SITE INVESTIGATION REPORT

O'Donovan United States Armed Forces Reserve Center
Albany, New York

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Prepared for:

US Army Corps of Engineers®
BUILDING STRONG®

Omaha District Rapid Response
Building 525 Castle Hall
Offutt AFB, Nebraska 68113

Prepared by:

Shaw®

Shaw Environmental & Infrastructure, Inc. (a CB&I company)
2790 Mosside Blvd
Monroeville, Pennsylvania 15146

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List of Acronyms

°F	degrees farenheit
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
1,1,1-TCA	1,1,1-trichloroethane
ACM	asbestos containing material
Aztech	Aztech Technologies
bgs	below ground surface
Chemtech	Chemtech Consulting Group
COC	chain of custody
DO	dissolved oxygen
DPT	direct push technology
Hg	elemental mercury
HRS	Hazard Ranking System
IATC	indoor air threshold concentration
IDW	investigation-derived waste
in. Hg	inches of mercury
NFRAP	No Further Remedial Action Planned
NPL	National Priorities List
NTUs	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYS GWQS	New York State Groundwater Quality Standard
ORP	oxidation reduction potential
OSWER	Office of Solid Waste Emergency Response
OWS	oil-water separator
PA	Preliminary Assessment
PARS	PARS Environmental, Inc.
PCE	tetrachloroethene
PID	photoionization detector
QC	quality control
RPD	relative percent difference
RSC	Regional Support Command

List of Acronyms (Continued)

SAP	Sampling and Analysis Plan
Shaw	Shaw Environmental and Infrastructure, Inc.
SI	Site Investigation
SOP	standard operating procedure
SVOCs	semi-volatile organic compounds
TCE	trichloroethene
TICs	tentatively identified compounds
TSSGC	Target Shallow Soil Gas Concentrations
U.S.	United States
USACE	United States Army Corps of Engineers
USAFRC	United States Armed Forces Reserve Center
USAR	United States Army Reserve
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

The following Site Investigation (SI) report has been prepared by Shaw Environmental and Infrastructure, Inc. (Shaw), a CB&I company, for the United States (U.S.) Army Corps of Engineers (USACE)-Omaha District, in compliance with the Rapid Response Contract No. W9128F-12-D-0003, Task Order No. 008. The SI was performed in accordance with the requirements presented in the *Work Plan, O'Donovan United States Armed Forces Reserve Center, Albany, New York,* (Work Plan) (Shaw, March 2013).

1.1 Scope of Activities

This SI report presents the field activities and analytical results for the time-critical response action performed March 13 through April 19, 2013 at the Major James J. O'Donovan United States Armed Forces Reserve Center (USAFRC) site located at 90 North Main Avenue, Albany, New York (**Figure 1**).

The time-critical response action consisted of:

- Vapor Intrusion Assessment at USAFRC Buildings
- Soil Vapor Investigation
- Monitoring Well Installation and Groundwater Sampling

1.2 Report Organization

This SI Report is organized into the following sections:

- **Section 1.0**, "Introduction": Presents the scope and purpose of this report.
- **Section 2.0**, "Background": Provides descriptions of the location, history, topography, geology and soils, and previous investigations for the O'Donovan USAFRC.
- **Section 3.0**, "Soil Vapor Investigation": Presents the data collection techniques and locations as well as analytical methods used for the soil vapor investigation and vapor intrusion assessment.
- **Section 4.0**, "Groundwater Investigation": Presents the monitoring well installation and sampling locations and analytical methods used for the groundwater investigation.

- **Section 5.0**, "Analytical Results": Details the groundwater and soil vapor analytical results.

- **Section 6.0**, "Conclusions and Recommendations": Presents the conclusions and recommendations of this investigation.

2.0 BACKGROUND

2.1 Location

The O'Donovan USAFRC site is located on a 3.5-acre parcel at 90 North Main Avenue in Albany, New York. The surrounding area consists of the adjacent Albany High School and residential properties (**Figure 1**).

2.2 History

The O'Donovan USAFRC site was developed for use by the military in 1955 as a 100-man center for conducting U.S. Army Reserve (USAR) and U.S. Armed Forces Reserve training. The site was most recently used as a reserve training center for U.S. Army, Navy, and Marine personnel (PARS Environmental, Inc.[PARS], 2012). The USAFRC is in the process of being closed with plans to surplus the property in the future.

2.3 Topography

The topography at the site is generally flat with a slight gradient to the south-southwest. The majority of the site consists of fill placed during construction to raise the entire site to the approximate elevation of Washington Avenue. Based on the most recent survey conducted at the site, the ground surface elevation is approximately 229 feet above mean sea level and slopes steeply away on the east, west, and south sides of the site.

2.4 Regional Geology and Soils

Albany County contains parts of two major physiographic provinces. The northeastern half of the county, including the USAFRC, is located in the Hudson-Mohawk Lowlands physiographic province. The Lowland have little relief, but rise in elevation and become more rugged westward near the Helderberg Escarpment of the Appalachian Upland physiographic province in the southwestern half of the county.

The bedrock formations of Albany County range in age from the Middle Ordovician to Middle Devonian. At least four major glacial advances have occurred in Albany County. The latest being the Wisconsinan Glaciation, which covered the area between 70,000 and 16,000 years ago. Glacial till was deposited during its retreat and is the most common type of deposit in Albany County (PARS, 2012).

The site is underlain by Urban Land-Udipsamments-Udorthents soils. A general description of each soil type is as follows:

- Urban land-Udipsamments complex – This unit consistes of nearly level to gently sloping areas of Urban land and very deep, moderately well-drained to somewhat excessively-drained soil. Urban land is mostly covered by asphalt, concrete, buildings, or other impervious materials. Udipsamments are sandy soils that have been disturbed by grading or filling during construction. The seasonal high water table is generally at a depth of more than 6 feet below ground surface (bgs). Depth to bedrock is greater than 6 feet bgs. Permeability is moderately rapid to rapid where soils are relatively undisturbed and uncompacted. The available water capacity is low or very low, and runoff is slow or medium (PARS, 2012).

- Urban land – Udorthents complex – This unit consists of nearly level and gently sloping areas of Urban land. Udorthents are mostly covered by asphalt, concrete, buildings, or other impervious materials. Udorthents are silty loam to silty clay soil and are mostly cuts and fills. The natural drainage, permeability, available water capacity, and runoff vary with the soil material. Depth to bedrock is greater than 6 feet (PARS, 2012).

2.5 Previous Investigations

Previous remedial activities and investigations have been performed at the site, including:

- **1991** – Available records identify three underground storage tanks (USTs), two 10,000-gallon and one 2,000-gallon, used for fuel oil storage at the site as being closed-in-place or removed prior to April, 1991. In April 1991, Spill #9100658 was reported to the New York State Department of Environmental Conservation (NYSDEC). Contaminated soil associated with the spill was removed, and the case was closed.

- **1993** – Two USTs containing No 2 fuel oil were removed. No additional information is available.

- **1998** – An investigation of the oil-water separator (OWS) and wash rack area was performed by the U.S. Geological Survey. Elevated levels of gasoline related volatile organic compounds (VOCs) were detected in groundwater, and additional investigation was recommended. Spill #9100658 was reported to the NYSDEC; the case was closed in 2001

- **1999** – Parsons completed a subsurface investigation and closure activities associated with the OWS and wash rack. Soil and groundwater contamination was identified. The OWS was filled and closed in-place. The wash rack was closed and paved over. No remediation activities were performed.

- **2002** – The site is listed on the Federal Agency Hazardous Waste Compliance Docket of Federal facilities as a Resource Conservation and Recovery Act Large Quantity Generator.

- **2003** – A Preliminary Assessment (PA) of the site was performed by Parsons. A Hazard Ranking System (HRS) evaluation was completed based on information from the PA. The HRS score of 52 (a high score) was based on the potential number of receptors and data from the previous sampling at the OWS and wash rack area and made the site eligible for inclusion on the National Priorities List (NPL). Based on the results of the PA, the U.S. Environmental Protection Agency (USEPA) requested that a site investigation be performed.

- **2004** – A supplemental SI was completed in the vicinity of the OWS and southern boundary of the site. The HRS was revised to 1.04 based on the analytical results of soil and groundwater samples collected during the SI. A recommendation was made for limited soil excavation in the area of the OWS, wash rack, and former USTs. No recommendation was made for groundwater.

- **2005** – Approximately 75 tons of soil was excavated in the vicinity of the OWS. Results from confirmation soil sampling indicated no VOCs or semi-volatile organic compounds (SVOCs) above NYSDEC soil cleanup criteria. The HRS was revised to 0.34 and no further action was recommended.

- **2006** – The USEPA issued a No Further Remedial Action Planned (NFRAP) letter based on the results of the 2004 SI and HRS scoring of 1.04. The NFRAP disqualified the site from the NPL, but did not release the Army from cleanup associated with spills at the site.

- **2009** – Correspondence from the USEPA to the USAR stated that the "Removal Action Branch does not currently have enough information to recommend that no further action be taken at the site. Due to the proximity of the Albany High School and that the area of the former wash rack is about 3-4 feet higher in elevation than the school parking lot, soil vapor/vapor intrusion sampling is recommended."

- **2011** – PARS completed a vapor intrusion assessment of the maintenance shop and a soil, groundwater, and soil gas assessment of the eastern portion of the site. The vapor intrusion assessment did not identify a concern. Soil analytical results were all below NYSDEC Unrestricted Soil Cleanup Objectives for VOCs, SVOCs, and metals. Groundwater analytical results indicated residual VOC, SVOC, and metals contamination at concentrations slightly exceeding their respective NYSDEC criteria in the vicinity of the former OWS. Tetrachloroethene (PCE) was detected in one soil gas sample outside the O'Donovan building. A recommendation was made for additional investigation to assess VOC impacts at the site.

- **2012** – PARS conducted additional work to further investigate PCE detected in the soil gas sample outside the O'Donovan building and groundwater impacts from previous activities at the site. The investigation included soil, groundwater, sub-slab and indoor air sampling. Results indicated VOC contamination in soil, groundwater, sub-slab vapor and indoor air exceeding regulatory limits, Recommendation was made for additional investigation of PCE contamination identified in groundwater and air samples plus excavation to remove the bottom of the former OWS and assess potential soil contamination underneath.

3.0 SOIL VAPOR INVESTIGATION

3.1 Pre-Mobilization Activities

In preparation for the work to be performed at the site, representatives from the New York State Department of Health (NYSDOH), NYSDEC, USEPA, Army 99th Regional Support Command (RSC), Army Environmental Command and USACE held a meeting at the USAFRC on March 5, 2013, during which the preferred locations for soil gas and monitoring well installations were selected.

On March 13, 2013, Shaw personnel met with representatives of USACE - Omaha District and the Army 99th RSC to discuss the time-critical groundwater and vapor intrusion project at the O'Donovan USAFRC. During the meeting, project goals and objectives were discussed, historical reports, including asbestos sampling data, were reviewed and a site walk was conducted to select locations for the indoor air sampling. Locations with positive asbestos containing material (ACM) results were avoided in the selection of indoor air and sub-slab sampling points.

During the site walk, the proposed soil gas implant and monitoring well locations were marked based upon the map and field conditions. There was concern regarding the proposed soil gas implant locations on Washington Avenue in relation to observed utilities (e.g. fire hydrant and old gas line markings), as well as overhead telephone and electric lines. On March 14, Shaw and USACE personnel met with the NYSDEC Project Manager to review the proposed soil gas implant and monitoring well markings. The NYSDEC Project Manager confirmed that the NYSDOH preference would be to install the soil gas implants along Washington Avenue, and not relocate them one block north, on Benson Street. It was also clarified that the soil gas implants were to be installed 1 foot above the groundwater table regardless of the depth to water below ground surface. This is a slight deviation from the NYSDOH Final Guidance for Evaluation Soil Vapor Intrusion in the State of New York, October 2006 (NYSDOH VI Guidance) which indicates that soil vapor implants should be installed 8 to 10 feet bgs (i.e. foundation depth). The NYSDOH VI Guidance further indicates that when the depth-to-water is less than 6 feet bgs, then the implants should be placed 1 foot above the water table.

Additionally, permission was obtained by the USACE from the City School District of Albany to install two soil gas points and one monitoring well on the adjacent Albany High School property. The proposed soil gas locations on the sidewalks of N. Main Avenue and Washington

Avenue required a Street Opening permit from the City of Albany, which was obtained by the drilling subcontractor. The soil gas and monitoring well locations are shown on **Figure 2**.

3.2 Geophysical Survey

Prior to the start of subsurface investigation activities, the New York State underground utility notification service, Dig Safely New York, was contacted to locate the utilities within the public right-of-ways, including: gas, water, sewer, cable, telephone, and fiber optic cable.

On March 14 and 15, 2013, Shaw personnel conducted a ground penetrating radar and electromagneict geophysical survey at each proposed soil gas and monitoring well location (**Figure 2**) to identify subsurface anomalies such as utilities. All subsurface anomalies observed during the survey were marked with spray paint. Any proposed location that appeared to be near a subsurface anomaly was relocated and a new survey was conducted. All locations were measured and triangulated in the field and recorded on a hand sketched field map drawn to scale. Copies of the field maps were used by field staff during soil gas and monitoring well installation.

3.3 Air Sampling

Shaw personnel mobilized to the site on March 18, 2013 to begin the indoor air sampling and sub-slab investigation.

Nine sub-slab and nine indoor air samples, one duplicate sample and one ambient air (outdoor) air sample were proposed. Sample locations were determined based on visual observations of the building's interior, as well as input from the U.S. Army representative. Whenever possible, locations away from floor drains, floor cracks, vents, windows and door openings were selected. Five locations were chosen in the "Army" side of the building (**Figure 3**), and four locations were chosen on the "Navy" side of the Building (**Figures 4** through **6**). These locations are described further in Sections 3.3.1 and 3.3.2. As part of the indoor air sampling, interviews were conducted to determine building characteristics (i.e., age, materials, etc.), as well as the habits of its occupants. It was noted that five people work on the "Army" side Monday through Friday, while on drill weekends, up to 90 people can be present on site. According to the Army representative, the Navy moved out of the building approximately 10 years ago, and that part of the building has remained vacant.

The "Army" side has a "finished" basement. The hallways and bathroom have floor tiles while the remaining rooms have concrete floors. The firing range floor is the only painted surface. Locations were chosen in five of the basement rooms, as outlined in Sections 3.3.1 and 3.3.2.

The Navy side of the building has two locations that could be considered basement and/or crawlspace; the boiler room (**Figure 4**) and the "vault" (**Figure 5**). For the remainder of the building, the first, or main, floor was considered the lowest level. Access to the "vault" was through a hatch in the floor in the furthest northeastern room of the building (near Washington Avenue and the Reserve Center driveway. The floor of the "vault" room was concrete. An opening to the outside (approximately 3-inches by 6-inches was noted in the eastern corner of the wall near the ceiling. Two dirt-floor hallways are located off the main room in the vault. One of these hallways connected to the boiler room. An aboveground water tank (set on a concrete pad) was located halfway between the main room and the boiler room in the hallway. All samples collected in the "basement" portion of the building were collected through concrete floor. The floor on the first floor (i.e., main floor) of the Navy side was covered in tile and/or carpet. It is not known if the tiles on the Navy side of the building had been tested for ACM. One indoor air/subslab location was located on the first floor of the Navy side in a room used as a "weight" room. USACE had a separate contractor remove a piece of tile and mastic on the floor in the "weight" room (**Figure 6**) in order for Shaw to collect the last sub-slab sample. All locations sampled are outlined in Sections 3.3.1 and 3.3.2.

The building contents, and the general condition of each property, were surveyed and documented in accordance with the questionnaire in the NYSDOH VI Guidance prior to collection of the air samples. Weather conditions, temperature, and pertinent photoionization detector (PID) readings were also recorded. Copies of the questionnaires are located in **Appendix A**.

It should be noted that weather conditions during the air sampling event were not ideal. Beginning in the early hours of March 19, the Albany area received approximately 4 to 6-inches of snow. Local weather reports noted that actual snowfall may have been greater than what was observed on the ground because the outside temperature was high, and some of the snow had melted as it came into contact with the ground surface. Temperature and pressure extremes in the area during the course of sampling were as follows:

Date	Low Temp (°F)	High Temp (°F)	Low Pressure (inches of Hg)	High Pressure (inches of Hg)
March 18, 2013	16	37	29.72	30.45
March 19, 2013	22	33	29.80	30.04
March 20, 2013	23	27	29.77	29.80

3.3.1 Sub-Slab Soil Vapor

Nine sub-slab soil vapor samples were collected between March 18, and 20, 2013 from locations in the building as shown on **Figures 3** through **6**, and in the photographs included in **Appendix B**. Samples were collected in individually certified summa canisters over a 24-hour period. Sample locations were as follows:

- SS-1 – Building 1 (Army) Boiler Room
- SS-2 and SS-DUP – Building 1 (Army) Unit Supply Room
- SS-3 – Firing Range Back Room
- SS-4B – Building 1 (Army) Medical Supply Room
- SS-5 – Building 1 (Army) Firing Range
- SS-6 – Building 2 (Navy) Boiler Room
- SS-7 – Building 2 (Navy) Vault
- SS-9 – Building 2 (Navy) "Weight Room"

All locations, except SS-9, were collected in the basement; SS-9 was a sub-slab sample collected from a first floor location (i.e. no basement underneath). Three locations, SS-4, SS-4A (both located in the Medical Supply Room), and SS-8 (located in the "vault" near the water tank, were not sampled because the summa canister collected water due to the high water table.

The sub-slab soil vapor samples were collected by Shaw field staff using the following procedures:

- Shaw personnel visually assessed the floor condition, line of traffic and selected a sample location that was away from major cracks and other floor penetrations (sumps, pipes, floor drains, etc.).

- Drilled a hole through the concrete floor slab at the selected location using an electric hammer drill.

- Swept concrete dust away from the drill hole and wiped the floor with a dampened towel.

- Inserted the Teflon tubing into the hole, extending no further than 2 inches below the bottom of the floor slab.

- Placed non-toxic modeling clay around the tubing at the floor penetration, packing it in tightly around the tubing.

- Conducted helium leak detection test to ensure that seal was "tight".

- Recorded a "background" reading of the hole using a MiniRAE 2000 PID.

- Purged approximately one to three probe volumes at a flow rate of less than 0.2 liters per minute using a low-flow Gilian^{TM} air pump. After removing a sufficient volume, connected the individually certified summa canister with a twenty-four hour regulator to the sample tubing.

- Recorded the serial number of the canister and associated regulator on the field notebook/sample form. These numbers were preprinted on the individual chain of custody (COC) forms.

- Assigned sample identification on the canister identification tag and recorded this on the appropriate COC and field notebook/sample form.

- Recorded the gauge pressure.

- Recorded the sample start time on the air sampling form, and took a digital photograph of canister setup and surrounding area. The duplicate soil gas sample was collected using a "T" splitter. The canisters were turned on sequentially (i.e., one after the other), with less than a minute between opening of the two valves, in order to give the technician time to ensure that there was proper vacuum in the first canister prior to turning on the other canister.

- Continued sampling until there was a vacuum of approximately 5 inches of mercury (in. Hg) remaining in the canister.

- Installed the plug on the canister inlet fitting, and placed the sample container in the original box.

- Completed the sample collection log with the appropriate information, and logged each sample on the COC form.

- Delivered samples under proper chain of custody to Chemtech for analysis of VOCs by USEPA method TO-15 to an accuracy of 1 micrograms per cubic meter ($\mu g/m^3$) or less.

- Removed the temporary subsurface probe and properly sealed the hole with hydraulic cement.

3.3.2 Indoor Air Samples

Ten indoor air samples (IA-1 through IA-9 and IA-4B), and one duplicate sample, were collected on March 18, and 19, 2013 at the locations shown on **Figures 3** through **6** and in the photographs included in **Appendix B**. Sample locations were as follows:

- IA-1 – Building 1 (Army) Boiler Room
- IA-2 and IA-DUP – Building 1 (Army) Unit Supply Room
- IA-3 – Firing Range Back Room
- IA-4 and IA-4B – Building 1 (Army) Medical Supply Room
- IA-5 – Building 1 (Army) Firing Range
- IA-6 – Building 2 (Navy) Boiler Room
- IA-7 – Building 2 (Navy) Vault
- IA-8 – Building 2 (Navy) Vault near Water Aboveground Storage Tank
- IA-9 – Building 2 (Navy) "Weight Room"

All samples were collected approximately 4 to 5 feet from the ground or floor surface using 6-liter summa canisters over a 24-hour period. The duplicate air samples were collected adjacent to each other; no "T-splitter" was used. After collection, the samples were sent to Chemtech for VOC analysis by USEPA Method TO-15.

3.3.3 Ambient Outdoor Air Sample

One ambient outdoor air (OA-1) sample was collected on March 19, 2013; the outdoor air sample was collected as shown on **Figure 2**. The sample was suspended approximately 4.5-feet above the ground using summa canisters with a 24-hour regulator. After collection the sample was sent to Chemtech for VOC analysis by USEPA Method TO-15.

3.4 Soil Gas Sampling

As previously discussed, 17 soil gas locations were marked in the field during a site visit on March 13. NYSDEC agreed with the proposed locations on March 14. Eight of the soil gas samples were located on USAFRC property: one in the rear fenced section of the parking lot in the southeast corner nearest Albany High School (SV-1), three along Washington Avenue (SV-3 through SV-5), and four along N. Main Avenue (SV-6 and SV-8 through SV-10). Two locations, SV-2 and SV-7, were on Albany High School property; SV-2 on Washington Avenue near the USAFRC driveway and SV-7 in an island in the school parking lot. The remaining locations were along the sidewalks of N. Main Avenue (SV-11 through SV-13) and Washington

Avenue (SV-14 through SV-17). Soil gas locations are shown on **Figure 2** and in the photographs included in **Appendix B**.

3.4.1 Soil Gas Implant Installation

The soil gas point and monitoring well drilling and installation was subcontracted to Aztech Technologies (Aztech) of Ballston Spa, NY, a licensed driller in the State of New York. Personnel from Shaw and Aztech mobilized to the site on March 19 to begin the soil vapor implant installations on the USARFC and Albany High School properties. Between March 19, and 20, 2013 a total of 10 soil gas implants were installed at depths ranging from 2.5-feet bgs to 13-feet bgs. Note that the SV-8 implant was initially set at 6 feet bgs; however, during sampling, the canister pulled water and the implant was reset to 4 feet bgs on March 22.

The Street Opening permit for Washington Avenue and N. Main Avenue were received on March 21. Shaw and Aztech returned to the site on March 22 to install the soil vapor implants at the remaining locations. The soil vapor implants were installed as follows:

Soil Vapor ID	depth installed (feet bgs)
SV-1	8
SV-2	13
SV-3	8
SV-4	8
SV-5	5.5
SV-6	4
SV-7	2.5
SV-8	6; reset at 4
SV-9	8
SV-10	8
SV-11	4
SV-12	5
SV-13	4
SV-14	5
SV-15	5
SV-16	5
SV-17	5

Prior to installing the implants, an overhead and underground survey check was conducted at each location in accordance with Shaw Standard Operating Procedure (SOP) HS-308 immediately prior to the start of ground penetration activities. The implants were set approximately 1 foot above the water table. The depth-to-water at each location was determined by advancing a 4-foot Macrocore sampler with an acetate liner into the unconsolidated soil. Soil samples were collected until wet soil was observed. Once the depth-to-water at the location was known, the implant was installed in an adjacent hole using DPT.

After the desired depth was reached, a stainless steel screen attached to a dedicated section of tubing was placed in the borehole. The borehole was backfilled with glass beads to a minimum of 6 inches above the screened interval. Bentonite was then placed above the glass beads to approximately 1 foot below the ground surface, and allowed to cure for 24-hours prior to sampling. The laboratory grade tubing was capped with a stainless steel Swagelok fitting and then secured in place at grade within a cemented roadbox.

3.4.2 Soil Gas Sampling

Soil gas sampling began on March 22, 2013. Ten soil gas locations (SV-1 through SV-10), one duplicate sample (collected at SV-10), and one ambient air (OA-1) were scheduled to be sampled.

Prior to sampling, a tracer gas test was completed in accordance with the NYSDOH VI Guidance to ensure that no ambient air was infiltrating into the sample interval. Upon completion of a successful tracer gas test, the tubing was purged of approximately two to three probe volumes at a flow rate of less than 0.2-liters per minute. PID readings were collected and recorded during the purging process.

Following purging, soil vapor samples were collected in 6-liter summa canisters equipped with 2-hour regulators from each of the newly installed locations with the exceptions of SV-1, SV-3, SV-4, SV-8 and SV-9. At locations SV-1, SV-3, SV-4 and SV-9, Shaw personnel noted that the vacuum gauges ranged between -19 in. Hg in SV-4 to -28 in. Hg in SV-9. Sampling is considered complete when the appropriate time has lapsed and/or the gauge is between 1 and -5 in. Hg. The lab confirmed that SV-1, SV-3 and SV-9 were under vacuum, and would need to be diluted to bring the pressure up in order for analysis. There was enough pressure in SV-4 to run the sample without a dilution. It is likely that the regulator for SV-4 was faulty. Location SV-8 pulled water; therefore, no sample was collected at this location.

On March 25, Shaw personnel returned to the site to collect samples from SV-11 though SV-17, as well as resample SV-8 at its new depth (4 feet bgs). Locations SV-11, SV-13 and SV-16 pulled water, and could not be sampled. During this sampling round, a duplicate sample (SV-12) and ambient outdoor air were also collected.

Shaw returned to the site on April 5 to try for the final time to collect samples at SV-11, SV-12, and SV-13. SV-11 pulled water and therefore no sample was collected. SV-12 was unable to pull a vacuum, and no sample could be collected. A sample was collected at SV-13. Throughout this sampling effort no viable samples could be collected from the SV-16 location because of the elevated water table.

4.0 GROUNDWATER INVESTIGATION

4.1 Borehole Drilling and Monitoring Well Installation

A total of eight monitoring wells (identified as GW-1 through GW-8) were installed by Aztech between April 1 and April 4, 2013 at the locations shown on **Figure 2**.

An overhead and underground survey check was conducted at each boring location in accordance with Shaw SOP HS-308 immediately prior to the start of ground penetration activities, and all locations were confirmed to be at least 5 feet from marked utilities. As an added measure of safety, the top 5 feet of each monitoring well boring was dug manually using a post hole digger at the exact drilling location.

Borings for monitoring well installations were advanced into the overburden soils using a track mounted Geoprobe® DT6610 rotary rig equipped with 4¼-inch inside diameter hollow stem augers. Soil samples were collected continuously in 5-ft acetate sampling liners for lithologic characterization. Soil characteristics were recorded by a Shaw geologist on a soil boring log in accordance with the Unified Soil Classification System. Descriptions included grain size, color, moisture content, consistency, and any evidence of contamination (including organic vapor readings).

Soils at the site were observed to consist primarily of brown and gray mixed silts, clays and sands. There were no organic vapors detected above 2.0 parts per million in any of the soil borings. Wet to saturated conditions were observed in generally thin zones below 15 feet in borings GW-1 through GW-4 and GW-8. Saturated conditions were not directly observed in GW-5 because the 16 to 20 foot bgs interval was not recovered in the sampler. Saturated conditions were observed in GW-6 at 13.5 feet bgs and at 13 feet bgs in GW-7. Photographs of drilling activities are included in **Appendix B**. Detailed descriptions for each of the borings are provided on the boring logs in **Appendix C**.

Monitoring wells were installed to an approximate depth of 20 feet bgs at each borehole drilling location. The wells were constructed of 2-inch inner diameter flush-threaded polyvinyl chloride riser, and 15 feet of 0.010-inch slot screen. Annular space was filled with clean filter pack sand (US Silica Filpro WG#1) to an elevation 1 to 2 feet above the top of the screened interval. A minimum of 1 foot of bentonite chips (Baroid ⅜ chips) was placed above the sand and hydrated. The remaining annular space was grouted to the surface. All wells were finished as flush-mount surface completions set in a 2-foot x 2-foot x 4-inch concrete pad. Well construction details are

included in **Table 4-1.** Photographs of well installation activities are included in **Appendix B**. Well construction logs are included in **Appendix D.**

4.2 Decontamination

A temporary decontamination pad was constructed at the site. All non-dedicated drilling tools were decontaminated between boring locations using potable tap water and a phosphate-free detergent (i.e., Alconox®).

4.3 Investigation Derived Waste

All soil cuttings were contained in new, unused 55-gallon drums and managed as investigation-derived waste (IDW). Fluids generated as a result of decontaminating down-hole equipment, monitoring well development, and groundwater sampling were also collected into a 55-gallon drum, and managed as IDW. Drums were properly labeled and staged on site prior to waste characterization sampling and off-site disposal.

4.4 Site Survey

The three existing monitoring wells, and eight new monitoring wells, were surveyed by C.T. Male Associates of Latham, New York, a professional surveyor registered in the State of New York. The survey was completed in New York East State Plane Coordinates, North American Datum 1983. Survey data is included in **Appendix E**.

4.5 Monitoring Well Development

Monitoring wells were developed approximately 48 hours after installation using a pump and surge technique to remove the fines and establish the filter pack. The total depth and static water level in the well were recorded prior to well development. Water quality parameters including pH, conductivity, turbidity, dissolved oxygen (DO), temperature, and oxidation reduction potential (ORP), were recorded. Development continued until turbidity readings were below 100 nephelometric turbidity units (NTUs), all parameters stabilized to within 10 percent over three consecutive readings, and/or 10 well volumes were pumped from the well.

4.6 Groundwater Sampling

As outlined in USACE Engineering Manual EM 1110-1-4000, the newly-installed wells were allowed to rest for a minimum of two weeks after installation to allow for equilibration of the well with the formation following development.

One round of groundwater samples was collected on April 19, 2013 in accordance with the procedures and protocols outlined in the Sampling and Analysis Plan. Groundwater samples were collected from all 11 monitoring wells on site (8 newly-installed wells [GW-1 through GW-8], and 3 existing wells [MW-1 through MW-3]) utilizing low-flow sampling procedures. Each well was purged prior to sampling until all water quality parameters including pH, conductivity, turbidity, DO, temperature, and ORP stabilized to within 10 percent over three consecutive readings. **Table 4-2** shows the final water quality parameter readings before sample collection.

