
cis-1,2-Dichloroethene		**3,100**	**400**	<63,000	**30,000**	**950**
trans-1,2-Dichloroethene		**130**	<79	<63,000	<400	**120**
1,2-Dichloroethene (total)		**3,300**	**400**	<63,000	**30,000**	**1,100**
1,2-Dichloropropane		<74	<92	<74,000	<460	<18
cis-1,3-Dichloropropene		<73	<91	<73,000	<450	<18
trans-1,3-Dichloropropene		<73	<91	<73,000	<450	<18
1,3-Dichloropropene (total) (a)		<73	<91	<73,000	<450	<18
Ethylbenzene		<69	<87	**220,000**	**1,200**	**43**
Freon 22		<150	<180	<140,000	<880	<35
Freon TF		<120	<150	<120,000	<770	<31
Methyl Butyl Ketone		<170	<200	<160,000	<1,000	<41
Methylene Chloride		<140	<170	<140,000	<870	<35
Methyl Ethyl Ketone		**560**	<150	<120,000	**2,200**	**59**
Methyl Isobutyl Ketone		<170	<200	<160,000	<1,000	<41
Styrene		<68	<85	<68,000	<430	<17
1,1,2,2-Tetrachloroethane		<110	<140	<110,000	<690	<27
Tetrachloroethene		<110	<140	<110,000	<680	<27
Toluene		<60	**530**	**6,400,000**	**57,000**	**450**
1,1,1-Trichloroethane		**1,000**	**2,600**	<87,000	<550	**600**
1,1,2-Trichloroethane		<87	<110	<87,000	<550	<22
Trichloroethene		**16,000**	**2,100**	<86,000	**14,000**	**2,800**
Vinyl Chloride		**150**	<51	**230,000**	**3,800**	<10
Xylene (m,p)		<180	<220	**560,000**	**2,800**	**110**
Xylene (o)		<69	**110**	**170,000**	**1,000**	**61**
Xylene (total)		<69	**110**	**740,000**	**4,000**	**180**
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP6-(49-49.5)	SGP7-(7-7.5)	SGP7-(34-34.5)	SGP7-(49-49.5)	SGP8-(7-7.5)
	Depth (ft bls):	49-49.5	7-7.5	34-34.5	49-49.5	7-7.5
	Date:	5/2/2006	5/3/2006	5/3/2006	5/3/2006	5/4/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
		27,471	**15,710**	**8,560,000**	**146,000**	**153,611**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP8-(34-34.5)	SGP8-(49-49.5)	SGP-9(8.5-9)	SGP9-(34-34.5)	SGP9-(49-49.5)
	Depth (ft bls):	34-34.5	49-49.5	8.5-9	34-34.5	49-49.5
	Date:	5/4/2006	5/4/2006	4/28/2006	5/1/2006	5/1/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		<1,200	<120,000	<120	<31,000	<48,000
Benzene		<64	<6400	**11**	<1,600	<2,600
Bromodichloromethane		<130	<13,000	<13	<3,400	<5,400
Bromoform		<210	<21,000	<21	<5,200	<8,300
Bromomethane		<78	<7,800	<8	<1,900	<3,100
1,3-Butadiene		<110	<11,000	**13**	<2,900	<4,400
Carbon Disulfide		**170**	<16,000	<16	<4,000	<6,200
Carbon Tetrachloride		<130	<13,000	<13	<3,100	<5,000
Chlorobenzene		<92	<9,200	<9.2	<2,300	<3,700
Chloroethane		<130	<13,000	<5.3	<1,300	<2,100
Chloroform		<98	<9,800	<10	<2,400	<3,900
Chloromethane		<100	<10,000	<10	<2,700	<4,100
Dibromochloromethane		<170	<17,000	<17	<4,300	<6,800
Dichlorodifluoromethane		<250	<25,000	<25	<6,400	<9,900
1,1-Dichloroethane		**2,500**	<8,100	**1,100**	<2,000	<3,200
1,2-Dichloroethane		<81	<8,100	<8	<2,000	<3,200
1,1-Dichloroethene		<79	**28,000**	<8	<2,000	<3,200
cis-1,2-Dichloroethene		<79	**590,000**	**630**	**220,000**	**440,000**
trans-1,2-Dichloroethene		<79	<7,900	**71**	<2,000	<3,200
1,2-Dichloroethene (total)		<79	**590,000**	**710**	**220,000**	**440,000**
1,2-Dichloropropane		<92	<9,200	<9	<2,300	<3,700
cis-1,3-Dichloropropene		<91	<9,100	<9	<2,300	<3,600
trans-1,3-Dichloropropene		<91	<9,100	<9	<2,300	<3,600
1,3-Dichloropropene (total) (a)		<91	<9,100	<9	<2,300	<3,600
Ethylbenzene		**17,000**	<8,700	<9	<2,200	<3,500
Freon 22		<180	<18,000	<18	<4,600	<7,100
Freon TF		<150	<15,000	<15	<3,800	<6,100
Methyl Butyl Ketone		<200	<20,000	<20	<5,300	<8,200
Methylene Chloride		<170	<17,000	<17	<4,500	<6,900
Methyl Ethyl Ketone		<150	<15,000	**50**	<3,800	<5,900
Methyl Isobutyl Ketone		<200	<20,000	<20	<5,300	<8,200
Styrene		**220**	<8,500	<9	<2,100	<3,400
1,1,2,2-Tetrachloroethane		<140	<14,000	<14	<3,400	<5,500
Tetrachloroethene		<140	<14,000	**100**	<3,400	<5,400
Toluene		**900**	**45,000**	**23**	<1,900	<3,000
1,1,1-Trichloroethane		<110	<11,000	**45**	<2,700	<4,400
1,1,2-Trichloroethane		<110	<11,000	<11	<2,700	<4,400
Trichloroethene		<110	**1,200,000**	**480**	**13,000**	**86,000**
Vinyl Chloride		**10,000**	**890,000**	**280**	<1,300	<2,000
Xylene (m,p)		**20,000**	<22,000	<22	<5,600	<8,700
Xylene (o)		**6,900**	<8,700	<9	<2,200	<3,500
Xylene (total)		**29,000**	<8,700	<9	<2,200	<3,500
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP8-(34-34.5)	SGP8-(49-49.5)	SGP-9(8.5-9)	SGP9-(34-34.5)	SGP9-(49-49.5)
	Depth (ft bls):	34-34.5	49-49.5	8.5-9	34-34.5	49-49.5
	Date:	5/4/2006	5/4/2006	4/28/2006	5/1/2006	5/1/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
		86,690	**3,343,000**	**3,513**	**453,000**	**966,000**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP10-(7.5-8)	SGP10-(34-34.5)	SGP10-(49-49.5)	SGP11-(7-7.5)	SGP100
	Depth (ft bls):	7.5-8	34-34.5	49-49.5	7-7.5	7-7.9
	Date:	4/27/2006	4/27/2006	4/27/2006	5/5/2006	6/29/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		<31,000	<24,000	<95,000	<950	**190**
Benzene		<1,700	<1,300	<5,100	<51	**10**
Bromodichloromethane		<3,600	<2,700	<11,000	<110	<2.7
Bromoform		<5,500	<4,100	<17,000	<170	<4.1
Bromomethane		<2,100	<1,600	<6,200	<62	<1.6
1,3-Butadiene		<2,900	<2,200	<8,800	<88	**17**
Carbon Disulfide		**5,000**	<3,100	<12,000	**180**	**8.7**
Carbon Tetrachloride		<3,300	<2,500	<10,000	<100	<2.5
Chlorobenzene		<2,400	<1,800	<7,400	<74	<1.8
Chloroethane		<1,400	<1,100	<4,200	<110	<2.6
Chloroform		<2,600	<2,000	<7,800	<78	<2
Chloromethane		<2,700	<2,100	<8,300	<83	<2.1
Dibromochloromethane		<4,500	<3,400	<14,000	<140	<3.4
Dichlorodifluoromethane		**16,000**	**22,000**	**46,000**	<200	<4.9
1,1-Dichloroethane		<2,100	<1,600	<6,500	<65	<1.6
1,2-Dichloroethane		<2,100	<1,600	<6,500	<65	<1.6
1,1-Dichloroethene		<2,100	<1,600	<6,300	<63	<1.6
cis-1,2-Dichloroethene		<2,100	<1,600	<6,300	**370**	<1.6
trans-1,2-Dichloroethene		<2,100	<1,600	<6,300	<63	<1.6
1,2-Dichloroethene (total)		<2,100	<1,600	<6,300	**370**	<1.6
1,2-Dichloropropane		<2,400	<1,800	<7,400	<74	<1.8
cis-1,3-Dichloropropene		<2,400	<1,800	<7,300	<73	<1.8
trans-1,3-Dichloropropene		<2,400	<1,800	<7,300	<73	<1.8
1,3-Dichloropropene (total) (a)		<2,400	<1,800	<7,300	<73	<1.8
Ethylbenzene		<2,300	<1,700	<6,900	<69	**2.9**
Freon 22		**160,000**	**240,000**	**600,000**	<140	<3.5
Freon TF		<4,100	<3,100	<12,000	<120	<3.1
Methyl Butyl Ketone		<5,300	<4,100	<16,000	<160	**5.3**
Methylene Chloride		<4,500	<3,500	<14,000	<140	<3.5
Methyl Ethyl Ketone		<3,800	<2,900	<12,000	<120	**44**
Methyl Isobutyl Ketone		<5,300	<4,100	<16,000	<160	<4.1
Styrene		<2,300	<1,700	<6,800	<68	**2**
1,1,2,2-Tetrachloroethane		<3,600	<2,700	<11,000	<110	<2.7
Tetrachloroethene		<3,600	<2,700	<11,000	<110	**24**
Toluene		<2,000	<1,500	<6,000	<60	**14**
1,1,1-Trichloroethane		<2,900	<2,200	<8,700	**980**	**3.9**
1,1,2-Trichloroethane		<2,900	<2,200	<8,700	<87	<2.2
Trichloroethene		<2,800	<2,100	<8,600	**11,000**	<2.1
Vinyl Chloride		<1,400	<1,000	<4,100	<41	<1
Xylene (m,p)		<5,600	<4,300	<17,000	<170	<4.3
Xylene (o)		<2,300	<1,700	<6,900	<69	**2.5**
Xylene (total)		<2,300	<1,700	<6,900	<69	**2.5**
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP10-(7.5-8)	SGP10-(34-34.5)	SGP10-(49-49.5)	SGP11-(7-7.5)	SGP100
	Depth (ft bls):	7.5-8	34-34.5	49-49.5	7-7.5	7-7.9
	Date:	4/27/2006	4/27/2006	4/27/2006	5/5/2006	6/29/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
		181,000	**262,000**	**646,000**	**12,900**	**324.8**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP101	SGP101	SGP101	SGP102	SGP103
	Depth (ft bls):	7-7.5	34-34.5	49-49.5	7-7.5	7-7.5
	Date:	6/29/2006	6/29/2006	6/29/2006	6/29/2006	06/28/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		**120**	**130**	**5000**	**130**	**110**
Benzene		**3.8**	**4.2**	<64	**11**	**6.7**
Bromodichloromethane		<2	<2	<130	<2.7	<2
Bromoform		<3.1	<3.1	<210	<4.1	<3.1
Bromomethane		<1.2	<1.2	<78	<1.6	<1.2
1,3-Butadiene		**12**	**8.2**	**190**	**17**	<1.7
Carbon Disulfide		**5**	**40**	**190**	**16**	**14**
Carbon Tetrachloride		<1.9	<1.9	<130	**3.1**	<1.9
Chlorobenzene		<1.4	<1.4	<92	<1.8	<1.4
Chloroethane		<2	<2	<130	<2.6	<2
Chloroform		**1.9**	<1.5	<98	<2	<1.5
Chloromethane		<1.5	<1.5	<100	<2.1	<1.5
Dibromochloromethane		<2.6	<2.6	<170	<3.4	<2.6
Dichlorodifluoromethane		**4.9**	**6.4**	<250	<4.9	<3.7
1,1-Dichloroethane		<1.2	<1.2	<81	<1.6	<1.2
1,2-Dichloroethane		<1.2	<1.2	<81	<1.6	<1.2
1,1-Dichloroethene		<1.2	<1.2	<79	<1.6	<1.2
cis-1,2-Dichloroethene		<1.2	<1.2	<79	<1.6	<1.2
trans-1,2-Dichloroethene		<1.2	<1.2	<79	<1.6	<1.2
1,2-Dichloroethene (total)		<1.2	<1.2	<79	<1.6	<1.2
1,2-Dichloropropane		<1.4	<1.4	<92	<1.8	<1.4
cis-1,3-Dichloropropene		<1.4	<1.4	<91	<1.8	<1.4
trans-1,3-Dichloropropene		<1.4	<1.4	<91	<1.8	<1.4
1,3-Dichloropropene (total) (a)		<1.4	<1.4	<91	<1.8	<1.4
Ethylbenzene		<1.3	**1.9**	<87	**4.3**	<1.3
Freon 22		<2.7	<2.7	<180	<3.5	<2.7
Freon TF		**10**	**18**	<150	**12**	<2.3
Methyl Butyl Ketone		<3.1	**10**	<200	**4.1**	<3.1
Methylene Chloride		<2.6	<2.6	<170	<3.5	<2.6
Methyl Ethyl Ketone		**20**	**44**	**710**	**29**	**22**
Methyl Isobutyl Ketone		<3.1	<3.1	<200	<4.1	<3.1
Styrene		<1.3	**1.8**	<85	<1.7	<1.3
1,1,2,2-Tetrachloroethane		<2.1	<2.1	<140	<2.7	<2.1
Tetrachloroethene		**20**	**20**	<140	**25**	**15**
Toluene		**4.1**	**6.4**	**75**	**12**	**3.7**
1,1,1-Trichloroethane		**9.8**	**18**	<110	**8.7**	**2.1**
1,1,2-Trichloroethane		<1.6	<1.6	<110	<2.2	<1.6
Trichloroethene		**4.2**	**26**	<110	**11**	<1.6
Vinyl Chloride		<0.77	<0.77	<51	<1	<0.77
Xylene (m,p)		<3.3	<3.3	<220	**19**	<3.3
Xylene (o)		<1.3	**1.9**	<87	**8.7**	<1.3
Xylene (total)		<1.3	**1.9**	<87	**29**	<1.3
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP101	SGP101	SGP101	SGP102	SGP103
	Depth (ft bls):	7-7.5	34-34.5	49-49.5	7-7.5	7-7.5
	Date:	6/29/2006	6/29/2006	6/29/2006	6/29/2006	06/28/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
		215.7	**338.7**	**6165**	**283.2**	**173.5**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP103	SGP103	SGP104	SGP105	SGP106
	Depth (ft bls):	34-34.5	49-49.5	7-7.5	7-7.5	7-7.5
	Date:	06/28/2006	6/29/2006	06/26/2006	06/26/2006	06/26/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Acetone		**4000**	**45**	**200**	**120**	**210**
Benzene		**180**	**5.4**	**14**	**5.8**	**14**
Bromodichloromethane		<110	<1.1	<13	<2.7	<4
Bromoform		<170	<1.7	<21	<4.1	<6.2
Bromomethane		<62	<0.62	<7.8	<1.6	<2.3
1,3-Butadiene		**120**	**13**	**49**	**12**	**19**
Carbon Disulfide		**140**	**1.4**	**17**	**9**	**14**
Carbon Tetrachloride		<100	<1	<13	<2.5	<3.8
Chlorobenzene		<74	<0.74	<9.2	<1.8	<2.8
Chloroethane		<110	<1.1	<13	<2.6	<4
Chloroform		<78	**13**	<9.8	**2.7**	**3.2**
Chloromethane		<83	<0.83	<10	<2.1	<3.1
Dibromochloromethane		<140	<1.4	<17	<3.4	<5.1
Dichlorodifluoromethane		<200	**6.9**	<25	**5.4**	<7.4
1,1-Dichloroethane		<65	<0.65	**530**	<1.6	<2.4
1,2-Dichloroethane		<65	<0.65	<8.1	<1.6	<2.4
1,1-Dichloroethene		<63	<0.63	<7.9	<1.6	<2.4
cis-1,2-Dichloroethene		<63	<0.63	<7.9	<1.6	<2.4
trans-1,2-Dichloroethene		<63	<0.63	<7.9	<1.6	<2.4
1,2-Dichloroethene (total)		<63	<0.63	<7.9	<1.6	<2.4
1,2-Dichloropropane		<74	<0.74	<9.2	<1.8	<2.8
cis-1,3-Dichloropropene		<73	<0.73	<9.1	<1.8	<2.7
trans-1,3-Dichloropropene		<73	<0.73	<9.1	<1.8	<2.7
1,3-Dichloropropene (total) (a)		<73	<0.73	<9.1	<1.8	<2.7
Ethylbenzene		<69	**1.8**	<8.7	<1.7	**4.3**
Freon 22		<140	<1.4	<18	<3.5	<5.3
Freon TF		<120	**5**	<15	<3.1	<4.6
Methyl Butyl Ketone		<160	<1.6	<20	<4.1	<6.1
Methylene Chloride		<140	<1.4	<17	<3.5	**14**
Methyl Ethyl Ketone		710	**15**	**38**	**21**	**50**
Methyl Isobutyl Ketone		<160	<1.6	<20	<4.1	<6.1
Styrene		<68	**1.2**	<8.5	<1.7	**3.7**
1,1,2,2-Tetrachloroethane		<110	<1.1	<14	<2.7	<4.1
Tetrachloroethene		<110	**75**	**24**	**15**	**26**
Toluene		**280**	**7.9**	**18**	**6**	**53**
1,1,1-Trichloroethane		<87	**38**	**2100**	**2.4**	<3.3
1,1,2-Trichloroethane		<87	<0.87	<11	<2.2	<3.3
Trichloroethene		<86	**54**	<11	<2.1	**120**
Vinyl Chloride		<41	<0.41	<5.1	<1	<1.5
Xylene (m,p)		<170	**1.8**	<22	<4.3	**8.7**
Xylene (o)		<69	**1.5**	<8.7	<1.7	**3.8**
Xylene (total)		<69	**3.4**	<8.7	<1.7	**13**
1,2,4-Trichlorobenzene		--	--	--	--	--
1,2-Dichloroethane		--	--	--	--	--
1,4-Dioxane		--	--	--	--	--
2,2,4-Trimethylpentane		--	--	--	--	--
2-Hexanone		--	--	--	--	--
Allyl chloride		--	--	--	--	--

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID:	SGP103	SGP103	SGP104	SGP105	SGP106
	Depth (ft bls):	34-34.5	49-49.5	7-7.5	7-7.5	7-7.5
	Date:	06/28/2006	6/29/2006	06/26/2006	06/26/2006	06/26/2006
	Units:	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
Benzene, 1,2,4-trimethyl		--	--	--	--	--
Benzene, 1,3,5-trimethyl-		--	--	--	--	--
Cryofluorane		--	--	--	--	--
Cyclohexane		--	--	--	--	--
EDB		--	--	--	--	--
Ethene, 1,2-dichloro-, (E)-		--	--	--	--	--
Freon 113		--	--	--	--	--
Hexachlorobutadiene		--	--	--	--	--
Isopropanol		--	--	--	--	--
m-Dichlorobenzene		--	--	--	--	--
Methyl bromide		--	--	--	--	--
Methyl chloride		--	--	--	--	--
Methyl ethyl ketone		--	--	--	--	--
Methyl tert-butyl ether		--	--	--	--	--
n-Heptane		--	--	--	--	--
n-Hexane		--	--	--	--	--
o-Chlorotoluene		--	--	--	--	--
o-Dichlorobenzene		--	--	--	--	--
p-Dichlorobenzene		--	--	--	--	--
p-Ethyltoluene		--	--	--	--	--
tert-Butyl alcohol		--	--	--	--	--
Tetrahydrofuran		--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--
Vinyl bromide		--	--	--	--	--
		4,720	**289.3**	**3,279**	**199.3**	**4,325**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

