REMEDIAL DESIGN

PRE- DESIGN INVESTIGATION REPORT

WORK ASSIGNMENT D004440-2

CAMP GEORGETOWN SITE
GEORGETOWN (T)

SITE NO. 7-27-010
MADISON (C), NY

Prepared for:
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway, Albany, New York

Alexander B. Grannis, Commissioner

DIVISION OF ENVIRONMENTAL REMEDIATION

URS Corporation
77 Goodell Street
Buffalo, New York 14203

FINAL
January 2008

G39111

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SITE # 7-27-010

TOWN OF GEORGETOWN, MADISON COUNTY, NEW YORK

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEPARTMENT OF ENVIRONMENTAL REMEDIATION

WORK ASSIGNMENT D004440-02

Prepared by:

URS CORPORATION

77 Goodell Street

Buffalo, New York 14203

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1.0 INTRODUCTION

This Pre-Design Investigation Report (PDIR) has been prepared to present the results of investigation activities recently completed at the Camp Georgetown Remedial Design Project. The project is Work Assignment No. 02 under URS Corporation's (URS) Standby Contract number D004440 with the New York State Department of Environmental Conservation (NYSDEC). This PDIR has been prepared in general accordance with the Project Management Work Plan (PMWP) submitted by URS on April 25, 2006.

1.1. Site History and Background Information

Camp Georgetown is a large complex consisting of a NYSDEC crew headquarters and a New York State Department of Correctional Services (NYSDCS) active incarceration facility, located in the Town of Georgetown, Madison County (Figure 1). The incarceration facility is operated by the NYSDCS, but is located on property managed by the NYSDEC. The NYSDCS occupies the property north of Crumb Hill Road and does not include any past wood treatment operations associated with the contamination. The NYSDEC occupies the property south of Crumb Hill Road, which includes the area defined as the Class 2 inactive hazardous waste disposal site, Site # 7-27-010. This area defined as the site occupies approximately 6.6 acres. The site is bordered on the northeast by Crumb Hill Road, south by private property, and west by State Reforestation Land (Figure 2). The portion of the site owned by NYSDEC straddles the border between Madison and Chenango Counties

The area around the site is typified by a mature and eroded plateau that is dissected by a series of valleys several hundred feet deep. This plateau has a rolling, rugged appearance. Approximately 45 percent of Madison County is classified as commercial forest.

Incarceration facility inmates participate in various work programs. One of the work activities formerly performed by the Camp Georgetown inmates was a sawmill and wood treatment operation. The wood treatment plant was operated from approximately 1970 to 1983 as a dip tank process using the chemical biocide pentachlorophenol (PCP). Untreated poles were

stored in drying sheds northwest of the treatment building. The poles were moved into the treatment building by rail and then hoisted into one of two empty dip tanks. The dip tank would then be filled with a pentachlorophenol mixture, consisting of approximately one part PCP, to eleven parts fuel oil, which would come from one or both of the two 2,000 gallon above ground storage tanks (AST) by gravity flow.

After treatment, the poles were hoisted from the dip tanks and allowed to drip back into the dip tank for a period of time. The poles were then moved by rail to the drip pad, located on the southeast end of the building. The poles would remain in this uncovered area for another 24 hours. Finally, the poles were moved to one of the designated "treated material storage areas." These areas were located around the outside of the treatment building and also along the southwest side of the service road serving the treatment plant and storage buildings.

In 1983, the PCP treatment process was discontinued. From 1983 until 1991, the treatment plant was operated as a pressure treatment process using chromated copper arsenate (CCA) solution. The CCA solution used at Camp Georgetown was comprised of 23.75% chromic acid, 17% arsenic pentoxide, 9.25% cupric oxide, and 50% water. Unlike the dipping process employed for PCP, this process involved placement the wood in a pressurized vessel for treatment.

1.1.1. Remedial History

The Camp Georgetown site is one of three NYSDCS facilities in the State currently under investigation by the NYSDEC due to former wood treatment operations. Each of the three sites is an active incarceration facility operated by the NYSDCS, and located on property under the jurisdiction of the NYSDEC. The NYSDCS provided the funding for building construction at the Camps and provides for the maintenance and security. The NYSDEC provides the work programs, technical forestry staff to supervise work, and tools and equipment required to carry out the work. The wood treatment programs were developed to provide lumber and round poles for NYSDEC construction and maintenance projects. The pole treatment plants, however, are no longer in operation. Wood treatment at Camp Georgetown was discontinued in 1991.

In October of 1997, the NYSDEC Division of Operations requested that the Division of Environmental Remediation (DER) perform an environmental investigation at Camp Georgetown. DER completed a Preliminary Investigation (PI) at Camp Georgetown in 1999. The PI consisted of the excavation of 22 test trenches, the installation and sampling of 8 monitoring wells and the collection of 26 surface soil, and 22 subsurface soil samples. The investigation found PCP in the soil directly below the treatment building and the area extending to the west of the building. The soil under the building was also tested for dioxin, a common impurity in PCP, which was found to be above cleanup criteria.

In 1999, the NYSDEC listed the area of the Camp Georgetown property on the south side of Crumb Hill Road as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (Site # 7-27-010). A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required. This listing was based on the past use of PCP at the site

In 2001, the NYSDEC initiated a Remedial Investigation/Feasibility Study (RI/FS) for the Camp Georgetown site. The RI was developed to build on the information generated during the PI and to help fully delineate the extent of contamination at the site. The results of the RI were presented in the document Remedial Investigation Report for the Camp Georgetown Site, dated April 2003 and revised February 2004 (Shaw, 2004a). Based on the results of the RI, a Feasibility Study Report was prepared in February 2004 (Shaw, 2004b). The Feasibility Study evaluated numerous remedial options for the Camp Georgetown site, and determined the selected remedy.

1.1.2. Summary of the Selected Remedy

In March 2004, a Record of Decision (ROD) was issued for the site. As discussed in the FS and ROD, the NYSDEC had selected soil excavation and on-site consolidation with multi-layer geo-membrane cap as the remedy for this site. Subsequently, the NYSDEC reevaluated the

selected remedy and amended the ROD, calling for soil excavation with off-site disposal as the remedy for this site. The ROD Amendment was issued in May 2007.

The elements of the amended remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program;
2. Demolition and off-site disposal of the former treatment building and its contents;
3. Excavation and off-site disposal of areas A through J. Localized groundwater contamination will be extracted and treated as part of the dewatering process during soil excavation;
4. Site restoration by bringing in approved backfill, grading to insure proper drainage, placement of additional topsoil as necessary, and seeding;
5. Implementation of a ground water monitoring program will be instituted to observe the attenuation of residual ground water contamination. Groundwater samples will be collected periodically for at least 5 years. This program will allow the effectiveness of the remedy (source removal) to be monitored;
6. Development of a site management plan to provide the details of the groundwater monitoring plan;
7. Imposition of an institutional control in the form of an environmental easement that will require (a) compliance with the approved site management plan; (b) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (c) the property owner to complete and submit to the Department a periodic certification of institutional controls;
8. The property owner will provide a periodic certification of institutional controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain

certification that the institutional controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

A total of 10 areas of concern (Areas A through J) have been identified in the ROD as requiring remediation. The approximate locations of the AOCs are shown on Figure 3 and described in Table 1-1.

1.2. Objectives

The purpose of this pre-design investigation is to collect additional site data in support of the remedial design. The specific objectives of this pre-design investigation are as follows:

- Waste characterization of soils from areas of concern for the purpose of profiling for off-site disposal and for comparing soil concentrations with land disposal restriction treatment standards.
- Conduct test trench excavation and sampling to further delineate soil contamination near select areas of concern (AOCs).
- Collect additional data on groundwater quality and hydraulic conductivity in the areas of concern for the purpose of determining excavation dewatering design parameters and water disposal requirements.

1.3. Scope of Work

The scope of work implemented to meet the objectives listed above included the following tasks. Deviations from the scope as described in the PMWP are discussed in subsequent subsections.

- Completion of test trenching and collection of 2 soil samples from each test trench to further delineate soil contamination near AOCs A, B, D, F, H, and I.
- Performance of slug testing on six existing monitoring wells to estimate hydraulic conductivity in areas of concern.
- Collection and analysis of soil samples from test trenches within each of the AOCs for waste characterization parameters.
- Collection and analysis of 6 groundwater samples for waste characterization parameters from test trenches within the AOCs where remediation depths are expected to be below the water table. A portion of each test trench was to be excavated to a depth of 1 to 2 feet below the water table to allow for the collection of water.

2.0 FIELD ACTIVITIES

Pre-design investigation field activities were conducted during June 2007. Field activities were performed in general accordance with the Sampling and Analysis Plan (SAP) (URS May 2006), the Quality Assurance Project Plan (QAPP) (URS May 2006), and the Health and Safety Plan (HASP) (URS June 2007) prepared for this project. The details of the field activities performed as part of this pre-design investigation are discussed in the following subsections.

2.1. Waste Characterization Test Trench Excavation and Sampling

The original scope of work described in the PMWP included excavation of test trenches in 8 AOCs, A through H, for the collection of samples for waste characterization purposes. Test trenches were excavated within the following AOCs to the depths indicated:

- AOC–A (10 feet bgs);
- AOC–B (11.5 feet bgs);
- AOC–C (1 foot bgs);
- AOC–D (9 feet bgs);
- AOC–E (5 feet bgs);
- AOC–F (4 feet bgs);
- AOC–G (10 feet bgs); and
- AOC–H (3 feet bgs).

Soils were screened for evidence of gross contamination. Screening methods included visual inspection for staining or the presence of non-aqueous phase liquids (NAPL) and monitoring for volatile organic compounds (VOCs) using a photoionization detector (PID). Soil descriptions and screening observations were recorded on logs completed for each test trench. An active water line supplying the NYSDEC shops was encountered in the initial excavation of the test trench in Area B, therefore the test trench location was offset and re-excavated. An

inactive telecommunications line was encountered beneath wood sheeting and a plastic corrugated pipe on the west side of the trench in Area D. A clay pipe transecting test trench AOC-F was encountered approximately 3 feet bgs during the excavation in Area F. Test trench logs are provided in Appendix A.

A total of 8 soil samples collected from test trenches within the areas of concern were submitted for laboratory analysis of the following waste characterization parameters:

- Target Compound List (TCL) semi-volatile organic compounds (SVOCs) by USEPA Method 8270C;
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDDs and PCDFs) by USEPA Method 8290;
- Resource Conservation and Recovery Act (RCRA) metals by USEPA Method 6010B/7471A;
- Corrosivity (pH) by USEPA Method 9045C;
- Ignitability by USEPA Method 1030;
- Reactivity in accordance with SW846 Chapter 7, Section 7.3; and
- Full Toxicity Characteristic Leaching Procedure (TCLP) parameters by USEPA Methods 1311/8260B, 8270C, 8081A, 8151A, 6010B and 7470A.

Upon completion of each test trench, the excavation was backfilled with the excavated material in the reverse order of excavation.

2.2. Groundwater Sampling

In order to characterize groundwater quality for disposal purposes, groundwater samples were to be collected from AOCs A, B, D, E, F, and G. Groundwater samples were collected from five AOCs (A, B, D, F, and G) and submitted to the laboratory for analysis of the following parameters:

- TCL VOCs by USEPA Method 8260B

- TCL SVOCs by USEPA Method 8270C
- TCL pesticides by USEPA Method 8081A
- TCL polychlorinated biphenyls (PCBs) by USEPA Method 8082
- PCDDs and PCDFs by USEPA Method 8290
- Target Analyte List (TAL) metals by USEPA Method 6010B/7470A
- Total dissolved solids (TDS) by USEPA Method 160.1
- Total suspended solids (TSS) by USEPA Method 160.2
- Oil & grease by USEPA Method 413.1
- pH by USEPA Method 9040B
- Flashpoint by Method 1010
- Reactivity in accordance with SW846 Chapter 7, Section 7.3.

No groundwater leached into the test trench in AOC-E, therefore a sample could not be collected for analysis.

2.3. Hydraulic Conductivity Testing

To evaluate groundwater hydraulic conductivity in the AOCs for the purpose of estimating excavation dewatering requirements, slug testing was performed on select monitoring wells located near the AOCs. The slug tests were performed on MW-02 (Area C), MW-04 (Area G), MW-05 (Areas D and E), MW-06 (Area F), MW-07 (south side of Area A), and MW-08 (north side of Area A) as identified in the PMWP. Slug testing was performed in accordance with procedures presented in the SAP using a stainless steel slug and a pressure transducer to record instantaneous changes in water levels.

2.4. Delineation Test Trench Excavation and Sampling

Per the PMWP, test trenches near AOCs A, B, D, F, H, and I were to be excavated to further delineate soil contamination. Eight tests trenches were excavated, near AOCs A, D, E, F, H and I (Figure 3). The soils were screened for evidence of contamination. Screening methods included visual inspection for staining, monitoring for VOCs using a photoionization detector

(PID), and observation of odors. Soil descriptions and screening observations were recorded on logs completed for each test trench. A clay pipe that was expected to be encountered during the excavation of the test trench in Area I (TT-06) was not located. The clay pipe was encountered in Area F, in test trench AOC-F.

Test trenches were excavated as follows:

- TT-01 (AOC H) 10 feet long by 2 feet bgs
- TT-02 (AOC F) 15 feet long by 10 feet bgs
- TT-03 (AOC A) 15 feet long by 10 feet bgs
- TT-04 (AOC A) 10 feet long by 8.5 feet bgs
- TT-05 (AOC D) 15 feet long by 9.5 feet bgs
- TT-06 (AOC I) 30 feet long by 5 feet bgs
- TT-07 (AOC D) 10 feet long by 9 feet bgs
- TT-08 (Between AOCs B and D) 10 feet long by 10 feet bgs

Two soil samples were collected from each trench and submitted to the laboratory for analysis by the following methods:

- TCL SVOCs by USEPA Method 8270C;
- TCDDs and TCDFs by USEPA Method 8290; and
- TAL Metals by USEPA Method 6010B/7470A.

Upon completion of each test trench, the excavation was backfilled with the excavated material in the reverse order of excavation. The test trench logs are provided in Appendix A.

2.5. Investigation Derived Waste Management

No investigation derived wastes were generated during the pre-design investigation fieldwork.

2.6. Surveying

Additional surveying was completed at the site by Joanne Darcy Crum, L.S. Professional Land Surveyor. Surveying activities included locating test trenches for waste characterization and for delineation of contamination. Survey work was referenced to the New York State Plane Coordinate System Central Zone and reported in North American Datum of 1983/1996 (NAD 83/96) and reported in US Survey Feet. All location points were referenced vertically to the North American Vertical Datum of 1988 (NAVD 88)/GEOID03 and reported in US Survey Feet. The survey drawing is provided in Appendix B.

2.7. Pre-Demolition Survey Sampling

Samples were collected from the treatment building and adjacent storage shed to test for the presence of asbestos containing material (ACM) and lead based paint (LBP). This additional out-of-scope work was performed at the request of the NYSDEC to identify any potential ACM or LBP as part of a pre-demolition survey. Eleven types of suspect material were representatively sampled and submitted for analysis: drywall (2 types); joint compound; 12”x12” speckled floor tile and mastic; cove base; expansion joint; linoleum and tan mastic; black coating material; window glazing; black gasket material; and brown roof shingles. Four samples of paint chips were collected from painted surfaces. Pre-demolition survey results are summarized in Section 3.3. A more detailed description of sampling and analysis procedures is provided in the Pre-Demolition Survey Report in Appendix C.

3.0 RESULTS

3.1. Soil Investigation

The following subsections present the results of soil investigation including observations of gross contamination in soil and the results of soil analytical testing. In accordance with the PMWP, a Data Usability Summary Report (DUSR) for analytical data has been prepared as a separate document. The DUSR presents results of the data validation and has been prepared in accordance with NYSDEC Division of Environmental Remediation Draft DER-10 *Technical Guidance for Site Investigation and Remediation, Appendix 2B- Guidance for the Development of Data Usability Summary Reports* (NYSDEC 2002).

Per the ROD (NYSDEC, March 2004) the contaminants of concern for this site are benzo(a)anthracene, bis(2-ethylhexyl)phthalate, PCP, 2,3,7,8-TCDD toxicity equivalence factor (TEF), arsenic, chromium, and copper. The primary soil Standards, Criteria, and Guidance (SCG) values for soils identified in ROD Amendment (NYSDEC, May 2007)] are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels"; and 6 NYCRR Subpart 375-6 – "Remedial Program Soil Cleanup Objectives." For dioxins/furans a 1 part per billion (ppb) SCG of 2,3,7,8-TCDD TEF has been developed.

3.1.1. Waste Characterization Test Trench Results

Soil samples were collected from 8 test trenches within the following AOCs: AOC-A, AOC-B, AOC-D, AOC-E, AOC-F, AOC-G, and AOC-H, as shown on Figure 3. During excavation, fill was encountered as deep as 11.5 feet bgs. A slight fuel-like odor was encountered in AOCs A and F. A mild to moderate chemical odor was encountered in AOCs-B and E. A light non-aqueous phase liquid (LNAPL) was encountered in AOCs D and F. Staining was observed at AOCs D, F, G, and H. No PID readings above background elevated were observed at any of the test trench locations.

As mentioned in Section 2.1, an active water line supplying the NYSDEC shops was encountered in the initial excavation of the test trench in Area B. An inactive telecommunications line was encountered beneath wood sheeting and a plastic corrugated pipe on the west side (closest to the treatment building) of test trench AOC-D in Area D. Water from a drain tile adjacent to the Treatment Building in Area D was draining into the excavation AOC-D after a depth of 9 feet bgs was excavated. A clay pipe transecting test trench AOC-F was encountered approximately 3 feet bgs during the excavation in Area F.

The detected analytical results for the AOC samples are summarized in Table 3-1. SVOCs, dioxins/furans and metals were detected in the waste characterization (AOC) test-trench samples. All results were below *40CFR Part 261.24 - Characteristics of Hazardous Waste* limits in the analysis for the hazardous waste characteristics, including toxicity (i.e., TCLP), ignitability, corrosivity, and reactivity. PCP and total hexachlorodibenzofurans (HxCDF) in the sample from test trench AOC-A exceeded the *40CFR PART 268.40 - Alternative Treatment Standard* limits for F-032 waste (Figure 4). Comparison of the waste characterization sample results to site 6NYCRR Part 376 and site background limits is provided in Appendix D-1.

3.1.2. Delineation Test Trench Results

Test trenches (TT-01 through TT-08) were excavated to further delineate soil contamination near select areas of concern (AOCs) as shown in Figure 3. Depths of the delineation test trenches ranged from approximately 2 to 10 feet bgs. Although no visible staining was observed in any of the delineation test trenches, a sheen was recorded in the seep water at locations TT-03 and TT-04, which are located south and southeast of Area A. At TT-02, located near the southwest corner of Area F, a bisecting trench backfilled with miscellaneous debris (e.g., plastic, shirts, household garbage, and a 6 foot long x 1 foot diameter pole) was encountered from 2 to 4 feet bgs. At TT-07, located on the east side of the treatment building (Area D), a 4-inch pipe was encountered through the excavation at approximately 6 feet bgs. A chemical odor was noted throughout the TT-07 excavation, most notably in the gray soils at approximately 4 feet bgs.

Analytical results for contaminants of concern in delineation test trench samples are summarized in Table 3-2 and Figure 5. Concentrations above the SCGs (6NYCRR Part 375.6 Unrestricted Use) included PCP (SCG = 0.8 mg/kg), detected in soil samples from TT-02-SE, TT-03 NW, TT-03-SE, and TT-07-NW; and arsenic (SCG =13 mg/kg) in TT-06-NW and TT-06-SE. A comparison of the results to the SCGs listed in the original ROD (NYSDEC, March 2004) is also provided in table 3-2.

The detected metal concentrations were also compared to TAGM 4046 and Camp Georgetown site background concentrations [RI (Shaw 2004a)]. A majority of the detections exceeded the Camp Georgetown site background levels. With the exception of arsenic, magnesium, nickel, and zinc, all are within Eastern USA background concentrations (listed in TAGM 4046). Arsenic, nickel, silver and/or zinc exceeded 6NYCRR Part 375.6 Unrestricted Use limits. The complete list of detected compounds in the delineation samples compared to 6NYCRR Part 375.6 Unrestricted Use limits, TAGM 4046 limits and site background is provided in Appendix D-2.

3.2. Groundwater Investigation

This section presents the results of groundwater investigation activities including (1) groundwater sample collection from AOC test trenches for the purpose of waste characterization evaluation and (2) performance of slug testing to estimate hydraulic conductivities in the proposed excavation areas.

3.2.1. Groundwater Sampling Results

Groundwater samples were collected from 5 test trenches – AOC-A, -B, -D, -F, and -G. The analytical results, summarized in Table 3-3, are compared to Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) *Ambient Water Quality Standards And Guidance Values And Groundwater Effluent Limitations*, June 1998, Class GA groundwater and Class A surface water standards and guidance values. Discussion of results compared to the

standards is presented below. Evaluation of results in comparison to surface water standards and guidance is included in Section 4.2.

Detected VOCs included benzene, chloroethane, ethylbenzene, isopropylbenzene, methylcycloheaxane, toluene, and xylene. Benzene, toluene, ethylbenzene and xylene exceeded TOGS 1.1.1 Class GA and Class A ambient water quality standards and guidance values in AOC-A, -B, and -D.

SVOCs exceeding TOGS 1.1.1 Class GA and/or Class A ambient water quality standards and guidance values included 2,3,4,6-tetrachorophenol, 2,4-dimethylphenol, pentachlorophenol, phenol, 1,1-biphenyl, and/or fuel oil compounds [e.g., polynuclear aromatic hydrocarbons (PAHs)] in all locations.

Several pesticides, including DDTs and BHCs were detected in the samples from AOC-A, -B and –D, with most exceeding TOGS 1.1.1 Class GA and/or Class A ambient water quality standards and guidance values. The TOGS 1.1.1 Class GA water quality standard for 2,3,7,8-TCDD TEF was exceeded in all samples collected from the test trenches. The TOGS 1.1.1 Class A water quality standard for 2,3,7,8-TCDD was exceeded in the water from AOC-D and AOC-F.

Metals detected exceeding the TOGS 1.1.1 Class GA and/or Class A ambient water quality standard and guidance values included aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, and vanadium.

The results discussed above should not be considered as indicative of groundwater quality at the site because the samples were not collected from monitoring wells but from groundwater that leached into open test trenches.

3.2.2. Hydraulic Conductivity Testing

Results of slug tests conducted in onsite monitoring wells are summarized in Table 3-4. Values of hydraulic conductivity were obtained from both rising and falling head tests. Tests were conducted in six wells. Results indicate that the hydraulic conductivities of the water-bearing zone at the site are relatively low, in the range of 10^{-6} to 10^{-4} centimeters per second (cm/s). Slug test data and analysis are included in Appendix E.

3.3. Pre Demolition Survey Results

Of the 11 types of samples collected, two were positive for ACM, both types being non-friable organic bound (NOB) materials. The black coating material contains between 9.4% and 13.2% Chrysotile. The black gasket material contains 10.8% Chrysotile. Lead was detected in 1 paint chip sample (0.09% wt.), however the level of lead in the paint is below federal limits (0.5 % wt). The pre demolition survey report is provided in Appendix C.

4.0 DISCUSSION

The following discussion incorporates results of this pre-design investigation in the evaluation of remedial design parameters for extent of soil excavation, excavation dewatering, and soil disposal requirements.

4.1. Extent of Contamination

Results of this PDIR can be used to further define areas of concern identified in the FS (Shaw, 2004b). As previously discussed, ten areas of concern have been identified as containing soil contamination in excess of Site SCGs (6NYCRR Part 375.6 – Unrestricted Use). The PDIR results indicate that the proposed limits of some of these areas require revision due to additional areas of contamination that were identified during the PDIR.

Soil analytical results for Areas A, D, F, and I indicate the horizontal extent of contamination has not been defined as contaminant concentrations exceeding site SCGs were identified in the test trench samples as follows:

- Area A: TT-03 contained 40 mg/kg PCP on the southeast end and 0.88 mg/kg PCP on the northwest end of the excavation.
- Area D: TT-07 contained 1.6 mg/kg PCP on the northwest end.
- Area F: TT-02 contained 2.2 mg/kg PCP on the southeast end of the excavation.
- Area I: TT-06 contained 23.4 mg/kg arsenic on the southeast end and 14.1 mg/kg arsenic on the northwest end of the excavation.

It is recommended the following excavation limits be modified as shown on Figure 5, based on the results listed above:

- Area A: Extend excavation limits south to include the entire length of TT-03.

- Area D: Create a new area of concern, Area K, the width of TT-07, beginning at the eastern side of Area D extending up to the eastern limit of TT-07 to a depth of 5 feet bgs.
- Area F: Extend excavation limits from the southwest corner past MW-06 to the TT-02 line and then diagonally to the southeast corner of Area F.
- Area I: Create a new area of concern, Area L, from the south side of monitoring well MW-05 along the length of TT-06 to a depth of 10 feet bgs.

4.2. Excavation Dewatering

The following evaluation of excavation dewatering pumping and discharge requirements was performed by incorporating the results from hydraulic conductivity testing and groundwater analytical testing. Information and assumptions presented in the RI and FS (Shaw 2004a and 2004b, respectively), in addition to other conservative assumptions outlined below were used for the evaluation. As the remedial design progresses, and the information and assumptions regarding excavation dewatering are revised and refined, the groundwater extraction rates will be reevaluated. Key factors and assumptions will include the duration of excavation, the depth and area of excavation open at one time, and whether sheeting or other methods are used to minimize the infiltration of groundwater. These items will be further considered in the Design submittal.

4.2.1. Extraction Rates

Contaminated soil from several areas of the site is to be excavated and removed. In general, the depth of soil to be excavated extends below the existing water table at the site. Therefore, regardless of the specific excavation method chosen, it is expected that dewatering of the areas to be excavated will be required. Groundwater at the site has been detected at depths ranging from approximately 2 feet to 5 feet below ground. Based on the FS (Shaw, 2004b), the depth of the soil to be excavated is from 1 to 12 feet.

The quantity of water to be pumped in order to dewater a specific area is dependent on many factors including, but not limited to, the soil formation parameters, the drawdown required, and the footprint of the excavation. Soil parameters were assumed to be consistent among the

various areas. For the areas where the excavation will extend below the water table, drawdown requirements range from 4 feet to 11 feet, assuming that the groundwater is depressed to one foot below the assumed bottom of the excavation. As presented in the FS (Shaw, 2004b), the areal extents of the excavations range from approximately 200 square feet to approximately 6,000 square feet. Calculations of estimated dewatering rates for this evaluation are included in Appendix F. Depending on the size of the excavation, the assumed time frame of dewatering (1,2, or 3 days), and the assumed properties of the water-bearing zone, extraction rates of 1 to 300 gallons per minute (gpm) were obtained. The total volume of water that will need to be extracted from all eight excavations requiring dewatering has been estimated at 40,000 to 1,400,00 gallons.

4.2.2. Treatment Rate

Although estimated extraction rates range as high 300 gpm, a rate in the range of 50 to 100 gpm is a more workable flow rate, and will allow for easier selection of equipment including pumps and filters. A 50 to 100 gpm system is more practical and will also minimize the impact of the temporary discharge on the receiving body of water. If a higher withdrawal rate is required on a temporary basis, the contractor will have several options. The contractor may temporarily store the water for treatment at a later time, dewater the area at a slower rate and for a longer time, dewater and excavate the large areas in smaller portions, or to use sheeting or other methods to limit the infiltration of water. Assuming continuous treatment, it would take approximately 10 to20 days to treat and discharge 1.5 million gallons of water at a rate of 50 to 100 gpm. The exact means and methods for the excavation and dewatering will be up to the contractor; therefore, the size of the treatment system will also be left up to the Contractor.

4.2.3. Water Discharge

As the water collected for dewatering is from areas of contaminated soil, it is likely that the water itself will be contaminated. The proposed discharge for the water is to Mann Brook, which is considered a Class A stream by the NYSDEC.

Table 3-3 summarizes contaminants detected in a round of water samples collected from test trenches during a sampling event in June 2007. In general, contaminant concentrations were

relatively low; however, some VOCs, SVOCs, pesticides, dioxin/furans, and metals exceeded the Class A criteria.

4.2.4. Proposed Treatment

Until a discharge permit has been obtained, it is difficult to determine what specific treatment may be required before the extracted groundwater can be discharged. However, for the purpose of this evaluation, it is assumed that treatment will consist only of solids removal and aqueous-phase carbon adsorption.

Although some VOCs in the groundwater samples exceeded the criteria for a Class A stream, it is not expected that the average VOC concentrations will be very significant. Any of the more volatile contaminants will be lost during the pumping, storage, and discharge of the water. Therefore, no specific treatment is proposed for the volatile contaminants.

Several semivolatile contaminants were detected at significant levels including pentachlorophenol. Aqueous phase carbon adsorption would most likely be used for removal of these contaminants prior to discharge. Carbon would also likely remove the trace amounts of pesticides and dioxin/furans in the groundwater. The contaminated water is simply pumped through the carbon unit, where the contaminants have an affinity to adsorb onto the surface of the carbon particles. Aqueous phase carbon adsorption units are well suited to the temporary construction-type environment proposed for this site. The units are small enough that they easily could be relocated as necessary at the various areas to be excavated. Depending on the flow rate that the contractor uses, the carbon system can be designed for either large flow rate units, or smaller flow rate units operating in parallel.

A filtration step would most likely be included in conjunction with the carbon for treatment of the proposed groundwater discharge. The filters will serve two purposes. One is to extend the life of the carbon adsorbers by preventing solids in the water from clogging the units. The second benefit to removing the solids is that the fine sediment and suspended particles in the water often also contain a significant amount of adsorbed contamination. By removing the solids,

it is expected that the contaminant concentrations in the groundwater will be decreased. Again, due to the temporary nature of the discharge, a simple filter-bag type unit (as opposed to a media type unit such as a sand filter) is proposed. An alternative to the filters would be the use of some type of settling tank or impoundment that could be used to store the water until most solids had settled out from the water. The specific treatment used will depend mostly on the excavation methods, schedule and other factors to be determined by the contractor.

No specific treatment is proposed for the metals contaminants. The metals results reported on Table 3-3 are unfiltered results. Therefore, it is expected that the filtration and the carbon adsorption steps will remove a large portion of the inorganic contaminants. Due to the short-term nature of the discharge, it is not expected that treatment for the removal of inorganic contaminants will be a high priority. Metals treatment will be given further consideration after discharge criteria have been established by the Department.

4.3. Soil Disposal Requirements

As stated in the ROD, contaminated soil that would be disposed of off-site is regulated by 6NYCRR Part 371 that defines the contaminated soils as hazardous waste (hazardous waste code F032). As such, these soils would have to be disposed of in an appropriate hazardous waste landfill and may require pretreatment prior to disposal.

An evaluation of federal and state land disposal restriction (LDR) regulations was performed to determine the need for pretreatment of soils prior to placement in an appropriate landfill.

4.3.1. Regulatory Review

Pertinent federal and state regulations reviewed included the following:

- RCRA Subtitle C, Land Disposal Restrictions, 40 CFR Part 268
- NYSDEC Regulations, Land Disposal Restrictions, 6NYCRR Part 376

The findings of this evaluation as they pertain to Site contaminated soils are summarized below:

- F032 hazardous wastes are prohibited from land disposal unless the wastes meet applicable treatment standards.

- Soil and debris contaminated with F032 wastes are prohibited from land disposal unless the wastes meet the applicable LDR alternative treatment standards (ATS) for contaminated soil discussed below.

- LDR ATSs for contaminated soil state that when treatment of any constituent would result in a concentration less than 10 times the Universal Treatment Standard (UTS) for that constituent, treatment to achieve constituent concentrations less than 10 times the UTS is not required.

- In addition to treatment requirements discussed above, soils exhibiting the characteristics of ignitability, corrosivity, or reactivity must also be treated to eliminate these characteristics.

The ATSs for waste code F032, as described above (i.e., 10 x UTS), are presented in Table 3-1. ATSs for total metals listed in Table 3-1 have been adjusted from the TCLP based values by multiplying the ATS by 200 (accounting for 20x dilution during extraction procedure and 10 x UTS) for estimating purposes. Based on evaluation of these regulations, Site contaminated soil exhibiting constituent concentrations below the ATS (10 times the UTS) could be sent for land disposal without prior treatment to reduce constituent concentrations. In addition, these soils must not exhibit the characteristics for ignitability, corrosivity, and reactivity.

The above analysis assumes that soils meet landfill requirements for liquids content. Excavated soils to be disposed of in a Subtitle C landfill must exhibit no free liquid as defined by the paint filter liquids test, USEPA Method 9095, in Test Methods for Evaluating Solid Waste (SW-846) (USEPA 1997). Soils that may contain free liquids, due to groundwater saturation,

may require onsite pretreatment including temporary placement in drying beds or mixing with a non-biodegradable material such as cement kiln dust. Any treatment mixtures added prior to land filling must not be biodegradable in the landfill.

Soils determined to exceed the ATSs are prohibited from landfill placement in the United States. Any soils intended for off-site disposal that exceed these ATSs would require pre-treatment prior to landfill placement.

4.3.2. Site Waste Characterization

Based on pre-design investigation soil analysis, no soil exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity were identified. Therefore, no pretreatment of soils would be required to address these parameters prior to placement in a landfill.

Site soil analytical results from this pre-design investigation are compared to the ATSs for waste code F032 in Table 3-1. PCP and total HxCDF were identified at concentrations exceeding the ATSs in the sample from Area A. Based on these results, soils would require pre-treatment prior to placement in an appropriate hazardous waste landfill, or incineration. However, at the time of construction, results for waste characterization sampling of excavated soil planned for off-site disposal should be evaluated for compliance with these LDR ATSs.

5.0 REFERENCES

URS Corporation. 2006a. *Project Management Work Plan/Budget Estimate For Remedial Design Project*, Camp Georgetown Site, Site #7-27-010, Town of Georgetown, New York. Final. April.

URS Corporation. 2006b. *Field Sampling Plan for the Pre-Design Investigation*. Site ID #7-27-010, Camp Georgetown Town of Georgetown, Madison County, New York. May.

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NYSDEC. 1998. *Ambient Water Quality Standards And Guidance Values And Groundwater Effluent Limitations*. Division of Water Technical and Operational Guidance Series (1.1.1). June, including up to June 2004 Addendum.

NYSDEC. 1994. *Determination Of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046)* Division of Hazardous Waste Remediation. Jan 24.

Shaw Environmental and Infrastructure Engineering of New York, P.C. (Shaw) 2004a. *Remedial Investigation Report for the Camp Georgetown Site, Georgetown, New York*. Revised. February 23.

Shaw. 2004b. *Feasibility Study Report, Camp Georgetown, Georgetown, New York*. Final. February 24.

United States Environmental Protection Agency (USEPA). 1997. *Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, SW-846*. Final Update III. June.

TABLE 1-1
AREAS OF CONCERN

Area of Concern	Estimated Area (square feet)	Estimated Depth (feet bgs)	Estimated Volume (cubic yards)	Location Description
A	3800	10	1050	GPT-16 and GPT-17
B	2800	12	1450	Former AST Location
C	1200	1	50	Adjacent to and Southeast of Former AST Location
D	6000	10	2290	Former Treatment Building
E	1800	5	350	Former Drip Pad
F	2500	10	1000	Southwest of Former Treatment Building
G	700	10	300	TP-19
H	1500	1	60	Seep
I	200	5	40	Drainage path from SW corner of Former Treatment Building to Seep
J	500	5	90	Drainage path from SE corner of Former Treatment Building to Footer Drain
Proposed New Areas of Excavation				
K	900	5	200	Southwest corner of Treatment Building
L	600	10	250	East Side of Storage Shed on east side of Treatment Building,

TABLE 3-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID				AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Semivolatile Organic Compounds								
1,1-Biphenyl	MG/KG	-	-	0.60	0.046 J		0.25 J	0.33 J
2,3,4,6-Tetrachlorophenol	MG/KG	74	-	7.1 DJ	0.13 J	0.17 J		2.6
2-Methylnaphthalene	MG/KG	-	-	8.2 DJ	0.81		1.6	6.6 DJ
Acenaphthylene	MG/KG	-	-	0.39 J				
Acetophenone	MG/KG	-	-					
Benzaldehyde	MG/KG	-	-					
Benzo(a)anthracene	MG/KG	34	-	0.072 J				0.043 J
Benzo(a)pyrene	MG/KG	34	-					
Benzo(b)fluoranthene	MG/KG	68	-					
Benzo(g,h,i)perylene	MG/KG	-	-					0.044 J
bis(2-Ethylhexyl)phthalate	MG/KG	-	-	0.23 J	0.066 J	0.13 J	0.092 J	0.076 J
Chrysene	MG/KG	34	-	0.15 J				0.082 J
Dibenzofuran	MG/KG	-	-				0.13 J	
Fluoranthene	MG/KG	-	-	0.38 J				0.16 J
Fluorene	MG/KG	34	-	1.4	0.066 J		0.24 J	0.67
Indeno(1,2,3-cd)pyrene	MG/KG	34	-					
Naphthalene	MG/KG	56	-	1.1	0.079 J		0.16 J	0.49
Pentachlorophenol	MG/KG	74	-	370 D	4.2 J	7.2 D	0.29 J	46 D
Phenanthrene	MG/KG	56	-	4.2	0.21 J		0.55	2.2
Pyrene	MG/KG	82	-	2.2	0.073 J	0.049 J	0.073 J	0.85

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID				AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
TCLP Semivolatile Organic Compounds								
2,4,5-Trichlorophenol	UG/L	-	4.00E+05	3 J				
Pentachlorophenol	UG/L	-	100000	660 D	200 J	59 J	9 J	680 D
Dioxins & Furans								
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	72,000 D	5,300 D	3.2 J	2,100	12,000 D
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-					
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	2,900 D	93 D		41	260 D
1,2,3,4,7,8-HxCDD	NG/KG	10000	-	200 D	3.0 J		3.4 J	45
1,2,3,4,7,8-HxCDF	NG/KG	10000	-	1,200 D	16		16	71
1,2,3,6,7,8-HxCDD	NG/KG	10000	-	4,300 D	170		65	570
1,2,3,6,7,8-HxCDF	NG/KG	10000	-	340 D				
1,2,3,7,8,9-HxCDD	NG/KG	10000	-	560 D	9.9		9.0	130
1,2,3,7,8,9-HxCDF	NG/KG	10000	-	140 D			2.1 J	32
1,2,3,7,8-PeCDD	NG/KG	10000	-	39				13
1,2,3,7,8-PeCDF	NG/KG	10000	-	180	2.7 J		2.1 J	9.0
2,3,4,6,7,8-HxCDF	NG/KG	10000	-	1,100 D	15		11	78
2,3,4,7,8-PeCDF	NG/KG	10000	-	420	6.0		2.0 J	20
2,3,7,8-TCDD	NG/KG	10000	-	0.96				
2,3,7,8-TCDF	NG/KG	10000	-		0.37 NJ	0.23 NJ	0.31 NJ	1.3 NJ
OCDD	NG/KG	-	-	330,000 DJ	41,000 D	21	18,000	71,000 D
OCDF	NG/KG	-	-	290,000 DJ	7,700 D	2.1 J	1,900	36,000 D

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

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SITE NO. 7-27-010

Location ID				AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID				AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Dioxins & Furans								
Total HpCDD	NG/KG	-	-	110,000 D	7,900 D	5.5	3,000	18,000 D
Total HpCDF	NG/KG	-	-	2,900 D	4,900 D	1.2 J	1,300	260 D
Total HxCDD	NG/KG	10000	-	10,000 D	360		150	1,400
Total HxCDF	NG/KG	10000	-	46,000 D	810	0.90 J	370	3,400
Total PeCDD	NG/KG	10000	-	82				29
Total PeCDF	NG/KG	10000	-	1,300	33	1.7 J	22	180
Total TCDD	NG/KG	10000	-	55			0.60 J	11
Total TCDF	NG/KG	10000	-	110	14	0.97	1.5	18
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	-	2,400	130	0.077	54	340
Metals								
Arsenic	MG/KG	1000	-	7.4 J	10.7 J	6.2 J	8.8 J	8.8 J
Barium	MG/KG	-	-	52.9	78.5	40.0	114	87.4
Cadmium	MG/KG	-	-	0.52 J	0.54 J	0.39 J	0.49 J	0.46 J
Chromium	MG/KG	120	-	16.2	20.7	16.4	18.2	18.5
Lead	MG/KG	-	-	18.4 J	15.0 J	8.3 J	10.4 J	10.9 J
Mercury	MG/KG	-	-	0.045 B		0.0085 B		
Silver	MG/KG	-	-	5.6 J	6.1 J	5.0 J	5.3 J	5.9 J
TCLP Metals								
Barium	MG/L	-	100	0.151 BJ	0.293 J	0.349 J	0.564 J	0.281 J
Cadmium	MG/L	-	1	0.00063 B	0.00022 B	0.00052 B	0.00073 B	0.00038 B

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

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CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID				AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
TCLP Metals								
Mercury	MG/L	-	0.2			5.00E-05 B		
Selenium	MG/L	-	1		0.0367			
RCRA Characteristics								
Corrosivity (pH)	S.U.	-	2-12.5	5.5	7.9	5.5	7.1	4.5
Ignitability	°F	-	<140	150 >	145 >	145 >	145 >	145 >
Reactive Sulfide	MG/KG	-	500	13				

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

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SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-F	AOC-G	AOC-H
Sample ID				AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix				Soil	Soil	Soil
Depth Interval (ft)				3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled				06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			
Semivolatile Organic Compounds						
1,1-Biphenyl	MG/KG	-	-	0.083 J		
2,3,4,6-Tetrachlorophenol	MG/KG	74	-	0.24 J		
2-Methylnaphthalene	MG/KG	-	-	0.79		
Acenaphthylene	MG/KG	-	-			
Acetophenone	MG/KG	-	-			0.12 J
Benzaldehyde	MG/KG	-	-	0.10 J	0.076 J	
Benzo(a)anthracene	MG/KG	34	-	0.13 J		
Benzo(a)pyrene	MG/KG	34	-	0.099 J		
Benzo(b)fluoranthene	MG/KG	68	-	0.14 J		
Benzo(g,h,i)perylene	MG/KG	-	-	0.065 J		
bis(2-Ethylhexyl)phthalate	MG/KG	-	-	0.12 J	0.095 J	0.10 J
Chrysene	MG/KG	34	-	0.11 J		
Dibenzofuran	MG/KG	-	-			
Fluoranthene	MG/KG	-	-	0.22 J		
Fluorene	MG/KG	34	-	0.16 J		
Indeno(1,2,3-cd)pyrene	MG/KG	34	-	0.048 J		
Naphthalene	MG/KG	56	-	0.16 J		
Pentachlorophenol	MG/KG	74	-	11 D	0.13 J	
Phenanthrene	MG/KG	56	-	0.32 J		
Pyrene	MG/KG	82	-	0.34 J		

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

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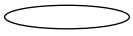
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

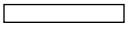
Location ID				AOC-F	AOC-G	AOC-H
Sample ID				AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix				Soil	Soil	Soil
Depth Interval (ft)				3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled				06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			
TCLP Semivolatile Organic Compounds						
2,4,5-Trichlorophenol	UG/L	-	4.00E+05			
Pentachlorophenol	UG/L	-	100000	6 J		
Dioxins & Furans						
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	5,400	210	300
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	1,200	38	79
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	110	2.8 J	
1,2,3,4,7,8-HxCDD	NG/KG	10000	-	17		3.8 J
1,2,3,4,7,8-HxCDF	NG/KG	10000	-	19	2.2 J	2.7 J
1,2,3,6,7,8-HxCDD	NG/KG	10000	-	150	11	16
1,2,3,6,7,8-HxCDF	NG/KG	10000	-			
1,2,3,7,8,9-HxCDD	NG/KG	10000	-	39	1.4 J	7.4
1,2,3,7,8,9-HxCDF	NG/KG	10000	-	13	1.6 J	1.2 J
1,2,3,7,8-PeCDD	NG/KG	10000	-	4.1 J		1.8 J
1,2,3,7,8-PeCDF	NG/KG	10000	-	2.8 J		
2,3,4,6,7,8-HxCDF	NG/KG	10000	-	30	2.2 J	3.7 J
2,3,4,7,8-PeCDF	NG/KG	10000	-	7.9		
2,3,7,8-TCDD	NG/KG	10000	-			
2,3,7,8-TCDF	NG/KG	10000	-	0.74 NJ		0.26 NJ
OCDD	NG/KG	-	-	41,000	1,500	1,300
OCDF	NG/KG	-	-	9,000	170	270

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.