The groundwater samples were shipped via overnight courier to Chemtech Consulting Group (Chemtech) in Mountainside, New Jersey. Samples were analyzed for VOCs with a library search of tentatively identified compounds (TICs). Groundwater analytical results are discussed in Section 5.0.

4.7 Groundwater Elevations

As shown on **Table 4-1**, the depth to groundwater was measured in each well on April 19, 2013. The measurements were used to develop a groundwater elevation contour map (**Figure 7)** which shows a mound near the center of the site, and groundwater flow away from the mound in a radial pattern. Note that the depth to water in MW-3 is very shallow, and is believed to be a perched water zone. The groundwater elevation in MW-3 was not used in developing the groundwater elevation contour map.

5.0 ANALYTICAL RESULTS

5.1 Groundwater

As stated previously, one round of groundwater samples was collected on April 19, 2013 from all 11 monitoring wells on site, (8 newly-installed wells [GW-1 through GW-8] and 3 existing wells [MW-1 through MW-3]). Samples were shipped via overnight courier to Chemtech in Mountainside, New Jersey, and analyzed for VOCs with a library search of TICs.

The groundwater analytical results show that PCE is present in GW-8 (0.69 micrograms per liter [µg/L]) and MW-1 (1.3 µg/L) at concentrations below the New York State Groundwater Quality Standard (NYS GWQS) of 5.0 µg/L, and above the standard in MW-2 (49.1 µg/L) and MW-3 (5.9 µg/L). Other VOCs detected in groundwater include acetone in GW-4 (6.1 µg/L) and isopropylbenzene in MW-3 (0.45 µg/L). Neither of these compounds exceeded their respective NYS GWQS. Thirteen TICs were detected in MW-3 and one TIC was detected in GW-8, The analytical results are summarized in **Table 5-1**, and shown on **Figure 8**. Complete analytical results are included in **Appendix F.**

5.2 Sub-Slab Vapor, Indoor Air, and Outdoor Air

Analytical results from the indoor air sampling event in March 2013 reported numerous detections, specifically: 21 different compounds constituting 127 analytical detections for sub-slab vapor samples, and 27 different compounds constituting 139 analytical detections for indoor air samples. Four target compounds (1,1,1-trichloroethane [1,1,1-TCA], carbon tetrachloride, PCE, and trichloroethene [TCE]) were selected as indicators of contamination, as they are the compounds listed in the NYSDOH VI Guidance.

The analytical results for the sub-slab, indoor air, and outdoor air samples are summarized in **Table 5-2**; the complete analytical data results are included as **Appendix F**. Analytical results for the four NYSDOH VI Guidance target compounds included as part of the air sampling are presented on **Figure 9**.

All four target compounds were detected in the sub-slab soil vapor samples within the on-site building, as follows:

- 1,1,1-TCA detections ranged from 0.27 µg/m^3 (SS-2) to 0.49 µg/m^3 (SS-1 and SS-9).
- Carbon tetrachloride results ranged from 0.25 µg/m^3 (SS-9) to 1.26 µg/m^3 (SS-4B).

- The seven detections for PCE ranged from 1.02 µg/m^3 (SS-9) to 4.48 µg/^{m}3 (SS-1);

- TCE detections ranged from 0.21 µg/m^3 (SS-3) to 52.1 µg/m^3 (SS-1). Two samples, SS-1 and SS-5, had TCE detections of 52.1 µg/m^3 and 24.7 µg/m^3, respectively, which exceed the New York target shallow soil concentration threshold at which additional monitoring is advised.

Similar to the sub-slab vapor results, all four compounds were also detected in at least one of the indoor air samples,as follows:

- 1,1,1-TCA was only detected in the reanalysis of IA-6 at a concentration of 0.16 µg/m^3.

- Carbon tetrachloride was detected in all indoor air samples except IA-1; the highest detected concentration was 0.57 µg/m^3 (IA-3 and IA-6RE).

- There were four detections of PCE in indoor air samples ranging from 0.27 µg/m^3 (IA-9) to 1.42 µg/m^3 (IA-3)

- There were six detections for TCE ranging from 0.16 µg/m^3 (IA-5) to 44.1 µg/m^3 (IA-3). Two samples, IA-1 and IA-3, had TCE detections 6.45 µg/m^3 and 44.1 µg/m^3, respectively, which exceed the New York indoor air threshold.

Results for the four target compounds in the outdoor air sample are as follows:

- 1,1,1-TCA was not detected.

- Carbon tetrachloride was detected at a concentration of 0.38 µg/m^3.

- PCE was not detected

- TCE was not detected.

5.3 Soil Gas

The analytical results for the soil gas samples are summarized in **Table 5-3**; the complete analytical data results are included as **Appendix F**. Analytical results for the four NYSDOH VI Guidance target compounds included as part of the air sampling are presented on **Figure 10**.

A total of 19 compounds were detected in soil gas. Soil gas results were compared to the USEPA Target Shallow Soil Gas Concentrations (TSSGC) values located in Table 2 of the

Office of Solid Waste Emergency Response (OSWER) draft Vapor Intrusion Guidance document. Since the soil to indoor air attenuation factor of the site is unknown, an attenuation factor of 0.1, the lowest values in the table, was used for comparison. Only TCE in SV-7 (29 $\mu g/m^3$) and SV-8 (23.1 $\mu g/m^3$) were above the applicable guidance value of 22 $\mu g/m^3$.

Dissimilar results for TCE were observed for SV-12 and its duplicate (9.14 $\mu g/m^3$ and 90.3 $\mu g/m^3$, respectively) collected on March 25. The location was resampled on April 5, and this result was non-detect (1.61U $\mu g/m^3$). As discussed previously, all samples were collected in individually certified summa canisters with individually certified regulators. It is unlikely that Chemtech failed to analyze and certify a can or regulator. The lab Quality Control (QC) shows a passing calibration and good surrogate recovery for all three SV-12 results. Additionally, Chemtech reviewed and verified that there were no errors in dilution or data transcription. The 9.14 $\mu g/m^3$ and non-detect results are comparable and the 90.3 $\mu g/m^3$ is likely an anomaly, as discussed further in Section 5.5.1 *Field Duplicates.*

5.4 Investigation Derived Waste

Waste characterization sampling results for the soil cuttings are presented in **Table 5-4**. Samples were analyzed for Toxicity Characteristic Leaching Procedure VOCs and metals. Analytical results were all non-detect or below regulatory limits. Analytical results from the groundwater sampling were used as the waste characterization results for the IDW fluids.

5.5 Quality Control

In accordance with the approved Sampling and Analysis Plan (SAP) document, specific quality control measures were incorporated into the investigation sampling and analyses processes. To monitor the field collection effort, field duplicate and ambient blank samples were collected and analyzed. The laboratory performance was evaluated via method-specific QC samples such as blanks and method spikes and where applicable by site-specific QC matrix spike, duplicate and serial dilution analyses. The details of the QC measures are presented in **Tables 5-5 and 5-6.** The QC measures are also discussed in the Data Usability Review memos presented with the analytical data results in **Appendix F**.

5.5.1 Field Quality Control Measures

To monitor the field collection effort field QC measures including Field Duplicates, Ambient Blanks, and Trip Blanks were completed throughout the sampling effort. Field Duplicates were collected for each type of air/vapor sample collected via summa canister, as well as for the groundwater sampling effort. Summa sampling efforts were supported by Ambient Blank data

for each sample collection type. The groundwater VOC samples were shipped in a cooler containing a Trip Blank to monitor potential cross-contamination and/or infiltration of contaminants while in transit.

Field Blanks

The air/vapor sampling efforts were supported by a total of three Ambient Blank samples. One was collected during the indoor air/sub-slab sampling effort and two were collected during the two main days of soil vapor sample collection. Although several target analytes were detected in theses Ambient Blanks, all were present at concentrations well below the applicable criteria (indoor air threshold concentration [IATC] or TSSGC) values for the respective compounds. Thus, there were no environmental contamination issues with the air/vapor sampling efforts.

The VOC Trip Blank collected along with the groundwater samples contained no target analytes at a concentration above the reporting/detection limits. Thus, the environmental conditions and shipment process did not cross-contaminate any of the samples. In general all field blank data met criteria and the sample collection processes were shown to be free of contamination significant enough to influence project decisions.

Field Duplicates

Field Duplicates were collected for each type of air/vapor sampled and also for the groundwater sampling effort. Air sample Field Duplicates were collected either as collocated summa canisters, such as for indoor air samples, or by means of a T-connector in the sample probe line between two summa canisters. This method was used for both the sub-slab and soil vapor sampling efforts. Field Duplicate quality was evaluated based upon both precision (relative percent difference [RPD]) and whether or not the difference in concentrations values were significant with regard to the applicable criteria comparison.

One VOC (PCE) was detected in the sample and Field Duplicate collected during the groundwater sampling effort. Precision met the SAP established RPD limit of 35 and demonstrated adequate reproducibility in the sampling and analytical process.

The indoor air sampling was supported by one sample/duplicate pair. A total of 13 analytes were detected in at least 1 of the summa canisters. Of these, only two met the RPD criteria, while eight were only present in the one of the two collocated summa canisters. Despite the poor precision, evaluation of the data against the IATC values for each of the detected compounds demonstrates that there is no significance, compared to the IATC for any of the analytes.

Therefore, the sampling effort was precise enough to provide adequate comparisons to the IATC values.

Precision for the sub-slab sampling effort, also demonstrated with one sample/duplicate pair, was better. Of a total of 13 compounds detected in at least ` of the t-connected summa canisters, 9 met the RPD criteria, and only 1 analyte was present in 1, but not both samples. Again, even for those analytes with poor precision (RPD>35), the concentrations are insignificant compared to the respective TSSGC values showing that the sampling effort precision was adequate.

Two Field Duplicates were collected during the soil vapor sampling effort. Both showed similar precision to the IA/SS duplicates, with most analytes not meeting the RPD limits and the TSSGC values being significantly above the reported values. However, TCE in the second sample/duplicate pair (SV-12) did demonstrate poor precision and values above and below the TSSGC, with the duplicate being 10X the primary sample and 5X the TSSGC. The laboratory raw data was evaluated to ensure that no dilution or data transfer error had occurred,. Since none could be found, the team decided to resample the location a few days later. The resample was non-detect for TCE.

5.5.2 Laboratory Quality Control Performance

The project samples were analyzed by Chemtech. Detailed Data Usability Review memos were completed for each of the sample delivery groups/sample sets received at the laboratories. Copies are provided as an appendix to this report.

Laboratory QC performance was monitored via the applicable method and in the case of the air samples NYDOH measures. These included instrument performance checks and calibration, as well as batch QC such as blanks and clean matrix spikes, laboratory duplicate analyses, QC matrix spike, and serial dilution checks of the extended calibration curve accuracy.

Data qualification, due to internal standard/matrix interference issues was warranted for three of the indoor air samples (IA-6, IA-8, and IA-9). The reported values for these locations were considered to be estimated concentrations by the project team. All other laboratory QC measures, including instrument performance and calibration, Method blanks, laboratory control spike/laboratory control spike duplidate, and where applicable Matrix QC met SAP established goals.

5.5.3 Summary of Quality

The sampling and analytical effort was completed in compliance with the approved SAP. In general, field and laboratory QC measures instill adequate confidence in the data for decision comparison. However, the field duplicate indicates a high degree of variablity in the air sampling. In general this did not effect data usability for comparison to applicable decision levels.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 Groundwater

One round of groundwater samples was collected on April 19, 2013 from newly-installed wells GW-1 through GW-8, and existing wells MW-1, MW-2, and MW-3. Analytical results show that PCE is present in GW-8 (0.69 µg/L) and MW-1 (1.3 µg/L) at concentrations below the NYS GWQS of 5.0 µg/L and above the Standard in MW-2 (49.1 µg/L) and MW-3 (5.9 µg/L). No other VOCs exceeded their respective NYS GWQS.

Wells MW-1, MW-2, and MW-3 have reported PCE concentrations above the NYS GWQS during previous sampling events as follows:

Well ID	NYS GWQS - PCE	Sample Date / Analytical Result	
		7/11/12	8/9/12
MW-1	5 µg/L	120 µg/L	80 µg/L
MW-2	5 µg/L	9,500 µg/L	2,800 µg/L
MW-3	5 µg/L	2,200 µg/L	210 µg/L

6.1.2 Sub-Slab Vapor and Indoor Air

Analytical results from the sub-slab vapor and indoor air sampling event in March 2013 reported numerous detections; specifically 21 different compounds constituting 127 analytical detections for sub-slab vapor samples, and 27 different compounds constituting 139 analytical detections for indoor air samples. Four target compounds (1,1,1-TCA, carbon tetrachloride, PCE, and TCE) were selected as indicators of contamination as they are the compounds listed in the NYSDOH VI Guidance.

All four target compounds were detected in the sub-slab soil vapor samples within the on-site building, as follows:

- 1,1,1-TCA detections ranged from 0.27 µg/m3 to 0.49 µg/m3.
- Carbon tetrachloride results ranged from 0.25 µg/m3 to 1.26 µg/m3.
- PCE ranged from 1.02 µg/m^3 to 4.48 µg/m^3;

- TCE detections ranged from 0.21 µg/m^3 to 52.1 µg/m^3. Two samples exceeded the New York target shallow soil concentration threshold at which additional monitoring is advised.

All four compounds were also detected in at least one of the indoor air samples, as follows:

- 1,1,1-TCA was detected at a concentration of 0.16 µg/m3.
- Carbon tetrachloride was detected at a maximum concentration of 0.57 µg/m3.
- PCE ranged from 0.27 µg/m3 to 1.42 µg/m3
- TCE ranged from 0.16 µg/m^3 to 44.1 µg/m^3. Two samples exceeded the New York indoor air threshold.

Results for the four target compounds in the outdoor air sample are as follows:

- 1,1,1-TCA was not detected.
- Carbon tetrachloride was detected at a concentration of 0.38 µg/m3.
- PCE was not detected
- TCE was not detected.

6.1.3 Soil Gas

A total of 19 compounds were detected in soil gas. Soil gas results were compared to the USEPA TSSGC values located in Table 2 of the OSWER draft Vapor Intrusion Guidance document. Since the soil to indoor air attenuation factor of the site is unknown, an attenuation factor of 0.1, the lowest values in the table, was used for comparison. Only TCE in SV-7 (29 µg/m^3) and SV-8 (23.1 µg/m^3), and the highly variable duplicate detection at SV-12 (90.3 ug/mg^3) were above the applicable guidance value of 22 µg/m^3.

6.2 Recommendations

6.2.1 Groundwater

Based on the continued detection of PCE above regulatory limits, further investigation is recommended for groundwater in the vicinity of MW-1, MW-2, and MW-3 to assess VOC impacts at the site.

6.2.2 Sub-Slab Vapor and Indoor Air

The NYSDOH matrices (located in the NYSDOH VI Guidance) indicate that the TCE sample results for the Army Boiler Room (samples SS-1/IA-1) place this location in the "monitor" category. It is recommended that another set of samples be collected during the next heating season (November 15 through March 31) to confirm the initial results.

6.2.3 Soil Gas

Due to the uncertainties in the soil to indoor air attenuation factor at the site and the detection of TCE above the applicable guidance value, further investigation is recommended for soil gas concurrent with the sub-slab and indoor air sampling as recommended above.

TABLES

Table 4-1
Monitoring Well Construction Details and Groundwater Elevation Data
O'Donovan USAFRC, Albany, New York

Well ID	Monitoring Well Construction Details						Groundwater Elevation: 4/19/2013		
	Location Coordinates		Installation Date	Well Diameter (in)	Well Depth at Construction (ft bgs)	Screened Interval (ft bgs)	Top of PVC Riser Elevation (ft amsl)	Depth to Water (ft btoc)	Potentiometric Surface Elevation (ft amsl)
	Northing[a]	Easting[a]							
GW-1	1397432.4580	684489.0800	4/3/2013	2	20.0	5.0-20.0	226.39	11.30	215.09
GW-2	1397715.4150	684568.6170	4/2/2013	2	20.0	5.0-20.0	229.01	12.55	216.46
GW-3	1397814.5900	684881.4540	4/1/2013	2	19.0	4.0-19.0	229.74	13.88	215.86
GW-4	1397871.7130	684804.9250	4/1/2013	2	20.0	5.0-20.0	230.30	14.50	215.80
GW-5	1397983.7710	684658.3110	4/2/2013	2	20.0	5.0-20.0	229.60	14.41	215.19
GW-6	1397631.0660	684775.0670	4/3/2013	2	20.0	5.0-20.0	221.08	5.57	215.51
GW-7	1397897.0980	684492.8390	4/4/2013	2	20.0	5.0-20.0	225.57	12.87	212.70
GW-8	1397586.5010	684277.6590	4/4/2013	2	20.0	5.0-20.0	212.90	4.36	208.54
MW-1	1397748.8190	684639.1240	NA	2	20.0	NA	229.73	11.99	217.74
MW-2	1397701.5620	684725.1940	NA	2	20.0	NA	228.73	11.26	217.47
MW-3	1397626.8220	684668.3060	NA	2	20.0	NA	228.10	4.76	223.34

[a] *location coordinates are NY East State Plane (NAD 1983), feet.*

btoc = below top of casing

ft = feet.

ft amsl = feet above mean sea level.

ft bgs = feet below ground surface

ID = identification.

in = inches.

NA = Not Available

Table 4-2
Monitoring Well Water Quality Parameters
O'Donovan USAFRC, Albany, New York

Well ID	Sample Date	Total Depth (ft btoc)	Depth to Water (ft btoc)	Purge Volume (gallons)	Conductivity (mS/cm)	pH	Turbidity (NTU)	Temperature (°C)	ORP (mV)	DO (mg/L)
GW-1	4/19/2013	19.43	11.30	1.3	1.194	6.90	7.9	12.58	-18.7	3.49
GW-2	4/19/2013	19.34	12.55	1.1	1.046	6.74	8.0	13.00	186.0	5.68
GW-3	4/19/2013	18.62	13.88	0.8	0.332	7.56	17.5	12.28	28.9	4.37
GW-4	4/19/2013	19.39	14.50	0.8	0.449	7.06	19.9	13.15	121.1	1.99
GW-5	4/19/2013	19.55	14.41	0.8	0.733	7.23	1.4	13.12	-48.1	1.09
GW-6	4/19/2013	19.12	5.57	2.2	1.701	6.59	0.0	13.31	19.3	7.89
GW-7	4/19/2013	19.50	12.87	1.1	@@@	@@@	0.0	13.11	-50.3	0.18
GW-8	4/19/2013	19.20	4.36	2.4	0.851	6.41	0.0	9.49	99.7	7.58
MW-1	4/19/2013	19.58	11.99	1.2	0.559	6.52	1.5	14.69	212.4	3.47
MW-2	4/19/2013	19.26	11.26	1.3	2.129	6.89	1.8	12.12	220.0	4.51
MW-3	4/19/2013	19.35	4.76	2.4	0.716	7.35	5.0	12.28	-33.3	3.99

Note: Final water quality readings before sample collection
btoc = below top of casing
°C = degrees Celsius.
DO = dissolved oxygen.
ft = feet
g/L = grams per liter.
ID = identification.
mg/L = milligrams per liter.
mS/cm = millisiemens per centimeter.
mV = millivolts.
NTU = Nephelometric Turbidity Unit.
ORP = oxidation-reduction potential.
PVC = polyvinylchloride
TDS = total dissolved solid.
@@@ = meter malfunction

Table 5-1
Groundwater Analytical Results
O'Donovan USAFRC, Albany, NY

		Sample ID	041913-MW-1		041913-DUP		041913-MW-2		041913-MW-3		041913-GW-1		041913-GW-2	
		Sample Date	4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013	
COMPOUND	Units	NYS GWQS	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichlorotrifluoroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	ug/l	0.7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-Chloropropane	ug/l	0.04*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dioxane	ug/l	NS	100	U	100	U	100	U	100	U	100	U	100	U
2-Butanone	ug/l	50	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Hexanone	ug/l	50	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4-Methyl-2-Pentanone	ug/l	5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Acetone	ug/l	50	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Benzene	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Disulfide	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	ug/l	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.4*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethyl Benzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.45	J	0.5	U	0.5	U
m/p-Xylenes	ug/l	5	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Acetate	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl Ether	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylcyclohexane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 5-1
Groundwater Analytical Results
O'Donovan USAFRC, Albany, NY

		Sample ID	041913-MW-1		041913-DUP		041913-MW-2		041913-MW-3		041913-GW-1		041913-GW-2	
		Sample Date	4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013	
COMPOUND	Units	NYS GWQS	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
o-Xylene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	ug/l	0.4*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	ug/l	5	1.3		1.1		**49.1**		**5.9**		0.5	U	0.5	U
Toluene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	ug/l	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tentitively Identified Compounds														
.alpha.,.beta.,.beta.-Trimethylsty	ug/l	NS							8.8	J				
1,2,4-Trimethylbenzene	ug/l	5							3.3	J				
1H-Indene, 2,3-dihydro-1,6-dimethy	ug/l	NS							10.5	J				
1H-Indene, 2,3-dihydro-4,6-dimethy	ug/l	NS							6.1	J				
Benzene, 1,2,3,4-tetramethyl-	ug/l	NS							6.4	J				
Benzene, 1-ethenyl-4-ethyl-	ug/l	NS							13.4	J				
Benzene, 1-ethyl-3,5-dimethyl-	ug/l	NS							8.2	J				
Indan, 1-methyl-	ug/l	NS							6.2	J				
Naphthalene, 1,2,3,4-tetrahydro-5-	ug/l	NS							6.6	J				
Naphthalene, 1-methyl-	ug/l	NS							19.6	J				
n-Butylbenzene	ug/l	5							0.93	J				
n-propylbenzene	ug/l	5							0.93	J				
sec-Butylbenzene	ug/l	5							0.9	J				
Tetrahydrofuran	ug/l	50												

Notes:

ND = Not detected

NS - None Specified

NYS GWQS = New York State Groundwater Quality Standards

ug/L = micrograms per liter

VOCs = volatile organic compounds

Qualifiers:

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

NS - None Specified

Values in bold are above NYS GWQS from TOGS 111

Tentitively Identified Compounds (TICs): Reported concentrations are semi-quantitative estimates derived from single-point response factors

Table 5-1
Groundwater Analytical Results
O'Donovan USAFRC, Albany, NY

		Sample ID	041913-GW-3		041913-GW-4		041913-GW-5		041913-GW-6		041913-GW-7		041913-GW-8	
		Sample Date	4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013	
COMPOUND	Units	NYS GWQS	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichlorotrifluoroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	ug/l	0.7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-Chloropropane	ug/l	0.04*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dioxane	ug/l	NS	100	U	100	U	100	U	100	U	100	U	100	U
2-Butanone	ug/l	50	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Hexanone	ug/l	50	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4-Methyl-2-Pentanone	ug/l	5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Acetone	ug/l	50	2.5	U	6.1		2.5	U	2.5	U	2.5	U	2.5	U
Benzene	ug/l	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Disulfide	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	ug/l	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.4*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	ug/l	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethyl Benzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p-Xylenes	ug/l	5	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Acetate	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl Ether	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylcyclohexane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 5-1
Groundwater Analytical Results
O'Donovan USAFRC, Albany, NY

		Sample ID	041913-GW-3		041913-GW-4		041913-GW-5		041913-GW-6		041913-GW-7		041913-GW-8	
		Sample Date	4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013		4/19/2013	
COMPOUND	Units	NYS GWQS	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
o-Xylene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	ug/l	0.4*	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.69	J
Toluene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	ug/l	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tentitively Identified Compounds														
.alpha.,.beta.,.beta.-Trimethylsty	ug/l	NS												
1,2,4-Trimethylbenzene	ug/l	5												
1H-Indene, 2,3-dihydro-1,6-dimethy	ug/l	NS												
1H-Indene, 2,3-dihydro-4,6-dimethy	ug/l	NS												
Benzene, 1,2,3,4-tetramethyl-	ug/l	NS												
Benzene, 1-ethenyl-4-ethyl-	ug/l	NS												
Benzene, 1-ethyl-3,5-dimethyl-	ug/l	NS												
Indan, 1-methyl-	ug/l	NS												
Naphthalene, 1,2,3,4-tetrahydro-5-	ug/l	NS												
Naphthalene, 1-methyl-	ug/l	NS												
n-Butylbenzene	ug/l	5												
n-propylbenzene	ug/l	5												
sec-Butylbenzene	ug/l	5												
Tetrahydrofuran	ug/l	50					3.1	J						

Notes:

ND = Not detected

NS - None Specified

NYS GWQS = New York State Groundwater Quality Standards

ug/L = micrograms per liter

VOCs = volatile organic compounds

Qualifiers:

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification c
result is less than the quantitation limit but greater than MDL. The concentra
approximate value.

NS - None Specified

Values in bold are above NYS GWQS from TOGS 111

Tentitively Identified Compounds (TICs): Reported concentrations are sen
estimates derived from single-point response factors

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	SS-1		SS-1DL		IA-1		SS-2		IA-2		SS-3		IA-3	
			Date	3/18/2013		3/18/2013		3/18/2013		3/19/2013		3/19/2013		3/19/2013		3/19/2013	
			Sample Type and Location	Sub Slab Boiler Room Army		Sub Slab (10x Dilution) Boiler Room Army		Indoor Air Boiler Room Army		Sub Slab Unit Supply Room		Indoor Air Unit Supply Room		Sub Slab Firing Range Back		Indoor Air Firing Range Back	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	3.3	ug/M^3	0.69	U	6.87	UD	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,1-Trichloroethane	22000	2200	ug/M^3	0.49		1.64	UD	0.16	U	0.27		0.16	U	0.16	U	0.16	U
1,1,2,2-Tetrachloroethane	42	4.2	ug/M^3	0.89		6.87	UD	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,2-Trichloroethane	150	15	ug/M^3	0.93		5.46	UD	0.55	U	0.55	U	0.55	U	0.55	U	0.93	
1,1-Dichloroethane	5000	500	ug/M^3	0.2	U	2.02	UD	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,1-Dichloroethene	2000	200	ug/M^3	0.2	U	1.98	UD	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dichlorobenzene	2000	200	ug/M^3	0.6	U	6.01	UD	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,2-Dichloroethane	94	9.4	ug/M^3	0.4	U	4.05	UD	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
1,2-Dichloropropane	40	4	ug/M^3	0.46	U	4.62	UD	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
1,3-Dichlorobenzene	1100	110	ug/M^3	0.6	U	6.01	UD	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,4-Dichlorobenzene	8000	800	ug/M^3	0.6	U	6.01	UD	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
2-Butanone	10000	1000	ug/M^3	10.3		10.6	D	0.91		2.89		0.29	U	5.31		0.83	
2-Hexanone	NS	NS	ug/M^3	0.41	U	4.09	UD	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
4-Methyl-2-Pentanone	NS	NS	ug/M^3	0.86		2.05	UD	0.2	U	0.57		0.2	U	0.7		0.2	U
Acetone	3500	350	ug/M^3	113	E	117	D	5.23		14		3.8		34		4.75	
Benzene	310	31	ug/M^3	10.9		8.95	D	0.42		6.07		0.16	U	1.73		0.61	
Bromodichloromethane	140	14	ug/M^3	0.74		3.35	UD	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Bromoform	2200	220	ug/M^3	0.52	U	5.17	UD	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U
Bromomethane	50	5	ug/M^3	0.19	U	1.94	UD	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Carbon Disulfide	7000	700	ug/M^3	56.4	E	47.3	D	0.97		6.85		0.16	U	4.36		1.06	
Carbon Tetrachloride	160	16	ug/M^3	0.57		1.89	UD	0.44		0.5		0.19	U	0.44		0.57	
Chlorobenzene	600	60	ug/M^3	0.46	U	4.61	UD	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
Chloroethane	100000	10000	ug/M^3	0.26	U	2.64	UD	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
Chloroform	110	11	ug/M^3	33.2		26.4	D	0.34	J	0.24	U	0.24	U	15.6		0.39	J
Chloromethane	900	90	ug/M^3	0.25		2.07	UD	0.66		0.21	U	0.81		0.29		0.66	

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	SS-1		SS-1DL		IA-1		SS-2		IA-2		SS-3		IA-3	
			Date	3/18/2013		3/18/2013		3/18/2013		3/19/2013		3/19/2013		3/19/2013		3/19/2013	
			Sample Type and Location	Sub Slab Boiler Room Army		Sub Slab (10x Dilution) Boiler Room Army		Indoor Air Boiler Room Army		Sub Slab Unit Supply Room		Indoor Air Unit Supply Room		Sub Slab Firing Range Back		Indoor Air Firing Range Back	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
cis-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	4.54	UD	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Dibromochloromethane	100	10	ug/M^3	0.43	U	4.26	UD	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
Dichlorodifluoromethane	2000	200	ug/M^3	0.89		2.47	UD	1.19		0.74		1.43		1.19		1.19	
Ethyl Benzene	2200	220	ug/M^3	1		4.34	UD	0.43	U	2.22		0.43	U	0.78		0.43	U
m/p-Xylene	70000	7000	ug/M^3	2.69		8.69	UD	0.87	U	3.39		0.87	U	3		0.87	U
Methylene Chloride	5200	60*	ug/M^3	0.87		1.74	UD	0.69		0.63		1.6		1.18		0.8	
o-Xylene	70000	7000	ug/M^3	1.26		4.34	UD	0.43	U	0.91		0.43	U	1.26		0.43	U
Styrene	10000	1000	ug/M^3	0.43	U	4.26	UD	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
t-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	4.54	UD	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Tetrachloroethene	810	100*	ug/M^3	4.48		2.03	UD	0.2	U	3.73		0.2	U	3.59		1.42	
Toluene	4000	400	ug/M^3	5.65		4.9	D	0.19	U	28.3		0.19	U	12.8		0.38	
trans-1,2-Dichloroethene	700	70	ug/M^3	0.2	U	1.98	UD	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	22	5*	ug/M^3	**52.1**		**39.2**	D	**6.45**		1.5		0.08	U	0.21		**44.1**	
Trichlorofluoromethane	7000	70	ug/M^3	1.35		2.81	UD	1.4		1.24		0.84		0.9		1.46	
Vinyl Chloride	280	28	ug/M^3	0.08	U	0.77	UD	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