	Sample ID:	SVP-1	SVP-1	SVP-1	SVP-2	SVP-2
	Depth (ft bls):	SVP-1(15')	SVP-1(40')	SVP-1(5')	SVP-2(5')	SVP-2(15')
	Date:	10/27/2004	10/27/2004	10/27/2004	10/26/2004	10/26/2004
Constituent	Units:	0	0	0	0	0
Acetone		**240**	**1200D**	**230D**	**380D**	**170D**
Benzene		**27**	**77**	**9.6**	**12**	**31**
Bromodichloromethane		<3.4	<3.4	<3.4	<3.4	<3.4
Bromoform		<5.2	<5.2	<5.2	<5.2	<5.2
Bromomethane		--	--	--	--	--
1,3-Butadiene		**29**	**120D**	**14**	**12**	**35**
Carbon Disulfide		**18**	**12**	**10**	**22**	**56**
Carbon Tetrachloride		<3.1	<3.1	<3.1	<3.1	<3.1
Chlorobenzene		<2.3	<2.3	<2.3	<2.3	<2.3
Chloroethane		<1.3	<1.3	<1.3	<1.3	<1.3
Chloroform		<2.4	<2.4	<2.4	<2.4	<2.4
Chloromethane		--	--	--	--	--
Dibromochloromethane		<4.3	<4.3	<4.3	<4.3	<4.3
Dichlorodifluoromethane		<2.5	**3.3**	<2.5	<2.5	<2.5
1,1-Dichloroethane		<2	<2	<2	<2	<2
1,2-Dichloroethane		<2	<2	<2	<2	<2
1,1-Dichloroethene		<2	<2	<2	<2	<2
cis-1,2-Dichloroethene		<2	<2	<2	<2	<2
trans-1,2-Dichloroethene		--	--	--	--	--
1,2-Dichloroethene (total)		--	--	--	--	--
1,2-Dichloropropane		<2.3	<2.3	<2.3	<2.3	<2.3
cis-1,3-Dichloropropene		<2.3	<2.3	<2.3	<2.3	<2.3
trans-1,3-Dichloropropene		<2.3	<2.3	<2.3	<2.3	<2.3
1,3-Dichloropropene (total) (a)		--	--	--	--	--
Ethylbenzene		**7.8**	**17**	**3.2**	**4.3**	**11**
Freon 22		--	--	--	--	--
Freon TF		--	--	--	--	--
Methyl Butyl Ketone		--	--	--	--	--
Methylene Chloride		<1.7	<1.7	<1.7	<1.7	<1.7
Methyl Ethyl Ketone		<2	<2	<2	<2	<2
Methyl Isobutyl Ketone		<2.1	<2.1	<2.1	<2.1	<2.1
Styrene		<3.4	<3.4	<3.4	<3.4	<3.4
1,1,2,2-Tetrachloroethane		**55**	**22**	**14**	**14**	**46**
Tetrachloroethene		**41**	**98**	**18**	**21**	**49**
Toluene		**9.8**	<2.7	<2.7	<2.7	**3.9**
1,1,1-Trichloroethane		<2.7	<2.7	<2.7	<2.7	<2.7
1,1,2-Trichloroethane		**24**	**4.7**	<2.7	<2.7	**86**
Trichloroethene		<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Chloride		**23**	**31**	**8.7**	**14**	**30**
Xylene (m,p)		**7.4**	**14**	**3**	**4.3**	**8.7**
Xylene (o)		**31**	**48**	**12**	**20**	**40**
Xylene (total)		<3.7	<3.7	<3.7	<3.7	<3.7
1,2,4-Trichlorobenzene		<2	<2	<2	<2	<2
1,2-Dichloroethane		<18	<18	<18	<18	<18
1,4-Dioxane		<2.3	**5.1**	<2.3	<2.3	**2.6**
2,2,4-Trimethylpentane		<2	**11**	<2	**3.6**	<2
2-Hexanone		<1.6	<1.6	<1.6	<1.6	<1.6
Allyl chloride		**4.9**	**4.5**	<2.5	**4.6**	**6.4**

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID: / Depth (ft bls): / Date: / Units:	SVP-1 SVP-1(15') 10/27/2004 0	SVP-1 SVP-1(40') 10/27/2004 0	SVP-1 SVP-1(5') 10/27/2004 0	SVP-2 SVP-2(5') 10/26/2004 0	SVP-2 SVP-2(15') 10/26/2004 0
Benzene, 1,2,4-trimethyl		<2.5	<2.5	<2.5	<2.5	<2.5
Benzene, 1,3,5-trimethyl-		<3.5	<3.5	<3.5	<3.5	<3.5
Cryofluorane		<1.7	**200D**	**52**	**52**	**79**
Cyclohexane		<3.8	<3.8	<3.8	<3.8	<3.8
EDB		<2	<2	<2	<2	<2
Ethene, 1,2-dichloro-, (E)-		<3.8	<3.8	<3.8	<3.8	<3.8
Freon 113		<5.3	<5.3	<5.3	<5.3	<5.3
Hexachlorobutadiene		<12	<12	<12	<12	<12
Isopropanol		<3	<3	<3	<3	<3
m-Dichlorobenzene		<1.9	<1.9	<1.9	<1.9	<1.9
Methyl bromide		<1	<1	<1	<1	<1
Methyl chloride		**15**	**110**	**12**	**19**	**14**
Methyl ethyl ketone		**2.9**	**6.1**	**2.3**	**2.3**	**2.5**
Methyl tert-butyl ether		**40**	**110**	**28**	<2	**53**
n-Heptane		**23**	**81**	**7.8**	**8.1**	**31**
n-Hexane		<2.6	<2.6	<2.6	<2.6	<2.6
o-Chlorotoluene		<3	<3	<3	<3	<3
o-Dichlorobenzene		**9**	**9**	**5.8**	**7.8**	**11**
p-Dichlorobenzene		**5.9**	**6.9**	<2.5	<2.5	<2.5
p-Ethyltoluene		**18**	**30**	**19**	**16**	<15
tert-Butyl alcohol		<15	<15	<15	<15	<15
Tetrahydrofuran		<2.8	**5.4**	<2.8	<2.8	<2.8
Trichlorofluoromethane		<2.2	<2.2	<2.2	<2.2	<2.2
Vinyl bromide						
		631.7	**2,226**	**449.4**	**617**	**766.1**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID: / Depth (ft bls): / Date: / Units:	SVP-2 SVP-2(40') 10/27/2004 0	SVP-3 SVP-3(15') 10/26/2004 0	SVP-3 SVP-3(40') 10/26/2004 0	SVP-3 SVP-3(5') 10/26/2004 0	SVP-4 SVP-4(15') 10/26/2004 0
Acetone		**1200D**	**330**	**570**	**76**	**140**
Benzene		**89**	**22**	**83**	**9.3**	**45**
Bromodichloromethane		<3.4	<20	<67	<3.4	<17
Bromoform		<5.2	<31	<100	<5.2	<26
Bromomethane		--	--	--	--	--
1,3-Butadiene		**130D**	**17**	**110**	**7.3**	**31**
Carbon Disulfide		**25**	**78**	**65**	**19**	**17**
Carbon Tetrachloride		<3.1	<19	<63	<3.1	<16
Chlorobenzene		<2.3	<14	<46	**3.5**	<12
Chloroethane		<1.3	<7.9	<26	<1.3	<6.60000000
Chloroform		<2.4	<15	<49	<2.4	<12
Chloromethane		--	--	--	--	--
Dibromochloromethane		<4.3	<26	<85	<4.3	<21
Dichlorodifluoromethane		<2.5	<15	<49	<2.5	<12
1,1-Dichloroethane		<2	**29**	**160**	<2	**19**
1,2-Dichloroethane		<2	**34**	**150**	<2	<9.9
1,1-Dichloroethene		<2	<12	<40	<2	<9.9
cis-1,2-Dichloroethene		<2	**23**	**120**	<2	<9.9
trans-1,2-Dichloroethene		--	--	--	--	--
1,2-Dichloroethene (total)		--	--	--	--	--
1,2-Dichloropropane		<2.3	<14	<46	<2.3	<12
cis-1,3-Dichloropropene		<2.3	<14	<45	<2.3	<11
trans-1,3-Dichloropropene		<2.3	<14	<45	<2.3	<11
1,3-Dichloropropene (total) (a)		--	--	--	--	--
Ethylbenzene		**19**	<13	<43	**4.8**	**12**
Freon 22		--	--	--	--	--
Freon TF		--	--	--	--	--
Methyl Butyl Ketone		--	--	--	--	--
Methylene Chloride		<1.7	<10	<35	<1.7	<8.70000000
Methyl Ethyl Ketone		<2	<12	<41	<2	<10
Methyl Isobutyl Ketone		<2.1	<13	<43	<2.1	<11
Styrene		<3.4	<21	<69	<3.4	<17
1,1,2,2-Tetrachloroethane		**23**	**81**	**160**	**16**	**56**
Tetrachloroethene		**110**	**45**	**110**	**20**	**64**
Toluene		<2.7	**150**	**310**	<2.7	**71**
1,1,1-Trichloroethane		<2.7	<16	<55	<2.7	<14
1,1,2-Trichloroethane		**17**	**860**	**2500**	<2.7	**640**
Trichloroethene		<1.3	<7.7	<26	<1.3	<6.4
Vinyl Chloride		**38**	**26**	**52**	**17**	**30**
Xylene (m,p)		**15**	<13	<43	**5.2**	**11**
Xylene (o)		**56**	**27**	**52**	**24**	**42**
Xylene (total)		<3.7	<22	<74	<3.7	<19
1,2,4-Trichlorobenzene		<2	<12	<40	<2	<10
1,2-Dichloroethane		<18	<110	<360	<18	<90
1,4-Dioxane		<2.3	<14	<47	<2.3	<12
2,2,4-Trimethylpentane		**9.8**	<12	<41	<2	<10
2-Hexanone		<1.6	<9.4	<31	<1.6	<7.8
Allyl chloride		**6.9**	<15	<49	**6.4**	<12

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID: / Depth (ft bls): / Date: / Units:	SVP-2 SVP-2(40') 10/27/2004 0	SVP-3 SVP-3(15') 10/26/2004 0	SVP-3 SVP-3(40') 10/26/2004 0	SVP-3 SVP-3(5') 10/26/2004 0	SVP-4 SVP-4(15') 10/26/2004 0
Benzene, 1,2,4-trimethyl		<2.5	<15	<49	<2.5	<12
Benzene, 1,3,5-trimethyl-		<3.5	<21	<70	<3.5	<17
Cryofluorane		**130**	**76**	**220**	**41**	**72**
Cyclohexane		<3.8	<23	<77	<3.8	<19
EDB		<2	**13**	**40**	<2	<9.9
Ethene, 1,2-dichloro-, (E)-		<3.8	<23	<77	<3.8	<19
Freon 113		<5.3	<32	<110	<5.3	<27
Hexachlorobutadiene		<12	<74	<250	<12	<61
Isopropanol		<3	<18	<60	<3	<15
m-Dichlorobenzene		<1.9	<12	<39	<1.9	<9.70000000
Methyl bromide		<1	<6.2	<21	**2.3**	<5.2
Methyl chloride		**83**	**35**	**56**	**4.7**	**18**
Methyl ethyl ketone		**6.1**	<11	<36	<1.8	<9
Methyl tert-butyl ether		**130**	**45**	**110**	**23**	**82**
n-Heptane		**120**	**19**	**74**	**5.3**	**74**
n-Hexane		<2.6	<16	<52	<2.6	<13
o-Chlorotoluene		<3	<18	<60	<3	<15
o-Dichlorobenzene		**9.6**	<18	<60	**9.6**	<15
p-Dichlorobenzene		<2.5	<15	<49	**6.4**	<12
p-Ethyltoluene		**39**	<91	<300	<15	<76
tert-Butyl alcohol		<15	<88	<290	<15	<74
Tetrahydrofuran		<2.8	<17	<56	<2.8	<14
Trichlorofluoromethane		<2.2	<13	<44	<2.2	<11
Vinyl bromide						
		2,256	**1,910**	**4,942**	**300.8**	**10,833**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID: / Depth (ft bls): / Date: / Units:	SVP-4 SVP-4(40') 10/26/2004 0	SVP-4 SVP-4(5') 10/26/2004 0
Acetone		**2100**	**86**
Benzene		**640**	**29**
Bromodichloromethane		<140	<3.4
Bromoform		<220	<5.2
Bromomethane		--	--
1,3-Butadiene		**400**	**24**
Carbon Disulfide		<65	**11**
Carbon Tetrachloride		<130	<3.1
Chlorobenzene		**100**	<2.3
Chloroethane		<55	<1.3
Chloroform		<100	<2.4
Chloromethane		--	--
Dibromochloromethane		<180	<4.3
Dichlorodifluoromethane		<100	**3.9**
1,1-Dichloroethane		<85	<2
1,2-Dichloroethane		<83	<2
1,1-Dichloroethene		<83	<2
cis-1,2-Dichloroethene		<83	<2
trans-1,2-Dichloroethene		--	--
1,2-Dichloroethene (total)		--	--
1,2-Dichloropropane		<97	<2.3
cis-1,3-Dichloropropene		<95	<2.3
trans-1,3-Dichloropropene		<95	<2.3
1,3-Dichloropropene (total) (a)		--	--
Ethylbenzene		<91	**4.8**
Freon 22		--	--
Freon TF		--	--
Methyl Butyl Ketone		--	--
Methylene Chloride		<73	<1.7
Methyl Ethyl Ketone		<86	<2
Methyl Isobutyl Ketone		<89	**2.6**
Styrene		<140	<3.4
1,1,2,2-Tetrachloroethane		<140	**24**
Tetrachloroethene		**570**	**26**
Toluene		<110	**20**
1,1,1-Trichloroethane		<110	<2.7
1,1,2-Trichloroethane		<110	**70**
Trichloroethene		<54	<1.3
Vinyl Chloride		**140**	**16**
Xylene (m,p)		<91	**5.2**
Xylene (o)		**150**	**23**
Xylene (total)		<160	<3.7
1,2,4-Trichlorobenzene		<85	<2
1,2-Dichloroethane		<760	<18
1,4-Dioxane		<98	<2.3
2,2,4-Trimethylpentane		<86	<2
2-Hexanone		<66	<1.6
Allyl chloride		<100	**6.4**

Footnotes on next page.

Table 2-1. Concentrations of Volatile Organic Compounds in On-Site Soil Gas Samples, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York

Constituent	Sample ID: / Depth (ft bls): / Date: / Units:	SVP-4 SVP-4(40') 10/26/2004 0	SVP-4 SVP-4(5') 10/26/2004 0
Benzene, 1,2,4-trimethyl		<100	<2.5
Benzene, 1,3,5-trimethyl-		<150	<3.5
Cryofluorane		**260**	**28**
Cyclohexane		<160	<3.8
EDB		<83	<2
Ethene, 1,2-dichloro-, (E)-		<160	<3.8
Freon 113		<220	<5.3
Hexachlorobutadiene		<520	<12
Isopropanol		<130	<3
m-Dichlorobenzene		<82	<1.9
Methyl bromide		<43	**1.1**
Methyl chloride		**270**	**11**
Methyl ethyl ketone		<76	**2.1**
Methyl tert-butyl ether		**290**	**21**
n-Heptane		**340**	**13**
n-Hexane		<110	<2.6
o-Chlorotoluene		<130	<3
o-Dichlorobenzene		<130	**5.8**
p-Dichlorobenzene		<100	**6.4**
p-Ethyltoluene		<640	<15
tert-Butyl alcohol		<620	<15
Tetrahydrofuran		<120	<2.8
Trichlorofluoromethane		<92	<2.2
Vinyl bromide			
		5,260	**440.3**

Bold indicates a detection

ft bls	Feet below land surface
µg/m³	Micrograms per cubic meter
(a)	Total represents sum of cis and trans isomers
--	Not analyzed for

Appendix A

Summary of Soil Gas Data Collected by the Town of Oyster Bay, Bethpage Community Park.

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
INTERIM REMEDIAL MEASURE - CONSTRUCTION AREA

INVESTIGATION REPORT
& REMEDIAL ACTION PLAN

NOVEMBER 2005

Prepared For:

Town of Oyster Bay
Department of Public Works

H2MGROUP
Engineers • Architects • Scientists • Planners • Surveyors

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LE 4.3.1. VOLATILE ORGANIC COMPOUND (VOC) SOIL VAPOR SAMPLING RESULTS

Parameter	Samples Collected on 6-10-2005	D-1	D-1	E-3	E-5	E-13
	Ambient 6-10-2005	8-10 ft	58-60 ft	8-10 ft	8-10 ft	8-10 ft
	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
1,1,1-Trichloroethane	U	11	17 J	24	45	U
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U
1,1-Dichloroethane	U	U	U	8.1	U	U
1,1-Dichloroethene	U	U	U	U	U	U
1,2,4-Trichlorobenzene	U	U	U	U	U	U
1,2,4-Trimethylbenzene	U	210 J	140 EJ	88	U	110
1,2-Dibromoethane	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U
1,2-Dichloroethene (total)	U	U	U	520	440	U
1,2-Dichloropropane	U	U	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U	U	U	U
1,3,5-Trimethylbenzene	U	49	39 J	26	U	30
1,3-Butadiene	U	3.1	110 J	240	280 J	U
1,3-Dichlorobenzene	U	U	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U	U	U
1,4-Dioxane	U	U	U	U	U	U
2,2,4-Trimethylpentane	U	1.5	8.4 J	22	89	U
2-Chlorotoluene	U	.1 U	U	U	U	U
3-Chloropropene	U	0.63 U	U	U	U	U
4-Ethyltoluene	U	170	140 J	69	U	79
Acetone	U	100	81 J	140	U	U
Benzene	U	4.8	32 J	42	54	U
Bromodichloromethane	U	U	U	U	U	U
Bromoethene	U	U	U	U	U	U
Bromoform	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U
Carbon Disulfide	U	U	2.6 J	59	50	U
Carbon Tetrachloride	U	U	U	U	U	U
Chlorobenzene	U	U	U	U	U	U
Chloroethane	U	U	U	U	U	U
Chloroform	U	U	44 J	10	U	U
Chloromethane	1.5	U	U	U	U	U
cis-1,2-Dichloroethene	U	U	U	440	400	U
cis-1,3-Dichloropropene	U	U	U	U	U	U
Cyclohexane	U	7.6	38 J	23	34	U
Dibromochloromethane	U	U	U	U	U	U
Dichlorodifluoromethane	U	U	U	U	U	9900
Ethylbenzene	U	40	66 J	30	U	33
Freon TF	U	U	U	U	U	U
Hexachlorobutadiene	U	U	U	U	U	U
Isopropyl Alcohol	U	U	U	U	U	U
Methyl Butyl Ketone	U	U	U	U	U	U
Methyl Ethyl Ketone	U	2.4	15 J	38	U	U
Methyl Isobutyl Ketone	U	U	3.1 J	U	U	U
Methyl tert-Butyl Ether	U	U	U	U	U	U
Methylene Chloride	U	U	U	U	U	U
n-Heptane	U	11	53 J	37	36	U
n-Hexane	U	6.7	95 J	49	81	U
Styrene	U	U	0.85 U	U	U	U
tert-Butyl Alcohol	U	U	15 U	U	U	U
Tetrachloroethene	U	95	130 J	95	56	63
Tetrahydrofuran	U	U	U	U	U	U
Toluene	1.1	120	380 EJ	140	45	87
trans-1,2-Dichloroethene	U	U	U	71	25	U
trans-1,3-Dichloropropene	U	U	U	U	U	U
Trichloroethene	U	100	150 J	1900	2700	25
Trichlorofluoromethane	U	3.7	3.4 J	U	U	U
Vinyl Chloride	U	U	U	82	380	U
Xylene (m,p)	U	950	230 J	130	U	150
Xylene (o)	U	87	87 J	43	U	52
Xylene (total)	U	430	480 J	170	U	200

J – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

TABLE 4.3.1 (continued). VOLATILE ORGANIC COMPOUND (VOC) SOIL VAPOR SAMPLING RESULTS

Parameter	Samples Collected on 6-17-2005	G-4	G-4	J-1	J-1	N-4	N-4
	Ambient 6-17-2005	10 ft	52 ft	10 ft	52 ft	10 ft	52 ft
	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
1,1,1-Trichloroethane	U	65	U	370	160	190	U
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U	U
1,1-Dichloroethane	U	2200	810	530	300	53	U
1,1-Dichloroethene	U	71	990	U	170	U	U
1,2,4-Trichlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ
1,2,4-Trimethylbenzene	U	160	U	54	U	U	2
1,2-Dibromoethane	U	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	U	1500	99000	360	3400	790	6.7
1,2-Dichloropropane	U	U	U	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	U	36	U	64	U	U	U
1,3-Butadiene	U	U	U	120	150	22	U
1,3-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dichlorobenzene	U	44	U	U	U	U	U
1,4-Dioxane	U	U	U	U	U	U	U
2,2,4-Trimethylpentane	U	430	U	840	U	U	U
2-Chlorotoluene	U	U	U	U	U	U	U
3-Chloropropene	U	U	U	U	U	U	U
4-Ethyltoluene	U	22	U	U	U	U	1.4
Acetone	U	480	U	U	U	U	15
Benzene	U	51	U	99	U	U	1
Bromodichloromethane	U	U	U	U	U	U	U
Bromoethene	U	U	U	U	U	U	U
Bromoform	U	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U	U
Carbon Disulfide	U	150	U	200	270	130	U
Carbon Tetrachloride	U	41	U	U	U	U	U
Chlorobenzene	U	U	U	U	U	U	U
Chloroethane	U	550	U	120	U	U	U
Chloroform	U	U	U	U	U	41	U
Chloromethane	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	U	1300	99000	320	3400	710	6.7
cis-1,3-Dichloropropene	U	U	U	U	U	U	U
Cyclohexane	U	55	U	240	U	U	U
Dibromochloromethane	U	U	U	U	U	U	U
Dichlorodifluoromethane	U	U	U	U	U	U	U
Ethylbenzene	U	U	U	U	U	U	U
Freon TF	U	U	U	U	U	U	U
Hexachlorobutadiene	UJ	UJ	UJ	UJ	UJ	UJ	UJ
Isopropyl Alcohol	U	U	U	U	U	U	U
Methyl Butyl Ketone	U	U	U	U	U	U	U
Methyl Ethyl Ketone	2.1	120	U	U	U	U	2.8
Methyl Isobutyl Ketone	U	U	U	U	U	U	U
Methyl tert-Butyl Ether	U	U	U	U	U	U	U
Methylene Chloride	U	U	U	U	450	94	U
n-Heptane	U	110	U	190	330	U	U
n-Hexane	U	99	U	170	150	39	U
Styrene	U	U	U	U	89	32	U
tert-Butyl Alcohol	U	U	U	U	U	U	U
Tetrachloroethene	U	240	U	U	U	88	U
Tetrahydrofuran	U	U	U	U	U	U	U
Toluene	1.9	75	U	180	680	87	4.5
trans-1,2-Dichloroethene	U	250	U	56	U	83	U
trans-1,3-Dichloropropene	U	U	U	U	U	U	U
Trichloroethene	U	1100	17000	480	18000	8100 E	43
Trichlorofluoromethane	U	U	U	U	U	U	U
Vinyl Chloride	U	4300 E	1500	1200	360	U	U
Xylene (m,p)	1.1	22	U	52	U	U	2.6
Xylene (o)	U	31	U	48	U	U	1.3
Xylene (total)	1.1	52	U	100	U	U	3.9

E – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

BLE 4.3.1 (continued). VOLATILE ORGANIC COMPOUND (VOC) SOIL VAPOR SAMPLING RESULTS

Parameter	Samples Collected on 6-17-2005	N-7	N-7
	Ambient 6-17-2005	10 ft	52 ft
	(µg/m³)	(µg/m³)	(µg/m³)
1,1,1-Trichloroethane	U	120	190
1,1,2,2-Tetrachloroethane	U	U	U
1,1,2-Trichloroethane	U	U	U
1,1-Dichloroethane	U	130	49
1,1-Dichloroethene	U	U	U
1,2,4-Trichlorobenzene	U	UJ	UJ
1,2,4-Trimethylbenzene	U	U	U
1,2-Dibromoethane	U	U	U
1,2-Dichlorobenzene	U	U	U
1,2-Dichloroethane	U	U	U
1,2-Dichloroethene (total)	U	440	790
1,2-Dichloropropane	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U
1,3,5-Trimethylbenzene	U	U	U
1,3-Butadiene	U	U	22
1,3-Dichlorobenzene	U	U	U
1,4-Dichlorobenzene	U	U	U
1,4-Dioxane	U	U	U
2,2,4-Trimethylpentane	U	U	U
2-Chlorotoluene	U	U	U
3-Chloropropene	U	U	U
4-Ethyltoluene	U	U	U
Acetone	U	330	U
Benzene	U	U	U
Bromodichloromethane	U	U	U
Bromoethane	U	U	U
Bromoform	U	U	U
Bromomethane	U	U	U
Carbon Disulfide	U	140	93
Carbon Tetrachloride	U	U	U
Chlorobenzene	U	U	U
Chloroethane	U	U	U
Chloroform	U	40	U
Chloromethane	U	U	U
cis-1,2-Dichloroethene	U	370	710
cis-1,3-Dichloropropene	U	U	U
Cyclohexane	U	U	U
Dibromochloromethane	U	U	U
Dichlorodifluoromethane	U	U	U
Ethylbenzene	U	U	U
Freon TF	U	U	U
Hexachlorobutadiene	U	UJ	UJ
Isopropyl Alcohol	U	470	U
Methyl Butyl Ketone	U	U	U
Methyl Ethyl Ketone	2.1	47	U
Methyl Isobutyl Ketone	U	U	U
Methyl tert-Butyl Ether	U	U	U
Methylene Chloride	U	94	U
n-Heptane	U	U	U
n-Hexane	U	27	39
Styrene	U	31	U
tert-Butyl Alcohol	U	U	U
Tetrachloroethene	U	240	88
Tetrahydrofuran	U	U	U
Toluene	1.9	79	60
trans-1,2-Dichloroethene	U	87	87
trans-1,3-Dichloropropene	U	U	U
Trichloroethene	U	4500	7500
Trichlorofluoromethane	U	U	U
Vinyl Chloride	U	U	U
Xylene (m,p)	1.1	36	U
Xylene (o)	U	24	U
Xylene (total)	1.1	61	U

J - Parameter detected above the upper calibration range limit.
U - Parameter was analyzed but was not detected above the reporting limit.
J - Estimated value.

TABLE 4.3.1 (continued). VOLATILE ORGANIC COMPOUND (VOC) SOIL VAPOR SAMPLING RESULTS

Parameter	Samples Collected on 6-23-2005	E-11	G-11	H-13	H-13	I-3	I-5
	Ambient 6-23-2005	10 ft	10 ft	10 ft	52 ft	10 ft	10
	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
1,1,1-Trichloroethane	U	U	40	U	36	210	150
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U	U
1,1-Dichloroethane	U	U	U	U	U	120	210
1,1-Dichloroethene	U	U	9.5	U	U	U	U
1,2,4-Trichlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ
1,2,4-Trimethylbenzene	U	84	110	150	130	110	69
1,2-Dibromoethane	U	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	210	79	37	U	48	1900	950
1,2-Dichloropropane	U	U	U	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	84	U	U	U	U
1,3,5-Trimethylbenzene	U	25	34	46	40	38	U
1,3-Butadiene	U	27	U	20	88	22	U
1,3-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dioxane	U	U	U	U	U	U	U
2,2,4-Trimethylpentane	U	U	U	U	U	U	U
2-Chlorotoluene	U	U	U	U	U	U	U
3-Chloropropene	U	U	U	U	U	U	U
4-Ethyltoluene	U	64	74	88	100	79	59
Acetone	U	U	U	200	400	U	U
Benzene	U	13	U	12	42	23	U
Bromodichloromethane	U	U	U	U	U	U	U
Bromoethene	U	U	U	U	U	U	U
Bromoform	U	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U	U
Carbon Disulfide	U	U	U	U	37	U	U
Carbon Tetrachloride	U	U	U	U	U	U	U
Chlorobenzene	U	U	U	U	U	U	U
Chloroethane	U	U	U	U	U	U	U
Chloroform	1.1	U	83	130	540	26	U
Chloromethane	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	190	79	37	U	48	1700	870
cis-1,3-Dichloropropene	U	U	U	U	U	U	U
Cyclohexane	U	U	U	9.3	48	U	U
Dibromochloromethane	U	U	U	U	U	U	U
Dichlorodifluoromethane	U	11000 EJ	1200	5900 EJ	29000 J	U	U
Ethylbenzene	U	27	25	33	56	35	U
Freon TF	U	U	U	U	U	U	U
Hexachlorobutadiene	UJ	UJ	UJ	UJ	UJ	UJ	UJ
Isopropyl Alcohol	U	U	U	U	U	U	U
Methyl Butyl Ketone	U	U	U	U	U	U	U
Methyl Ethyl Ketone	2.9	19	U	32	100	62	U
Methyl Isobutyl Ketone	U	U	U	U	U	U	U
Methyl tert-Butyl Ether	U	U	U	U	U	U	U
Methylene Chloride	U	U	U	U	U	U	U
n-Heptane	U	14	U	15	49	20	U
n-Hexane	U	13	U	16	70	24	39
Styrene	U	U	U	U	U	U	U
tert-Butyl Alcohol	U	U	U	U	U	U	U
Tetrachloroethene	3.1	2000	2200	2200	4400	5000	2800
Tetrahydrofuran	U	U	U	U	U	U	U
Toluene	0.94	79	60	87	230	100	83
trans-1,2-Dichloroethene	0.79	U	U	U	U	210	95
trans-1,3-Dichloropropene	U	U	U	U	U	U	U
Trichloroethene	4.1	48	260	28	100	3700	4500
Trichlorofluoromethane	1.1	U	53	21	44	U	U
Vinyl Chloride	U	U	51 U	U	U	U	U
Xylene (m,p)	U	120	120	160	230	150	120
Xylene (o)	U	43	48	61	87	61	48
Xylene (total)	U	170	170	220	320	210	170

E – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

TABLE 4.3.1 (continued). VOLATILE ORGANIC COMPOUND (VOC) SOIL VAPOR SAMPLING RESULTS

Parameter	Samples Collected on 6-23-2005		J-9		J-9	
	Ambient 6-23-2005		10 ft		52 ft	
	(µg/m³)		(µg/m³)		(µg/m³)	
1,1,1-Trichloroethane		U		U		U
1,1,2,2-Tetrachloroethane		U		U		U
1,1,2-Trichloroethane		U		U		U
1,1-Dichloroethane		U		U		U
1,1-Dichloroethene		U	1100			U
1,2,4-Trichlorobenzene		U		UJ		UJ
1,2,4-Trimethylbenzene		U		U		U
1,2-Dibromoethane		U		U		U
1,2-Dichlorobenzene		U		U		U
1,2-Dichloroethane		U		U		U
1,2-Dichloroethene (total)	210		59000		320000	
1,2-Dichloropropane		U		U		U
1,2-Dichlorotetrafluoroethane		U		U		U
1,3,5-Trimethylbenzene		U		U		U
1,3-Butadiene		U		U		U
1,3-Dichlorobenzene		U		U		U
1,4-Dichlorobenzene		U		U		U
1,4-Dioxane		U		U		U
2,2,4-Trimethylpentane		U		U		U
2-Chlorotoluene		U		U		U
3-Chloropropene		U		U		U
4-Ethyltoluene		U		U		U
Acetone		U		U		U
Benzene		U		U		U
Bromodichloromethane		U		U		U
Bromoethene		U		U		U
Bromoform		U		U		U
Bromomethane		U		U		U
Carbon Disulfide		U		U		U
Carbon Tetrachloride		U		U		U
Chlorobenzene		U		U		U
Chloroethane		U		U		U
Chloroform	1.1			U		U
Chloromethane		U		U		U
cis-1,2-Dichloroethene	210	E	59000		320000	E
cis-1,3-Dichloropropene		U		U		U
Cyclohexane		U		U		U
Dibromochloromethane		U		U		U
Dichlorodifluoromethane		U		U		U
Ethylbenzene		U		U		U
Freon TF		U		U		U
Hexachlorobutadiene		U		UJ		UJ
Isopropyl Alcohol		U		U		U
Methyl Butyl Ketone		U		U		U
Methyl Ethyl Ketone	2.9			U	3500	
Methyl Isobutyl Ketone		U		U		U
Methyl tert-Butyl Ether		U		U		U
Methylene Chloride		U		U		U
n-Heptane		U		U		U
n-Hexane		U		U		U
Styrene		U		U		U
tert-Butyl Alcohol		U		U		U
Tetrachloroethene	3.1		1600			U
Tetrahydrofuran		U		U		U
Toluene	0.94			U		U
trans-1,2-Dichloroethene	0.79			U		U
trans-1,3-Dichloropropene		U		U		U
Trichloroethene	4.1		1700		5100	
Trichlorofluoromethane	1.1			U		U
Vinyl Chloride		U		U		U
Xylene (m,p)		U		U		U
Xylene (o)		U		U		U
Xylene (total)		U		U		U

E – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

TABLE 4.3.1. SOIL VAPOR SAMPLING RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCS)

Parameter	Samples Collected on 9-27-2005	R1	R1	R1
	Ambient 9-27-2005	10-12 ft	28-30 ft	48-50 ft
	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
1,1,1-Trichloroethane	U	U	U	U
1,1,2,2-Tetrachloroethane	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U
1,1-Dichloroethane	U	U	U	U
1,1-Dichloroethene	U	U	U	U
1,2,4-Trichlorobenzene	U	U	U	U
1,2,4-Trimethylbenzene	U	U	U	U
1,2-Dibromoethane	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U
1,2-Dichloroethane	U	U	U	U
1,2-Dichloroethene (total)	U	U	U	U
1,2-Dichloropropane	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U	U
1,3,5-Trimethylbenzene	U	U	U	U
1,3-Butadiene	U	U	U	U
1,3-Dichlorobenzene	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U
1,4-Dioxane	U	U	U	U
2,2,4-Trimethylpentane	U	U	2800 D	4200 D
2-Chlorotoluene	U	U	U	U
3-Chloropropene	U	U	U	U
4-Ethyltoluene	U	U	U	U
Acetone	U	U	U	U
Benzene	U	U	U	U
Bromodichloromethane	U	U	U	U
Bromoethene	U	U	U	U
Bromoform	U	U	U	U
Bromomethane	U	U	U	U
Carbon Disulfide	U	U	U	690 D
Carbon Tetrachloride	U	U	U	U
Chlorobenzene	U	U	U	U
Chloroethane	U	U	U	U
Chloroform	U	U	U	U
Chloromethane	U	U	U	U
cis-1,2-Dichloroethene	U	U	U	U
cis-1,3-Dichloropropene	U	U	U	U
Cyclohexane	U	U	U	U
Dibromochloromethane	U	U	U	U
Dichlorodifluoromethane	3.1	590000 D	280000 D	44000 D
Ethylbenzene	U	U	U	U
Freon TF	U	U	U	U
Hexachlorobutadiene	U	U	U	U
Isopropyl Alcohol	U	U	U	U
Methyl Butyl Ketone	U	U	U	U
Methyl Ethyl Ketone	U	26000 D	U	1700 D
Methyl Isobutyl Ketone	U	U	U	U
Methyl tert-Butyl Ether	U	U	U	U
Methylene Chloride	U	U	U	U
n-Heptane	U	U	U	U
n-Hexane	U	19000 D	U	U
Styrene	U	U	U	U
tert-Butyl Alcohol	U	U	U	U
Tetrachloroethene	U	U	U	U
Tetrahydrofuran	U	U	U	490 D
Toluene	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
trans-1,3-Dichloropropene	U	U	U	U
Trichloroethene	U	U	U	U
Trichlorofluoromethane	1.5	U	U	U
Vinyl Chloride	U	U	U	U
Xylene (m,p)	U	U	U	U
Xylene (o)	U	U	U	U
Xylene (total)	U	U	U	U

E – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

TABLE 4.3.1 (continued). SOIL VAPOR SAMPLING RESULTS FOR VOLATILE ORGANIC COMPOUNDS (VOCS)

Parameter	Samples Collected on 9-28-2005	R3	R3	R3	R6	R6	R6
	Ambient 9-28-2005	8-10 ft	28-30 ft	48-50 ft	8-10 ft	28-30 ft	48-50 ft
	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
1,1,1-Trichloroethane	U	U	U	U	U	U	U
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U	U
1,1-Dichloroethane	U	U	U	U	U	U	U
1,1-Dichloroethene	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	U	U	U	U	U	U	U
1,2-Dibromoethane	U	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	U	U	U	U	U	U	U
1,2-Dichloropropane	U	U	U	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	U	U	U	U	U	U	U
1,3-Butadiene	U	U	U	U	U	U	U
1,3-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dichlorobenzene	U	U	U	U	U	U	U
1,4-Dioxane	U	U	U	U	U	U	U
2,2,4-Trimethylpentane	0.98	1400	2800	3600	1300	2800	3900
2-Chlorotoluene	U	U	U	U	U	U	U
3-Chloropropene	U	U	U	U	U	U	U
4-Ethyltoluene	U	U	U	U	U	U	U
Acetone	U	U	U	U	7600	3100	3100
Benzene	0.77	U	U	U	U	U	U
Bromodichloromethane	U	U	U	U	U	U	U
Bromoethene	U	U	U	U	U	U	U
Bromoform	U	U	U	U	U	U	U
Bromomethane	U	U	U	U	U	U	U
Carbon Disulfide	U	1500	4000	4400	3700	1400	1300
Carbon Tetrachloride	U	U	U	U	U	U	U
Chlorobenzene	U	U	U	U	U	U	U
Chloroethane	U	U	U	U	U	U	U
Chloroform	U	U	U	U	U	U	U
Chloromethane	1.6	U	U	U	U	U	U
cis-1,2-Dichloroethene	U	U	U	U	U	U	U
cis-1,3-Dichloropropene	U	U	U	U	U	U	U
Cyclohexane	U	U	U	U	U	U	180
Dibromochloromethane	U	U	U	U	U	U	U
Dichlorodifluoromethane	19	48000	190000	110000	64000	10000	28000
Ethylbenzene	U	U	U	U	U	110	U
Freon TF	15	U	U	U	U	U	U
Hexachlorobutadiene	U	U	U	U	U	U	U
Isopropyl Alcohol	U	9800 J	21000 J	17000 J	17000 J	6900 J	7100
Methyl Butyl Ketone	U	U	U	U	U	U	U
Methyl Ethyl Ketone	U	830	6200	1800	1500	590	5900
Methyl Isobutyl Ketone	U	U	U	U	U	U	U
Methyl tert-Butyl Ether	U	U	U	U	U	U	U
Methylene Chloride	1.9	U	U	U	U	190	420
n-Heptane	U	U	U	U	U	U	U
n-Hexane	0.92	U	U	U	U	160	170
Styrene	U	U	U	U	U	100	U
tert-Butyl Alcohol	U	U	U	U	U	U	U
Tetrachloroethene	U	U	U	U	U	U	U
Tetrahydrofuran	U	U	U	U	U	U	U
Toluene	2.3	1100	2000	2000	2100	870	830
trans-1,2-Dichloroethene	U	U	U	U	U	U	U
trans-1,3-Dichloropropene	U	U	U	U	U	U	U
Trichloroethene	U	U	U	U	U	U	U
Trichlorofluoromethane	4.2	U	U	U	U	U	U
Vinyl Chloride	U	U	U	U	U	U	U
Xylene (m,p)	U	U	U	U	520	290	280
Xylene (o)	U	U	U	U	U	91	U
Xylene (total)	U	U	U	U	520	380	270

E – Parameter detected above the upper calibration range limit.
U – Parameter was analyzed but was not detected above the reporting limit.
J – Estimated value.

Appendix B

Pre-Design Investigation Program,
Soil Gas Interim Remedial Measure,
Operable Unit 3 – Former Grumman
Settling Ponds, Bethpage, New York.

APPENDIX B

Pre-Design Investigation Program, Soil Gas Interim Remedial Measure, Operable Unit 3 – Former Grumman Settling Ponds, Bethpage, New York.

Appendix B summarizes the proposed data collection program for the pre-design phase of the on-site Soil Gas Interim Remedial Measure (soil gas IRM) for the Bethpage Community Park (Operable Unit 3 [OU3]– Former Grumman Settling Ponds) in Bethpage, New York. The components of the soil gas IRM pre-design investigation include the following:

- Limited on- and off-site soil gas and groundwater sampling.
- Cone Penetrometer (CPT) borings drilled along the southern Bethpage Community Park (Park) boundary and on Northrop Grumman Systems Corporation (Northrop Grumman) property.
- Installation and monitoring of perched water piezometers in selected areas.

The details of each component are provided below and in Tables B-1 and B-2 and on Figures B-1 and B-2.

Soil Gas Sampling & Groundwater Sampling

ARCADIS proposes to collect off-site soil gas samples. As shown on Figure B-1 and described in Table B-1, a total of eight soil gas point locations are proposed on the Town of Oyster Bay (Town) rights of way, along Sycamore Avenue and Stewart Avenue (identified as SGP-108 to SGP-115). Four soil gas point locations are also proposed in an area southwest of the Park, on Northrop Grumman property (identified as SGP-11A to SGP-11D). The proposed soil gas sampling will develop information on the transport mechanisms for volatile organic compounds (VOCs) in soil gas, refine the conceptual site model, and verify the previously detected VOC soil gas concentrations in areas where trichloroethene (TCE) was detected. Overall, ARCADIS proposes to collect a total of 32 soil gas samples from up to three different depths at each location (i.e., 8 feet below land surface [ft bls], 20 ft bls, 50 ft bls). Soil gas samples will be collected from temporary soil gas points, consistent with past practices.