Concentration Exceeds Criteria (1)


Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-F	AOC-G	AOC-H
Sample ID				AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix				Soil	Soil	Soil
Depth Interval (ft)				3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled				06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			
Dioxins & Furans						
Total HpCDD	NG/KG	-	-	7,700	320	450
Total HpCDF	NG/KG	-	-	6,300	160	270
Total HxCDD	NG/KG	10000	-	440	29	56
Total HxCDF	NG/KG	10000	-	1,100	67	96
Total PeCDD	NG/KG	10000	-	15	10	1.8 J
Total PeCDF	NG/KG	10000	-	84	6.3	17
Total TCDD	NG/KG	10000	-	5.3	7.9	
Total TCDF	NG/KG	10000	-	11	1.0	2.5
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	-	150	6.0	9.8
Metals						
Arsenic	MG/KG	1000	-	5.3 J	8.3 J	6.4 J
Barium	MG/KG	-	-	53.1	56.9	71.7
Cadmium	MG/KG	-	-	0.44 J	0.65 J	0.44 J
Chromium	MG/KG	120	-	13.7	20.4	14.7
Lead	MG/KG	-	-	13.5 J	20.0 J	11.1 J
Mercury	MG/KG	-	-	0.053	0.046 B	0.040 B
Silver	MG/KG	-	-	4.6 J	7.5 J	5.6 J
TCLP Metals						
Barium	MG/L	-	100	0.210 J	0.204 J	0.240 J
Cadmium	MG/L	-	1	0.00089 B	0.00087 B	0.0349

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				AOC-F	AOC-G	AOC-H
Sample ID				AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix				Soil	Soil	Soil
Depth Interval (ft)				3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled				06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**			
TCLP Metals						
Mercury	MG/L	-	0.2			
Selenium	MG/L	-	1	0.0319		
RCRA Characteristics						
Corrosivity (pH)	S.U.	-	2-12.5	6.2	5.9	5.3
Ignitability	°F	-	<140	145 >	155 >	145 >
Reactive Sulfide	MG/KG	-	500	13	28	

Criteria (1)- Alternative Treatment Standards for F032 Waste - 40 CFR 268.48

Criteria (2)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				TT-01-NE	TT-01-SW	TT-02-NW	TT-02-SE	TT-03-NW
Sample ID				TT-1-NE (0-1')	TT-1-SW (0-1')	TT-2-NW (4')	TT-2 SE (4')	TT-3-NW (2.5)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				0.0-1.0	0.0-1.0	4.0-4.0	4.0-4.0	2.5-2.5
Date Sampled				06/20/07	06/20/07	06/20/07	06/20/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Semivolatile Organic Compounds								
Benzo(a)anthracene	MG/KG	1	0.224					
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	0.075 J	0.16 J	0.11 J	0.096 J	0.17 J
Pentachlorophenol	MG/KG	0.8	1				2.2 J	0.88 J
Total Semivolatile Organic Compounds	MG/KG	-	-	0.075	0.16	0.11	2.296	1.05
Dioxins & Furans								
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	0.64	0.17	8.5	180	130
Metals								
Arsenic	MG/KG	13	7.5	6.3	7.5	5.7	5.9	7.2
Chromium	MG/KG	30	50	18.6	24.2	19.4	18.4	14.0
Copper	MG/KG	50	25	19.5	18.9	17.7	15.9	19.8

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Contaminants of Concern: Standards, Criteria, and Guidance values. Record of Decision, Camp Georgetown Site, Site No. 7-27-010, NYSDEC. March 2004.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Advanced Selection: COCs
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Printed: 10/31/2007 3:28:04 PM
[LOCID] LIKE 'TT*' AND ([PARNAME] = 'Benzo(a)anthracene' OR [PARNAME] = 'bis(2-Ethylhexyl)phthalate' OR [PARNAME] = 'Pentachlorophenol' OR [PARNAME] = '2,3,7,8-TCDD Toxicity Equivalence (
OR [PARNAME] = 'Arsenic' OR [PARNAME] = 'Chromium' OR [PARNAME] = 'Coppe

TABLE 3-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				TT-03-SE	TT-04-NW	TT-04-SE	TT-05-NW	TT-05-SE
Sample ID				TT-3-SE (2.5)	TT-4-NW (1.5)	TT-4-SE (1.5)	TT-5-NW (1.5)	TT-5-SE (1.5)
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.5-2.5	1.5-1.5	1.5-1.5	1.5-1.5	1.5-1.5
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Semivolatile Organic Compounds								
Benzo(a)anthracene	MG/KG	1	0.224					
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	0.10 J	0.10 J	0.087 J	0.11 J	0.093 J
Pentachlorophenol	MG/KG	0.8	1	40 D	0.064 J			
Total Semivolatile Organic Compounds	MG/KG	-	-	40.1	0.164	0.087	0.11	0.093
Dioxins & Furans								
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	93	3.3	0.11	0.98	5.4
Metals								
Arsenic	MG/KG	13	7.5	10.6	7.2	7.6	5.1	4.8
Chromium	MG/KG	30	50	19.3	22.3	24.2	21.8	16.9
Copper	MG/KG	50	25	23.7	17.0	17.0	17.7	15.8

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Contaminants of Concern: Standards, Criteria, and Guidance values. Record of Decision, Camp Georgetown Site, Site No. 7-27-010, NYSDEC. March 2004.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Advanced Selection: COCs
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[LOCID] LIKE 'TT*' AND ([PARNAME] = 'Benzo(a)anthracene' OR [PARNAME] = 'bis(2-Ethylhexyl)phthalate' OR [PARNAME] = 'Pentachlorophenol' OR [PARNAME] = '2,3,7,8-TCDD Toxicity Equivalence (
OR [PARNAME] = 'Arsenic' OR [PARNAME] = 'Chromium' OR [PARNAME] = 'Copper

TABLE 3-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				TT-06-NW	TT-06-SE	TT-07-NW	TT-07-SE	TT-08-E
Sample ID				TT-6-NW (2.0)	TT-6-SE (2.0)	TT-7-NW (4')	TT-7-SE (4')	TT-8-E (3')
Matrix				Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)				2.0-2.0	2.0-2.0	4.0-4.0	4.0-4.0	3.0-3.0
Date Sampled				06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Semivolatile Organic Compounds								
Benzo(a)anthracene	MG/KG	1	0.224					
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	0.10 J	0.084 J	0.073 J	0.089 J	0.055 J
Pentachlorophenol	MG/KG	0.8	1		0.14 J	1.6	0.12 J	
Total Semivolatile Organic Compounds	MG/KG	-	-	0.1	0.224	1.673	0.209	0.055
Dioxins & Furans								
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	2.2	1.3	25	12	0.028
Metals								
Arsenic	MG/KG	13	7.5	14.1	23.4	9.2	11.5	7.8
Chromium	MG/KG	30	50	20.8	25.2	21.3	22.5	19.5
Copper	MG/KG	50	25	20.1	28.9	25.1	25.0	22.2

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Contaminants of Concern: Standards, Criteria, and Guidance values. Record of Decision, Camp Georgetown Site, Site No. 7-27-010, NYSDEC. March 2004.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Advanced Selection: COCs
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[LOCID] LIKE 'TT*' AND ([PARNAME] = 'Benzo(a)anthracene' OR [PARNAME] = 'bis(2-Ethylhexyl)phthalate' OR [PARNAME] = 'Pentachlorophenol' OR [PARNAME] = '2,3,7,8-TCDD Toxicity Equivalence (
OR [PARNAME] = 'Arsenic' OR [PARNAME] = 'Chromium' OR [PARNAME] = 'Coppe

TABLE 3-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID				TT-08-W
Sample ID				TT-8-W (3')
Matrix				Soil
Depth Interval (ft)				3.0-3.0
Date Sampled				06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	
Semivolatile Organic Compounds				
Benzo(a)anthracene	MG/KG	1	0.224	
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	0.050 J
Pentachlorophenol	MG/KG	0.8	1	
Total Semivolatile Organic Compounds	MG/KG	-	-	0.05
Dioxins & Furans				
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	0.12
Metals				
Arsenic	MG/KG	13	7.5	10.5
Chromium	MG/KG	30	50	22.3
Copper	MG/KG	50	25	20.1

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Contaminants of Concern: Standards, Criteria, and Guidance values. Record of Decision, Camp Georgetown Site, Site No. 7-27-010, NYSDEC. March 2004.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- = No criteria. Blank cell = Not detected.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Advanced Selection: COCs
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[LOCID] LIKE 'TT*' AND ([PARNAME] = 'Benzo(a)anthracene' OR [PARNAME] = 'bis(2-Ethylhexyl)phthalate' OR [PARNAME] = 'Pentachlorophenol' OR [PARNAME] = '2,3,7,8-TCDD Toxicity Equivalence (
OR [PARNAME] = 'Arsenic' OR [PARNAME] = 'Chromium' OR [PARNAME] = 'Copper

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
Benzene	UG/L	1	1	-		2 J			
Chloroethane	UG/L	5	5	-			2 J		
Ethylbenzene	UG/L	5	5	-	1 J	7	11		
Isopropylbenzene (Cumene)	UG/L	5	2.6	-	2 J	4 J	15		
Methylcyclohexane	UG/L	-	-	-		5	35		
Toluene	UG/L	5	5	-		7			
Xylene (total)	UG/L	5	5	-	10	42	32		
Semivolatile Organic Compounds									
1,1-Biphenyl	UG/L	5	5	-		730 J	62		
2,3,4,6-Tetrachlorophenol	UG/L	1	1	-	100 J	1,300 J		2 J	
2,4-Dimethylphenol	UG/L	1	1	-		18 J			
2-Methylnaphthalene	UG/L	-	4.7	-	120 J	1,600 DJ	550 D	8 J	
Acenaphthene	UG/L	20	5.3	-			25		
Anthracene	UG/L	50	3.8	-		40 J			
Benzo(a)anthracene	UG/L	0.002	0.002	-		4 J			
Benzo(a)pyrene	UG/L	ND	0.0012	-		1 J			
Benzo(b)fluoranthene	UG/L	0.002	0.002	-		1 J			
bis(2-Ethylhexyl)phthalate	UG/L	5	0.6	-		1 J		1 J	
Caprolactam	UG/L	-	-	-					2 J

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

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[LOCID] LIKE 'AOC*' AND [MATRIX] = 'WG

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
Chrysene	UG/L	0.002	0.002	-		7 J			
Dibenzofuran	UG/L	-	-	-			38		
Fluoranthene	UG/L	50	50	-		34 J	2 J		
Fluorene	UG/L	50	0.54	-		530 J	62	1 J	
Naphthalene	UG/L	10	10	-		120 J	90	1 J	
Pentachlorophenol	UG/L	1	1	-	4,100	7,300 D	28 J	60	13 J
Phenanthrene	UG/L	50	5	-		380 DJ	110 J	2 J	
Phenol	UG/L	1	1	-		2 J			
Pyrene	UG/L	50	4.6	-		150 J	15		
Pesticide Organic Compounds									
4,4'-DDD	UG/L	0.3	1.10E-05	-			0.10 J		
4,4'-DDE	UG/L	0.2	7.00E-06	-			0.18 J		
4,4'-DDT	UG/L	0.2	1.10E-05	-	0.24 J	43	0.21 J		
beta-BHC	UG/L	0.04	0.007	-	0.41 J	2.9 J			
delta-BHC	UG/L	0.04	0.008	-			0.19 J		
Endosulfan I	UG/L	-	-	-			0.53 J		
Endrin	UG/L	ND	0.002	-			0.16 J		
Endrin aldehyde	UG/L	5	5	-			0.11 J		
gamma-Chlordane	UG/L	0.05	2.00E-05	-			0.64 J		

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Pesticide Organic Compounds									
Heptachlor	UG/L	0.04	2.00E-04	-			0.22 J		
Dioxins & Furans									
1,2,3,4,6,7,8-HpCDD	NG/L	-	-	-	360 J	2,400 J	610 J	92 J	7.5 J
1,2,3,4,6,7,8-HpCDF	NG/L	-	-	-	150 J	420 J	75 J	21 J	3.5 J
1,2,3,4,7,8,9-HpCDF	NG/L	-	-	-	8.0 J	42 J	12 J	1.6 J	0.21 J
1,2,3,4,7,8-HxCDD	NG/L	-	-	-	0.59 J	1.4 J	0.67 J	0.26 J	0.036 J
1,2,3,4,7,8-HxCDF	NG/L	-	-	-	5.1 J		27 J	0.90 J	0.16 J
1,2,3,6,7,8-HxCDD	NG/L	-	-	-	22 J	84 J	21 J	4.4 J	0.45 J
1,2,3,6,7,8-HxCDF	NG/L	-	-	-	1.6 J	3.7 J	1.9 J	0.53 J	
1,2,3,7,8,9-HxCDD	NG/L	-	-	-	1.6 J	4.9 J	1.8 J	0.61 J	0.092 J
1,2,3,7,8,9-HxCDF	NG/L	-	-	-	3.7 J	6.5 J	2.3 J	0.57 J	0.087 J
1,2,3,7,8-PeCDD	NG/L	-	-	-	0.15 J	0.26 J	0.11 J	0.060 J	0.012 J
1,2,3,7,8-PeCDF	NG/L	-	-	-	1.1 J			0.12 J	0.030 J
2,3,4,6,7,8-HxCDF	NG/L	-	-	-	4.2 J	9.1 J	3.3 J	0.88 J	0.15 J
2,3,4,7,8-PeCDF	NG/L	-	-	-	2.3 J	3.9 J	1.4 J	0.35 J	0.058 J
2,3,7,8-TCDD	NG/L	-	3.10E-06	-			0.020 J	0.0042 J	
2,3,7,8-TCDF	NG/L	-	-	-	0.12 NJ		0.14 NJ	0.024 NJ	0.0021 NJ
OCDD	NG/L	-	-	-	2,100 J	4,300 DJ	4,600 J	610 J	45 J
OCDF	NG/L	-	-	-	1,400 J	2,500 J	480 J	130 J	18 J

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

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[LOCID] LIKE 'AOC*' AND [MATRIX] = 'WG

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Dioxins & Furans									
Total HpCDD	NG/L	-	-	-	530 J	3,300 J	840 J	130 J	12 J
Total HpCDF	NG/L	-	-	-	820 J	2,600 J	470 J	110 J	13 J
Total HxCDD	NG/L	-	-	-	45 J	170 J	43 J	10 J	1.2 J
Total HxCDF	NG/L	-	-	-	210 J	420 J	120 J	32 J	4.5 J
Total PeCDD	NG/L	-	-	-	0.33 J	1.7 J	0.46 J	0.17 J	0.047 J
Total PeCDF	NG/L	-	-	-	14 J	22 J	6.1 J	2.0 J	0.40 J
Total TCDD	NG/L	-	-	-	0.20 J	0.63 J	0.23 J	0.067 J	0.044 J
Total TCDF	NG/L	-	-	-	1.3 J	5.0 J	2.3 J	0.39 J	0.083 J
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/L	7.00E-04	-	-	14	48	19	2.9	0.31
Metals									
Aluminum	UG/L	-	100 (ionic)	-	280,000	6,730	130,000	30,800	223,000
Arsenic	UG/L	25	50	-	204		102	16.0	142
Barium	UG/L	1000	1000	-	1,780	73.6 B	1,230	249	1,510
Beryllium	UG/L	3	3	-	10.4	0.22 B	5.1	0.96 B	8.8
Cadmium	UG/L	5	5	-	3.2 B		1.0 B		3.2 B
Calcium	UG/L	-	-	-	70,800	73,600	69,800	56,700	76,900
Chromium	UG/L	50	50	-	357	11.3	175	42.3	254
Cobalt	UG/L	-	5	-	201		107		176
Copper	UG/L	200	200	-	403	16.5 B	238	44.7	407

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

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[LOCID] LIKE 'AOC*' AND [MATRIX] = 'WG

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Metals									
Iron	UG/L	300	300	-	508,000	11,400	235,000	52,500	418,000
Lead	UG/L	25	50	-	219	4.9 J	113	25.4	197
Magnesium	UG/L	35000	35000	-	75,400	15,800	47,700	12,700	64,800
Manganese	UG/L	300	300	-	7,060	1,490	3,780	1,550	8,140
Mercury	UG/L	0.7	7.00E-04	-	0.79	0.15 BJ	0.31	0.11 BJ	0.59
Nickel	UG/L	100	100	-	443	13.7 B	247	52.1	402
Potassium	UG/L	-	-	-	19,600	1,650 B	10,200	3,550 B	14,400
Selenium	UG/L	10	4.6 (dissolved)	-		24.4		10.1	
Silver	UG/L	50	0.1 (ionic)	-	98.6		49.4	15.0	83.2
Sodium	UG/L	20000	-	-	8,920	3,820 B	2,110 B	2,430 B	11,900
Vanadium	UG/L	-	14 (acid sol.)	-	345	8.5 B	160	37.4 B	266
Zinc	UG/L	2000	2000	-	1,090 J	38.3 J	810 J	162 J	984 J
RCRA Characteristics									
Corrosivity (pH)	S.U.	-	-	2-12.5	6.6	7.2	7.3	6.8	6.7
Ignitability	°F	-	-	<140	150 >	150 >	155 >	145 >	145 >
Reactive Sulfide	MG/L	-	-	500			0.087 B		
Miscellaneous Parameters									
Oil & Grease, Total Recoverable	MG/L	-	-	-	26	540	310	9.8	
Total Dissolved Solids	MG/L	-	-	-	350	320	510	210	520

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

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[LOCID] LIKE 'AOC*' AND [MATRIX] = 'WG

TABLE 3-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID					AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)					-	-	-	-	-
Date Sampled					06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Miscellaneous Parameters									
Total Suspended Solids	MG/L	-	-	-	9,000	250	5,600	930	8,000

Criteria (1)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class GA.

Criteria (2)- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000 (Including 4/2000 and 6/2004 Addenda), Class A.

Criteria (3)- Hazardous Waste Criteria, 40 CFR Part 261, Subpart C - Characteristics of Hazardous Waste

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

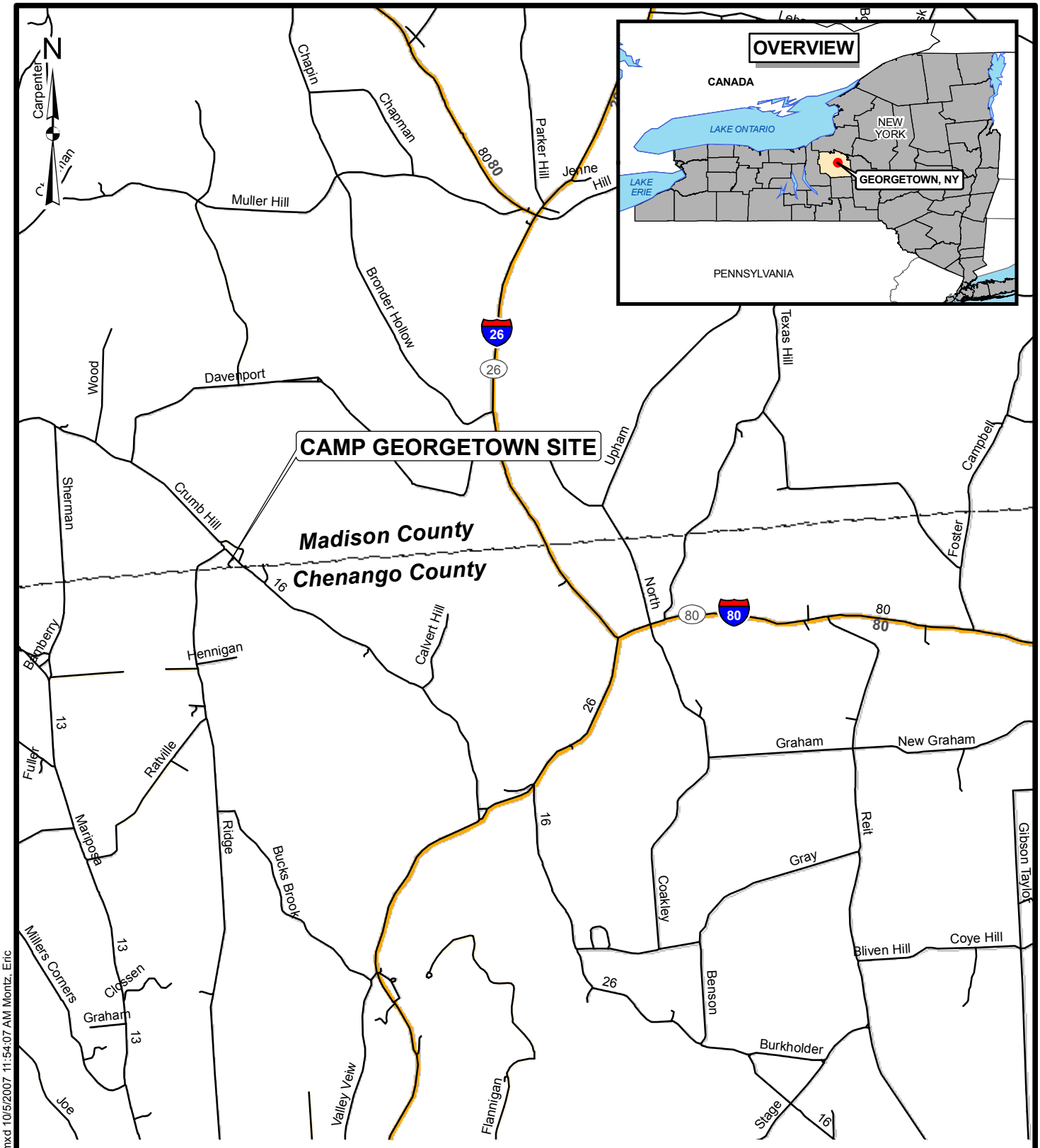
> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

TABLE 3-4
RESULTS OF SLUG TEST ANALYSIS

Well	Average Hydraulic Conductivity		
	cm/sec	ft/min	ft/day
MW-02	1.57E-05	1.88E-05	0.027
MW-04	1.94E-05	2.32E-05	0.033
MW-05	2.12E-04	2.54E-04	0.37
MW-06	1.67E-04	2.00E-04	0.29
MW-07	7.60E-05	9.10E-05	0.13
MW-08	3.96E-06	4.74E-06	0.0068

Notes:
cm/s – centimeter per second
ft/min – feet per minute
ft/day – feet per day



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SITE LOCATION MAP
CAMP GEORGETOWN
TOWN OF GEORGETOWN
MADISON COUNTY, NY

FIGURE 1

SOURCE: 2003 Color Infrared, NYSGIS Clearinghouse

0 800 1,600
Feet

URS

SITE AERIAL PHOTO
CAMP GEORGETOWN
TOWN OF GEORGETOWN
MADISON COUNTY, NY

FIGURE 2

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N

GARAGE / NYSDEC OFFICE

METEOROLOGY STATION

POST PEELER AND ROLLWAYS

DRYING SHED #2

DRYING SHED #1

TREATMENT BUILDING

AREA J

AOC-B

AOC-C

AREA B

AREA C

MW-02

Water Line

TT-08

TT-07

AOC-D

Corrugated Pipe & Telecommunication Line

AREA D

AREA E

AOC-E

TT-05

MW-05

TT-06

TT-04

AREA A

AOC-A

TT-03

MW-08

MW-07

AREA I

AOC-F

AOC-G

MW-04

4" Clay Pipe

AREA F

AREA G

MW-06

AOC-H

TT-02

AREA H

TT-01

Legend

- Monitoring Well
- Test Trench
- Road
- Building
- Proposed Area of Concern

0 75 150 Feet

INVESTIGATION LOCATIONS
CAMP GEORGETOWN SITE

URS

FIGURE 3

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N

GARAGE / NYSDEC OFFICE

METEOROLOGY STATION

POST PEELER AND ROLLWAYS

DRYING SHED #2

DRYING SHED #1

AREA J

AOC-B

AOC-C

AREA B

AREA C

MW-02

Water Line

TT-08

AOC-D

TT-07

Corrugated Pipe & Telecommunication Line

AREA D

TREATMENT BUILDING

AREA E

AOC-E

TT-05

MW-05

TT-06

TT-04

AREA A

AOC-A

TT-03

MW-08

MW-07

AREA I

AOC-G

MW-04

AOC-F

AREA F

4" Clay Pipe

AREA G

MW-06

TT-02

AOC-H

AREA H

TT-01

AOC-A	Criteria	6/07
SVOCs:		
Pentachlorophenol	74	370
Total HxCDF:	10000	46,000

Legend

- Monitoring Well
- Test Trench
- Road
- Building
- Proposed Area of Concern

Sample Location	Criteria	Sample Date
AOC-A		6/07
SVOCs:		
Pentachlorophenol	74	370
Total HxCDF:	10000	46,000
Compound	Criteria	Result

Criteria: Waste Code F032
Alternative LDR Treatment Standards 6NYCRR Part 376.4

0 75 150 Feet

WASTE CHARACTERIZATION RESULTS
CAMP GEORGETOWN SITE

URS

FIGURE 4

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N

METEOROLOGY STATION

GARAGE / NYSDEC OFFICE

POST PEELER AND ROLLWAYS

DRYING SHED #1

DRYING SHED #2

TREATMENT BUILDING

AREA J

AREA L

AREA E

AREA D

AREA C

AREA B

AREA A

AREA K

AREA I

AREA F

AREA G

AREA H

AOC-A

AOC-B

AOC-C

AOC-D

AOC-E

AOC-F

AOC-G

AOC-H

Water Line

Corrugated Pipe & Telecommunication Line

4" Clay Pipe

MW-01

MW-02

MW-04

MW-05

MW-06

MW-07

MW-08

TT-01

TT-02

TT-03

TT-04

TT-05

TT-06

TT-07

TT-08

TT-07-NW (4'-4')	Criteria	6/07
SVOCs:		
Pentachlorophenol	0.8	1.6

TT-06-NW (2'-2')	Criteria	6/07
Metals:		
Arsenic	13	14.1

TT-06-SE (2'-2')	Criteria	6/07
Metals:		
Arsenic	13	23.4

TT-03-NW (2.5'-2.5')	Criteria	6/07
SVOCs:		
Pentachlorophenol	0.8	0.88

TT-03-SE (2.5'-2.5')	Criteria	6/07
SVOCs:		
Pentachlorophenol	0.8	40

TT-02-SE (4'-4')	Criteria	6/07
SVOCs:		
Pentachlorophenol	0.8	2.2

Legend

- Monitoring Well
- Test Trench
- Road
- Building
- Proposed Area of Concern
- Extended Excavation Areas

Sample Location (Depth (Ft)) — Sample Date

TT-06-NW (2'-2')	Criteria	6/07
Metals:		
Arsenic	13	14.1

Compound — Criteria — Result

Criteria: NYCRR Part 375.6 Unrestricted Use

0 75 150 Feet

DELINEATION SAMPLE RESULTS CAMP GEORGETOWN SITE

URS

FIGURE 5

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APPENDIX A

TEST TRENCH LOGS

77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-A**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 2.5') Fill: Dark brown, Clayey Silt and gravel to cobble size shale, some wood, slight fuel like odo little groundwater seepage, slow, slight sheen, Non-detect on PID.
2		
3		(2.5 to 10.0') Light brown Clayey Silt with Gravel and Cobbles. Hard, moist to dry with slow seeps.
4		
5		
6		
7		
8		
9		
10		
11		
12		

COMMENTS: No elevated PID readings detected. No odors detected below 2.5'. Collected one soil sample, AOC-A-2.5', for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity. Collected one water sample for TCL VOCs, SVOCs+ 2,3,4,6-Tetrachlorophenol, Pesticides & PCBs, TAL Metals, Dioxins, TSS, TDS, Oil & Grease, Ignitability, pH (Corrosivity), and Reactivity. Samples submitted to Mitkem Corporation.

77 Goodell Street
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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-B**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') FILL: Gray Clayey Silt and Shale Gravel.
2		(1.0 to 11.5') FILL: Gray to light brown Clayey Silt with gravel and cobble, soft. Sidewalls sloughing in from former excavation through area. All soils appear to be reworked.
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

COMMENTS: An active water line was supplying NYSDEC shops was hit. Trench was offset and re-excavated. No elevated PID readings detected. Mild to moderate chemical odor noted throughout excavation. Collected one soil sample, AOC-B-5.0', for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity. Collected one water sample for TCL VOCs, SVOCs+ 2,3,4,6-Tetrachlorophenol, Pesticides & PCBs, TAL Metals, Dioxins, TSS, TDS, Oil & Grease, Ignitability, pH (Corrosivity), and Reactivity. Samples submitted to Mitkem Corporation.

77 Goodell Street
Buffalo, New York 14203
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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-C**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') Fill: Gray to light brown clayey silt with shale cobbles and gravel.
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

COMMENTS: Collected one soil sample AOC-C-(0-1).
No odors, staining or elevated PID readings noted.
Sample submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-D**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.5') FILL: Gray Clayey Silt and Shale Gravel. Drain tile at 1.5' below ground surface, saturated.
2		(1.5 to 3.5') FILL: Gray to light brown Clayey Silt with gravel and cobble, hard. Four Electrical/communication lines encountered in gray stained soil with chemical odor at approximately 3'.
3		
4		(3.5 to 9.0') Gray to light brown Clayey Silt with gravel and cobble, hard.
5		
6		
7		
8		
9		Water from drain adjacent to building entering excavation.
10		
11		
12		

COMMENTS: An inactive telecommunication line encountered beneath wood sheeting and a plastic corrugated pipe on the side nearest building. No elevated PID readings detected. A thin clear LNAPL layer was noted on water surface in excavation. Collected one soil sample, AOC-D-3.0', for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity. Collected one water sample for TCL VOCs, SVOCs+ 2,3,4,6-Tetrachlorophenol, Pesticides & PCBs, TAL Metals, Dioxins, TSS, TDS, Oil & Grease, Ignitability, pH (Corrosivity), and Reactivity. Samples submitted to Mitkem Corporation.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-E**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 0.5') FILL: Gray Clayey Silt and Shale Gravel. (0.5 to 1.0') FILL: Dark red brown Clayey Silt with organic material.
2		(1.0 to 5.0') Gray brown Clayey Silt with gravel and cobble, hard, slight chemical odor, non-detect on PID. No water seeps into excavation.
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

COMMENTS: Collected one soil sample AOC-E-3.0'.
No elevated PID readings detected.
Sample submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/20/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/20/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-F**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 4.0') Fill: Dark brown to brown, moist, Clayey Silt with gravel.
2		
3		4" Clay Pipe bedded in gravel encountered in trench at 3' bgs. Appears to continue towards AOC-H. Water in pipe contains Dark Brown LNAPL Old fuel-like odor noted, no PID readings indicated. Gravel and material around pipe is black stained.
4		
5		
6		
7		
8		
9		
10		
11		
12		

COMMENTS: Collected one soil sample AOC-F-3' from bedding material around clay pipe, for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity. Collected one water sample for TCL VOCs, SVOCs+ 2,3,4,6-Tetrachlorophenol, Pesticides & PCBs, TAL Metals, Dioxins, TSS, TDS, Oil & Grease, Ignitability, pH (Corrosivity), and Reactivity. Samples submitted to Mitkem Corporation.

77 Goodell Street
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(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/20/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/20/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-G**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1 2 3		(0.0 to 3.0') Fill: Gray brown Clayey Silt and shale fragments, with Dark Gray to black staining at 2.5 feet in small (2") seam of wood fibers at southern end of trench.
4 5 6 7 8 9 10		(3.0 to 10.0') Gray and gray brown to brown (alternating colors) Clayey Silt with gravel and cobbles, hard, dry to moist. With discontinuous wet seeps.
11 12		

COMMENTS: No odors or elevated PID readings detected, however stained wood encountered at 2.5'. Collected one soil sample AOC-G-2.5', for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity. Collected one water sample for TCL VOCs, SVOCs+ 2,3,4,6-Tetrachlorophenol, Pesticides & PCBs, TAL Metals, Dioxins, TSS, TDS, Oil & Grease, Ignitability, pH (Corrosivity), and Reactivity. Samples submitted to Mitkem Corporation.

77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/20/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/20/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**AOC-H**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') Fill: Dark brown to brown, moist, Clayey Silt with gravel. Dark Gray with wood fragments at 1.0'
2		(1.0 to 2.0') Dark brown, moist, Clayey Silt with gravel.
3		(2.0 to 3.0') Light Gray, hard, Clayey Silt with gravel.
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COMMENTS: Collected one soil sample AOC-H-(0-1).
No odors noted.
Sample submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), RCRA metals, Dioxins, Furans, full TCLP, ignitability, corrosivity, reactivity.

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(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/20/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/20/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-01**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 0.7') Dark brown to brown, moist, Clayey Silt with gravel.
2		(0.7 to 1.3') Light gray brown, moist, Clayey Silt with gravel and cobbles. (1.3 to 2.0') Becomes drier and harder, but water appears to seep upward at 2.0'.
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COMMENTS: Collected one soil sample from each end of the pit, TT-01-NE-(0-1) and TT-01-SW-(0-1).
No elevated PID readings or signs of contamination were observed.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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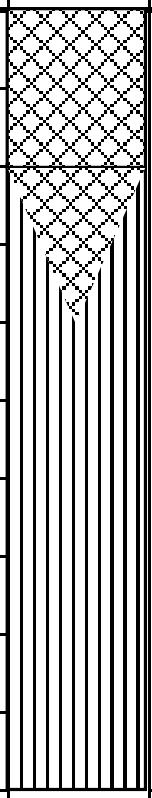
TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/20/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/20/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-02**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 10.0') Bisecting trench backfilled with miscellaneous debris encountered from 2.0' to 4.0'. Contains plastic, shirts, household garbage, and a 6' long 1' diameter pole. Remainder of material appears native or reworked, light gray brown, clayey silt with gravel and cobbles.
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COMMENTS: Collected one soil sample from each end of the pit, TT-02-NW-4' and TT-02-SE-4'.
No elevated PID readings or signs of contamination were observed.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-03**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') Fill: Brown Clayey Silt and Cobbles
2		(1.0 to 2.5') Fill: Dark gray to black stained, organic (roots) and mulch. No odor, slight sheen on water seeps.
3		(2.5 to 10.0') Light Brown, moist to dry, hard, Clayey Silt, gravel and cobbles.
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COMMENTS: Collected one soil sample from each end of the pit, TT-03-NW-2.5' and TT-03-SE-2.5'.
No elevated PID readings were observed.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-04**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') Fill: Gray clayey Silt and Shale Gravel
2		(1.0 to 1.5') Fill: Dark gray clayey Silt with gravel, cobbles and organic root mass.
3		(1.5 to 8.5') Light Brown Clayey Silt with gravel and cobbles, hard. Very hard at 8'. Water seeps in slowly, slight sheen on water.
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COMMENTS: Collected one soil sample from each end of the pit, TT-04-NW-1.5' and TT-04-SE-1.5'.
No elevated PID readings were observed.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-05**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 0.5') Fill: Gray clayey Silt and Shale Gravel and Cobble (0.5 to 1.5') Fill: Gray to light red brown Clayey Silt and Shale gravel/cobble.
2		(1.5 to 9.5') Light Brown Clayey Silt with gravel and large shale pieces (~2' long), hard. Water seeps in at 9.5'.
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COMMENTS: Collected one soil sample from each end of the pit, TT-05-NW-2.0' (plus MS/MSD) and TT-05-SE-1.5'. No elevated PID readings were observed.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-06**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 0.5') Fill: Gray clayey Silt and Shale Gravel.
2		(0.5 to 5.0') Gray to light brown, Clayey Silt with Gravel and Cobbles, hard, moist to dry, little seepage at 5'. No visible staining or odors.
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COMMENTS: Collected one soil sample from each end of the pit, TT-06-NW-2.0' and TT-06-SE-2.0'. No elevated PID readings were observed. Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans. Clay pipe expected in the vicinity of this test trench was not located.

77 Goodell Street
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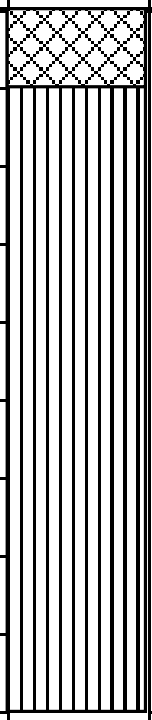
(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-07**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 9.0') Gray to light Brown Clayey Silt with Gravel and Cobble. 4" Pipe runs through excavation at approximately 6" below ground surface. Chemical odor noted throughout excavation, most notable in gray soils at approximately 4'. Could not advance past large boulders present at 9.0'
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COMMENTS: Collected one soil sample from each end of the trench, TT-07-NW-4' and TT-07-SE-4'.
No elevated PID readings were observed. Water seeps in very slowly.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

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(716) 856-5636

TEST TRENCH LOG

PROJECT:	**Camp Georgetown - PDI**		Sheet 1 of 1
CLIENT:	NYSDEC	**JOB NUMBER:**	11174679.00003
CONTRACTOR:	American Auger & Ditching	**LOCATION:**	Georgetown, New York
DATE STARTED:	6/21/2007	**GROUND ELEVATION:**	
DATE COMPLETED:	6/21/2007	**OPERATOR:**	Ryan Baye
TRENCH NUMBER:	**TT-08**	**GEOLOGIST:**	Rob Murphy

DEPTH (FT)	SAMPLE	DESCRIPTION
1		(0.0 to 1.0') Fill: Gray clayey Silt and Gravel and Cobble
2		(1.0 to 10') Gray to light brown Clayey Silt with Gravel and Cobble.
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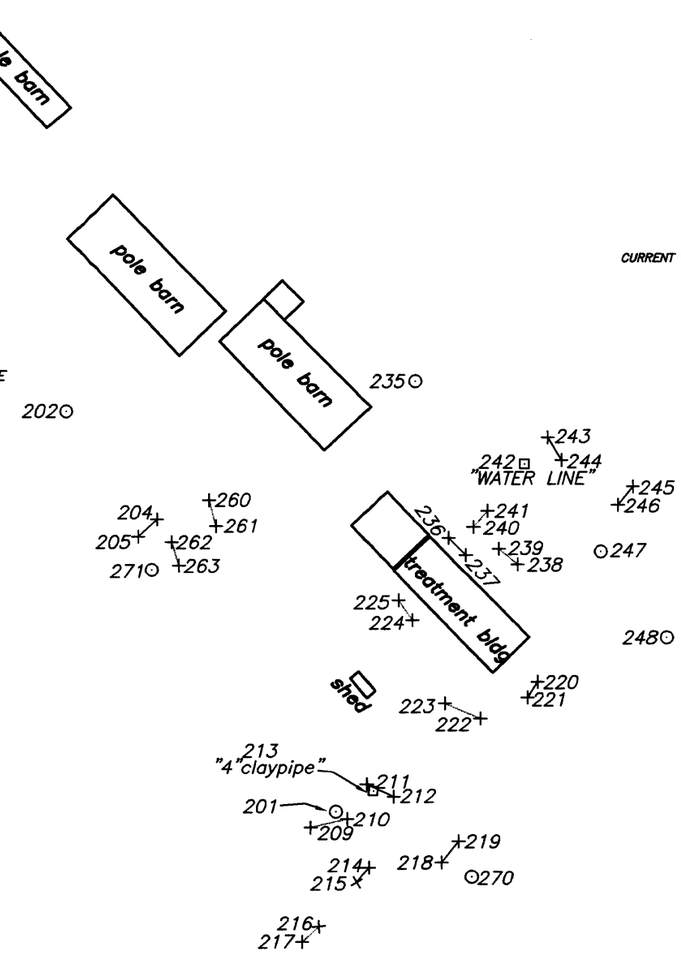
COMMENTS: Collected one soil sample from each end of the trench, TT-08-W-3' and TT-08-E-3'.
No elevated PID readings were observed. Very little water enters trench.
Samples submitted to Mitkem Laboratory for SVOCs (plus 2,3,4,6-Tetrachlorophenol and TICs), TAL metals, Dioxins, and Furans.

APPENDIX B

SURVEY DRAWING

PT#, NORTHING, EASTING, ELEVATION, DESCRIPTION
96,995306.50440000,1035177.60360000,1624.9900,14CONTROL
97,995540.52460000,1035159.36090000,1629.8770,14CONTROL
201,995203.58450834,1035140.50766473,1625.8301,81PMW6
202,995461.04966106,1034967.53902369,1629.9047,81PMW8
204,995391.46668103,1035025.68248635,1625.2487,99AOC-A
205,995380.35053428,1035013.61899952,1625.5026,99AOC-A
207,995281.11147533,1035165.54036183,0.0000,66BLDGMINOR
208,995293.47576970,1035155.03497972,0.0000,66BLDGMINOR
209,995193.19911101,1035124.51655016,1622.4000,99TT-2
210,995198.71892102,1035147.84965426,1621.7432,99TT-2
211,995220.98623776,1035160.33837482,1623.0087,99AOC-F
212,995213.07489156,1035177.23199855,1622.8015,99AOC-F
213,995216.86049105,1035164.32333463,1623.1080,STAKE4"CLAYPIPE
214,995167.48559992,1035161.43634888,1619.8185,99AOC-H
215,995158.04274695,1035153.90038347,1620.3524,99AOC-H
216,995129.61218425,1035129.77376752,1617.5603,99TT-1
217,995119.82028913,1035118.99558405,1617.0189,99TT-1
218,995170.85270360,1035207.99621391,1622.6990,99AOC-G
219,995184.20391056,1035219.15646420,1622.8993,99AOC-G
220,995286.87702757,1035269.52366878,1624.1387,99AOC-E
221,995276.66774468,1035262.98097416,1624.4691,99AOC-E
222,995263.33050763,1035232.80054298,1623.5272,99TT-6
223,995273.09983476,1035210.32421287,1624.3859,99TT-6
224,995326.61767332,1035189.47597998,1626.0027,99TT-5
225,995339.37920058,1035180.55709898,1626.2691,99TT-5
226,995463.63970887,1035162.86321336,0.0000,65BLDG
227,995435.83728747,1035133.38846163,0.0000,65BLDG
228,995505.67049023,1035065.93249299,0.0000,65BLDG
229,995496.64389619,1035040.38570733,0.0000,65BLDG
230,995571.88391628,1034968.29172671,0.0000,65BLDG
231,995387.22474018,1035150.42617153,0.0000,66BLDGMINOR
232,995359.45066328,1035177.03587644,0.0000,66BLDGMINOR
233,995358.23394277,1035177.63654957,0.0000,65BLDG
234,995292.78018618,1035240.43965274,0.0000,65BLDG
235,995479.95765977,1035191.33236831,1631.7931,81PMW-1
236,995379.37040504,1035212.91737362,1626.9291,99AOC-D
237,995368.30108014,1035223.69993463,1626.9803,99AOC-D
238,995362.29871389,1035256.56600939,1626.1104,99TT-7
239,995372.28064483,1035244.55970413,1626.5457,99TT-7
240,995386.35052420,1035228.57098560,1626.5047,99TT-8
241,995396.83848355,1035237.29369168,1626.9814,99TT-8
242,995426.88180793,1035260.99369186,1626.8440,STAKE-H2OLINE
243,995443.72702648,1035276.05957129,1626.6258,99AOC-B
244,995429.33724781,1035285.09504532,1626.6596,99AOC-B
245,995412.18591575,1035331.53107808,1624.3244,99AOC-C
246,995400.52454040,1035321.90368346,1624.6136,99AOC-C
247,995370.49522671,1035310.89534706,1628.2647,81PMW-2
248,995315.32246902,1035352.99429253,1626.0857,81PMW-3
249,995315.44489563,1035263.79249531,0.0000,65BLDG
250,995380.07002615,1035200.78061207,0.0000,65BLDG
251,995381.32492717,1035199.99926066,0.0000,66BLDGMINOR
252,995409.01872718,1035173.25338904,0.0000,66BLDGMINOR
253,995531.33293614,1035119.73296218,0.0000,66BLDGMINOR
254,995544.86437718,1035106.25797237,0.0000,66BLDGMINOR
255,995599.91741201,1034997.07796635,0.0000,66BLDGMINOR
256,995643.19573304,1034954.98115913,0.0000,66BLDGMINOR
257,995656.08161436,1034970.22627168,0.0000,66BLDGMINOR
258,995720.66419971,1034908.74545696,0.0000,66BLDGMINOR
259,995533.54712104,1035094.77229873,0.0000,66BLDGMINOR
260,995403.73505096,1035059.27211883,1625.7377,99TT-4
261,995387.00717695,1035063.86578564,1626.0231,99TT-4
262,995376.68761191,1035035.39977666,1625.6531,99TT-3
263,995361.75343894,1035040.08892888,1625.8264,99TT-3
270,995161.60636647,1035227.34958550,0.0000,81MW4
271,995359.03785925,1035022.25730260,0.0000,81MW7



CURRENT ELEVATIONS FOR MW'S ARE TOP OF CASING NOT RISERS

NORTH

HORIZONTAL DATUM: NAD83/96
N.Y.S. PLANE COORDINATE
SYSTEM , CENTRAL ZONE

VERTICAL DATUM:
NAVD88/GEOID03

100' 0' 100' 200' 300'

Scale

LEGEND

- ⊙ Monitoring well
- ⊡ Stake
- △ Survey Control Point
- +——+ Test Trench

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.
JOANNE DARCY CRUM, L.S.

A TEST TRENCH LOOCATION SURVEY FOR

URS CORPORATION-NEW YORK

URS PROJECT No. D004440-2

CAMP GEORGETOWN

COUNTY OF MADISON STATE OF NEW YORK

SCALE 1" = 100.00' 24 JULY 2007

JOANNE DARCY CRUM, L.S. 49673
COBLESKILL, NEW YORK 12043

MAP A/35/07

APPENDIX C

PRE-DEMOLITION BUILDING SURVEY

PRE-DEMOLITION BUILDING SURVEY
FOR ASBESTOS & LEAD BASE PAINT CONTAINING MATERIALS
TREATMENT BUILDING AND STORAGE SHED
CAMP GEORGETOWN
SITE #7-27-010

TOWN OF GEORGETOWN, MADISON COUNTY, NEW YORK

PREPARED FOR:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
WORK ASSIGNMENT D004440-2

PREPARED BY:
URS CORPORATION
77 GOODELL STREET
BUFFALO, NEW YORK 14203

OCTOBER 2007

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TABLES
(Following Text)

FIGURES

(Following Tables)

APPENDICES

(Following Figures)

1.0 INTRODUCTION

URS Corporation (URS) was retained by New York State Department of Environmental Conservation (NYSDEC) to perform a pre-demolition building survey for asbestos-containing materials (ACM) and lead based paint (LBP) of the Treatment Building and Storage Shed, located at the Camp Georgetown facility, 3191 Crumb Hill Road, Georgetown, Madison County, New York (Figure 1). As part of the remediation of Camp Georgetown, the Treatment Building and Storage Shed are to be demolished. This work was performed under URS' NYSDEC Standby Contract, Work Assignment Number D004440-02. The pre-demolition building survey was performed as an add-on to the scope of work presented in the Camp Georgetown Remedial Design Project Management Work Plan (URS April 2006).

1.1 Purpose and Scope

The purpose of this report is to: (1) present and summarize results of the pre-demolition survey; (2) inventory and quantify thermal insulation and building materials that contain asbestos of both the interior and exterior of the building; and (3) inventory and quantify building materials that are coated with LBP on both the interior and exterior of the building.

The ACM survey was performed in accordance with the Environmental Protection Agency (EPA) under Asbestos Hazard Emergency Response Act (AHERA) and in accordance with Occupational Safety and Health Administration (OSHA) requirements.

The scope services for the survey included the following tasks:

- Review of all available site/facility plans and past ACM studies at the facility
- Conduct visual inspections to identify suspect ACM and/or LBP inside and outside of the buildings

- Collect discrete physical samples of each type of suspected ACM (e.g., floor tiles, mastic, pipeline insulation, window glazing, roofing, flashing, plaster, ceiling tiles, thermal insulation, transite panels, cove base molding, etc.) and LBP.

- Document each sample location and the locations where ACM and/or LBP was identified

- Laboratory analysis of samples to determine asbestos type and content, and lead content

- Delineate the locations and estimate quantities of ACM in the buildings

- Prepare a summary report

1.2 Background

The treatment building and the storage shed located at Camp Georgetown, 3191 Crum Hill Road, Georgetown, New York are presently vacant. URS personnel performed the asbestos and LBP surveys from September 5, 2007 through September 21, 2007.