Values in **bold** are above Indoor Air Threshold Concentration

*-Indoor Air Threshold Concentration from NY requirements

RE-sample reanalyzed due to QC issue-both results provided for comparison

NS-None Specified

ug/M^3 = micrograms per cubic meter

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	SS-4B		IA-4		IA-4B		SS-5		IA-5		SS-6		IA-6	
			Date	3/20/2013		3/18/2013		3/20/2013		3/19/2013		3/19/2013		3/20/2013		3/20/2013	
			Sample Type and Location	Sub Slab Medical Supply Room		Indoor Air Medical Supply Room		Indoor Air Medical Supply Room		Sub Slab Firing Range		Indoor Air Firing Range		Sub Slab Boiler Room Navy		Indoor Air Boiler Room Navy	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	3.3	ug/M^3	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,1-Trichloroethane	22000	2200	ug/M^3	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
1,1,2,2-Tetrachloroethane	42	4.2	ug/M^3	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,2-Trichloroethane	150	15	ug/M^3	0.55	U	0.55	U	0.55	U	0.6		0.55	U	0.55	U	0.55	U
1,1-Dichloroethane	5000	500	ug/M^3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,1-Dichloroethene	2000	200	ug/M^3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dichlorobenzene	2000	200	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,2-Dichloroethane	94	9.4	ug/M^3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
1,2-Dichloropropane	40	4	ug/M^3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
1,3-Dichlorobenzene	1100	110	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,4-Dichlorobenzene	8000	800	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
2-Butanone	10000	1000	ug/M^3	2.48		1.27		1.3		2.86		1.15		0.71		1.5	
2-Hexanone	NS	NS	ug/M^3	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
4-Methyl-2-Pentanone	NS	NS	ug/M^3	0.94		0.2	U	0.2	U	0.57		0.49		0.2	U	0.33	J
Acetone	3500	350	ug/M^3	14.7		8.08		13.3		11.4		7.13		3.8		6.18	
Benzene	310	31	ug/M^3	1.92		0.42		0.58		2.94		0.58		0.73		0.48	
Bromodichloromethane	140	14	ug/M^3	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Bromoform	2200	220	ug/M^3	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U
Bromomethane	50	5	ug/M^3	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Carbon Disulfide	7000	700	ug/M^3	6.54		0.16	U	0.16	U	5.29		0.16	U	0.62		0.16	U
Carbon Tetrachloride	160	16	ug/M^3	1.26		0.44		0.38		0.19	U	0.44		0.44		0.44	
Chlorobenzene	600	60	ug/M^3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
Chloroethane	100000	10000	ug/M^3	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
Chloroform	110	11	ug/M^3	0.63		0.59		0.59		0.24	U	0.63		0.24	U	0.24	U
Chloromethane	900	90	ug/M^3	0.21	U	0.81		0.7		0.27		0.83		0.58		0.64	

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	SS-4B		IA-4		IA-4B		SS-5		IA-5		SS-6		IA-6	
			Date	3/20/2013		3/18/2013		3/20/2013		3/19/2013		3/19/2013		3/20/2013		3/20/2013	
			Sample Type and Location	Sub Slab Medical Supply Room		Indoor Air Medical Supply Room		Indoor Air Medical Supply Room		Sub Slab Firing Range		Indoor Air Firing Range		Sub Slab Boiler Room Navy		Indoor Air Boiler Room Navy	
COMPOUND	**Target Shallow Soil Conc. Att=0.1**	**Indoor Air Threshold Conc.**	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
cis-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Dibromochloromethane	100	10	ug/M^3	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
Dichlorodifluoromethane	2000	200	ug/M^3	0.84		1.24		1.63		1.04		1.48		1.29		1.53	
Ethyl Benzene	2200	220	ug/M^3	0.48		0.43	U	0.43	U	1.39		0.52		0.43	U	0.61	
m/p-Xylene	70000	7000	ug/M^3	1.13		0.87	U	0.87	U	3.39		1.3		0.87	U	1.87	
Methylene Chloride	5200	60*	ug/M^3	0.73		0.83		0.73		0.63		1.25		1.53		0.83	
o-Xylene	70000	7000	ug/M^3	0.48		0.43	U	0.43	U	1.17		0.48		0.43	U	0.78	
Styrene	10000	1000	ug/M^3	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
t-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Tetrachloroethene	810	100*	ug/M^3	1.22		0.2	U	0.2	U	2.85		0.2	U	0.2	U	0.61	
Toluene	4000	400	ug/M^3	1.47		0.49		0.57		21.1		13.9		0.6		18.8	
trans-1,2-Dichloroethene	700	70	ug/M^3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	22	5*	ug/M^3	5.21		0.08	U	0.08	U	**24.7**		0.16		0.08	U	0.64	
Trichlorofluoromethane	7000	70	ug/M^3	2.3		1.91		2.64		1.07		1.63		3.88		5.62	
Vinyl Chloride	280	28	ug/M^3	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

Values in **bold** are above Indoor Air Threshold Concentration

*-Indoor Air Threshold Concentration from NY requirements

RE-sample reanalyzed due to QC issue-both results provided for comparison

NS-None Specified

ug/M^3 = micrograms per cubic meter

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	IA-6RE		SS-7		IA-7		IA-8		IA-8RE		SS-9		IA-9	
			Date	3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013	
			Sample Type and Location	Indoor Air Boiler Room Navy		Sub Slab Vault Navy Side		Indoor Air Vault Navy Side		Indoor Air Vault Water Tank		Indoor Air Vault Water Tank		Sub Slab Weight Room Navy		Indoor Air Weight Room Navy	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	3.3	ug/M^3	0.69		0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,1-Trichloroethane	22000	2200	ug/M^3	0.16		0.38		0.16	U	0.16	U	0.16	U	0.49		0.16	U
1,1,2,2-Tetrachloroethane	42	4.2	ug/M^3	0.69		0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
1,1,2-Trichloroethane	150	15	ug/M^3	0.55		0.55	U	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
1,1-Dichloroethane	5000	500	ug/M^3	0.2		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,1-Dichloroethene	2000	200	ug/M^3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,2-Dichlorobenzene	2000	200	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,2-Dichloroethane	94	9.4	ug/M^3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
1,2-Dichloropropane	40	4	ug/M^3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
1,3-Dichlorobenzene	1100	110	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
1,4-Dichlorobenzene	8000	800	ug/M^3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
2-Butanone	10000	1000	ug/M^3	1.86	U	1.77		0.59		0.53		0.53		1.18		0.53	
2-Hexanone	NS	NS	ug/M^3	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
4-Methyl-2-Pentanone	NS	NS	ug/M^3	0.45	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Acetone	3500	350	ug/M^3	6.89	U	12.8		5.23		4.04		4.28		9.98		4.51	
Benzene	310	31	ug/M^3	0.64	U	0.73		0.58		0.48		0.51		0.61		0.42	
Bromodichloromethane	140	14	ug/M^3	0.33		0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Bromoform	2200	220	ug/M^3	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U
Bromomethane	50	5	ug/M^3	0.19		0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Carbon Disulfide	7000	700	ug/M^3	0.34		4.67		0.47		1.15		1.15		4.98		0.16	U
Carbon Tetrachloride	160	16	ug/M^3	0.57		0.19	U	0.38		0.44		0.44		0.25		0.44	
Chlorobenzene	600	60	ug/M^3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
Chloroethane	100000	10000	ug/M^3	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
Chloroform	110	11	ug/M^3	0.24	U	1.9		0.24	U	0.24	U	0.24	U	1.32		0.24	U
Chloromethane	900	90	ug/M^3	0.72		0.21	U	0.66		0.56		0.56		0.21	U	0.64	

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	IA-6RE		SS-7		IA-7		IA-8		IA-8RE		SS-9		IA-9	
			Date	3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013		3/20/2013	
			Sample Type and Location	Indoor Air Boiler Room Navy		Sub Slab Vault Navy Side		Indoor Air Vault Navy Side		Indoor Air Vault Water Tank		Indoor Air Vault Water Tank		Sub Slab Weight Room Navy		Indoor Air Weight Room Navy	
COMPOUND	**Target Shallow Soil Conc. Att=0.1**	**Indoor Air Threshold Conc.**	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
cis-1,3-Dichloropropene	200	20	ug/M^3	0.45		0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Dibromochloromethane	100	10	ug/M^3	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
Dichlorodifluoromethane	2000	200	ug/M^3	1.73	U	0.69		1.34		1.43		1.34		1.78		1.78	
Ethyl Benzene	2200	220	ug/M^3	0.69	U	0.48		0.43	U	0.43	U	0.43	U	1.04		0.43	U
m/p-Xylene	70000	7000	ug/M^3	2.22		1.22		0.91		0.87	U	0.87	U	2.61		0.87	U
Methylene Chloride	5200	60*	ug/M^3	0.8	U	0.73		0.8		0.69		0.73		0.66		0.87	
o-Xylene	70000	7000	ug/M^3	0.96	U	0.43		0.43	U	0.43	U	0.43	U	0.78		0.43	U
Styrene	10000	1000	ug/M^3	0.43		0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
t-1,3-Dichloropropene	200	20	ug/M^3	0.45		0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
Tetrachloroethene	810	100*	ug/M^3	0.95		1.29		0.54		0.2	U	0.2	U	1.02		0.27	
Toluene	4000	400	ug/M^3	25.6		16.2		14.3		2.79		2.86		14.3		14.7	
trans-1,2-Dichloroethene	700	70	ug/M^3	0.2		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	22	5*	ug/M^3	0.91	U	5.21		2.2		4.51		4.73		0.08	U	0.08	U
Trichlorofluoromethane	7000	70	ug/M^3	6.18	U	1.85		1.69		1.63		1.63		3.26		2.02	
Vinyl Chloride	280	28	ug/M^3	0.08		0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

Values in **bold** are above Indoor Air Threshold Concentration

*-Indoor Air Threshold Concentration from NY requirements

RE-sample reanalyzed due to QC issue-both results provided for comparison

NS-None Specified

ug/M^3 = micrograms per cubic meter

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	IA-9RE		OA-1	
			Date	3/20/2013		3/19/2013	
			Sample Type and Location	Indoor Air Weight Room Navy		Outdoor Air	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	3.3	ug/M^3	0.69	U	0.69	U
1,1,1-Trichloroethane	22000	2200	ug/M^3	0.16	U	0.16	U
1,1,2,2-Tetrachloroethane	42	4.2	ug/M^3	0.69	U	0.69	U
1,1,2-Trichloroethane	150	15	ug/M^3	0.55	U	0.55	U
1,1-Dichloroethane	5000	500	ug/M^3	0.2	U	0.2	U
1,1-Dichloroethene	2000	200	ug/M^3	0.2	U	0.2	U
1,2-Dichlorobenzene	2000	200	ug/M^3	0.6	U	0.6	U
1,2-Dichloroethane	94	9.4	ug/M^3	0.4	U	0.4	U
1,2-Dichloropropane	40	4	ug/M^3	0.46	U	0.46	U
1,3-Dichlorobenzene	1100	110	ug/M^3	0.6	U	0.6	U
1,4-Dichlorobenzene	8000	800	ug/M^3	0.6	U	0.6	U
2-Butanone	10000	1000	ug/M^3	0.62		0.77	
2-Hexanone	NS	NS	ug/M^3	0.41	U	0.41	U
4-Methyl-2-Pentanone	NS	NS	ug/M^3	0.2	U	0.2	U
Acetone	3500	350	ug/M^3	4.75		6.41	
Benzene	310	31	ug/M^3	0.48		0.58	
Bromodichloromethane	140	14	ug/M^3	0.33	U	0.33	U
Bromoform	2200	220	ug/M^3	0.52	U	0.52	U
Bromomethane	50	5	ug/M^3	0.19	U	0.19	U
Carbon Disulfide	7000	700	ug/M^3	0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M^3	0.44		0.38	
Chlorobenzene	600	60	ug/M^3	0.46	U	0.46	U
Chloroethane	100000	10000	ug/M^3	0.26	U	0.26	U
Chloroform	110	11	ug/M^3	0.24	U	0.24	U
Chloromethane	900	90	ug/M^3	0.66		0.72	

Table 5-2
Sub Slab and Indoor Air Sample Results
ODonovan USAFRC, Albany, NY

			Sample ID	IA-9RE		OA-1	
			Date	3/20/2013		3/19/2013	
			Sample Type and Location	Indoor Air Weight Room Navy		Outdoor Air	
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	Result	Qual.	Result	Qual.
cis-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	0.45	U
Dibromochloromethane	100	10	ug/M^3	0.43	U	0.43	U
Dichlorodifluoromethane	2000	200	ug/M^3	1.73		1.19	
Ethyl Benzene	2200	220	ug/M^3	0.43	U	0.43	U
m/p-Xylene	70000	7000	ug/M^3	0.87	U	0.87	U
Methylene Chloride	5200	60*	ug/M^3	0.87		0.73	
o-Xylene	70000	7000	ug/M^3	0.43	U	0.43	U
Styrene	10000	1000	ug/M^3	0.43	U	0.43	U
t-1,3-Dichloropropene	200	20	ug/M^3	0.45	U	0.45	U
Tetrachloroethene	810	100*	ug/M^3	0.34		0.2	U
Toluene	4000	400	ug/M^3	15.8		0.3	J
trans-1,2-Dichloroethene	700	70	ug/M^3	0.2	U	0.2	U
Trichloroethene	22	5*	ug/M^3	0.08	U	0.08	U
Trichlorofluoromethane	7000	70	ug/M^3	2.14		0.9	
Vinyl Chloride	280	28	ug/M^3	0.08	U	0.08	U

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

Values in **bold** are above Indoor Air Threshold Concentration

*-Indoor Air Threshold Concentration from NY requirements

RE-sample reanalyzed due to QC issue-both results provided for comparison

NS-None Specified

ug/M^3 = micrograms per cubic meter

Table 5-3
Soil Gas Results
O'Donovan USAFRC, Albany, NY

		Sample ID	SV-1		SV-2		SV-2DL		SV-3		SV-4		SV-5		SV-6		SV-7		SV-8		SV-9	
		Sampling Date	3/22/2013		3/22/2013		3/22/2013		3/22/2013		3/22/2013		3/22/2013		3/22/2013		3/22/2013		3/25/2013		3/22/2013	
		Matrix	Air		Air		Air		Air		Air		Air		Air		Air		Air		Air	
	Target Soil Gas	Dilution Factor	5		1		10		3.3		1		1		1		1		10		4.5	
COMPOUND	Con. Att=0.1	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	ug/M^3	3.43	U	0.69	U	171	UD	2.27	U	0.69	U	0.69	U	0.69	U	0.69	U	6.87	U	3.09	U
1,1,1-Trichloroethane	22000	ug/M^3	0.82	U	0.82		136	UD	0.55	U	0.16	U	0.16	U	0.16	U	0.16	U	1.64	U	0.76	U
1,1,2,2-Tetrachloroethane	42	ug/M^3	3.43	U	0.69	U	171	UD	2.27	U	0.69	U	0.69	U	0.69	U	0.69	U	6.87	U	3.09	U
1,1,2-Trichloroethane	150	ug/M^3	2.73	U	0.55	U	136	UD	1.8	U	0.55	U	0.55	U	0.55	U	0.55	U	5.46	U	2.46	U
1,1-Dichloroethane	5000	ug/M^3	1.01	U	0.2	U	101	UD	0.67	U	0.2	U	0.2	U	0.2	U	0.2	U	2.02	U	0.91	U
1,1-Dichloroethene	2000	ug/M^3	0.99	U	0.2	U	99.1	UD	0.65	U	0.2	U	0.2	U	0.2	U	0.2	U	1.98	U	0.89	U
1,2-Dichlorobenzene	2000	ug/M^3	3.01	U	0.6	U	150	UD	1.98	U	0.6	U	0.6	U	0.6	U	0.6	U	6.01	U	2.71	U
1,2-Dichloroethane	94	ug/M^3	2.02	U	0.4	U	101	UD	1.34	U	0.4	U	0.4	U	0.4	U	0.4	U	4.05	U	1.82	U
1,2-Dichloropropane	40	ug/M^3	2.31	U	0.46	U	115	UD	1.53	U	0.46	U	0.46	U	0.46	U	0.46	U	4.62	U	2.08	U
1,3-Dichlorobenzene	1100	ug/M^3	3.01	U	0.6	U	150	UD	1.98	U	0.6	U	0.6	U	0.6	U	0.6	U	6.01	U	2.71	U
1,4-Dichlorobenzene	8000	ug/M^3	3.01	U	0.6	U	150	UD	1.98	U	0.6	U	0.6	U	0.6	U	0.6	U	6.01	U	2.71	U
2-Butanone	10000	ug/M^3	3.54		3.54		368	UD	3.54		0.29	U	0.8		2.48		6.78		4.72		1.33	U
2-Hexanone	None Specified	ug/M^3	2.04	U	0.41	U	511	UD	1.35	U	0.41	U	0.41	U	0.41	U	0.41	U	4.09	U	1.84	U
4-Methyl-2-Pentanone	None Specified	ug/M^3	1.02	U	0.2	U	512	UD	0.68	U	0.2	U	0.2	U	0.98		0.2	U	2.05	U	0.92	U
Acetone	3500	ug/M^3	1.19	U	0.24	U	296	UD	0.78	U	0.24	U	0.24	U	14.5		16.9		210		1.07	U
Benzene	310	ug/M^3	12.8		34.2		31.3	JD	18.8		11.2		1.44		3.51		1.18		30.7		39.9	
Bromodichloromethane	140	ug/M^3	1.67	U	0.33	U	167	UD	1.11	U	0.33	U	0.33	U	0.33	U	0.33	U	3.35	U	1.51	U
Bromoform	2200	ug/M^3	2.58	U	0.52	U	258	UD	1.71	U	0.52	U	0.52	U	0.52	U	0.52	U	5.17	U	2.33	U
Bromomethane	50	ug/M^3	0.97	U	0.19	U	97.1	UD	0.64	U	0.19	U	0.19	U	0.19	U	0.19	U	1.94	U	0.87	U
Carbon Disulfide	7000	ug/M^3	14.3		37.1		32.1	JD	26.2		13.7		0.72		3.43		0.4		39.9		44.8	
Carbon Tetrachloride	160	ug/M^3	0.94	U	1.2		157	UD	0.82		0.69		0.38		0.25		0.31		2.52		1.45	
Chlorobenzene	600	ug/M^3	2.3	U	0.46	U	115	UD	1.52	U	0.46	U	0.46	U	0.46	U	0.46	U	4.61	U	2.07	U
Chloroethane	100000	ug/M^3	1.32	U	0.26	U	66	UD	0.87	U	0.26	U	0.26	U	0.26	U	0.26	U	2.64	U	1.19	U
Chloroform	110	ug/M^3	1.22	U	0.24	U	122	UD	0.81	U	0.24	U	0.24	U	5.86		16.6		6.35		1.1	U
Chloromethane	900	ug/M^3	1.03	U	0.21	U	51.6	UD	0.68	U	0.87		0.62		0.21	U	0.25		2.07	U	0.93	U
cis-1,3-Dichloropropene	200	ug/M^3	2.27	U	0.45	U	113	UD	1.5	U	0.45	U	0.45	U	0.45	U	0.45	U	4.54	U	2.04	U
Dibromochloromethane	100	ug/M^3	2.13	U	0.43	U	212	UD	1.41	U	0.43	U	0.43	U	0.43	U	0.43	U	4.26	U	1.92	U
Dichlorodifluoromethane	2000	ug/M^3	1.48	J	0.25	U	123	UD	4.9		0.79		1.29		1.19		1.24		5.93		2.03	J
Ethyl Benzene	2200	ug/M^3	3.04		13.5		9.99	JD	7.38		2.69		0.43	U	1.3		0.43	U	4.34	U	9.12	
m/p-Xylene	70000	ug/M^3	10.4		32.6				20.8		6.52		0.87	U	3.65		0.87	U	8.69	U	22.6	
Methylene Chloride	5200	ug/M^3	0.87	U	0.17	U	86.8	UD	0.57	U	0.17	U	0.17	U	0.17	U	0.76		32		0.78	U
o-Xylene	70000	ug/M^3	4.13		10.4		108	UD	6.08		1.61		0.43	U	0.96		0.43	U	4.34	U	5.65	
Styrene	10000	ug/M^3	2.13	U	0.43	U	106	UD	1.41	U	0.43	U	0.43	U	0.43	U	0.43	U	4.26	U	1.92	U
t-1,3-Dichloropropene	200	ug/M^3	2.27	U	0.45	U	113	UD	1.5	U	0.45	U	0.45	U	0.45	U	0.45	U	4.54	U	2.04	U
Tetrachloroethene	810	ug/M^3	2.03		1.97		169	UD	2.03		0.88		0.2	U	0.2	U	1.02		2.03	U	0.95	
Toluene	4000	ug/M^3	21.1		104	E	131	JD	61.4		36.2		3.32		17.7		2.49		50.1		148	
trans-1,2-Dichloroethene	700	ug/M^3	0.99	U	0.2	U	99.1	UD	0.65	U	0.2	U	0.2	U	0.2	U	0.2	U	1.98	U	0.89	U
Trichloroethene	22	ug/M^3	0.4	U	7.52		134	UD	11.3		1.45		0.08	U	0.08	U	**29**		**23.1**		0.38	U
Trichlorofluoromethane	7000	ug/M^3	1.69	J	1.85		140	UD	2.25		1.74		0.96		0.96		0.9		6.18		3.32	
Vinyl Chloride	280	ug/M^3	0.38	U	0.08	U	63.9	UD	0.26	U	0.08	U	0.08	U	0.08	U	0.08	U	0.77	U	0.36	U

Table 5-3
Soil Gas Results
O'Donovan USAFRC, Albany, NY

		Sample ID	SV-10		SV-10DL		SV-12		SV-12RS		SV-13RS		SV-14		SV-14DL		SV-15		SV-15DL		SV-17	
		Sampling Date	3/22/2013		3/22/2013		3/25/2013		4/5/2013		4/5/2013		3/25/2013		3/25/2013		3/25/2013		3/25/2013		3/25/2013	
		Matrix	Air		Air		Air		Air		Air		Air		Air		Air		Air		Air	
	Target Soil Gas	Dilution Factor	1		10		8.3		10		1		5		10		5		10		2.5	
COMPOUND	Con. Att=0.1	Units	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.	Result	Qual.
1,1,1,2-Tetrachloroethane	330	ug/M^3	0.69	U	6.87	UD	5.7	U	6.87	U	0.69	U	3.43	U	6.87	UD	3.43	U	6.87	UD	1.72	U
1,1,1-Trichloroethane	22000	ug/M^3	0.16	U	1.64	UD	1.36	U	1.64	U	0.16	U	0.82	U	1.64	UD	0.82	U	1.64	UD	0.44	U
1,1,2,2-Tetrachloroethane	42	ug/M^3	0.69	U	6.87	UD	5.7	U	6.87	U	0.69	U	3.43	U	6.87	UD	3.43	U	6.87	UD	1.72	U
1,1,2-Trichloroethane	150	ug/M^3	0.55	U	5.46	UD	4.53	U	5.46	U	0.55	U	2.73	U	5.46	UD	2.73	U	5.46	UD	1.36	U
1,1-Dichloroethane	5000	ug/M^3	0.2	U	2.02	UD	1.68	U	4.05	U	0.4	U	1.01	U	2.02	UD	1.01	U	2.02	UD	0.51	U
1,1-Dichloroethene	2000	ug/M^3	0.2	U	1.98	UD	1.65	U	3.96	U	0.4	U	0.99	U	1.98	UD	0.99	U	1.98	UD	0.5	U
1,2-Dichlorobenzene	2000	ug/M^3	0.6	U	6.01	UD	4.99	U	6.01	U	0.6	U	3.01	U	6.01	UD	3.01	U	6.01	UD	1.5	U
1,2-Dichloroethane	94	ug/M^3	0.4	U	4.05	UD	3.36	U	4.05	U	0.4	U	2.02	U	4.05	UD	2.02	U	4.05	UD	1.01	U
1,2-Dichloropropane	40	ug/M^3	0.46	U	4.62	UD	3.84	U	4.62	U	0.46	U	2.31	U	4.62	UD	2.31	U	4.62	UD	1.16	U
1,3-Dichlorobenzene	1100	ug/M^3	0.6	U	6.01	UD	4.99	U	6.01	U	0.6	U	3.01	U	6.01	UD	3.01	U	6.01	UD	1.5	U
1,4-Dichlorobenzene	8000	ug/M^3	0.6	U	6.01	UD	4.99	U	6.01	U	0.6	U	3.01	U	6.01	UD	3.01	U	6.01	UD	1.5	U
2-Butanone	10000	ug/M^3	1.86		2.95	UD	3.83		4.42	J	0.71	J	4.72		5.01	D	6.19		5.9	D	2.01	
2-Hexanone	None Specified	ug/M^3	0.41	U	4.09	UD	3.39	U	4.09	U	0.41	U	2.04	U	4.09	UD	2.04	U	4.09	UD	1.02	U
4-Methyl-2-Pentanone	None Specified	ug/M^3	0.2	U	2.05	UD	1.7	U	4.1	U	0.41	U	1.02	U	2.05	UD	1.02	U	2.05	UD	0.51	U
Acetone	3500	ug/M^3	0.24	U	2.38	UD	101		2.38	U	0.24	U	285	E	285	D	219	E	199	D	61.3	
Benzene	310	ug/M^3	26.5		24.3	D	26.5		39.6		1.37	J	30.7		24	D	43.8		36.1	D	15	
Bromodichloromethane	140	ug/M^3	0.33	U	3.35	UD	2.78	U	6.7	U	0.67	U	1.67	U	3.35	UD	1.67	U	3.35	UD	0.84	U
Bromoform	2200	ug/M^3	0.52	U	5.17	UD	4.29	U	10.3	UQ	1.03	UQ	2.58	U	5.17	UD	2.58	U	5.17	UD	1.29	U
Bromomethane	50	ug/M^3	0.19	U	1.94	UD	1.61	U	3.88	U	0.39	U	0.97	U	1.94	UD	0.97	U	1.94	UD	0.49	U
Carbon Disulfide	7000	ug/M^3	7.16		6.85	D	29.6		49.8		2.3		40.2		35.5	D	71.3		59.2	D	13.4	
Carbon Tetrachloride	160	ug/M^3	0.38		1.89	UD	1.57	U	1.89	U	0.31	J	1.57		1.89	UD	1.89		1.89	UD	0.94	
Chlorobenzene	600	ug/M^3	0.46	U	4.61	UD	3.82	U	4.61	U	0.46	U	2.3	U	4.61	UD	2.3	U	4.61	UD	1.15	U
Chloroethane	100000	ug/M^3	0.26	U	2.64	UD	2.19	U	2.64	U	0.26	U	1.32	U	2.64	UD	1.32	U	2.64	UD	0.66	U
Chloroform	110	ug/M^3	0.24	U	2.44	UD	3.66	J	5.86	J	0.49	U	1.22	U	2.44	UD	12.2		10.3	D	0.61	U
Chloromethane	900	ug/M^3	0.21	U	2.07	UD	1.71	U	2.07	U	0.85	J	1.03	U	2.07	UD	1.03	U	2.07	UD	0.52	U
cis-1,3-Dichloropropene	200	ug/M^3	0.45	U	4.54	UD	3.77	U	4.54	U	0.45	U	2.27	U	4.54	UD	2.27	U	4.54	UD	1.13	U
Dibromochloromethane	100	ug/M^3	0.43	U	4.26	UD	3.54	U	8.52	U	0.85	U	2.13	U	4.26	UD	2.13	U	4.26	UD	1.06	U
Dichlorodifluoromethane	2000	ug/M^3	1.38		2.47	UD	2.05	U	4.94	U	1.34	J	1.24	U	2.47	UD	1.24	U	2.47	UD	2.37	
Ethyl Benzene	2200	ug/M^3	23.5		18.2	D	9.12		26.1		0.83	J	2.61		4.34	UD	5.65		4.34	D	3.82	
m/p-Xylene	70000	ug/M^3	59.9		51.2	D	27.8		75.1		2.13	J	7.38		8.69	UD	14.3		9.99	D	12.2	
Methylene Chloride	5200	ug/M^3	4.52		1.74	UD	10.8		3.47	U	1.49	J	0.87	U	1.74	UD	0.87	U	6.95	D	11.1	
o-Xylene	70000	ug/M^3	15.2		12.2	D	6.95		18.2	J	1	J	2.61		4.34	UD	3.91		4.34	UD	3.17	
Styrene	10000	ug/M^3	2.09		4.26	UD	3.53	U	4.26	U	0.43	U	2.13	U	4.26	UD	2.13	U	4.26	UD	1.06	U
t-1,3-Dichloropropene	200	ug/M^3	0.45	U	4.54	UD	3.77	U	4.54	U	0.45	U	2.27	U	4.54	UD	2.27	U	4.54	UD	1.13	U
Tetrachloroethene	810	ug/M^3	1.22		2.03	UD	1.7	U	4.07	JQ	0.27	JQ	1.02	U	2.03	UD	1.36		2.03	UD	0.54	
Toluene	4000	ug/M^3	111	E	177	D	122		122		4.9		43		32.8	D	120		100	D	64.4	
trans-1,2-Dichloroethene	700	ug/M^3	0.2	U	1.98	UD	1.65	U	3.96	U	0.4	U	0.99	U	1.98	UD	0.99	U	1.98	UD	0.5	U
Trichloroethene	22	ug/M^3	0.08	U	0.81	UD	9.14		1.61	U	0.16	U	9.14		8.06	D	1.88		0.81	UD	0.97	
Trichlorofluoromethane	7000	ug/M^3	1.07		2.81	UD	2.36	J	2.81	J	1.29	J	3.65		3.37	JD	3.37		3.37	JD	2.42	
Vinyl Chloride	280	ug/M^3	0.08	U	0.77	UD	0.64	U	0.77	U	0.08	U	0.38	U	0.77	UD	0.38	U	0.77	UD	0.2	U

Table 5-3
Soil Gas Results
O'Donovan USAFRC, Albany, NY

Qualifiers

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

E (Organics) - Indicates the analyte ‘s concentration exceeds the calibrated range of the instrument for that specific analysis.