For these, and any future soil gas samples, ARCADIS proposes to reduce the list of VOCs selected for laboratory analysis to those constituents previously detected either on Northrop Grumman property or on the Town rights of way. This approach will help focus the analysis on those constituents that are potentially site-related. This approach is consistent with the New York State Department of Health (NYSDOH) (2006) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, which states that "Based on the initial sampling results, development and application of a site-specific analyte list may be considered for analysis of subsequent soil vapor

... samples". The reduced analyte list is provided in Table B-2 and includes constituents detected in soil gas samples from Northrop Grumman property (i.e., the former Plant 24 Access Road) and the Town rights-of-way (i.e., Sycamore and Stewart Avenues).

Coincident with the soil gas sampling, ARCADIS will conduct groundwater sampling at the water table from soil gas points drilled to 50 ft bls on Northrop Grumman property and in Town right of ways, as feasible. The purpose of the groundwater sampling is to gather information to assess the relationship of detected VOCs in soil gas to proximal shallow groundwater quality. The collection of groundwater samples will depend on site access, the ability to achieve target drilling depths, and other potential field factors. The proposed groundwater sampling locations are described in Table B-1. Groundwater samples will be collected using methods described in the NYSDEC-approved OU3 RI/FS Work Plan.

If site-related VOCs are detected in the soil gas samples to be collected along Sycamore Avenue, ARCADIS may propose additional soil gas sampling in a more distal area(s), as may be appropriate, to achieve the overarching RI/FS objective of determining the extent of VOCs in soil gas.

Cone Penetrometer Borings

The proposed transects of CPT borings in and south of the Park will help define the lateral extent of the zone of low-permeability soil (LPZ) and perched water, if present. If present, then follow-up work may include installing and sampling of perched water piezometers to determine if site VOCs are present. Two east-west transects in the southwest Park area and on Northrop Grumman property are proposed, with a target drilling depth of 60 ft bls. Locations of CPT borings are shown on Figure B-2.

Perched Water Piezometers

Perched water piezometers will be drilled, installed, and monitored for the presence/extent of perched water at selected CPT locations that indicated the presence of the LPZ and perched water. As such, the locations of perched water piezometers have not yet been determined. Piezometer drilling, installation, and monitoring specifications were provided in the RI/FS Work Plan. The schedule for monitoring for the presence and extent of perched water in piezometers will depend on the findings of the initial monitoring event.

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Table B-1. Summary of Proposed Additional Soil Gas and Groundwater Samples, Soil Gas IRM Pre-design Work, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York.

Activity	Proposed Sample ID	Proposed Sampling	Proposed Soil Gas Sampling Depths (ft bls)	Proposed Soil Gas Analysis	Proposed Groundwater Sampling Intervals	Proposed Groundwater Analysis	Proposed Soil Sampling Intervals	Proposed Soil Analysis	General Rationale
On-Site Soil Gas Sampling (2)									
NGC property									
	SGP-11A	Soil Gas, Soil	8, 20, 50	VOCs (1)	None	None	Continuous	Lithology	Confirm soil gas findings and further evaluate spatial distribution of soil gas. Evaluate possible transport mechanisms (i.e., lateral diffusion, vertical off-gassing from groundwater).
	SGP-11B	Soil Gas, Soil	8	VOCs (1)	None	None	Continuous	Lithology	
	SGP-11C	Soil Gas, Soil	8	VOCs (1)	None	None	Continuous	Lithology	
	SGP-11D	Soil Gas, Groundwater, Soil	8, 20, 50	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	
Off-Site Soil Gas and Groundwater Sampling (2)									
Sycamore Avenue									
	SGP-108	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	Evaluate the spatial distribution of soil gas with increasing distance from the Park. Evaluate possible transport mechanisms (i.e., lateral diffusion, vertical off-gassing from groundwater).
	SGP-109	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	
	SGP-110	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	Confirm soil gas findings and further evaluate spatial distribution of soil gas. Evaluate possible transport mechanisms (i.e., lateral diffusion, vertical off-gassing from groundwater).
	SGP-111	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	
	SGP-112	Soil gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	
Stewart Avenue									
	SGP-113	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	Confirm soil gas findings and further evaluate spatial distribution of soil gas. Evaluate possible transport mechanisms (i.e., lateral diffusion, vertical off-gassing from groundwater).
	SGP-114	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	
	SGP-115	Soil Gas, Groundwater, Soil	8, 20, 50 (3)	VOCs (1)	55-57 (water table)	VOCs (4)	Continuous	Lithology	

Footnotes:

(1) Reduced TCL VOC analyte list via USEPA Method TO-15 (see Table 2)
(2) Based on NYSDEC approval obtained during the previous round of soil gas sampling, tracer gas (per NYSDOH guidance) will be performed on 10 percent of samples (3 samples).
All soil gas points will be completed as temporary borings.
(3) Based on borehole stratigraphy, the sampling intervals may change.
(4) Target Compound List for VOCs analyzed via NYSDEC ASP Method 2000.

Definitions:

NA	Not Applicable
ft bls	feet below land surface
VOC	Volatile Organic Compound

Table B-2. Proposed Reduced Soil Gas Volatile Organic Compound Analyte List,
Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage,
New York.

Constituent	Detected Location
1,1,1-Trichloroethane	Access Road, Off-site
1,1-Dichloroethane	Access Road, Off-site
1,1-Dichloroethene	Access Road
1,2,4-Trimethylbenzene	Access Road
1,3-Butadiene	Access Road, Off-site
1,4-Dichlorobenzene	Access Road
2,2,4-Trimethylpentane	Access Road
Methyl Ethyl Ketone	Access Road, Off-site
4-Ethyltoluene	Access Road
Acetone	Access Road, Off-site
Benzene	Access Road, Off-site
Carbon Disulfide	Access Road, Off-site
Carbon Tetrachloride	Access Road, Off-site
Chlorobenzene	Access Road
Chloroform	Access Road, Off-site
Chloromethane	Access Road, Off-site
cis-1,2-Dichloroethene	Access Road
Cyclohexane	Access Road
Dichlorodifluoromethane	Access Road, Off-site
Ethylbenzene	Access Road, Off-site
Freon TF	Access Road, Off-site
Freon 22	Access Road, Off-site
Methyl Butyl Ketone	Access Road, Off-site
Methylene Chloride	Off-site
Methyl tert-Butyl Ether	Access Road
n-Heptane	Access Road
n-Hexane	Access Road
Styrene	Access Road, Off-site
tert-Butyl Alcohol	Access Road
Tetrachloroethene	Access Road, Off-site
Toluene	Access Road, Off-site
trans-1,2-Dichloroethene	Access Road
Trichloroethene	Access Road, Off-site
Trichlorofluoromethane	Access Road
Xylene (m,p)	Access Road, Off-site
Xylene (o)	Access Road, Off-site
Xylene (total)	Access Road, Off-site

Appendix C

Pneumatic Conductivity Test Work Plan, Soil Gas Interim Remedial Measure, Operable Unit 3 – Former Grumman Settling Ponds, Bethpage, New York.

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Pneumatic Conductivity Test Work Plan

Operable Unit 3 - Soil Gas Interim Remedial Measure Work Plan, Former Grumman Settling Ponds, Bethpage, New York

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Appendix C

Pneumatic Conductivity Test Work Plan

Operable Unit 3 - Soil Gas Interim Remedial Measure Work Plan, Former Grumman Settling Ponds, Bethpage, New York.

February 16, 2007

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ARCADIS

1. Introduction

This Operable Unit 3 (OU3) Pneumatic Conductivity Test (PCT) Work Plan (the Work Plan) was prepared as an appendix to the Soil Vapor Interim Remedial Measures (IRM) Work Plan both by ARCADIS of New York, Inc. (ARCADIS) on behalf of Northrop Grumman Systems Corporation (Northrop Grumman), and is being submitted pursuant to the Order On Consent (Consent Order or CO) Index # W1-0018-04-01 that was executed by the New York State Department of Environmental Conservation (NYSDEC) and Northrop Grumman Systems Corporation (Northrop Grumman), effective July 4, 2005 (NYSDEC 2005).

The present day Bethpage Community Park property (Park), which the NYSDEC has termed the "Former Grumman Settling Ponds Area" and designated as OU3, is referred to herein as the Site. Adjoining the Park property to the south is the former Plant 24 Access Road Property, which is a partially asphalt-paved/partially grassed area that runs east-west along the Park southern boundary. The Former Plant 24 Access Road Property is owned by Northrop Grumman.

The CO allows the implementation of IRMs for OU3. In response to NYSDEC's December 22, 2006 letter to Northrop Grumman, Northrop Grumman has elected to implement a soil gas mitigation system as an IRM. The purpose of this Work Plan is to present the methodology for conducting PCTs at the Site. The PCTs will be used to obtain site-specific design parameters for the design of the full-scale soil gas IRM. The Work Plan is organized in the following sections:

- Section 2 summarizes the PCT objectives.
- Section 3 describes the PCT locations and selection criteria.
- Section 4 provides the PCT methodology, including the proposed well network and installation details, the equipment requirements and the test methodology and monitoring program.
- Section 5 describes the waste management plan.
- Section 6 provides the reporting and evaluation plan.

2. Objectives

The main objective of the PCT is to collect site-specific field data for use in designing the full-scale soil gas IRM. To design an appropriate testing program, several sub-objectives have been established and include:

- Determine the site-specific pneumatic conductivity along the southern boundary of the former Plant 24 Access Road above and below the Low Permeability Zone (LPZ).
- Estimate the quantity of surface leakage in wells screened above the LPZ.
- Estimate the quantity of water generation during subsurface depressurization.
- Estimate the influent vapor concentration and contaminant mass loading rate; and,
- Obtain additional site specific geologic data within the test area(s).

In addition to the above, active (e.g, traditional negative pressure generating blower) and passive (e.g. natural "barometric pumping" and/or the use of wind turbines or alternative measures) systems may be evaluated and compared. Finally, the site-specific pneumatic conductivity and/or surface leakage may be estimated in both capped (e.g., paved) and uncapped conditions. All of these objectives will be focused on, in addition to the overall goals set forth in the Soil Gas IRM Work Plan (listed in Section 4 of the Soil Gas IRM Work Plan).

3. Pneumatic Conductivity Test Locations

Proposed test locations and relevant cross-sections are presented in Figure C-1.

PCTs will be performed at a minimum of two locations along the southern boundary of the former Plant 24 Access Road. In addition, two vertical horizons of vadose zone soils will be evaluated at both locations. Specifically, one test will be performed above and one below the LPZ that was identified at several locations along the southern boundary of the former Plant 24 Access Road. These locations were selected based on the following criteria:

- The distribution of soil gas, as currently understood and reported in the OU-3 Soil Gas IRM Work Plan.
- To determine pneumatic conductivity in vadose zone soils within multiple lateral and vertical zones along the southern boundary of the former Plant 24 Access Road.
- To determine the rate of water generation in multiple areas along the former Plant 24 Access Road; and,
- To determine the mean mass loading rate in both an area of relatively higher and lower volatile organic compound (VOC) soil gas concentration.
- Finally, the well locations were selected in areas such that they can be incorporated into the full-scale soil gas IRM.

A description of the proposed PCB methodology is provided below.

4. Pneumatic Conductivity Test Methodology

The PCTs will be conducted using a network of vertical extraction wells (herein referred to as depressurization wells [DWs]), monitoring wells (herein referred to as vacuum monitoring well clusters [Vacuum Monitoring Well Clusters (VMWC)]), existing groundwater monitoring wells, a temporary negative pressure generation system and associated process and monitoring equipment. The work referenced herein will be completed in accordance with the Site-Specific Health and Safety Plan (HASP), prepared by ARCADIS.

The following subsections describe the PCT methodology including the proposed well network and installation, equipment set up and testing methodology.

4.1 Well Network and Installation

Proposed DW and VMWC locations are shown on Figure C-1. Typical DW and VMWC construction details are shown on Figure C-2. A summary of proposed DW and VMWC construction details is provided in Table C-1.

The Rotosonic drilling method will likely be employed to drill the boreholes. This drilling method will minimize the generation of drilling waste and will provide continuous cores

of the penetrated material for the purpose of hydrogeologic logging. A written log of the materials penetrated during drilling will be prepared by the ARCADIS geologist overseeing the drilling and monitoring well construction. The log will describe the color and character of the materials penetrated, relative proportions of the various material types, thicknesses of units, and moisture content.

A summary of the proposed construction details for the DWs and VMWCs is provided below. It should be noted that in addition to the procedures described below, in the event that perched water is encountered in boreholes (during drilling) that are planned to penetrate the LPZ, a steel casing will be installed and grouted into the LPZ (to case off the perched water) prior to drilling through the LPZ and the deepest VMWC will be installed in a separate borehole.

4.1.1 Depressurization Wells

As referenced previously, pairs of DWs will be installed at each of the proposed locations identified on Figure C-1. Each shallow DW will be constructed of 4-inch diameter, schedule 40 PVC well casing, fitted with a 7 or 15 foot (ft) long, 0.020-inch slot wire-wrapped PVC well screen. Each deep DW will be completed with a 5 or 15-ft long screen. Each DW will be set with a sand pack extending at least 2-ft above and below the well screen. The borehole annulus above the sand pack will be filled with a minimum of 3-ft of bentonite slurry, followed by bentonite grout to approximately 5 ft below grade; the remainder of the borehole annulus will be filled with sand. A 2-ft x 2-ft concrete pad will be set around the well at grade, and fitted with a minimum 8" diameter curb box. The well will be sealed with a J-plug. The final screen length and setting will be determined based upon conditions encountered during drilling; however, proposed construction details based on existing geologic data are provided in Table C-1.

The depressurization well pairs will be named DW-1 and DW-2, numbered in the order of installation. Individual wells associated with each pair will be labeled with an "S" or "D" to indicate shallow or deep screen settings. Upon completion, a well construction diagram will be prepared for each well upon completion, and will be accompanied by a plan view diagram referencing north and labeling the wells as described above.

4.1.2 Vacuum Monitoring Wells

As referenced previously, VMWCs will be installed at each of the proposed locations identified on Figure C-1. The wells forming the VMWCs will be installed within the

same borehole (see Figure C-2). Based on the geology found in the vadose zone, each vacuum monitoring well cluster will be constructed of three to four, three-quarter inch diameter, schedule 40 PVC well casings, each fitted with a 1-ft long, 0.010-inch slotted PVC well screen. Each screen will be set within a 5-ft sand pack, with 2-ft of sand below and above each screen. Screen locations were selected to evaluate both horizontal vacuum influence and the effect of surface leakage for shallow DWs. Accordingly, VMWCs screens will be situated both within the corresponding screen interval of their respective DW and above the DW (shallow) screen interval. Overlying the sand pack, 3-ft of bentonite slurry will be emplaced. The borehole will then be grouted to 2-ft below the next screen zone, where the sand pack and bentonite slurry for the next screen will be placed. Following installation of the shallowest screen, the borehole will be grouted to approximately 5 ft below grade. The remaining 5 ft of the borehole will be backfilled with sand and finished with a 2 ft x 2 ft concrete pad. A minimum 8" diameter curb box will be set in the concrete pad for access to the monitoring points. Each of the monitoring wells will be finished with a threaded plug. The final screen settings will be determined based upon conditions encountered during drilling; however, proposed construction details based on existing geologic data are provided in Table C-1.

Vacuum monitoring well clusters will be named VMWC-1 through VMWC-8. Shallow wells within each cluster will be labeled A through C to indicate relative depth (i.e., the 7 ft deep well in well cluster 1 will be identified as VMWC-1A) and the letters will ascend with depth. The deep well in each well cluster will be labeled with a D (i.e., the 44 ft deep well in well cluster 1 will be identified as VMWC-1D). A well construction diagram of each well in the cluster will be prepared upon completion. In addition, a plan view diagram of the well cluster will be prepared, referencing north and identifying the individual wells.

4.2 Equipment Setup

A process flow diagram of the proposed PCT system is shown on Figure C-3. In summary, the PCT system will include the following equipment:

- A regenerative-type extraction blower for generating negative pressure at the respective DW.
- A dilution valve installed on the influent (suction) side of the blower to adjust the vacuum level applied to the DW.

- An air-water knockout tank installed on the influent side of the blower.
- Vapor stream sample ports, vacuum and pressure gauges, and valves located throughout the system to allow for proper monitoring, control, and data collection during the test; and,
- A single 400-pound (lb) vapor phase granular activated carbon (VPGAC) canister to treat vapor emissions generated during the tests.

As described above and shown on FigureC-3, the PCT system will allow for the generation of negative pressure at the proposed DW. The selected extraction blower will be sized to generate sufficient vacuum to achieve a target radius of influence of approximately 50-feet. If it is determined that the selected blower generates more vacuum than desired (e.g., if substantial quantities of moisture are extracted from the subsurface), the dilution valve will be used to balance the vacuum to an acceptable level. Water will be conveyed to a portable storage device for transfer to the disposal location (see Section 5). Vapor emissions will be treated through the 400-lb VPGAC unit.

A description of the proposed test methodology and monitoring program is provided in the following section.

4.3 Test Methodology and Monitoring Program

The PCT will be implemented using the locations and equipment setup described previously. During implementation, each DW will be operated as a single test for approximately 4 to 6 hours. For each individual test, there will be three phases of operation. The first phase will involve the collection of data with full (100%) vacuum applied to the wellhead. However, if significant quantities of water are generated under full vacuum, the vacuum will be reduced to a level that does not result in significant water generation. The second and third phases will involve collecting data at approximately 75% and 50% of the applied vacuum of the first phase.

Following the start of each test, system parameters and samples will be collected on the following schedule:

- Influent and effluent photoionization detector (PID) readings at 30-minutes, 1-hour, and every hour thereafter at the DW wellhead during each phase of testing.

- Influent flow rate and total applied vacuum from the DW and induced vacuum measurements from VMWC at 30-minutes, 1-hour, and every hour thereafter during each phase of testing. In addition, baseline readings will be collected from all groundwater monitoring and MVWCs.

- The quantity of moisture generated will be recorded every hour for each testing location.

- A total of four (4) vapor samples will be collected during the PCT (i.e., one influent vapor sample will be taken during the fourth hour of the first vacuum phase at each test location).

- An effluent vapor sample (i.e., following air treatment) will be taken at the conclusion of the entire testing program.

- Four (4) water samples will be collected during the PCT. The water samples will be collected as grab samples directly from the liquid knockout tank and will be collected at the end of each individual test.

All field parameters and physical measurements will be recorded on standard forms. Sample forms for shallow zone and deep zone testing have been provided herein as Attachment A. All vapor samples will be submitted to Columbia Analytical, located in Rochester, New York for VOC analysis using USEPA Method TO-15. All water samples will be submitted to Columbia Analytical, located in Rochester, New York for VOC analysis using USEPA Method 8260. Table C-2 provides a summary of the proposed laboratory analyte list for both vapor and water samples.

5. Waste Management

Liquid waste from the vapor system knockout tank will be discharged to the local POTW under the existing agreement for well sampling activities. The remaining wastes generated during the pneumatic conductivity tests will be containerized, characterized, transported, and disposed of in accordance with applicable local, state and federal regulations and the specific requirements of the disposal facility. Transportation and disposal facilities will be qualified to handle, transport, and dispose of the respective waste.

6. Reporting and Evaluation

Following completion of the PCT, the data will be summarized and evaluated. These data will be transmitted to the NYSDEC in the form of electronic mail correspondence. A PCT summary report will be prepared and submitted to the NYSDEC as a part of the 50 to 75 % design report. The summary report will present the results of system operational parameters and analytical data collected during the pilot program. Following presentation of the PCT results, conclusions and recommendations will be made with respect to implementation of the full-scale soil gas IRM.

- Site-specific pneumatic conductivity along the southern boundary of the former Plant 24 Access Road above and below the Low Permeability Zone (LPZ).
- Quantity of surface leakage estimate in wells screened above the LPZ and quantity of water generation estimate as a result of subsurface depressurization
- Influent vapor concentration and contaminant mass loading rate estimates.
- Additional site specific geologic data within the test area(s).
- Results of the alternative systems will be presented. Finally, the site-specific pneumatic conductivity and/or surface leakage may be estimated in both capped (e.g., paved) and uncapped conditions.