1.3 Consultant's License and Certification

URS personnel conducting the ACM survey have completed the New York State mandated asbestos training and hold a current license and certification. Copies of the license and certification are contained in Attachment A.

1.4 Laboratory Accreditation

EMSL Analytical of Depew, New York and EMSL Analytical of Westmont, New Jersey performed the laboratory analyses of the samples. The Depew, New York laboratory is accredited by the New York State Department of Health (NYSDOH) Wadsworth Center's Environmental Laboratory Approval Program (ELAP) and by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to analyze

bulk samples for asbestos. The Westmont, New Jersey laboratory is accredited by the NYSDOH Wadsworth Center's ELAP and by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP) for lead in paint. Copies of the laboratory certifications are presented in Attachment B.

2.0 FIELD ACTIVITIES

2.1 Asbestos-Containing Material Survey

A thorough visual inspection of the interior and exterior of the buildings were performed to identify suspected ACM. Suspected ACM observed included, drywall, joint compound, 12”x12” speckled floor tile and mastic, cove base, expansion joint, linoleum and tan mastic, black coating material, window glazing, gasket, and brown roof shingles.

Following the visual inspection, 11 suspected homogeneous materials were identified for sampling and analysis. Three representative bulk samples were collected from each type of material using an asbestos core sampler and other miscellaneous sampling tools for a total of 33 samples. Each sample was placed in a sample bag marked with the sample identification number. Following the collection of each bulk sample, the sampled surface was sealed as not to allow suspected ACM from becoming airborne. The samples were submitted to the laboratory under proper chain of custody. The chains of custody forms are provided in Attachment C. A discussion of the sampling performed in each area is presented in the following subsections. The types of analyses performed are discussed in Section 3.

2.1.1 Camp Georgetown Treatment Building – Ground Floor

The ground floor area of the treatment building was visually inspected for ACM. Possible asbestos-containing material identified included drywall, joint compound, 12”x12” tan speckled floor tile and mastic, brown cove base, black expansion joint, beige linoleum and tan mastic, black coating materials, white window glazing, and black gasket material. Thirty bulk samples (CG-101-1, CG-101-2, CG-101-14, CG-102-3 throughCG-102-13, CG-105-16 through CG-105-18, CG-106-15, CG-110-19 through CG-110-21, and CG-111-22 through CG-111-30) were collected from the locations shown on Figure 2-1 and listed in Table 2-1.

2.1.2 Camp Georgetown Treatment Building - Loft

The loft area was visually inspected for ACM. No suspect material was identified during the inspection. Therefore, no samples were collected. The areas inspected are shown on Figure 2-2.

2.1.3 Camp Georgetown Treatment Building - Roof

The roof was visually inspected for ACM. Possible asbestos-containing materials included brown asphalt shingles. Three bulk samples (CG-201-31 through CG-201-33) were collected from the locations shown on Figure 2-3 and listed in Table 2-1.

2.1.4 Camp Georgetown Storage Shed – Ground Floor

The ground floor area was visually inspected for ACM. No suspect ACM was identified during the inspection. Therefore, no samples were collected. The areas inspected are shown on Figure 2-4

2.1.5 Camp Georgetown Storage Shed – Roof

The roof area was visually inspected for ACM. No suspect ACM was identified during the inspection. Therefore, no samples were collected. The areas inspected are shown on Figure 2-4

2.2 Lead-Based Paint Survey

During the visual inspection for the interior and exterior for ACM, paint surfaces were also inspected. Suspected LBP was observed on floors, and windows frames. Following the visual inspection, a total of four paint chip samples (CG-LED-1 through CG-LED-4) were collected from paint surfaces inside and outside of the treatment building from locations shown on Figure 2-5.

3.0 ANALYTICAL RESULTS

Analytical results of the bulk samples for ACM and paint chip samples for LBP are discussed below.

3.1 Asbestos-Containing Material

Eleven suspect homogeneous materials (33 bulk samples) were delivered to EMSL Analytical of Depew, New York under chain-of-custody for analysis. Of the 11 suspect homogeneous materials sampled, 8 types were considered to be Non-Friable Organically Bound (NOB) materials (i.e., 12"x12" speckled floor tile and mastic, cove base, expansion joint, linoleum and mastic, black coating material, window glazing, gasket, and brown roof shingles). The drywall (2 types) and joint compound samples are considered to be non-NOB materials.

For the following types of NOB samples (i.e., 12"x12" speckled floor tile and mastic, cove base, linoleum and mastic, gasket, and roof shingles), only one of three bulk samples were to be analyzed for asbestos using Polarized Light Microscopy (PLM). For the expansion joint sample, PLM analysis was to be performed on one bulk sample. If negative for ACM, the next expansion joint bulk sample was analyzed until a positive result was obtained or all three were negative. All drywall, joint compound, black coating material, and window glazing samples were to be analyzed by PLM. Of the 8 types of NOB bulk samples, two types (gasket, and black coating material) were positive for ACM. Of the 3 types of non-NOB samples, none were positive for ACM.

If the results of the PLM analyses on NOB material were negative (or inconclusive), one bulk sample required analysis by Transmission Electron Microscopy (TEM). Of the 8 types of NOB samples, 6 types were inconclusive for asbestos by PLM, therefore analysis by TEM was necessary for the 12"x12" speckled floor tile and mastic, cove base, linoleum and mastic, window glazing, roof shingles, and expansion joint. All the TEM analyses yielded negative results (i.e., less than 1% asbestos). TEM analysis is not required on non-NOB samples.

Under New York State Department of Labor regulations, a material is considered to be asbestos-containing if the percentage of asbestos is greater than one percent (1%) by weight. A summary of the analytical results and approximate quantities of ACM are presented in Table 2-1. A copy of the laboratory analytical report can be found in Attachment C.

Based on the analytical results, the following materials at this site were determined to contain asbestos:

MATERIAL
Black Coating Material
Black Gasket Material

3.2 Lead-Based Paint

The four paint chip samples were delivered to EMSL Analytical of Westmont, New Jersey, under chain-of-custody for analysis. The paint chip-samples were prepared and analyzed for lead by flame atomic absorption spectroscopy (AAS) by SW846 Methods 3050B and 7420, respectively. Only sample CG-LED-3 was positive for lead, with 0.09% wt. The levels of lead in the paint are below federal limits (0.5 % wt).

4.0 ASBESTOS INVENTORY

Based on the analytical results, the areas identified as containing asbestos were re-inspected to delineate the location and estimated quantities of ACM present.

The locations of the ACM are shown on Figure 2-1 through 2-4. An inventory of the ACM in each12”x12” space/area is presented in Table 2-1 and the estimated quantities of ACM in the treatment building are presented in Table 5-1.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Asbestos-containing building materials are present at the Camp Georgetown Treatment Building located at Camp Georgetown, 3191 Crumb Hill Road, Georgetown, New York. ACM is present in black coating material and black gasket material. Table 5-1 lists the ACMs and their estimated quantities. The levels of lead in the paint are below federal limits, therefore no action for lead is necessary.

5.2 Recommendations

Based on the results of the asbestos survey, URS recommends the following:

- Abatement of ACM must be completed prior to demolition activities commencing in the subject areas, unless all the demolition debris is to be managed as ACM for disposal purposes. A cost estimate for ACM Abatement is included in Attachment E.
- All building materials identified herein as meeting the current regulatory definition of "asbestos-containing" must be handled only by Contractors licensed by the State of New York to do such work.
- Removal and disposal of ACM must be carried out in compliance with current applicable state, federal and local laws.
- A Demolition Plan should be prepared outlining the proper procedures for working in areas that contain ACM.
- All ACM should be labeled to indicate the hazard, and warning notifications posted conspicuously in areas containing ACM.

- Areas where friable ACM is present or where the condition of the ACM is poor should be isolated and removed prior to removing the non-friable ACM.

6.0 LIMITATIONS

URS conducted this pre-demolition asbestos survey as an additional task, which was not included in the scope of work as presented in the Camp Georgetown Remedial Design Project Management Work Plan (URS May 2006). URS has endeavored to investigate the existing conditions at the facilities using general accepted asbestos survey methods and procedures. Regardless of the thoroughness of a survey, it is possible that some areas containing asbestos were inaccessible to the surveyor. This report presents general descriptions of various construction materials and the general locations where these materials were encountered. Intrusive sampling was not conducted for this survey; therefore, buried, covered, or inaccessible areas may contain asbestos not found during this survey. Buried materials may become visible during construction activities. If suspect materials that were not previously sampled are uncovered during construction activities, they should be tested prior to further disturbance of the area. Materials for which sampling and analysis has not been completed to determine asbestos content should be treated as ACM until analysis is completed.

The conclusions presented in this report are professional opinions based on the data described in this report. They are intended only for the purpose, the location, and the project indicated. Changes in applicable standards may occur as a result of legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control. Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

TABLE 2-1

INVENTORY OF ACM - TREATMENT BUILDING

CAMP GEORGETOWN

Area	Space ID	Material	Sample ID	% And Type of Asbestos	Est. Quantity	Friable	Condition
GROUND FLOOR	101	Drywall	CG-101-1	NAD	N/A	No	Poor
	101	Joint Compound	CG-101-2	NAD	N/A	No	Poor
	101	Black Expansion Joint	CG-101-14	NAD	N/A	No	Good
	102	Drywall	CG-102-3	NAD	N/A	No	Poor
	102	Joint Compound	CG-102-4	NAD	N/A	No	Poor
	102	Drywall	CG-102-5	NAD	N/A	No	Poor
	102	Joint Compound	CG-102-6	NAD	N/A	No	Poor
	102	12”x12” tan speckled floor tile & Mastic	CG-102-7	NAD	N/A	No	Poor
	102	12”x12” tan speckled floor tile & Mastic	CG-102-8	SNA	N/A	No	Poor
	102	12”x12” tan speckled floor tile & Mastic	CG-102-9	SNA	N/A	No	Poor
	102	Brown Cove Base	CG-102-10	NAD	N/A	No	Poor
	102	Brown Cove Base	CG-102-11	SNA	N/A	No	Poor
	102	Brown Cove Base	CG-102-12	SNA	N/A	No	Poor
	102	Black Expansion Joint	CG-102-13	NAD	N/A	No	Poor
	103	Black Expansion Joint	N/A	N/A	N/A	No	Poor
	104	No suspect ACM Identified	N/A	N/A	N/A	N/A	N/A
	105	Beige Linoleum & Tan Mastic	CG-105-16	NAD	N/A	N/A	Poor
	105	Beige Linoleum & Tan Mastic	CG-105-17	SNA	N/A	N/A	Poor
	105	Beige Linoleum & Tan Mastic	CG-105-18	SNA	N/A	N/A	Poor
	105	Black Expansion Joint	N/A	N/A	N/A	No	Good
	106	Black Expansion Joint	CG-106-15	N/A	N/A	N/A	Good
	107	Black Expansion Joint	N/A	N/A	N/A	No	Poor
	108	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A
	109	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A
	110	Thick Dry Wall	CG-110-19	NAD	N/A	No	Poor
	110	Thick Dry Wall	CG-110-20	NAD	N/A	No	Poor
	110	Thick Dry Wall	CG-110-21	NAD	N/A	No	Poor
	111	**Black Coating Material**	**CG-111-22**	**9.4% CHRY**	**132 LF**	**No**	Fair
	111	**Black Coating Material**	**CG-111-23**	**9.5% CHRY**	**N/A**	**No**	Fair
	111	**Black Coating Material**	**CG-111-24**	**13.2% CHRY**	**N/A**	**No**	Fair
	111	White Window Glazing	CG-111-25	NAD	N/A	Yes	Poor
	111	White Window Glazing	CG-111-26	NAD	N/A	Yes	Poor
	111	White Window Glazing	CG-111-27	NAD	N/A	Yes	Poor
	111	**Black Gasket Maintenance Saddle**	**CG-111-28**	**10.8% CHRY**	**22 LF**	**No**	Fair
	111	**Black Gasket Maintenance Saddle**	**CG-111-29**	**PACM**	**N/A**	**No**	Fair
	111	**Black Gasket Maintenance Saddle**	**CG-111-30**	**SNA**	**N/A**	**No**	Fair
	112	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A

TABLE 2-1 (Continued)

INVENTORY OF ACM - TREATMENT BUILDING

CAMP GEORGETOWN

Area	Space ID	Material	Sample ID	% And Type of Asbestos	Est. Quantity	Friable	Condition
LOFT AREA	113	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A
ROOF	201	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A
	202	Brown Roof Shingles	CG-201-31	NAD	N/A	No	Poor
	202	No Suspect ACM Identified	CG-201-32	SNA	N/A	No	Poor
	202	No Suspect ACM Identified	CG-201-33	SNA	N/A	No	Poor
	203	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A

Note: Bold indicates the presence of ACM> 1%

ACM = Asbestos Containing Material
CHRY = Chrysotile
LF = Linear Feet
NA = Not Applicable
NAD = No Asbestos Detected
PACM = Presumed asbestos-containing material
SNA = Sample Not Analyzed

TABLE 2-2

INVENTORY OF ACM – STORAGE SHED

CAMP GEORGETOWN

Area	Space ID	Material	Sample ID	% And Type of Asbestos	Est. Quantity	Friable	Condition
GROUND FLOOR	101	No Suspect ACM Identified	N/A	N/A	N/A	No	N/A
ROOF	201	No Suspect ACM Identified	N/A	N/A	N/A	N/A	N/A

ACM = Asbestos Containing Material
NA = Not Applicable

TABLE 3-1

SUMMARY OF LEAD-BASE PAINT RESULTS

TREATMENT BUILDING

CAMP GEORGETOWN

SAMPLE	MATERIAL DESCRIPTION	RESULTS % WT. LEAD CONCENTRATION
CG-LED -1	Dark Gray Paint	<0.01%WT
CG-LED -2	Light Gray Paint	<0.01%WT
CG-LED -3	White Paint	<0.09%WT
CG-LED -4	White Paint	<0.01%WT

NOTE:

Federal Standard is 5,000 ug/g (0.5%)

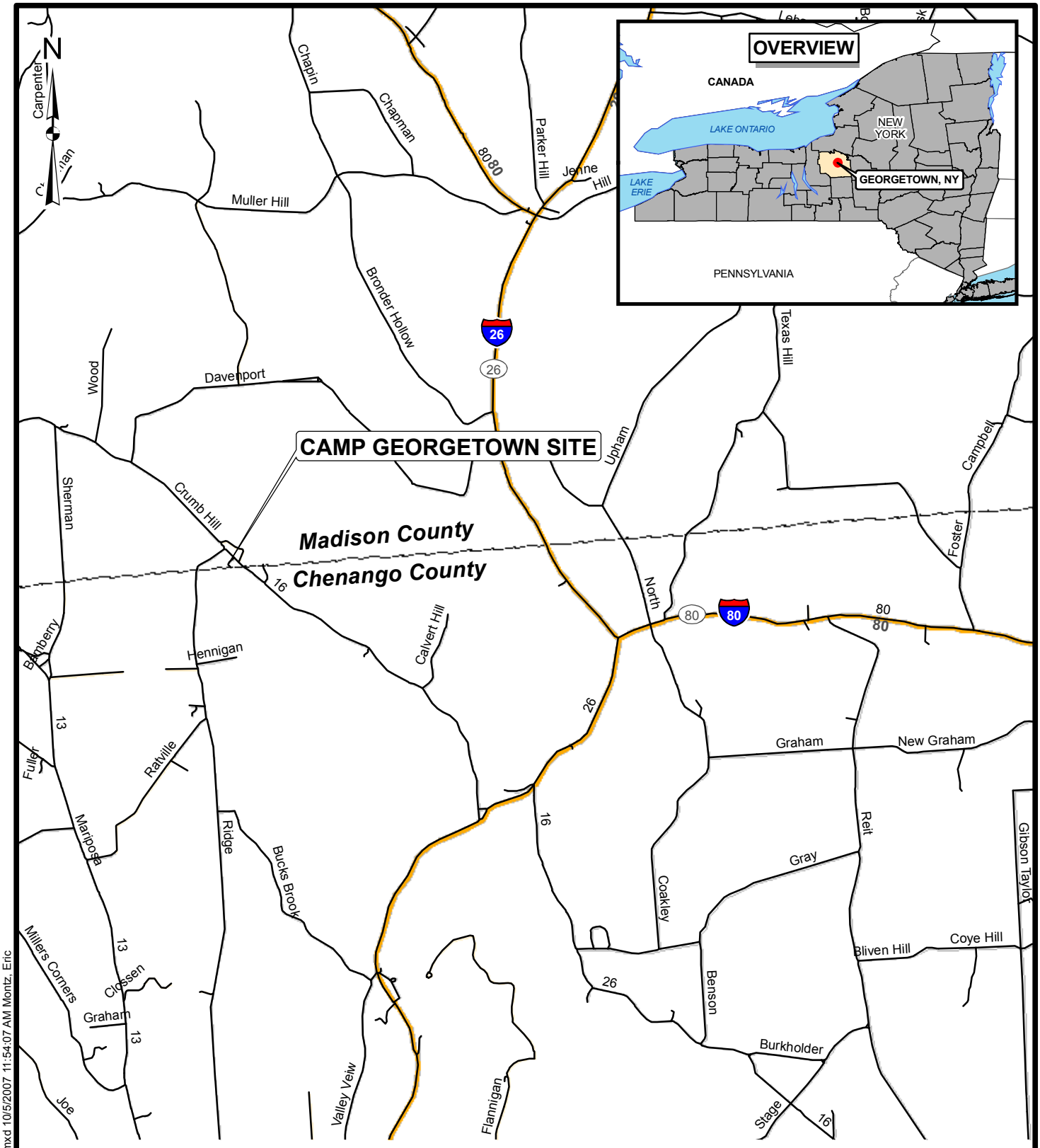
TABLE 5-1

TYPE AND ESTIMATED QUANTITIES OF ACM

TREATMENT BUILDING

CAMP GEORGETOWN

Material	Type	Estimated Quantity
Black Coating Material	Chrysotile	132 Linear Feet
Black Gasket Material	Chrysotile	22 Linear Feel

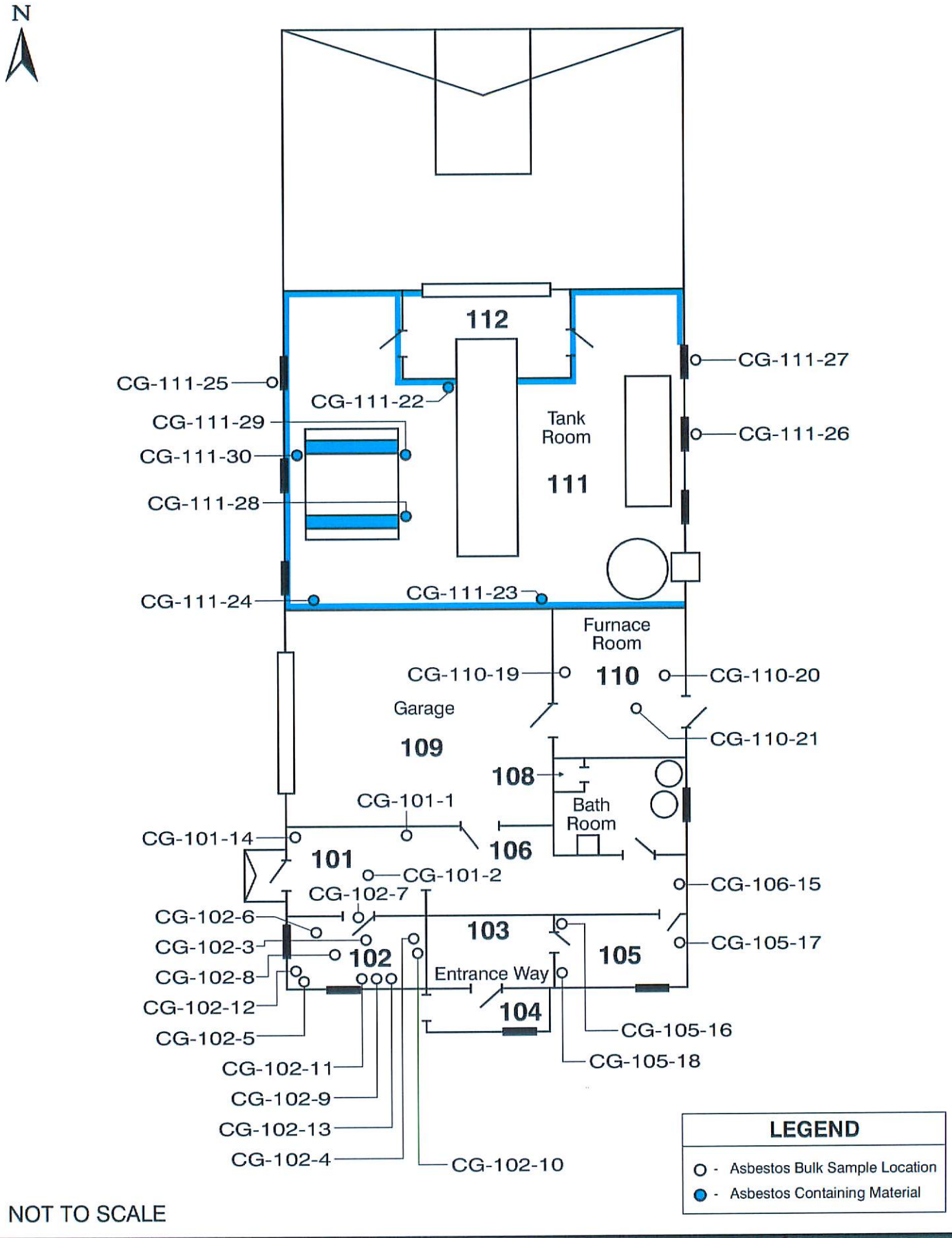


J:\11174437.00000\DB\GIS\SiteLocationMap_2.mxd 10/5/2007 11:54:07 AM Montz, Eric

URS

SITE LOCATION MAP
CAMP GEORGETOWN
TOWN OF GEORGETOWN
MADISON COUNTY, NY

FIGURE 1

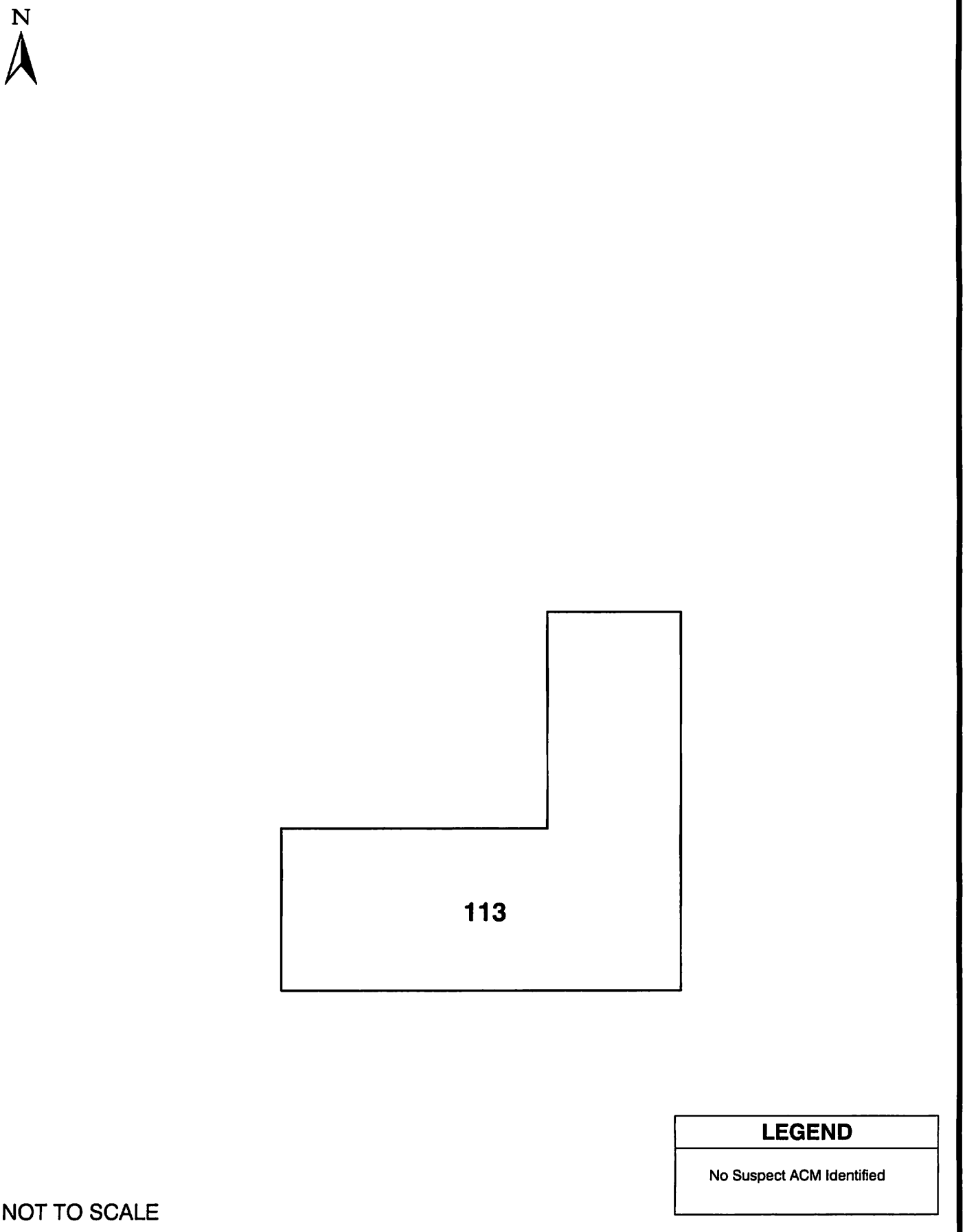


URS

CAMP GEORGETOWN
TREATMENT BUILDING GROUND FLOOR
ASBESTOS BULK SAMPLE LOCATIONS

FIGURE 2-1

AG19832.11174679.091607.CCM

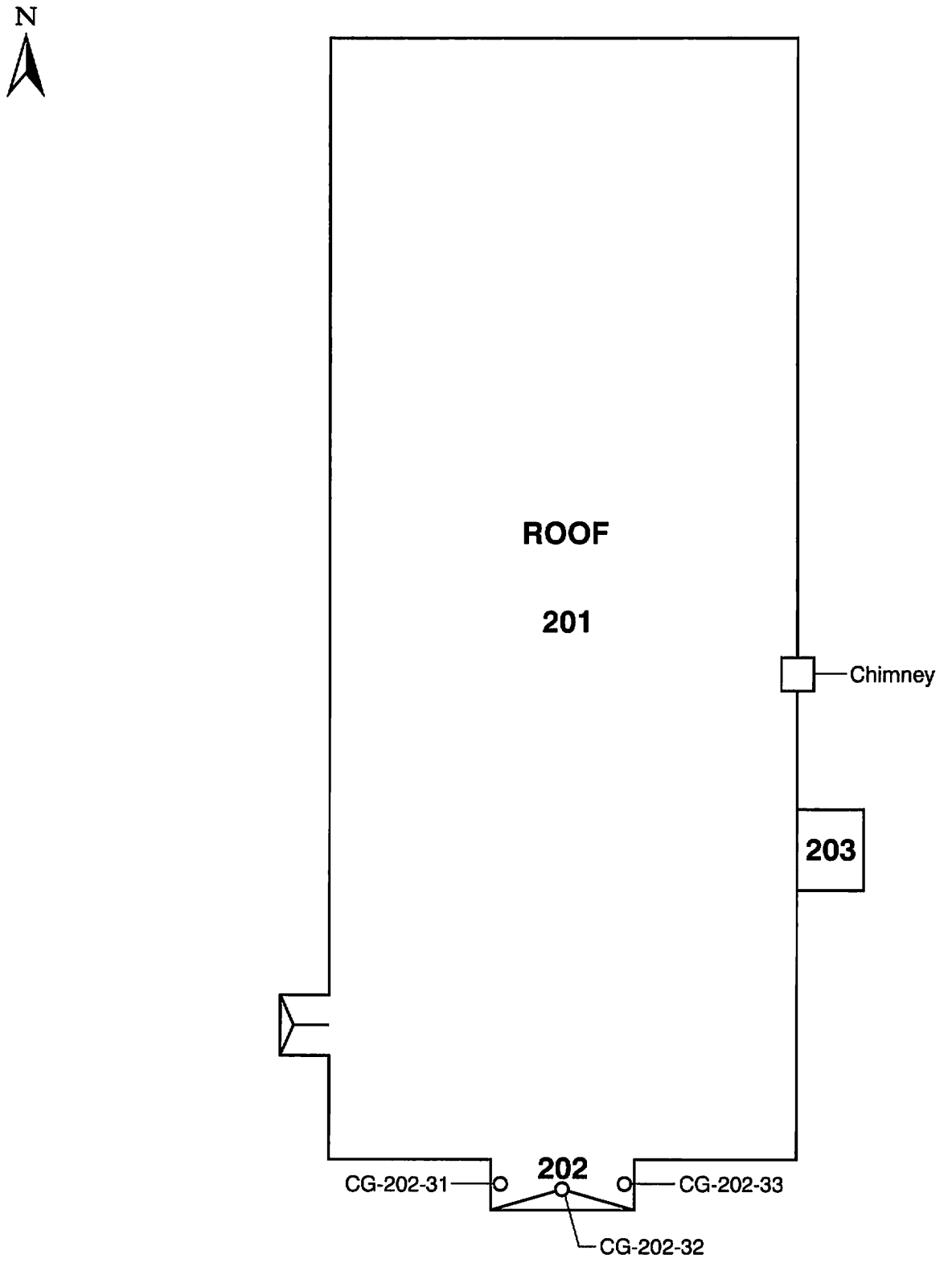


URS

CAMP GEORGETOWN
TREATMENT BUILDING LOFT AREA
ASBESTOS BULK SAMPLE LOCATIONS

FIGURE 2-2

AG19833-11174679-091607-GCM



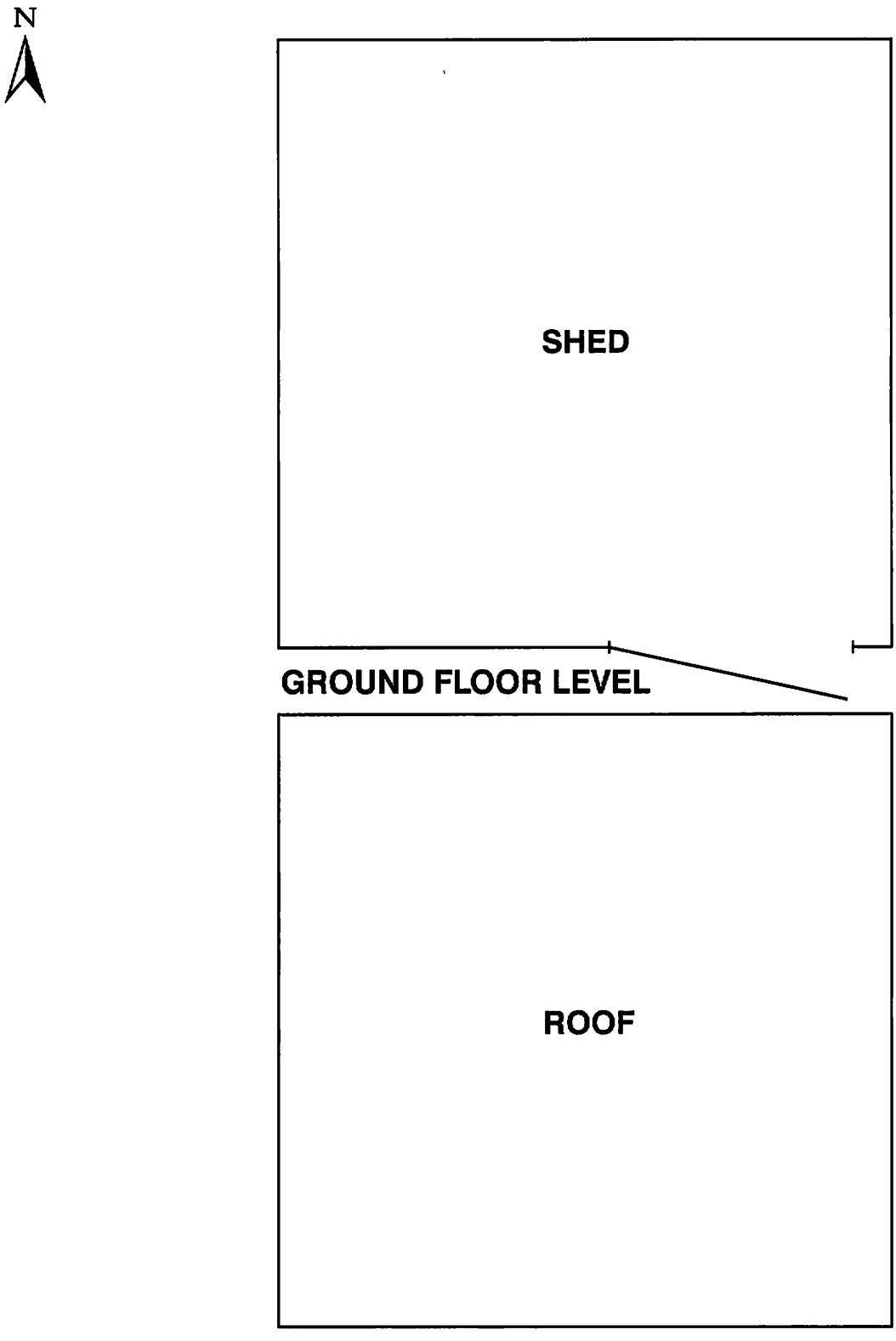
NOT TO SCALE

URS

CAMP GEORGETOWN
TREATMENT BUILDING ROOF LEVEL
ASBESTOS BULK SAMPLE LOCATIONS

FIGURE 2-3

AG19834-111744679-091607-GCM



LEGEND
No Suspect ACM Identified

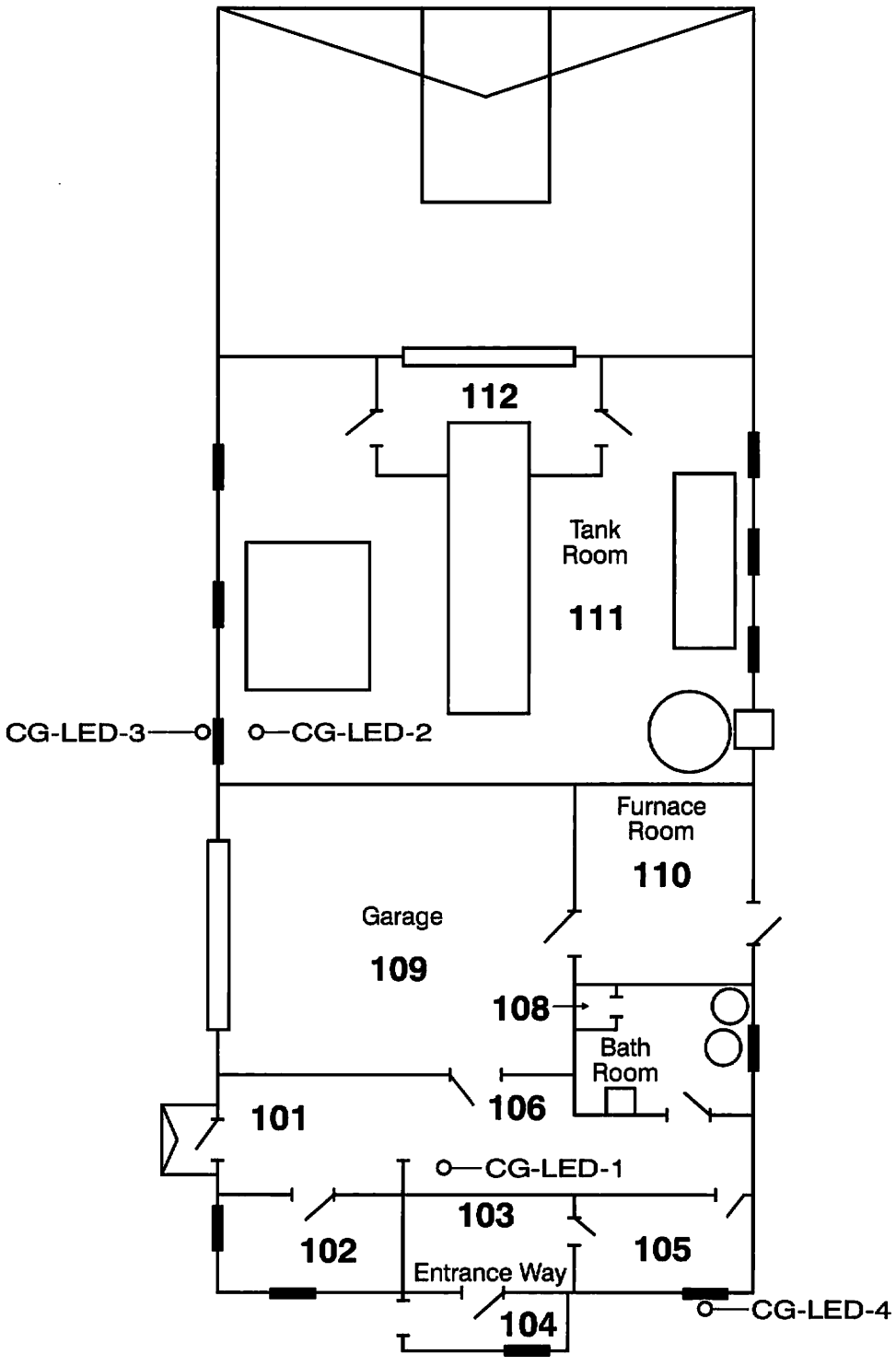
NOT TO SCALE

URS

CAMP GEORGETOWN
STORAGE SHED
ASBESTOS BULK SAMPLE LOCATIONS

FIGURE 2-4

AG19835-111746/9-091607-GCM



LEGEND
O - Lead Base-Paint Sample Location

NOT TO SCALE

AG19876-111746/9 101707-CCM

URS

CAMP GEORGETOWN
TREATMENT BUILDING GROUND FLOOR
LEAD BASE-PAINT SAMPLE LOCATIONS

FIGURE 2-5

ATTACHMENT A

URS CERTIFICATIONS

STATE OF NEW YORK - DEPARTMENT OF LABOR

ASBESTOS CERTIFICATE

DAVID B COFIELD JR.
CLASS(EXPIRES)
C ATEC(11/07) D INSP(11/07)
H PM (11/07) I PD (11/07)

CERT# 91-06346
DMV# 407190051

MUST BE CARRIED ON ASBESTOS PROJECTS

EYES BRO
HAIR BLK
HGT 5' 07"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 290A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

STATE OF NEW YORK - DEPARTMENT OF LABOR

DIVISION OF SAFETY AND HEALTH

License and Certificate Unit
BUILDING 12, STATE CAMPUS
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

RESTRICTED LICENSE
Asbestos Removal Not Permitted

Contractor: **URS CORPORATION-NEW YORK**
5 PENN PLAZA
15TH FLOOR
NEW YORK, NY 10001

LICENSE NUMBER: **05-0274**
DATE OF ISSUE: **3 /15/2007**
EXPIRATION DATE: **3/31/2008**

Duly Authorized Representative: **KURTIS W. STOKES**

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

SH 432 (6-03)

Maureen Cox, Director
FOR THE COMMISSIONER OF LABOR

ATTACHMENT B

LABORATORY CERTIFICATIONS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2008
Issued April 01, 2007
Revised April 24, 2007

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. KENNETH NAJUCH
EMSL ANALYTICAL INC
490 ROWLEY ROAD
DEPEW, NY 14043

NY Lab Id No: 11606
EPA Lab Code: NY01278

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Drinking Water Miscellaneous

Asbestos	EPA 100.1
	EPA 100.2

Serial No.: 33578

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2008
Issued April 01, 2007

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. KENNETH NAJUCH
EMSL ANALYTICAL INC
490 ROWLEY ROAD
DEPEW, NY 14043

NY Lab Id No: 11606
EPA Lab Code: NY01278

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved subcategories and/or analytes are listed below:

Miscellaneous Air

Asbestos	40 CFR 763 APX A No. III
	YAMATE,AGARWAL GIBB
Fibers	NIOSH 7400 A RULES

Serial No.: 33020

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2008
Issued April 01, 2007

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. KENNETH NAJUCH
EMSL ANALYTICAL INC
490 ROWLEY ROAD
DEPEW, NY 14043

NY Lab Id No: 11606
EPA Lab Code: NY01278

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	EPA 600/M4/82/020
	Item 198.1 of Manual
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	ITEM 198.4 OF MANUAL

Serial No.: 33019

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200056-0

EMSL Analytical, Inc.

Depew, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).

2007-07-01 through 2008-06-30

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Sally L. Bruce

For the National Institute of Standards and Technology

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
490 Rowley Road
Depew, NY 14043
Mr. Kenneth J. Najuch
Phone: 716-651-0030 Fax: 716-651-0394
E-Mail: knajuch@emsl.com
URL: http://www.emsl.com/

BULK ASBESTOS FIBER ANALYSIS (PLM) **NVLAP LAB CODE 200056-0**

NVLAP Code	*Designation / Description*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2007-07-01 through 2008-06-30
Effective dates

For the National Institute of Standards and Technology

NVLAP-01S (REV. 2005-05-19)

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200056-0

EMSL Analytical, Inc.

Depew, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

AIRBORNE ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).

2007-07-01 through 2008-06-30

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Sally S. Bruce

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2006-09-13)

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
490 Rowley Road
Depew, NY 14043
Mr. Kenneth J. Najuch
Phone: 716-651-0030 Fax: 716-651-0394
E-Mail: knajuch@emsl.com
URL: http://www.emsl.com/

AIRBORNE ASBESTOS FIBER ANALYSIS (TEM) **NVLAP LAB CODE 200056-0**

NVLAP Code	*Designation / Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

2007-07-01 through 2008-06-30
Effective dates

Sally S. Bruce
For the National Institute of Standards and Technology

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2008
Issued April 01, 2007
Revised July 16, 2007

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. JULIE A. SMITH
EMSL ANALYTICAL INC
1 COOPER STREET
WESTMONT, NJ 08108

NY Lab Id No: 10896
EPA Lab Code: NJ01209

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Lead in Dust Wipes	EPA 7420
Lead in Paint	EPA 7420

Sample Preparation Methods

EPA 3050B

Serial No.: 34126

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

AIHA

Your Essential Connection

August 22, 2007

Lab ID#: 100194

Patty Kirkland
EMSL Analytical, Inc. – Westmont
107 Haddon Avenue.
Westmont, NJ 08108.

Dear Patty:

The AIHA has approved an extension to your laboratory's current certificate of accreditation in the Industrial Hygiene Laboratory Accreditation Program (IHLAP), Environmental Lead Laboratory Accreditation Program (ELLAP), and Environmental Microbiology Laboratory Accreditation Program (EMLAP). This extension will expire on November 1, 2007. Remember that your laboratory's proficiency rating in the PAT programs must be maintained for the new certificate to be issued.

Your laboratory remains an accredited laboratory in the IHLAP, ELLAP and EMLAP programs. Please keep a copy of this letter with your expired certificate. If you have questions or concerns, please feel free to contact Heather I. Thompson, Laboratory Accreditation Specialist at (703) 846-0716.

Sincerely,

Cheryl O. Morton

Cheryl O. Morton
Director, Laboratory Quality Assurance Dept.

The American Industrial Hygiene Association

CELEBRATING 30 Thirty Years of AIHA Accrediting Labs
SOUND DATA SMART DECISIONS
1974 - 2004

acknowledges that

EMSL Analytical, Inc.

107 Haddon Avenue, Westmont, NJ 08108
Laboratory ID: 100194

has fulfilled the requirements of the AIHA Laboratory Quality Assurance Programs (LQAP), thereby, conforming to the ISO/IEC 17025:1999 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories.* The above named laboratory, along with all premises from which key activities are performed, as listed above, have been accredited by AIHA in the following:

ACCREDITATION PROGRAMS

✓	**INDUSTRIAL HYGIENE**	Accreditation Expires: 09/01/2006
✓	**ENVIRONMENTAL LEAD**	Accreditation Expires: 09/01/2006
✓	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: 09/01/2007
☐	**FOOD**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with LQAP requirements. This certificate is not valid without the attached **Scope of Accreditation**.