Table 5-4
IDW Soil Analytical Results
O'Donovan USAFRC, Albany, NY

		Sample ID	SOIL-DRUMS	
		Date	4/19/2013	
Parameter	LDR Limit (TCLP)	Units	Result	Qual.
TCLP/Metals				
Arsenic	5.0	mg/L	0.1	U
Barium	100.0	mg/L	1.14	
Cadmium	1.0	mg/L	0.03	U
Chromium (Total)	5.0	mg/L	0.05	U
Lead	5.0	mg/L	0.06	U
Mercury	0.2	mg/L	0.001	U
Selenium	1.0	mg/L	0.1	U
Silver	5.0	mg/L	0.05	U
TCLP/Volatiles				
Benzene	0.5	mg/L	0.0125	U
Carbon tetrachloride	0.5	mg/L	0.0125	U
Chlorobenzene	100.0	mg/L	0.0125	U
Chloroform	6.0	mg/L	0.0125	U
1,2-Dichloroethane	0.5	mg/L	0.0125	U
1,1-Dichloroethylene	0.7	mg/L	0.0125	U
Methyl Ethyl Ketone	200.0	mg/L	0.0625	U
Tetrachloroethylene	0.7	mg/L	0.0125	U
Trichloroethylene	0.5	mg/L	0.0125	U
Vinyl chloride	0.2	mg/L	0.0125	U

Notes:
TCLP = toxicity characteristic leaching procedure
LDR = Land disposal restrictions (40 CFR 261.24)
U = Non detect
mg/L = milligrams per liter

TCLP/Metals analysis by USEPA Methods SW1311/6010/6020/7471
TCLP/Volatiles analysis by USEPA Methods SW1311/8260B

Table 5-5
QC Summary - Groundwater Samples
O'Donovan USAFRC, Albany, NY

Sample ID			041913-MW-1		041913-DUP			TRIPBLANK(2)	
Lab Sample Number			E1939-03		E1939-04			E1939-16	
Sampling Date			4/19/2013		4/19/2013			4/19/2013	
Matrix		NYS GWQS	Water		Water			Water	
Dilution Factor			1		1			1	
Units		ug/l	ug/L		ug/L		RPD	ug/L	
COMPOUND	CAS #								
1,1,1-Trichloroethane	71-55-6	5	0.5	U	0.5	U	Both ND	0.5	U
1,1,2,2-Tetrachloroethane	79-34-5	5	0.5	U	0.5	U	Both ND	0.5	U
1,1,2-Trichloroethane	79-00-5	1	0.5	U	0.5	U	Both ND	0.5	U
1,1,2-Trichlorotrifluoroethane	76-13-1	5	0.5	U	0.5	U	Both ND	0.5	U
1,1-Dichloroethane	75-34-3	5	0.5	U	0.5	U	Both ND	0.5	U
1,1-Dichloroethene	75-35-4	0.7	0.5	U	0.5	U	Both ND	0.5	U
1,2,3-Trichlorobenzene	87-61-6	5	0.5	U	0.5	U	Both ND	0.5	U
1,2,4-Trichlorobenzene	120-82-1	5	0.5	U	0.5	U	Both ND	0.5	U
1,2-Dibromo-3-Chloropropane	96-12-8	0.04*	0.5	U	0.5	U	Both ND	0.5	U
1,2-Dibromoethane	106-93-4	5	0.5	U	0.5	U	Both ND	0.5	U
1,2-Dichlorobenzene	95-50-1	5	0.5	U	0.5	U	Both ND	0.5	U
1,2-Dichloroethane	107-06-2	0.6	0.5	U	0.5	U	Both ND	0.5	U
1,2-Dichloropropane	78-87-5	1	0.5	U	0.5	U	Both ND	0.5	U
1,3-Dichlorobenzene	541-73-1	5	0.5	U	0.5	U	Both ND	0.5	U
1,4-Dichlorobenzene	106-46-7	5	0.5	U	0.5	U	Both ND	0.5	U
1,4-Dioxane	123-91-1	NS	100	U	100	U	Both ND	100	U
2-Butanone	78-93-3	50	2.5	U	2.5	U	Both ND	2.5	U
2-Hexanone	591-78-6	50	2.5	U	2.5	U	Both ND	2.5	U
4-Methyl-2-Pentanone	108-10-1	5	2.5	U	2.5	U	Both ND	2.5	U
Acetone	67-64-1	50	2.5	U	2.5	U	Both ND	2.5	U
Benzene	71-43-2	1	0.5	U	0.5	U	Both ND	0.5	U
Bromochloromethane	74-97-5	5	0.5	U	0.5	U	Both ND	0.5	U
Bromodichloromethane	75-27-4	50	0.5	U	0.5	U	Both ND	0.5	U
Bromoform	75-25-2	50	0.5	U	0.5	U	Both ND	0.5	U
Bromomethane	74-83-9	5	0.5	U	0.5	U	Both ND	0.5	U
Carbon Disulfide	75-15-0	5	0.5	U	0.5	U	Both ND	0.5	U
Carbon Tetrachloride	56-23-5	5	0.5	U	0.5	U	Both ND	0.5	U
Chlorobenzene	108-90-7	5	0.5	U	0.5	U	Both ND	0.5	U
Chloroethane	75-00-3	5	0.5	U	0.5	U	Both ND	0.5	U
Chloroform	67-66-3	7	0.5	U	0.5	U	Both ND	0.5	U
Chloromethane	74-87-3	5	0.5	U	0.5	U	Both ND	0.5	U
cis-1,2-Dichloroethene	156-59-2	5	0.5	U	0.5	U	Both ND	0.5	U
cis-1,3-Dichloropropene	10061-01-5	0.4*	0.5	U	0.5	U	Both ND	0.5	U
Cyclohexane	110-82-7	5	0.5	U	0.5	U	Both ND	0.5	U
Dibromochloromethane	124-48-1	50	0.5	U	0.5	U	Both ND	0.5	U
Dichlorodifluoromethane	75-71-8	5	0.5	U	0.5	U	Both ND	0.5	U
Ethyl Benzene	100-41-4	5	0.5	U	0.5	U	Both ND	0.5	U
Isopropylbenzene	98-82-8	5	0.5	U	0.5	U	Both ND	0.5	U
m/p-Xylenes	179601-23-1	5	1	U	1	U	Both ND	1	U
Methyl Acetate	79-20-9	5	0.5	U	0.5	U	Both ND	0.5	U
Methyl tert-butyl Ether	1634-04-4	5	0.5	U	0.5	U	Both ND	0.5	U
Methylcyclohexane	108-87-2	5	0.5	U	0.5	U	Both ND	0.5	U
Methylene Chloride	75-09-2	5	0.5	U	0.5	U	Both ND	0.5	U
o-Xylene	95-47-6	5	0.5	U	0.5	U	Both ND	0.5	U
Styrene	100-42-5	5	0.5	U	0.5	U	Both ND	0.5	U
trans-1,3-Dichloropropene	10061-02-6	0.4*	0.5	U	0.5	U	Both ND	0.5	U
Tetrachloroethene	127-18-4	5	1.3		1.1		16.6	0.5	U
Toluene	108-88-3	5	0.5	U	0.5	U	Both ND	0.5	U
trans-1,2-Dichloroethene	156-60-5	5	0.5	U	0.5	U	Both ND	0.5	U
Trichloroethene	79-01-6	5	0.5	U	0.5	U	Both ND	0.5	U
Trichlorofluoromethane	75-69-4	5	0.5	U	0.5	U	Both ND	0.5	U
Vinyl Chloride	75-01-4	2	0.5	U	0.5	U	Both ND	0.5	U

Qualifiers

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

NS - None Specified

Table 5-6
Field Quality Control Summary - Air Samples
O'Donovan USAFRC, Albany, NY

Sample ID		Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	OA-1	P/F	IA-2	IADUP	RPD	SS-2	SS-DUP	RPD
Sampling Date				3/19/2013		3/19/2013	3/18/2013		3/19/2013	3/18/2013	
Field QC Type				Ambient Blank IA/SS			Dup-IA2			DUP-SS2	
Dilution Factor				1		1	1		1	1	
Units		Ug/M3	Ug/M3	Ug/M3		Ug/M3	Ug/M3		Ug/M3	Ug/M3	
COMPOUND	CAS #										
1,1,1,2-Tetrachloroethane	630-20-6	330	3.3	0.69 U	P	0.69 U	0.69 U	Both ND	0.69 U	0.69 U	Both ND
1,1,1-Trichloroethane	71-55-6	22000	2200	0.16 U	P	0.16 U	0.16 U	Both ND	0.27	0.22	20.4
1,1,2,2-Tetrachloroethane	79-34-5	42	4.2	0.69 U	P	0.69 U	0.69 U	Both ND	0.69 U	0.69 U	Both ND
1,1,2-Trichloroethane	79-00-5	150	15	0.55 U	P	0.55 U	0.55 U	Both ND	0.55 U	0.55 U	Both ND
1,1-Dichloroethane	75-34-3	5000	500	0.2 U	P	0.2 U	0.2 U	Both ND	0.2 U	0.2 U	Both ND
1,1-Dichloroethene	75-35-4	2000	200	0.2 U	P	0.2 U	0.2 U	Both ND	0.2 U	0.2 U	Both ND
1,2-Dichlorobenzene	95-50-1	2000	200	0.6 U	P	0.6 U	0.6 U	Both ND	0.6 U	0.6 U	Both ND
1,2-Dichloroethane	107-06-2	94	9.4	0.4 U	P	0.4 U	0.4 U	Both ND	0.4 U	0.4 U	Both ND
1,2-Dichloropropane	78-87-5	40	4	0.46 U	P	0.46 U	0.46 U	Both ND	0.46 U	0.46 U	Both ND
1,3-Dichlorobenzene	541-73-1	1100	110	0.6 U	P	0.6 U	0.6 U	Both ND	0.6 U	0.6 U	Both ND
1,4-Dichlorobenzene	106-46-7	8000	800	0.6 U	P	0.6 U	0.6 U	Both ND	0.6 U	0.6 U	Both ND
2-Butanone	78-93-3	10000	1000	0.77	P	0.29 U	0.97	*107.9*	2.89	8.26	*96.3*
2-Hexanone	591-78-6	NS	NS	0.41 U	P	0.41 U	0.41 U	Both ND	0.41 U	0.94	*NC*
4-Methyl-2-Pentanone	108-10-1	NS	NS	0.2 U	P	0.2 U	0.2 U	Both ND	0.57	1.02	*56.6*
Acetone	67-64-1	3500	350	6.41	P	3.8	6.65	*54.5*	14	35.6	*87.1*
Benzene	71-43-2	310	31	0.58	P	0.16 U	0.67	*NC*	6.07	5.75	5.4
Bromodichloromethane	75-27-4	140	14	0.33 U	P	0.33 U	0.33 U	Both ND	0.33 U	0.33 U	Both ND
Bromoform	75-25-2	2200	220	0.52 U	P	0.52 U	0.52 U	Both ND	0.52 U	0.52 U	Both ND
Bromomethane	74-83-9	50	5	0.19 U	P	0.19 U	0.19 U	Both ND	0.19 U	0.19 U	Both ND
Carbon Disulfide	75-15-0	7000	700	0.16 U	P	0.16 U	0.16 U	Both ND	6.85	4.98	31.6
Carbon Tetrachloride	56-23-5	160	16	0.38	P	0.19 U	0.44	*NC*	0.5	0.38	27.3
Chlorobenzene	108-90-7	600	60	0.46 U	P	0.46 U	0.46 U	Both ND	0.46 U	0.46 U	Both ND
Chloroethane	75-00-3	100000	10000	0.26 U	P	0.26 U	0.26 U	Both ND	0.26 U	0.26 U	Both ND
Chloroform	67-66-3	110	11	0.24 U	P	0.24 U	0.24 U	Both ND	0.24 U	0.24 U	Both ND
Chloromethane	74-87-3	900	90	0.72	P	0.81	0.68	17.4	0.21 U	0.21 U	Both ND
cis-1,3-Dichloropropene	10061-01-5	200	20	0.45 U	P	0.45 U	0.45 U	Both ND	0.45 U	0.45 U	Both ND

Table 5-6
Field Quality Control Summary - Air Samples
O'Donovan USAFRC, Albany, NY

Sample ID		Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	OA-1	P/F	IA-2	IADUP	RPD	SS-2	SS-DUP	RPD
Sampling Date				3/19/2013		3/19/2013	3/18/2013		3/19/2013	3/18/2013	
Field QC Type				Ambient Blank IA/SS			Dup-IA2			DUP-SS2	
Dilution Factor				1		1	1		1	1	
Units		Ug/M3	Ug/M3	Ug/M3		Ug/M3	Ug/M3		Ug/M3	Ug/M3	
COMPOUND	CAS #										
Dibromochloromethane	124-48-1	100	10	0.43 U	P	0.43 U	0.43 U	Both ND	0.43 U	0.43 U	Both ND
Dichlorodifluoromethane	75-71-8	2000	200	1.19	P	1.43	1.34	6.5	0.74	0.79	6.5
Ethyl Benzene	100-41-4	2200	220	0.43 U	P	0.43 U	1.52	*NC*	2.22	1.48	*40.0*
m/p-Xylene	179601-23-1	70000	7000	0.87 U	P	0.87 U	4.17	*NC*	3.39	3.69	8.5
Methylene Chloride	75-09-2	5200	60	0.73	P	1.6	0.69	*79.5*	0.63	1.11	*55.2*
o-Xylene	95-47-6	70000	7000	0.43 U	P	0.43 U	1.22	*NC*	0.91	1.17	25.0
Styrene	100-42-5	10000	1000	0.43 U	P	0.43 U	0.43 U	Both ND	0.43 U	0.43 U	Both ND
t-1,3-Dichloropropene	10061-02-6	200	20	0.45 U	P	0.45 U	0.45 U	Both ND	0.45 U	0.45 U	Both ND
Tetrachloroethene	127-18-4	810	100	0.2 U	P	0.2 U	1.02	*NC*	3.73	4.61	21.1
Toluene	108-88-3	4000	400	0.3 J	P	0.19 U	19.6	*NC*	28.3	12.1	*80.2*
trans-1,2-Dichloroethene	156-60-5	700	70	0.2 U	P	0.2 U	0.2 U	Both ND	0.2 U	0.2 U	Both ND
Trichloroethene	79-01-6	22	5	0.08 U	P	0.08 U	0.08 U	Both ND	1.5	0.08 U	Both ND
Trichlorofluoromethane	75-69-4	7000	70	0.9	P	0.84	1.35	*46.6*	1.24	1.29	4.0
Vinyl Chloride	75-01-4	280	28	0.08 U	P	0.08 U	0.08 U	Both ND	0.08 U	0.08 U	Both ND

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

Values in **bold** are above applicable limt (IA/TSGC-SS)

P/F-Pass/Fail comparison to Blank criteria (<1/10 criteria)

RPD-Relative Percent Difference

RPD values in *italics* are above RPD limit (35) without differing against criteria limit

RPD values in **bold** are above RPD limits and differ with regards to criteria comparison

Table 5-6
Field Quality Control Summary - Air Samples
O'Donovan USAFRC, Albany, NY

Sample ID				OA-1		P/F	SV-10		DUP		RPD	AMBIENTAIR		P/F	SV-12		DUP-32513		RPD
Sampling Date				3/22/2013			3/22/2013		3/22/2013			3/25/2013			3/25/2013		3/25/2013		
Field QC Type		Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Ambient Blank Soil Gas					Duplicate SV-10			Ambient Blank SG					Duplicate SV-12		
Dilution Factor				1			1		1			1			8.3		10		
Units		Ug/M3	Ug/M3	Ug/M3			Ug/M3		Ug/M3			Ug/M3			Ug/M3		Ug/M3		
COMPOUND	CAS #																		
1,1,1,2-Tetrachloroethane	630-20-6	330	3.3	0.69	U	P	0.69	U	0.69	U	Both ND	0.69	U	P	5.7	U	6.87	U	Both ND
1,1,1-Trichloroethane	71-55-6	22000	2200	0.16	U	P	0.16	U	0.16	U	Both ND	0.16	U	P	1.36	U	1.64	U	Both ND
1,1,2,2-Tetrachloroethane	79-34-5	42	4.2	0.69	U	P	0.69	U	0.69	U	Both ND	0.69	U	P	5.7	U	6.87	U	Both ND
1,1,2-Trichloroethane	79-00-5	150	15	0.55	U	P	0.55	U	0.55	U	Both ND	0.55	U	P	4.53	U	5.46	U	Both ND
1,1-Dichloroethane	75-34-3	5000	500	0.2	U	P	0.2	U	0.2	U	Both ND	0.2	U	P	1.68	U	2.02	U	Both ND
1,1-Dichloroethene	75-35-4	2000	200	0.2	U	P	0.2	U	0.2	U	Both ND	0.2	U	P	1.65	U	1.98	U	Both ND
1,2-Dichlorobenzene	95-50-1	2000	200	0.6	U	P	0.6	U	0.6	U	Both ND	0.6	U	P	4.99	U	6.01	U	Both ND
1,2-Dichloroethane	107-06-2	94	9.4	0.4	U	P	0.4	U	0.4	U	Both ND	0.4	U	P	3.36	U	4.05	U	Both ND
1,2-Dichloropropane	78-87-5	40	4	0.46	U	P	0.46	U	0.46	U	Both ND	0.46	U	P	3.84	U	4.62	U	Both ND
1,3-Dichlorobenzene	541-73-1	1100	110	0.6	U	P	0.6	U	0.6	U	Both ND	0.6	U	P	4.99	U	6.01	U	Both ND
1,4-Dichlorobenzene	106-46-7	8000	800	0.6	U	P	0.6	U	0.6	U	Both ND	0.6	U	P	4.99	U	6.01	U	Both ND
2-Butanone	78-93-3	10000	1000	0.59		P	1.86		1.33		33.2	0.44		P	3.83		4.42		14.3
2-Hexanone	591-78-6	NS	NS	0.41	U	P	0.41	U	0.41	U	Both ND	0.41	U	P	3.39	U	4.09	U	Both ND
4-Methyl-2-Pentanone	108-10-1	NS	NS	0.2	U	P	0.2	U	0.2	U	Both ND	0.2	U	P	1.7	U	2.05	U	Both ND
Acetone	67-64-1	3500	350	4.75		P	0.24	U	0.24	U	Both ND	2.61		P	101		130		25.1
Benzene	71-43-2	310	31	0.54		P	26.5		41.2		*43.4*	0.45		P	26.5		35.5		29.0
Bromodichloromethane	75-27-4	140	14	0.33	U	P	0.33	U	0.33	U	Both ND	0.33	U	P	2.78	U	3.35	U	Both ND
Bromoform	75-25-2	2200	220	0.52	U	P	0.52	U	0.52	U	Both ND	0.52	U	P	4.29	U	5.17	U	Both ND
Bromomethane	74-83-9	50	5	0.19	U	P	0.19	U	0.19	U	Both ND	0.19	U	P	1.61	U	1.94	U	Both ND
Carbon Disulfide	75-15-0	7000	700	0.16	U	P	7.16		10.3		*36.0*	0.16	U	P	29.6		37.7		24.1
Carbon Tetrachloride	56-23-5	160	16	0.38		P	0.38		0.44		14.6	0.44		P	1.57	U	1.89		18.5
Chlorobenzene	108-90-7	600	60	0.46	U	P	0.46	U	0.46	U	Both ND	0.46	U	P	3.82	U	4.61	U	Both ND
Chloroethane	75-00-3	100000	10000	0.26	U	P	0.26	U	0.26	U	Both ND	0.26	U	P	2.19	U	2.64	U	Both ND
Chloroform	67-66-3	110	11	0.24	U	P	0.24	U	0.24	U	Both ND	0.24	U	P	3.66	J	4.88		28.6
Chloromethane	74-87-3	900	90	0.6		P	0.21	U	0.21	U	Both ND	0.74		P	1.71	U	2.07	U	Both ND
cis-1,3-Dichloropropene	10061-01-5	200	20	0.45	U	P	0.45	U	0.45	U	Both ND	0.45	U	P	3.77	U	4.54	U	Both ND

Table 5-6
Field Quality Control Summary - Air Samples
O'Donovan USAFRC, Albany, NY

Sample ID				OA-1		SV-10		DUP			AMBIENTAIR			SV-12		DUP-32513		
Sampling Date				3/22/2013		3/22/2013		3/22/2013			3/25/2013			3/25/2013		3/25/2013		
Field QC Type		Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Ambient Blank Soil Gas	P/F			Duplicate SV-10		RPD	Ambient Blank SG	P/F				Duplicate SV-12		RPD
Dilution Factor				1		1		1			1			8.3		10		
Units		Ug/M3	Ug/M3	Ug/M3		Ug/M3		Ug/M3			Ug/M3			Ug/M3		Ug/M3		
COMPOUND	CAS #																	
Dibromochloromethane	124-48-1	100	10	0.43 U	P	0.43 U		0.43 U		Both ND	0.43 U	P		3.54 U		4.26 U		Both ND
Dichlorodifluoromethane	75-71-8	2000	200	1.34	P	1.38		1.29		6.7	1.43	P		2.05 U		2.47 U		Both ND
Ethyl Benzene	100-41-4	2200	220	0.43 U	P	23.5		45.2		*63.2*	0.43 U	P		9.12		6.95		27.0
m/p-Xylene	179601-23-1	70000	7000	0.87 U	P	59.9		128		*72.5*	0.87 U	P		27.8		20		32.6
Methylene Chloride	75-09-2	5200	60	1.01	P	4.52		0.17 U		Both ND	1.29	P		10.8		12.2		12.2
o-Xylene	95-47-6	70000	7000	0.43 U	P	15.2		39.5		88.8	0.43 U	P		6.95		5.21		28.6
Styrene	100-42-5	10000	1000	0.43 U	P	2.09		7.66		*114.3*	0.43 U	P		3.53 U		4.26 U		Both ND
t-1,3-Dichloropropene	10061-02-6	200	20	0.45 U	P	0.45 U		0.45 U		Both ND	0.45 U	P		3.77 U		4.54 U		Both ND
Tetrachloroethene	127-18-4	810	100	0.2 U	P	1.22		2.1		*53.0*	0.2 U	P		1.7 U		8.14		*130.9*
Toluene	108-88-3	4000	400	0.45	P	177 D		307 D		*53.7*	0.34 J	P		122		142		15.2
trans-1,2-Dichloroethene	156-60-5	700	70	0.2 U	P	0.2 U		0.2 U		Both ND	0.2 U	P		1.65 U		1.98 U		Both ND
Trichloroethene	79-01-6	22	5	0.08 U	P	0.08 U		1.61		*181.1*	0.08 U	P		9.14		**90.3**		**163.2**
Trichlorofluoromethane	75-69-4	7000	70	0.96	P	1.07		1.07		0.0	1.24	P		2.36 J		3.37 J		*35.3*
Vinyl Chloride	75-01-4	280	28	0.08 U	P	0.08 U		0.08 U		Both ND	0.08 U	P		0.64 U		0.77 U		Both ND

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

Values in **bold** are above applicable limt (IA/TSGC-SS)

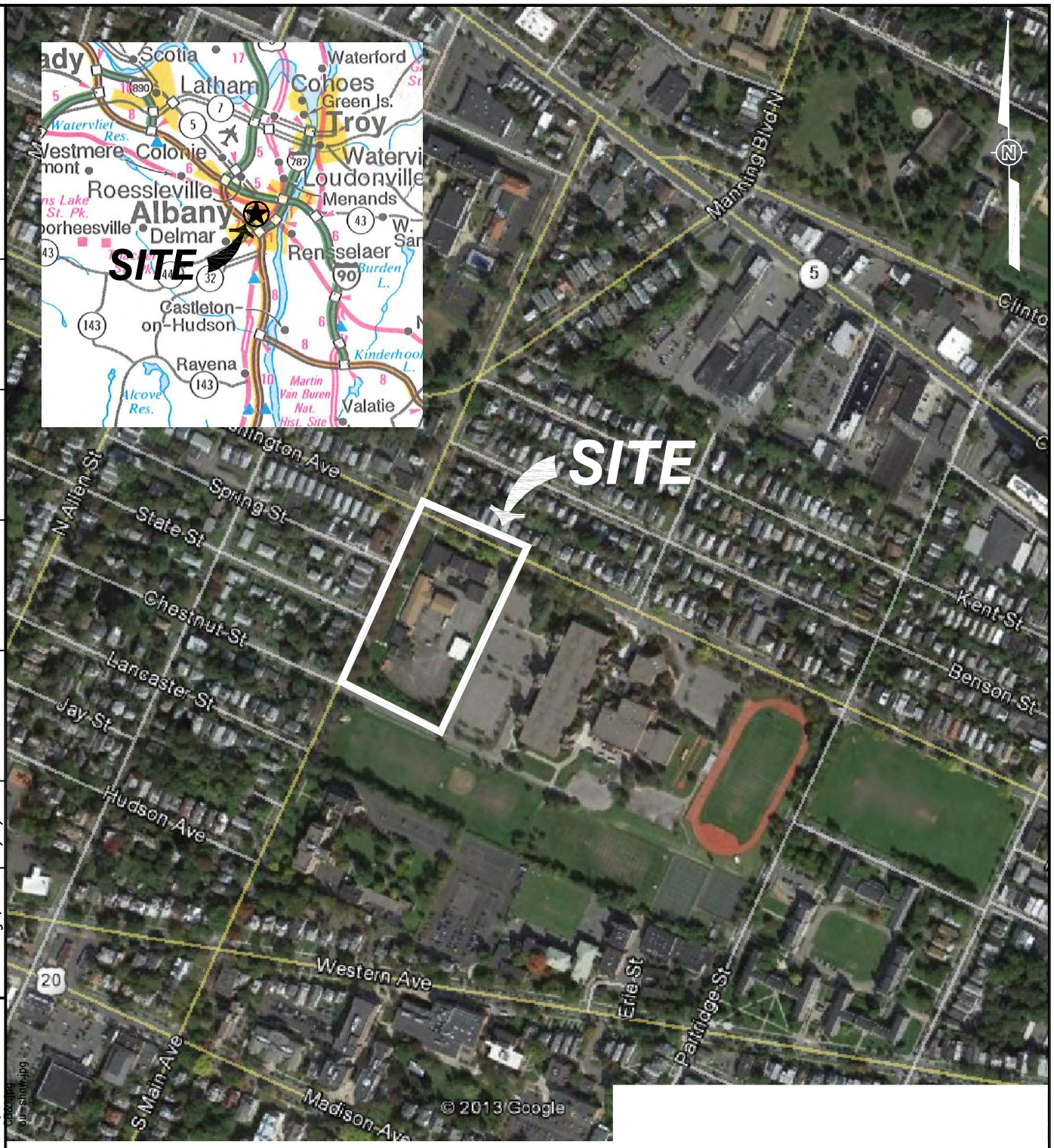
P/F-Pass/Fail comparison to Blank criteria (<1/10 criteria)

RPD-Relative Percent Difference

RPD values in *italics* are above RPD limit (35) without differing against criteria limit

RPD values in **bold** are above RPD limits and differ with regards to criteria comparison

FIGURES



S C A L E

0 500 1000 FEET

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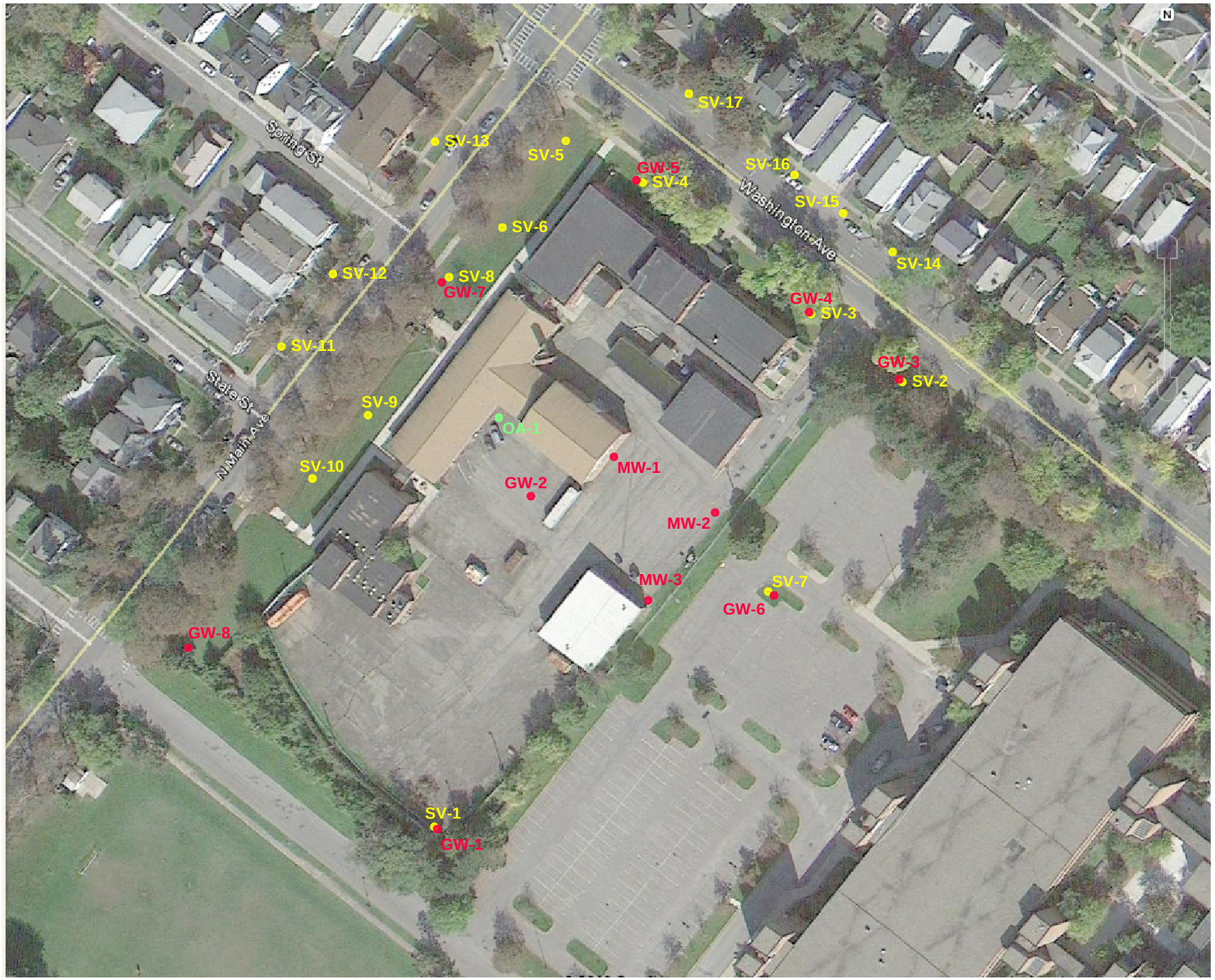
Plot Date/Time: May 13, 2013 - 9:16am
Plotted By: greg.jones

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, PA 15146

MAJOR JAMES J. O'DONOVAN
UNITED STATES ARMED FORCES RESERVE CENTER
ALBANY, NEW YORK

FIGURE 1

SITE LOCATION MAP



LEGEND:

- GROUNDWATER SAMPLE LOCATION
- SOIL VAPOR SAMPLE LOCATION
- OUTDOOR AIR SAMPLE LOCATION

REFERENCE:

BASE MAP FROM GOOGLE EARTH.