Table C-1. Summary of Pneumatic Conductivity Test Depressurization and Monitoring Wells, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Well Designation	Well Purpose	Approximate Well Diameter (inches)	Approximate Screened Interval(s) (feet bls)	Approximate Total Depth (feet bls)	Approximate Distance from Extraction Point[1] (feet)
Extraction Wells					
DW-1S	Depressurization Well	4	15 to 30	32	NA
DW-1D[3]	Depressurization Well	4	42 to 47	49	NA
Vacuum Monitoring Wells					
VMWC-1A	Vacuum Monitoring	0.75	7 to 8	10	10
VMWC-1B	Vacuum Monitoring	0.75	12 to 13	15	10
VMWC-1C	Vacuum Monitoring	0.75	20 to 35	37	10
VMWC-1D[3]	Vacuum Monitoring	0.75	44 to 45	47	10
VMWC-2A	Vacuum Monitoring	0.75	7 to 8	10	25
VMWC-2B	Vacuum Monitoring	0.75	12 to 13	15	25
VMWC-2C	Vacuum Monitoring	0.75	22 to 23	25	25
VMWC-2D[3]	Vacuum Monitoring	0.75	44 to 45	47	25
VMWC-3A	Vacuum Monitoring	0.75	7 to 8	10	50
VMWC-3B	Vacuum Monitoring	0.75	12 to 13	15	50
VMWC-3C	Vacuum Monitoring	0.75	22 to 23	25	50
VMWC-3D[3]	Vacuum Monitoring	0.75	44 to 45	47	50
VMWC-4A	Vacuum Monitoring	0.75	7 to 8	10	35 [2]
VMWC-4B	Vacuum Monitoring	0.75	12 to 13	15	35 [2]
VMWC-4C	Vacuum Monitoring	0.75	22 to 23	25	35 [2]
VMWC-4D[3]	Vacuum Monitoring	0.75	44 to 45	47	35 [2]

Footnotes on last page.

Table C-1. Summary of Pneumatic Conductivity Test Depressurization and Monitoring Wells, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Well Designation	Well Purpose	Approximate Well Diameter (inches)	Approximate Screened Interval(s) (feet bls)	Approximate Total Depth (feet bls)	Approximate Distance from Extraction Point[1] (feet)
Extraction Wells					
DW-2S	Depressurization Well	4	10 to 17	19	NA
DW-2D[3]	Depressurization Well	4	32 to 47	49	NA
Vacuum Monitoring Wells					
VMWC-5A	Vacuum Monitoring	0.75	7 to 8	10	10
VMWC-5B	Vacuum Monitoring	0.75	13 to 18	20	10
VMWC-5D[3]	Vacuum Monitoring	0.75	39 to 40	42	10
VMWC-6A	Vacuum Monitoring	0.75	7 to 8	10	25
VMWC-6B	Vacuum Monitoring	0.75	14 to 15	17	25
VMWC-6D[3]	Vacuum Monitoring	0.75	39 to 40	42	25
VMWC-7A	Vacuum Monitoring	0.75	7 to 8	10	50
VMWC-7B	Vacuum Monitoring	0.75	14 to 15	17	50
VMWC-7D[3]	Vacuum Monitoring	0.75	39 to 40	42	50
VMWC-8A	Vacuum Monitoring	0.75	7 to 8	10	35 [2]
VMWC-8B	Vacuum Monitoring	0.75	14 to 15	17	35 [2]
VMWC-8D[3]	Vacuum Monitoring	0.75	39 to 40	42	35 [2]

Notes & Abbreviations:

(1) - Distances of vacuum monitoring wells are measured from DW-1 for VMWC-1 through VMWC-4, and from DW-2 for VMWC-5 through VMWC-8.
(2) - Monitoring wells are to be installed 35 ft north of vapor depressurization well.
(3) - In the event perched water is encountered above the low permeability zone (LPZ), then before drilling through the LPZ a steel casing will be installed and grouted into the LPZ to case-off the perched water and the well that penetrates the LPZ will be installed in a separate borehole.
NA - Not applicable.

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Table C-2. Summary of Pneumatic Conductivity Test Soil Gas Laboratory Analytes, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Constituent
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,4-Trimethylbenzene
1,3-Butadiene
1,4-Dichlorobenzene
2,2,4-Trimethylpentane
Methyl Ethyl Ketone
4-Ethyltoluene
Acetone
Benzene
Carbon Disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroform
Chloromethane
cis-1,2-Dichloroethene
Cyclohexane
Dichlorodifluoromethane (Freon 12)
Ethylbenzene
Freon TF
Freon 22
Methyl Butyl Ketone
Methylene Chloride
Methyl tert-Butyl Ether
n-Heptane
n-Hexane
Styrene
tert-Butyl Alcohol
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
Trichloroethene
Trichlorofluoromethane
Xylene (m,p)
Xylene (o)
Xylene (total)

Notes:
(1) Soil Gas samples will be analyzed, for the above reduced TCL VOC analyte list based on site specific contaminants, via USEPA Method TO-15.
(2) Water samples will be analyzed, using Target Compound List for VOCs, via NYSDEC ASP Method 2000.

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Attachment A

Field Monitoring Forms

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Attachment A-1. Pneumatic Conductivity Test, Depressurization Well 1-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	DW-1S Wellhead Vacuum	DW-1S Wellhead Temperature	VCS Air Flow	Wellhead Effluent PID	Knockout Tank Totalizer	Blower Influent Vacuum	Blower Effluent Pressure	Carbon Effluent Pressure	Carbon Effluent Temperature	Carbon Effluent PID
		(iwc)	(F)	(fpm)	(ppm)	(gallons)	(iwc)	(iwc)	(iwc)	(F)	(ppm)
Baseline[5]											
30 min											
1 hr											
2 hr											
3 hr											
4 hr [3]											
5 hr / 75%											
6 hr / 50%											

Initials:	Date:	(+/-)[2]
Barometric Pressure (inHg)		
Ambient Temperature (F)		
Ambient Conditions		

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis.
Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

Attachment A-1. Pneumatic Conductivity Test, Depressurization Well 1-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (Iwc) Vacuum Points											
		VMWC-1			VMWC-2			VMWC-3			VMWC-4		
		Radial Distance[1] 10 ft			Radial Distance[1] 25 ft			Radial Distance[1] 50 ft			Radial Distance[1] 35 ft		
		Depth A (7-8 ft bls)	Depth B (12-13 ft bls)	Depth C (20-35 ft bls)	Depth A (7-8 ft bls)	Depth B (12-13 ft bls)	Depth C (22-23 ft bls)	Depth A (7-8 ft bls)	Depth B (12-13 ft bls)	Depth C (22-23 ft bls)	Depth A (7-8 ft bls)	Depth B (12-13 ft bls)	Depth C (22-23 ft bls)
Baseline[5]													
30 min													
1 hr													
2 hr													
3 hr													
4 hr [3]													
5 hr / 75%													
6 hr / 50%													

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-1. Pneumatic Conductivity Test, Depressurization Well 1-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

		Induced Vacuum Readings (iwc) Vacuum Points				Water Level Measurements			
Data Recording Interval	Time	Monitoring Wells (if applicable)				Monitoring Wells (if applicable)			Comments
		MW -__	MW -__	MW -__		MW -__	MW -__	MW -__	
						DTW	DTW	DTW	
		(ft bmp)	(ft bmp)	(ft bmp)		(ft bmp)	(ft bmp)	(ft bmp)	
Baseline[5]									
30 min									
1 hr									
2 hr									
3 hr									
4 hr [3]									
5 hr / 75%									
6 hr / 50%									

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

Attachment A-2. Pneumatic Conductivity Test, Depressurization Well 1-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	DW-1D Wellhead Vacuum	DW-1D Wellhead Temperature	VCS Air Flow	Wellhead Effluent PID	Knockout Tank Totalizer	Blower Influent Vacuum	Blower Effluent Pressure	Carbon Effluent Pressure	Carbon Effluent Temperature	Carbon Effluent PID
		(iwc)	(F)	(fpm)	(ppm)	(gallons)	(iwc)	(iwc)	(iwc)	(F)	(ppm)
Baseline[5]											
30 min											
1 hr											
2 hr											
3 hr											
4 hr [3]											
5 hr / 75%											
6 hr / 50%											

Initials:	Date:	(+/-)[2]
Barometric Pressure (inHg)		
Ambient Temperature (F)		
Ambient Conditions		

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

Attachment A-2. Pneumatic Conductivity Test, Depressurization Well 1-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc)			
		Vacuum Points			
		VMWC-1	VMWC-2	VMWC-3	VMWC-4
		Radial Distance[1] 10 ft	Radial Distance[1] 25 ft	Radial Distance[1] 50 ft	Radial Distance[1] 35 ft
		Depth D	Depth D	Depth D	Depth D
		(44-45 ft bls)	(44-45 ft bls)	(44-45 ft bls)	(44-45 ft bls)
Baseline[5]					
30 min					
1 hr					
2 hr					
3 hr					
4 hr [3]					
5 hr / 75%					
6 hr / 50%					

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-2. Pneumatic Conductivity Test, Depressurization Well 1-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc) VAC Points — Monitoring Wells (if applicable)			Water Level Measurements — Monitoring Wells (if applicable)			Comments
		MW -__	MW -__	MW -__	MW -__ DTW	MW -__ DTW	MW -__ DTW	
		(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	
Baseline[5]								
30 min								
1 hr								
2 hr								
3 hr								
4 hr [3]								
5 hr / 75%								
6 hr / 50%								

Notes:

(1) Radial Distances for VMWCs 1-4 are measured from DW-1D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis.
Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-3. Pneumatic Conductivity Test, Depressurization Well 2-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	DW-2S Wellhead Vacuum	DW-2S Wellhead Temperature	VCS Air Flow	Wellhead Effluent PID	Knockout Tank Totalizer	Blower Influent Vacuum	Blower Effluent Pressure	Carbon Effluent Pressure	Carbon Effluent Temperature	Carbon Effluent PID
		(iwc)	(F)	(fpm)	(ppm)	(gallons)	(iwc)	(iwc)	(iwc)	(F)	(ppm)
Baseline[5]											
30 min											
1 hr											
2 hr											
3 hr											
4 hr [3]											
5 hr / 75%											
6 hr / 50%											

Initials:	Date:	(+/-)[2]
Barometric Pressure (inHg)		
Ambient Temperature (F)		
Ambient Conditions		

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-3. Pneumatic Conductivity Test, Depressurization Well 2-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc) Vacuum Points							
		VMWC-5		VMWC-6		VMWC-7		VMWC-8	
		Radial Distance[1] 10 ft		Radial Distance[1] 25 ft		Radial Distance[1] 50 ft		Radial Distance[1] 35 ft	
		Depth A (7-8 ft bls)	Depth B (13-18 ft bls)	Depth A (7-8 ft bls)	Depth B (14-15 ft bls)	Depth A (7-8 ft bls)	Depth B (14-15 ft bls)	Depth A (7-8 ft bls)	Depth B (14-15 ft bls)
Baseline[5]									
30 min									
1 hr									
2 hr									
3 hr									
4 hr [3]									
5 hr / 75%									
6 hr / 50%									

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

Attachment A-3. Pneumatic Conductivity Test, Depressurization Well 2-Shallow Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc) Vacuum Points — Monitoring Wells (if applicable)			Water Level Measurements — Monitoring Wells (if applicable)			Comments
		MW -__	MW -__	MW -__	MW -__ DTW	MW -__ DTW	MW -__ DTW	
		(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	
Baseline[5]								
30 min								
1 hr								
2 hr								
3 hr								
4 hr [3]								
5 hr / 75%								
6 hr / 50%								

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2S.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-4. Pneumatic Conductivity Test, Depressurization Well 2-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	DW-2D Wellhead Vacuum	DW-2D Wellhead Temperature	VCS Air Flow	Wellhead Effluent PID	Knockout Tank Totalizer	Blower Influent Vacuum	Blower Effluent Pressure	Carbon Effluent Pressure	Carbon Effluent Temperature	Carbon Effluent PID
		(iwc)	(F)	(fpm)	(ppm)	(gallons)	(iwc)	(iwc)	(iwc)	(F)	(ppm)
Baseline[5]											
30 min											
1 hr											
2 hr											
3 hr											
4 hr [3]											
5 hr / 75%											
6 hr / 50%											

Initials:	Date:	(+/-)[2]
Barometric Pressure (inHg)		
Ambient Temperature (F)		
Ambient Conditions		

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

Attachment A-4. Pneumatic Conductivity Test, Depressurization Well 2-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc)			
		Vacuum Points			
		VMWC-5	VMWC-6	VMWC-7	VMWC-8
		Radial Distance[1] 10 ft	Radial Distance[1] 25 ft	Radial Distance[1] 50 ft	Radial Distance[1] 35 ft
		Depth D	Depth D	Depth D	Depth D
		(39-40 ft bls)	(39-40 ft bls)	(39-40 ft bls)	(39-40 ft bls)
Baseline[5]					
30 min					
1 hr					
2 hr					
3 hr					
4 hr [3]					
5 hr / 75%					
6 hr / 50%					

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis. Pre-carbon sample shall be collected at test hour 4 and a post carbon treatment sample shall be collected at hour 6 of final (4th) test.
(4) One water sample will be collected from the moisture separator at the end of the test and submitted to Columbia Analytical Labs, Rochester, New York for VOC analysis (Method ASP 2000).
(5) Initial measurement after start-up for wellhead vacuum.

DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
ft. bls	feet below land surface
ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Attachment A-4. Pneumatic Conductivity Test, Depressurization Well 2-Deep Field Monitoring Form, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Data Recording Interval	Time	Induced Vacuum Readings (iwc) Vacuum Points — Monitoring Wells (if applicable)			Water Level Measurements — Monitoring Wells (if applicable)			Comments
		MW -__	MW -__	MW -__	MW -__ DTW	MW -__ DTW	MW -__ DTW	
		(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	(ft bmp)	
Baseline								
30 min								
1 hr								
2 hr								
3 hr								
4 hr [3]								
5 hr / 75%								
6 hr / 50%								

Notes:

(1) Radial Distances for VMWCs 5-8 are measured from DW-2D.
(2) + indicates increasing, - indicates decreasing
(3) Air samples shall be collected in 6-liter suma canisters and submitted to Columbia Analytical Labs, Rochester, New York for TO-15 analysis.
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DW	Depressurization Well
DTW	depth to water
fpm	feet per minute
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ft. bmp	feet below measuring point
in Hg	inches of mercury
iwc	inches of water column
PID	photoionization detector
ppm	parts per million
VMWC	Vacuum Monitoring Well Cluster

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Appendix D

Draft Outline Operation, Maintenance, and Monitoring (OM&M) Manual, Soil Gas Interim Remedial Measure, Operable Unit 3 – Former Grumman Settling Ponds, Bethpage, New York.

APPENDIX D

DRAFT Outline, Operation, Maintenance, and Monitoring Manual, Soil Gas Interim Remedial Measure, Operable Unit 3 – Former Grumman Settling Ponds, Bethpage, New York.

The DRAFT outline for the Operation, Maintenance, and Monitoring (OM&M) Manual is provided below.

1.0 Introduction
- 1.1 Project Description
- 1.2 Purpose of OM&M Manual
- 1.3 Special Site-Specifics Safety Warnings
- 1.4 Records Management
  - 1.4.1 OM&M Needs Summary
  - 1.4.2 OM&M Needs Summary List of Official Records and References

2.0 Site Description
- 2.1 Description of Sites
- 2.2 Site History
- 2.3 Physical Site Characterization

3.0 Site Remedial Action
- 3.1 Description of Soil Gas Interim Remedial Measure (SG IRM)
- 3.2 Goals of Remedial Action

4.0 Sampling Analysis
- 4.1 Monitoring Plan
  - 4.1.1 Elements of Monitoring Plan
  - 4.1.2 Basis of Design
- 4.2 Environmental Effectiveness Monitoring
  - 4.2.1 Vacuum Monitoring
  - 4.2.2 On-site Soil Gas Quality Monitoring
- 4.3 Remedial System Performance and Compliance Monitoring
  - 4.3.1 Influent Sampling Procedures
  - 4.3.2 Discharge Sampling Procedures
- 4.4 Analytical Program
- 4.5 Evaluation of Monitoring Results
- 4.6 Records

5.0 Site Maintenance
- 5.1 Maintenance Activities
  - 5.1.1 Site Fence
  - 5.1.2 Signs
  - 5.1.3 Treatment Plant Maintenance
  - 5.1.4 Maintenance Schedule
- 5.2 Inspections and Maintenance
  - 5.2.1 Daily Check List
  - 5.2.2 Monthly Check List
  - 5.2.3 Annual Check List
- 5.3 Preventative Maintenance Schedule
  - 5.3.1 Monthly Activities
  - 5.3.2 Annual Activities
- 5.4 Disposal of Used Materials and Wastes

6.0 Reports
- 6.1 Quarterly Reports
- 6.2 Yearly Reports
- 6.3 5-Year Review Reports

7.0 Citizen Participation
- 7.1 OM&M Citizen Participation Plan
- 7.2 Contact List
- 7.3 FOIL Packet

8.0 Personnel
- 8.1 Organization
  - 8.1.1 Chain of Command
- 8.2 Manpower Requirements
- 8.3 Responsibilities and Duties
- 8.4 Qualifications
- 8.5 Training
- 8.6 Material Safety Data Sheets

9.0 Health and Safety Plan

10.0 Records and Forms
- 10.1 Groundwater Monitoring Well System
  - 10.1.1 Inspection Forms
  - 10.1.2 Monitoring Forms
  - 10.1.3 Maintenance Forms
- 10.2 Treatment Plant
  - 10.2.1 Inspection Forms
  - 10.2.2 Monitoring Forms
  - 10.2.3 Maintenance Forms

11.0 Emergency Contingency Plan
- 11.1 Emergency Spill Response
- 11.2 Fire/Explosion
- 11.3 Personal Injury
- 11.4 Toxic Exposures
- 11.5 Emergency Telephone Numbers, Map and Directions to Nearest Health Facility
- 11.6 Public Water Contingency Plan

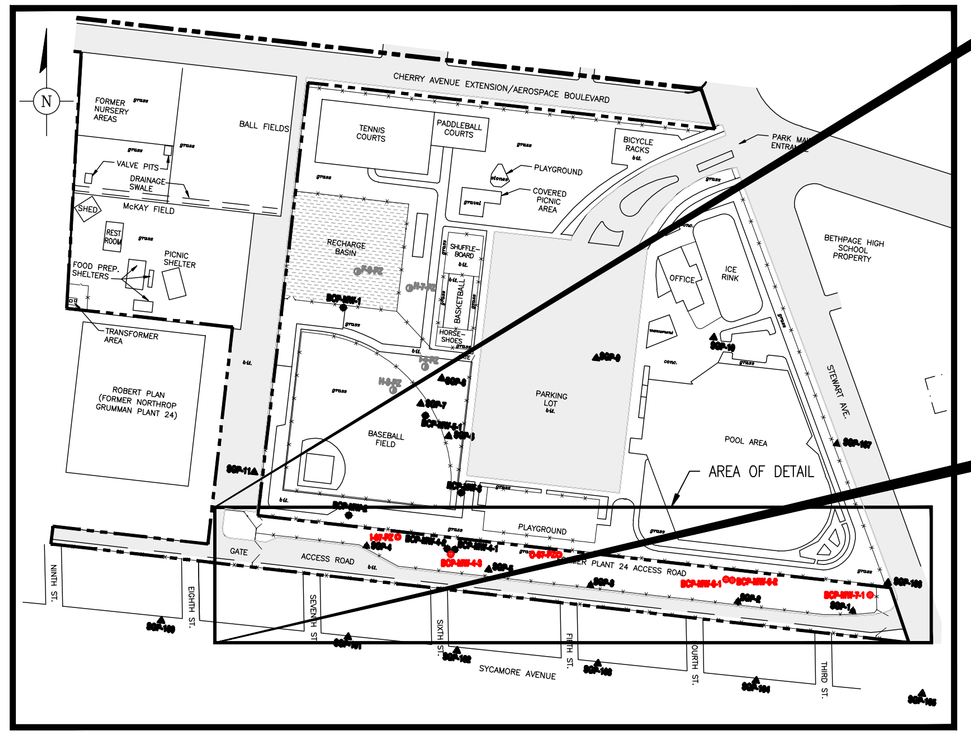
12.0 Record Drawings

13.0 RODs, Consent Orders, and/or any Explanation of Significant Differences (ESDs)

14.0 Electronic Copies of Official Records and References

APPENDIX A: Manufacture's Information

APPENDIX B: SOPs



SITE PLAN

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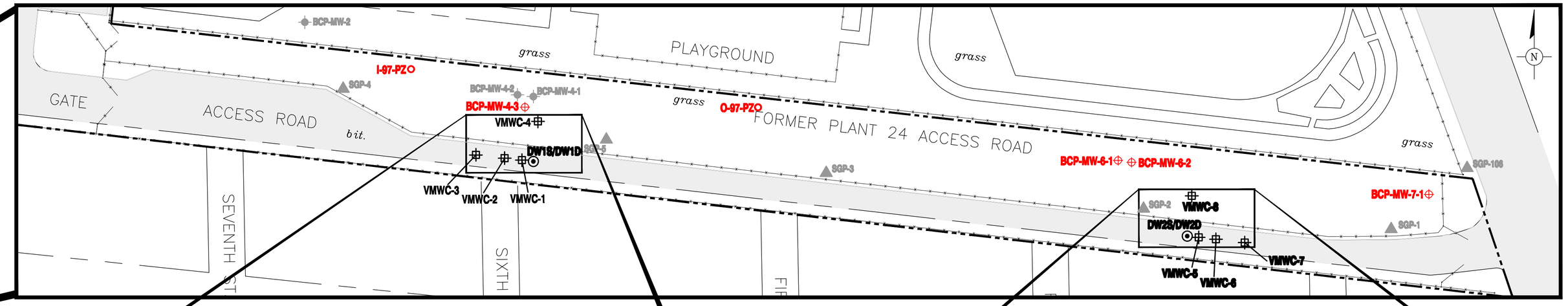