Larry S. Pierce, PhD, CIH
Chairperson, Analytical Accreditation Board

Roy M. Buchan, DrPH, CIH
President, AIHA

Date Issued: 08/11/2005

CELEBRATING 30 Thirty Years of AIHA Accrediting Labs
1974 - 2004
SOUND DATA
LABORATORY QUALITY ASSURANCE PROGRAMS

AIHA
Your Essential Connection: Advancing Occupational and Environmental Health and Safety Globally
2700 Prosperity Ave., Suite 250, Fairfax, VA 22031 U.S.A.
(703) 849-8888; Fax (703) 207-3561; www.aiha.org

AIHA Laboratory Quality Assurance Programs
SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
107 Haddon Avenue, Westmont, NJ 08108

Laboratory ID: **100194**
Issue Date: 08/11/2005

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or revocation. A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA website at:
http://www.aiha.org/LaboratoryServices/html/lists.htm

The EPA recognizes the AIHA ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air analysis is not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

Initial Accreditation Date: 01/18/1995

Field of Testing (FoT)	Method	Method Description *(for internal methods only)*
Airborne Dust	NIOSH 7082	
Paint	EPA SW-846 3050B	
	EPA SW-846 7420	
Settled Dust by Wipe	EPA SW-846 3050B	
	EPA SW-846 7420	
Soil	EPA SW-846 3050B	
	EPA SW-846 7420	

The laboratory participates in the following AIHA testing programs:

- ✓ Paint
- ✓ Soil
- ✓ Airborne Dust
- ✓ Settled Dust by Wipe

ATTACHMENT C

ANALYTICAL RESULTS/CHAIN-OF-CUSTODY

EMSL Analytical, Inc.
490 Rowley Road, Depew, NY 14043
Phone: (716) 651-0030 Fax: (716) 651-0394 Email: buffalolab@emsl.com

Attn: **David Cofield Jr.**
URS Corporation
77 Goodell Street
Buffalo, NY 14203
Fax: (716) 856-2545 Phone: (716) 856-5636
Project: 11174679.00003 / 3191 Crumb Hil Road

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899
EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/18/2007

Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
Sample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type
CG-101-1 *140704899-0001*	101 NE corner on ceiling	Gray Fibrous Homogeneous	2.00% Cellulose	98.00% Non-fibrous (other)	None Detected
CG-101-2 *140704899-0002*	101 central area on ceiling	White Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-3 *140704899-0003*	102 central area on ceiling	White Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-4 *140704899-0004*	102 NE area on ceiling	Gray Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-5 *140704899-0005*	102 SW area on ceiling	Gray Fibrous Layer # 1	1.00% Cellulose	99.00% Non-fibrous (other)	None Detected
CG-102-5 *140704899-0005A*	paper	Brown Fibrous Layer # 2	90.00% Cellulose	10.00% Non-fibrous (other)	None Detected
CG-102-6 *140704899-0006*	102 NW area on ceiling	Gray Fibrous Homogeneous	1.00% Cellulose	99.00% Non-fibrous (other)	None Detected
CG-110-19 *140704899-0007*	110 West side ceiling	Gray Fibrous Homogeneous	<1% Cellulose <1% Glass	100.00% Non-fibrous (other)	None Detected
CG-110-20 *140704899-0008*	110 East side ceiling	Gray Fibrous Homogeneous	1.00% Glass	99.00% Non-fibrous (other)	None Detected
CG-110-21 *140704899-0009*	110 central area ceiling	Gray Fibrous Homogeneous	1.00% Glass	99.00% Non-fibrous (other)	None Detected

Analyst(s)
Brian Walczak (10)

Rhonda McGee
Rhonda McGee, Laboratory Manager
or other approved signatory

PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.
Analysis performed by EMSL Buffalo (NVLAP #200056-0), NY ELAP #11606

EMSL Analytical, Inc.
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Attn: **David Cofield Jr.**
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77 Goodell Street
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Fax: (716) 856-2545 Phone: (716) 856-5636
Project: 11174679.00003 / 3191 Crumb Hill Road

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Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
Sample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type

Analyst(s)
Brian Walczak (10)

Rhonda McGee
Rhonda McGee, Laboratory Manager
or other approved signatory

PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Unless otherwise noted, the results in this report have not been blank corrected. Samples received in good condition unless otherwise noted.
Analysis performed by EMSL Buffalo (NVLAP #200056-0), NY ELAP #11606

PLMPointCount-1

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EMSL Analytical, Inc.
490 Rowley Road, Depew, NY 14043
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Attn: **David Cofield Jr.**
URS Corporation
77 Goodell Street
Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: **11174679.00003 / 3191 Crumb Hill Road**

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899

EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/18/2007

Asbestos Analysis of Non-Friable Organically Bound Materials by PLM via the NY State ELAP 198.6 Method

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
CG-102-7 *140704899-0010*	12"x12" tan speckled floor tile	Tan	100.0	None	Inconclusive: No Asbestos Detected
CG-102-10 *140704899-0011*	brown cove base	Brown	100.0	None	Inconclusive: No Asbestos Detected
CG-102-13 *140704899-0012*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-101-14 *140704899-0013*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-106-15 *140704899-0014*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-105-16 *140704899-0015*	beige linoleum	Beige	100.0	None	Inconclusive: No Asbestos Detected
CG-105-16 *140704899-0015A*	tan mastic	Tan	100.0	None	Inconclusive: No Asbestos Detected
CG-111-22 *140704899-0016*	black coating material	Black	90.6	None	9.4 Chrysotile 9.4 **Total All Types**
CG-111-23 *140704899-0017*	black coating material	Black	90.5	None	9.5 Chrysotile 9.5 **Total All Types**
CG-111-24 *140704899-0018*	black coating material	Black	86.8	None	13.2 Chrysotile 13.2 **Total All Types**

Analyst(s)
Brian Welczak (15)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

"Polarized Light Microscopy (PLM) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. The test results contained within this report meet the requirements of NELAC unless otherwise noted.EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collectionactivities or analytical method limitations. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.

ACCREDITATIONS: NVLAP #200056-0 and NY STATE ELAP #11605

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Attn: **David Cofield Jr.**
URS Corporation
77 Goodell Street
Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: 11174679.00003 / 3191 Crumb Hill Road

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EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/18/2007

Asbestos Analysis of Non-Friable Organically Bound Materials by PLM via the NY State ELAP 198.6 Method

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
CG-111-25 *140704899-0019*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-26 *140704899-0020*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-27 *140704899-0021*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-28 *140704899-0022*	black gasket material	Black	89.2	None	10.8 Chrysotile 10.8 **Total All Types**
CG-204-31 *140704899-0023*	roof shingles	Brown	100.0	None	Inconclusive: No Asbestos Detected

Analyst(s)
Brian Welczak (15)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

"Polarized Light Microscopy (PLM) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. The test results contained within this report meet the requirements of NELAC unless otherwise noted.EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collectionactivities or analytical method limitations. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.

ACCREDITATIONS: NVLAP #200056-0 and NY STATE ELAP #11606

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Attn: **David Cofield Jr.**
URS Corporation
77 Goodell Street
Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: **11174679.00003 / 3191 Crumb Hll Road**

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899

EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/29/2007

Asbestos Analysis of Non-Friable Organically Bound Materials by PLM via the NY State ELAP 198.6 Method

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
CG-102-7 *140704899-0010*	12"x12" tan speckled floor tile	Tan	100.0	None	Inconclusive: No Asbestos Detected
CG-102-10 *140704899-0011*	brown cove base	Brown	100.0	None	Inconclusive: No Asbestos Detected
CG-102-13 *140704899-0012*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-101-14 *140704899-0013*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-106-15 *140704899-0014*	black expansion joint	Black	100.0	None	Inconclusive: No Asbestos Detected
CG-105-16 *140704899-0015*	beige linoleum	Beige	100.0	None	Inconclusive: No Asbestos Detected
CG-105-16 *140704899-0015A*	tan mastic	Tan	100.0	None	Inconclusive: No Asbestos Detected
CG-111-22 *140704899-0016*	black coating material	Black	90.6	None	9.4 Chrysotile 9.4 **Total All Types**
CG-111-23 *140704899-0017*	black coating material	Black	90.5	None	9.5 Chrysotile 9.5 **Total All Types**
CG-111-24 *140704899-0018*	black coating material	Black	86.8	None	13.2 Chrysotile 13.2 **Total All Types**

Analyst(s)
Brian Walczak (15)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

*Polarized Light Microscopy (PLM) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. The test results contained within this report meet the requirements of NELAC unless otherwise noted.EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collection activities or analytical method limitations. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.

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Asbestos Analysis of Non-Friable Organically Bound Materials by PLM via the NY State ELAP 198.6 Method

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
CG-111-25 *140704899-0019*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-26 *140704899-0020*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-27 *140704899-0021*	white window glazing	White	100.0	None	Inconclusive: No Asbestos Detected
CG-111-28 *140704899-0022*	black gasket material	Black	89.2	None	10.8 Chrysotile 10.8 **Total All Types**
CG-204-31 *140704899-0023*	roof shingles	Brown	100.0	None	Inconclusive: No Asbestos Detected

Analyst(s)
Brian Walczak (15)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

*Polarized Light Microscopy (PLM) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. The test results contained within this report meet the requirements of NELAC unless otherwise noted.EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collectionactivities or analytical method limitations. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.

ACCREDITATIONS: NVLAP #200056-0 and NY STATE ELAP #11608

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Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: **11174679.00003 / 3191 Crumb Hll Road**

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899

EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/29/2007

Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
Sample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type
CG-101-1 *140704899-0001*	101 NE corner on ceiling	Gray Fibrous Homogeneous	2.00% Cellulose	98.00% Non-fibrous (other)	None Detected
CG-101-2 *140704899-0002*	101 central area on ceiling	White Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-3 *140704899-0003*	102 central area on ceiling	White Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-4 *140704899-0004*	102 NE area on ceiling	Gray Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	None Detected
CG-102-5 *140704899-0005*	102 SW area on ceiling	Gray Fibrous Layer # 1	1.00% Cellulose	99.00% Non-fibrous (other)	None Detected
CG-102-5 *140704899-0005A*	paper	Brown Fibrous Layer # 2	90.00% Cellulose	10.00% Non-fibrous (other)	None Detected
CG-102-6 *140704899-0006*	102 NW area on ceiling	Gray Fibrous Homogeneous	1.00% Cellulose	99.00% Non-fibrous (other)	None Detected
CG-110-19 *140704899-0007*	110 West side ceiling	Gray Fibrous Homogeneous	<1% Cellulose <1% Glass	100.00% Non-fibrous (other)	None Detected
CG-110-20 *140704899-0008*	110 East side ceiling	Gray Fibrous Homogeneous	1.00% Glass	99.00% Non-fibrous (other)	None Detected
CG-110-21 *140704899-0009*	110 central area ceiling	Gray Fibrous Homogeneous	1.00% Glass	99.00% Non-fibrous (other)	None Detected

Analyst(s)
Brian Walczak (10)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

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Analysis performed by EMSL Buffalo (NVLAP #200056-0), NY ELAP #11606

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Attn: **David Cofield Jr.**
URS Corporation
77 Goodell Street
Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: **11174679.00003 / 3191 Crumb Hll Road**

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899

EMSL Proj:
Analysis Date: 9/18/2007
Report Date: 9/29/2007

Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
Sample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type

Analyst(s)
Brian Walczak (10)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Unless otherwise noted, the results in this report have not been blank corrected.Samples received in good condition unless otherwise noted.

Analysis performed by EMSL Buffalo (NVLAP #200056-0), NY ELAP #11608

PLMPointCount-1

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Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: **11174679.00003 / 3191 Crumb Hill Road**

Customer ID: URSG50
Customer PO:
Received: 09/07/07 8:00 AM
EMSL Order: 140704899

EMSL Proj:
Analysis Date: 9/28/2007
Report Date: 9/29/2007

Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES	% TOTAL ASBESTOS
CG-102-7 *140704899-0010*	12"x12" tan speckled floor tile	Tan	100.0	None	No Asbestos Detected	
CG-102-10 *140704899-0011*	brown cove base	Brown	100.0	None	No Asbestos Detected	
CG-101-14 *140704899-0013*	black expansion joint	Black	100.0	None	No Asbestos Detected	
CG-105-16 *140704899-0015*	beige linoleum	Beige	100.0	None	No Asbestos Detected	
CG-105-16 *140704899-0015A*	tan mastic	Tan	100.0	None	No Asbestos Detected	
CG-111-25 *140704899-0019*	white window glazing	White	100.0	None	No Asbestos Detected	
CG-204-31 *140704899-0023*	roof shingles	Brown	100.0	None	No Asbestos Detected	

Analyst(s)
Ken Najuch (7)

Rhonda McGee

Rhonda McGee, Laboratory Manager
or other approved signatory

NYTNOB-2

THIS IS THE LAST PAGE OF THE REPORT.

23 Analys
10 NOB's

1407048999

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: NYSDEC
Project: Camp Georgetown, NY 13072
Building/Location: 3191Crumb Hill Road
Contact: David Cofield Jr. (716) 856-5636 Ext.1330
Fax Results to: David Cofield Jr. (716) 856-2545
Mail Report and Invoices to:
URS Corporation 77 Goodelle Street Buffalo, NY 14203

Date: 9/5/07
Project Number: 11174679.00003
Turnaround Requested:
____ RUSH
____ 24 Hour
____ 48 Hour
X ~~3-5 Day~~ 6-10 Day unless phone call BMW
4-6 @

Sample Number	Material Description	(SPACE T.D.) Sample Location	Laboratory Results PLM	Laboratory Results TEM
CG-101-1	Dry wall	101 N.E. corner on ceiling	ND	NA
CG-101-2	Joint Compound	101 central area on ceiling	ND	NA
CG-102-3	Dry wall	102 central area on ceiling	ND	NA
CG-102-4	Joint Compound	102 N.E. area on ceiling	ND	NA
CG-102-5	Dry wall	102 S.W. area on ceiling	ND	NA
CG-102-6	Joint Compound	102 N.W. area on ceiling	ND	NA
CG-102-7	12"x12" Tan speckled Floor Tile	102 Doorway ENTRANCE	ND	ND
CG-102-8	and Tan/BRN Mastic " " "	102 Central area	Don't	anal
CG-102-9	" " "	102 South central area	—	—
CG-102-10	BROWN Cove Base	102 EAST WALL	ND	ND
CG-102-11	" " "	102 South wall	Don't	anal

Sampled By: David Cofield Jr. Date: 9 5 07 Time: ____
Relinquished By: David Cofield Jr. Date: 9 6 07 Time: ____
Received By: ____ Date: 9 7 07 Time: 8 Am
Received By: ____ Date: 1 1 Time: ____

Comments: PLEASE READ PLM SAMPLES to the First Positive ~~Read~~ negative read (1) TEM (NOB)

LT

140704859

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: NYSDEC
Project: Camp Georgetown, NY 13072
Building/Location: 3191Crumb Hill Road
Contact: David Cofield Jr. (716) 856-5636 Ext.1330
Fax Results to: David Cofield Jr. (716) 856-2545
Mail Report and Invoices to: URS Corporation 77 Goodelle Street Buffalo, NY 14203

Page 1 of 3
Date: 9/5/07
Project Number: 11746790003
Turnaround Requested:
____ RUSH
____ 24 Hour
____ 48 Hour
X 3-5 Day 6-10 as per phone call 9.6

Sample Number	Material Description	(SPACE ID) Sample Location	Laboratory Results PLM	TEM
CG-102-12	Brown Cove-Base	102 west wall	Don't	anal
CG-102-13	Black Expansion Joint	102 South wall between Brick and wood	ND read to	ND
CG-101-14	" " "	101 West wall " "	ND first	NA pos
CG-106-15	" " "	106 EAST wall " "	Do ND only one Sample	TNOB If all neg
CG-105-16	Beige Linoleum and Tan Mastic	105 NORTH WEST DOORWAY ENTRALE	ND	ND
CG-105-17	" " "	105 EAST Edge of Platform	Don't	anal
CG-105-18	" " "	105 WEST DOORWAY ENTRANCE	1	1
CG-110-19	Thick DRY wall Ceiling	110 West side ceiling	ND	NA
CG-110-20	" " "	110 East side ceiling	ND	NA
CG-110-21	" " "	110 Central area Ceiling	ND	NA
GG-111-22	Black Coating material	111 NORTH wall Base	9.4%	NA

Sampled By: DAVID COFIELD JR. Date: 9 5 07 Time: ____
Relquished By: DAVID COFIELD JR. Date: 9 6 07 Time: ____
Received By: FED EX BOX Date: 9 7 07 Time: 8:00 am
Received By: ____ Date: 1 1 Time: ____

Comments: SAME AS 1 OF 3

14070 V899

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: NYSDEC
Project: Camp Georgetown, NY 13072
Building/Location: 3191Crumb Hill Road
Contact: David Cofield Jr. (716) 856-5636 Ext.1330
Fax Results to: David Cofield Jr. (716) 856-2545
Mail Report and Invoices to: URS Corporation 77 Goodelle Street Buffalo, NY 14203

Page 3 of 3
Date: 9/5/07
Project Number: 11174679.00003
Turnaround Requested:
_____ RUSH
_____ 24 Hour
_____ 48 Hour
X 3-5 Day 6-10 ~~days~~ phone call 9/6

Sample Number	Material Description	Source I.D. / Sample Location	Laboratory Results PLM	Laboratory Results TEM
CG-111-23	Black Coating Material	111 South wall BASE	9.5%	NA
CG-111-24	" " "	111 WEST wall BASE	13.2%	NA
CG-111-25	WHITE window Glazing	111 WEST SIDE window	ND	ND
CG-111-26	" " "	111 EAST SIDE window	ND	NA
CG-111-27	" " "	111 EAST NORTH SIDE window	ND	NA
CG-111-28	Black Gasket material	111 S.E. Saddle	10.8%	NA
CG-111-29	" " "	111 N.E. Saddle	Don't anal	
CG-111-30	" " "	111 N.W. Saddle	1	1
CG-204-31	Brown Roof Shingles	204 - WEST SIDE Edge	ND	ND
CG-204-32	" " "	204 Top central	Don't anal	
CG-204-33	" " "	204 EAST SIDE Edge	1	1

Sampled By: DAVID COFIELD JR Date: 9 5 07 Time: _____ Received By: DBy Date: 9 7 07 Time: 8:07 AM
Relinquished By: DAVID COFIELD JR Date: 9 6 07 Time: _____ Received By: _____ Date: 1 1 Time: _____

Comments: SAME AS 1 OF 3

EMSL Analytical
3 Cooper St., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-9551 Email: westmontleadlab@emsl.com

Attn: **URS Corporation**
77 Goodell Street
Buffalo, NY 14203

Fax: (716) 856-2545 Phone: (716) 856-5636
Project: Camp ~~Pharsalia, NY~~ 13072
George Bauer

Customer ID: URSG50
Customer PO:
Received: 09/10/07 8:21 AM
EMSL Order: 200712891
EMSL Proj:

Report Date: 9/13/2007

Lead in Paint Chips by Flame AAS (SW 846 3050B and 7420*)

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
CG-LED-1	*0001*		9/13/2007	<0.01 % wt
CG-LED-2	*0002*		9/13/2007	<0.01 % wt
CG-LED-3	*0003*		9/13/2007	0.09 % wt
CG-LED-4	*0004*		9/13/2007	<0.01 % wt

Shannon Kauffman

Shannon Kauffman, Laboratory Director
or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with these sample results included in this report meet the method quality control requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities.

* slight modifications to methods applied Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

ACCREDITATIONS: NJ-NELAP: 04653, AIHA Environmental Lead Laboratory Approval Program: 100194

Date Printed: 9/13/2007 12:43:33 PM

LEAD-BASE PAINT SAMPLING CHAIN OF CUSTODY

Client: NYSDEC
Project: Camp Georgetown, NY 13072
Building/Location: 3191 Crumb Hill Road
Contact: David Cofield Jr.
Fax Results to: David Cofield Jr.
Mail Report to: David Cofield Jr.
Mail Invoice to: Chuck Dusel
77 Goodell Street Buffalo, NY 14203

Page 1 of 1
Date: 9/5/07
Project Number: 11174680
Turnaround Requested:
RUSH
24 Hour
48 Hour
X 3-5 Day 6-10 Day

Sample Number	Material Description	(SPACE ID) Sample Location	Laboratory Results mg/cm2	Laboratory Results ug/g
CG-LED-1	DARK GRAY PAINT	106 Tool Storage		
CG-LED-2	light GRAY Paint	111 Tank Room		
CG-LED-3	White Paint	111 outside west window		
CG-LED-4	White Paint	105 outside EAST window		

Sampled By: DAVID Cofield IV Date: 9 5 07 Time:
Received By: DO Date: 9/7/07 Time: 11:45 Am

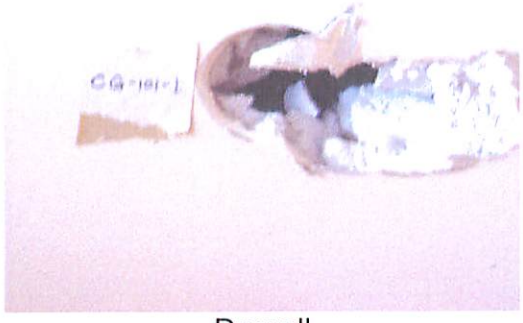
Relinquished By: DAVID Cofield IV Date: 9 7 07 Time:
Received By: Date: / / Time:

Comments:

ATTACHMENT D

PHOTOGRAPHS

CAMP GEORGETOWN
3191 CRUMB HILL ROAD
ASBESTOS BULK SAMPLE LOCATIONS



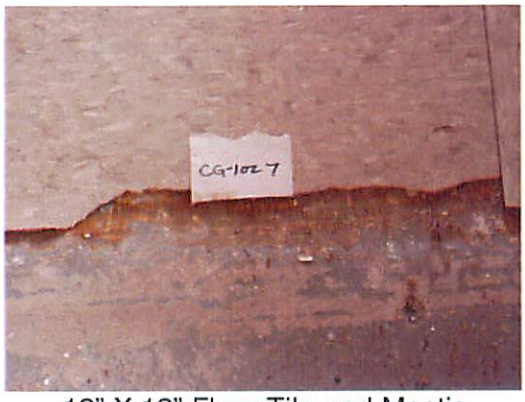
Drywall

Joint Compound

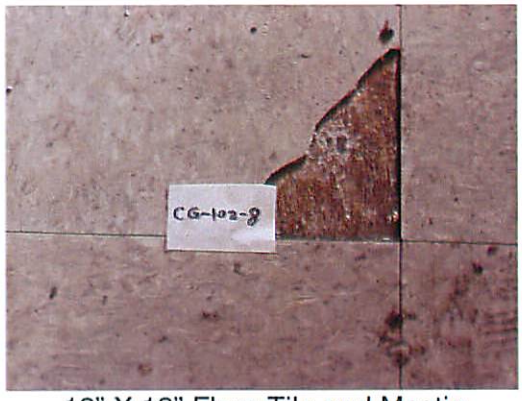
Drywall

Joint Compound

CAMP GEORGETOWN
3191 CRUMB HILL ROAD
ASBESTOS BULK SAMPLE LOCATIONS



12" X 12" Floor Tile and Mastic



12" X 12" Floor Tile and Mastic

12" X 12" Floor Tile and Mastic

Brown Cove Base

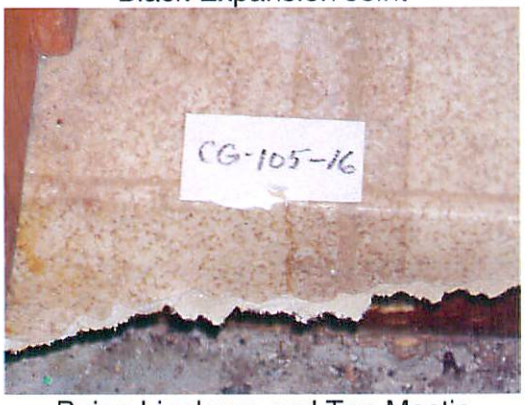
Brown Cove Base

Black Expansion Joint

CAMP GEORGETOWN
3191 CRUMB HILL ROAD
ASBESTOS BULK SAMPLE LOCATIONS

Black Expansion Joint

Black Expansion Joint



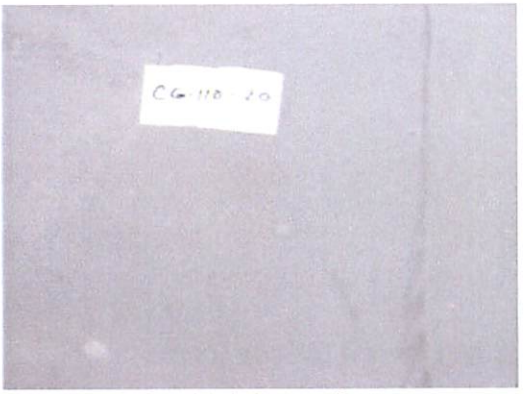
Beige Linoleum and Tan Mastic

Beige Linoleum and Tan Mastic

Beige Linoleum and Tan Mastic

Thick Drywall

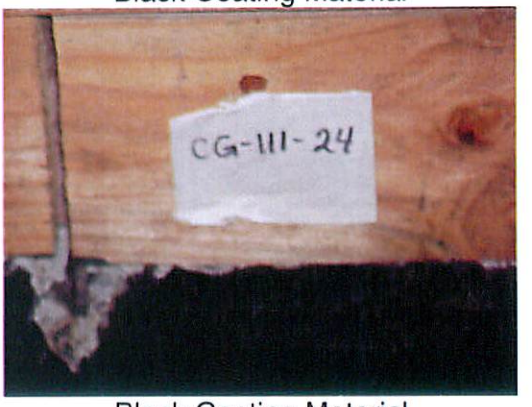
CAMP GEORGETOWN
3191 CRUMB HILL ROAD
ASBESTOS BULK SAMPLE LOCATIONS



Thick Drywall

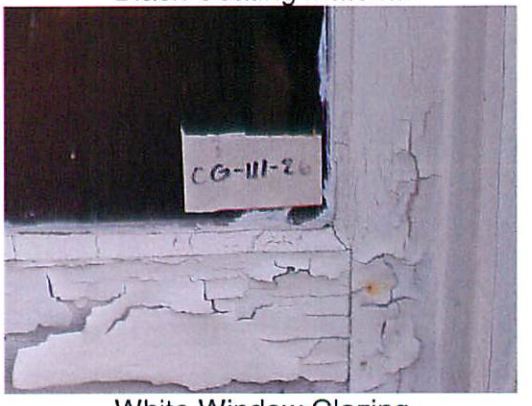
Black Coating Material

Black Coating Material



Black Coating Material

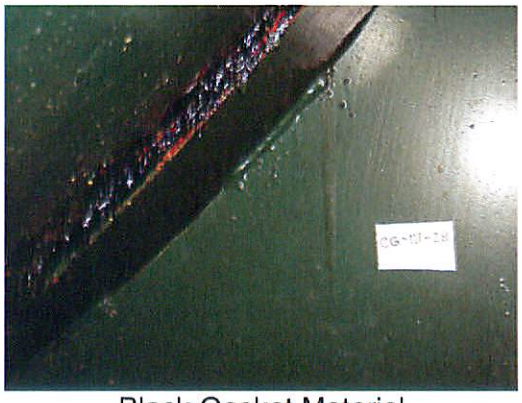
White Window Glazing



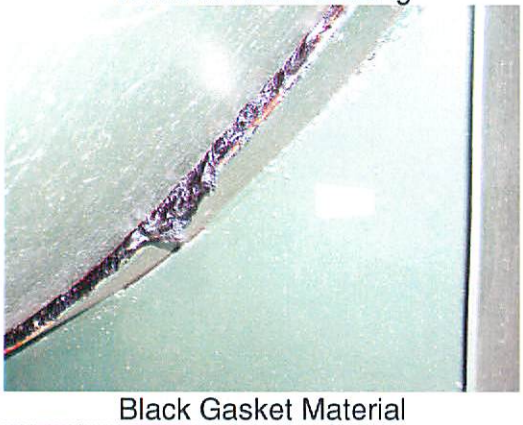
White Window Glazing

CAMP GEORGETOWN
3191 CRUMB HILL ROAD
ASBESTOS BULK SAMPLE LOCATIONS

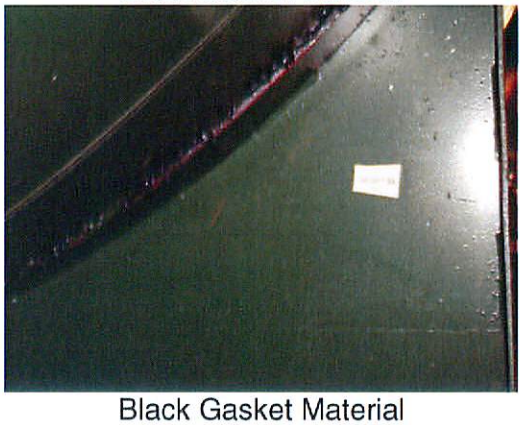
White Window Glazing



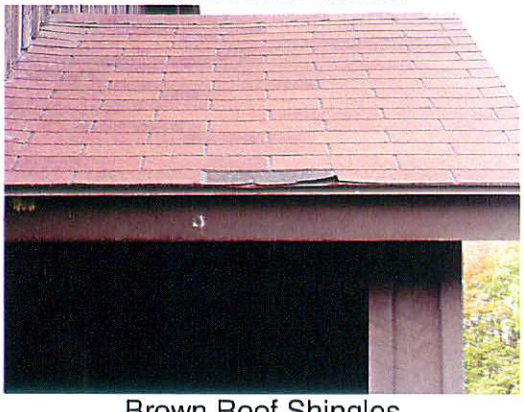
Black Gasket Material



Black Gasket Material



Black Gasket Material



Brown Roof Shingles

PHOTOS
CAMP GEORGETOWN
3191 CRUMB HILL ROAD
LEAD BASE PAINT SAMPLE LOCATIONS

Dark Gray Floor Paint

Light Gray Floor Paint

White Window Paint

White Window Paint

APPENDIX D

ANALYTICAL DATA TABLES

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID					AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
1,1-Biphenyl	MG/KG	-	-	-	0.60	0.046 J		0.25 J	0.33 J
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-	7.1 DJ	0.13 J	0.17 J		2.6
2-Methylnaphthalene	MG/KG	-	-	-	8.2 DJ	0.81		1.6	6.6 DJ
Acenaphthylene	MG/KG	100	-	-	0.39 J				
Acetophenone	MG/KG	-	-	-					
Benzaldehyde	MG/KG	-	-	-					
Benzo(a)anthracene	MG/KG	1	-	-	0.072 J				0.043 J
Benzo(a)pyrene	MG/KG	1	-	-					
Benzo(b)fluoranthene	MG/KG	1	-	-					
Benzo(g,h,i)perylene	MG/KG	100	-	-					0.044 J
bis(2-Ethylhexyl)phthalate	MG/KG	-	-	-	0.23 J	0.066 J	0.13 J	0.092 J	0.076 J
Chrysene	MG/KG	1	-	-	0.15 J				0.082 J
Dibenzofuran	MG/KG	7	-	-				0.13 J	
Fluoranthene	MG/KG	100	-	-	0.38 J				0.16 J
Fluorene	MG/KG	30	-	-	1.4	0.066 J		0.24 J	0.67
Indeno(1,2,3-cd)pyrene	MG/KG	0.5	-	-					
Naphthalene	MG/KG	12	-	-	1.1	0.079 J		0.16 J	0.49
Pentachlorophenol	MG/KG	0.8	-	-	370 D	4.2 J	7.2 D	0.29 J	46 D
Phenanthrene	MG/KG	100	-	-	4.2	0.21 J		0.55	2.2

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID					AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
Pyrene	MG/KG	100	-	-	2.2	0.073 J	0.049 J	0.073 J	0.85
TCLP Semivolatile Organic Compounds									
2,4,5-Trichlorophenol	UG/L	-	-	-	3 J				
Pentachlorophenol	UG/L	-	-	-	660 D	200 J	59 J	9 J	680 D
Dioxins & Furans									
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	72,000 D	5,300 D	3.2 J	2,100	12,000 D
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-					
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-	2,900 D	93 D		41	260 D
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-	200 D	3.0 J		3.4 J	45
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-	1,200 D	16		16	71
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	4,300 D	170		65	570
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-	340 D				
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-	560 D	9.9		9.0	130
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-	140 D			2.1 J	32
1,2,3,7,8-PeCDD	NG/KG	-	-	-	39				13
1,2,3,7,8-PeCDF	NG/KG	-	-	-	180	2.7 J		2.1 J	9.0
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-	1,100 D	15		11	78
2,3,4,7,8-PeCDF	NG/KG	-	-	-	420	6.0		2.0 J	20
2,3,7,8-TCDD	NG/KG	-	-	-	0.96				

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

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Flags assigned during chemistry validation are shown.

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Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

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Only Detected Results Reported.

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[LOCID] LIKE 'AOC*' AND [MATRIX] = 'SO

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID					AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Dioxins & Furans									
2,3,7,8-TCDF	NG/KG	-	-	-		0.37 NJ	0.23 NJ	0.31 NJ	1.3 NJ
OCDD	NG/KG	-	-	-	330,000 DJ	41,000 D	21	18,000	71,000 D
OCDF	NG/KG	-	-	-	290,000 DJ	7,700 D	2.1 J	1,900	36,000 D
Total HpCDD	NG/KG	-	-	-	110,000 D	7,900 D	5.5	3,000	18,000 D
Total HpCDF	NG/KG	-	-	-	2,900 D	4,900 D	1.2 J	1,300	260 D
Total HxCDD	NG/KG	-	-	-	10,000 D	360		150	1,400
Total HxCDF	NG/KG	-	-	-	46,000 D	810	0.90 J	370	3,400
Total PeCDD	NG/KG	-	-	-	82				29
Total PeCDF	NG/KG	-	-	-	1,300	33	1.7 J	22	180
Total TCDD	NG/KG	-	-	-	55			0.60 J	11
Total TCDF	NG/KG	-	-	-	110	14	0.97	1.5	18
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	-	-	2,400	130	0.077	54	340
Metals									
Arsenic	MG/KG	13	8.2	12 (3-12)	7.4 J	10.7 J	6.2 J	8.8 J	8.8 J
Barium	MG/KG	350	38.5	600 (15-600)	52.9	78.5	40.0	114	87.4
Cadmium	MG/KG	2.5	0.029	1 (0.1-1)	0.52 J	0.54 J	0.39 J	0.49 J	0.46 J
Chromium	MG/KG	30	16.6	40 (1.5-40)	16.2	20.7	16.4	18.2	18.5
Lead	MG/KG	63	12.6	500 (200-500)	18.4 J	15.0 J	8.3 J	10.4 J	10.9 J
Mercury	MG/KG	0.18	0.0824	0.2 (0.001-0.2)	0.045 B		0.0085 B		

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

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Only Detected Results Reported.

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APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-A	AOC-B	AOC-C	AOC-D	AOC-E
Sample ID					AOC-A (2.5)	AOC-B (5')	AOC-C (0-1')	AOC-D (3')	AOC-E (3.0)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	5.0-5.0	0.0-1.0	3.0-3.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Metals									
Silver	MG/KG	2	ND	-	5.6 J	6.1 J	5.0 J	5.3 J	5.9 J
TCLP Metals									
Barium	MG/L	-	-	-	0.151 BJ	0.293 J	0.349 J	0.564 J	0.281 J
Cadmium	MG/L	-	-	-	0.00063 B	0.00022 B	0.00052 B	0.00073 B	0.00038 B
Mercury	MG/L	-	-	-			5.00E-05 B		
Selenium	MG/L	-	-	-		0.0367			
RCRA Characteristics									
Corrosivity (pH)	S.U.	-	-	-	5.5	7.9	5.5	7.1	4.5
Ignitability	°F	-	-	-	150 >	145 >	145 >	145 >	145 >
Reactive Sulfide	MG/KG	-	-	-	13				

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

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Only Detected Results Reported.

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-F	AOC-G	AOC-H
Sample ID					AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix					Soil	Soil	Soil
Depth Interval (ft)					3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled					06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**			
Semivolatile Organic Compounds							
1,1-Biphenyl	MG/KG	-	-	-	0.083 J		
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-	0.24 J		
2-Methylnaphthalene	MG/KG	-	-	-	0.79		
Acenaphthylene	MG/KG	100	-	-			
Acetophenone	MG/KG	-	-	-			0.12 J
Benzaldehyde	MG/KG	-	-	-	0.10 J	0.076 J	
Benzo(a)anthracene	MG/KG	1	-	-	0.13 J		
Benzo(a)pyrene	MG/KG	1	-	-	0.099 J		
Benzo(b)fluoranthene	MG/KG	1	-	-	0.14 J		
Benzo(g,h,i)perylene	MG/KG	100	-	-	0.065 J		
bis(2-Ethylhexyl)phthalate	MG/KG	-	-	-	0.12 J	0.095 J	0.10 J
Chrysene	MG/KG	1	-	-	0.11 J		
Dibenzofuran	MG/KG	7	-	-			
Fluoranthene	MG/KG	100	-	-	0.22 J		
Fluorene	MG/KG	30	-	-	0.16 J		
Indeno(1,2,3-cd)pyrene	MG/KG	0.5	-	-	0.048 J		
Naphthalene	MG/KG	12	-	-	0.16 J		
Pentachlorophenol	MG/KG	0.8	-	-	11 D	0.13 J	
Phenanthrene	MG/KG	100	-	-	0.32 J		

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

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Only Detected Results Reported.

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-F	AOC-G	AOC-H
Sample ID					AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix					Soil	Soil	Soil
Depth Interval (ft)					3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled					06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**			
Semivolatile Organic Compounds							
Pyrene	MG/KG	100	-	-	0.34 J		
TCLP Semivolatile Organic Compounds							
2,4,5-Trichlorophenol	UG/L	-	-	-			
Pentachlorophenol	UG/L	-	-	-	6 J		
Dioxins & Furans							
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	5,400	210	300
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-	1,200	38	79
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-	110	2.8 J	
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-	17		3.8 J
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-	19	2.2 J	2.7 J
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	150	11	16
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-			
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-	39	1.4 J	7.4
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-	13	1.6 J	1.2 J
1,2,3,7,8-PeCDD	NG/KG	-	-	-	4.1 J		1.8 J
1,2,3,7,8-PeCDF	NG/KG	-	-	-	2.8 J		
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-	30	2.2 J	3.7 J
2,3,4,7,8-PeCDF	NG/KG	-	-	-	7.9		
2,3,7,8-TCDD	NG/KG	-	-	-			

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

> = The actual flashpoint has not been determined. It is greater than the reported value.

Only Detected Results Reported.

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APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-F	AOC-G	AOC-H
Sample ID					AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix					Soil	Soil	Soil
Depth Interval (ft)					3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled					06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**			
Dioxins & Furans							
2,3,7,8-TCDF	NG/KG	-	-	-	0.74 NJ		0.26 NJ
OCDD	NG/KG	-	-	-	41,000	1,500	1,300
OCDF	NG/KG	-	-	-	9,000	170	270
Total HpCDD	NG/KG	-	-	-	7,700	320	450
Total HpCDF	NG/KG	-	-	-	6,300	160	270
Total HxCDD	NG/KG	-	-	-	440	29	56
Total HxCDF	NG/KG	-	-	-	1,100	67	96
Total PeCDD	NG/KG	-	-	-	15	10	1.8 J
Total PeCDF	NG/KG	-	-	-	84	6.3	17
Total TCDD	NG/KG	-	-	-	5.3	7.9	
Total TCDF	NG/KG	-	-	-	11	1.0	2.5
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	-	-	150	6.0	9.8
Metals							
Arsenic	MG/KG	13	8.2	12 (3-12)	5.3 J	8.3 J	6.4 J
Barium	MG/KG	350	38.5	600 (15-600)	53.1	56.9	71.7
Cadmium	MG/KG	2.5	0.029	1 (0.1-1)	0.44 J	0.65 J	0.44 J
Chromium	MG/KG	30	16.6	40 (1.5-40)	13.7	20.4	14.7
Lead	MG/KG	63	12.6	500 (200-500)	13.5 J	20.0 J	11.1 J
Mercury	MG/KG	0.18	0.0824	0.2 (0.001-0.2)	0.053	0.046 B	0.040 B

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

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Only Detected Results Reported.

APPENDIX D-1
SUMMARY OF DETECTED COMPOUNDS IN WASTE CHARACTERIZATION SOIL SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					AOC-F	AOC-G	AOC-H
Sample ID					AOC-F (3')	AOC-G (2.5')	AOC-H (0-1')
Matrix					Soil	Soil	Soil
Depth Interval (ft)					3.0-3.0	2.5-2.5	0.0-1.0
Date Sampled					06/20/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**			
Metals							
Silver	MG/KG	2	ND	-	4.6 J	7.5 J	5.6 J
TCLP Metals							
Barium	MG/L	-	-	-	0.210 J	0.204 J	0.240 J
Cadmium	MG/L	-	-	-	0.00089 B	0.00087 B	0.0349
Mercury	MG/L	-	-	-			
Selenium	MG/L	-	-	-	0.0319		
RCRA Characteristics							
Corrosivity (pH)	S.U.	-	-	-	6.2	5.9	5.3
Ignitability	°F	-	-	-	145 >	155 >	145 >
Reactive Sulfide	MG/KG	-	-	-	13	28	

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental Infrastructure Engineering of New York, P.C. February 23, 2004

Criteria (3)- Eastern USA Background Concentrations from NYSDEC TAGM: HWR-94-4046 January 24, 1994 (Revised).

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Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

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Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-01-NE	TT-01-SW	TT-02-NW	TT-02-SE	TT-03-NW
Sample ID					TT-1-NE (0-1')	TT-1-SW (0-1')	TT-2-NW (4')	TT-2 SE (4')	TT-3-NW (2.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					0.0-1.0	0.0-1.0	4.0-4.0	4.0-4.0	2.5-2.5
Date Sampled					06/20/07	06/20/07	06/20/07	06/20/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
1,1-Biphenyl	MG/KG	-	-	-			0.077 J		
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-				0.087 J	
2-Methylnaphthalene	MG/KG	-	36.4	-			0.69		
4-Chloro-3-methylphenol	MG/KG	-	0.24 or MDL	-					0.23 J
4-Methylphenol (p-cresol)	MG/KG	0.33	0.9	-					0.081 J
Benzaldehyde	MG/KG	-	-	-				0.040 J	0.22 J
Benzo(b)fluoranthene	MG/KG	1	1.1	-					0.085 J
Benzo(k)fluoranthene	MG/KG	0.8	1.1	-					0.075 J
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	-	0.075 J	0.16 J	0.11 J	0.096 J	0.17 J
Butylbenzylphthalate	MG/KG	-	50	-				0.53	
Chrysene	MG/KG	1	0.4	-					0.069 J
Dimethylphthalate	MG/KG	-	2	-				0.060 J	
Fluoranthene	MG/KG	100	50	-					0.12 J
Fluorene	MG/KG	30	50	-			0.20 J		
Naphthalene	MG/KG	12	13	-					
Pentachlorophenol	MG/KG	0.8	1 or MDL	-				2.2 J	0.88 J
Phenanthrene	MG/KG	100	50	-			0.76	0.11 J	0.087 J
Pyrene	MG/KG	100	50	-			0.087 J	0.068 J	0.10 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

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Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-01-NE	TT-01-SW	TT-02-NW	TT-02-SE	TT-03-NW
Sample ID					TT-1-NE (0-1')	TT-1-SW (0-1')	TT-2-NW (4')	TT-2 SE (4')	TT-3-NW (2.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					0.0-1.0	0.0-1.0	4.0-4.0	4.0-4.0	2.5-2.5
Date Sampled					06/20/07	06/20/07	06/20/07	06/20/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
Total Semivolatile Organic Compounds	MG/KG	-	500	-	0.075	0.16	1.924	3.191	2.117
Dioxins & Furans									
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	26	9.6	370	7,000	3,600
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-					
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-			3.6 J	100	120
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-			0.99 J	34	18
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-			1.0 J	21	57
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	1.4 J		12	240	180
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-					17
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-			2.5 J	85	44
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-				1.4 J	4.9 J
1,2,3,7,8-PeCDD	NG/KG	-	-	-				8.1	5.7
1,2,3,7,8-PeCDF	NG/KG	-	-	-				4.2 J	10
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-			1.4 J	37	61
2,3,4,7,8-PeCDF	NG/KG	-	-	-				8.1	14
2,3,7,8-TCDD	NG/KG	-	-	-				0.52 J	0.38 J
2,3,7,8-TCDF	NG/KG	-	-	-	0.29 NJ			0.61 NJ	2.6 NJ
OCDD	NG/KG	-	-	-	170	64	2,600 J	47,000 D	22,000

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

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Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-01-NE	TT-01-SW	TT-02-NW	TT-02-SE	TT-03-NW
Sample ID					TT-1-NE (0-1')	TT-1-SW (0-1')	TT-2-NW (4')	TT-2 SE (4')	TT-3-NW (2.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					0.0-1.0	0.0-1.0	4.0-4.0	4.0-4.0	2.5-2.5
Date Sampled					06/20/07	06/20/07	06/20/07	06/20/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Dioxins & Furans									
OCDF	NG/KG	-	-	-	32	13	490	11,000	17,000
Total HpCDD	NG/KG	-	-	-	42	15	560	10,000	5,300
Total HpCDF	NG/KG	-	-	-	16	6.7	310	5,900	7,200
Total HxCDD	NG/KG	-	-	-	6.4		54	1,000	480
Total HxCDF	NG/KG	-	-	-	6.4	1.1 J	17	1,500	2,100
Total PeCDD	NG/KG	-	-	-			7.5	150	14
Total PeCDF	NG/KG	-	-	-	1.7 J		4.4 J	150	200
Total TCDD	NG/KG	-	-	-	0.29 J		0.92 J	24	7.0
Total TCDF	NG/KG	-	-	-	1.8		0.25 J	11	39
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	-	0.64	0.17	8.5	180	130
Metals									
Aluminum	MG/KG	-	SB	14300	14,400	23,000	15,000	13,000	12,700
Arsenic	MG/KG	13	7.5 or SB	8.2	6.3	7.5	5.7	5.9	7.2
Barium	MG/KG	350	300 or SB	38.5	76.7	53.2 B	82.8	87.9	77.9
Beryllium	MG/KG	7.2	0.16 or SB	0.427	0.43 B	0.42 B	0.44 B	0.42 B	0.16 B
Cadmium	MG/KG	2.5	1 or SB	0.029					0.42 B
Calcium	MG/KG	-	SB	310	1,020	1,640	1,140 B	2,170	
Chromium	MG/KG	30	10 or SB	16.6	18.6	24.2	19.4	18.4	14.0

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-01-NE	TT-01-SW	TT-02-NW	TT-02-SE	TT-03-NW
Sample ID					TT-1-NE (0-1')	TT-1-SW (0-1')	TT-2-NW (4')	TT-2 SE (4')	TT-3-NW (2.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					0.0-1.0	0.0-1.0	4.0-4.0	4.0-4.0	2.5-2.5
Date Sampled					06/20/07	06/20/07	06/20/07	06/20/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Metals									
Cobalt	MG/KG	-	30 or SB	8.31	13.5	10.9 B	14.3	13.3	
Copper	MG/KG	50	25 or SB	11.8	19.5	18.9	17.7	15.9	19.8
Iron	MG/KG	-	2000 or SB	25800	26,700	40,700	25,100	26,700	22,800
Lead	MG/KG	63	SB	12.6	10.5	15.2	12.2	9.5	63.0
Magnesium	MG/KG	-	SB	2890	4,500	4,400	3,750	4,310	1,590 B
Manganese	MG/KG	1600	SB	319	508 J	340 J	468 J	468 J	741 J
Mercury	MG/KG	0.18	0.1	0.0824				0.066 BJ	0.022 BJ
Nickel	MG/KG	30	13 or SB	17.8	27.1	23.7	25.8	27.3	10.1 B
Potassium	MG/KG	-	SB	715					
Silver	MG/KG	2	SB	ND	6.0	9.3	5.7	5.9	5.3
Vanadium	MG/KG	-	150 or SB	20.2	19.1	33.3	21.8	17.9	25.5
Zinc	MG/KG	109	20 or SB	52	55.8 J	77.7 J	71.0 J	60.0 J	84.2 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-03-SE	TT-04-NW	TT-04-SE	TT-05-NW	TT-05-SE
Sample ID					TT-3-SE (2.5)	TT-4-NW (1.5)	TT-4-SE (1.5)	TT-5-NW (1.5)	TT-5-SE (1.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	1.5-1.5	1.5-1.5	1.5-1.5	1.5-1.5
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
1,1-Biphenyl	MG/KG	-	-	-					
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-	0.80				
2-Methylnaphthalene	MG/KG	-	36.4	-					
4-Chloro-3-methylphenol	MG/KG	-	0.24 or MDL	-	0.048 J				
4-Methylphenol (p-cresol)	MG/KG	0.33	0.9	-					
Benzaldehyde	MG/KG	-	-	-					
Benzo(b)fluoranthene	MG/KG	1	1.1	-					
Benzo(k)fluoranthene	MG/KG	0.8	1.1	-					
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	-	0.10 J	0.10 J	0.087 J	0.11 J	0.093 J
Butylbenzylphthalate	MG/KG	-	50	-					
Chrysene	MG/KG	1	0.4	-					
Dimethylphthalate	MG/KG	-	2	-					
Fluoranthene	MG/KG	100	50	-	0.077 J				
Fluorene	MG/KG	30	50	-					
Naphthalene	MG/KG	12	13	-					
Pentachlorophenol	MG/KG	0.8	1 or MDL	-	40 D	0.064 J			
Phenanthrene	MG/KG	100	50	-					
Pyrene	MG/KG	100	50	-	0.17 J				