SCALE

0 100 200 FEET

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, PA 15146

MAJOR JAMES J. O'DONOVAN
UNITED STATES ARMED FORCES RESERVE CENTER
ALBANY, NEW YORK

FIGURE 2
GROUNDWATER MONITORING WELL AND SOIL VAPOR POINT AND OUTDOOR AIR LOCATIONS

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
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Plotted By: greg.jones

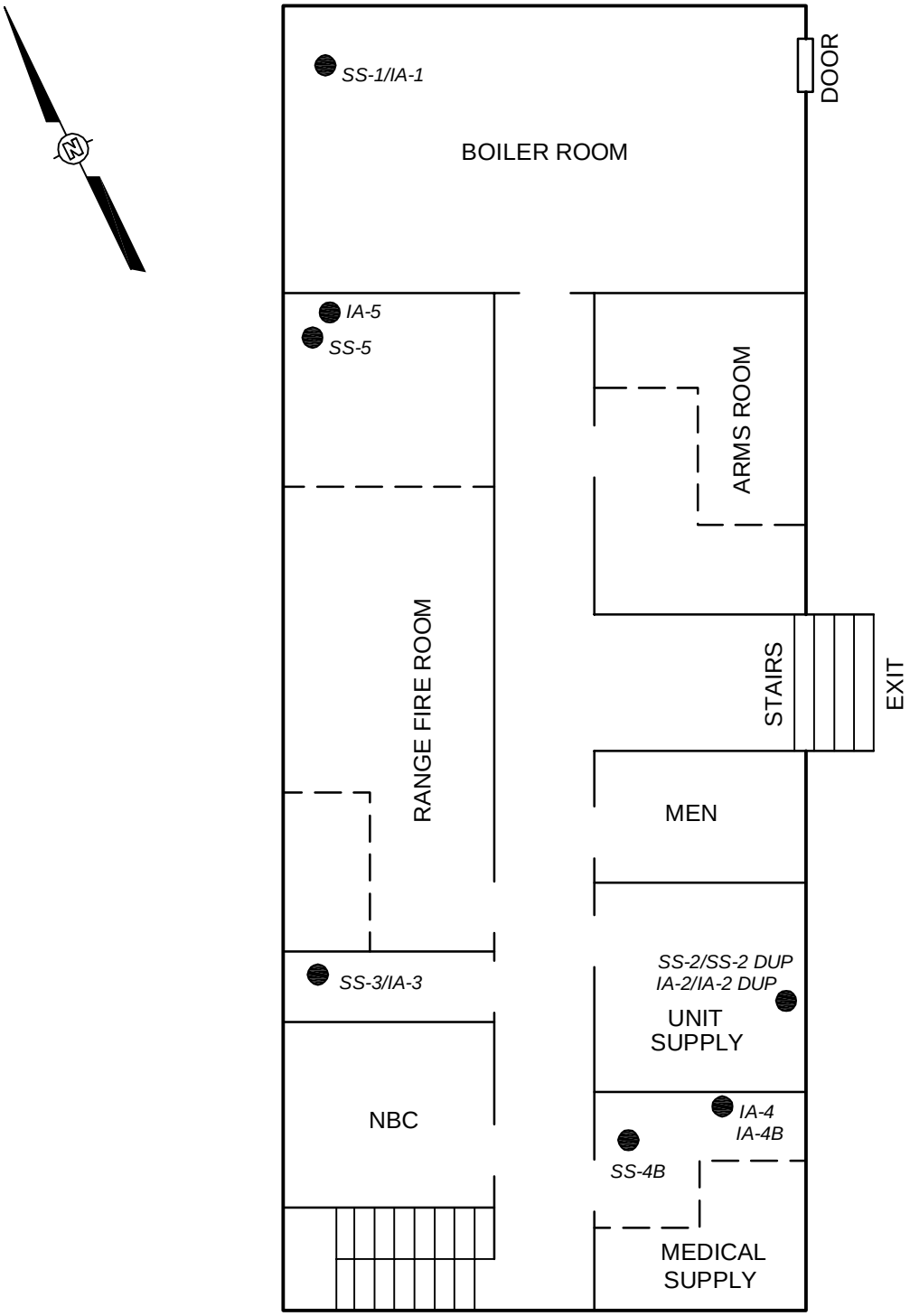

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Image : CB&I.jpg
ou-shaw.jpg

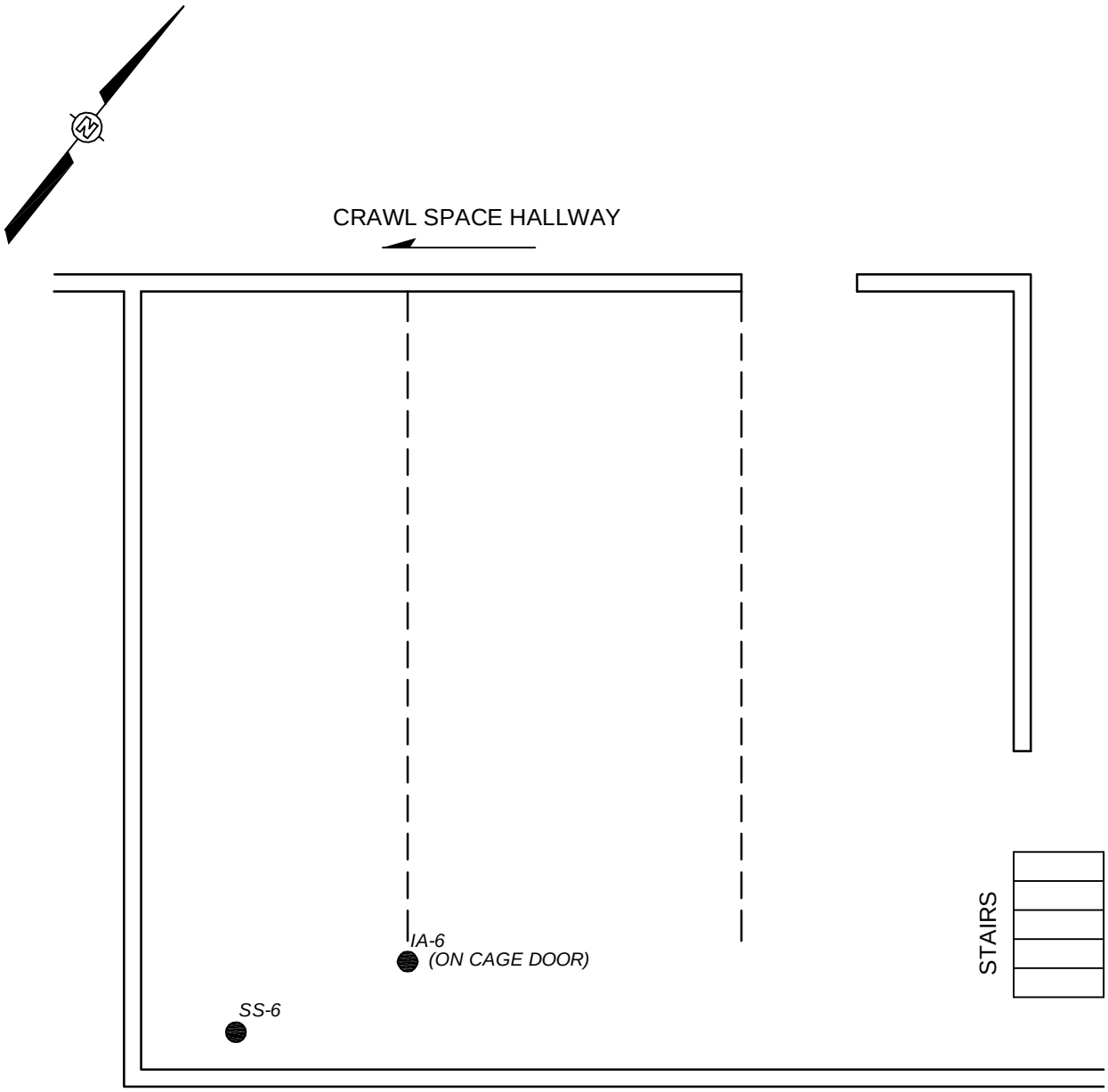
File: O:\Project\149092\149092-A5.dwg
Plot Date/Time: May 08, 2013 - 3:13pm
Plotted By: greg.jones

"NOT TO SCALE"

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, PA 15146

MAJOR JAMES J. O'DONOVAN
UNITED STATES ARMED FORCES RESERVE CENTER
ALBANY, NEW YORK

FIGURE 3
ARMY BASEMENT INDOOR AIR SAMPLE LOCATIONS



OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	-/-/--	--	--	--	--	149092-A3

Xref :
Image : CB&I.jpg
ou-shaw.jpg

File: O:\Project\149092\149092-A3.dwg
Plot Date/Time: May 08, 2013 - 12:50pm
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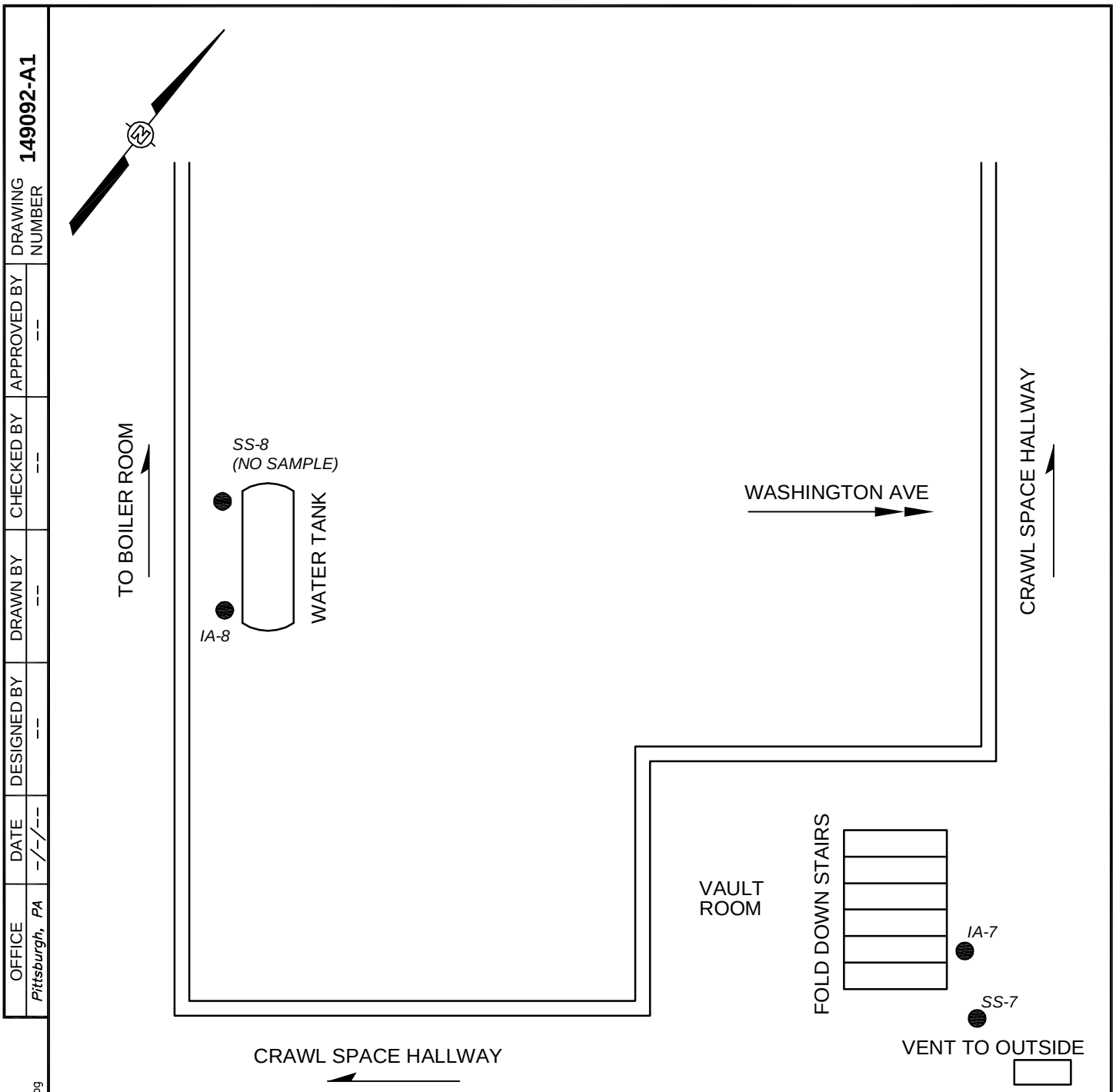
FIGURE 4
NAVY BOILER ROOM INDOOR AIR SAMPLING LOCATIONS



OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	-/-/--	--	--	--	--	149092-A1

Xref :
Image : CB&I.jpg
ou-shaw.jpg

File: O:\Project\149092\149092-A1.dwg
Plot Date/Time: May 08, 2013 - 12:48pm
Plotted By: greg.jones

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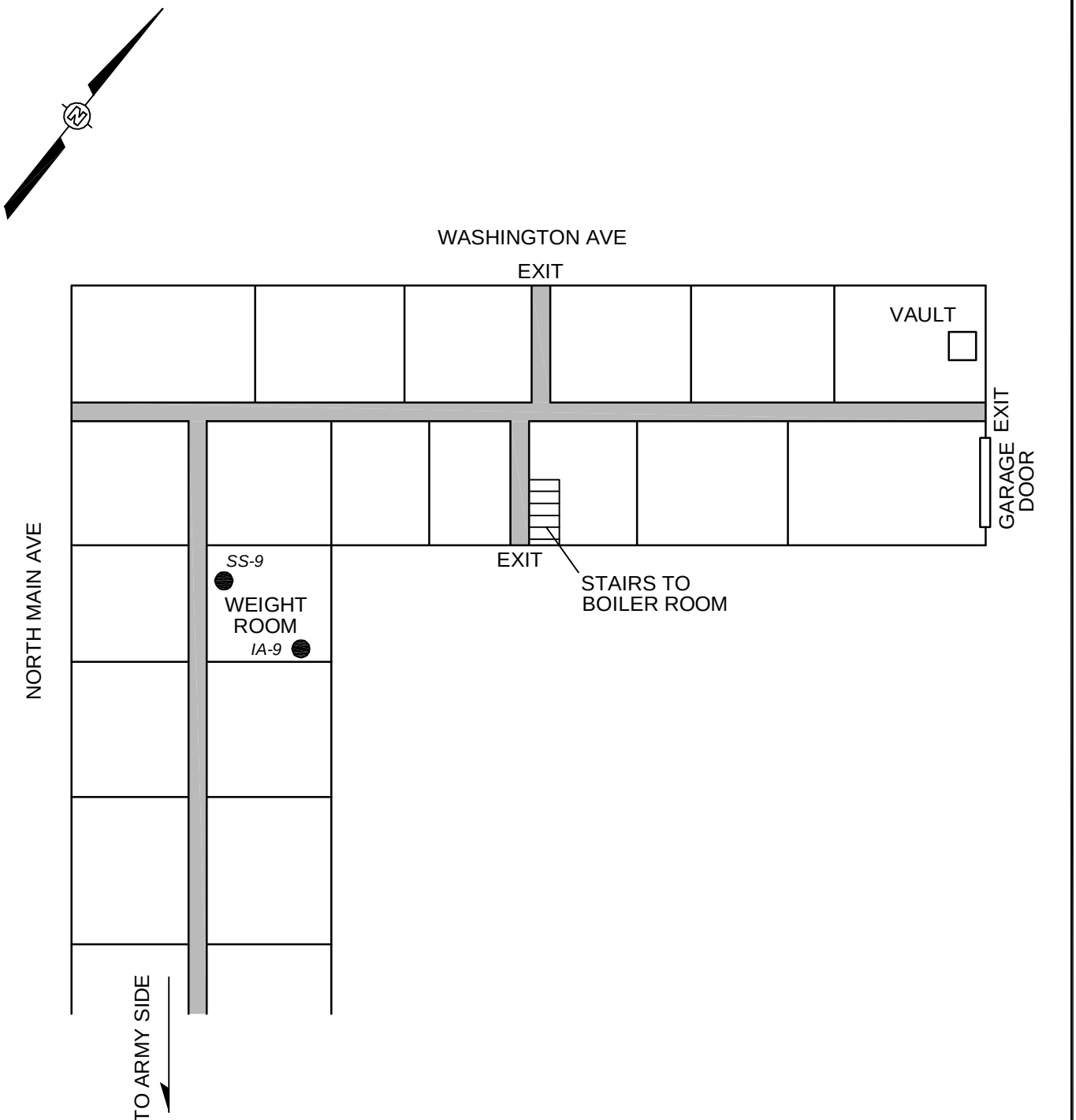
FIGURE 5
NAVY "VAULT" INDOOR AIR SAMPLING LOCATIONS



OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	-/-/--	--	--	--	--	**149092-A2**

Xref :
Image : CB&I.jpg
ou-shaw.jpg

File: O:\Project\149092\149092-A2.dwg
Plot Date/Time: May 08, 2013 - 12:46pm
Plotted By: greg.jones

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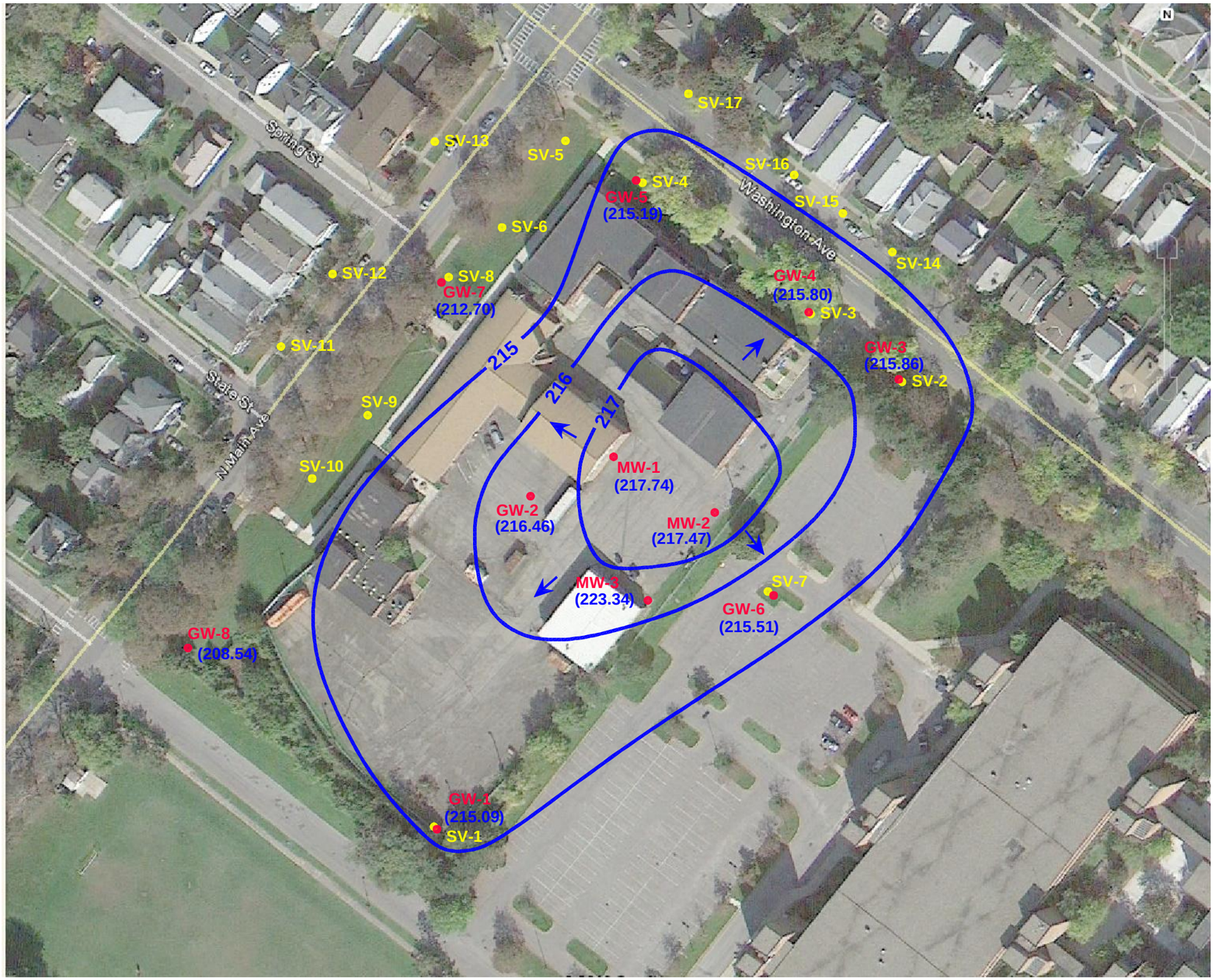
FIGURE 6
NAVY 1ST. FLOOR INDOOR AIR SAMPLING LOCATIONS



LEGEND:

- GROUNDWATER SAMPLE LOCATION
- SOIL VAPOR SAMPLE LOCATION
- GROUNDWATER ELEVATION CONTOUR (FEET AMSL)
- (215.51) GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION

NOTES:

1. MW-3 NOT USED TO CONSTRUCT CONTOUR MAP; PERCHED WATER
2. FEET AMSL = FEET ABOVE MEAN SEA LEVEL

REFERENCE:

BASE MAP FROM GOOGLE EARTH.

SCALE

0 100 200 FEET

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2790 Mosside Boulevard
Monroeville, PA 15146

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FIGURE 7
GROUNDWATER ELEVATION CONTOUR MAP

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	-/-/--	--	--	--	--	149092-B2

Xref :
Image : A$C6D777DA6.dib
CB&I.jpg
ou-smow.jpg

File: O:\Project\149092\149092-B2.dwg
Plot Date/Time: May 08, 2013 - 12:53pm
Plotted By: greg.jones

DRAWING NUMBER 149092-B3
APPROVED BY --
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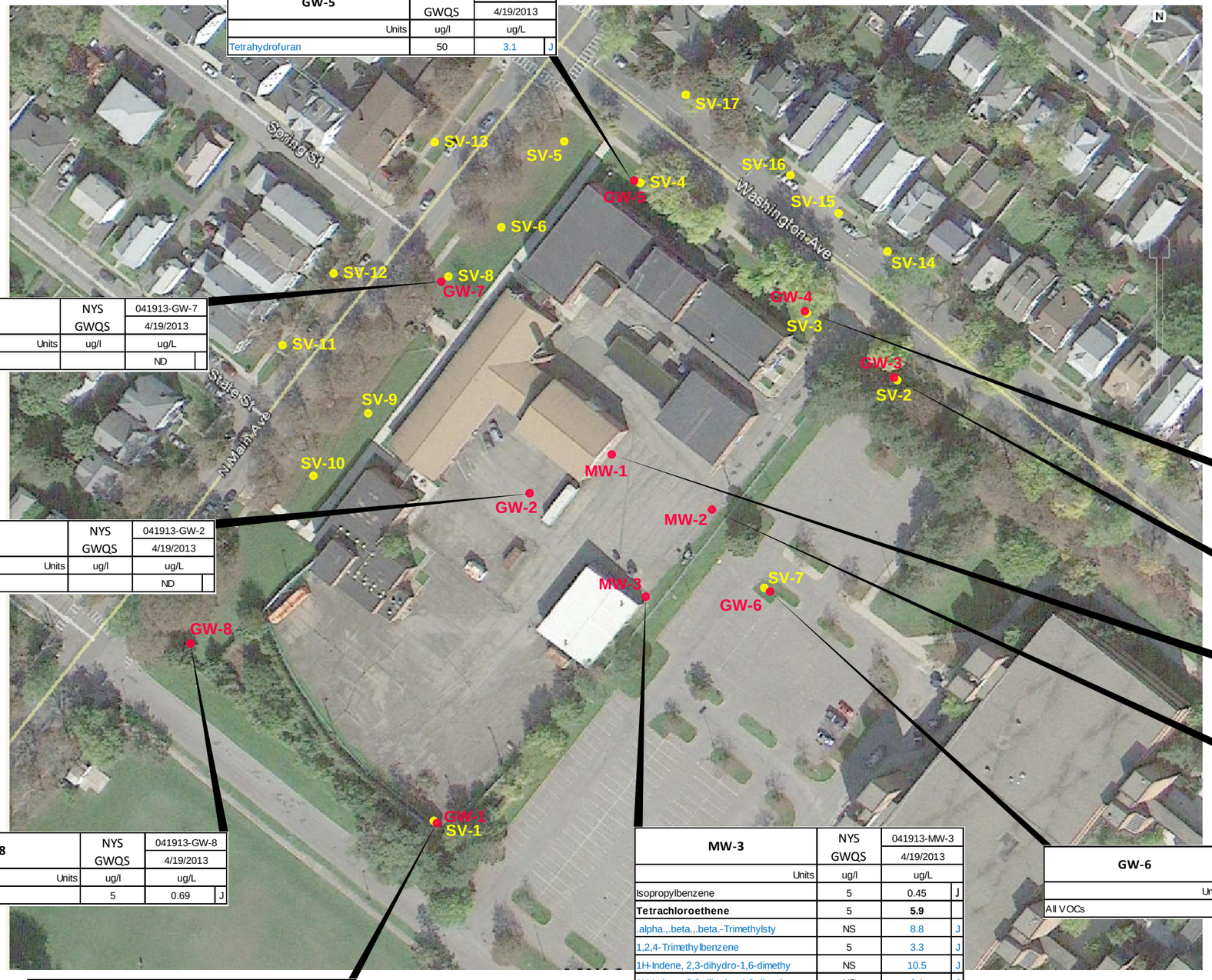
DRAWN BY --
DESIGNED BY --
DATE --/--/--
OFFICE Pittsburgh, PA



GW-5	NYS GWQS	041913-GW-5	
		4/19/2013	
Units	ug/l	ug/L	
Tetrahydrofuran	50	3.1	J

GW-7	NYS GWQS	041913-GW-7
		4/19/2013
Units	ug/l	ug/L
All VOCs		ND

GW-2	NYS GWQS	041913-GW-2
		4/19/2013
Units	ug/l	ug/L
All VOCs		ND

GW-8	NYS GWQS	041913-GW-8	
		4/19/2013	
Units	ug/l	ug/L	
Tetrachloroethene	5	0.69	J

GW-1	NYS GWQS	041913-GW-1
		4/19/2013
Units	ug/l	ug/L
All VOCs		ND

MW-3	NYS GWQS	041913-MW-3	
		4/19/2013	
Units	ug/l	ug/L	
Isopropylbenzene	5	0.45	J
Tetrachloroethene	5	**5.9**	
.alpha.,.beta.,.beta.-Trimethylsty	NS	8.8	J
1,2,4-Trimethylbenzene	5	3.3	J
1H-Indene, 2,3-dihydro-1,6-dimethy	NS	10.5	J
1H-Indene, 2,3-dihydro-4,6-dimethy	NS	6.1	J
Benzene, 1,2,3,4-tetramethyl-	NS	6.4	J
Benzene, 1-ethenyl-4-ethyl-	NS	13.4	J
Benzene, 1-ethyl-3,5-dimethyl-	NS	8.2	J
Indan, 1-methyl-	NS	6.2	J
Naphthalene, 1,2,3,4-tetrahydro-5-	NS	6.6	J
Naphthalene, 1-methyl-	NS	19.6	J
n-Butylbenzene	5	0.93	J
n-propylbenzene	5	0.93	J
sec-Butylbenzene	5	0.9	J

GW-6	NYS GWQS	041913-GW-6
		4/19/2013
Units	ug/l	ug/L
All VOCs		ND

GW-4	NYS GWQS	041913-GW-4
		4/19/2013
Units	ug/l	ug/L
Acetone	50	6.1

GW-3	NYS GWQS	041913-GW-3
		4/19/2013
Units	ug/l	ug/L
All VOCs		ND

MW-1	NYS GWQS	041913-MW-1	041913-DUP
		4/19/2013	4/19/2013
Units	ug/l	ug/L	ug/L
Tetrachloroethene	5	1.3	1.1

MW-2	NYS GWQS	041913-MW-2
		4/19/2013
Units	ug/l	ug/L
Tetrachloroethene	5	**49.1**

LEGEND:

- **GROUNDWATER SAMPLE LOCATION**
- **SOIL VAPOR SAMPLE LOCATION**

ND = Not detected

NS - None Specified

NYS GWQS = New York State Groundw ater Quality Standards

ug/L = micrograms per liter

VOCs = volatile organic compounds

Values in **bold** are above NYS GWQS from TOGS 111

Tentitively Identified Compounds (TICs) are in blue. Reported concentrations are semi-quantitative estimates derived from single-point response factors

Data Qualifiers

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.. The concentration given is an approximate value.

REFERENCE:

BASE MAP FROM GOOGLE EARTH.

SCALE

0 100 200 FEET

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Monroeville, PA 15146

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FIGURE 8

GROUNDWATER ANALYTICAL RESULTS

Xref : Image : A1C6D777DA6.dib CB&I.jpg 00-snow.jpg

File: O:\Project\149092\149092-B3.dwg
Plot Date/Time: May 08, 2013 - 7:13am
Plotted By: greg.jones

DRAWING NUMBER 149092-B6
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DRAWN BY --
DESIGNED BY --
DATE -/-/--
OFFICE Pittsburgh, PA

Xref : Image : A5C6D777DA6.dib CB&I.jpg 0_Basemap.jpg

File: O:\Project\149092\149092-B6.dwg
Plot Date/Time: May 08, 2013 - 7:26am
Plotted By: greg.jones

SS-1 / IA-1

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-1 Result	SS-1 Qual.	IA-1 Result	IA-1 Qual.
Sample ID				SS-1		IA-1	
Date				3/18/2013		3/18/2013	
Sample Type and Location				Sub Slab Boiler Room Army		Indoor Air Boiler Room Army	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.49		0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.57		0.44	
Tetrachloroethene	810	100*	ug/M³	4.48		0.2	U
Trichloroethene	22	5*	ug/M³	**52.1**		**6.45**	

SS-9 / IA-9

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-9 Result	SS-9 Qual.	IA-9 Result	IA-9 Qual.	IA-9RE Result	IA-9RE Qual.
Sample ID				SS-9		IA-9		IA-9RE	
Date				3/20/2013		3/20/2013		3/20/2013	
Sample Type and Location				Sub Slab Weight Room Navy		Indoor Air Weight Room Navy		Indoor Air Weight Room Navy	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.49		0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.25		0.44		0.44	
Tetrachloroethene	810	100*	ug/M³	1.02		0.27		0.34	
Trichloroethene	22	5*	ug/M³	0.08	U	0.08	U	0.08	U

SS-5 / IA-5

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-5 Result	SS-5 Qual.	IA-5 Result	IA-5 Qual.
Sample ID				SS-5		IA-5	
Date				3/19/2013		3/19/2013	
Sample Type and Location				Sub Slab Firing Range		Indoor Air Firing Range	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.19	U	0.44	
Tetrachloroethene	810	100*	ug/M³	2.85		0.2	U
Trichloroethene	22	5*	ug/M³	**24.7**		0.16	

SS-6 / IA-6

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-6 Result	SS-6 Qual.	IA-6 Result	IA-6 Qual.	IA-6RE Result	IA-6RE Qual.
Sample ID				SS-6		IA-6		IA-6RE	
Date				3/20/2013		3/20/2013		3/20/2013	
Sample Type and Location				Sub Slab Boiler Room Navy		Indoor Air Boiler Room Navy		Indoor Air Boiler Room Navy	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.16	U	0.16	U	0.16	
Carbon Tetrachloride	160	16	ug/M³	0.44		0.44		0.57	
Tetrachloroethene	810	100*	ug/M³	0.2	U	0.61		0.95	
Trichloroethene	22	5*	ug/M³	0.08	U	0.64		0.91	U

SS-2 / IA-2

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-2 Result	SS-2 Qual.	IA-2 Result	IA-2 Qual.
Sample ID				SS-2		IA-2	
Date				3/19/2013		3/19/2013	
Sample Type and Location				Sub Slab Unit Supply Room		Indoor Air Unit Supply Room	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.27		0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.5		0.19	U
Tetrachloroethene	810	100*	ug/M³	3.73		0.2	U
Trichloroethene	22	5*	ug/M³	1.5		0.08	U

IA-8

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	IA-8 Result	IA-8 Qual.	IA-8RE Result	IA-8RE Qual.
Sample ID				IA-8		IA-8RE	
Date				3/20/2013		3/20/2013	
Sample Type and Location				Indoor Air Vault Water Tank		Indoor Air Vault Water Tank	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.44		0.44	
Tetrachloroethene	810	100*	ug/M³	0.2	U	0.2	U
Trichloroethene	22	5*	ug/M³	4.51		4.73	

SS-3 / IA-3

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-3 Result	SS-3 Qual.	IA-3 Result	IA-3 Qual.
Sample ID				SS-3		IA-3	
Date				3/19/2013		3/19/2013	
Sample Type and Location				Sub Slab Firing Range Back		Indoor Air Firing Range Back	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.44		0.57	
Tetrachloroethene	810	100*	ug/M³	3.59		1.42	
Trichloroethene	22	5*	ug/M³	0.21		**44.1**	

SS-7 / IA-7

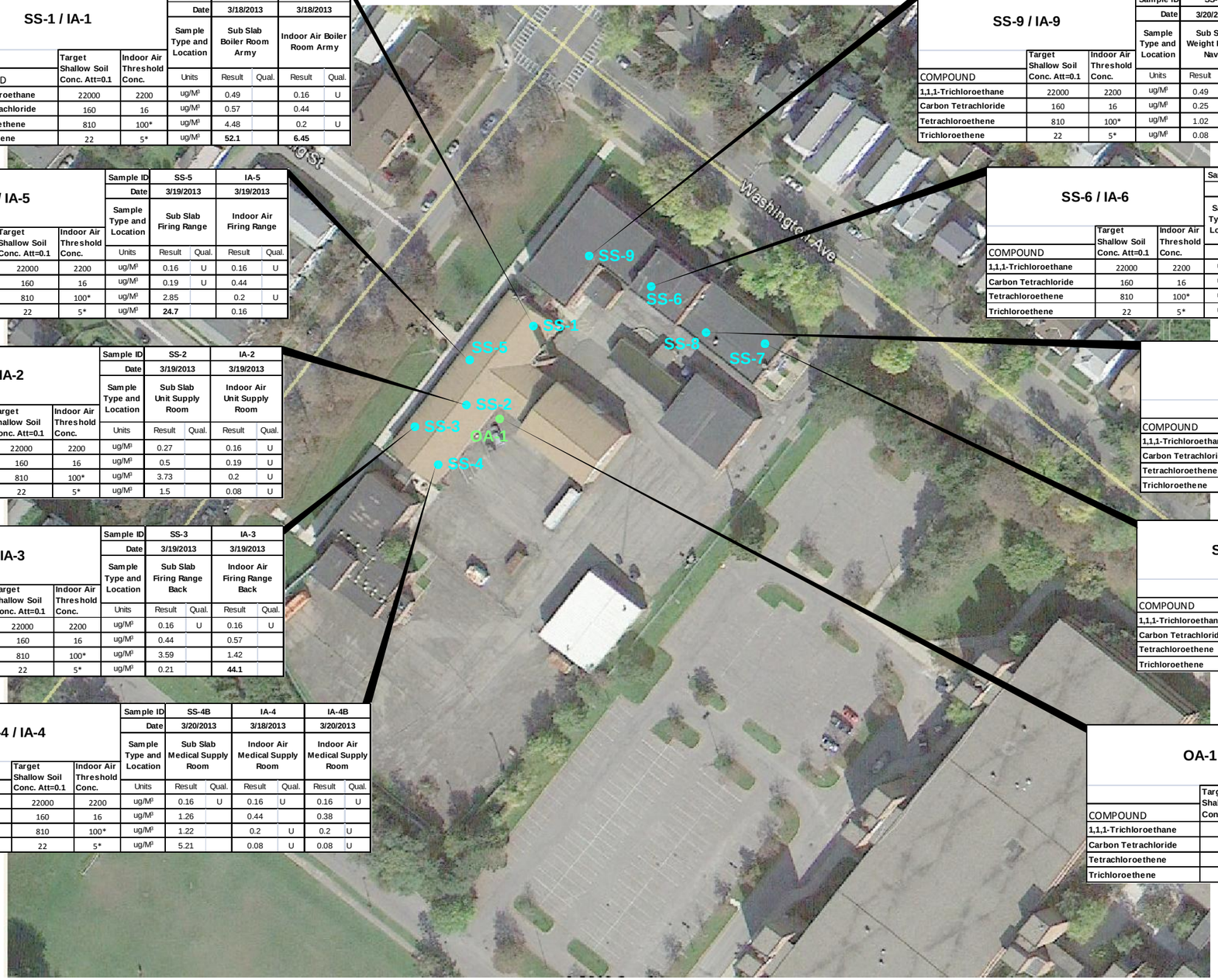
COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-7 Result	SS-7 Qual.	IA-7 Result	IA-7 Qual.
Sample ID				SS-7		IA-7	
Date				3/20/2013		3/20/2013	
Sample Type and Location				Sub Slab Vault Navy Side		Indoor Air Vault Navy Side	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.38		0.16	U
Carbon Tetrachloride	160	16	ug/M³	0.19	U	0.38	
Tetrachloroethene	810	100*	ug/M³	1.29		0.54	
Trichloroethene	22	5*	ug/M³	5.21		2.2	

SS-4 / IA-4

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	SS-4B Result	SS-4B Qual.	IA-4 Result	IA-4 Qual.	IA-4B Result	IA-4B Qual.
Sample ID				SS-4B		IA-4		IA-4B	
Date				3/20/2013		3/18/2013		3/20/2013	
Sample Type and Location				Sub Slab Medical Supply Room		Indoor Air Medical Supply Room		Indoor Air Medical Supply Room	
1,1,1-Trichloroethane	22000	2200	ug/M³	0.16	U	0.16	U	0.16	U
Carbon Tetrachloride	160	16	ug/M³	1.26		0.44		0.38	
Tetrachloroethene	810	100*	ug/M³	1.22		0.2	U	0.2	U
Trichloroethene	22	5*	ug/M³	5.21		0.08	U	0.08	U

OA-1

COMPOUND	Target Shallow Soil Conc. Att=0.1	Indoor Air Threshold Conc.	Units	OA-1 Result	OA-1 Qual.
Sample ID				OA-1	
Date				3/19/2013	
Sample Type and Location				Outdoor Air	
1,1,1-Trichloroethane	NA	NA	ug/M³	0.16	U
Carbon Tetrachloride	NA	NA	ug/M³	0.38	
Tetrachloroethene	NA	NA	ug/M³	0.2	U
Trichloroethene	NA	NA	ug/M³	0.08	U



LEGEND:

- BUILDING SAMPLE LOCATION
- OUTDOOR AIR SAMPLE LOCATION

Qualifiers and notes

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.
The concentration given is an approximate value.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

Values in **bold** are above Indoor Air Threshold Concentration

*-Indoor Air Threshold Concentration from NY requirements

RE-sample reanalyzed due to QC issue-both results provided for comparison

REFERENCE:

BASE MAP FROM GOOGLE EARTH.

SCALE
0 100 200 FEET

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, PA 15146

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FIGURE 9

SUB-SLAB INDOOR AIR, OUTDOOR AIR TARGET COMPOUND ANALYTICAL RESULTS

DRAWING NUMBER 149092-B4
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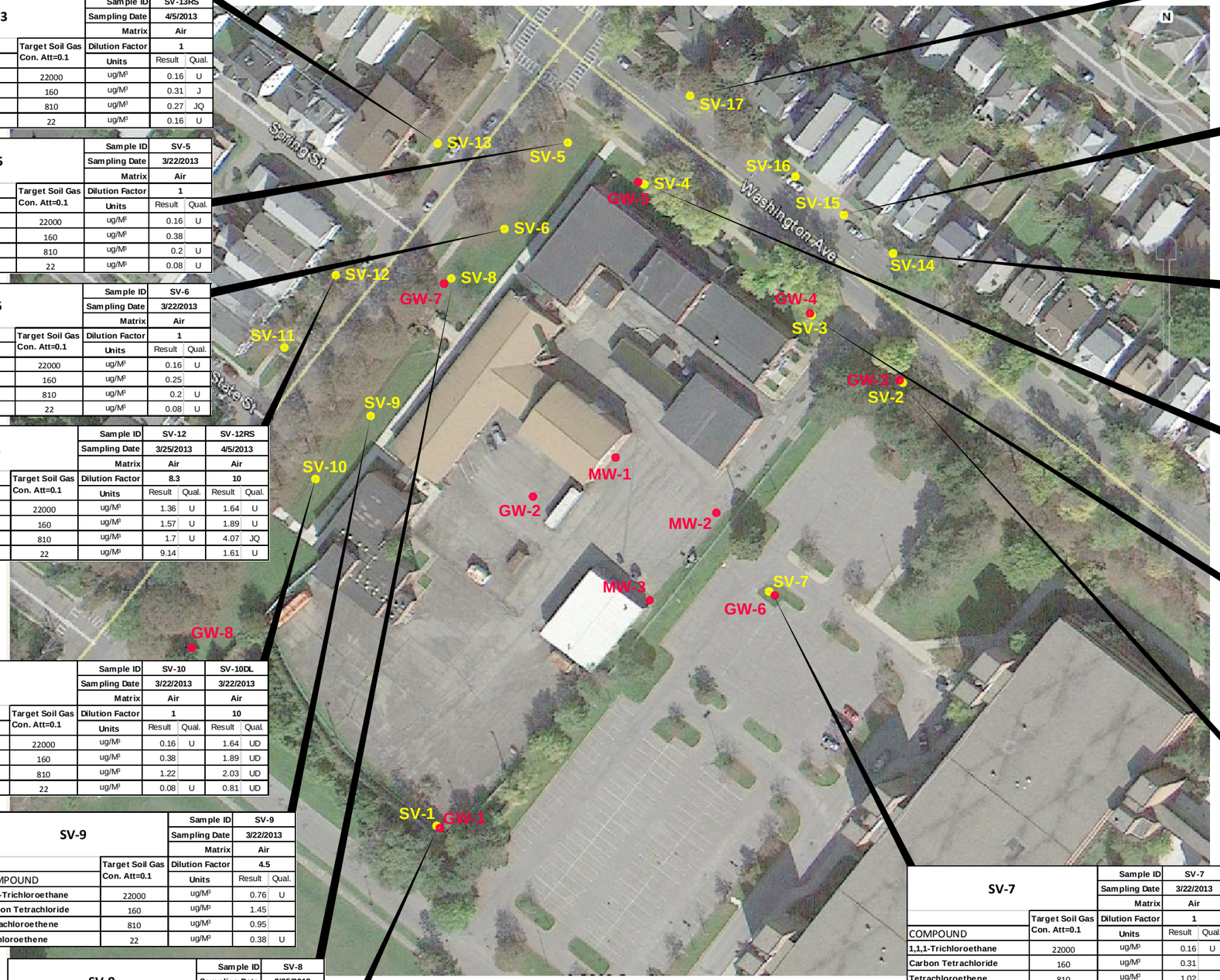


SV-13		Sample ID	SV-13RS
		Sampling Date	4/5/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	1
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16 U
Carbon Tetrachloride	160	ug/M³	0.31 J
Tetrachloroethene	810	ug/M³	0.27 JQ
Trichloroethene	22	ug/M³	0.16 U

SV-5		Sample ID	SV-5
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	1
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16 U
Carbon Tetrachloride	160	ug/M³	0.38
Tetrachloroethene	810	ug/M³	0.2 U
Trichloroethene	22	ug/M³	0.08 U

SV-6		Sample ID	SV-6
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	1
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16 U
Carbon Tetrachloride	160	ug/M³	0.25
Tetrachloroethene	810	ug/M³	0.2 U
Trichloroethene	22	ug/M³	0.08 U

SV-12		Sample ID	SV-12		SV-12RS	
		Sampling Date	3/25/2013		4/5/2013	
		Matrix	Air		Air	
	Target Soil Gas Con. Att=0.1	Dilution Factor	8.3		10	
COMPOUND		Units	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	22000	ug/M³	1.36	U	1.64	U
Carbon Tetrachloride	160	ug/M³	1.57	U	1.89	U
Tetrachloroethene	810	ug/M³	1.7	U	4.07	JQ
Trichloroethene	22	ug/M³	9.14		1.61	U

SV-10		Sample ID	SV-10		SV-10DL	
		Sampling Date	3/22/2013		3/22/2013	
		Matrix	Air		Air	
	Target Soil Gas Con. Att=0.1	Dilution Factor	1		10	
COMPOUND		Units	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16	U	1.64	UD
Carbon Tetrachloride	160	ug/M³	0.38		1.89	UD
Tetrachloroethene	810	ug/M³	1.22		2.03	UD
Trichloroethene	22	ug/M³	0.08	U	0.81	UD

SV-9		Sample ID	SV-9
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	4.5
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.76 U
Carbon Tetrachloride	160	ug/M³	1.45
Tetrachloroethene	810	ug/M³	0.95
Trichloroethene	22	ug/M³	0.38 U

SV-8		Sample ID	SV-8
		Sampling Date	3/25/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	10
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	1.64 U
Carbon Tetrachloride	160	ug/M³	2.52
Tetrachloroethene	810	ug/M³	2.03 U
Trichloroethene	22	ug/M³	23.1

SV-1		Sample ID	SV-1
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	5
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.82 U
Carbon Tetrachloride	160	ug/M³	0.94 U
Tetrachloroethene	810	ug/M³	2.03
Trichloroethene	22	ug/M³	0.4 U

SV-7		Sample ID	SV-7
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	1
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16 U
Carbon Tetrachloride	160	ug/M³	0.31
Tetrachloroethene	810	ug/M³	1.02
Trichloroethene	22	ug/M³	29

SV-17		Sample ID	SV-17
		Sampling Date	3/25/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	2.5
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.44 U
Carbon Tetrachloride	160	ug/M³	0.94
Tetrachloroethene	810	ug/M³	0.54
Trichloroethene	22	ug/M³	0.97

SV-15		Sample ID	SV-15		SV-15DL	
		Sampling Date	3/25/2013		3/25/2013	
		Matrix	Air		Air	
	Target Soil Gas Con. Att=0.1	Dilution Factor	5		10	
COMPOUND		Units	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.82	U	1.64	UD
Carbon Tetrachloride	160	ug/M³	1.89		1.89	UD
Tetrachloroethene	810	ug/M³	1.36		2.03	UD
Trichloroethene	22	ug/M³	1.88		0.81	UD

SV-14		Sample ID	SV-14		SV-14DL	
		Sampling Date	3/25/2013		3/25/2013	
		Matrix	Air		Air	
	Target Soil Gas Con. Att=0.1	Dilution Factor	5		10	
COMPOUND		Units	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.82	U	1.64	UD
Carbon Tetrachloride	160	ug/M³	1.57		1.89	UD
Tetrachloroethene	810	ug/M³	1.02	U	2.03	UD
Trichloroethene	22	ug/M³	9.14		8.06	D

SV-4		Sample ID	SV-4
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	1
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.16 U
Carbon Tetrachloride	160	ug/M³	0.69
Tetrachloroethene	810	ug/M³	0.88
Trichloroethene	22	ug/M³	1.45

SV-3		Sample ID	SV-3
		Sampling Date	3/22/2013
		Matrix	Air
	Target Soil Gas Con. Att=0.1	Dilution Factor	3.3
COMPOUND		Units	Result Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.55 U
Carbon Tetrachloride	160	ug/M³	0.82
Tetrachloroethene	810	ug/M³	2.03
Trichloroethene	22	ug/M³	11.3

SV-2		Sample ID	SV-2		SV-2DL	
		Sampling Date	3/22/2013		3/22/2013	
		Matrix	Air		Air	
	Target Soil Gas Con. Att=0.1	Dilution Factor	1		10	
COMPOUND		Units	Result	Qual.	Result	Qual.
1,1,1-Trichloroethane	22000	ug/M³	0.82		136	UD
Carbon Tetrachloride	160	ug/M³	1.2		157	UD
Tetrachloroethene	810	ug/M³	1.97		169	UD
Trichloroethene	22	ug/M³	7.52		134	UD

LEGEND:

- GROUNDWATER SAMPLE LOCATION
- SOIL VAPOR SAMPLE LOCATION

SCALE
0 100 200 FEET

REFERENCE:

BASE MAP FROM GOOGLE EARTH.

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, PA 15146

MAJOR JAMES J. O'DONOVAN
UNITED STATES ARMED FORCES RESERVE CENTER
ALBANY, NEW YORK

FIGURE 10
SOIL GAS TARGET COMPOUND ANALYTICAL RESULTS

Xref : Image : A$C6D777DA6.dib C8&I.jpg 08-SHOW.jpg

File: O:\Project\149092\149092-B4.dwg
Plot Date/Time: May 08, 2013 - 7:28am
Plotted By: greg.jones

APPENDIX A

NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Heather Fariello Date/Time Prepared 3/20/13

Preparer's Affiliation CB&I Phone No. 518-785-2346

Purpose of Investigation Indoor Air Assessment of Mjr. J. O'Donovan USAFRC

1. OCCUPANT: US Army

Interviewed: **Y** / **N**

Last Name: Baldaut First Name: Michael

Address: 90 N. Main Avenue, Albany, NY

County: Albany

Home Phone: _____ Office Phone: 845-392-0538

Number of Occupants/persons at this location 5 Age of Occupants ~40s

Note: Drill weekends can have ~90 people

2. OWNER OR LANDLORD: (Check if same as occupant X)

Interviewed: **Y / N**

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: US Army Reserve Center

If the property is residential, type? (Circle appropriate response) N/A

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? 0

If the property is commercial, type? N/A

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? N/A

Other characteristics:

Number of floors 1 Building age 1955

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe: N/A

Airflow between floors

Stairs in middle hallway - doors open

Airflow near source

Outdoor air infiltration

Infiltration into air ducts

No air ducts present

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N	under stairs to hallway in boiler room		
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: 8-10 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor cracks; floor drain in boiler room

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: Central Air Window units Open Windows None

No window units in basement

Are there air distribution ducts present? Y / (N)

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom (Almost Never)

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	Storage
1st Floor	Offices
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / (N)

b. Does the garage have a separate heating unit? Y / N / (NA)

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / (N) / NA
Please specify_____

d. Has the building ever had a fire? Y / N When? unknown

e. Is a kerosene or unvented gas space heater present? Y / (N) Where? _____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type? _____

g. Is there smoking in the building? Y / (N) How frequently? _____

h. Have cleaning products been used recently? Y / (N) When & Type? _____

i. Have cosmetic products been used recently? Y / (N) When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / (N) Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / (N) Where & When? _____

l. Have air fresheners been used recently? Y / (N) When & Type? _____

m. Is there a kitchen exhaust fan? Y / (N) If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / (N) If yes, where vented?_____

o. Is there a clothes dryer? Y / (N) If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / (N) When & Type?_____

Are there odors in the building? Y / (N)
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / (N)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / (N)

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) (No)
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / (N) Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: (Public Water) Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: (Public Sewer) Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency) Not applicable

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

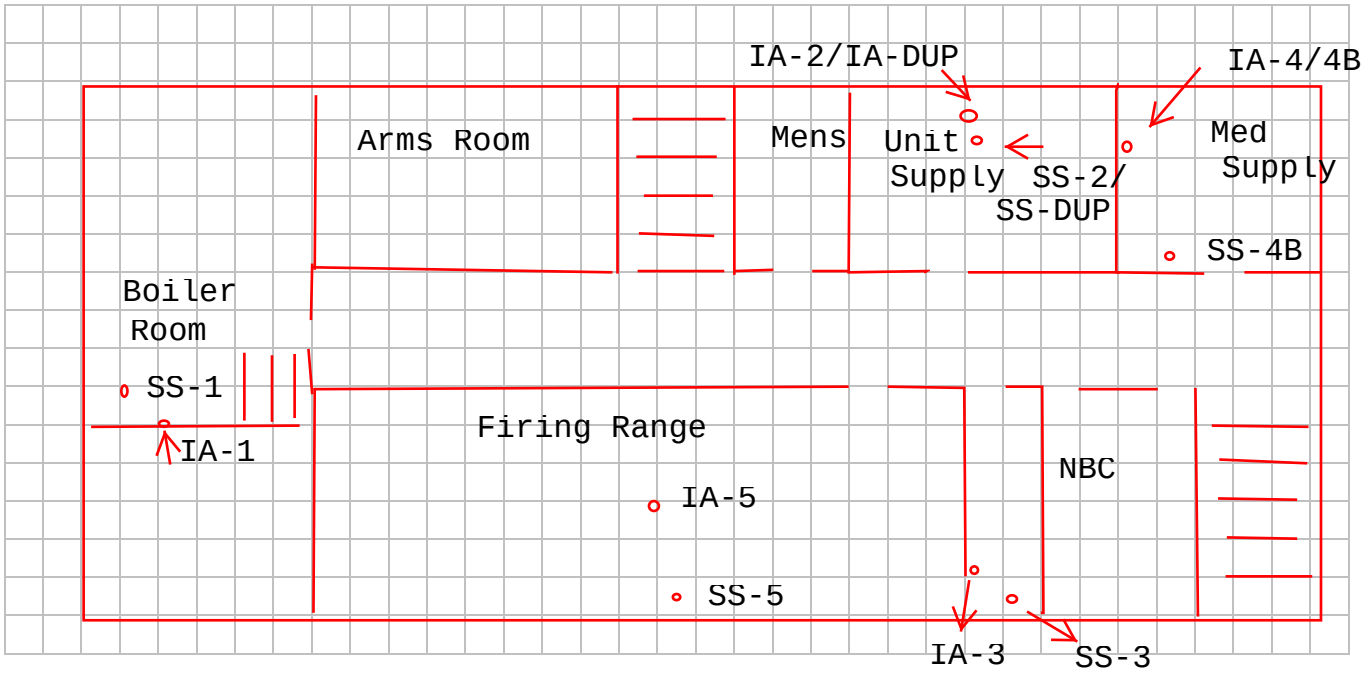
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

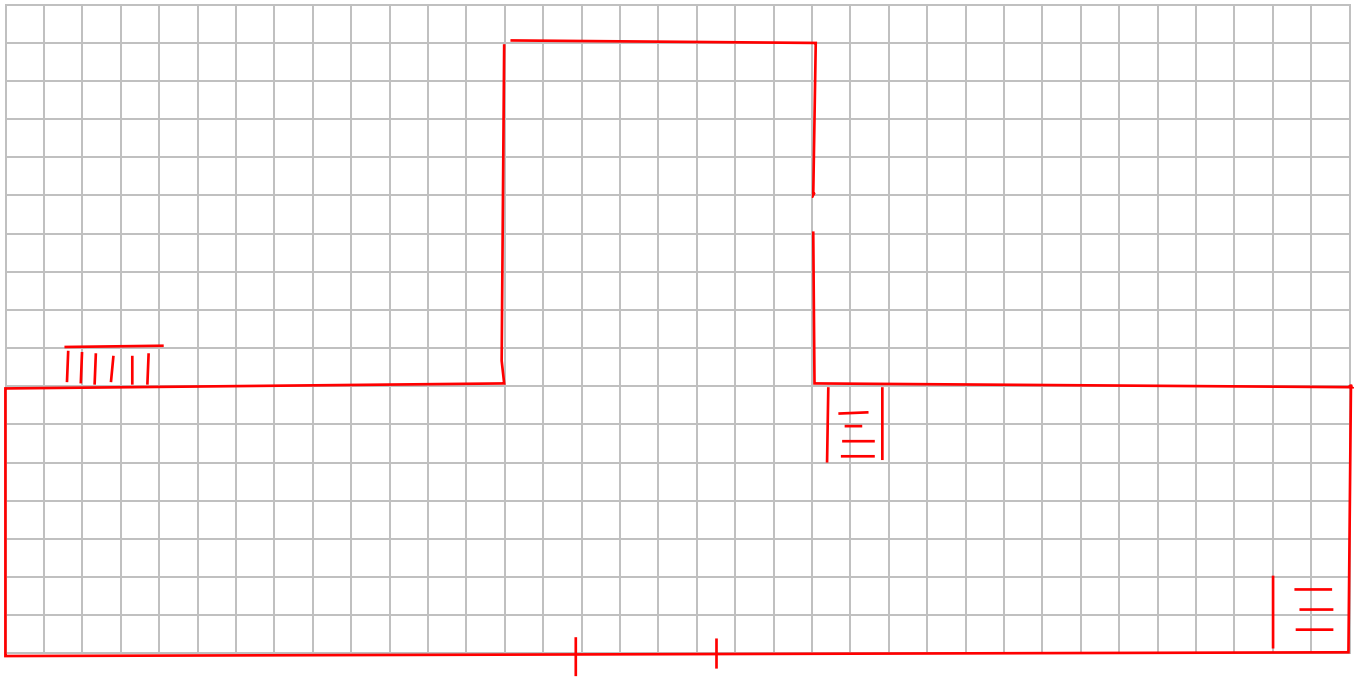
11. FLOOR PLANS ARMY

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



First Floor:

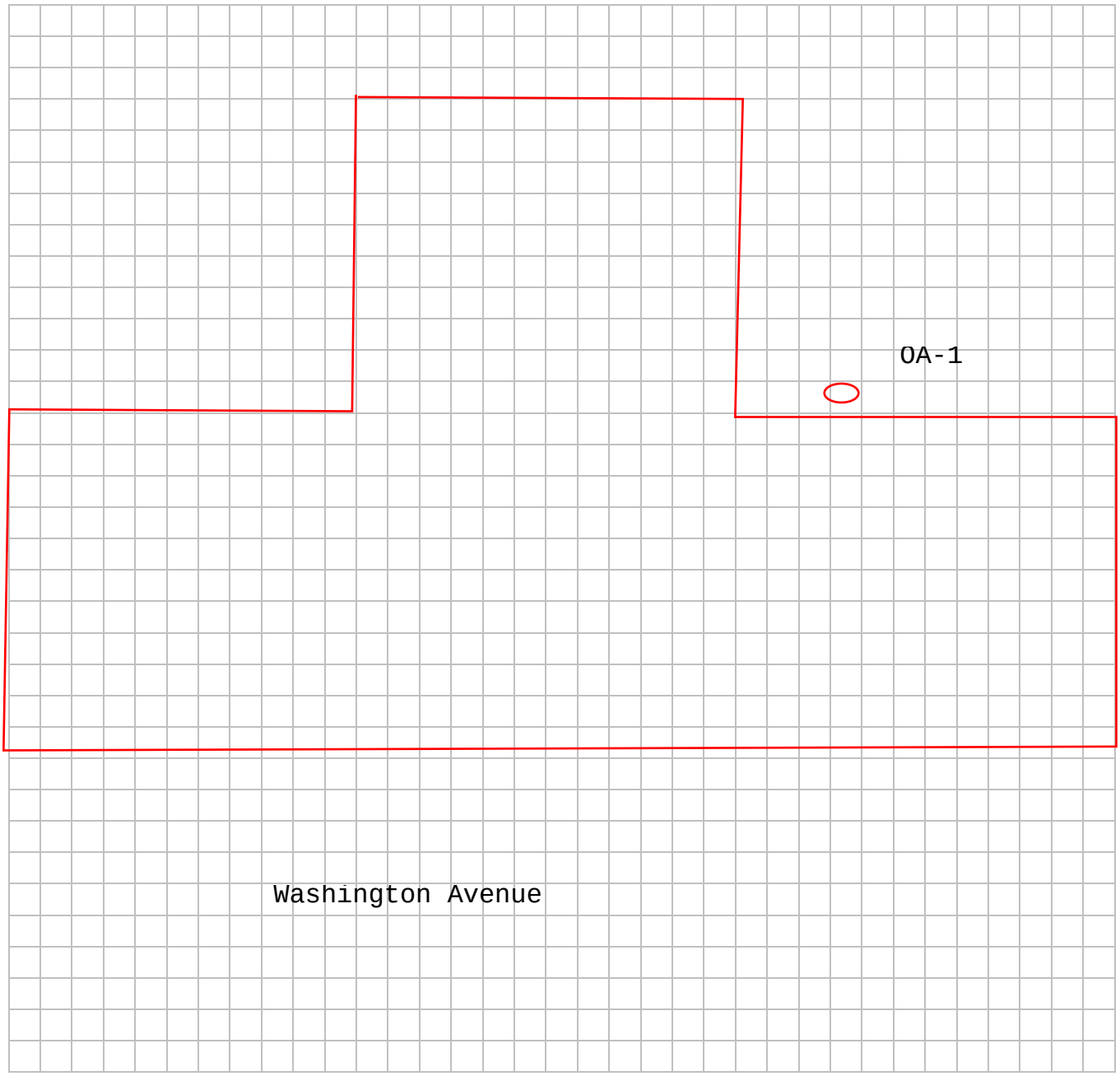


N. Main Ave.

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: MiniRae PPB Rae

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
BLR Rm	Blr H2O Treatmnt. Product #00935	55 Gal	U		0	y

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Heather Fariello Date/Time Prepared 3/20/13

Preparer's Affiliation CB&I Phone No. 518-785-2346

Purpose of Investigation Indoor Air Assessment of Mjr. J. O'Donovan USAFRC

1. OCCUPANT: US NAVY

Interviewed: **Y** / **N**

Last Name: Baldaut First Name: Michael

Address: 90 N. Main Avenue, Albany, NY

County: Albany

Home Phone: _____ Office Phone: 845-392-0538

Number of Occupants/persons at this location VACANT Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___) VACANT for ~10 years

Interviewed: **Y / N**

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: US Navy Reserve Center

If the property is residential, type? (Circle appropriate response) N/A

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? 0

If the property is commercial, type? N/A

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? N/A

Other characteristics:

Number of floors 1 Building age 1955

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe: N/A

Airflow between floors

Airflow near source

Outdoor air infiltration

~3-inch x 6-inch vent/hole to outside in vault room

Infiltration into air ducts

No air ducts present

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with concrete	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: 6-8 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

dirt floor

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present? Y / (N)

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom (Almost Never)

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	Boiler room/vault
1st Floor	Offices
2nd Floor	Offices
3rd Floor	Offices
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / (N)

b. Does the garage have a separate heating unit? Y / N / (NA)

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / (NA) Please specify_____

d. Has the building ever had a fire? Y / N When? unknown

e. Is a kerosene or unvented gas space heater present? Y / (N) Where? _____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type? _____

g. Is there smoking in the building? Y / (N) How frequently? _____

h. Have cleaning products been used recently? Y / (N) When & Type? _____

i. Have cosmetic products been used recently? Y / (N) When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / (N) Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / (N) Where & When? _____

l. Have air fresheners been used recently? Y / (N) When & Type? _____

m. Is there a kitchen exhaust fan? Y / (N) If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / (N) If yes, where vented?_____

o. Is there a clothes dryer? Y / (N) If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / (N) When & Type?_____

Are there odors in the building? (Y) / N
If yes, please describe: Damp/musty

Do any of the building occupants use solvents at work? Y / (N)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / (N)

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) (No)
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / (N) Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: (Public Water) Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: (Public Sewer) Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency) Not applicable

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

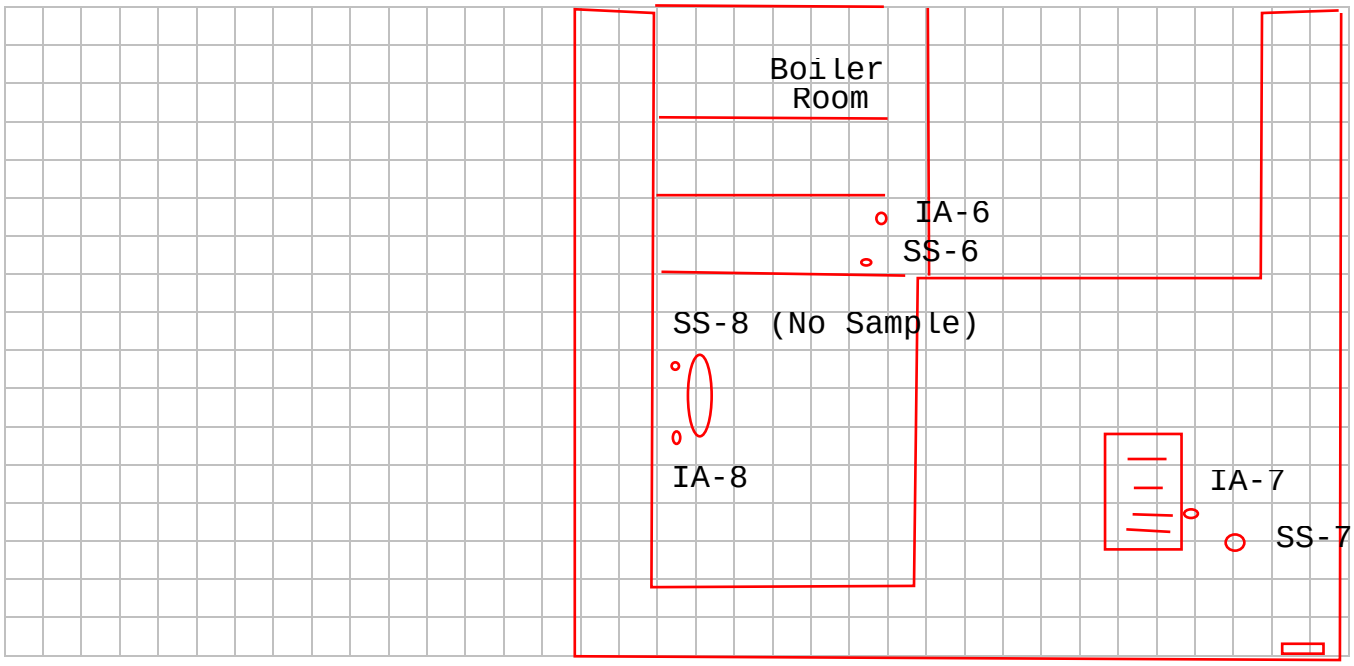
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

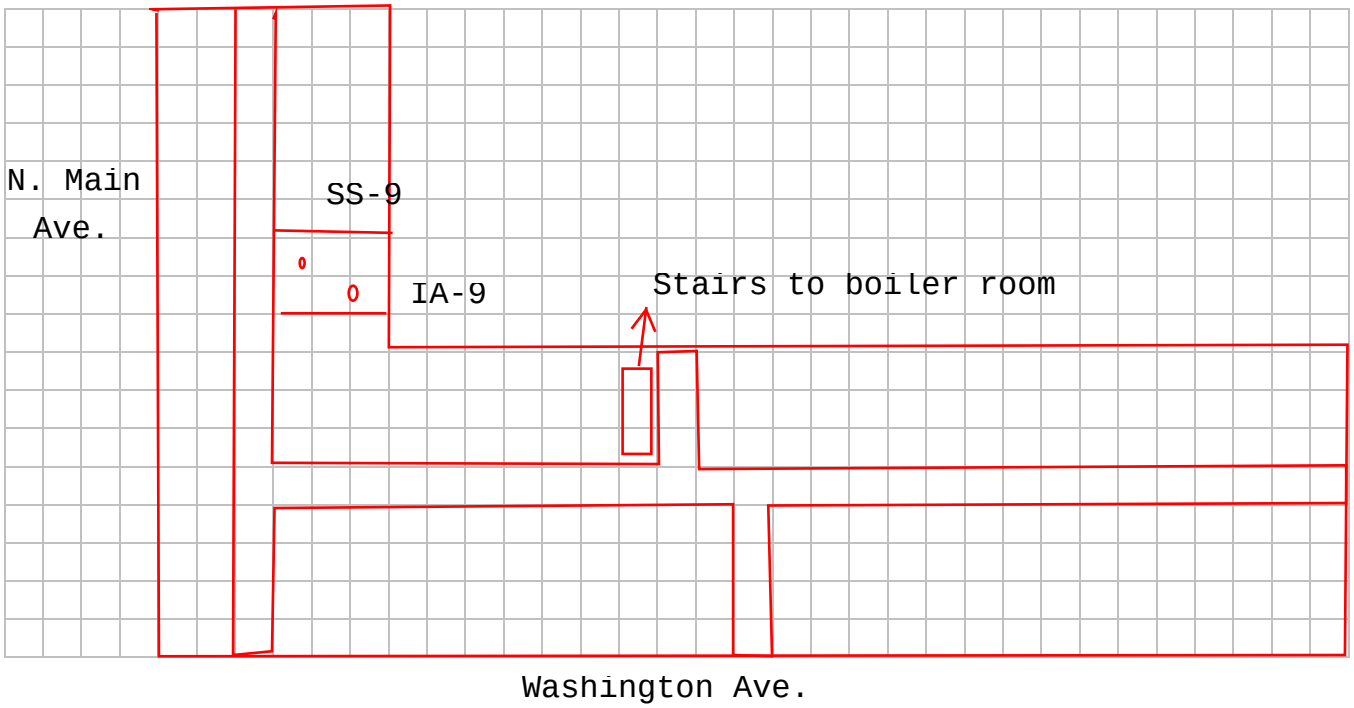
11. FLOOR PLANS NAVY

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



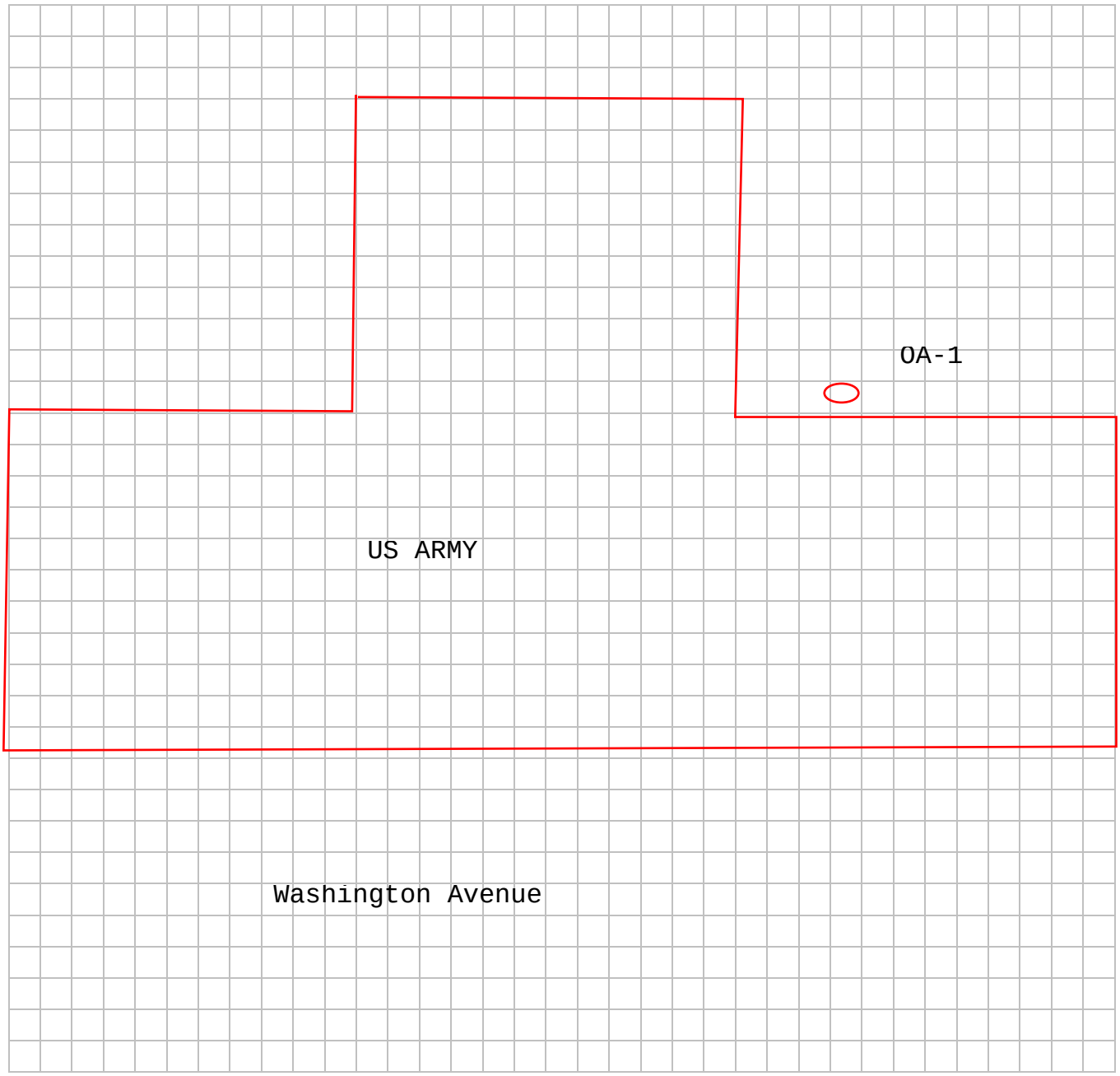
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: MiniRae PPB Rae

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
VACANT - NO CHEMICALS						

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX B

PHOTOGRAPHS

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 18, 2013 **Direction:** Not Applicable **Comments:** IA-1; Army Boiler Room	
Photographer: Heather Fariello **Date:** March 18, 2013 **Direction:** Not Applicable **Comments:** SS-1; Army Boiler Room	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 18, 2013 **Direction:** Not Applicable **Comments:** IA-2/IA-DUP and SS-2/SS-DUP; Army Supply Room	
Photographer: Heather Fariello **Date:** March 18, 2013 **Direction:** Not Applicable **Comments:** IA-3/SS-3; Back room of Army Firing Range	

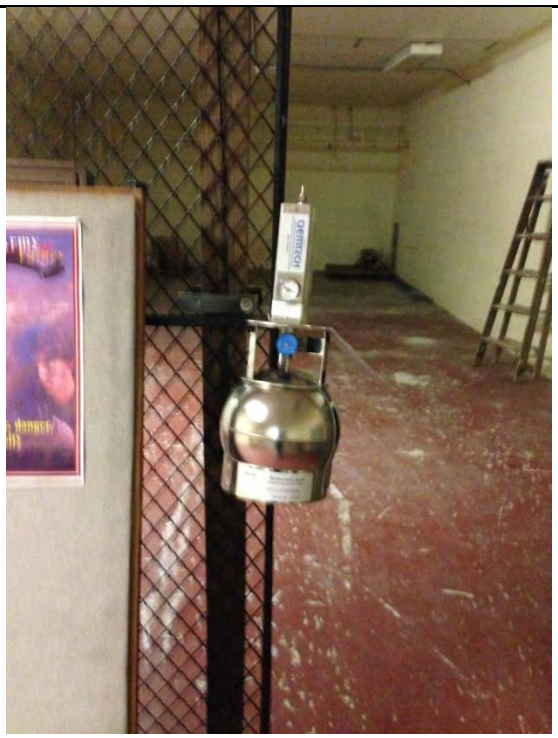
Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 20, 2013 **Direction:** Not Applicable **Comments:** IA-4; Army Medical Supply Room	
Photographer: Heather Fariello **Date:** March 20, 2013 **Direction:** Not Applicable **Comments:** SS-4B; Army Medical Supply Room	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 19, 2013 **Direction:** Not Applicable **Comments:** SS-5; Army Firing Range	
Photographer: Heather Fariello **Date:** March 19, 2013 **Direction:** Not Applicable **Comments:** IA-5; Army Firing Range	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Heather Fariello

Date:

March 19, 2013

Direction:

Not Applicable

Comments:

IA-6; Navy Boiler Room

Photographer:

Heather Fariello

Date:

March 19, 2013

Direction:

Not Applicable

Comments:

SS-6; Navy Boiler Room

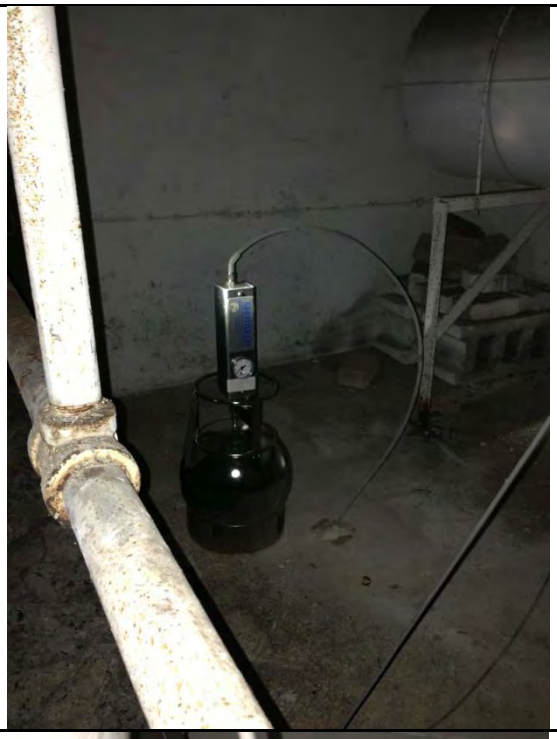
Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 14 2013 **Direction:** Not Applicable **Comments:** Navy Vault (IA-7 canister was hung from the stairs)	
Photographer: Heather Fariello **Date:** March 14 2013 **Direction:** Not Applicable **Comments:** IA-7 and SS-7; Navy Vault	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 20 2013 **Direction:** Not Applicable **Comments:** SS-8; Navy Vault Near Water Tank	
Photographer: Heather Fariello **Date:** March 20 2013 **Direction:** Not Applicable **Comments:** IA-8; Navy Vault Near Water Tank	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Heather Fariello **Date:** March 20 2013 **Direction:** Not Applicable **Comments:** IA-9; Navy "Weight" Room	
Photographer: Heather Fariello **Date:** March 20 2013 **Direction:** Not Applicable **Comments:** SS-9; Navy "Weight" Room	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

South

Comments:

SV-1 (O'Donovan USAFRC property)

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

South

Comments:

SV-2 (Albany High School Property)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Northwest

Comments:

SV-3 (O'Donovan USAFRC property)

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Southwest

Comments:

SV-4 (O'Donovan USAFRC property)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Southwest

Comments:

SV-5 (O'Donovan USAFRC property)

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Southeast

Comments:

SV-6 (O'Donovan USAFRC property)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

East

Comments:

SV-7 (Albany High School)

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Northeast (towards Washington Ave)

Comments:

SV-9
(N. Main Ave, O'Donovan USAFRC property)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

West

Comments:

SV-10 and duplicate (N. Main Ave, O'Donovan USAFRC property)

Photographer:

Robert Adams

Date:

March 22, 2013

Direction:

Southeast

Comments:

Ambient outdoor air (on fence, O'Donovan USAFRC propert)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: Nicholas Robertson **Date:** March 25, 2013 **Direction:** East **Comments:** SV-11 (N. Main Ave., ROW)	
Photographer: Nicholas Robertson **Date:** March 25, 2013 **Direction:** Southeast **Comments:** SV-12 and duplicate (N. Main Ave., ROW)	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

Southeast

Comments:

SV-13
(N. Main Ave., ROW)

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

Northwest

Comments:

SV-14
(Washington Ave., ROW)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

Northeast

Comments:

SV-15 (Washington Ave., ROW)

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

North

Comments:

SV-16 (Washington Ave., ROW)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

Not Applicable

Comments:

SV-17
(Washington Ave., ROW)

Photographer:

Nicholas Robertson

Date:

March 25, 2013

Direction:

East

Comments:

Ambient outdoor air sample (O'Donovan USAFRC property)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

April 5, 2013

Direction:

Unknown

Comments:

SV-11 Resample (on N. Main Ave)

Photographer:

Robert Adams

Date:

April 5, 2013

Direction:
Northeast (towards intersection of Washington Ave. and N. Main Ave.)

Comments:

SV-12 Resample (N. Main Ave, ROW)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

Robert Adams

Date:

April 5, 2013

Direction:
Northeast (towards intersection of Washington Ave. and N. Main Ave.)

Comments:

SV-12 Resample (picture 2, N. Main Ave., ROW)

Photographer:

Robert Adams

Date:

April 5, 2013

Direction:
Northeast (towards intersection of Washington Ave. and N. Main Ave.)

Comments:

SV-13 Resample (N. Main Ave, ROW)

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Northeast

Comments:

GW-8 Completed Installation

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-7 Completed Installation

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southeast

Comments:

GW-6 Completed Installation

Photographer:

William Squire

Date:

April 4, 2013

Direction:

West

Comments:

GW-5 Completed Installation

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-4 Completed Installation

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-3 Completed Installation

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southeast

Comments:

GW-2 Completed Installation

Photographer:

William Squire

Date:

April 4, 2013

Direction:

South

Comments:

GW-1 Well Development

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Northeast

Comments:

GW-7 Drill Cuttings

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-8 Pulling Augers

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-8 Placing Filterpack Sand

Photographer:

William Squire

Date:

April 4, 2013

Direction:

Southwest

Comments:

GW-8 Well Installation

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 4, 2013

Direction:

West

Comments:

GW-8 Drilling

Photographer:

William Squire

Date:

April 3, 2013

Direction:

Southeast

Comments:

GW-6 Soil Cores

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 3, 2013

Direction:

Southwest

Comments:

GW-6 Soil Cores

Photographer:

William Squire

Date:

April 3, 2013

Direction:

South

Comments:

GW-1 Well Installed

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 3, 2013

Direction:

Southeast

Comments:

GW-1 Drilling

Photographer:

William Squire

Date:

April 2, 2013

Direction:

East

Comments:

GW-2 Drilling

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer: William Squire **Date:** April 2, 2013 **Direction:** Southeast **Comments:** GW-5 Drilling	
Photographer: William Squire **Date:** April 2, 2013 **Direction:** Southeast **Comments:** GW-5 Drilling	

Shaw Environmental, Inc.
(A CB&I Company)
Photographic Record

Customer:	**USACOE, Omaha District**	**Project Number: 149092**
Site Name:	**O'Donovan USAFRC**	**Site Location: Albany, New York**

Photographer:

William Squire

Date:

April 2, 2013

Direction:

West

Comments:

GW-5 Setting Up

Photographer:

Date:

Direction:

Comments:

APPENDIX C

BORING LOGS

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 1

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-1	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397432.46 East 684489.08	STARTED	4/2/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/3/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1	Hand Dug	NA	0.0	Asphalt and gravel subbase	FILL	
2						
3				silty CLAY/clayey SILT - brown, stiff, medium to high plasticity, damp	CH / ML	
4						
5						
6	1	3.5	0.0	CLAY - brown, medium stiff to soft, high plasticity, moist	CH	
7						
8						
9						
10						
11	2	3.5	0.0	CLAY - brownish-gray, medium stiff to soft, high plasticity, moist	CH	
12						
13						
14						
15						
16	3	4.5	0.0	As above	CH	
17				SAND and SILT - brownish-gray, very fine grain, loose/soft, saturated	SM-ML	
18						
19				CLAY - brown, stiff, medium to high plasticity, moist	CH	
20						

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 2

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-2	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397715.42 East 684568.62	STARTED	4/2/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/2/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1	Hand Dug	NA	0.0	Asphalt and gravel subbase	FILL	
2						
3				silty CLAY/clayey SILT - brown, stiff, medium to high plasticity, damp	CH / ML	
4						
5						
6	1	4.0	0.6	CLAY - brown, medium stiff, high plasticity, damp to moist	CH	
7						
8						
9						
10						
11	2	5.0	0.0	As above	CH	
12						
13						
14				CLAY - brownish-gray, soft, high plasticity, moist		
15						
16	3	5.0	0.0	As above	CH	
17						
18						
19						
20				SAND and SILT - brownish-gray, very fine grain, loose/soft, saturated	SM-ML	

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 3

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-3	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397814.59 East 684881.45	STARTED	4/1/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/1/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1	Hand Dug	NA	0.0	silty CLAY/clayey SILT - brown, few pieces brick fragments, soft, medium to high plasticity, moist	CH / ML	
6	1	5.0	0.0	As above	CH / ML	
9				CLAY - brown, stiff to medium stiff, medium plasticity, roots @ 10 ft, moist	CL	
11	2	5.0	1.8	CLAY - brownish-gray, soft, medium plasticity, roots, moist grading to very moist	CL	
16	3	5.0	0.6	As above	CL	
17				silty SAND - brownish-gray, very fine grain, medium dense, saturated	SP / SM	
19				CLAY - brownish-gray, very soft, medium plasticity, wet to saturated	CL	

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 4

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-4	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397871.71 East 684804.93	STARTED	4/1/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/1/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1–5	Hand Dug	NA	0.0	silty CLAY/clayey SILT - brown, soft, medium to high plasticity, moist	CH / ML	
6–10	1	5.0	0.0	CLAY - brown, stiff, medium to high plasticity, damp to moist	CH	
11–15	2	5.0	0.0	As above CLAY - brownish-gray, soft, medium to high plasticity, very moist	CH	
16–20	3	2.0	0.0	As above, wet to very moist silty SAND - brownish-gray, very fine grain, medium dense to loose, moist Not recovered	CH SP / SM	

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 5

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-5	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397983.77 East 684658.31	STARTED	4/2/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/2/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1–5	Hand Dug	NA	0.0	silty CLAY/clayey SILT - brown, soft, medium to high plasticity, moist	CH / ML	
6–10	1	5.0	0.0	CLAY - brown, medium stiff grading to soft, medium to high plasticity, damp grading to very moist	CH	
11–15	2	5.0	0.0	CLAY - brownish-gray, soft, high plasticity, moist	CH	
16–20	3	1.0	0.0	As above silty SAND - brownish-gray, very fine grain, medium dense to loose, moist Not recovered	CH SP / SM	

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 6

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-6	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397631.07 East 684775.07	STARTED	4/3/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/3/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1	Hand Dug	NA	0.0	silty CLAY - brown, medium stiff, medium plasticity, damp	CL	
6	1	5.0	0.0	CLAY - brownish-gray, very soft, high plasticity, moist	CH	
11	2	5.0	0.0	CLAY - gray, very soft, high plasticity, moist	CH	
12				CLAY and SAND - gray, very soft/loose, saturated	CL / SC	
13				CLAY - gray, very soft, high plasticity, moist	CH	
14				silty SAND - gray, very fine grain, loose, saturated	SP / SM	
15				As above	SP / SM	
16	3	5.0	0.0	CLAY - gray, soft, high plasticity, wet, increasing silt with depth	CH	

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 7

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-7	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397897.10 East 684492.84	STARTED	4/3/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/4/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1	Hand Dug	NA	0.0	silty CLAY - brown, medium stiff, medium plasticity, damp	CL	
6	1	5.0	0.0	CLAY - brown, few fine gravel, soft, high plasticity, moist	CH	
10				CLAY - gray, soft, high plasticity, moist to very moist		
11	2	4.0	0.0	As above	CH	
14				silty SAND - gray, very fine grain, loose, saturated	SP / SM	
16	3	0.0	0.0	No recovery		

Shaw Environmental, Inc.

Boring Number:

SOIL BORING LOG

GW 8

PROJECT NUMBER	149092	PROJECT NAME	O'Donovan USAFRC, Albany, NY		
BORING NUMBER	GW-8	TOTAL DEPTH	20 ft	DATE	
SURFACE ELEVATION		COORDINATES	North 1397586.50 East 684277.66	STARTED	4/3/2013
GEOLOGIST	B. Squire	DRILLER	R. Hammond	COMPLETED	4/4/2013
DRILLING METHOD	Direct Push Technology	DRILLING COMPANY	Aztech	TOTAL PAGES	1

DEPTH (ft)	DPT SAMPLE NUMBER	RECOVERY (ft)	PID (ppm)	DESCRIPTION	USCS SYMBOL	REMARKS
1 – 5	Hand Dug	NA	0.0	silty CLAY - brown, medium stiff, medium plasticity, damp	CL	
6 – 10	1	4.5	0.0	silty CLAY - brown, few very fine to fine sand, soft, medium plasticity, moist	CL / ML	
11 – 12	2	4.5	0.0	As above	CL / ML	
13 – 15				CLAY - brown, soft, high plasticity, moist	CH	
16	3	5.0	0.0	As above, saturated	CH	
17 – 20				CLAY - gray, few silt, soft, medium to high plasticity, very moist		

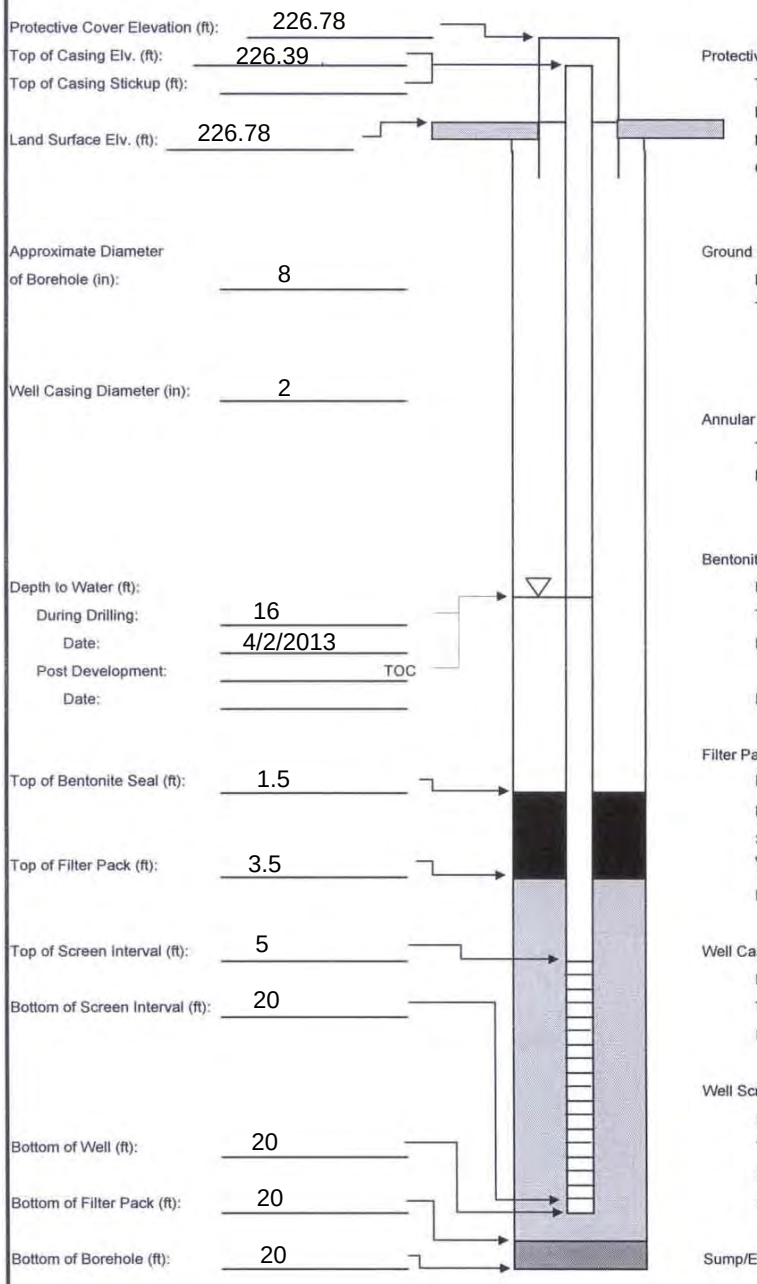
APPENDIX D

WELL CONSTRUCTION LOGS

Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-1
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/3/2013
Subcontractor:	Aztech	Northing:	1397432.4580
Driller:	R. Hammond	Easting:	684489.0800
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 226.78
Top of Casing Elv. (ft): 226.39
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 226.78

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 16
Date: 4/2/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 3.5

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

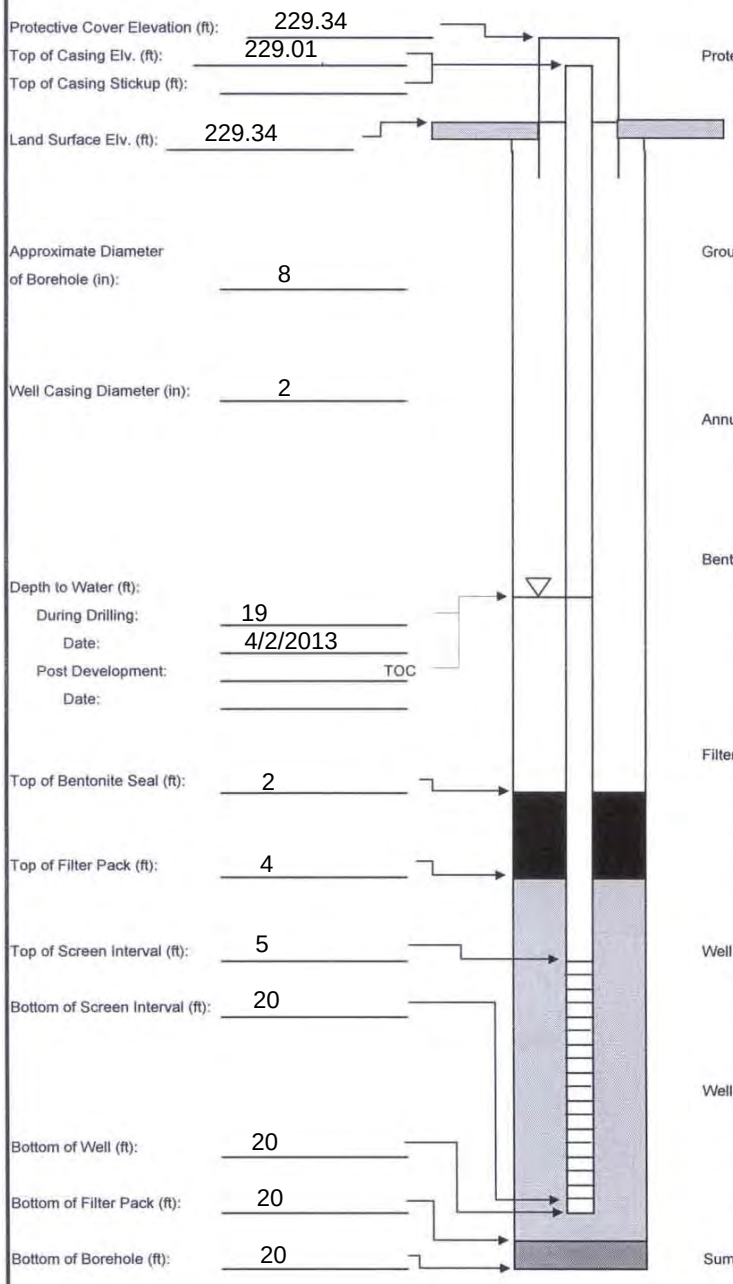
Backfill Material:

Shaw
Shaw E & I, Inc.

Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-2
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/2/2013
Subcontractor:	Aztech	Northing:	1397715.4150
Driller:	R. Hammond	Easting:	684568.6170
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 229.34
Top of Casing Elv. (ft): 229.01
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 229.34

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 19
Date: 4/2/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 2

Top of Filter Pack (ft): 4

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

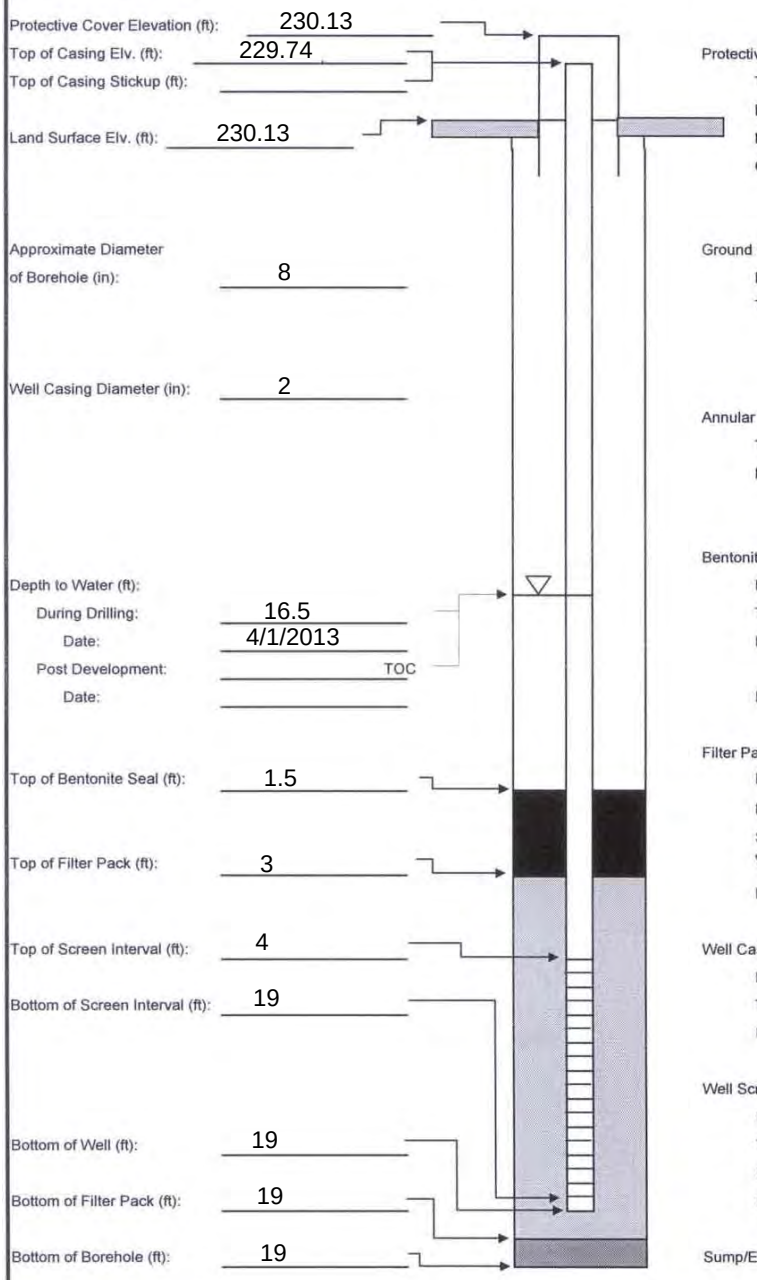
Backfill Material:

Shaw
Shaw E & I, Inc.

Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-3
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/1/2013
Subcontractor:	Aztech	Northing:	1397814.5900
Driller:	R. Hammond	Easting:	684881.4540
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 230.13
Top of Casing Elv. (ft): 229.74
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 230.13

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 16.5
Date: 4/1/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 3

Top of Screen Interval (ft): 4

Bottom of Screen Interval (ft): 19

Bottom of Well (ft): 19

Bottom of Filter Pack (ft): 19

Bottom of Borehole (ft): 19

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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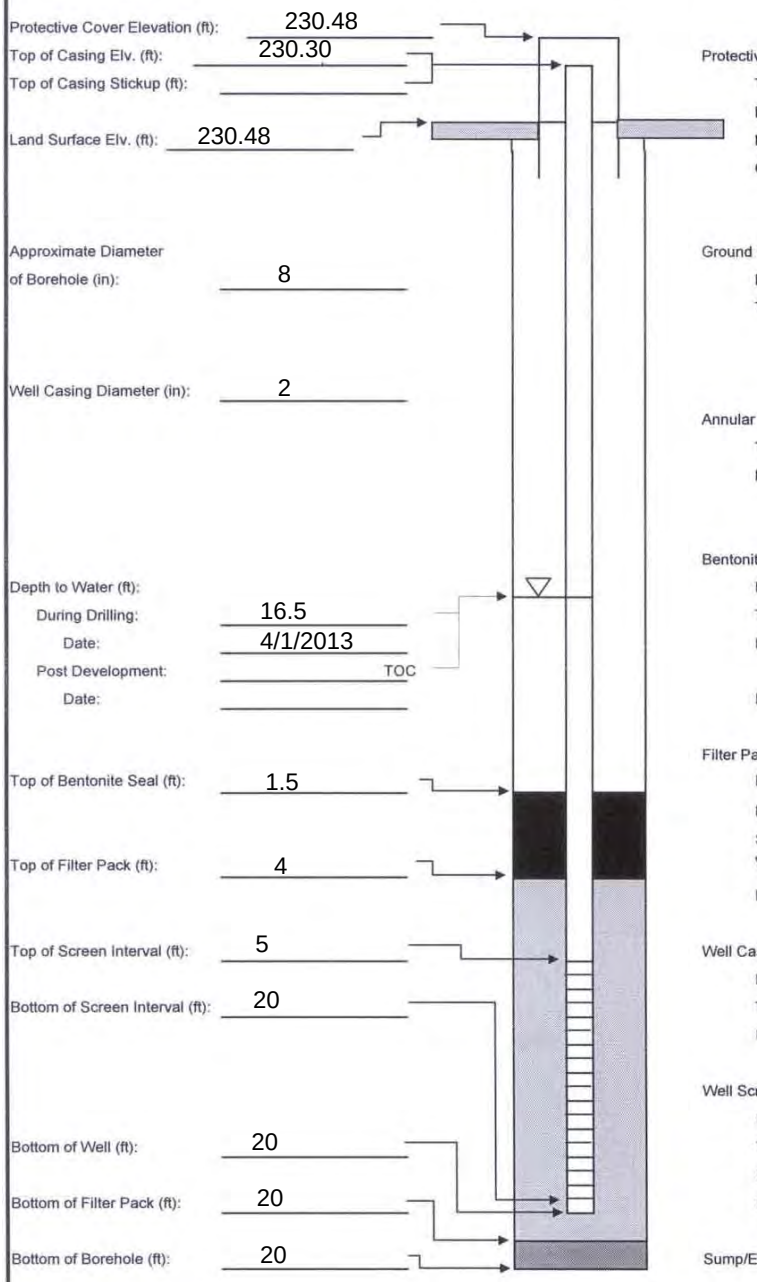
Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-4
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/1/2013
Subcontractor:	Aztech	Northing:	1397871.7130
Driller:	R. Hammond	Easting:	684804.9250
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 230.48
Top of Casing Elv. (ft): 230.30
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 230.48

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 16.5
Date: 4/1/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 4

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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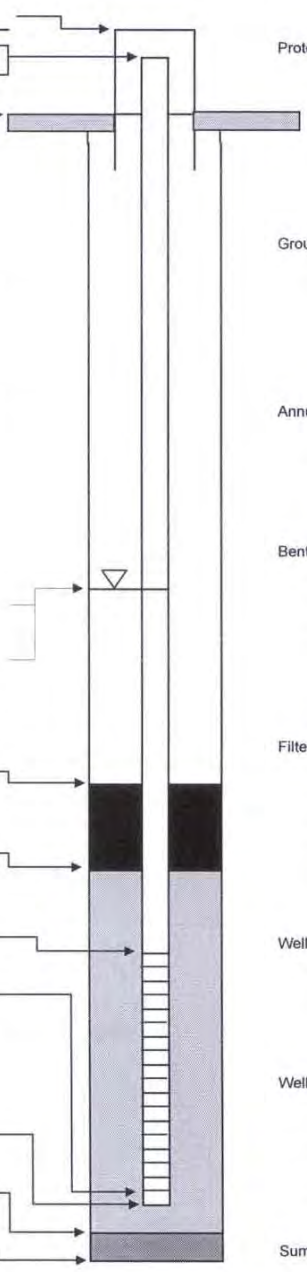
Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-5
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/2/2013
Subcontractor:	Aztech	Northing:	1397983.7710
Driller:	R. Hammond	Easting:	684658.3110
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 229.87
Top of Casing Elv. (ft): 229.60
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 229.87

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 15.5
Date: 4/2/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 2

Top of Filter Pack (ft): 4

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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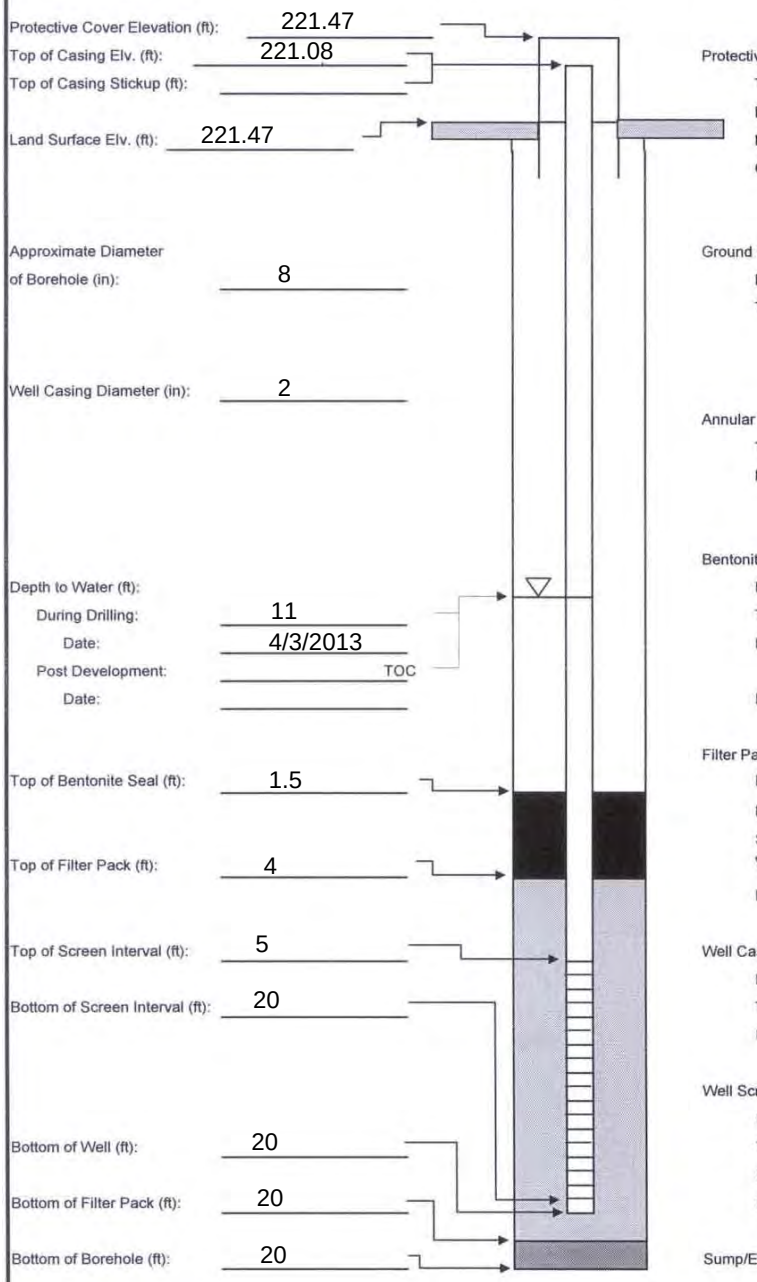
Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-6
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/3/2013
Subcontractor:	Aztech	Northing:	1397631.0660
Driller:	R. Hammond	Easting:	684775.0670
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Casing:
- Type: Flush Mount
- Dimensions (in): 8-inch dia.
- Length (ft): 10-inch
- Guard Post:

Ground Seal (Surface Pad)
- Dimensions: 2 ft x 2 ft x 4 inch
- Type: Concrete

Annular Space Seal:
- Type:
- Installation: Gravity Tremie Pumped

Bentonite Seal:
- Manufacturer: Baroid
- Type: Pellets Slurry
- Installation: 6-in lifts (One Section)
- (Gravity) Tremie Pumped
- Hydration time (hrs):

Filter Pack Material:
- Manufacturer: US Silica
- Product Name: Filpro
- Size: WG #1
- Volume Added (ft^3):
- Installation: (Gravity) Tremie

Well Casing:
- Manufacturer:
- Type: Sch 40 PVC
- Diameter (in): 2"

Well Screen Casing:
- Manufacturer:
- Type: 2" Sch 40 PVC
- Slot Size (in): 0.010 %Open
- Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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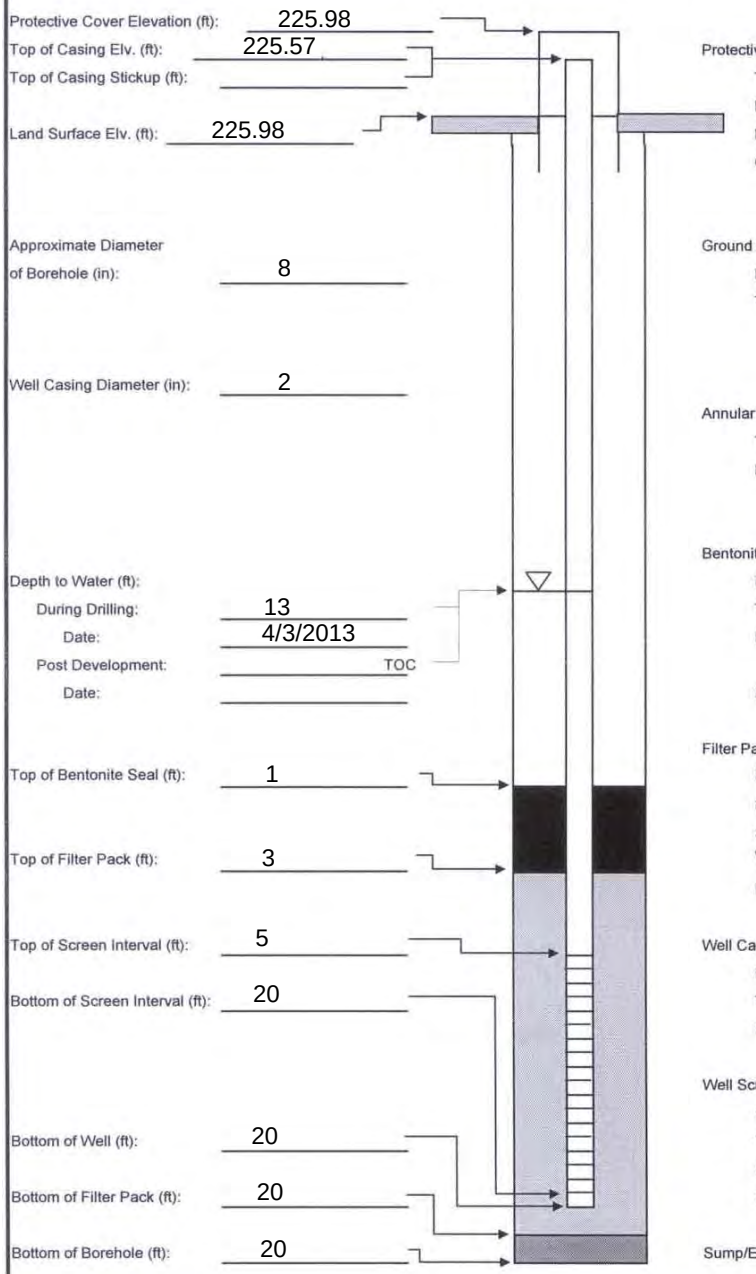
Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-7
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/4/2013
Subcontractor:	Aztech	Northing:	1397897.0980
Driller:	R. Hammond	Easting:	684492.8390
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 225.98
Top of Casing Elv. (ft): 225.57
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 225.98

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 13
Date: 4/3/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 1

Top of Filter Pack (ft): 3

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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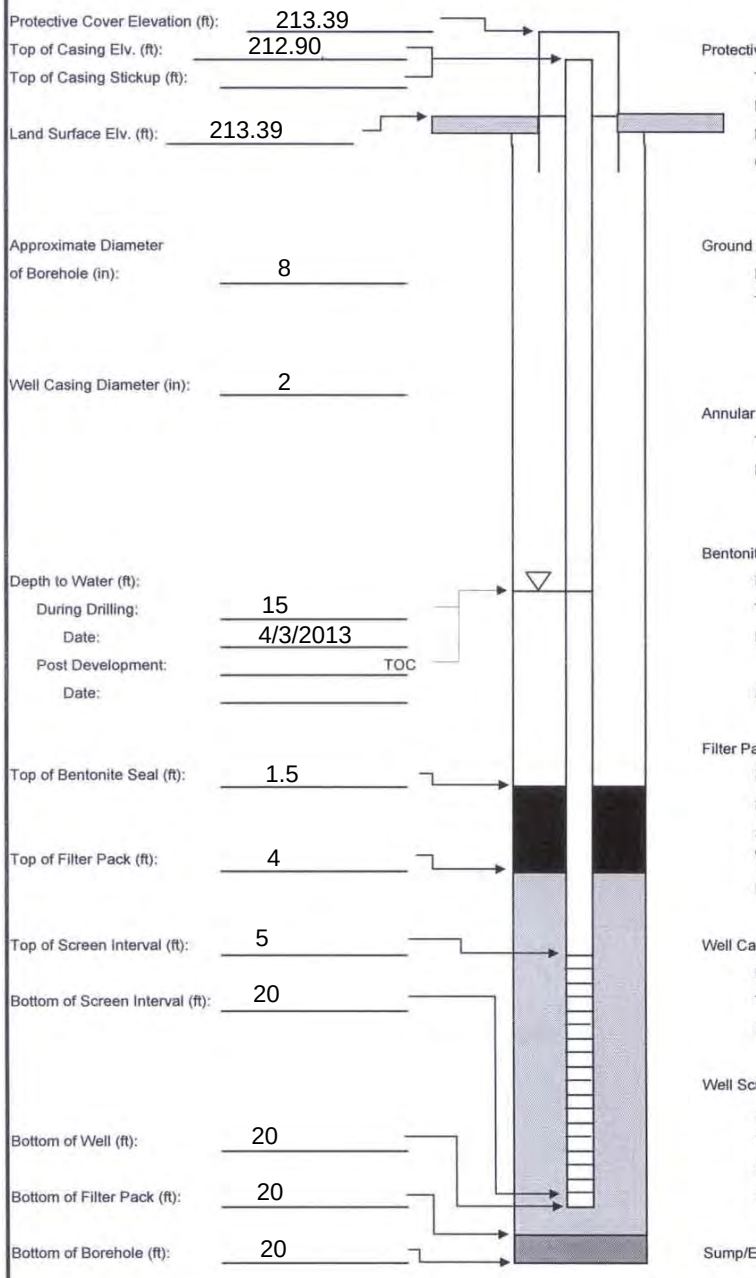
Attachment 3
Example Monitoring Well Construction Form

Monitoring Well Construction Form

Project:	O'Donovan USAFRC	Well Number:	GW-8
Location:	Albany, NY	Site Location:	
Client:	USACE	Installation Date	4/4/2013
Subcontractor:	Aztech	Northing:	1397586.5010
Driller:	R. Hammond	Easting:	684277.6590
IT Field Representative:	B. Squire	NAD:	NGVD:



Protective Cover Elevation (ft): 213.39
Top of Casing Elv. (ft): 212.90
Top of Casing Stickup (ft):
Land Surface Elv. (ft): 213.39

Approximate Diameter of Borehole (in): 8

Well Casing Diameter (in): 2

Depth to Water (ft):
During Drilling: 15
Date: 4/3/2013
Post Development: TOC
Date:

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 4

Top of Screen Interval (ft): 5

Bottom of Screen Interval (ft): 20

Bottom of Well (ft): 20

Bottom of Filter Pack (ft): 20

Bottom of Borehole (ft): 20

Protective Casing:
Type: Flush Mount
Dimensions (in): 8-inch dia.
Length (ft): 10-inch
Guard Post:

Ground Seal (Surface Pad)
Dimensions: 2 ft x 2 ft x 4 inch
Type: Concrete

Annular Space Seal:
Type:
Installation: Gravity Tremie Pumped

Bentonite Seal:
Manufacturer: Baroid
Type: Pellets Slurry
Installation: 6-in lifts (One Section)
(Gravity) Tremie Pumped
Hydration time (hrs):

Filter Pack Material:
Manufacturer: US Silica
Product Name: Filpro
Size: WG #1
Volume Added (ft^3):
Installation: (Gravity) Tremie

Well Casing:
Manufacturer:
Type: Sch 40 PVC
Diameter (in): 2"

Well Screen Casing:
Manufacturer:
Type: 2" Sch 40 PVC
Slot Size (in): 0.010 %Open
Slot Type: Continuous wrap (Factory slot)

Sump/End Cap:

Backfill Material:

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APPENDIX E

SURVEY DATA

MONITOR WELL CHART							
MONITOR WELL	GRADE ELEVATION	TOP OF CASING	TOP OF PVC	NORTHING	EASTING	LATITUDE	LONGITUDE
MW-1	230.08	230.00	229.73	1397748.8190	684639.1240	N 42°40'04.552"	W 73°47'02.953"
MW-2	229.10	229.06	228.73	1397701.5620	684725.1940	N 42°40'04.078"	W 73°47'01.806"
MW-3	228.43	228.42	228.10	1397626.8220	684668.3060	N 42°40'03.344"	W 73°47'02.576"
MW GW-1	226.78	226.78	226.39	1397432.4580	684489.0800	N 42°40'01.439"	W 73°47'04.997"
MW GW-2	229.34	229.34	229.01	1397715.4150	684568.6170	N 42°40'04.228"	W 73°47'03.900"
MW GW-3	230.13	230.13	229.74	1397814.5900	684881.4540	N 42°40'05.181"	W 73°46'59.702"
MW GW-4	230.48	230.48	230.30	1397871.7130	684804.9250	N 42°40'05.752"	W 73°47'00.719"
MW GW-5	229.87	229.87	229.60	1397983.7710	684658.3110	N 42°40'06.871"	W 73°47'02.669"
MW GW-6	221.47	221.47	221.08	1397631.0660	684775.0670	N 42°40'03.377"	W 73°47'01.146"
MW GW-7	225.98	225.98	225.57	1397897.0980	684492.8390	N 42°40'06.029"	W 73°47'04.894"
MW GW-8	213.39	213.39	212.90	1397586.5010	684277.6590	N 42°40'02.978"	W 73°47'07.809"
SV-1	226.79			1397434.5020	684486.4830	N 42°40'01.460"	W 73°47'05.031"
SV-2	230.20			1397812.5810	684884.1650	N 42°40'05.161"	W 73°46'59.666"
SV-3	230.49			1397870.2160	684806.5150	N 42°40'05.737"	W 73°47'00.698"
SV-4	230.03			1397981.8130	684663.6890	N 42°40'06.851"	W 73°47'02.597"
SV-5	229.52			1398017.4370	684598.2830	N 42°40'07.208"	W 73°47'03.469"
SV-6	229.58			1397943.7840	684544.3350	N 42°40'06.485"	W 73°47'04.199"
SV-7	221.83			1397634.3760	684770.2120	N 42°40'03.410"	W 73°47'01.211"
SV-8	226.25			1397901.6030	684499.0180	N 42°40'06.072"	W 73°47'04.811"
SV-9	229.55			1397784.1800	684430.1830	N 42°40'04.918"	W 73°47'05.745"
SV-10	225.95			1397730.4270	684383.0570	N 42°40'04.391"	W 73°47'06.382"
SV-11	219.89			1397842.5660	684356.6240	N 42°40'05.501"	W 73°47'06.723"
SV-12	222.43			1397904.2720	684400.3700	N 42°40'06.107"	W 73°47'06.131"
SV-13	225.58			1398016.6810	684487.2390	N 42°40'07.210"	W 73°47'04.955"
SV-14	229.70			1397922.9750	684875.8780	N 42°40'06.252"	W 73°46'59.764"
SV-15	229.93			1397955.8140	684833.8500	N 42°40'06.580"	W 73°47'00.323"
SV-16	230.05			1397988.3970	684792.5310	N 42°40'06.905"	W 73°47'00.872"
SV-17	229.28			1398057.4300	684702.7050	N 42°40'07.595"	W 73°47'02.067"

APPENDIX F

ANALYTICAL DATA
(Provided Separately on CD)