AREA OF DETAIL– FORMER PLANT 24 ACCESS ROAD

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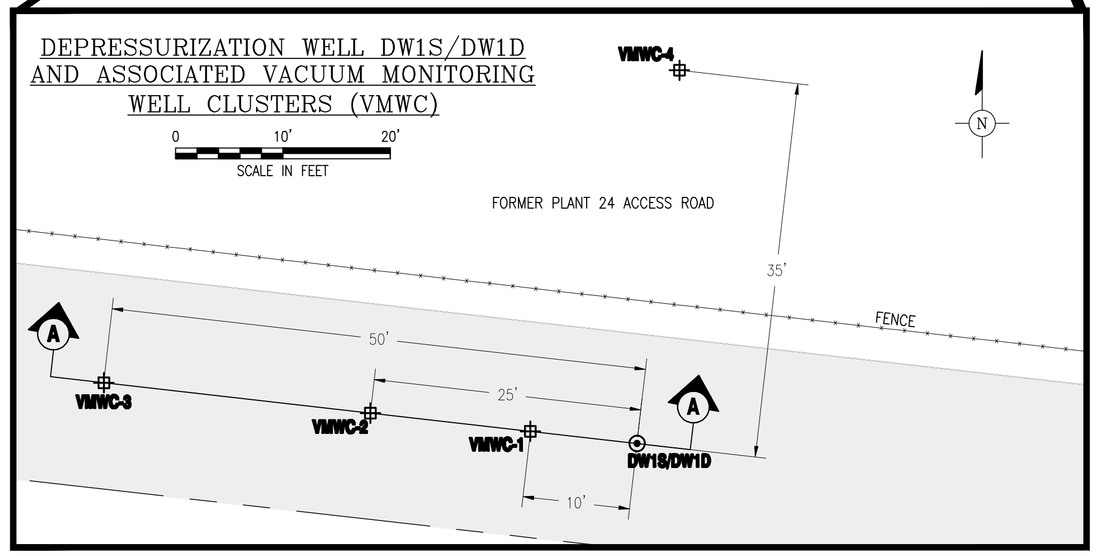
SCALE IN FEET

DEPRESSURIZATION WELL DW1S/DW1D AND ASSOCIATED VACUUM MONITORING WELL CLUSTERS (VMWC)



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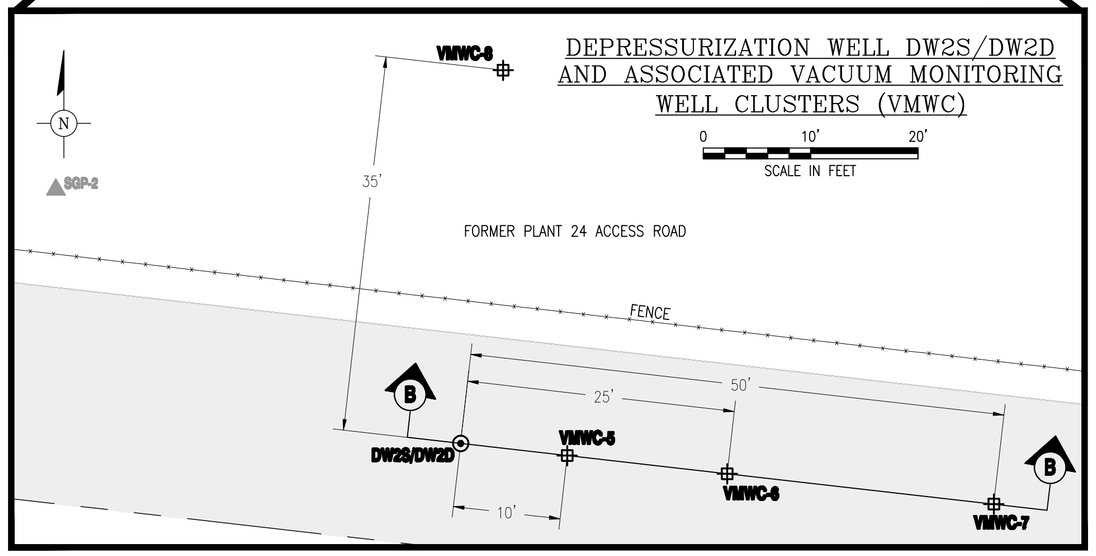
SCALE IN FEET

DEPRESSURIZATION WELL DW2S/DW2D AND ASSOCIATED VACUUM MONITORING WELL CLUSTERS (VMWC)



0 10' 20'

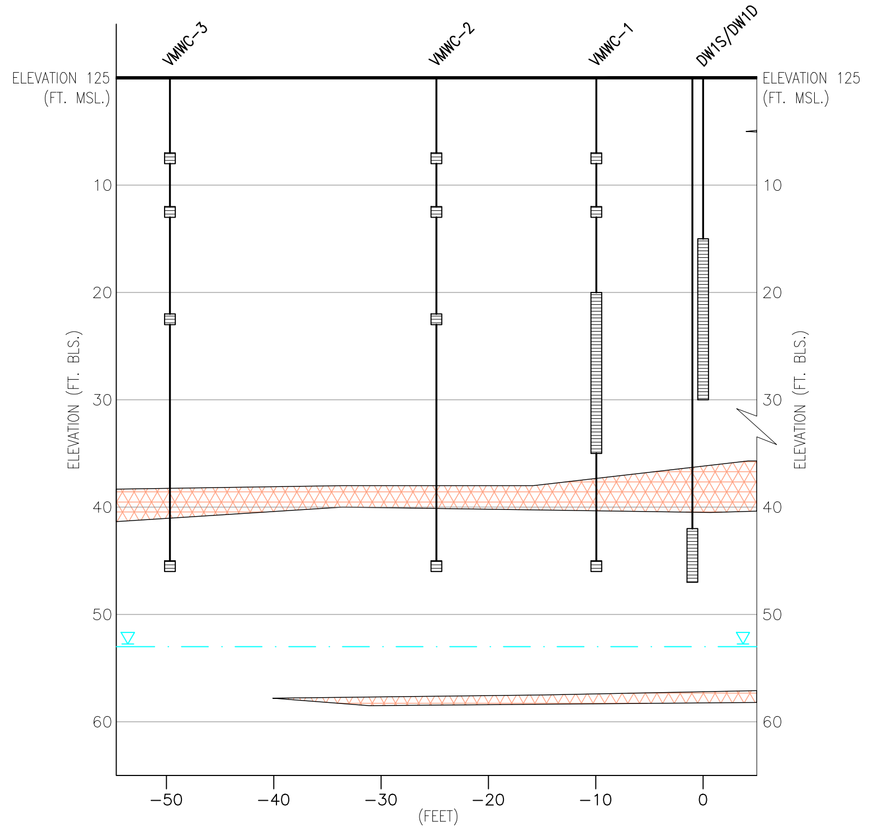
SCALE IN FEET

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- bit. — BITUMINOUS PAVEMENT
- SGP-1 — TEMPORARY SOIL GAS POINT INSTALLED AS PART OF OU-3 REMEDIAL INVESTIGATION
- BCP-MW-4-2 — BETHPAGE COUNTY PARK MONITORING WELLS
- F-8-PZ — COMPLETED PIEZOMETER
- DW1S/DW1D — PROPOSED DEPRESSURIZATION WELL (DW)
- VMWC-8 — PROPOSED VACUUM MONITORING WELL CLUSTER (VMWC)
- BCP-MW-7 — PROPOSED MONITORING WELL
- I-97-PZ — PROPOSED PIEZOMETER

NOTES:

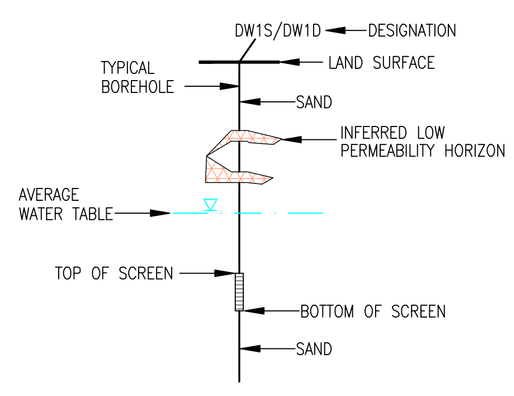
1. WATER TABLE MEASURMENT WAS OBTAINED FROM BCPMW-4-2 ON DECEMBER 11, 2006.
2. CROSS-SECTIONS BASED ON FIGURE 5-2 OF SOIL GAS INTERIM REMEDIAL MEASURE WORK PLAN (ARCADIS 2007).
3. LOCATIONS OF BCPMW-4-1 AND BCPMW-4-2 ARE BASED ON FIELD MEASUREMENTS AND ARE APPROXIMATE.



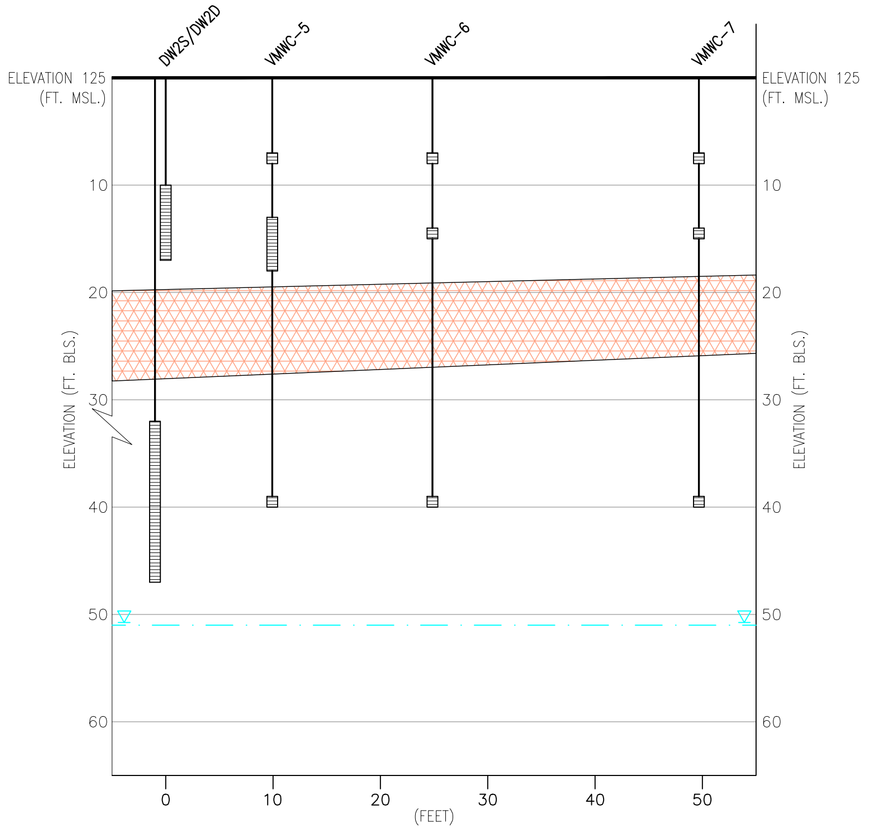
CROSS-SECTION A-A

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"= 10'

EXPLANATION



DEFINITIONS:
FT. MSL. – FEET RELATIVE TO MEAN SEA LEVEL
FT. BLS. – FEET BELOW LAND SURFACE



CROSS-SECTION B-B

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"= 10'

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NO.	ISSUED DATE	REVISION DESCRIPTION	BY/CKD

KEYPLAN

SEAL

ARCADIS
Two Huntington Quadrangle
Suite 1S10
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE

NORTHROP GRUMMAN
OPERABLE UNIT 3
SOIL GAS INTERIM REMEDIAL MEASURE
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT	K. PIERIDES	

SHEET TITLE

PROPOSED
PNEUMATIC CONDUCTIVITY
TEST LOCATIONS AND
WELL CONFIGURATION

TASK/PHASE NUMBER	DRAWN BY
001S0	A. SANCHEZ
PROJECT NUMBER	FIGURE
NY001464.0807	C-1

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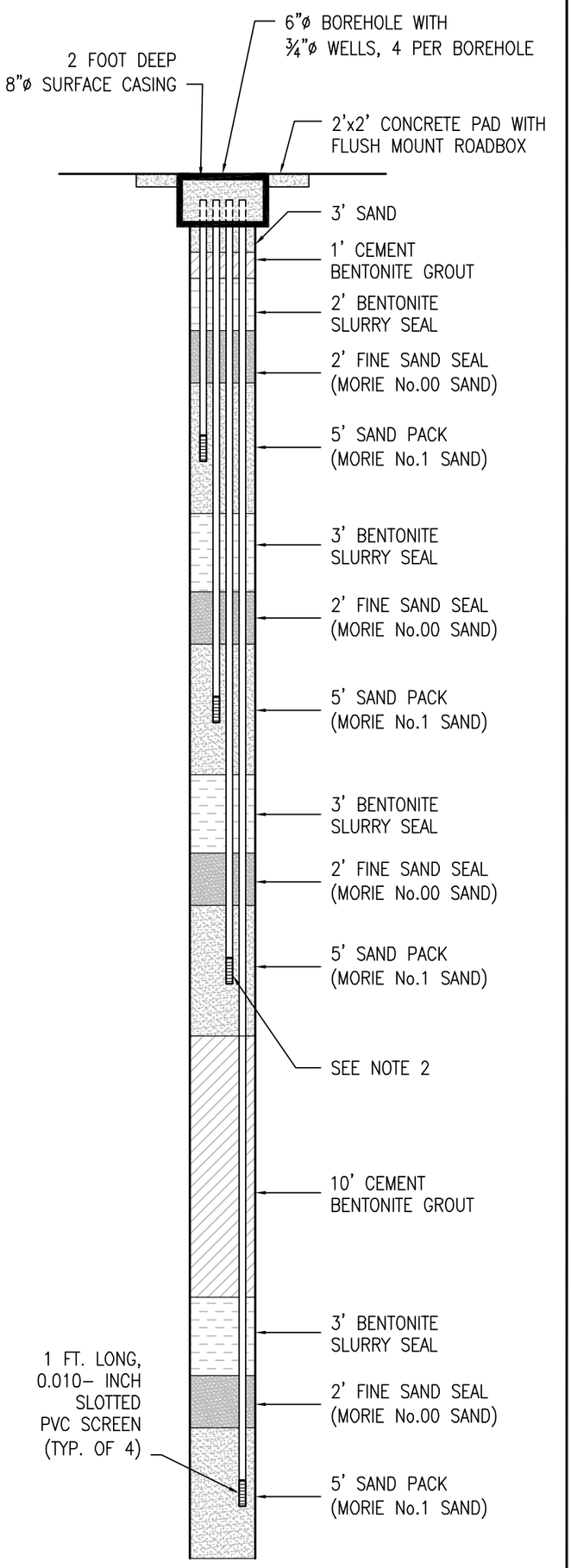
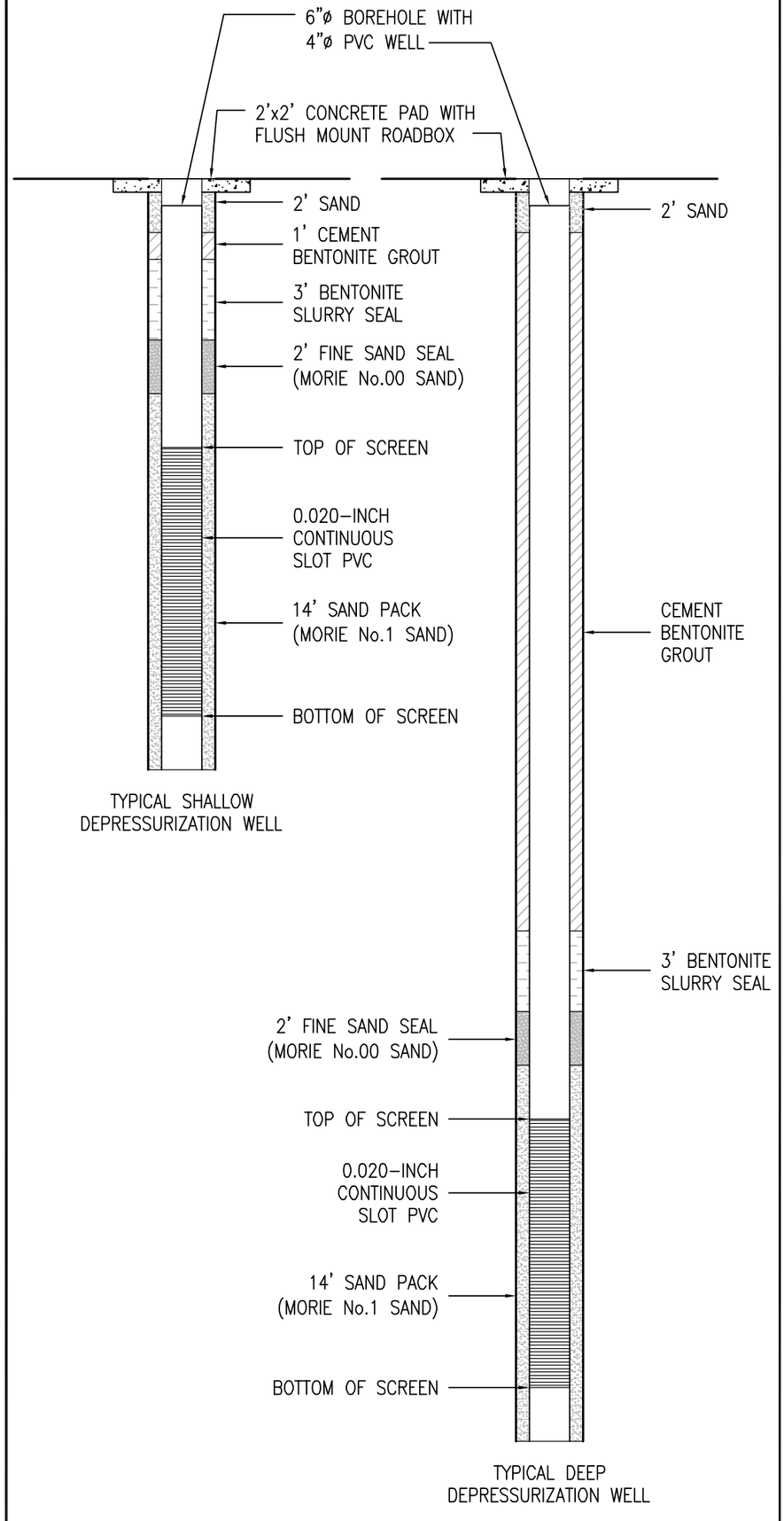


TYPICAL VACUUM MONITORING WELL CLUSTER CONSTRUCTION DETAIL

N.T.S.



TYPICAL DEPRESSURIZATION WELL PAIR CONSTRUCTION DETAIL

N.T.S.

NOTES:

1. DEPRESSURIZATION WELL (DW) AND VACUUM MONITORING WELL (VMWC), CONSTRUCTION DETAILS MAY BE MODIFIED DUE TO FIELD CONDITIONS.
2. REFER TO TABLE C–1 FOR ADDITIONAL DETAILS.