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-03-SE	TT-04-NW	TT-04-SE	TT-05-NW	TT-05-SE
Sample ID					TT-3-SE (2.5)	TT-4-NW (1.5)	TT-4-SE (1.5)	TT-5-NW (1.5)	TT-5-SE (1.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	1.5-1.5	1.5-1.5	1.5-1.5	1.5-1.5
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
Total Semivolatile Organic Compounds	MG/KG	-	500	-	41.195	0.164	0.087	0.11	0.093
Dioxins & Furans									
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	3,300	95	4.8 J	39	230
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-		44	2.1 J	10	
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-	60	2.8 J			2.5 J
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-	15				
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-	40	1.4 J			
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	160	5.3		1.7 J	8.2
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-					
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-	36				1.5 J
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-	3.6 J				
1,2,3,7,8-PeCDD	NG/KG	-	-	-	3.6 J				
1,2,3,7,8-PeCDF	NG/KG	-	-	-	7.2				
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-	36	1.3 J			
2,3,4,7,8-PeCDF	NG/KG	-	-	-	9.1				
2,3,7,8-TCDD	NG/KG	-	-	-					
2,3,7,8-TCDF	NG/KG	-	-	-	1.2 NJ				
OCDD	NG/KG	-	-	-	21,000	600	33	270	1,800

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-03-SE	TT-04-NW	TT-04-SE	TT-05-NW	TT-05-SE
Sample ID					TT-3-SE (2.5)	TT-4-NW (1.5)	TT-4-SE (1.5)	TT-5-NW (1.5)	TT-5-SE (1.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	1.5-1.5	1.5-1.5	1.5-1.5	1.5-1.5
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Dioxins & Furans									
OCDF	NG/KG	-	-	-	3,000	440	5.5 J	47	280
Total HpCDD	NG/KG	-	-	-	4,800	140	8.3	61	370
Total HpCDF	NG/KG	-	-	-	2,300	240	5.2	47	190
Total HxCDD	NG/KG	-	-	-	390	12		3.4 J	22
Total HxCDF	NG/KG	-	-	-	1,100	49		8.3	32
Total PeCDD	NG/KG	-	-	-	5.4				
Total PeCDF	NG/KG	-	-	-	110	2.1 J			4.6 J
Total TCDD	NG/KG	-	-	-	1.9				
Total TCDF	NG/KG	-	-	-	16				0.20 J
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	-	93	3.3	0.11	0.98	5.4
Metals									
Aluminum	MG/KG	-	SB	14300	14,100	23,600	23,000	20,100	13,100
Arsenic	MG/KG	13	7.5 or SB	8.2	10.6	7.2	7.6	5.1	4.8
Barium	MG/KG	350	300 or SB	38.5	68.3	56.7	45.8 B	44.2 B	56.0
Beryllium	MG/KG	7.2	0.16 or SB	0.427	0.33 B	0.40 B	0.46 B	0.32 B	0.33 B
Cadmium	MG/KG	2.5	1 or SB	0.029	0.36 B				
Calcium	MG/KG	-	SB	310	1,400				1,230
Chromium	MG/KG	30	10 or SB	16.6	19.3	22.3	24.2	21.8	16.9

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-03-SE	TT-04-NW	TT-04-SE	TT-05-NW	TT-05-SE
Sample ID					TT-3-SE (2.5)	TT-4-NW (1.5)	TT-4-SE (1.5)	TT-5-NW (1.5)	TT-5-SE (1.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.5-2.5	1.5-1.5	1.5-1.5	1.5-1.5	1.5-1.5
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Metals									
Cobalt	MG/KG	-	30 or SB	8.31	10.6 B		10.9 B	10.6 B	
Copper	MG/KG	50	25 or SB	11.8	23.7	17.0	17.0	17.7	15.8
Iron	MG/KG	-	2000 or SB	25800	28,000	29,100	35,400	28,700	25,600
Lead	MG/KG	63	SB	12.6	32.2	14.9	18.5	10.7	8.7
Magnesium	MG/KG	-	SB	2890	3,610	2,510	4,170	4,320	4,180
Manganese	MG/KG	1600	SB	319	571 J	577 J	436 J	270 J	316 J
Mercury	MG/KG	0.18	0.1	0.0824	0.050 BJ	0.061 BJ	0.030 BJ	0.026 BJ	
Nickel	MG/KG	30	13 or SB	17.8	21.5	14.5	24.2	26.5	23.1
Potassium	MG/KG	-	SB	715					
Silver	MG/KG	2	SB	ND	6.4	6.7	8.2	6.6	5.8
Vanadium	MG/KG	-	150 or SB	20.2	24.6	33.1	30.0	25.8	16.2
Zinc	MG/KG	109	20 or SB	52	110 J	62.5 J	85.9 J	74.2 J	58.7 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

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Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-06-NW	TT-06-SE	TT-07-NW	TT-07-SE	TT-08-E
Sample ID					TT-6-NW (2.0)	TT-6-SE (2.0)	TT-7-NW (4')	TT-7-SE (4')	TT-8-E (3')
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.0-2.0	2.0-2.0	4.0-4.0	4.0-4.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
1,1-Biphenyl	MG/KG	-	-	-			0.15 J		
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-					
2-Methylnaphthalene	MG/KG	-	36.4	-			5.1	0.56	
4-Chloro-3-methylphenol	MG/KG	-	0.24 or MDL	-					
4-Methylphenol (p-cresol)	MG/KG	0.33	0.9	-					
Benzaldehyde	MG/KG	-	-	-					
Benzo(b)fluoranthene	MG/KG	1	1.1	-					
Benzo(k)fluoranthene	MG/KG	0.8	1.1	-					
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	-	0.10 J	0.084 J	0.073 J	0.089 J	0.055 J
Butylbenzylphthalate	MG/KG	-	50	-					
Chrysene	MG/KG	1	0.4	-					
Dimethylphthalate	MG/KG	-	2	-					
Fluoranthene	MG/KG	100	50	-			0.044 J		
Fluorene	MG/KG	30	50	-			0.16 J		
Naphthalene	MG/KG	12	13	-			0.37	0.040 J	
Pentachlorophenol	MG/KG	0.8	1 or MDL	-		0.14 J	1.6	0.12 J	
Phenanthrene	MG/KG	100	50	-			0.65	0.096 J	
Pyrene	MG/KG	100	50	-			0.18 J	0.038 J	

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental ,Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-06-NW	TT-06-SE	TT-07-NW	TT-07-SE	TT-08-E
Sample ID					TT-6-NW (2.0)	TT-6-SE (2.0)	TT-7-NW (4')	TT-7-SE (4')	TT-8-E (3')
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.0-2.0	2.0-2.0	4.0-4.0	4.0-4.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Semivolatile Organic Compounds									
Total Semivolatile Organic Compounds	MG/KG	-	500	-	0.1	0.224	8.327	0.943	0.055
Dioxins & Furans									
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	77	56	1,100	510	2.5 J
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-					
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-	1.8 J	1.0 J	17	8.3	
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-					
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-			5.5	2.7 J	
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	3.9 J	2.4 J	33	15	
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-					
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-	2.5 J		2.4 J	1.9 J	
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-				1.2 J	
1,2,3,7,8-PeCDD	NG/KG	-	-	-					
1,2,3,7,8-PeCDF	NG/KG	-	-	-					
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-	1.3 J		4.1 J	2.0 J	
2,3,4,7,8-PeCDF	NG/KG	-	-	-					
2,3,7,8-TCDD	NG/KG	-	-	-					
2,3,7,8-TCDF	NG/KG	-	-	-					
OCDD	NG/KG	-	-	-	520	410	7,900	3,800	

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

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SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-06-NW	TT-06-SE	TT-07-NW	TT-07-SE	TT-08-E
Sample ID					TT-6-NW (2.0)	TT-6-SE (2.0)	TT-7-NW (4')	TT-7-SE (4')	TT-8-E (3')
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.0-2.0	2.0-2.0	4.0-4.0	4.0-4.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Dioxins & Furans									
OCDF	NG/KG	-	-	-	93	49	1,600	730	3.3 J
Total HpCDD	NG/KG	-	-	-	120	83	1,600	750	4.1 J
Total HpCDF	NG/KG	-	-	-	64	38	1,000	450	1.7 J
Total HxCDD	NG/KG	-	-	-	15	5.5	71	37	
Total HxCDF	NG/KG	-	-	-	28	13	190	93	
Total PeCDD	NG/KG	-	-	-					
Total PeCDF	NG/KG	-	-	-	5.1	1.2 J	3.2 J	2.5 J	
Total TCDD	NG/KG	-	-	-					
Total TCDF	NG/KG	-	-	-	0.33 J		3.1		
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	-	2.2	1.3	25	12	0.028
Metals									
Aluminum	MG/KG	-	SB	14300	15,600	18,100	15,100	15,900	14,200
Arsenic	MG/KG	13	7.5 or SB	8.2	14.1	23.4	9.2	11.5	7.8
Barium	MG/KG	350	300 or SB	38.5	83.6	136	89.9	91.0	86.1
Beryllium	MG/KG	7.2	0.16 or SB	0.427	0.47 B	0.66 B	0.56 B	0.63 B	0.48 B
Cadmium	MG/KG	2.5	1 or SB	0.029					
Calcium	MG/KG	-	SB	310	1,520	1,960	2,310	4,980	2,700
Chromium	MG/KG	30	10 or SB	16.6	20.8	25.2	21.3	22.5	19.5

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-06-NW	TT-06-SE	TT-07-NW	TT-07-SE	TT-08-E
Sample ID					TT-6-NW (2.0)	TT-6-SE (2.0)	TT-7-NW (4')	TT-7-SE (4')	TT-8-E (3')
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					2.0-2.0	2.0-2.0	4.0-4.0	4.0-4.0	3.0-3.0
Date Sampled					06/21/07	06/21/07	06/21/07	06/21/07	06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Metals									
Cobalt	MG/KG	-	30 or SB	8.31	15.3	18.4	14.4	15.6	13.7
Copper	MG/KG	50	25 or SB	11.8	20.1	28.9	25.1	25.0	22.2
Iron	MG/KG	-	2000 or SB	25800	30,200	37,900	31,300	33,200	29,700
Lead	MG/KG	63	SB	12.6	11.7	14.8	13.6	35.3	12.9
Magnesium	MG/KG	-	SB	2890	5,010	6,240	5,160	6,030	4,950
Manganese	MG/KG	1600	SB	319	520 J	608 J	516 J	533 J	479 J
Mercury	MG/KG	0.18	0.1	0.0824					
Nickel	MG/KG	30	13 or SB	17.8	31.3	37.8	32.5	34.9	30.3
Potassium	MG/KG	-	SB	715	971	1,140	1,110	1,340	
Silver	MG/KG	2	SB	ND	6.8	8.5	7.0	7.2	6.7
Vanadium	MG/KG	-	150 or SB	20.2	19.5	22.4	20.2	20.3	18.9
Zinc	MG/KG	109	20 or SB	52	75.0 J	84.5 J	82.9 J	81.8 J	69.7 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-08-W
Sample ID					TT-8-W (3')
Matrix					Soil
Depth Interval (ft)					3.0-3.0
Date Sampled					06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**	
Semivolatile Organic Compounds					
1,1-Biphenyl	MG/KG	-	-	-	
2,3,4,6-Tetrachlorophenol	MG/KG	-	-	-	
2-Methylnaphthalene	MG/KG	-	36.4	-	
4-Chloro-3-methylphenol	MG/KG	-	0.24 or MDL	-	
4-Methylphenol (p-cresol)	MG/KG	0.33	0.9	-	
Benzaldehyde	MG/KG	-	-	-	
Benzo(b)fluoranthene	MG/KG	1	1.1	-	
Benzo(k)fluoranthene	MG/KG	0.8	1.1	-	
bis(2-Ethylhexyl)phthalate	MG/KG	-	50	-	0.050 J
Butylbenzylphthalate	MG/KG	-	50	-	
Chrysene	MG/KG	1	0.4	-	
Dimethylphthalate	MG/KG	-	2	-	
Fluoranthene	MG/KG	100	50	-	
Fluorene	MG/KG	30	50	-	
Naphthalene	MG/KG	12	13	-	
Pentachlorophenol	MG/KG	0.8	1 or MDL	-	
Phenanthrene	MG/KG	100	50	-	
Pyrene	MG/KG	100	50	-	

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Criteria (3)- Site Background - Remedial Investigation Report for the Camp Georgetown Site; Shaw Environmental &Infrastructure Engineering of New York, P.C. February 23, 2004

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = No criteria. Blank cell = Not detected.

B (Metals only) - The reported concentration is above the method detection limit but below the quantitation limit. J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis. N - Tentative identification. The compound is presumed to be present.

Only Detected Results Reported.

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-08-W
Sample ID					TT-8-W (3')
Matrix					Soil
Depth Interval (ft)					3.0-3.0
Date Sampled					06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**	
Semivolatile Organic Compounds					
Total Semivolatile Organic Compounds	MG/KG	-	500	-	0.05
Dioxins & Furans					
1,2,3,4,6,7,8-HpCDD	NG/KG	-	-	-	6.8
1,2,3,4,6,7,8-HpCDF	NG/KG	-	-	-	
1,2,3,4,7,8,9-HpCDF	NG/KG	-	-	-	
1,2,3,4,7,8-HxCDD	NG/KG	-	-	-	
1,2,3,4,7,8-HxCDF	NG/KG	-	-	-	
1,2,3,6,7,8-HxCDD	NG/KG	-	-	-	
1,2,3,6,7,8-HxCDF	NG/KG	-	-	-	
1,2,3,7,8,9-HxCDD	NG/KG	-	-	-	
1,2,3,7,8,9-HxCDF	NG/KG	-	-	-	
1,2,3,7,8-PeCDD	NG/KG	-	-	-	
1,2,3,7,8-PeCDF	NG/KG	-	-	-	
2,3,4,6,7,8-HxCDF	NG/KG	-	-	-	
2,3,4,7,8-PeCDF	NG/KG	-	-	-	
2,3,7,8-TCDD	NG/KG	-	-	-	
2,3,7,8-TCDF	NG/KG	-	-	-	
OCDD	NG/KG	-	-	-	44

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

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Only Detected Results Reported.

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Printed: 10/29/2007 12:13:07 PM
[LOCID] LIKE 'TT*'

APPENDIX D-2
SUMMARY OF DETECTED CONTAMINANTS OF CONCERN IN TEST TRENCH DELINEATION SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-08-W
Sample ID					TT-8-W (3')
Matrix					Soil
Depth Interval (ft)					3.0-3.0
Date Sampled					06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**	
Dioxins & Furans					
OCDF	NG/KG	-	-	-	10.0
Total HpCDD	NG/KG	-	-	-	10
Total HpCDF	NG/KG	-	-	-	5.0
Total HxCDD	NG/KG	-	-	-	
Total HxCDF	NG/KG	-	-	-	
Total PeCDD	NG/KG	-	-	-	
Total PeCDF	NG/KG	-	-	-	
Total TCDD	NG/KG	-	-	-	
Total TCDF	NG/KG	-	-	-	
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/KG	-	1000	-	0.12
Metals					
Aluminum	MG/KG	-	SB	14300	15,700
Arsenic	MG/KG	13	7.5 or SB	8.2	10.5
Barium	MG/KG	350	300 or SB	38.5	89.4
Beryllium	MG/KG	7.2	0.16 or SB	0.427	0.61 B
Cadmium	MG/KG	2.5	1 or SB	0.029	
Calcium	MG/KG	-	SB	310	5,580
Chromium	MG/KG	30	10 or SB	16.6	22.3

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

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Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

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CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID					TT-08-W
Sample ID					TT-8-W (3')
Matrix					Soil
Depth Interval (ft)					3.0-3.0
Date Sampled					06/21/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**	
Metals					
Cobalt	MG/KG	-	30 or SB	8.31	15.9
Copper	MG/KG	50	25 or SB	11.8	20.1
Iron	MG/KG	-	2000 or SB	25800	33,100
Lead	MG/KG	63	SB	12.6	13.4
Magnesium	MG/KG	-	SB	2890	6,120
Manganese	MG/KG	1600	SB	319	541 J
Mercury	MG/KG	0.18	0.1	0.0824	
Nickel	MG/KG	30	13 or SB	17.8	34.9
Potassium	MG/KG	-	SB	715	1,150
Silver	MG/KG	2	SB	ND	7.2
Vanadium	MG/KG	-	150 or SB	20.2	19.9
Zinc	MG/KG	109	20 or SB	52	73.8 J

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use.

Criteria (2)- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

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Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

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Only Detected Results Reported.

APPENDIX D-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Benzene	UG/L	-		2 J			
Chloroethane	UG/L	-			2 J		
Ethylbenzene	UG/L	-	1 J	7	11		
Isopropylbenzene (Cumene)	UG/L	-	2 J	4 J	15		
Methylcyclohexane	UG/L	-		5	35		
Toluene	UG/L	-		7			
Xylene (total)	UG/L	-	10	42	32		
Semivolatile Organic Compounds							
1,1-Biphenyl	UG/L	-		730 J	62		
2,3,4,6-Tetrachlorophenol	UG/L	-	100 J	1,300 J		2 J	
2,4-Dimethylphenol	UG/L	-		18 J			
2-Methylnaphthalene	UG/L	-	120 J	1,600 DJ	550 D	8 J	
Acenaphthene	UG/L	-			25		
Anthracene	UG/L	-		40 J			
Benzo(a)anthracene	UG/L	-		4 J			
Benzo(a)pyrene	UG/L	-		1 J			
Benzo(b)fluoranthene	UG/L	-		1 J			
bis(2-Ethylhexyl)phthalate	UG/L	-		1 J		1 J	
Caprolactam	UG/L	-					2 J
Chrysene	UG/L	-		7 J			
Dibenzofuran	UG/L	-			38		
Fluoranthene	UG/L	-		34 J	2 J		

*Criteria- NYSDEC Division of Water - Bureau of Water Permits. Camp Georgetown Remediation Project Effluent Limitations and Monitoring Requirements. October 24, 2007.

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Only Detected Results Reported.

APPENDIX D-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria***					
Semivolatile Organic Compounds							
Fluorene	UG/L	-		530 J	62	1 J	
Naphthalene	UG/L	-		120 J	90	1 J	
Pentachlorophenol	UG/L	1	4,100	7,300 D	28 J	60	13 J
Phenanthrene	UG/L	-		380 DJ	110 J	2 J	
Phenol	UG/L	-		2 J			
Pyrene	UG/L	-		150 J	15		
Pesticide Organic Compounds							
4,4'-DDD	UG/L	-			0.10 J		
4,4'-DDE	UG/L	-			0.18 J		
4,4'-DDT	UG/L	-	0.24 J	43	0.21 J		
beta-BHC	UG/L	-	0.41 J	2.9 J			
delta-BHC	UG/L	-			0.19 J		
Endosulfan I	UG/L	-			0.53 J		
Endrin	UG/L	-			0.16 J		
Endrin aldehyde	UG/L	-			0.11 J		
gamma-Chlordane	UG/L	-			0.64 J		
Heptachlor	UG/L	-			0.22 J		
Dioxins & Furans							
1,2,3,4,6,7,8-HpCDD	NG/L	-	360 J	2,400 J	610 J	92 J	7.5 J
1,2,3,4,6,7,8-HpCDF	NG/L	-	150 J	420 J	75 J	21 J	3.5 J
1,2,3,4,7,8,9-HpCDF	NG/L	-	8.0 J	42 J	12 J	1.6 J	0.21 J
1,2,3,4,7,8-HxCDD	NG/L	-	0.59 J	1.4 J	0.67 J	0.26 J	0.036 J

*Criteria- NYSDEC Division of Water - Bureau of Water Permits. Camp Georgetown Remediation Project Effluent Limitations and Monitoring Requirements. October 24, 2007.

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APPENDIX D-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria***					
Dioxins & Furans							
1,2,3,4,7,8-HxCDF	NG/L	-	5.1 J		27 J	0.90 J	0.16 J
1,2,3,6,7,8-HxCDD	NG/L	-	22 J	84 J	21 J	4.4 J	0.45 J
1,2,3,6,7,8-HxCDF	NG/L	-	1.6 J	3.7 J	1.9 J	0.53 J	
1,2,3,7,8,9-HxCDD	NG/L	-	1.6 J	4.9 J	1.8 J	0.61 J	0.092 J
1,2,3,7,8,9-HxCDF	NG/L	-	3.7 J	6.5 J	2.3 J	0.57 J	0.087 J
1,2,3,7,8-PeCDD	NG/L	-	0.15 J	0.26 J	0.11 J	0.060 J	0.012 J
1,2,3,7,8-PeCDF	NG/L	-	1.1 J			0.12 J	0.030 J
2,3,4,6,7,8-HxCDF	NG/L	-	4.2 J	9.1 J	3.3 J	0.88 J	0.15 J
2,3,4,7,8-PeCDF	NG/L	-	2.3 J	3.9 J	1.4 J	0.35 J	0.058 J
2,3,7,8-TCDD	NG/L	-			0.020 J	0.0042 J	
2,3,7,8-TCDF	NG/L	-	0.12 NJ		0.14 NJ	0.024 NJ	0.0021 NJ
OCDD	NG/L	-	2,100 J	4,300 DJ	4,600 J	610 J	45 J
OCDF	NG/L	-	1,400 J	2,500 J	480 J	130 J	18 J
Total HpCDD	NG/L	-	530 J	3,300 J	840 J	130 J	12 J
Total HpCDF	NG/L	-	820 J	2,600 J	470 J	110 J	13 J
Total HxCDD	NG/L	-	45 J	170 J	43 J	10 J	1.2 J
Total HxCDF	NG/L	-	210 J	420 J	120 J	32 J	4.5 J
Total PeCDD	NG/L	-	0.33 J	1.7 J	0.46 J	0.17 J	0.047 J
Total PeCDF	NG/L	-	14 J	22 J	6.1 J	2.0 J	0.40 J
Total TCDD	NG/L	-	0.20 J	0.63 J	0.23 J	0.067 J	0.044 J
Total TCDF	NG/L	-	1.3 J	5.0 J	2.3 J	0.39 J	0.083 J
2,3,7,8-TCDD Toxicity Equivalence (TEF)	NG/L	7.00E-04	14	48	19	2.9	0.31

*Criteria- NYSDEC Division of Water - Bureau of Water Permits. Camp Georgetown Remediation Project Effluent Limitations and Monitoring Requirements. October 24, 2007.

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APPENDIX D-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria***					
Metals							
Aluminum	UG/L	100	280,000	6,730	130,000	30,800	223,000
Arsenic	UG/L	-	204		102	16.0	142
Barium	UG/L	-	1,780	73.6 B	1,230	249	1,510
Beryllium	UG/L	3	10.4	0.22 B	5.1	0.96 B	8.8
Cadmium	UG/L	-	3.2 B		1.0 B		3.2 B
Calcium	UG/L	-	70,800	73,600	69,800	56,700	76,900
Chromium	UG/L	50	357	11.3	175	42.3	254
Cobalt	UG/L	-	201		107		176
Copper	UG/L	-	403	16.5 B	238	44.7	407
Iron	UG/L	300	508,000	11,400	235,000	52,500	418,000
Lead	UG/L	25	219	4.9 J	113	25.4	197
Magnesium	UG/L	35000	75,400	15,800	47,700	12,700	64,800
Manganese	UG/L	300	7,060	1,490	3,780	1,550	8,140
Mercury	UG/L	-	0.79	0.15 BJ	0.31	0.11 BJ	0.59
Nickel	UG/L	100	443	13.7 B	247	52.1	402
Potassium	UG/L	-	19,600	1,650 B	10,200	3,550 B	14,400
Selenium	UG/L	-		24.4		10.1	
Silver	UG/L	-	98.6		49.4	15.0	83.2
Sodium	UG/L	20000	8,920	3,820 B	2,110 B	2,430 B	11,900
Vanadium	UG/L	-	345	8.5 B	160	37.4 B	266
Zinc	UG/L	-	1,090 J	38.3 J	810 J	162 J	984 J

*Criteria- NYSDEC Division of Water - Bureau of Water Permits. Camp Georgetown Remediation Project Effluent Limitations and Monitoring Requirements. October 24, 2007.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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Only Detected Results Reported.

APPENDIX D-3
SUMMARY OF DETECTED COMPOUNDS IN TEST TRENCH GROUNDWATER SAMPLES
CAMP GEORGETOWN PRE-DESIGN INVESTIGATION
SITE NO. 7-27-010

Location ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Sample ID			AOC-A	AOC-B	AOC-D	AOC-F	AOC-G
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			06/21/07	06/22/07	06/21/07	06/20/07	06/20/07
Parameter	**Units**	**Criteria***					
RCRA Characteristics							
Corrosivity (pH)	S.U.	6.5-8.5	6.6	7.2	7.3	6.8	6.7
Ignitability	°F	-	150 >	150 >	155 >	145 >	145 >
Reactive Sulfide	MG/L	-			0.087 B		
Miscellaneous Parameters							
Oil & Grease, Total Recoverable	MG/L	-	26	540	310	9.8	
Total Dissolved Solids	MG/L	-	350	320	510	210	520
Total Suspended Solids	MG/L	-	9,000	250	5,600	930	8,000

*Criteria- NYSDEC Division of Water - Bureau of Water Permits. Camp Georgetown Remediation Project Effluent Limitations and Monitoring Requirements. October 24, 2007.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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APPENDIX E

SLUG TEST DATA ANALYSIS

URS **EXHIBIT 4.7-2**

CALCULATION COVER SHEET

Client: NYS DEC

Project Name: CAMP GEORGETOWN/CAMP PHARSALIA SLUG TESTS

Project/Calculation Number: GEORGETOWN (11174679.00003), PHARSALIA (11174680.00003)

Title: CAMP GEORGETOWN/CAMP PHARSALIA 2007 SLUG TESTS

Total Number of Pages (including cover sheet): 35

Total Number of Computer Runs: _____

Prepared by: ROB PIUREK Date: 7/5/07

Checked by: Marek Ostwald Date: 7/5/07

Description and Purpose:

ANALYSIS OF JUNE 2007 SLUG TEST DATA FROM CAMP GEORGETOWN, NY AND CAMP PHARSALIA, NY.

Design Basis/References/Assumptions

- ASSUME BOREHOLE RADIUS OF 4.125" FOR ALL MONITORING WELLS
- ASSUME GRAVEL PACK POROSITY OF 0.3
- SITE GEOLOGY INDICATES DISCONTINUOUS AQUIFERS/PERCHED GROUNDWATER. ASSUME BOTTOM OF SCREEN AS AQUIFER BOTTOM.

Remarks/Conclusions/Results:

SEE "SUMMARY OF RESULTS" PAGE

Calculation Approved by: _____ 10/9/07.
Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

Camp Georgetown and Camp Pharsalia, NY Slug Tests
Summary of Results

Well ID	Hydraulic Conductivity [cm/sec]					
	FH	RH			N(**)	Mean (***)
Camp Georgetown Monitoring Wells						
MW-02	1.57E-05	(*)			1	1.57E-05
MW-04	3.39E-05	4.81E-06			2	1.94E-05
MW-05	(*)	2.12E-04			1	2.12E-04
MW-06	3.03E-04	3.20E-05			2	1.67E-04
MW-07	7.91E-05	7.30E-05			2	7.60E-05
MW-08	3.96E-06	3.96E-06			2	3.96E-06
Camp Pharsalia Monitoring Wells						
PMW-1	5.77E-05	7.80E-05			2	6.79E-05
PMW-5	1.27E-04	-			1	1.27E-04

Notes:

FH - Falling Head Test
RH - Rising Head Test
(*) - data not useable (see data usability sheet)
(**) - number of valid tests
(***) - geometric mean

Camp Georgetown and Camp Pharsalia, NY Slug Tests
Well Construction Details

Well ID	Formation	Screen Length		Radii			Aquifer Thickness	Depth from Aquifer Top	
		Total	Submerged	Screen (*)	Casing			to Top of Screen ^	to Bottom of Screen
					Actual	Equivalent			
		L_e	$L_{e\text{-}sub}$	r_w	r_c	$r_{c\text{-}eq}$ (**)	H	d	L_w
		[ft]	[ft]	[in]	[in]	[in]	[ft]	[ft]	[ft]
Camp Georgetown Monitoring Wells									
MW-02	Overburden	6.0	6.0	4.13	1.00	1.00	6.2	0.2	6.2
MW-04	Overburden	7.5	6.5	4.13	1.00	2.41	6.5	-1.0	6.5
MW-05	Overburden	7.5	6.1	4.13	1.00	2.41	6.1	-1.4	6.1
MW-06	Overburden	11.0	8.0	4.13	1.00	2.41	8.0	-3.0	8.0
MW-07	Overburden	7.5	7.5	4.13	1.00	1.00	7.6	0.1	7.6
MW-08	Overburden	7.3	7.0	4.13	1.00	2.41	7.0	-0.3	7.0
Camp Pharsalia Monitoring Wells									
PMW-1	Overburden	10.5	10.5	4.13	1.00	1.00	11.9	1.4	11.9
PMW-5	Overburden	8.7	7.5	4.13	1.00	2.41	7.5	-1.2	7.5

Assumed sandpack porosity: n = 0.30
Site geology indicates discontinuous aquifers/perched groundwater. Assume bottom of screen as aquifer bottom.

Notes:

(*) - assumed gravel pack radius

(**) - $r_{c\text{-}eq} = [(1 - n)\, r_c^2 + n\, r_w^2]^{1/2}$ if $L_{e\text{-}sub} < L_e$

$r_{c\text{-}eq} = r_c$ if $L_{e\text{-}sub} = L_e$

^ - Negative value indicates depth (in feet) of aquifer top below the top of screen.

Camp Georgetown and Camp Pharsalia, NY Slug Tests
Useability of Data

Well ID	Remarks	
	Falling Head Test	Rising Head Test
Camp Georgetown Monitoring Wells		
MW-02	OK	No established static level
MW-04	Recovers beyond static level	OK
MW-05	No established static level	OK
MW-06	Recovers beyond static level	OK
MW-07	OK	OK
MW-08	Slow recovery	Slow recovery
Camp Pharsalia Monitoring Wells		
PMW-1	OK	OK
PMW-5	End test early, nearby test pit influence	No test

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-2 — Sheet 1 of 1

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

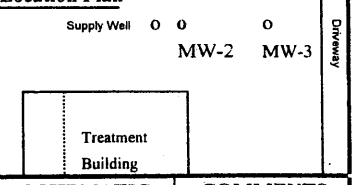
Location Description: Off north corner of Treatment Building. Near supply well.

Weather: Clearing and cool.

Date/Time Start: September 16, 1998 12:15 PM

Date/Time Finish: September 16, 1998 2:50 PM

Location Plan

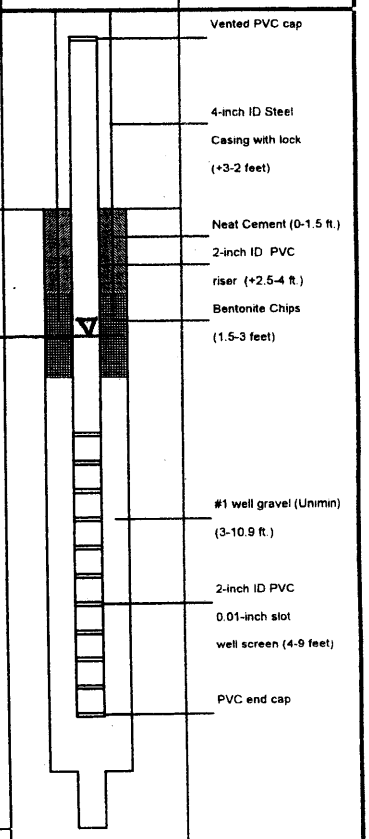


GROUNDWATER OBSERVATIONS

Water Level	9.24 ft.	6.48 ft.	8.41 ft.	
Date	9-17-98	9-23-98	10/7/98	
Time	7:40	11:16	9:45	
Meas. From	toc/pvc 1007.64	toc/pvc 1007.64	toc/pvc 1007.64	

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1004.7 feet (amsl), top PVC elevation 1007.64 feet (amsl), top steel casing 1007.96 feet (amsl).
0					
		7	60	0.6	Brown soil (0-2") over shale fill (2"-6").
1		6			Weathered Till, Silt-very fine Sand, some-little gravel,
		9			some-little clay (clay decreased with depth), damp.
2		14			
		16	75	1.5	Weathered Till grading to unweathered till. Tan Silt, some clay, DTW 2.77'
3		19			little very fine sand, little gravel, dense, damp.
		19			
4		18			
		19	70	4.8	Tan Till, Silt-very fine Sand, some coarse rounded sand, little gravel,
5		14			little-trace clay, moist-wet.
		13			
6		18			
		20	75	4.2	Tan Till as above. Saturated. Sandier lense between clayier lenses.
7		22			
		25			
8		50/5"			
		26	80	5	Tan Till, Silt, some coarse sand and fine gravel, little-some clay, stiff, dense.
9		36			
		50/5"			
10					
		26	60	0.9	As above, damp-dry.
11		50/5"			
					Boring terminated at 10.9 feet. Hole backfilled to 9 feet.
12					
13					
14					
15					
16					
17					
18					

SCHEMATIC



COMMENTS:

Headspaces measured with Photoionization Detector were very high, likely attributed to water vapor.

Remeasured head spaces 9-17-98 with FID. Those readings displayed on this log.

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

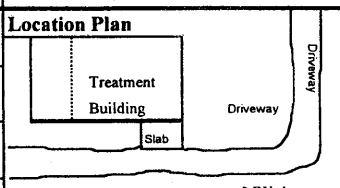
PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-4 Sheet 1 of 1

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

Location Description:
East of Treatment Building.
Between drive and woods.

Location Plan



Weather: Clear and sunny.

Date/Time Start: September 17, 1998 8:27 AM

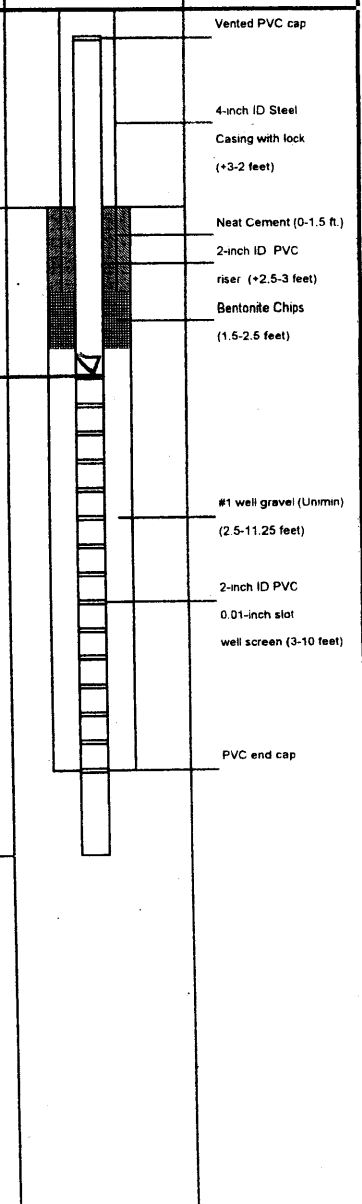
Date/Time Finish: September 17, 1998 10:40 AM

GROUNDWATER OBSERVATIONS

Water Level	8.35 ft.	7.43 ft.	8.30	
Date	9-18-98	9-23-98	10-7-98	
Time	8:55	11:21	10:10	
Meas. From	toc/pvc 1005.34	toc/pvc 1005.34	toc/pvc 1005.34	

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1002.1 feet (amsl), top PVC elevation 1005.34 feet (amsl), top steel casing 1005.49 feet (amsl).
0					
		3	25	0.1	Brown silty soil grading to tan-brown soil mixed with gravel, Fill.
1		3			
		4			
2		4			
		3	40	23	Tan silty soil, moist (2-2.25 feet) over gray Silt-very fine Sand, some gravel,
3		4			over Tan Silt, some gravel. Till?
		7			"Petroleum" type odor. DTW 3.50'
4		10			
		21	70	+10	Tan Till, Silt, little-some gravel, damp, increasing density with depth.
5		17			Slight "petroleum" type odor.
		16			
6		20			
		12	90	4.5	Tan Till, Silt, some gravel, very little clay, wet, slight "petroleum" odor.
7		9			
		9			
8		13			
		17	100	3.7	Tan Till as above. Moist grading to damp.
9		24			Slight petroleum odor (weathered gasoline?).
		32			Screened soil cuttings with FID (4 ppm). Screened breathing zone (0.0 ppm).
10		31			
		22	80	3.7	As above. Dense Till, damp.
11		37			
		50/3"			
12					Augering terminated at 10 feet. Sampling terminated at 11.25 feet.
13					
14					
15					
16					
17					
18					

SCHEMATIC



COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

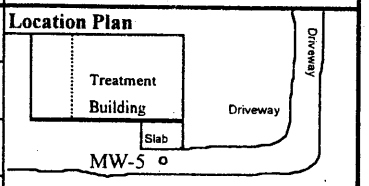
PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-5 Sheet 1 of 1

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

Location Description:
East of Treatment Building.
Just off concerete slab near office.

Location Plan



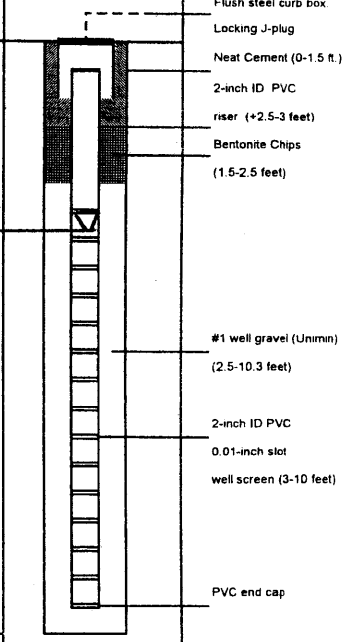
Weather: Clear and sunny.
Date/Time Start: September 17, 1998 10:48 AM
Date/Time Finish: September 17, 1998 1:10 PM

GROUNDWATER OBSERVATIONS

Water Level	3.78 ft.	4.17 ft.	5.20 ft.	
Date	9-18-98	9-23-98	10-7-98	
Time	9:00	11:25	10:35	
Meas. From	toc/pvc 1005.13	toc/pvc 1005.13	toc/pvc 1005.13	

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1005.4 feet (amsl), top PVC elevation 1005.13 feet (amsl), top steel casing 1005.52 feet (amsl).
0					
		12	70	1.8	Tan Fill, silt, sand, and gravel, damp, no stain, no odor.
1		13			
		20			
2		10			
		6	70	8.2	Tan Till, Silt, little clay, sand, and gravel, increasing density with depth.
3		17			Cobble near bottom of sample.
		18			No odor, no stain. Wet at 2 feet, graded to dry at 4 feet.
4		20			DTW 3.93'
		20	35	2.1	Tan Till, Silt, little clay, little coarse sand and gravel, moist.
5		16			No stain, no odor.
		20			
6		19			
		12	60	1.5	Tan Till, Silt, some coarse sand and gravel, trace clay, wet.
7		11			Shale cobble in end of sampler. No stain, no odor.
		14			
8		12			
		11	40	0.2	Till as above, moist.
9		37			
		43			
10		50/4"			
		50/0"	0	NA	Sampler bouncing on bottom, on boulder.
11					Sampling terminated at 10 feet. Auger refusal at 10.3 feet.
12					
13					
14					
15					
16					
17					
18					

SCHEMATIC



COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-6 Sheet 1 of 1

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

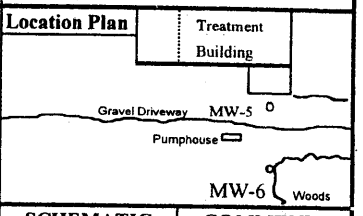
Location Description: Southeast of Treatment Building. Between former pumphouse and woods

Weather: Clear and sunny.

Date/Time Start: September 17, 1998 2:09 PM

Date/Time Finish: September 17, 1998 4:40 PM

Location Plan

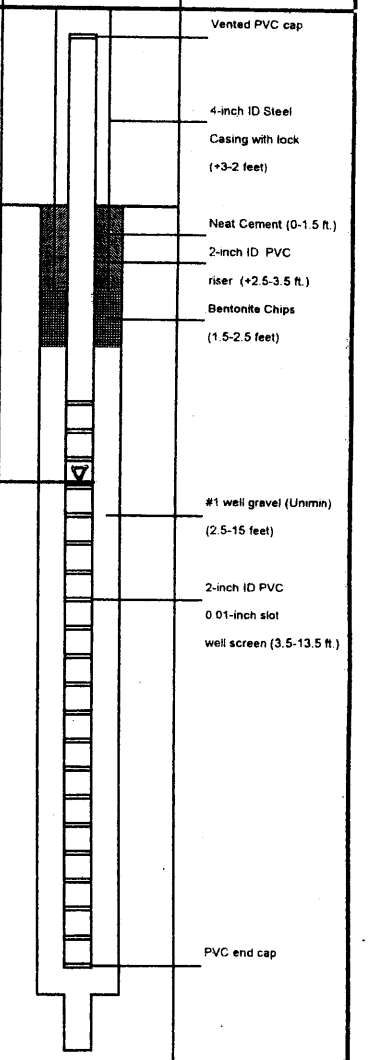


GROUNDWATER OBSERVATIONS

Water Level	6.46 ft.	6.86 ft.	7.90 ft.	
Date	9-18-98	9-23-98	10-7-98	
Time	8:50	11:20	10:55	
Meas. From	toc/pvc 1005.42	toc/pvc 1005.42	toc/pvc 1005.42	

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1002.2 feet (amsl), top PVC elevation 1005.42 feet (amsl), top steel casing 1005.68 feet (amsl).
0					
		6	60	0.3	Tan silty soil grading to tan Silt, some coarse sand and gravel,
1		7			(reworked till), damp.
		9			
2		11			
		5	40	140	Tan Silt, some gravel (8-inches) over brown Silt, trace roots
3		3			(former top soil zone). Moist on top, wet on the bottom of sample.
		3			"Petroleum type odor".
4		3			
		14	80	60	Brown Silt-soil, moist-wet, grading to Tan Till, Silt, some rounded
5		16			coarse sand and gravel, little clay, dense, compact, stiff.
		19			Wet lenses near bottom of sample. DTW 5.52'
6		18			
		14	65	46	Tan Till, Silt, some coarse rounded sand and gravel, wet, soft.
7		15			
		14			
8		17			
		8	80	23	Tan Till, Silt-very fine sand, some coarse rounded sand and gravel,
9		16			moist-wet on top grading to stiff tan till, silt to some rounded coarse
		42			sand and gravel, little clay.
10		24			
		17	70	6	Tan Till as above, dense, grading to tan silt-fine sand,
11		24			trace coarse sand-fine gravel, softer/less compact than above,
		27			wet, no odor, no stain.
12		34			
		33	50	2	Dense tan Till, Silt, some coarse rounded sand and gravel,
13		50/3"			dense, moist.
14					
		32	50	0	Dense tan Till, Silt-very fine sand, some coarse sand and gravel,
15		50/6"			damp.
					Sampling terminated at 15 feet. Augered hole to 14 feet.
16					
17					
18					

SCHEMATIC



COMMENTS

COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-7 Sheet 1 of 1

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

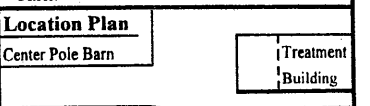
Location Description: South of southwest corner of treatment building. Southeast of center pole barn.

Weather: Clear and sunny.

Date/Time Start: September 17, 1998 4:54 PM

Date/Time Finish: September 17, 1998 6:50 PM

Location Plan

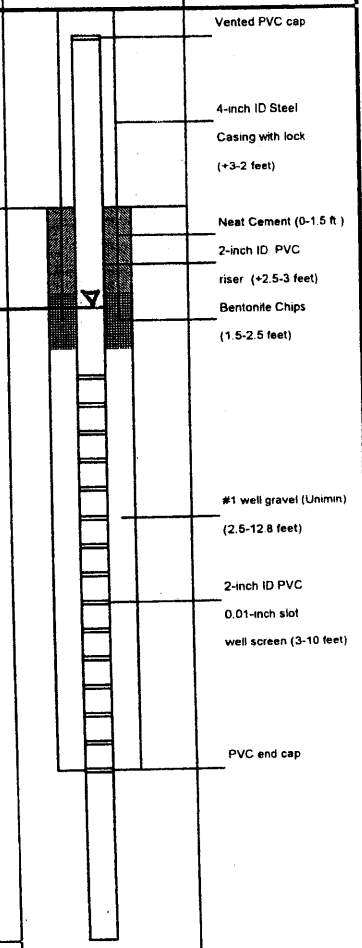


GROUNDWATER OBSERVATIONS

Water Level	6.3 ft.	6.61 ft.	7.20 ft.	
Date	9-18-98	9-23-98	10-7-98	
Time	8:45	11:42	11:00	
Meas. From	toc/pvc 1008.03	toc/pvc 1008.03	toc/pvc 1008.03	

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1004.8 feet (amsl), top PVC elevation 1008.03 feet (amsl), top steel casing 1008.17 feet (amsl).
0					
		A	NA	NA	Rock fill, soil, weathered till. Augered from ground surface to 1.5 feet.
1		A			
		A			
2		5	30	140	Fill, tan Silt, some gravel and cobbles, damp, slight odor, moist at bottom of sample. DTW 2.36'
		4			
3		2			
		2			
4		3	60	640	Brown Silt, some coarse sand and gravel, soft, strong "gasoline type odor", wet, former topsoil zone (3.5-5 feet). Till, tan Silt, some coarse sand and gravel, (5-5.5 feet).
		2			
5		2			
		12			
6		19	60	240	Gray-tan Till, Silt, some coarse sand and gravel, mottled gray-reddish brown discoloration, damp-moist, slight odor. 500-900 ppm measured in hole with FID, 0.0 ppm in breathing zone.
		20			
7		36			
		38			
8		17	70	30	Tan Till, Silt, some coarse sand and gravel, little clay, stiff, damp, slight odor. Measured head space inside augers with FID (+1000 ppm). Measured 0-2 ppm in breathing zone. Levels fluctuating with wind, also picking up rig exhaust.
		13			
9		16			
		18			
10		36	60	2	Till as above, faint odor in upper sample, no odor in bottom of sample, damp.
		24			
11		36			
		41			
12		36	50	2	Dense Till as above. Advanced augers to 10 feet and set well.
		38			
13		50/3"			
					Augering terminated at 10 feet. Sampling terminated at 12.8 feet.
14					
15					
16					
17					
18					

SCHEMATIC



COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-8 — Sheet 1 of 1

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Camp Georgetown
PROJECT NUMBER: 733109.01000

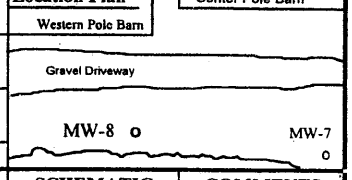
Location Description: South of southwest corner of center pole barn. Southeast of western pole barn.

Weather: Clear and sunny.

Date/Time Start: September 18, 1998 8:15 AM

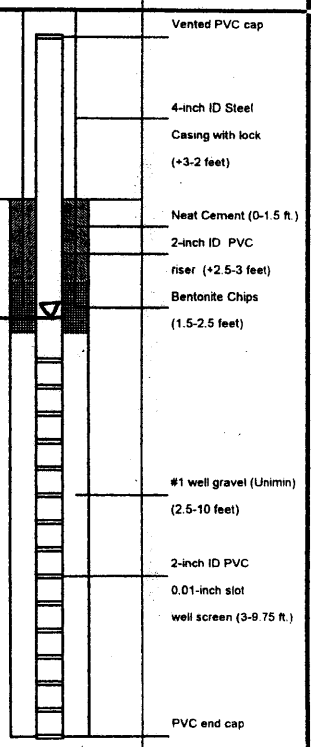
Date/Time Finish: September 18, 1998 10:30 AM

Location Plan



GROUNDWATER OBSERVATIONS				
Water Level	11.71 ft.	11.40 ft.		
Date	9-23-98	10-7-98		
Time	11:38	11:15		
Meas. From	toc/pvc 1009.64	toc/pvc 1009.64		

Sample Depth	Sample I.D.	SPT	% Rec.	FID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 1006.4 feet (amsl), top PVC elevation 1009.64 feet (amsl), top steel casing 1009.77 feet (amsl).
0					
		14	50		Brown silty top soil (1-inch) over Fill, gravel, some silt and sand,
1		8			bottom of sample was silt-very fine sand, with roots and trace wood,
		7			soft, slight swampy odor, wet.
2		4			
		2	70		Tan-gray Till, weathered, wet at top grading to more compact dense DTW 2.75'
3		12			till, damp to moist, no odor.
		74			
4		38			
		35	70		Tan Till, Silt, some coarse sand and gravel, moist, no odor.
5		25			
		19			
6		20			
		12	80		Tan Till, Silt, some coarse sand and gravel, little clay, moist, no odor.
7		28			
		38			
8		50/4"			
		17	90		Tan Till, Silt, some coarse sand and gravel. Some lenses
9		17			with little clay, some lenses with a trace of clay. No odor.
		24			
10		42			
					Boring terminated at 10 feet.
11					
12					
13					
14					
15					
16					
17					
18					



SCHEMATIC | **COMMENTS**

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:

Contractor: Applied Earth Tech.
Driller: Paul Mandigo
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

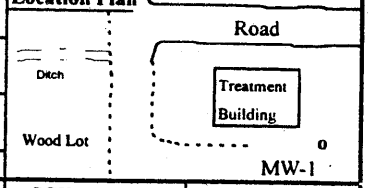
BORING/ WELL NO. PMW-1 **Sheet** 1 of 1

PROJECT NAME: Camp Pharsalia
PROJECT NUMBER: 733108.01000

Location Description: Southeast of treatment building.

Weather: Sunny, cold, windy.
Date/Time Start: September 24, 1998 3:45 PM
Date/Time Finish: September 24, 1998 5:55 PM

Location Plan

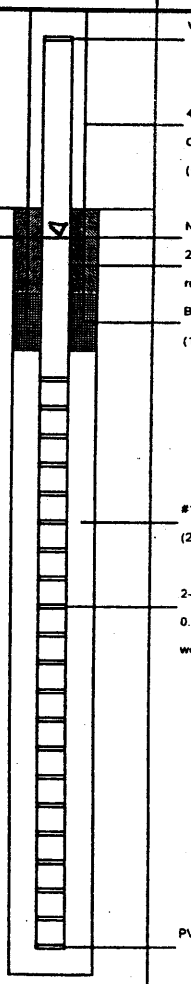


GROUNDWATER OBSERVATIONS

Water Level	4.38 ft.	4.87	4.48	3.10
Date	9-25-98	10/1/98	10/2/98	10/13/98
Time	8:30	8:09	8:08	
Meas. From	toc/pvc 998.15	toc/pvc 998.15	toc/pvc 998.15	toc/pvc 998.15

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 995.4 feet (amsl), top PVC elevation 998.15 feet (amsl), top steel casing 998.33 feet (amsl).
0					
		9	65	1.3	Brown top soil, moist, (0-5 inches) over tan Fill, silt, sand, and gravel, damp. DTW 1.07'
1		14			
		21			
2		26			
		16	70	6.8	Till, tan Silt-sand, little coarse sand and fine gravel (shale pieces in gravel),
3		16			trace clay, moist.
		15			
4		10			
		6	75	1.8	Tan Till, Silt, little coarse rounded sand-gravel, little clay, moist, no odor.
5		9			
		19			
6		21			
		27	60	8.7	As above. Moist to wet, no odor, no stain.
7		23			
		20			
8		19			
		23	90	5.9	As above, moist to wet, no odor, no stain.
9		50/3"			
		RB/A			
10		A			
		17	50	48	Dense Till, tan, Silt, little-some rounded coarse sand and gravel,
11		27			damp-moist.
		33			
12		50			
		42	100	19	Dense Till as above grading to dense tan-gray till, silt, trace coarse sand
13		54/6"			and gravel.
		A			
14					Well boring terminated at 13.5 feet.
15					
16					
17					
18					

SCHEMATIC



COMMENTS

COMMENTS:
Soil descriptions are from adjacent deeper test boring MW-1 boring.

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

Contractor: Applied Earth Tech.
Driller: Kevin Hawkins
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: Camp Pharsalia
PROJECT NUMBER: 733108.01000

Weather: Cold, windy, partly cloudy, high 40s-low 50s

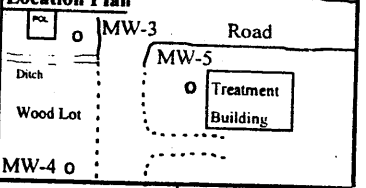
Date/Time Start: October 1, 1998 2:05 PM

Date/Time Finish: October 1, 1998 6:30 PM

BORING/ WELL NO. P MW-5 **Sheet** 1 of 1

Location Description:
West of the treatment building, in wood lot area west of gravel road.

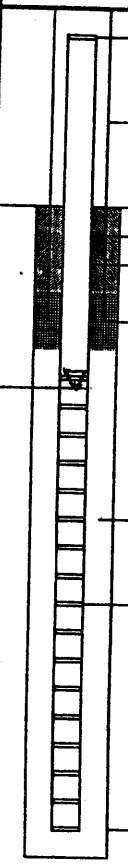
Location Plan



GROUNDWATER OBSERVATIONS				
Water Level	7.59	5.65		
Date	10/2/98	10/13/98		
Time	8:26			
Meas. From	toc/pvc 995.56	toc/pvc 995.56		

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
					Ground elevation 992.6 feet (amsl), top PVC elevation 995.56 feet (amsl), top steel casing 995.81 feet (amsl).
0					
		7	45	140	Brown silty soil (0-3-inches) over gray very fine sand, trace gravel, moist.
1		7			"petroleum" type odor in gray material.
		8			
2		24			
		32	40	290	Tan Till, some coarse sand-very fine gravel, trace clay, trace cobble,
3		37			gray streaking (staining). "Petroleum" moving through gray streaks?
		22			
4		17			DTW 3.70'
		22	40	300	Till as above, little clay, gray streaking, "petroleum" odor, moist.
5		30			
		21			
6		26			
		25	75	290	Dense Till as above, moist-wet, "petroleum" odor, slight sheen, gray staining,
7		27			
		49			
8		28			
		25	0	NA	Rock in sampler, no recovery. Oily sheen, sampler wet, "petroleum" odor.
9		23			
		28			
10		31			
		20	80	8.5	Tan dense Till, Silt, some coarse sand and gravel, little clay, damp,
11		50/3"			slight "petroleum" odor.
		A			
12					Sampling terminated at 10.8 feet. Auger refusal at 11.5 feet.
13					
14					
15					
16					
17					
18					

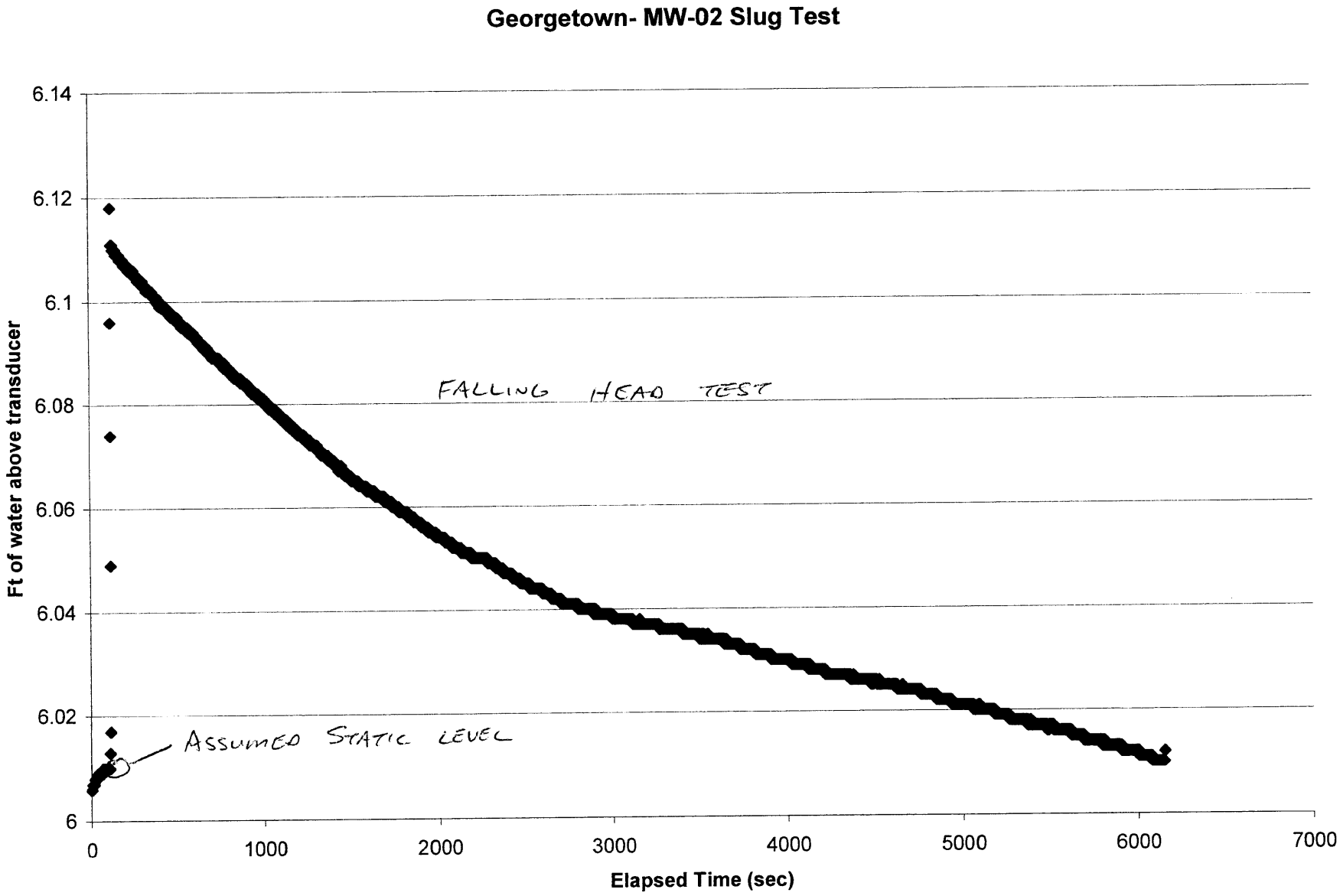
SCHEMATIC

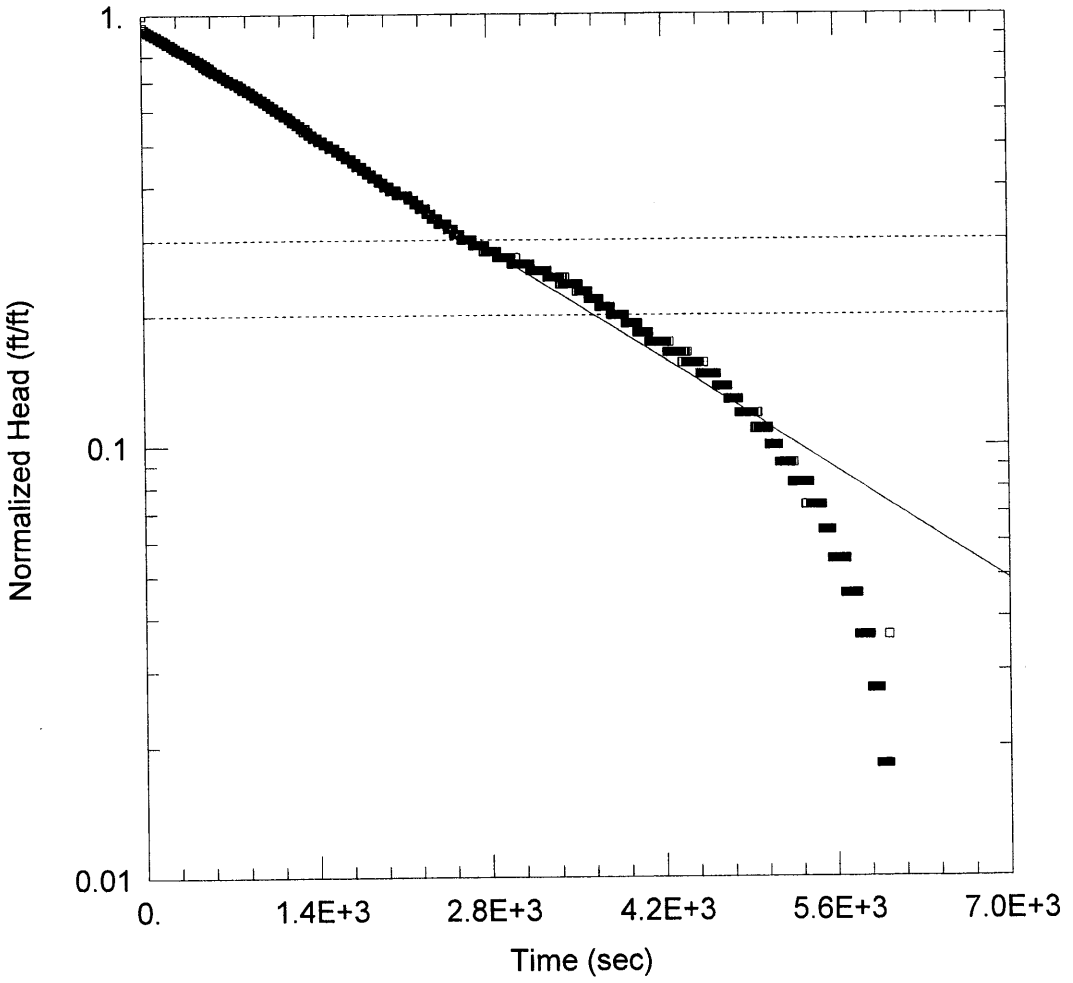


COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:


Georgetown- MW-02 Slug Test
6.14
6.12
6.1
6.08
6.06
6.04
6.02
6
Ft of water above transducer
FALLING HEAD TEST
ASSUMED STATIC LEVEL
0
1000
2000
3000
4000
5000
6000
7000
Elapsed Time (sec)



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-02 FH.aqt
Date: 07/05/07 Time: 10:21:49

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-02
Test Date: 6/19/07

AQUIFER DATA

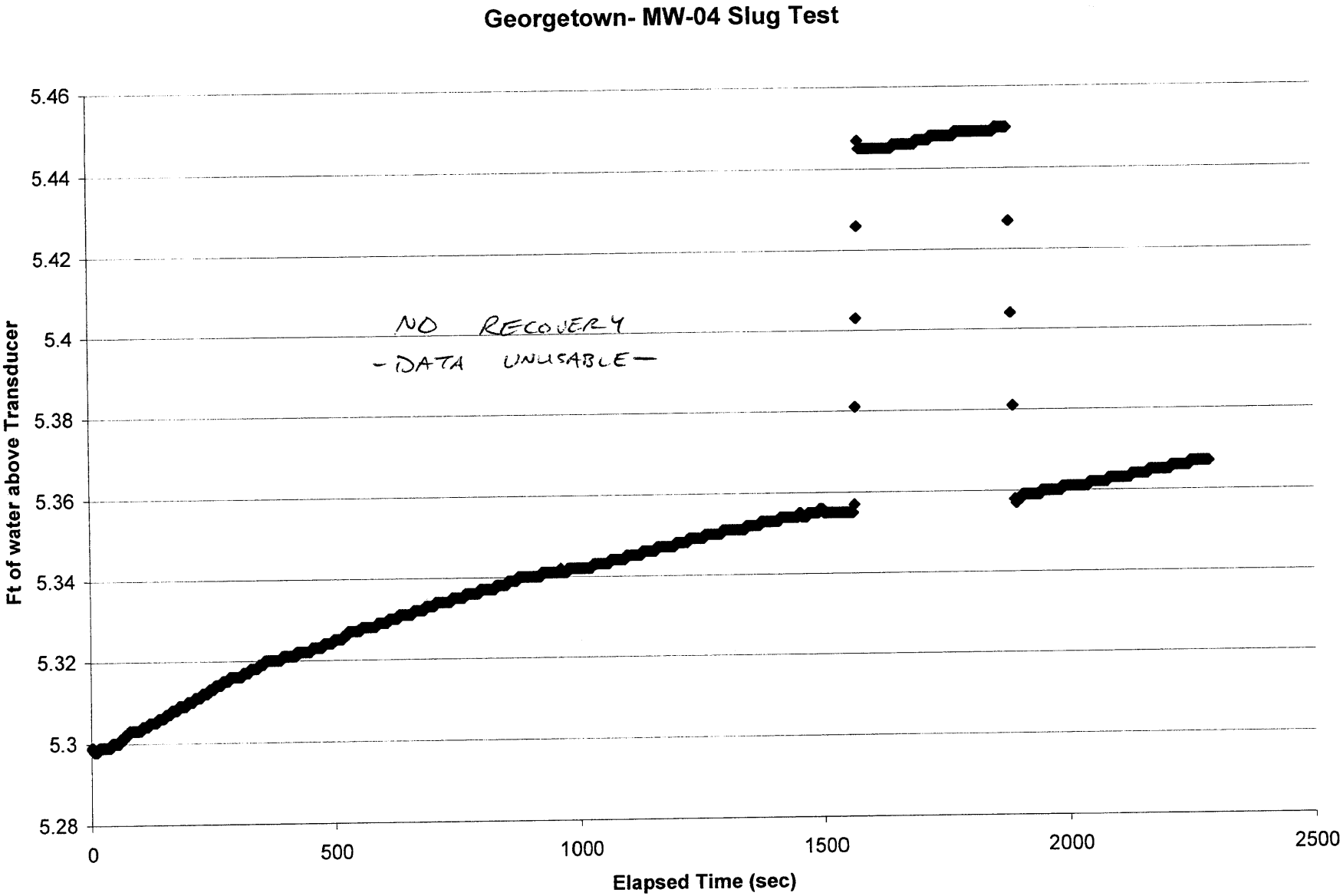
Saturated Thickness: 6.2 ft
Anisotropy Ratio (Kz/Kr): 1.

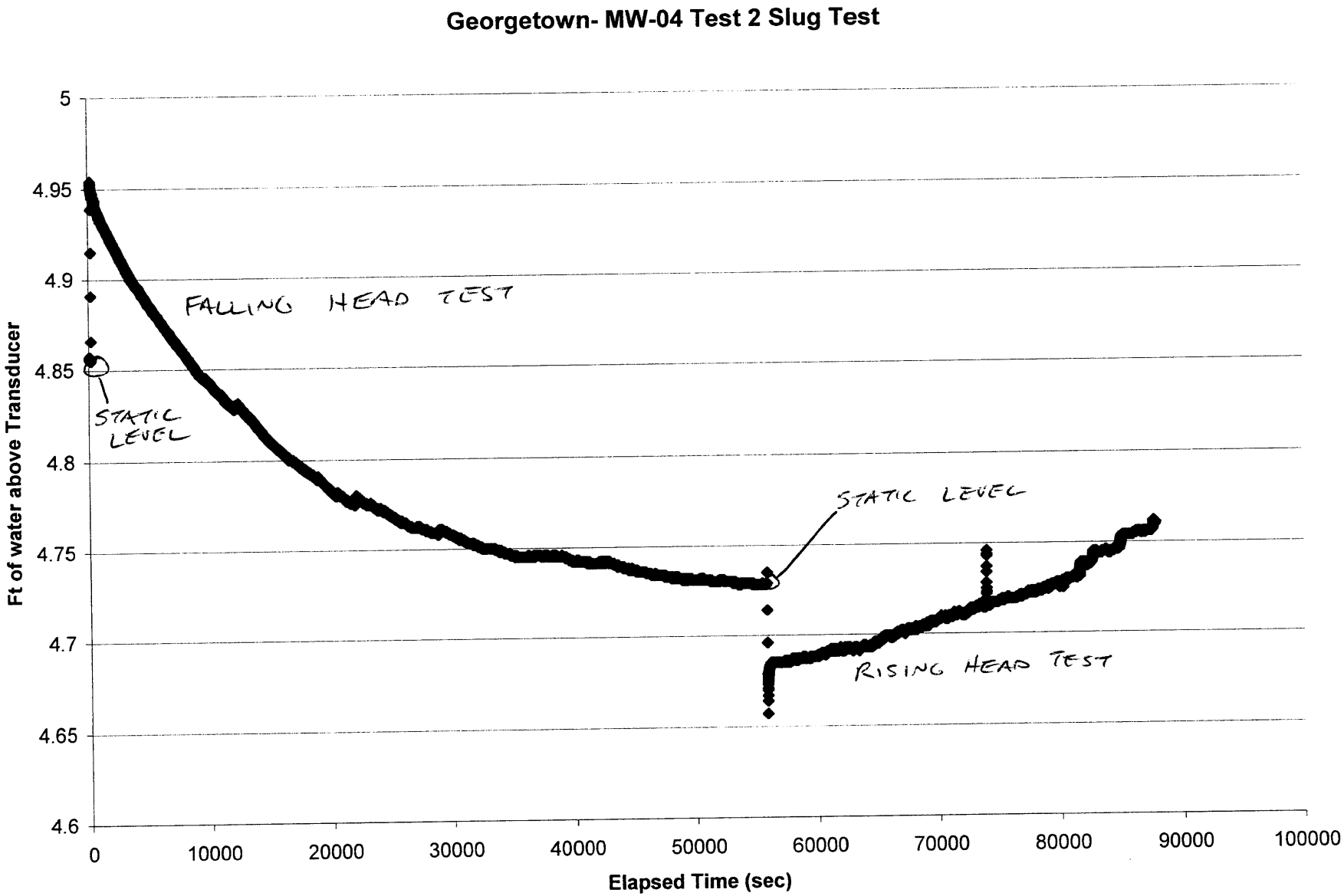
WELL DATA (MW-02 FH)

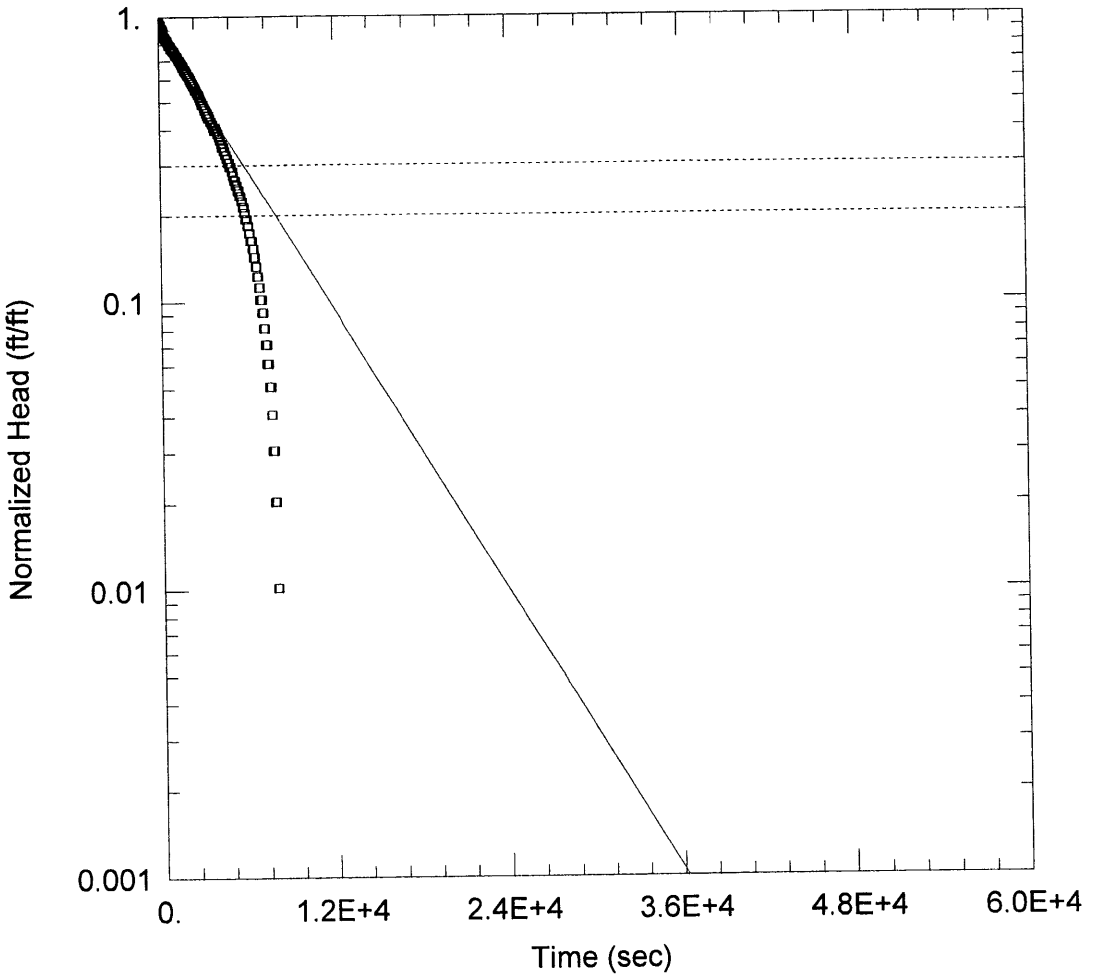
Initial Displacement: 1. ft
Total Well Penetration Depth: 6.23 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.23 ft
Screen Length: 6. ft
Wellbore Radius: 0.3441 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.572E-5 cm/sec
y0 = 0.9222 ft


Georgetown- MW-04 Slug Test
Ft of water above Transducer
5.46
5.44
5.42
5.4
5.38
5.36
5.34
5.32
5.3
5.28
NO RECOVERY
- DATA UNUSABLE -
0
500
1000
1500
2000
2500
Elapsed Time (sec)


Georgetown- MW-04 Test 2 Slug Test
Ft of water above Transducer
5
4.95
4.9
4.85
4.8
4.75
4.7
4.65
4.6
FALLING HEAD TEST
STATIC LEVEL
STATIC LEVEL
RISING HEAD TEST
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
Elapsed Time (sec)



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-04 FH.aqt
Date: 07/05/07 Time: 10:21:47

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-04
Test Date: 6/20/07

AQUIFER DATA

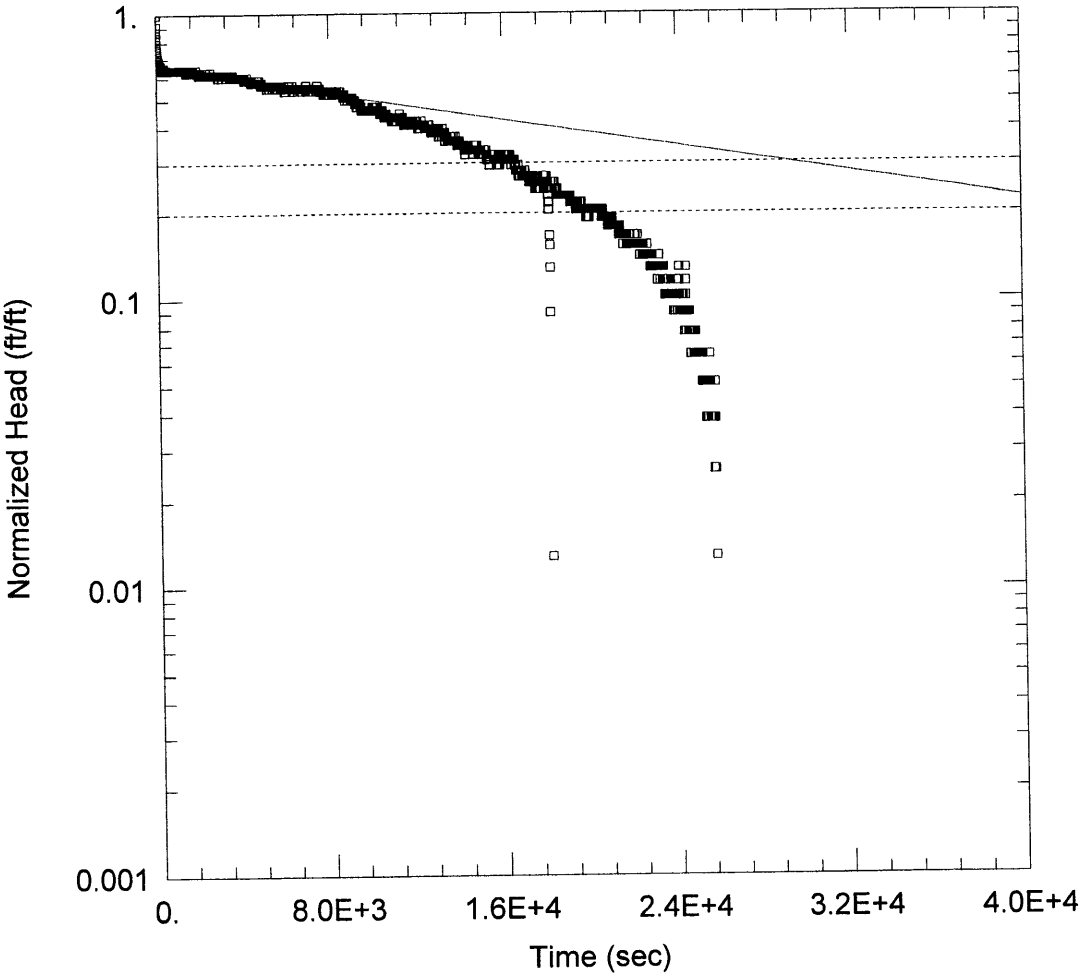
Saturated Thickness: 6.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-04 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 6.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.5 ft
Screen Length: 7.5 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.389E-5 cm/sec
y0 = 0.8818 ft



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-04 RH.aqt
Date: 07/05/07 Time: 10:21:40

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-04
Test Date: 6/20/07

AQUIFER DATA

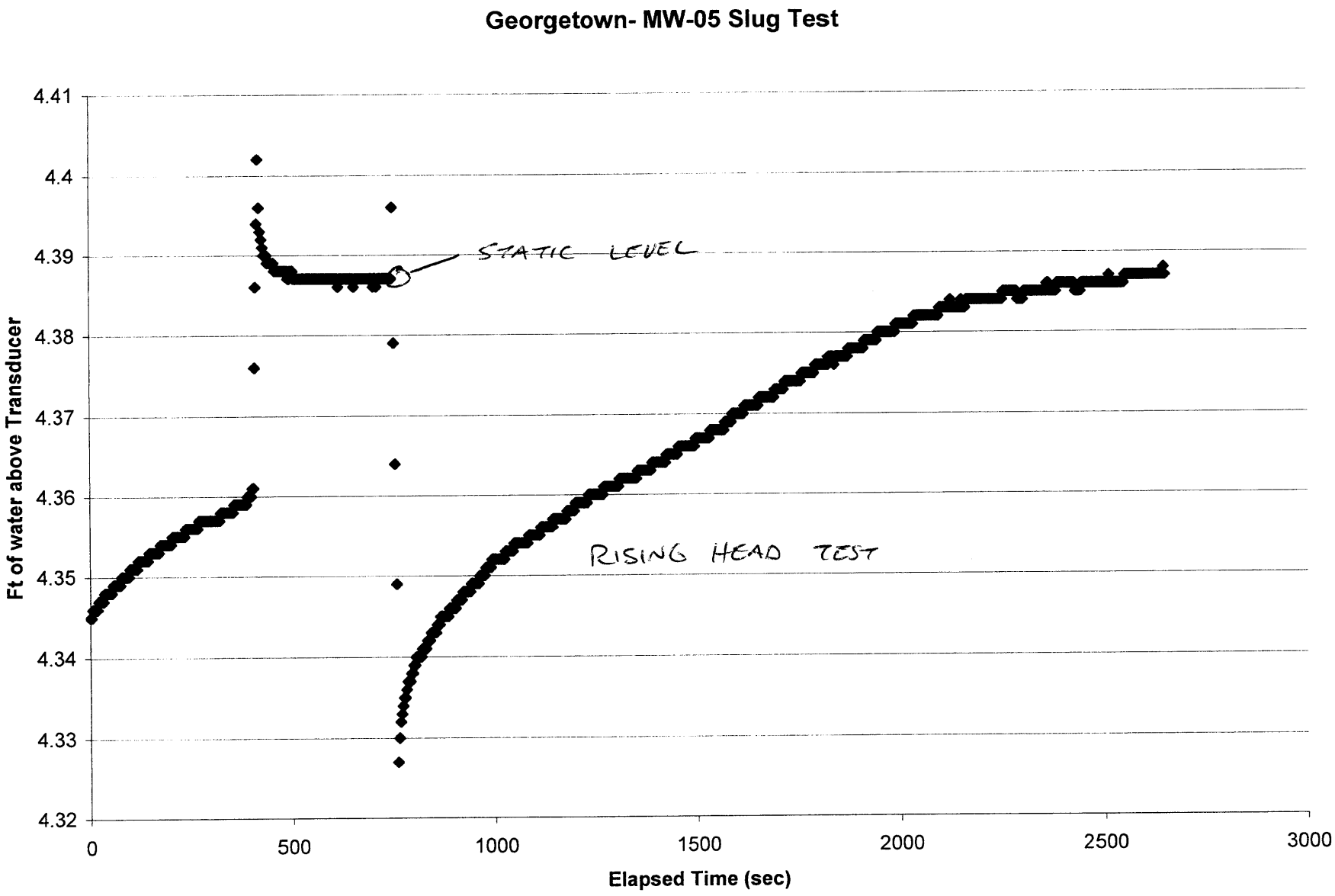
Saturated Thickness: 6.5 ft
Anisotropy Ratio (Kz/Kr): 1.

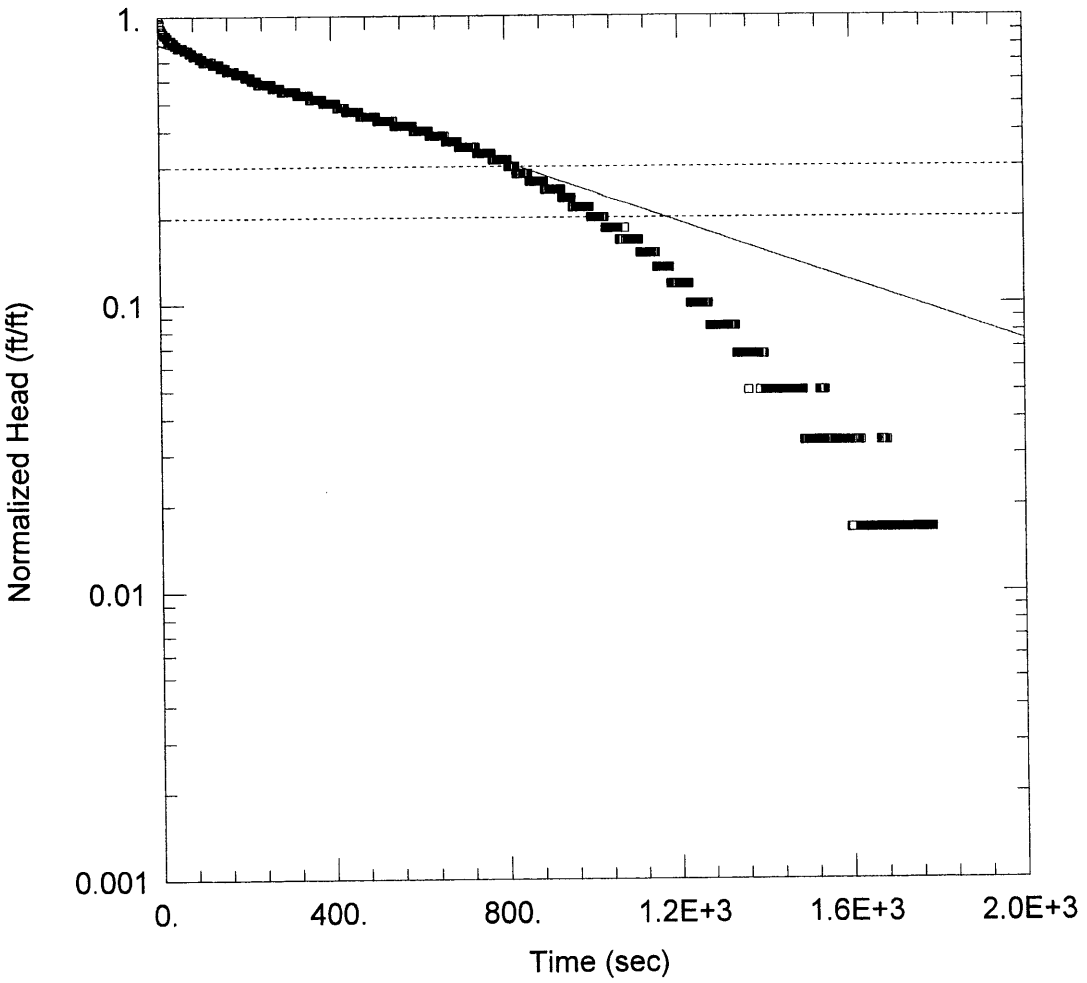
WELL DATA (MW-04 RH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 6.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.5 ft
Screen Length: 7.5 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.813E-6 cm/sec
y0 = 0.653 ft


Georgetown- MW-05 Slug Test
Ft of water above Transducer
4.41
4.4
4.39
4.38
4.37
4.36
4.35
4.34
4.33
4.32
0
500
1000
1500
2000
2500
3000
Elapsed Time (sec)
STATIC LEVEL
RISING HEAD TEST



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-05 RH.aqt
Date: 07/05/07 Time: 10:21:38

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-05
Test Date: 6/19/07

AQUIFER DATA

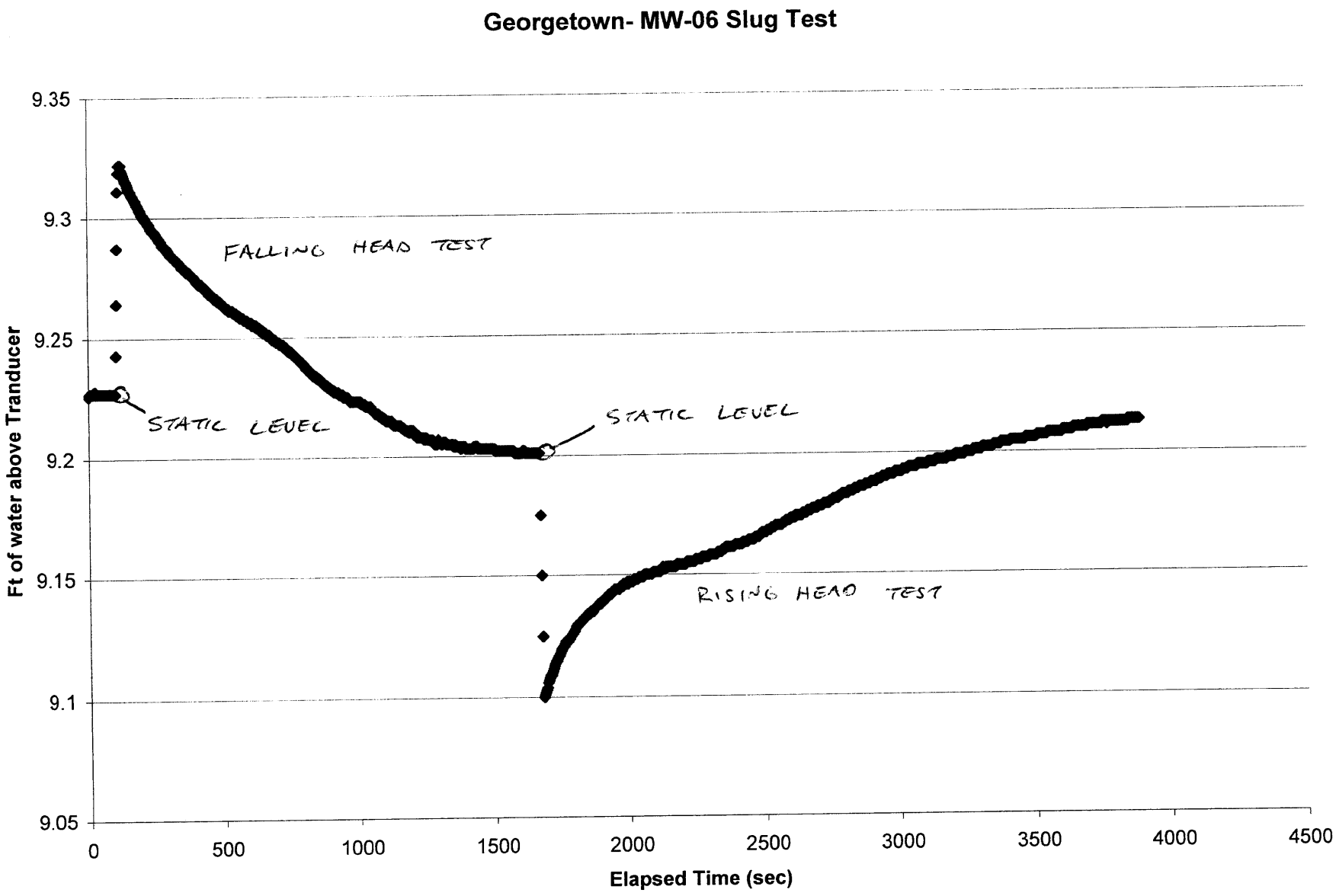
Saturated Thickness: 6.1 ft
Anisotropy Ratio (Kz/Kr): 1.

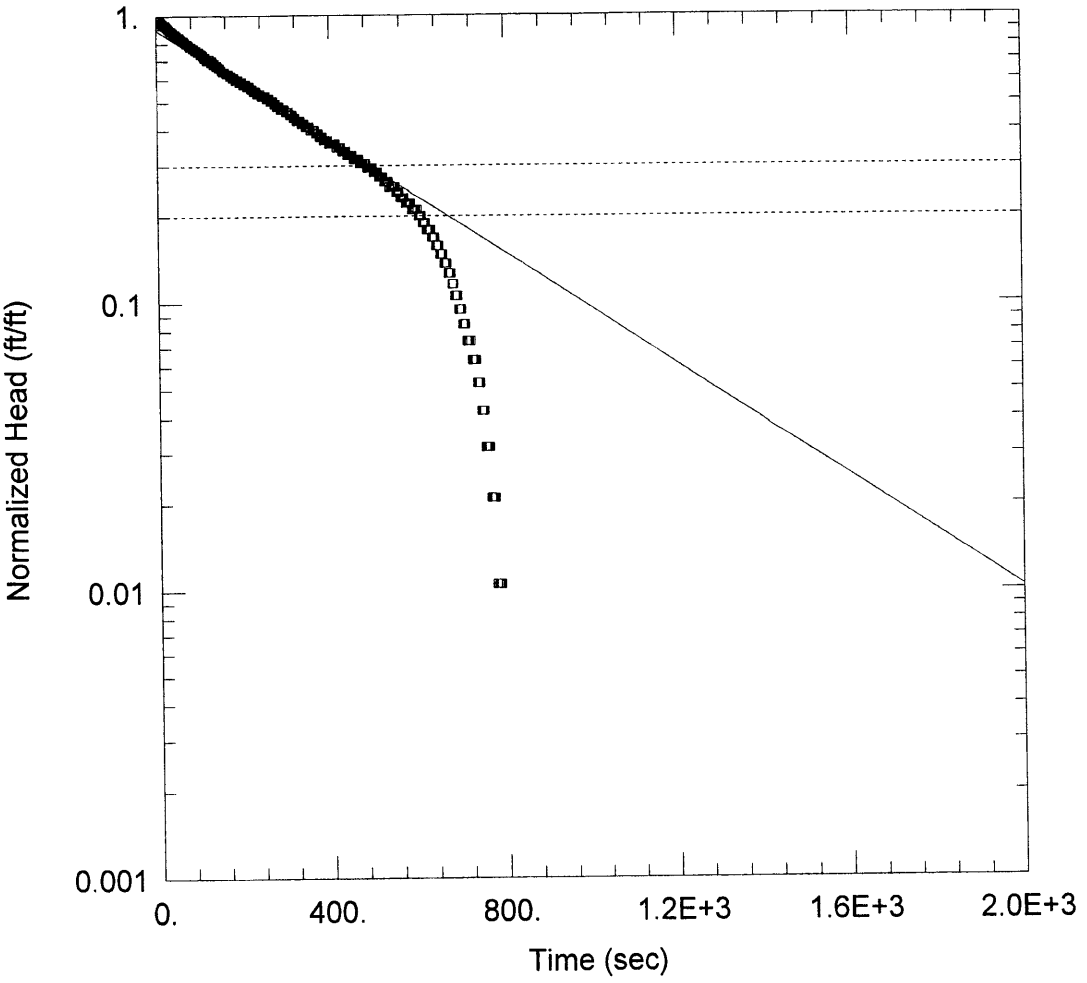
WELL DATA (MW-05 RH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 6.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.07 ft
Screen Length: 7.5 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0002121 cm/sec
y0 = 0.8071 ft


Georgetown- MW-06 Slug Test
9.35
9.3
9.25
9.2
9.15
9.1
9.05
Ft of water above Tranducer
FALLING HEAD TEST
STATIC LEVEL
STATIC LEVEL
RISING HEAD TEST
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Elapsed Time (sec)



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-06 FH.aqt
Date: 07/05/07 Time: 10:21:35

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-06
Test Date: 6/19/07

AQUIFER DATA

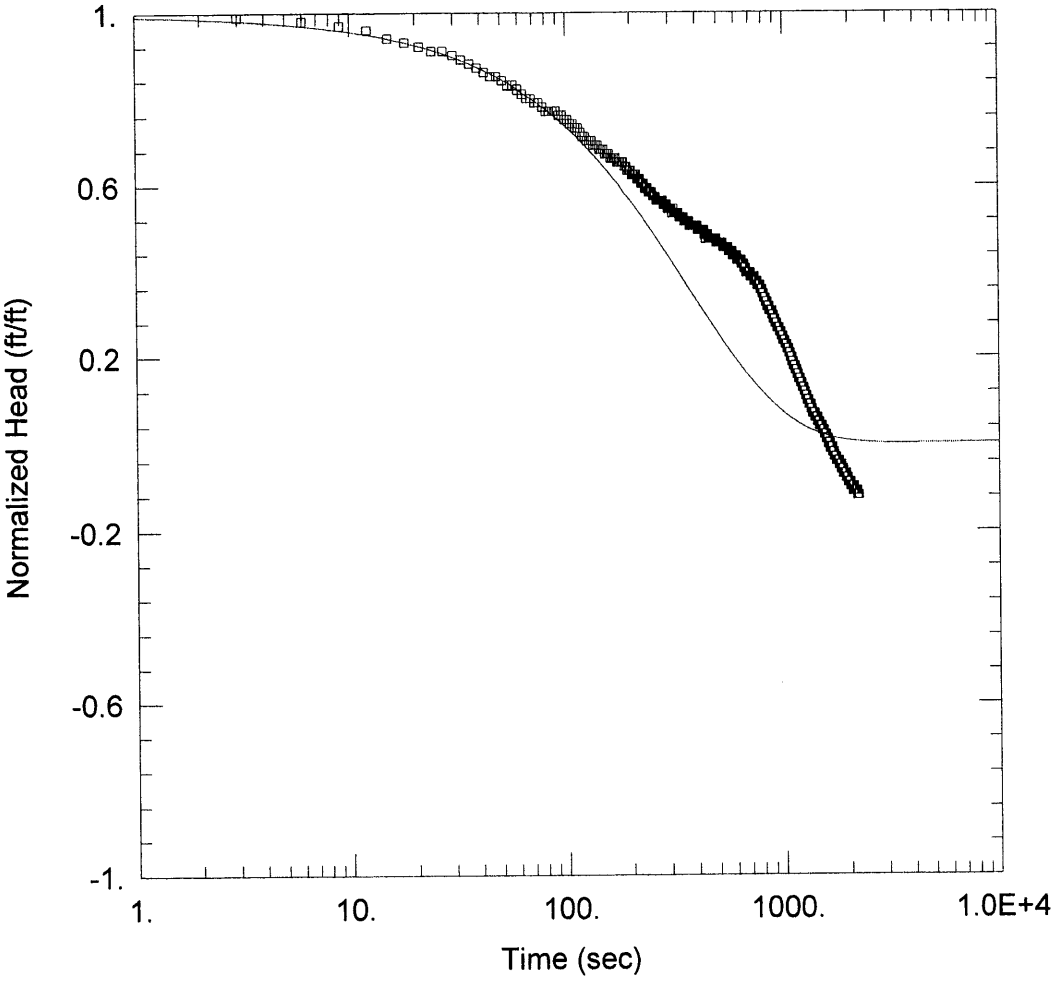
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-06 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 8. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.98 ft
Screen Length: 11. ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003025 cm/sec
y0 = 0.893 ft



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-06 RH.aqt
Date: 07/06/07 Time: 11:34:25

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-06
Test Date: 6/19/07

AQUIFER DATA

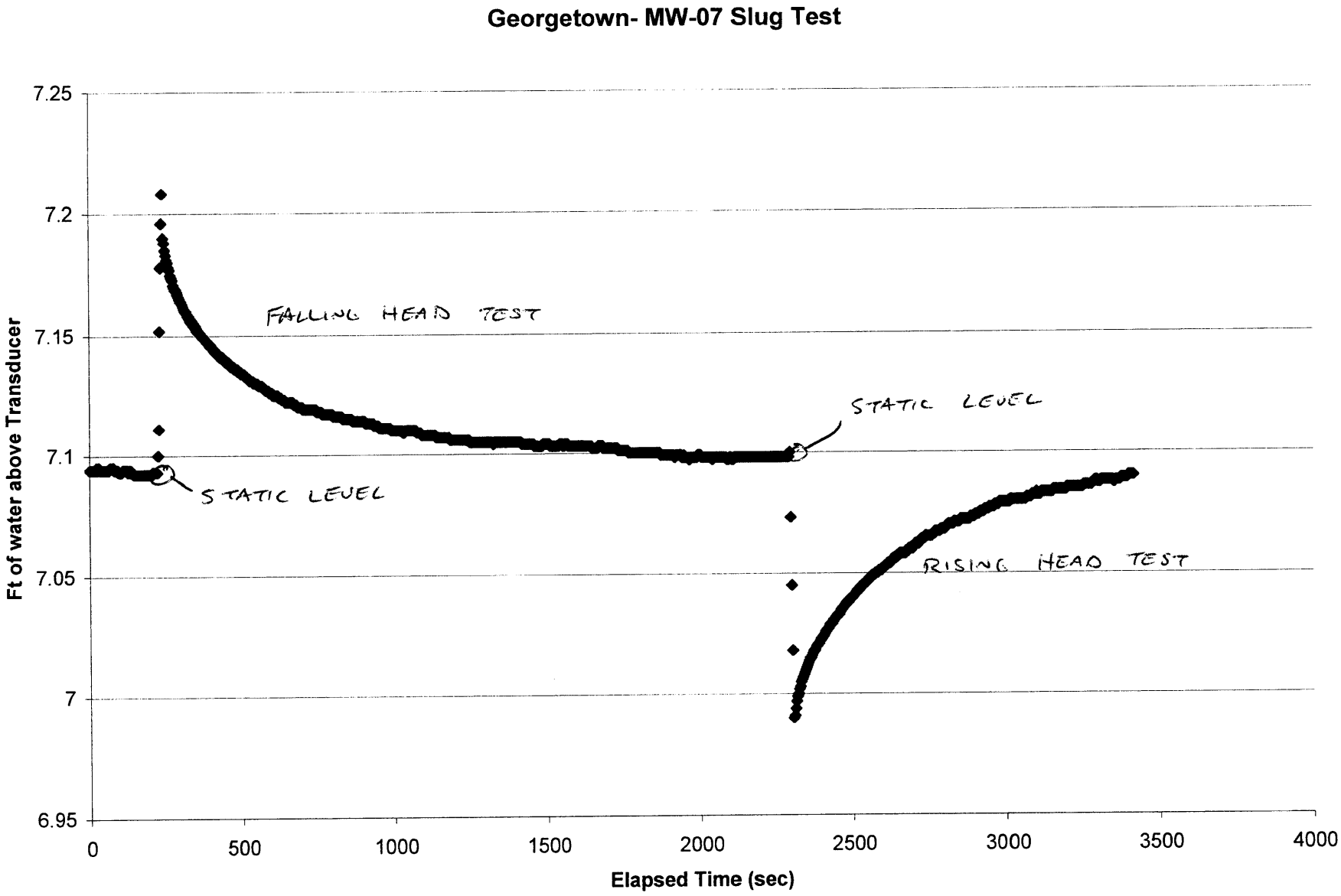
Saturated Thickness: 8. ft

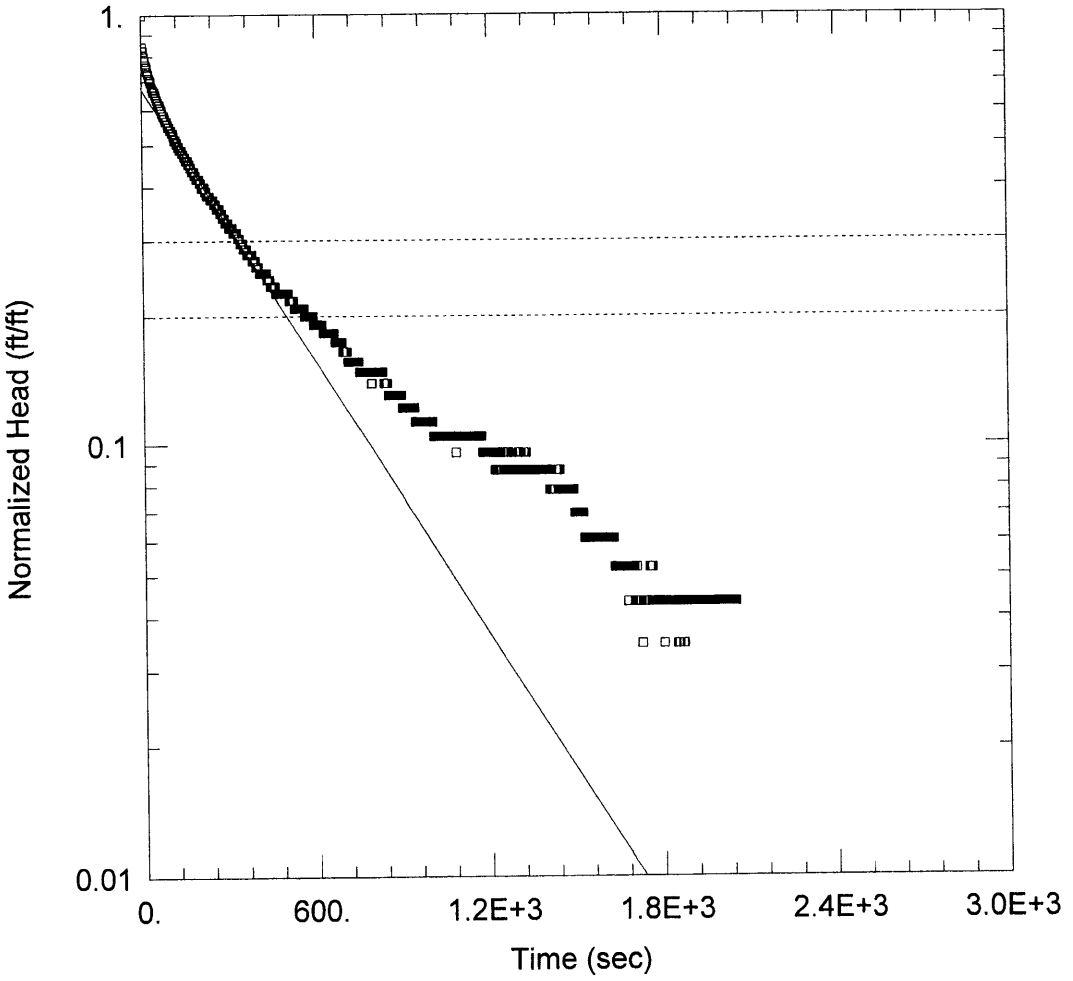
WELL DATA (MW-06 RH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 8. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.98 ft
Screen Length: 11. ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model
Kr = 3.201E-5 cm/sec
Ss = 3.635E-6 ft^{-1}
Kz/Kr = 1


Georgetown- MW-07 Slug Test
7.25
7.2
7.15
7.1
7.05
7
6.95
Ft of water above Transducer
0
500
1000
1500
2000
2500
3000
3500
4000
Elapsed Time (sec)
FALLING HEAD TEST
STATIC LEVEL
STATIC LEVEL
RISING HEAD TEST



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-07 FH.aqt
Date: 07/05/07 Time: 10:21:30

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-07
Test Date: 6/19/07

AQUIFER DATA

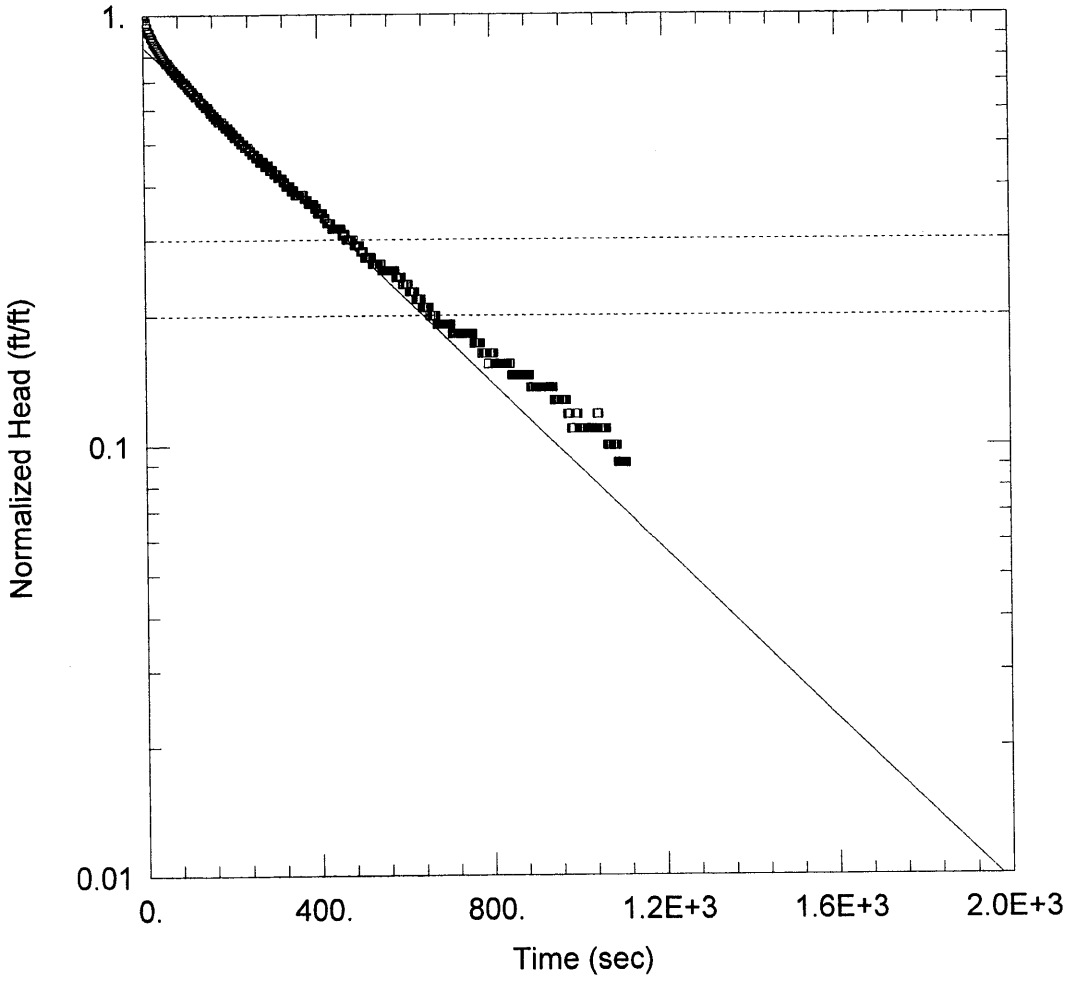
Saturated Thickness: 7.64 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-07 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 7.64 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.64 ft
Screen Length: 7.5 ft
Wellbore Radius: 0.3441 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.907E-5 cm/sec
y0 = 0.6705 ft



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-07 RH.aqt
Date: 07/05/07 Time: 10:21:26

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-07
Test Date: 6/19/07

AQUIFER DATA

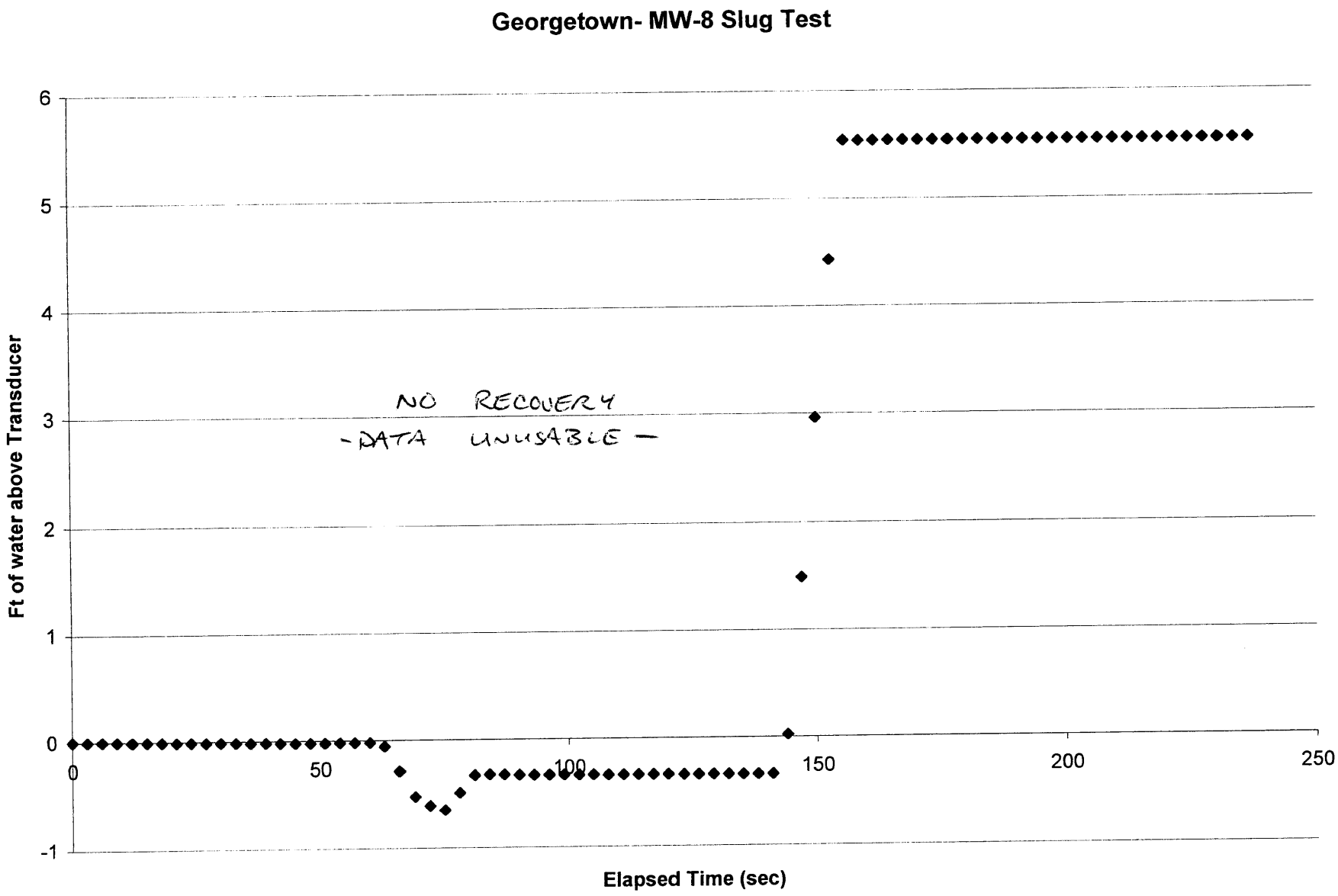
Saturated Thickness: 7.64 ft Anisotropy Ratio (Kz/Kr): 1.

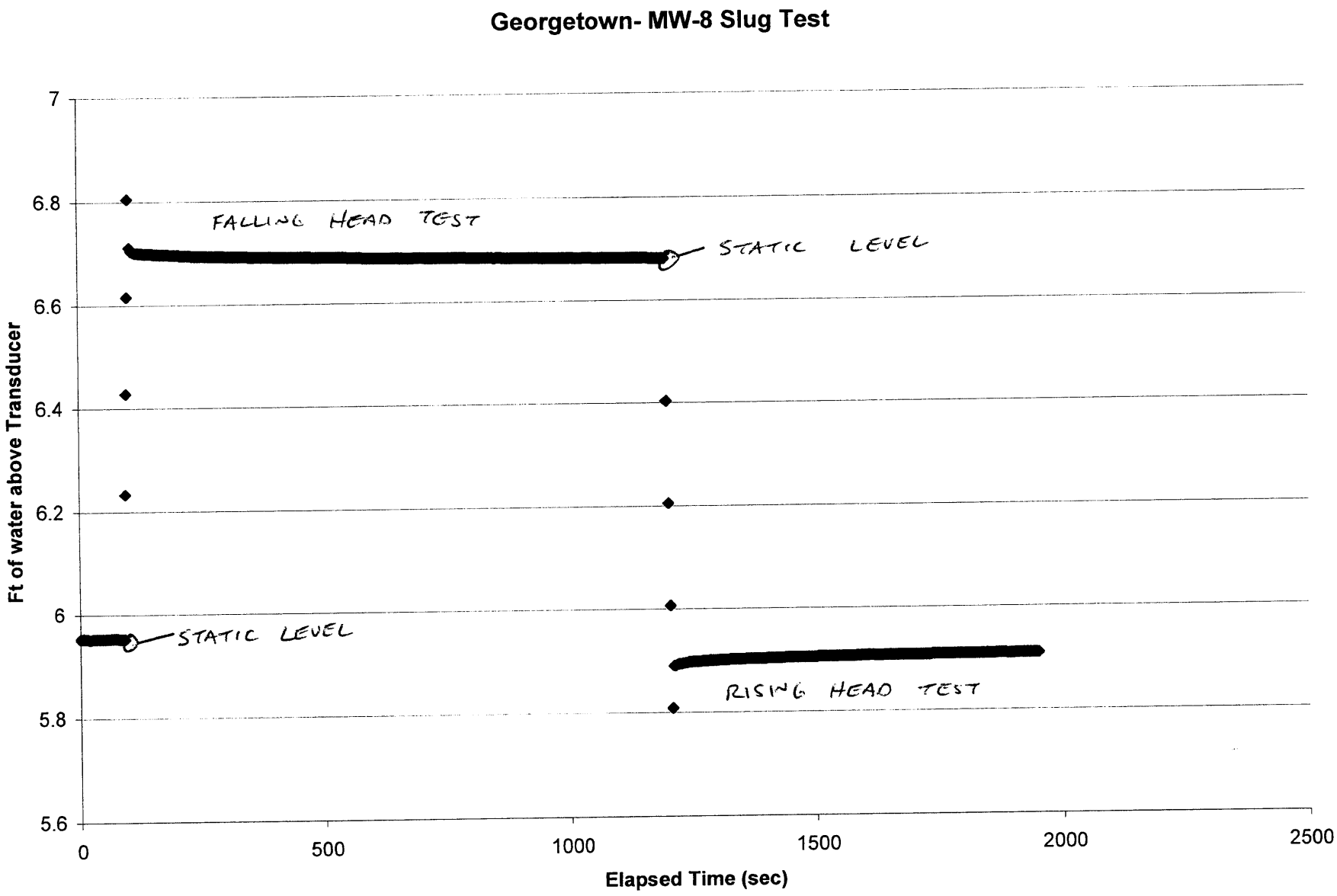
WELL DATA (MW-07 RH)

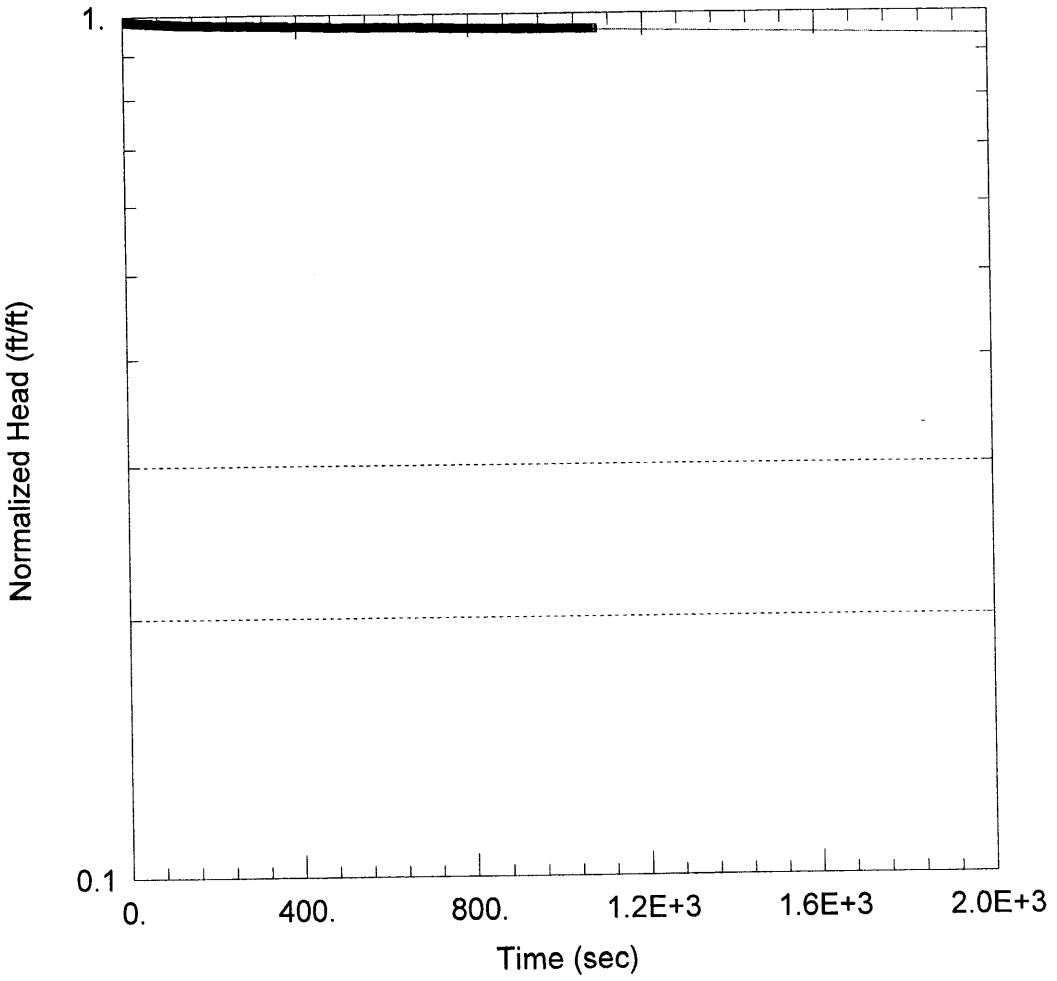
Initial Displacement: 1. ft
Total Well Penetration Depth: 7.64 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.64 ft
Screen Length: 7.5 ft
Wellbore Radius: 0.3441 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.302E-5 cm/sec
y0 = 0.842 ft


Georgetown- MW-8 Slug Test
Ft of water above Transducer
6
5
4
3
2
1
0
-1
0
50
100
150
200
250
Elapsed Time (sec)
NO RECOVERY
- DATA UNUSABLE -


Georgetown- MW-8 Slug Test
7
6.8
6.6
6.4
6.2
6
5.8
5.6
Ft of water above Transducer
FALLING HEAD TEST
STATIC LEVEL
STATIC LEVEL
RISING HEAD TEST
0
500
1000
1500
2000
2500
Elapsed Time (sec)



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-08 FH.aqt
Date: 07/05/07 Time: 10:21:23

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-08
Test Date: 6/19/07

AQUIFER DATA

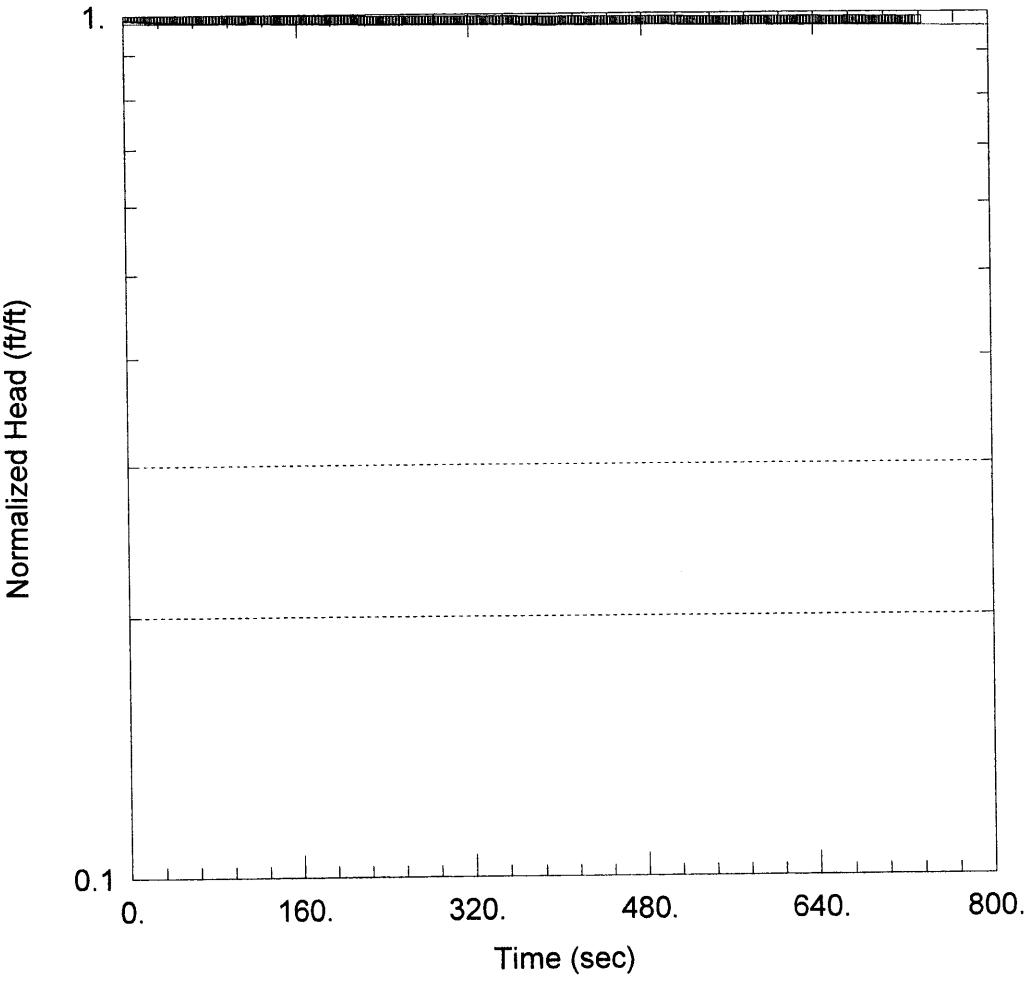
Saturated Thickness: 7. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-08 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 7. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7. ft
Screen Length: 7.3 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.961E-6 cm/sec
y0 = 0.9794 ft



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\MW-08 RH.aqt
Date: 07/05/07 Time: 10:21:20

PROJECT INFORMATION

Company: URS Corporation
Project: 11174679.00003
Location: Camp Georgetown
Test Well: MW-08
Test Date: 6/19/07

AQUIFER DATA

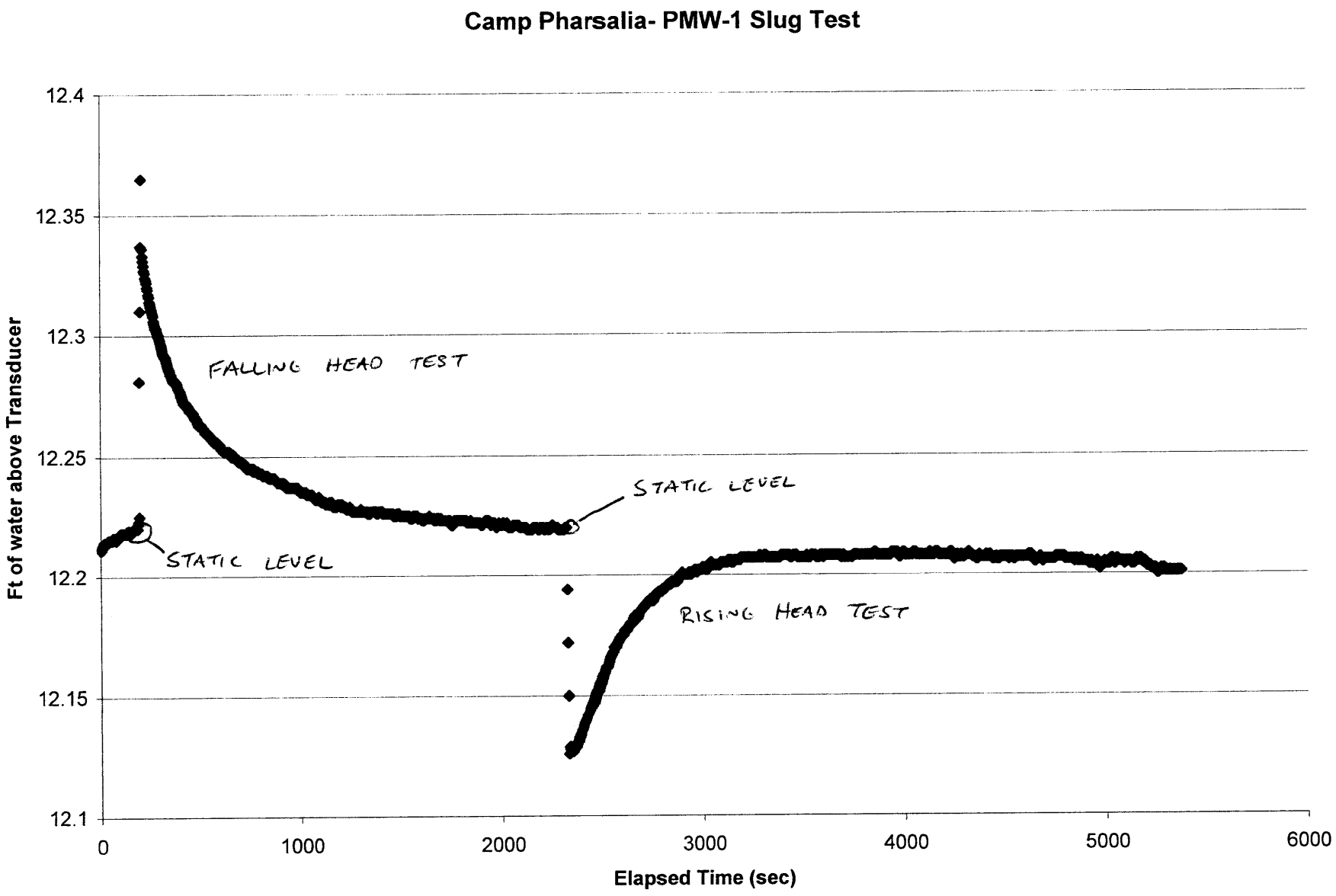
Saturated Thickness: 7. ft
Anisotropy Ratio (Kz/Kr): 1.

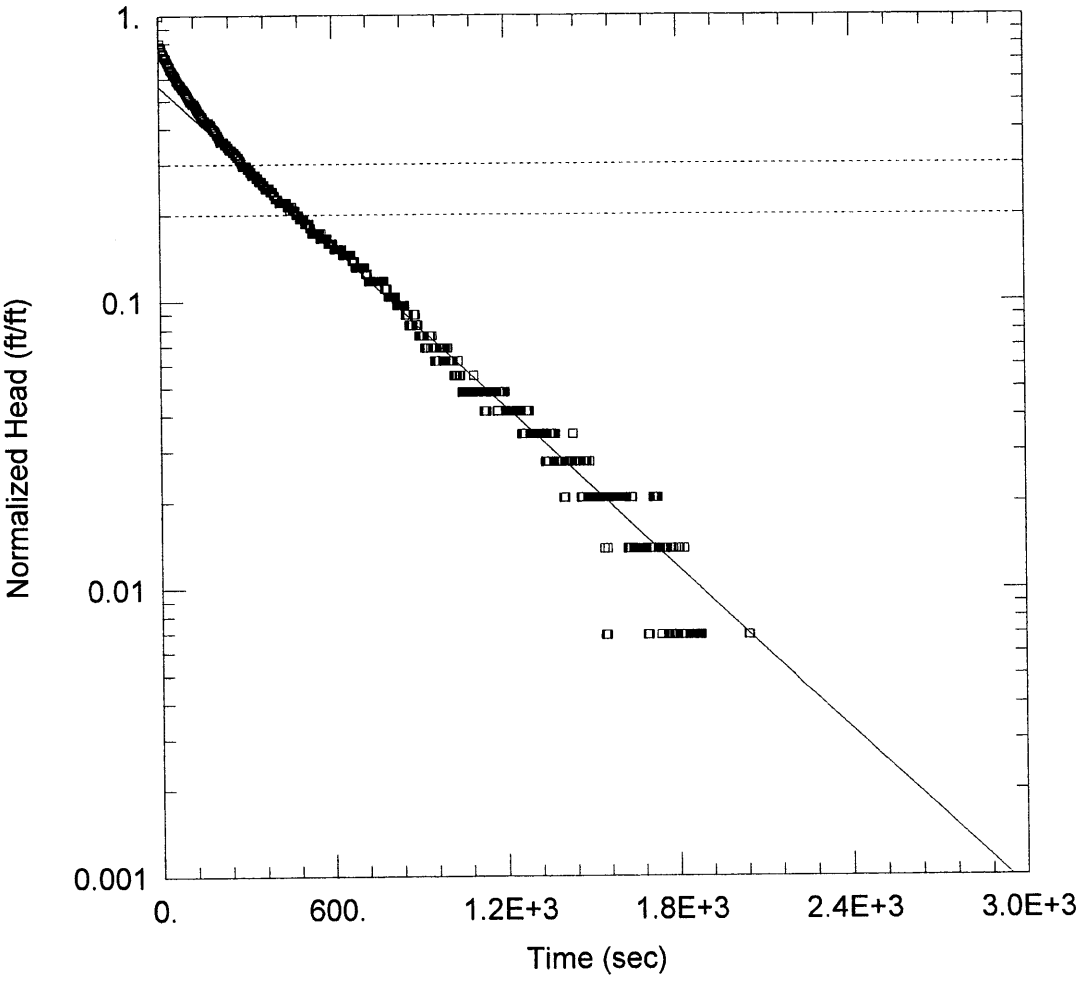
WELL DATA (MW-08 RH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 7. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7. ft
Screen Length: 7.3 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.961E-6 cm/sec
y0 = 0.9794 ft


Camp Pharsalia- PMW-1 Slug Test
Ft of water above Transducer
12.4
12.35
12.3
12.25
12.2
12.15
12.1
0
1000
2000
3000
4000
5000
6000
Elapsed Time (sec)
FALLING HEAD TEST
STATIC LEVEL
STATIC LEVEL
RISING HEAD TEST



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\PMW-1 FH.aqt
Date: 07/05/07 Time: 10:21:17

PROJECT INFORMATION

Company: URS Corporation
Project: 11174680.00003
Location: Camp Pharsalia
Test Well: PMW-1
Test Date: 6/22/07

AQUIFER DATA

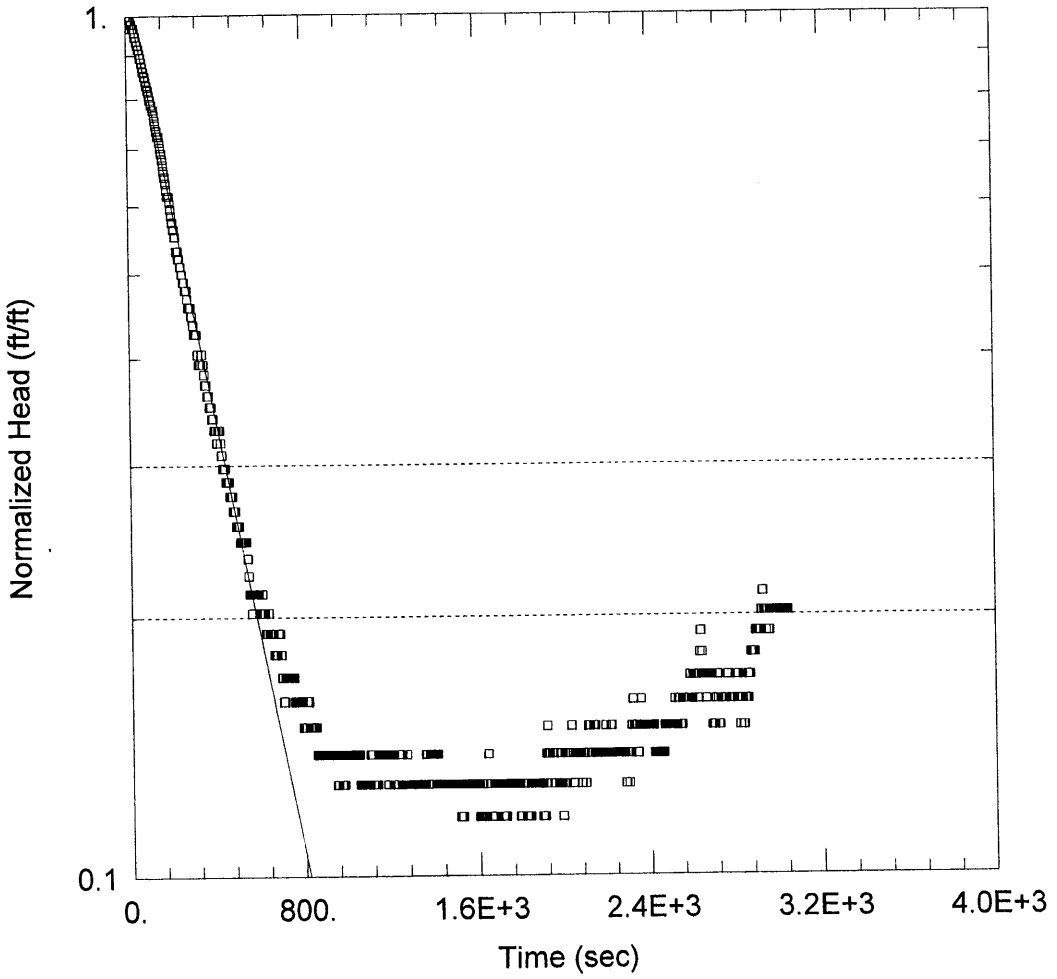
Saturated Thickness: 11.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PMW-1 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 11.93 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.93 ft
Screen Length: 10.5 ft
Wellbore Radius: 0.3441 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.773E-5 cm/sec
y0 = 0.5635 ft



WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\PMW-1 RH.aqt
Date: 07/05/07 Time: 10:21:14

PROJECT INFORMATION

Company: URS Corporation
Project: 11174680.00003
Location: Camp Pharsalia
Test Well: PMW-1
Test Date: 6/22/07

AQUIFER DATA

Saturated Thickness: 11.9 ft Anisotropy Ratio (Kz/Kr): 1.

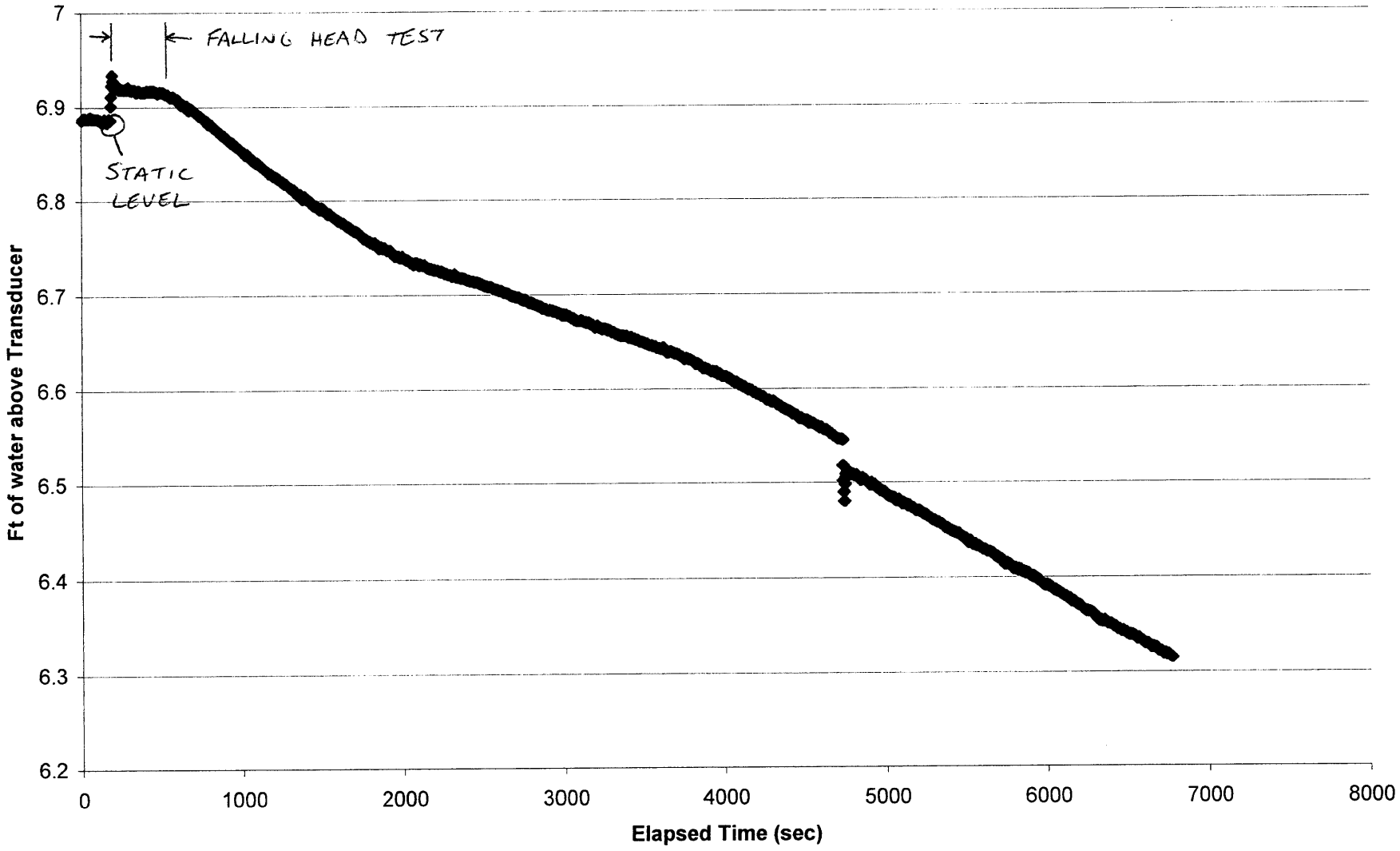
WELL DATA (PMW-1 RH)

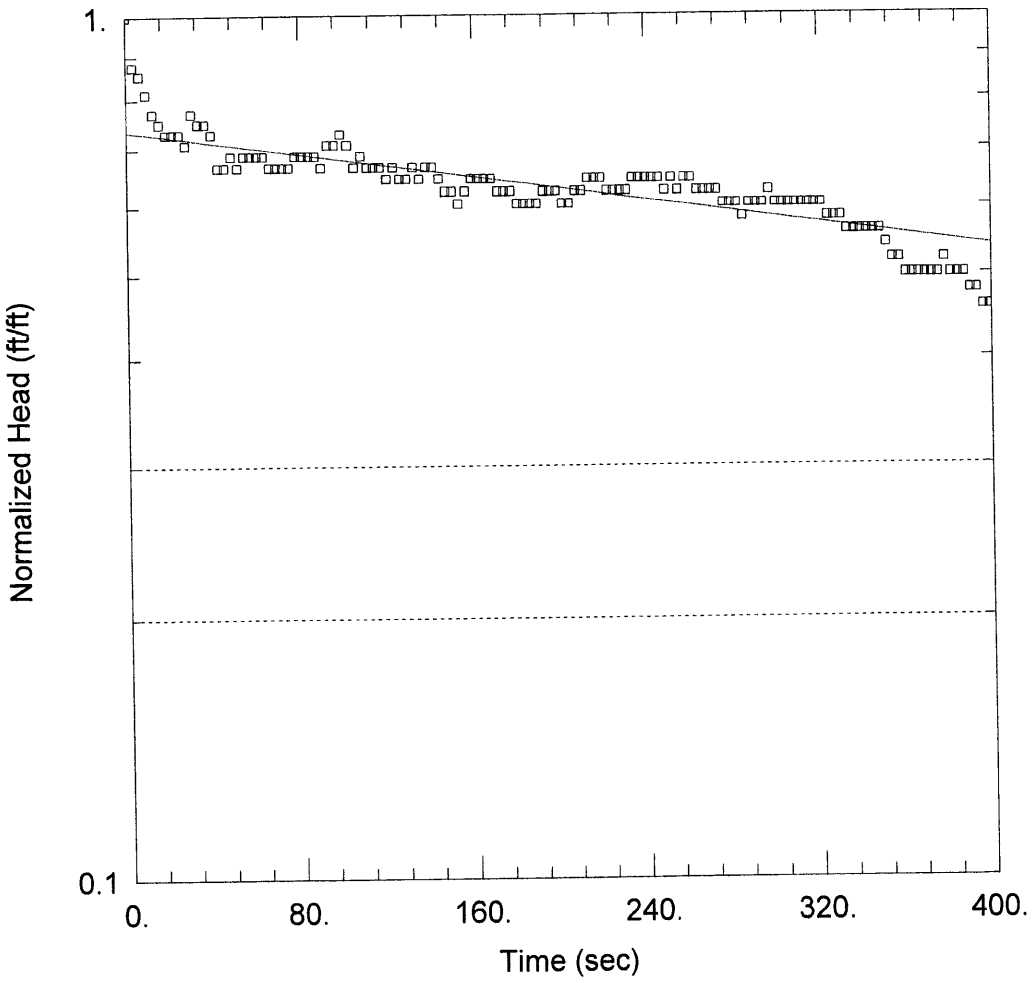
Initial Displacement: 1. ft
Total Well Penetration Depth: 11.93 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.93 ft
Screen Length: 10.5 ft
Wellbore Radius: 0.3441 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.802E-5 cm/sec
y0 = 1.079 ft

Camp Pharsalia- PMW-5 Slug Test





WELL TEST ANALYSIS

Data Set: M:\Georgetown & Pharsalia Slug Tests\Processed Data\PMW-5 FH.aqt
Date: 07/05/07 Time: 10:21:51

PROJECT INFORMATION

Company: URS Corporation
Project: 11174680.00003
Location: Camp Pharsalia
Test Well: PMW-5
Test Date: 6/22/07

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PMW-5 FH)

Initial Displacement: 1. ft
Total Well Penetration Depth: 7.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.5 ft
Screen Length: 8.7 ft
Wellbore Radius: 0.3441 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001272 cm/sec
y0 = 0.7347 ft

APPENDIX F

CALCULATION – DEWATERING RATES DURING EXCAVATION

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

CALCULATION COVER SHEET

Client: NYSDEC Project Name: Camp Georgetown

Project / Calculation Number: 111 74 679

Title: Dewatering Rates During Excavation

Total number of pages (including cover sheet): 20 (19 + cover)

Total number of computer runs: 0

Prepared by: Marek Ostrowski Date: 8/28/07

Checked by: [signature] Date: 9/10/07

Description and Purpose: To estimate gound water extraction rates and volumes required to dewater the excavated areas.

Design bases / references / assumptions: Method of infinite-extent strip aquifer with instanteneous drawdown was used. Saturated thickness 13 feet, hydraulic conductivity $4*10^{-6}$ cm/s to $2*10^{-4}$ cm/s. Storativity 3 to 25%. Dewatering to be accomplish in one, two or three days. Calculated rates and volumes include water flowing into the excavation from the aquifer, as well as water stored in either the excavated soil or the the open excavation pit.

Remarks / conclusions: Total volume of water that would have to be removed per excavation (includes water from storage and inflow) ranges between approximately 1,000 and 500,000 gallons. Extraction rates per excavation range between apeoximately 1 and 300 gpm. These ranges reflect the size and depth of different excavations, as well as assumptions made about the process of dewatering and aquifer parameters.
The estimated range of volumes of water that would have to be removed from all excavations is approximately 40,000 to 1,400,000 gallons.

Calculation Approved by: [signature] 10/9/07
Project Manager / Date

Revision No:	Description of Revisions	Approved by:

Project Manager / Date

MADE BY: MO DATE: 8/28/07
CHECKED BY: DATE: 9/10/07

PROJECT: Camp Georgetown
SUBJECT: Dewatering Rates During Excavation

1. PURPOSE

The purpose of this calculation is to estimate the ground water extraction rates required to dewater excavated areas.

2. METHODOLOGY

It is proposed that soils within several areas at the Camp Georgetown site be excavated and removed. Ground water table at the site has been observed between approximately 2 and 5 feet below ground surface. The anticipated depths of the excavations are between 1 and 12 feet. Therefore, several of the excavations will require dewatering for the purpose of exposing the excavation bottom in order to take confirmatory soil samples.

Terms used in calculations:

A_{excav} - surface area of excavation, [ft^2]
L - length of pit, [ft]
Q - 2-dimensional flow into the excavation from both sides, [ft^2/d]
Q_w - 3-dimensional flow into the excavation from both sides, [ft^3/d]
S - aquifer storativity, [-]
S_0 - drawdown in the pit, [ft]
T - aquifer transmissivity, [ft^2/d]
t - time, [d]
V_{stored} - volume of water stored inside the excavation, [ft^3]
V_{inflow} - volume of water that will flow into the excavation during dewatering period, [ft^3]
θ - time when excavation is maintained in dry condition, [d]

Dewatering can be accomplished in numerous ways. The method that will be used by the contractor is not known at this point. The approach taken in this calculation is to treat each excavation as an open pit. It is assumed that ground water residing in the volume of excavated soil is removed from the pit instantaneously, and then the pit is maintained dry for a given period of time by removing the inflow of ground water reaching the excavation from the surrounding aquifer. The method of extracting water is not specified.

Two sources of water have to be considered: the water stored in the pit, and water flowing into the pit from the aquifer. The volume of stored water is calculated as follows:

$$V_{stored} = A_{excav}\ s_0\ S$$

Time-history of the flow into the pit from the aquifer is approximated as the flow into a trench placed in an infinite aquifer, where the initial level was lowered instantaneously (reference 1, equation 3a):

$$Q = 2\ s_0\ (T\ S\ /\ \pi)^{1/2}\ /\ t^{1/2}$$

$$Q_w = Q\ L = 2\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}\ /\ t^{1/2}$$

The volume of water removed from the excavation during the time when the pit is maintained in dry condition is:

$$V_{inflow} = {}_0\int^{\theta} Q_w(t)\,dt = {}_0\int^{\theta} [2\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}\ /\ t^{1/2}]\,dt$$

$$V_{inflow} = [2\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ {}_0\int^{\theta} [1/t^{1/2}]\,dt$$

$$V_{inflow} = [2\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ [2\ t^{1/2}]_0^{\theta}$$

$$V_{inflow} = [4\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ [\theta^{1/2} - 0^{1/2}]$$

$$V_{inflow} = [4\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ \theta^{1/2}$$

The total volume of water removed is the sum of the stored volume and the inflow volume:

$$V_{total} = V_{stored} + V_{inflow}$$

The average extraction rate as a function of the time period in which the pit is maintained in dry conditions is:

$$Q_{avg} = V_{total}\ /\ \theta$$

This rate includes both the removal of the stored water and the removal of ground water flowing into the excavation during the dewatering period.

3. PARAMETERS

Transmissivity - T

The site is located above till deposits. The top 15 feet of the till, where the excavation will take place, consists of dense silty or clayey material with sand and gravel lenses (reference 2, Section 3.1.2). Below that, the clay till is considered to be generally dry (Section 3.1.3 of reference 2). Water table is found at depths of 2 to 5 feet (reference 2, Section 3.1.4). The thickness of the water-bearing zone is assumed as the distance from the highest water table (2 ft bgs) to the bottom of the sand/gravel lenses (15 ft bgs):

$$H_0 = 15 - 2 = 13 \text{ ft}$$

The area-average hydraulic conductivity of the water-bearing zone is not known. Slug tests performed in six of the site wells indicate values between $4*10^{-6}$ cm/s and $2*10^{-4}$ cm/s (see page 8 of this calculation package, summary of results from the July 5, 2007 analysis of slug tests). The high and low values of transmissivity $T = H_0 K$ are:

$$T_{low} = 13 \text{ ft} * 4*10^{-6} \text{ cm/s} = 13 \text{ ft} * 0.0113 \text{ ft/d} = 0.15 \text{ ft}^2/\text{d}$$

$$T_{low} = 13 \text{ ft} * 2*10^{-4} \text{ cm/s} = 13 \text{ ft} * 0.57 \text{ ft/d} = 7.4 \text{ ft}^2/\text{d}$$

Storativity - S

It is not clear whether the bulk of the flow takes place through the sandy/gravelly ~~silty~~ lenses, or through the silty matrix. Therefore, the nature of the system - confined or unconfined - is difficult to determine. Conservatively, it is assumed that the system is unconfined, and the flow takes place through the entire saturated thickness. The release of water from storage is governed by the specific yield. Specific yield of silt and clay varies between approximately 3% and 25% (reference 3, Figure 5-4).

$$S_{low} = 0.03$$

$$S_{high} = 0.25$$

Drawdown inside excavation - s_0

Water level has been observed between approximately 2 and 5 ft below ground (reference 2, Section 3.1.4). Conservatively, use the 2-ft depth for this calculation. Depths of excavation areas are from Figure 2 of reference 4. It is assumed that the water table following dewatering is to be maintained at one foot below the excavation bottom. From that:

$$S_0 = (\text{Depth of Excavation} + 1) - 2$$

Area	Depth of Excav. [ft] [Depth]	Drawdown [ft] [s_0]
A	10.0	9.0
B	12.0	11.0
C	1.0	NA
D	10.0	9.0
E	5.0	4.0
F	10.0	9.0
G	10.0	9.0
H	1.0	NA
I	5.0	4.0
J	5.0	4.0

NA - Bottom of excavation is above water table. Dewatering is not required. These areas are not included in the calculation.

Size of excavation - A_{excav}, L

Excavation areas are taken from Figure 2 of reference 4. On the figure, both volumes (in cubic yards) and depths of excavations are shown. Lengths of excavation are equal to half of the excavation perimeter (this is because the formula for the flow rate already accounts for the flow from both sides of the trench).

$$A_{excav} = (\text{Volume in CY})*27 / \text{Depth}$$

Area	Depth [ft]	Volume [cy]	A_{excav} [ft^2]	L [ft]
A	10.0	1,050	2,835	110
B	12.0	1,340	3,015	110
D	10.0	2,290	6,183	170
E	5.0	350	1,890	90
F	10.0	700	1,890	90
G	10.0	300	810	50
I	5.0	40	216	140
J	5.0	90	486	230

Dewatering time period - θ

Assume that the excavation has to be dewatered in one to three days. Calculations of the total extraction rate will be performed for dewatering times of 1, 2 and 3 days.

θ = 1, 2 and 3 d

4. CALCULATIONS AND RESULTS

Summary of parameters:

T = 0.13 to 7.8 ft^2/d

S = 0.03 to 0.25

θ = 1, 2 and 3 d

Area	s_0 [ft]	A_{excav} [ft^2]	L [ft]
A	9	2,835	110
B	11	3,015	110
D	9	6,183	170
E	4	1,890	90
F	9	1,890	90
G	9	810	50
I	4	216	140
J	4	486	230

For each excavation, two cases were considered. The case that will produce the lowest extraction rate is the case of the lowest transmissivity and lowest specific yield. The highest extraction rate will be produced by the highest transmissivity and highest specific yield. In addition, for the high flow case it is assumed that the pit is empty of soil and filled with water, such as in the case where the finished excavation was allowed to fill with water. This corresponds to the case where S = 1 in the formula for V_{stored} (note: not in the formula for V_{flow}).

Case 1 - low flow

$T = 0.13\ ft^2/d$
$S = 0.03$
$V_{stored} = A_{excav}\ s_0\ S$

Case 2 - high flow

$T = 7.8\ ft^2/d$
$S = 0.25$
$V_{stored} = A_{excav}\ s_0$

Calculations were performed in a spreadsheet table (see page 9 of this calculation package for Case 1, and page 10 for Case 2). Estimated flow rates are summarized below. These are time-averaged low and high flow rates for different dewatering periods, rounded to the nearest 1 gpm, with flows of less than 1 gpm rounded to 1 gpm.

Area	Flow rate [in gpm] for dewatering period of: 1 day	2 days	3 days
A	5 - 148	3 - 77	2 - 53
B	6 - 192	3 - 100	2 - 69
D	10 - 313	5 - 162	4 - 110
E	2 - 45	1 - 24	1 - 16
F	3 - 101	2 - 53	1 - 37
G	2 - 45	1 - 24	1 - 17
H	excavation above water table		
I	1 - 13	1 - 9	1 - 7
J	1 - 25	1 - 15	1 - 12

These flows should be interpreted as extraction rates required to lower the water table from its original level to the bottom of the excavation in 1, 2 or 3 days. Estimated flows are in the range of approximately 1 to 300 gpm per excavation.

Total volume of water to be removed from an excavation ranges between approximately 800 gallons (Case 1, Area I, 1 day) and 500,000 gallons (Case 2, Area D, 3 days).

These ranges reflect the size and depth of each excavation, as well as assumptions made about the process of dewatering and the parameters of the aquifer.

The total volume of water to be removed from all excavations is estimated at between approximately 40,000 gallons (Case 1, 1 day) and 1,400,000 gallons (Case 2, 3 days).

5. REFERENCES

1. Non-Steady Type Curves for Strip Aquifers with Constant Drawdown
H. Onder
Journal of Irrigation and Drainage Engineering, 1994

2. Remedial Investigation Report for the Camp Georgetown Site
Shaw Environmental and Infrastructure Engineering of New York, P.C., April 8, 2003, revision February 23, 2004

3. Hydraulics of Groundwater
J. Bear
McGraw-Hill, 1979

4. Remedial Design, Camp Georgetown Site
URS, April 2006

Camp Georgetown and Camp Pharsalia, NY Slug Tests
Summary of Results

Well ID	Hydraulic Conductivity [cm/sec]					
	FH	RH			N(**)	Mean (***)
Camp Georgetown Monitoring Wells						
MW-02	1.57E-05	(*)			1	1.57E-05
MW-04	3.39E-05	4.81E-06			2	1.94E-05
MW-05	(*)	2.12E-04			1	2.12E-04
MW-06	3.03E-04	3.20E-05			2	1.67E-04
MW-07	7.91E-05	7.30E-05			2	7.60E-05
MW-08	3.96E-06	3.96E-06			2	3.96E-06
Camp Pharsalia Monitoring Wells						
PMW-1	5.77E-05	7.80E-05			2	6.79E-05
PMW-5	1.27E-04	-			1	1.27E-04

Notes:

FH - Falling Head Test
RH - Rising Head Test
(*) - data not useable (see data usability sheet)
(**) - number of valid tests
(***) - geometric mean

SUMMARY OF SLUG TEST RESULTS

From CMS Calculation

"CAMP GEORGETOWN / CAMP PHARSALIA 2007 SLUG TESTS"

July 2, 2007

Spreadsheet claculates time-averaged extraction rate reqired to lower water level inside an excavation of area "A_{excav}" by "s_0", and maintain it there during time period "θ". The average rate is asumed to be equal to the sum of the volume of stored water removed initially from the excavation "V_{stored}" and volume of water during the dewatering period "V_{flow}", divided by the length of the dewatering period "θ". Note: removal of stored water is conducted at the same time as the excavation - water is stored in soil porosity.

Flow/volume from inflow:

$$V_{stored} = A_{excav}\ s_0\ S$$

$$V_{inflow} = [4\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ \theta^{1/2}$$

$$V_{total} = V_{stored} + V_{inflow}$$

$$Q_{avg} = V_{total}\ /\ \theta$$

From H.Onder, Non-Steady Flow Type Curves for Strip Aquifers with Constant Drawdown, Journal of Irrigation and Drainage Engineering, Vol. 120, No. 4, July/August 1994

Aquifer:

thickness	H_0 =	13 ft
conductivity	K =	4E-06 cm/s
transmissivity	T =	0.15 ft²/d
storativity	S =	0.03

Dewatering times: θ = 1 2 3 d

Case 1
Low Flow

Calculate required flow rate:

Area	Surface Area A_{excav}	Length L	Drawdown s_0	Storage Volume V_{stored}	θ[d]=	Inflow Volume 1 V_{inflow}	2 V_{inflow}	3 V_{inflow}	θ[d]=	Total Volume 1 V_{total}	2 V_{total}	3 V_{total}
	[ft²]	[ft]	[ft]	[ft³]		[ft³]	[ft³]	[ft³]		[ft³]	[ft³]	[ft³]
A	2,835	110	9	765		149	210	257		914	975	1,023
B	3,015	110	11	995		182	257	314		1,176	1,252	1,309
D	6,183	170	9	1,669		230	325	398		1,899	1,994	2,067
E	1,890	90	4	227		54	76	94		281	303	320
F	1,890	90	9	510		122	172	210		632	682	721
G	810	50	9	219		68	95	117		286	314	336
I	216	140	4	26		84	119	146		110	145	171
J	486	230	4	58		138	195	239		196	254	297
Sum for all excavations =				4,470		1,025	1,449	1,775		5,495	5,919	6,245

~40,000 gal

Area	Surface Area A_{excav}	Length L	Drawdown s_0	θ[d]=	Time-Averaged Extraction Rate 1 Q_{avg}	2 Q_{avg}	3 Q_{avg}	θ[d]=	Time-Averaged Extraction Rate 1 Q_{avg}	2 Q_{avg}	3 Q_{avg}
	[ft²]	[ft]	[ft]		[ft³/d]	[ft³/d]	[ft³/d]		[gpm]	[gpm]	[gpm]
A	2,835	110	9		914	488	341		4.7	2.5	1.8
B	3,015	110	11		1,176	626	436		6.1	3.3	2.3
D	6,183	170	9		1,899	997	689		9.9	5.2	3.6
E	1,890	90	4		281	152	107		1.5	0.8	0.6
F	1,890	90	9		632	341	240		3.3	1.8	1.2
G	810	50	9		286	157	112		1.5	0.8	0.6
I	216	140	4		110	72	57		0.6	0.4	0.3
J	486	230	4		196	127	99		1.0	0.7	0.5
Sum for all excavations =					5,495	2,959	2,082		29	15	11

Spreadsheet claculates time-averaged extraction rate reqired to lower water level inside an excavation of area "A_{excav}" by "s_0", and maintain it there during time period "θ". The average rate is asumed to be equal to the sum of the volume of stored water removed initially from the excavation "V_{stored}" and volume of water during the dewatering period "V_{flow}", divided by the length of the dewatering period "θ". Note: removal of stored water is conducted after completeing the excavation - water is stored in open pit.

Flow/volume from inflow:

$$V_{stored} = A_{excav}\ s_0$$

$$V_{inflow} = [4\ s_0\ L\ (T\ S\ /\ \pi)^{1/2}]\ \theta^{1/2}$$

$$V_{total} = V_{stored} + V_{inflow}$$

$$Q_{avg} = V_{total}\ /\ \theta$$

From H.Onder, Non-Steady Flow Type Curves for Strip Aquifers with Constant Drawdown, Journal of Irrigation and Drainage Engineering, Vol. 120, No. 4, July/August 1994

Aquifer:

thickness	H_0 =	13 ft
conductivity	K =	2E-04 cm/s
transmissivity	T =	7.4 ft²/d
storativity	S =	0.25

Case 2
High Flow

Dewatering times: θ = 1 2 3 d

Calculate required flow rate:

Area	Surface Area A_{excav}	Length L	Drawd. s_0	Storage Volume V_{stored}	Inflow Volume θ[d] =	1 V_{inflow}	2 V_{inflow}	3 V_{inflow}	Total Volume θ[d] =	1 V_{total}	2 V_{total}	3 V_{total}
	[ft²]	[ft]	[ft]	[ft³]		[ft³]	[ft³]	[ft³]		[ft³]	[ft³]	[ft³]
A	2,835	110	9	25,515		3,032	4,288	5,251		28,547	29,803	30,766
B	3,015	110	11	33,165		3,706	5,240	6,418		36,871	38,405	39,583
D	6,183	170	9	55,647		4,686	6,626	8,116		60,333	62,273	63,763
E	1,890	90	4	7,560		1,102	1,559	1,910		8,662	9,119	9,470
F	1,890	90	9	17,010		2,481	3,508	4,296		19,491	20,518	21,306
G	810	50	9	7,290		1,378	1,949	2,387		8,668	9,239	9,677
I	216	140	4	864		1,715	2,425	2,970		2,579	3,289	3,834
J	486	230	4	1,944		2,817	3,984	4,880		4,761	5,928	6,824
Sum for all excavations =				148,995		20,916	29,580	36,228		169,911	178,575	185,223

~ 1,400,000 gal

Area	Surface Area A_{excav}	Length L	Drawd. s_0	Time-Averaged Extraction Rate θ[d] =	1 Q_{avg}	2 Q_{avg}	3 Q_{avg}	Time-Averaged Extraction Rate θ[d] =	1 Q_{avg}	2 Q_{avg}	3 Q_{avg}
	[ft²]	[ft]	[ft]		[ft³/d]	[ft³/d]	[ft³/d]		[gpm]	[gpm]	[gpm]
A	2,835	110	9		28,547	14,901	10,255		148.3	77.4	53.3
B	3,015	110	11		36,871	19,203	13,194		191.5	99.8	68.5
D	6,183	170	9		60,333	31,137	21,254		313.4	161.8	110.4
E	1,890	90	4		8,662	4,560	3,157		45.0	23.7	16.4
F	1,890	90	9		19,491	10,259	7,102		101.3	53.3	36.9
G	810	50	9		8,668	4,619	3,226		45.0	24.0	16.8
I	216	140	4		2,579	1,645	1,278		13.4	8.5	6.6
J	486	230	4		4,761	2,964	2,275		24.7	15.4	11.8
Sum for all excavations =					169,911	89,288	61,741		883	464	321

NON-STEADY-FLOW TYPE CURVES FOR STRIP AQUIFERS WITH CONSTANT DRAWDOWN

By Halil Onder[1]

ABSTRACT: A type-curve method to determine aquifer parameters from a constant-drawdown test at a drain in a finite strip aquifer is described. An available solution in the form of complementary error functions to one-dimensional, nonsteady flow toward a drain, under constant drawdown condition in a strip aquifer bounded on the other side by an impervious formation, is used to define a drain function. Values of the drain function are calculated by using a polynomial approximation for the complementary error function and are tabulated, and a corresponding family of type curves is constructed for selected values of dimensionless distance along the width of the strip aquifer. The method is demonstrated through an application. The proposed match-point procedure may be used to determine the aquifer parameters from observed drawdown values in an observation well in the strip aquifer and discharge data measured in the drain during constant drawdown canal pumping tests.

Reference 1

INTRODUCTION

Determination of aquifer parameters from observed water levels by type-curve matching methods is the most commonly used technique for aquifer identification. Two drain functions with associated type curves, for one-dimensional (1D), nonsteady flow in a semiinfinite nonleaky aquifer under constant drawdown and constant discharge conditions, respectively, are described by Lohman (1972). Solutions and type curves for leaky semiinfinite aquifers under similar conditions are given by Vandenberg (1977a,b; 1978) and by Motz (1990a,b; 1991). Other works involving type-curve matching methods for 1D flow include Gustafson (1977), Sen (1986), and Motz (1992).

Rorabaugh (1960) used water levels in estimating aquifer constants in a finite aquifer. Although he presented dimensionless graphs for drawdowns, he did not elaborate his analysis to develop a type-curve matching technique. Using an available solution for 1D, nonsteady flow towards a drain, under constant drawdown condition in a strip aquifer, a drain function may be defined and a corresponding family of type curves may be constructed.

THEORETICAL BACKGROUND

One-dimensional (1D) nonsteady horizontal flow toward a drain under step drawdown conditions from a strip aquifer is shown in Fig. 1. The aquifer is homogeneous, isotropic, and of finite areal extent (bounded on one side by the drain and by an impermeable boundary on the other). The drain completely penetrates the aquifer. The aquifer is bound above and below by impermeable formations.

The solution to this problem is available from the analogous problem in heat flow [Carslaw and Jaeger (1978); see page 97, equation (9)] and it has

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Note. Discussion open until January 1, 1995. To extend the closing date one month, a written request must be filed with the ASCE Manager of Journals. The manuscript for this paper was submitted for review and possible publication on April 5, 1993. This paper is part of the ***Journal of Irrigation and Drainage Engineering***, Vol. 120, No. 4, July/August, 1994. ©ASCE, ISSN 0733-9437/94/0004-0732/$2.00 + $.25 per page. Paper No. 5935.

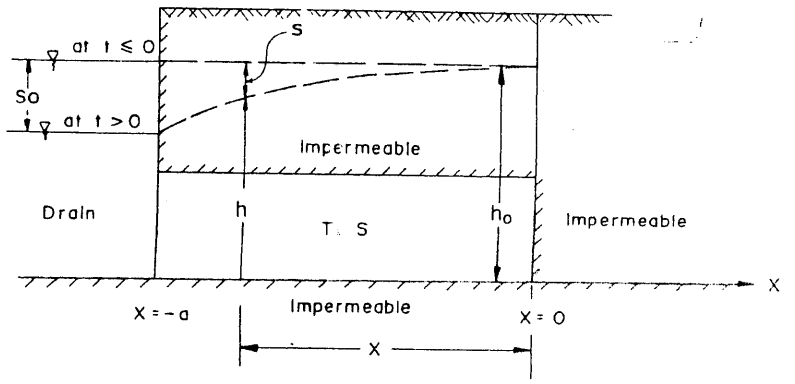

FIG. 1. 1D Flow in Finite Aquifer with Constant Drawdown in Drain

been used in the analysis of ground-water flow (Pinder et al. 1969). It may be written as

$$s = s_0 \sum_{n=0}^{\infty} (-1)^n \left[\operatorname{erfc} \frac{(2n+1)a + x}{2\sqrt{\nu t}} + \operatorname{erfc} \frac{(2n+1)a - x}{2\sqrt{\nu t}} \right] \quad (1)$$

where s = draw down; s_0 = constant draw down at $x = -a$; x = distance from the drain; t = time; $\nu = T/S$ = hydraulic diffusivity in which T = transmissivity; S = storage coefficient; a = width of finite strip aquifer along x axis; n = a positive integer; and erfc( ) = complementary error function.

The time dependent discharge Q of the aquifer from both sides of the drain, per unit length, resulting from a step drawdown in the stage, at $x = -a$, is [Carslaw and Jaeger (1978); see page 97, equations 12 and 13)]

$$Q = \frac{4Ts_0}{a} \sum_{n=0}^{\infty} \exp\left[-\frac{(2n+1)^2 \pi^2 \nu t}{4a^2} \right] \quad (2a)$$

or

$$Q = \frac{2Ts_0}{\sqrt{\pi \nu t}} \left[1 + 2 \sum_{n=1}^{\infty} (-1)^n e^{-(n^2 a^2/\nu t)} \right] \quad (2b)$$

For very small values of time, the exponentials in (2b) may be replaced by zero, then it becomes

$$Q = \frac{2Ts_0}{\sqrt{\pi \nu t}} = \frac{2s_0}{\sqrt{\pi t}} \sqrt{TS} \quad (3a)$$

Obviously, when the time is small, such that the flow behavior in the aquifer has not been affected by the no-flow boundary at $x = 0$ yet; the discharge formula is the same as the one for the semiinfinite aquifer case [see, for example, Lohman (1972); page 43, equation (120); and Rorabaugh (1964); equation 4]. Eq. (2a), when t is sufficiently large, may be approximated by taking only the first term in the series (Rorabaugh 1964)

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REMEDIAL INVESTIGATION REPORT FOR THE CAMP GEORGETOWN SITE GEORGETOWN, NEW YORK

NYSDEC Site No.: 7-27-010

April 8, 2003
Revision: February 23, 2004

Submitted to:

Mr. Brad Brown
New York State Department of Environmental Conservation
Bureau of Eastern Remedial Action
625 Broadway
Albany, New York 12233-7015

Reference 2

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Reviewed By:

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Senior Project Manager

3.0 INVESTIGATION RESULTS

The results from the RI are presented in the following sections. A description of the Site's physical characteristics, the nature and extent of chemical impacts, and the results from the exposure assessments are provided.

3.1 Physical Characteristics

3.1.1 Regional Geology

As summarized in the NYSDEC, ("*Preliminary Investigation Report, Camp Georgetown*"), May 1999, the southern half of Madison County is located on a plateau known as the Appalachian Uplands. The plateau is mature and eroded, and is dissected by a series of valleys that are several hundred feet deep. The major valleys on the plateau have a north south orientation. Large, rounded bedrock hills and ridges characterize the high plateau in the extreme southern part of the county near the location of Camp Georgetown. The nearly level hilltops are at a similar elevation, reflecting the nearly horizontal character of the underlying bedrock. The plateau uplands have a rugged, rolling appearance because of stream dissection and deepening of the valleys by glacial scour. The rounded shoulders of the hills and the steep lower valley sides also are indications of glacial modification.

Regional bedrock consists of Upper Devonian Formations which include the Tully Limestone, Ithaca Siltstone and Sandstone, and Geneseo Shales. The bedrock lies nearly flat, except that it has a slight regional dip to the south of about 50 feet per mile. (US Department of Agriculture, Soil Conservation Service, Madison County, New York, March 1981).

3.1.2 Site Geology

The overburden geology was investigated during the test pit and monitoring well investigations. The top foot of overburden consists of weathered, broken gray shale (i.e., soil and unconsolidated rock fragments) that size range in size from gravel to boulders mixed with grey silt and sand or brown sandy topsoil. This overburden is considered to be non-native fill material most likely originating from a shale quarry located northwest of the Site. Underlying the fill material is glacial lodgment till consisting of a silty till with thin sand lenses overlying a clay till with thin sand lenses. Both till layers are very dense and vary in color across the Site from grey, tan and brown. Glacial till was observed to a depth of approximately 46 feet bgs (which is the

maximum depth of drilling during monitoring well installation during PI activities). The till is very dense as evidenced by high blow counts and difficult drilling conditions. Observations during drilling confirm that the upper 15 feet of the till unit contains numerous thin lenses of more permeable sands and fine gravel that may or may not be interconnected.

According to the PIR, a drinking water well was installed in 1991 north of Crumb Hill Road near the Department of Correctional Services softball field. The well was drilled to a total depth of 400 feet and bedrock was encountered at 220 feet bgs. Stratigraphy was not logged during installation of this well. **Figure 4** depicts geologic cross sections of the Site.

3.1.3 Regional Hydrogeology

The Camp Georgetown property is located approximately 4 miles from the Otselic River, which is the closest regional discharge zone for Mann Brook. Regionally, groundwater would be anticipated to flow toward the Otselic River. Shallow groundwater in the area of the Site is typically found in coarser-grained glacially-derived sediments or as perched water overlying deposits of fine-grained sediments of lower permeability.

3.1.4 Site Specific Hydrogeology

Depth to groundwater across the Site ranged between 2 to 5 feet bgs during the groundwater sampling events. Gauging data indicates that groundwater flow appears to be in a southwesterly direction, generally following topography and eventually discharging into Mann Brook.

Recharge of the water table is likely provided by precipitation infiltrating areas of the Site. Shallow groundwater accumulates in the more permeable sandy lenses found within the till and then likely disperses slowly into the regional groundwater flow regime. Groundwater recovery rates witnessed during well development and purging activities indicated that the hydraulic conductivity for the till unit appeared to be very low.

3.2 Nature and Extent of Contamination

This section presents the analytical results from the surface, sediment, seep, and subsurface soils, biota samples and groundwater samples collected at the Site. For screening and discussion purposes only, these results are compared to published New York State standards and/or screening criteria.

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Hydraulics of Groundwater

from the volume of pore space between the two positions of the phreatic surface. The storativity of a phreatic aquifer is, therefore, sometimes referred to as *specific yield*, S_y; it gives the yield of an aquifer per unit area and unit drop of the water table (see further discussion in Sec. 6-1).

Recalling that actually the water table is an approximate concept, we understand that water is actually being drained from the entire column of soil up to the ground surface. Bear (1972, p. 485) shows that when the soil is homogeneous and the fluctuating water table is sufficiently deep, the above definition for specific yield still holds (see Sec. 6-1).

One should be careful not to identify the specific yield with the porosity of a phreatic aquifer. As water is being drained from the interstices of the soil, the drainage is never a complete one. A certain amount of water is retained in the soil against gravity by capillary forces. After drainage has stopped, the volume of water retained in an aquifer per unit (horizontal) area and unit drop of the water table is called *specific retention*, S_r. Thus

$$S_y + S_r = n \tag{5-12}$$

For this reason S_y ($<n$) is sometimes called *effective porosity*. Here, again, one should note that we have been referring to the approximate concept of a water table. However, for a homogeneous soil and a sufficiently deep water table, the above definition for S_r holds (see Sec. 6-1).

Figure 5-4 shows the relationships between S_y, S_r, and particle size.

When drainage occurs, it takes time for the water to flow, partly under unsaturated flow conditions, out of the soil volume between two positions of a water table, at t and at $t + \Delta t$. This is especially true if the lowering of the water table is rapid. Under such conditions, the specific yield becomes time dependent, gradually approaching its ultimate value (Fig. 5-5). When the water level is rising or falling slowly, the changes in moisture distribution have time to adjust continuously and the time lag vanishes. This phenomenon of time dependency of the

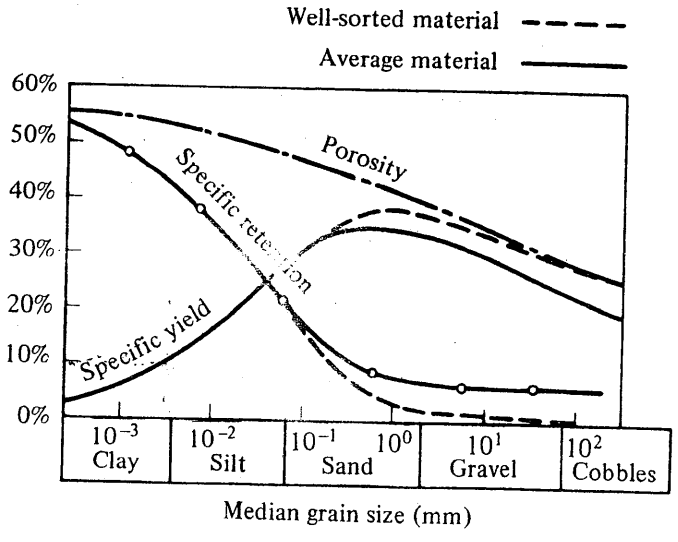

Figure 5-4 Relationship between specific yield and grain size *(from Conkling et. al., 1934, as modified by Davis and DeWiest, 1966).*

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PROJECT MANAGEMENT WORK PLAN/BUDGET ESTIMATE

For:

REMEDIAL DESIGN PROJECT
CAMP GEORGETOWN SITE
SITE #7-27-010

TOWN OF GEORGETOWN, NEW YORK

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
WORK ASSIGNMENT D004440-2

Prepared by:

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77 GOODELL STREET
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Reference 4

APRIL 2006

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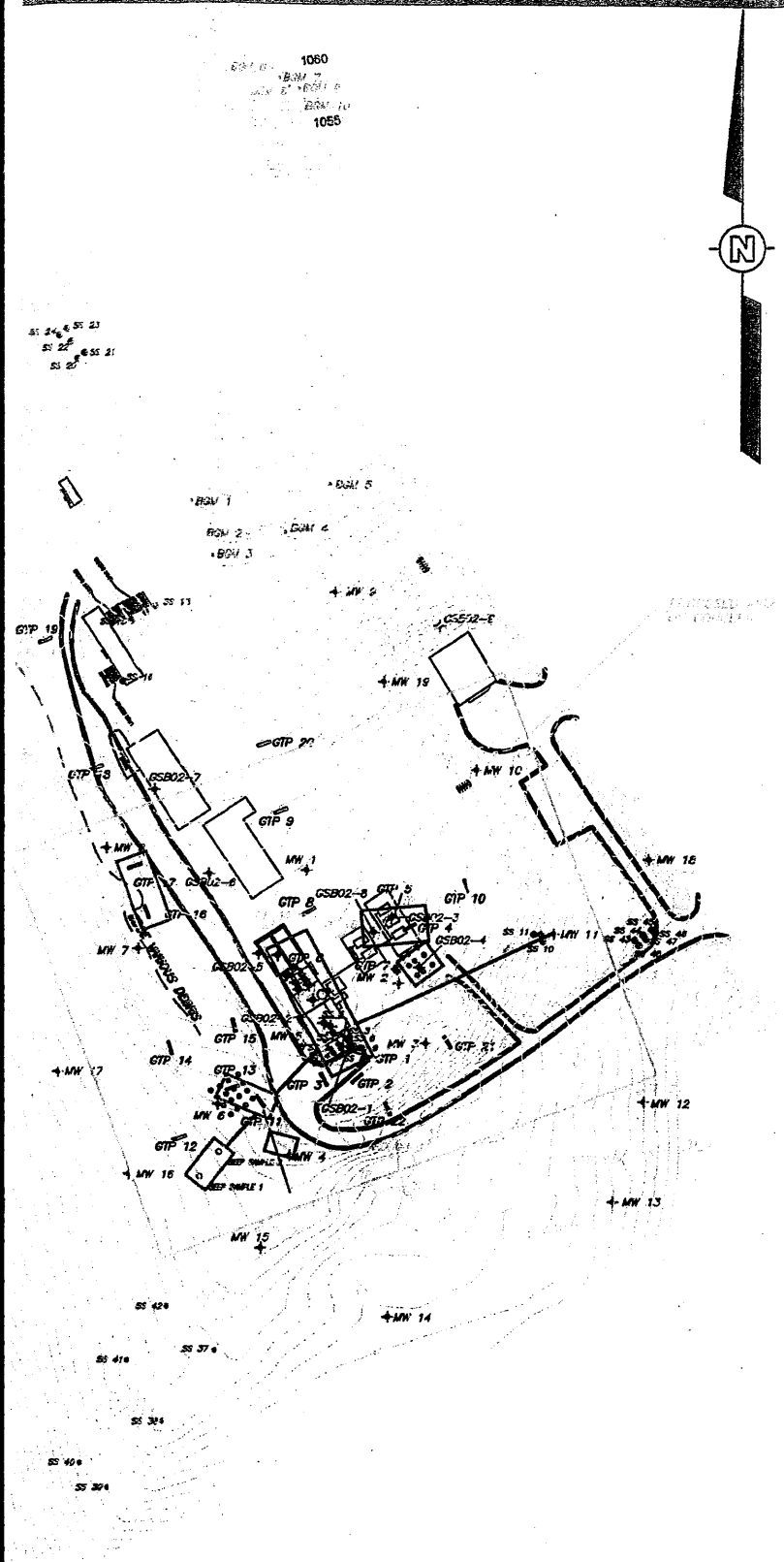
NOTE:

HORIZONTAL AND VERTICAL DATUMS ARE BASED ON A PREVIOUS SURVEY DONE BY MODI ENGINEERS AND LAND SURVEYORS, AND ARE ASSUMED.



LEGEND:

- WATER SUPPLY WELL
- HISTORIC SURFACE SOIL SAMPLE
- HISTORIC SOIL BORING
- SOIL BORING
- SURFACE SOIL SAMPLE
- MONITORING WELL
- SEEP SAMPLE
- SURFACE SOIL BACKGROUND SAMPLE
- TEST PIT SAMPLE
- HISTORIC TEST PIT SAMPLE
- SEDIMENT SAMPLE
- 1 TREATMENT BUILDING
- 2 STORAGE SHED
- 3 DRYING SHED #1
- 4 DRYING SHED #2
- 5 POST PEELER AND ROLLWAYS
- 6 METEOROLOGY STATION
- 7 GARAGE / NYSDEC OFFICE
- PROPOSED AREAS OF EXCAVATION
- PROPOSED AREA OF CONCERN

Figure continues on next page

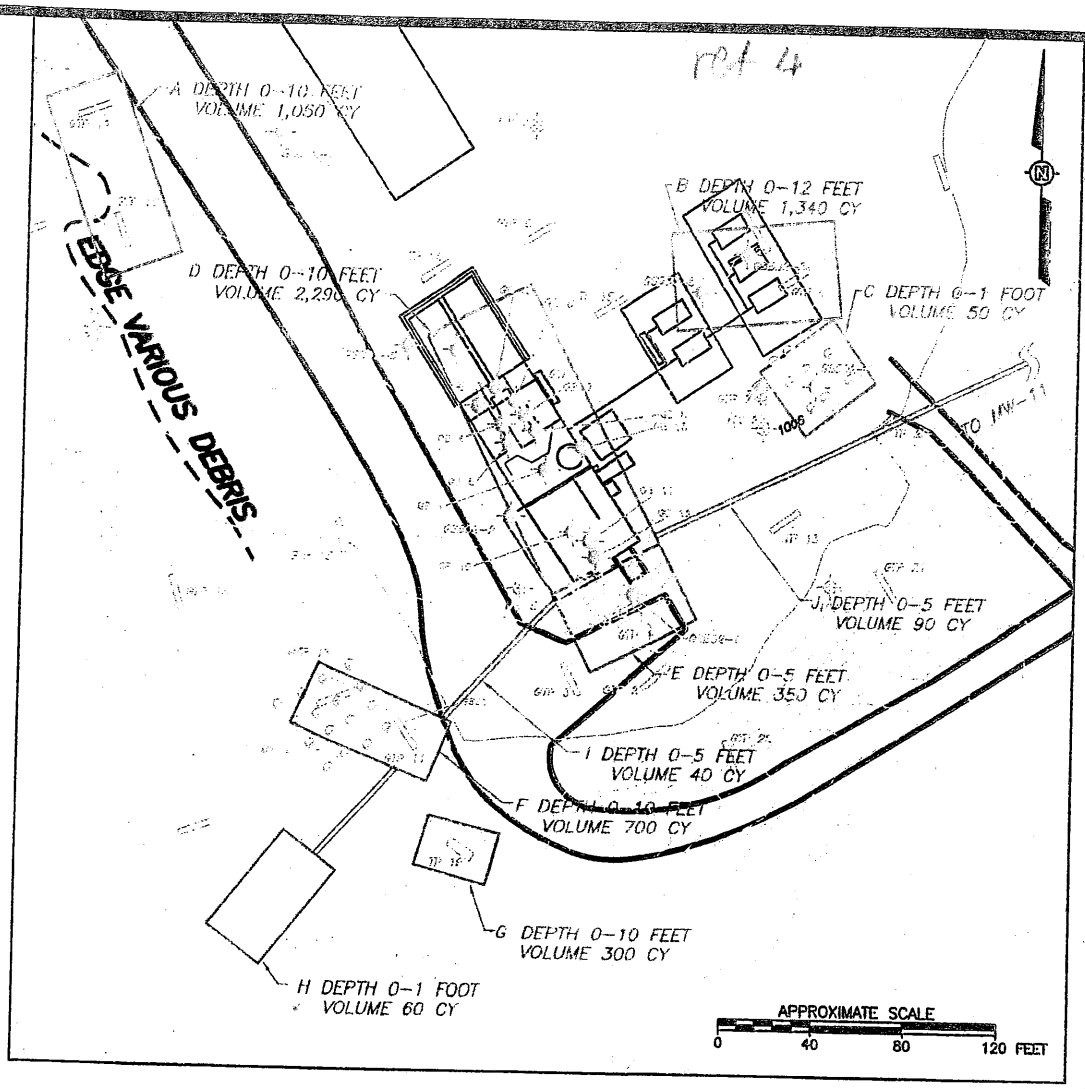
APPROXIMATE SCALE

0 100 200 300 FEET

CAMP GEORGETOWN
SITE PLAN

URS

FIGURE 2



ENLARGEMENT OF A PORTION OF THE PROPOSED AREA OF CONCERN

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