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Acad Version : R17.0s (LMS Tech)
User Name : dsanchez
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Melville, NY 11747
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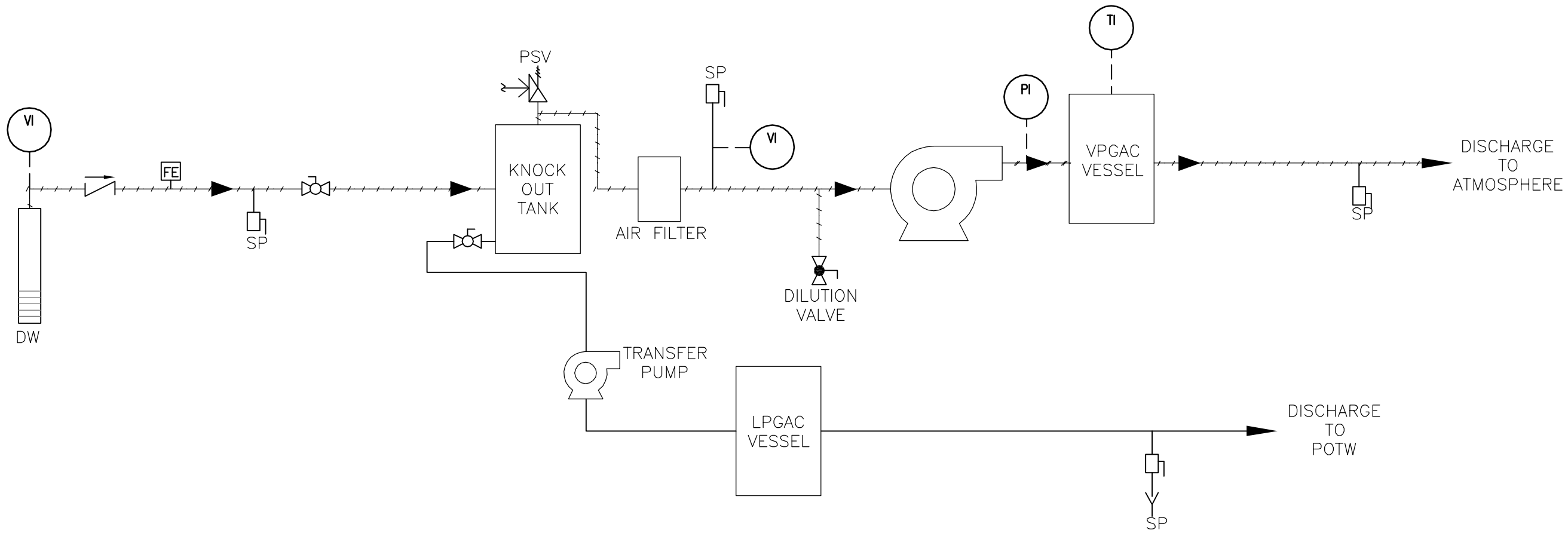
www.arcadis-us.com

PROJECT TITLE
NORTHROP GRUMMAN
OPERABLE UNIT 3
SOIL GAS INTERIM REMEDIAL MEASURE
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		R. PORSCHE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
TYPICAL DEPRESSURIZATION AND VACUUM MONITORING WELL DETAIL		001S0	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.000	C-2



PIPING, EQUIPMENT, AND INSTRUMENT LEGEND

- VAPOR STREAM
- PROCESS WATER
- INSTRUMENT CONNECTED TO PROCESS LINE
- PORTABLE INSTRUMENT NOT CONNECTED TO PROCESS LINE
- BALL VALVE (NORMALLY OPEN)
- BALL VALVE (NORMALLY CLOSED)
- CHECK VALVE
- SAMPLE PORT
- FE — FLOW ELEMENT ACCESS
- EXTRACTION BLOWER
- DEPRESSURIZATION WELL

EQUIPMENT AND INSTRUMENT DESIGNATIONS

- DW– DEPRESSURIZATION WELL
- FI– FLOW INDICATOR
- PI– PRESSURE INDICATOR
- PSV– PRESSURE SAFETY VALVE
- SP– SAMPLE PORT
- V– SHUTOFF VALVE
- VPGAC– VAPOR PHASE GRANULAR ACTIVATED CARBON
- VI– VACUUM INDICATOR

EQUIPMENT DESCRIPTIONS

VPGAC VESSEL

MAKE: US FILTER/SIEMENS
MODEL: VSC–400 W/ VOCARB NS/NR 4X10 VPGAC

LPGAC VESSEL

MAKE: US FILTER/SIEMENS
MODEL: ASC–200

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NO.	ISSUED DATE	REVISION DESCRIPTION	BY/CKD

KEYPLAN

SEAL

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OPERABLE UNIT 3
SOIL GAS INTERIM REMEDIAL MEASURE
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
PNEUMATIC CONDUCTIVITY TEST PROCESS FLOW DIAGRAM		001S0	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.0807	C-3

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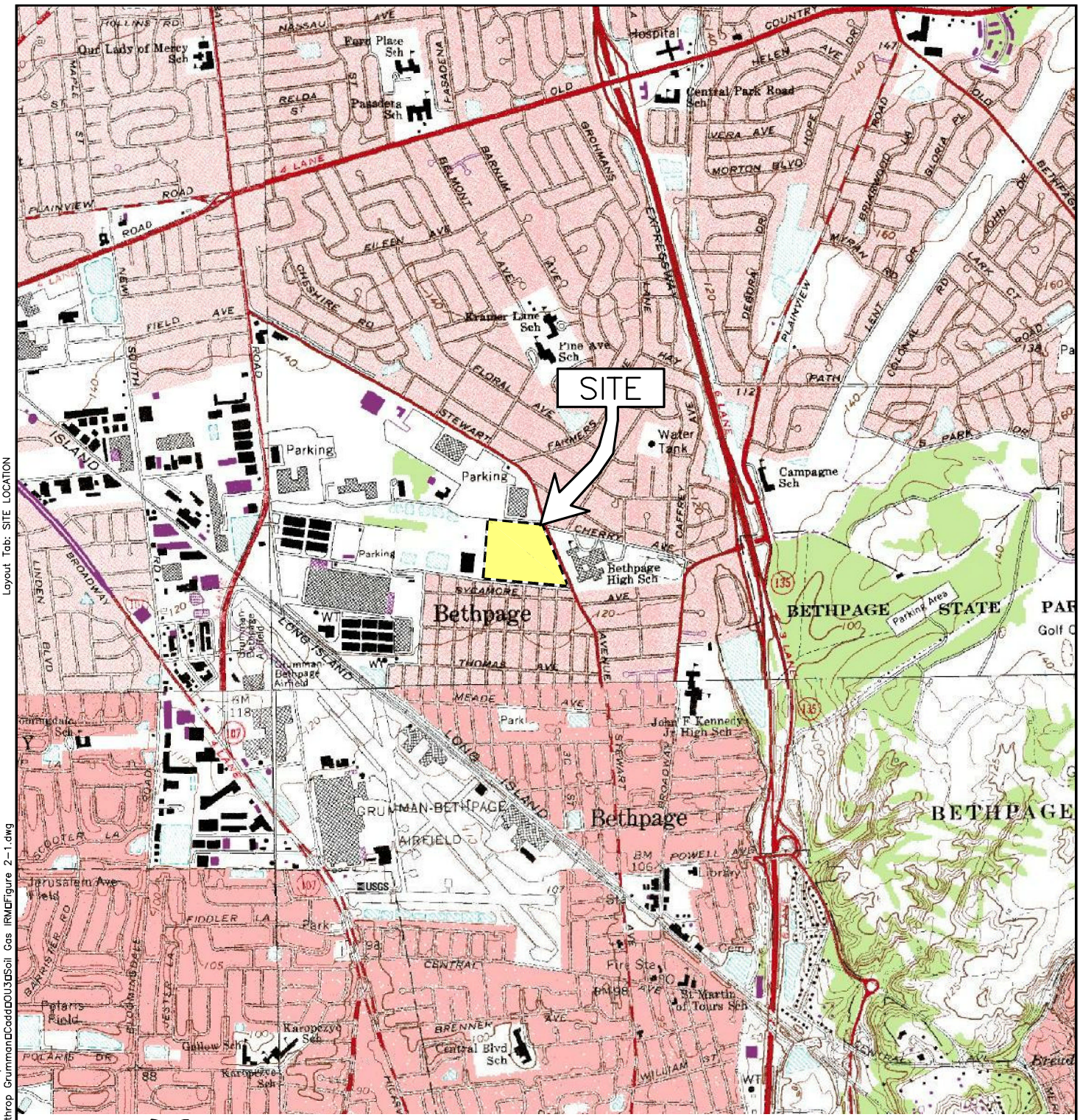

0 2000' 4000'

SCALE IN FEET

SITE LOCATION

SOURCE: USGS 7.5 MIN. AMITYVILLE QUADRANGLE, AMITYVILLE, NY. 1994
USGS 7.5 MIN. FREEPORT QUADRANGLE, FREEPORT, NY., 1994
USGS 7.5 MIN. HICKSVILLE QUADRANGLE, HICKSVILLE, NY., 1967, PHOTOREVISED 1979
USGS 7.5 MIN. HUNTINGTON QUADRANGLE, HUNTINGTON, NY. 1967, PHOTOREVISED 1979

EXPLANATION

PROPERTY BOUNDARY

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ARCADIS
Two Huntington Quadrangle
Suite 1S10, Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		D. STERN
SHEET TITLE: SITE LOCATION FORMER GRUMMAN SETTLING PONDS OPERABLE UNIT 3 BETHPAGE, NEW YORK		TASK/PHASE NUMBER 001SO	DRAWN BY A. SANCHEZ
		PROJECT NUMBER NY001464.0807	FIGURE 2-1

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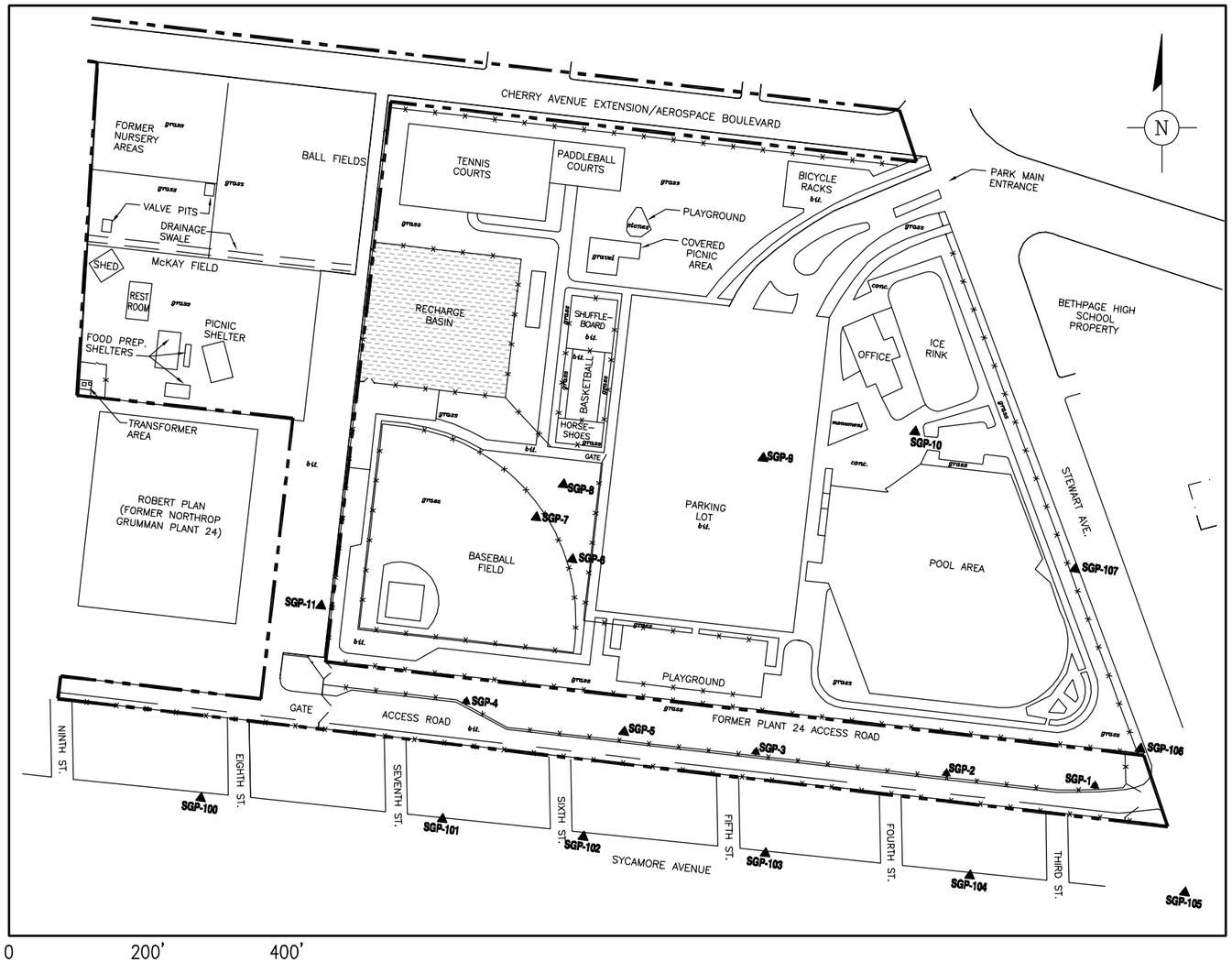

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- *bit.* BITUMINOUS PAVEMENT
- SGP-1 ▲ SOIL GAS POINT

Current Plotstyle : ByColor
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Acad Version : R17.0s (LMS Tech)
User Name : alsanchez

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KEYPLAN

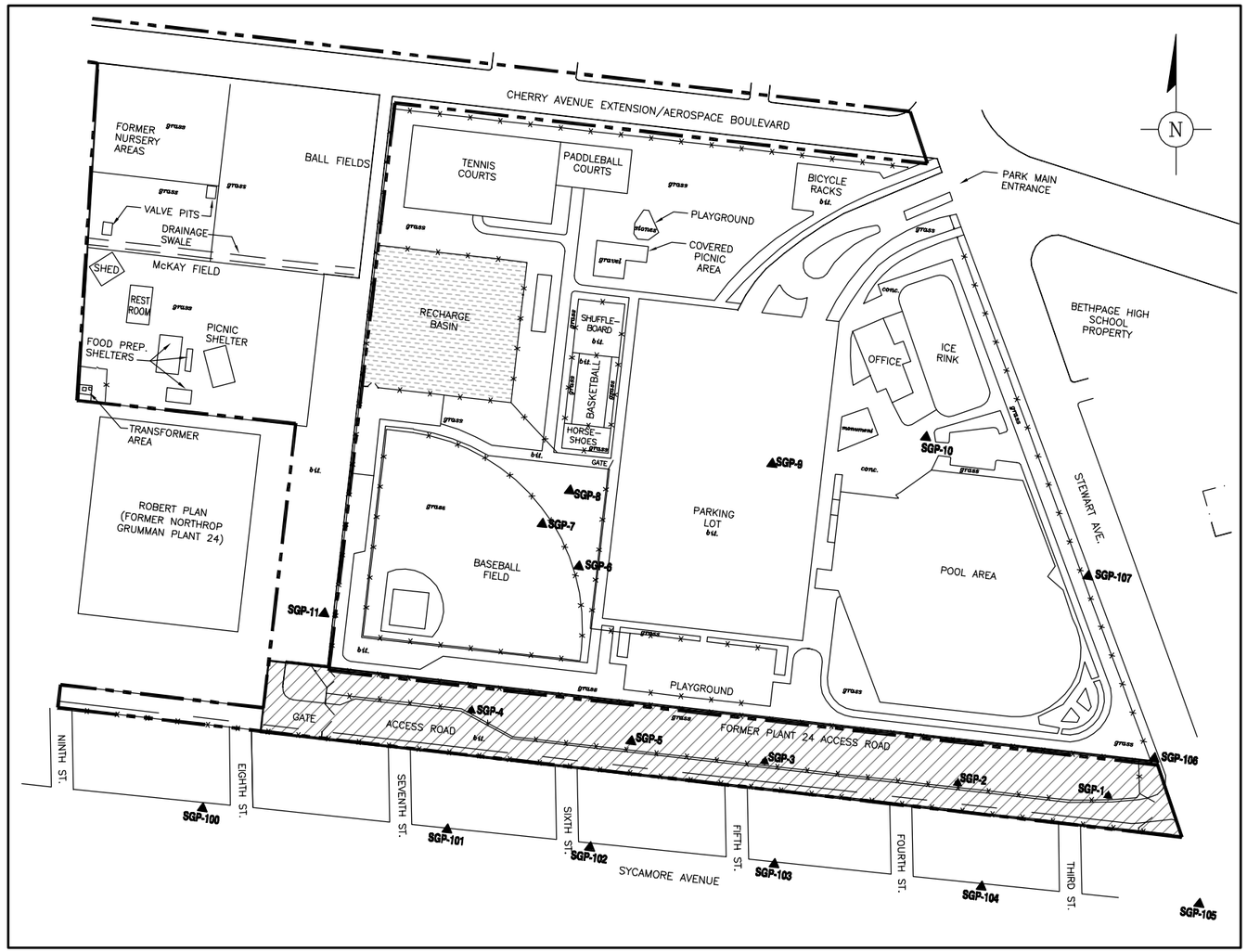
SEAL

ARCADIS
Two Huntington Quadrangle
Suite 1S10
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE

NORTHROP GRUMMAN
OPERABLE UNIT 3
SOIL GAS INTERIM REMEDIAL MEASURE
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		W. WITTEK
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
FEATURES, STRUCTURES AND APPROXIMATE SOIL GAS SAMPLING LOCATIONS		001SO	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.0807	2-2



LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- *bit.* — BITUMINOUS PAVEMENT
- SGP-1 ▲ — SOIL GAS POINT
- PROPOSED LOCATION OF SOIL GAS INTERIM REMEDIAL MEASURE SYSTEM

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SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
PROPOSED LOCATION OF SOIL GAS INTERIM REMEDIAL MEASURE SYSTEM		001S0	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.0807	5-1

Current Plotstyle : ByColor
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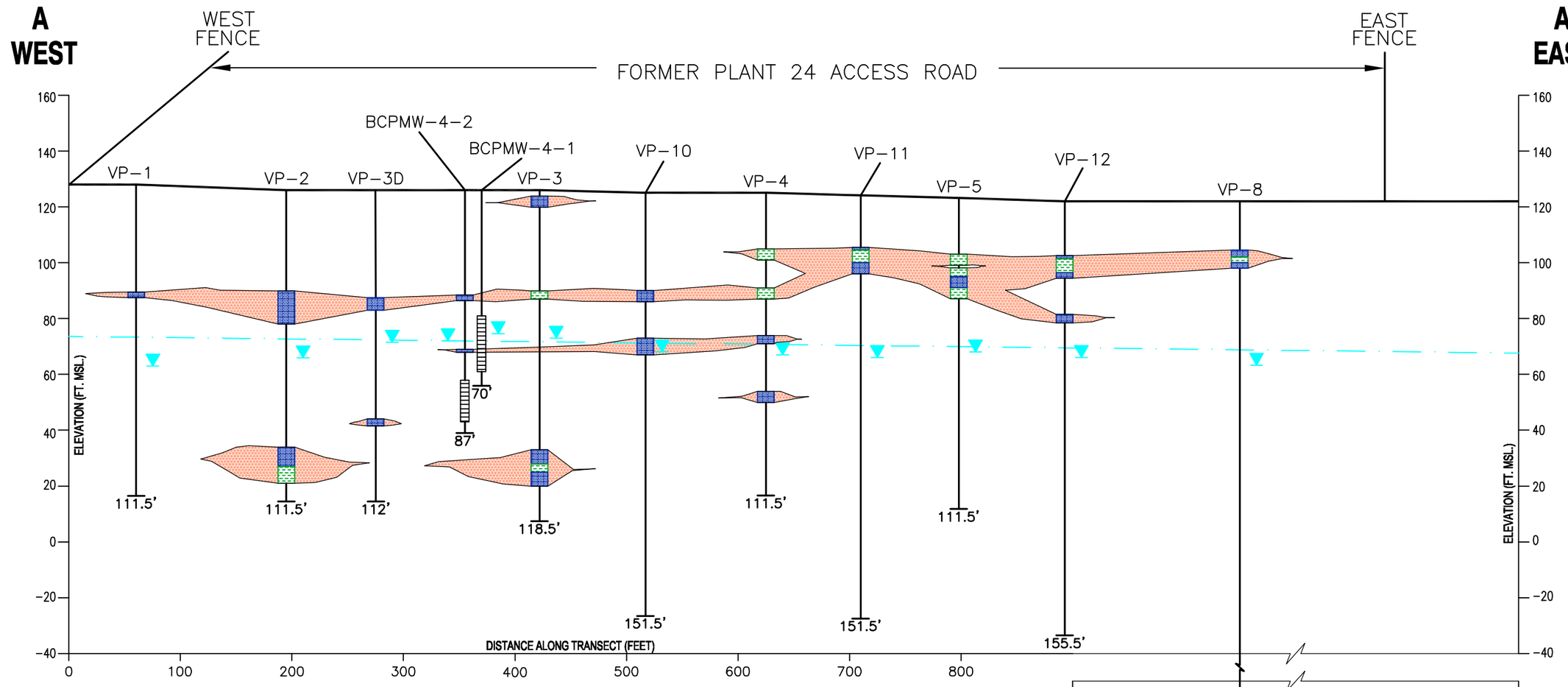
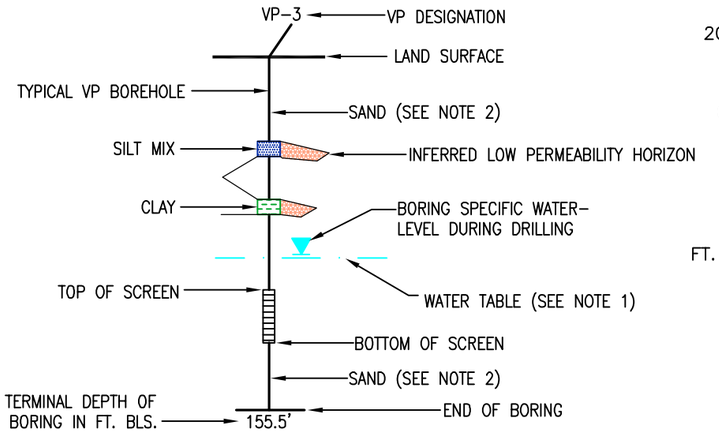
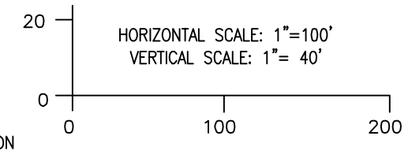


EXPLANATION



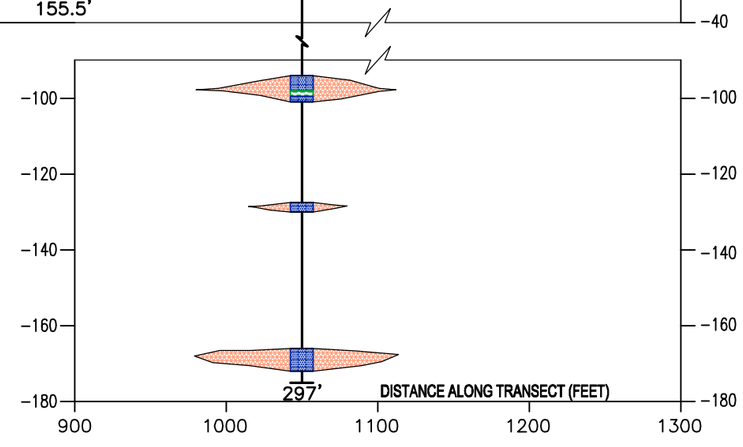


DEFINITIONS

VP VERTICAL PROFILE
ug/L MICROGRAMS PER LITER
FT. MSL. FEET RELATIVE TO MEAN SEA LEVEL
FT. BLS. FEET BELOW LAND SURFACE

NOTES:

1. WATER TABLE AS MEASURED IN BCPMW-4-1 ON DECEMBER 11, 2006.
2. ZONES BETWEEN SILT MIX AND CLAY AREAS OF VERTICAL PROFILE BORINGS ARE SAND.
3. LOCATIONS OF BCPMW-4-1 AND BCPMW-4-2 ARE BASED ON FIELD MEASUREMENTS AND ARE APPROXIMATE.



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PROJECT TITLE

NORTHROP GRUMMAN
OPERABLE UNIT 3
SOIL GAS INTERIM REMEDIAL MEASURE
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		W. WITTEK
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
GEOLOGIC CROSS-SECTION A-A'		001SO	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.0807	5-2

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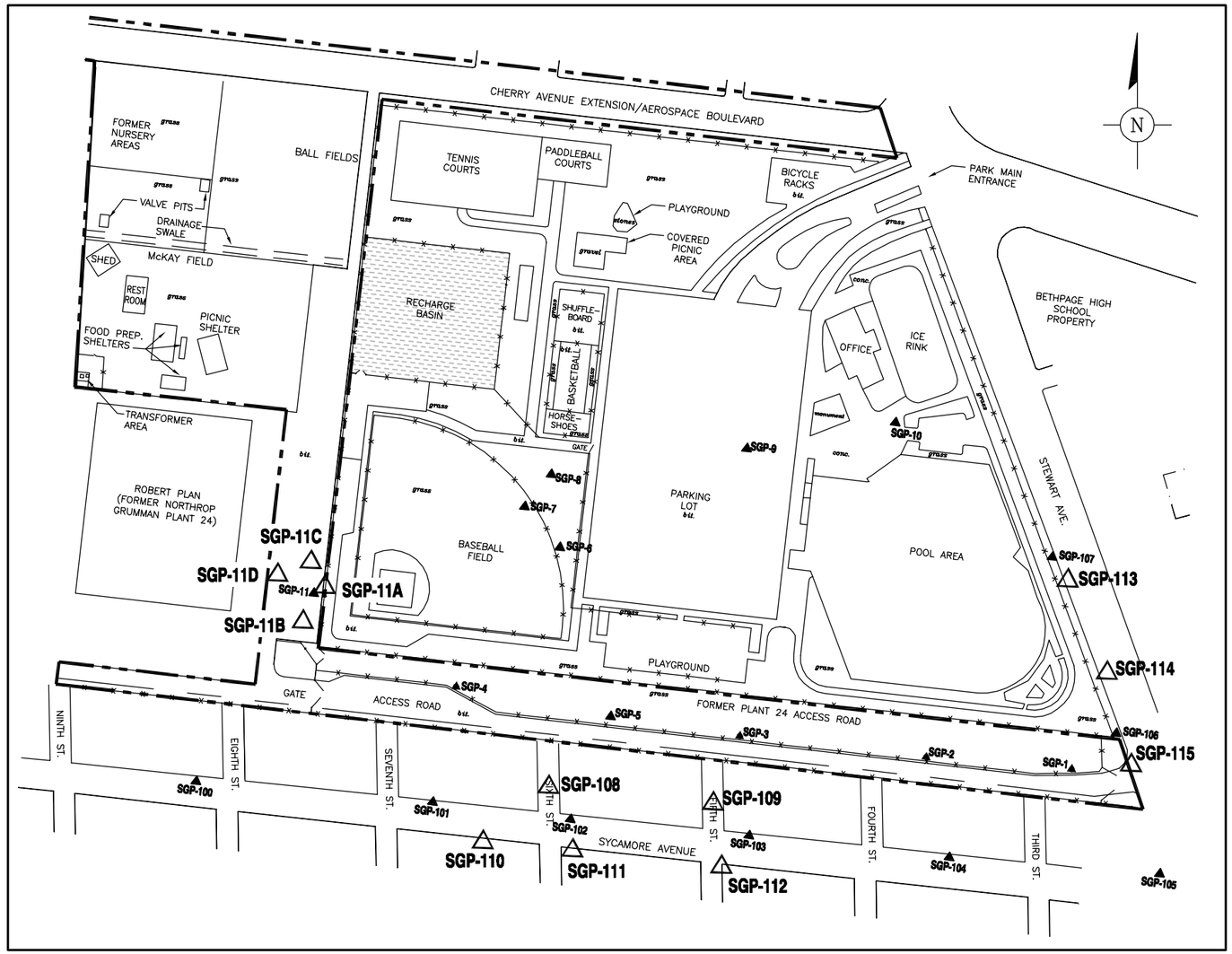
Acad Version : R17.0s (LMS Tech)
User Name : alsanchez



0 200' 400'

SCALE IN FEET

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- *bit.* BITUMINOUS PAVEMENT
- SGP-1 ▲ SOIL GAS POINT (SGP)
- SGP-113 △ PROPOSED SOIL GAS POINT

NOTES:

1. SGP–100 TO SGP–105 COMPLETED ON NORTH SIDE OF SYCAMORE AVE. PROPOSED SGP–110; SGP–111; AND SGP–112 WILL BE COMPLETED ON SOUTH SIDE OF SYCAMORE AVE. ALL LOCATIONS SUBJECT TO FIELD VERIFICATION.
2. ALL SGP LOCATIONS PROPOSED FOR AREAS TO THE SOUTH AND EAST OF BETHPAGE COMMUNITY PARK WILL BE DRILLED ON TOWN OF OYSTER BAY RIGHTS–OF–WAY.
3. ALL SGP LOCATIONS WILL BE PROPERLY ABANDONED AFTER COMPLETION OF SAMPLING.

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C. SAN GIOVANNI	M. WOLFERT		W. WITTEK
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
LOCATION OF PROPOSED SOIL GAS SAMPLING LOCATIONS		001SO	A. SANCHEZ
		PROJECT NUMBER	FIGURE
		NY001464.0807	B-1

Current Plotstyle : ByColor
Layout Tab: Layout1
Date\Time : Fri, 16 Feb 2007 – 11:04am
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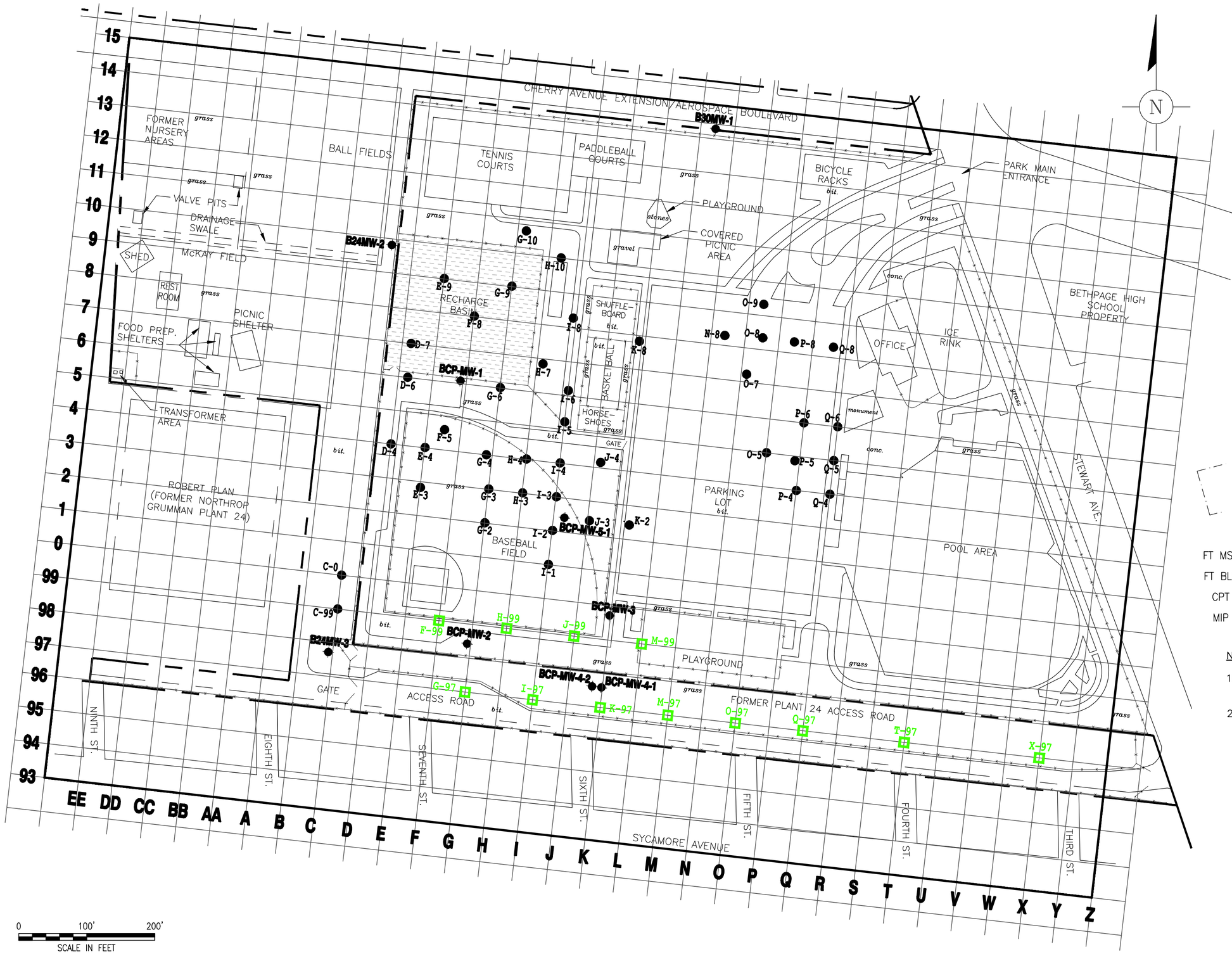
Acad Version : R17.0s (LMS Tech)
User Name : alsanchez



EXPLANATION

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- BASIN
- *bit.* BITUMINOUS PAVEMENT
- C-6 COMPLETED CPT/MIP BORING LOCATION AND DESIGNATION
- BCP-MW-3 EXISTING MONITORING WELL
- F-94 PROPOSED CPT POINT

FT MSL	FEET RELATIVE TO MEAN SEA LEVEL
FT BLS	FEET BELOW LAND SURFACE
CPT	CONE PENETROMETER
MIP	MEMBRANE INTERFACE PROBE

NOTES:

1. GRID BOX DIMENSIONS ARE 50-FT SQUARE.
2. COMPLETED CPT/MIP BORINGS DRILLED TO THE WATER TABLE (EST. 55 FT BLS), OR UNTIL REFUSAL IS ENCOUNTERED,

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BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		M. REINDL

SHEET TITLE

SITE PLAN SHOWING
PROPOSED CPT BORINGS AND
COMPLETED CPT/MIP BORINGS

TASK/PHASE NUMBER	DRAWN BY
001S0	A. SANCHEZ

PROJECT NUMBER	FIGURE
NY001464.0807	**B-2**

Current Plotstyle : ByColor
Layout Tab: Layout1
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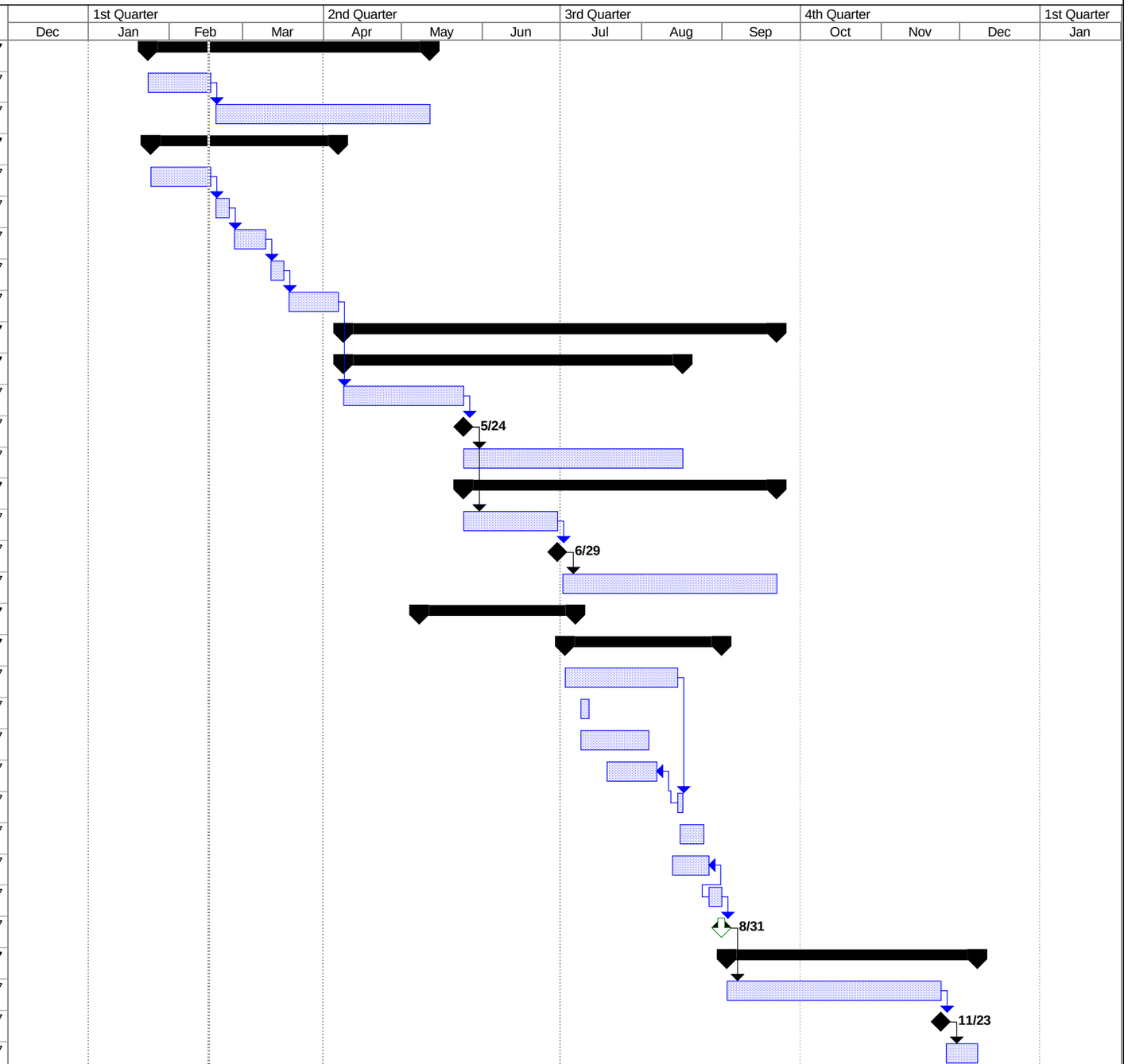
User Name : alsanchez Path\Name : G:\DATA\PROJECTS\Northrop Grumman\Cadd\DWG\Soil Gas IRM\Figure B-2.dwg

Figure 12-1. Project Schedule, Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

ID	Task Name	Duration	Start	Finish
1	**Soil Gas IRM Work Plan**	**78 days**	**Wed 1/24/07**	**Fri 5/11/07**
2	Work Plan Preparation/Submitted to NYSDEC	18 days	Wed 1/24/07	Fri 2/16/07
3	NYSDEC Review and Comments	60 days	Mon 2/19/07	Fri 5/11/07
4	**Pneumatic Conductivity Study**	**52 days**	**Thu 1/25/07**	**Fri 4/6/07**
5	Workplan Preparation/Submitted to NYSDEC	17 days	Thu 1/25/07	Fri 2/16/07
6	NYSDEC Review and Comments	5 days	Mon 2/19/07	Fri 2/23/07
7	Installation of Wells	10 days	Mon 2/26/07	Fri 3/9/07
8	Implementation of Test	5 days	Mon 3/12/07	Fri 3/16/07
9	Data Summary/Analysis	15 days	Mon 3/19/07	Fri 4/6/07
10	**Soil Gas IRM Design**	**120 days**	**Mon 4/9/07**	**Fri 9/21/07**
11	**50-75% Design**	**94 days**	**Mon 4/9/07**	**Thu 8/16/07**
12	Design Preparation	34 days	Mon 4/9/07	Thu 5/24/07
13	Design Submittal to NYSDEC	0 days	Thu 5/24/07	Thu 5/24/07
14	NYSDEC Review and Comment	60 days	Fri 5/25/07	Thu 8/16/07
15	**95% Design**	**86 days**	**Fri 5/25/07**	**Fri 9/21/07**
16	Design Preparation	26 days	Fri 5/25/07	Fri 6/29/07
17	Design Submittal to NYSDEC	0 days	Fri 6/29/07	Fri 6/29/07
18	NYSDEC Review and Comment	60 days	Mon 7/2/07	Fri 9/21/07
19	**General Contractor Bidding and Contracting**	**44 days**	**Tue 5/8/07**	**Fri 7/6/07**
25	**Construction**	**44 days**	**Tue 7/3/07**	**Fri 8/31/07**
26	Construction of Pre-Fabricated Building/System	31 days	Tue 7/3/07	Tue 8/14/07
27	Mobilization	3 days	Mon 7/9/07	Wed 7/11/07
28	Installation of Wells	20 days	Mon 7/9/07	Fri 8/3/07
29	Subsurface Utility and Trenching	13 days	Thu 7/19/07	Tue 8/7/07
30	Pre-Fabricated Building/System Installation	2 days	Wed 8/15/07	Thu 8/16/07
31	Final Utility Connections	7 days	Thu 8/16/07	Fri 8/24/07
32	Surface Seal Installation (if necessary)	10 days	Mon 8/13/07	Mon 8/27/07
33	Mechanical Shakedown	5 days	Mon 8/27/07	Fri 8/31/07
34	System Start-up	0 days	Fri 8/31/07	Fri 8/31/07
35	**As-Built Submittal**	**70 days**	**Mon 9/3/07**	**Fri 12/7/07**
36	As-Built Submittal Preparation	60 days	Mon 9/3/07	Fri 11/23/07
37	Submittal to NYSDEC	0 days	Fri 11/23/07	Fri 11/23/07
38	NYSDEC Review and Comment	10 days	Mon 11/26/07	Fri 12/7/07



Project: alternative 1_jan_03_07
Date: Fri 2/16/07

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline