



April 20, 2015

Mr. Eugene W. Melnyk, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Subject: **Area D Site Management Plan
Former Buffalo Color Corporation Site – Area D
Buffalo, New York
NYSDEC Site # C915012**

Dear Mr. Melnyk:

Enclosed please find a finalized Site Management Plan (SMP) for Area D of the former Buffalo Color Corporation Site located in Buffalo, New York. A hard copy and a copy on disc are being provided. The SMP has been finalized based on comments received from you on March 27, 2015 and March 31, 2015 via electronic mail.

Should you have any questions, please do not hesitate to contact me at 412.279.6661 or dan.forlastro@amecfw.com.

Very truly yours,
Amec Foster Wheeler Environment & Infrastructure, Inc.

A handwritten signature in blue ink, appearing to read "Daniel Forlastro", written over a faint, larger version of the same signature.

Daniel Forlastro, P.E.

enclosure

cc: J. Yensan (OSC, w/ enclosure [disc])
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FORMER BUFFALO COLOR CORPORATION SITE - AREA D

ERIE COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 9-15-012

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

APRIL 2015

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SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program for Area D of the former Buffalo Color Corporation Site (hereinafter referred to as the “site”) located in Buffalo, Erie County, New York. The site was remediated in accordance with a June 28, 1993 Order on Consent, Index B9-0014-84-01RD, between the New York State Department of Environmental Conservation (NYSDEC) and AlliedSignal Inc. (AlliedSignal). Honeywell, as successor to AlliedSignal, retains responsibility for compliance with the requirements of the Order on Consent.

1.1.1 General

In accordance with the requirements of the Order on Consent and NYSDEC-approved Work Plans, AlliedSignal investigated and remediated contaminated media at the approximate 19-acre site. Figure 1 provides a site location map and Figure 2 shows the Area D Site Plan. Figures 3 and 4 show the locations of the groundwater treatment facility on Area A adjacent to Area D and the treatment facility discharge piping on Areas A and B. The boundaries of the site are more fully described in the metes and bounds site description, which is part of the Environmental Easement included as Appendix A.

Per the NYSDEC-approved Remedial Action Work Plan (Remedial Design/Remedial Action Work Plan, Remcor, April 1994), contamination remained in the subsurface at this site at the completion of site remedial work, which is hereafter referred to as “remaining contamination.” This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports

associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by MACTEC Engineering and Consulting, P.C., (MACTEC) on behalf of Honeywell and current property owner South Buffalo Development LLC in accordance with the RAWP and the requirements of NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated November 2009, and the guidelines provided by NYSDEC. This SMP addresses the means and methods for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site.

1.1.2 Purpose

Per the RAWP, certain contamination remains on-site after completion of the remedial action. As a result, Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Erie County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the means and methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for remaining contamination. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring, and; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems including an Operation and Maintenance Manual for the groundwater treatment system. The monitoring and operation and maintenance activities included in this SMP incorporate applicable portions of the Operation, Maintenance and Monitoring (OM&M) Plan (Parsons Engineering Science, 2000) for the site that was prepared in accordance with the RAWP and has been implemented since completion of the remedial action in 1998. For reference and incorporation into the SMP, the current OM&M Plan for the Areas A and D groundwater extraction and treatment system (MACTEC, 2014) is attached to this SMP as Appendix B.

This SMP also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the release of liability.

Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375, and the June 28, 1993 Order on Consent, Index B9-0014-84-01RD, and any person who does not comply may be subject to applicable penalties.

1.1.3 Revisions

Revisions to this SMP must be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The site is located in the City of Buffalo, County of Erie, New York and is identified as being all of tax parcel 122.16-1-10, Lot 178 all as shown on the tax maps of the County of Erie. The site is an approximate 19-acre area bounded by the Buffalo River to the east, south, and southwest; a railroad yard to the north; and an abandoned railroad right-of-way (ROW) to the northeast (see Figure 2).

There are no above grade structures present on the Area D site. The site is part of the former Buffalo Color Corporation facility, which also included Area A located beyond the abandoned railroad ROW to the northeast (Figure 2). The groundwater treatment building for recovered site groundwater is located on Area A. The surrounding area consists of industrial, commercial, and residential properties. The boundaries of the site are more fully described in Appendix A, Environmental Easement.

1.2.2 Site History

Originally founded as the Schoellkopf Aniline and Dye Company in 1879, the plant produced dyes and organic chemicals based primarily on aniline and various aniline derivatives. The company was reorganized into the National Aniline Chemical Company in 1916. It became one of the five companies that merged to create Allied Chemical Corporation (Allied Chemical) in 1920. The existing dye-making facility and the right to produce certain dyes and intermediates were sold by Allied Chemical to Buffalo Color Corporation on July 1, 1977. At the time of the sale, the plant was divided into eight areas designated with the letters A, B, C, D, E, F, G, and H. Buffalo Color Corporation purchased the manufacturing areas A through E, while Allied Chemical retained an acid plant (which was subsequently sold to PVS Chemical in 1981), the research and development facility on Area F, and the parking lots on Areas G (Elk Street) and H (Smith Street).

Environmental investigation of the Area D site began in the 1980s. In accordance with the Order on Consent, Area D finalization of the remedial investigation occurred

from 1993 through 1996 and remediation occurred from 1996 through 1998. The investigation activities are documented in Section 1.3 below. The remedial action is documented below in Section 1.4. Operation, maintenance and monitoring activities have been conducted in accordance with a NYSDEC-approved Post-Remedial Construction Operation Maintenance and Monitoring Plan for Area D (Parsons, 2001) since the completion of remediation.

In 2005, Buffalo Color Corporation filed for bankruptcy. During the bankruptcy proceedings, some of the facility's production equipment was sold and removed from the site. In conjunction with the bankruptcy, the office building and former plant hospital located at 100 Lee Street on Area B and the warehouse building (Building 322) located near Elk Street on Area E, along with some of the land under and around those buildings, were sold to other parties. Agreements are in place to preserve access rights to the land for the purposes of any required environmental investigation and remediation activities. The remaining buildings and property on Areas A, B, C, D and E were purchased by South Buffalo Development LLC in 2008.

1.2.3 Geologic Conditions

The following summarizes the geologic conditions known to exist at the site.

1.2.3.1 Site Lithology

In accordance with a December 14, 1987 Order on Consent between the Buffalo Color Corporation/AlliedSignal and NYSDEC and a NYSDEC approved RI/FS Work Plan, a Remedial Investigation (RI)/Feasibility Study (FS) was conducted for the Area D site. The RI identified a number of subsurface zones at the site with contrasting hydrogeologic properties. In order of increasing depth, these zones include:

Fill: This unconsolidated material is found over the majority of the surface of the site. It typically consists of clay, silt, crushed stone, gravel, bricks, and miscellaneous building demolition debris. The fill thickness averages 9 feet.

Alluvium: This unit underlies the fill and is unconsolidated silty sand with traces of fine-grained clay and silt. The alluvium thickness averages 18 feet.

Glaciolacustrine Clay: This unit is primarily soft gray and gray-brown clay, with occurrences of silty clay. This unit underlies the alluvium and has an average thickness of 28 feet. These materials have a relatively low hydraulic conductivity and the unit is considered an aquitard between the shallow and underlying confined water-bearing units.

Basal Till: This unit is a mixture of sand and silt, and minor amounts of clay and gravel. This unit underlies the glaciolacustrine clay and was encountered immediately above the bedrock. Thickness of this unit averages 12 feet.

Onondaga Limestone: This bedrock unit was described as fractured and weathered, dark gray limestone. The bedrock surface slopes gently to the south, at a rate of approximately 1.2 feet per 100 feet.

Figure 5 is a plan view of Area D showing the hydrogeologic cross section locations and Figures 6 through 10 show the Area D hydrogeologic cross sections.

1.2.3.2 Site Hydrogeology

Two primary water-bearing zones have been identified at the site. The first water-bearing zone encountered, the shallow zone, is a saturated unconfined system within the fill and sediments above the glaciolacustrine clay unit. The second water-bearing zone, the bedrock zone, occurs within the basal till and weathered upper surface of the bedrock. The RI concluded that the thick, low conductivity glaciolacustrine clay unit acts as an aquitard, separating these water-bearing zones and providing a confining layer for the deeper bedrock zone.

Groundwater flow in the shallow zone at the site is generally from the north towards the Buffalo River. At Area D, shallow groundwater is typically encountered within 3 to 5 feet of the ground surface, and varies seasonally. The average hydraulic conductivity of the shallow zone is $2.2\text{E-}03$ centimeters per second (cm/sec). The groundwater in the bedrock zone exists under apparent confined conditions within the basal till unit and upper portion of the Onondaga Limestone beneath the base of the glaciolacustrine clay. The average hydraulic conductivity of the bedrock zone is $1.4\text{E-}02$ cm/sec.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

Numerous environmental investigations have been completed for the Buffalo Color property, including Area D, dating back to the 1980s. The Remedial Investigation (RI) was conducted in 1988 to build off of prior studies and characterize the nature and extent of contamination at the site. A series of Pre-Design Investigations were conducted subsequent to the RI to further characterize specific areas within Area D and allow the FS and Remedial Design to be performed. The results of the RI and subsequent investigations are described in detail in the following reports:

- Remedial Investigation Report, Buffalo Color Area “D”, Malcolm-Pirnie, Inc., April 1989.
- Remedial Design/Remedial Action Work Plan, Area “D”, Remcor, Inc., April 1994.
- Final Remedial Design Report, Buffalo Color Corporation Area D Site, Parsons Engineering Science, Inc., March 1996

Generally, the RI determined that site soil contained concentrations of organic and inorganic substances that exceeded the NY Commercial and Industrial Soil Cleanup Objectives (SCOs). Shallow groundwater was found to contain concentrations of organic and inorganic substances that exceeded the NY Class GA standards.

Below is a summary of site conditions when the RI was performed in 1988.

Soil

Metals, polycyclic aromatic hydrocarbons (PAHs), and chlorobenzene were found across Area D, in both surface and subsurface soil, at concentrations that exceed the SCOs. For the direct contact pathway, surface soil samples are considered the most relevant data points. The data suggests that the soil locations with concentrations of metals and PAHs that exceed the SCOs may be sources of groundwater contamination although the impact was widespread and encountered at all site locations investigated. Similarly, a correlation between shallow soil volatile organic compound (VOC)

concentrations and VOCs in groundwater may be attributable to specific areas of concern identified during the RI, although impact was evident over the entire site.

Site-Related Groundwater

Shallow groundwater on Area D was found to contain concentrations of VOCs (principally chlorobenzene and ethylbenzene), semivolatile organic compounds (SVOCs; primarily aniline and naphthalene), and metals (arsenic and iron) at concentrations that exceed the NY Class GA standards. Total VOC levels exceeded 100 milligrams per liter (mg/L) and total SVOCs exceeded 10 mg/L at locations on Area D. Visual evidence of a thin accumulation of light non-aqueous phase liquids (LNAPL) was found in monitoring wells in the vicinity of the former incineration area and former Tank Park 910. The specific source of the groundwater contamination has not been determined, but it is likely related to prior use and storage of chemicals that occurred on Area D.

Sediment

Sediment samples obtained adjacent to the site in the Buffalo River had detectable concentrations of PAHs and metals but the concentrations were not above SCOs. However, during remediation activities, a section of the site embankment along the Buffalo River slid into the river (Figure 2). Due to the potential for damaging the installed vertical barrier wall, recovery of the material was not feasible. The material was covered with rip rap to prevent soil migration and left in place.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Final Remediation Design Report (Parsons, 1996). Specific details regarding the remedial construction activities are presented in the Area D Closure Certification Report (Parsons, 2000).

The following is a summary of the primary Remedial Actions performed at the site:

- Installation of a vertical barrier around the site perimeter. The vertical barrier installed was a soil-bentonite slurry wall, constructed using site soil. The vertical barrier restricts migration of impacted shallow groundwater to the Buffalo River;
- Plugging of all pipes encountered during the remedial action was performed using concrete;
- Installation of a Resource Conservation and Recovery Act (RCRA) compliant cap system over the entire site that included a flexible membrane liner, geonet drainage layer, two feet of cover soil, and 6 inches of topsoil to establish a vegetative cover. The cap system prevents contact with impacted site soil and infiltration of precipitation into the impacted soil;
- Excavation and dredging of soil/sediment along the Area D shoreline and placement of the removed soil/sediment within the footprint of the cap system;
- Placement of riprap along the Area D shoreline to prevent erosion of soil and sediment and migration of eroded soil and sediment to the Buffalo River;
- Placement of geotextile and riprap over the Sediment Deposit Area (SDA), an area along the western shoreline where a historic slope failure had occurred;
- Installation of a groundwater extraction and treatment system to address impacted site groundwater. The groundwater treatment facility was located on Area A north of Area D; and
- Preparation of an Operation, Maintenance, and Monitoring Plan for the long-term O&M of the remedy.

Additional remedial actions were performed to complete the site remedy and allow closure of the Order on Consent. These actions will be implemented upon approval of this SMP by NYSDEC:

- Establish monitoring requirements for the SDA, which incorporates Monitored Natural Recovery into the remedy for this area to supplement the existing sediment containment structure;
- Execution and recording of an Environmental Easement in favor of NYSDEC to restrict land use and address future exposure to any remaining contamination at the site. Elements of the Environmental Easement include establishing engineering and institutional controls, prohibiting groundwater use, providing protocols for disturbance of site soils and/or groundwater, and limiting future land use to commercial or industrial use; and
- Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

The additional remedial actions are scheduled to be completed by the end of December 2014.

1.4.1 Removal of Contaminated Materials from the Site

No contaminated materials were removed from the site during the remedial action. Contaminated materials were contained beneath the cap system constructed over the site.

1.4.2 Site-Related Treatment Systems

A groundwater extraction and treatment system was established for Area D shallow groundwater. The groundwater treatment facility is located on Area A. The requirement for groundwater extraction and treatment will diminish over time due to the presence of the barrier wall and cap system, which restricts the migration of groundwater and precipitation, respectively, into Area D. Groundwater extraction wells from Area A were incorporated into the Area D treatment system in 2007. The O&M Plan for the treatment system was updated in 2010 to include the Area A groundwater extraction and treatment. The OM&M Plan for Areas A and D (Appendix B) includes the O&M Plan

for Area A groundwater treatment as an attachment to provide a comprehensive, current depiction of the configuration and operation of the groundwater treatment system.

1.4.3 Remaining Contamination

Soil contamination exceeding applicable SCOs remains at the site beneath the cap system. The shoreline stabilization protects the site from erosion and slope failure that could allow potential migration of impacted soil from the site into the Buffalo River. Engineering and institutional controls will ensure that the remedy remains effective at prohibiting contact with impacted soil.

Soil contamination exceeding applicable SCOs remains within the SDA. Riprap placed over the SDA protects the area from erosion and migration of impacted soil into the Buffalo River. Engineering and institutional controls will ensure that the remedy is not disturbed by river dredging and remains effective at limiting unintended contact with the impacted soil and preventing migration of impacted soil to the Buffalo River.

Groundwater with constituents above NY Class GA Standards remains at the site. The groundwater extraction and treatment system in conjunction with the vertical barrier will continue to operate to address the impacted groundwater while engineering and institutional controls will prohibit use and contact with impacted site groundwater.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Because of the remaining contamination at the Site, Engineering Controls and Institutional Controls are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper management of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Integrated Cover

Exposure to remaining contamination in soil at the site is addressed by a cover system placed over the site. For the upland portion of the site, this cover system is comprised of a flexible membrane liner, geocomposite drainage layer, clean soil with a minimum thickness of 24 inches, and topsoil to support vegetation. For the slopes, the cover system includes a geotextile overlain by riprap to prevent erosion and migration of potentially impacted soil to the Buffalo River. The Excavation Work Plan provided in Appendix C outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining soil is disturbed. Procedures for the inspection and maintenance of the integrated cover are provided in the Monitoring Plan included in Section 3 of this SMP.

The cover system is a permanent control and the quality and integrity of this system will be maintained and inspected at defined, regular intervals in perpetuity.

2.2.2 Hydraulic Barrier Wall

A hydraulic barrier wall has been installed around the site perimeter to prevent the migration of potentially impacted groundwater to the Buffalo River. The barrier wall is a soil-bentonite slurry wall and the limits of the wall are located beneath the cover system. Future site operations that would potentially disturb the hydraulic barrier wall will be prohibited. Groundwater elevations have been obtained on a monthly basis from paired observation wells (one well inside the wall and one well between the wall and the river) set along the site perimeter to ensure that an inward groundwater gradient, established by operating the groundwater extraction system, is maintained. The hydraulic barrier wall will remain as an engineering control until such time as groundwater clean-up objectives are achieved and NYSDEC provides written agreement to terminate the extraction and treatment of groundwater.

2.2.3 Groundwater Extraction and Treatment

Groundwater extraction is conducted to maintain an inward gradient away from the Buffalo River. The groundwater extraction enhances the vertical barrier wall's ability to restrict migration of impacted groundwater to the Buffalo River. The extracted groundwater is treated at the treatment facility located at Area A and discharged to the Buffalo Sewer Authority. Operation, maintenance, and monitoring of the groundwater extraction system is detailed in the Areas A and D Groundwater Extraction System OM&M Manual included as Appendix B to this SMP. Monitoring of the extracted groundwater is performed to evaluate the effectiveness of the groundwater extraction system and progress toward remediation of the site groundwater. Groundwater extraction and treatment will continue until clean-up objectives are achieved and permission to discontinue is granted in writing by the NYSDEC. Requirements for long-term groundwater monitoring are provided in Section 3.3 of this Plan.

2.2.4 Sediment Deposit Area

The sediment deposit area is overlain by a geotextile and riprap to prevent potential sediment erosion and migration to the Buffalo River. The cover system is a permanent engineering control and will be monitored and maintained to ensure its integrity. Any disturbance of the cover system will necessarily be repaired as soon as practical due to the potential for sediment migration.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required to: (1) implement, maintain and monitor Engineering Control systems; (2) address future exposure to remaining contamination by controlling disturbances of subsurface contamination; and, (3) limit the use and development of the site to commercial and industrial uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls must be inspected at a frequency and in a manner defined in this SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Site are:

- The Site may only be used for commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed and maintained;
- The Site may not be used for a higher level of use, such as unrestricted or restricted residential use, without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the Site that will disturb remaining contamination must be conducted in accordance with this SMP;
- The use or withdrawal of Site groundwater for drinking, irrigation, or other consumptive purposes is prohibited;
- Vegetable gardens and farming on the Site are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any

changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or at a longer interval that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Excavation Work Plan

The site has been remediated for restricted commercial or industrial use. Any future intrusive work that will penetrate the cover system, or encounter or disturb remaining contamination, including any modifications or repairs to the existing cover system, must be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix C to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as Appendix D to this SMP that is in compliance with current DER-10, 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State, and local regulations. Based on future changes to State and Federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section C-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and parties preparing the remedial documents submitted to the State, and parties performing this work, are jointly responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation spoils, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted quarterly, regardless of the frequency of the Periodic Review Report. The inspections will evaluate and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- Site records are complete and up to date; and
- Changes, or needed changes, to the remedy or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted by a qualified environmental professional, as determined by NYSDEC, within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site.

2.4.2 Notifications

As necessary, notifications will be submitted by the property owner to the NYSDEC for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of 6NYCRR Part 375 and/or Environmental Conservation Law.

2. 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
3. Notice within 48-hours of any damage or defect to the remedy that reduces or has the potential to reduce the effectiveness of the Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
4. Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
5. Provision within 45 days of a follow-up status report on actions taken to respond to any emergency event that requires ongoing responsive action. The status report shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the qualified environmental professional listed in the table below. These emergency contact lists must be maintained in an easily accessible location at the site.

Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility locate)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
NYSDEC Region 9 Contacts Regional Hazardous Waste Site Remediation Engineer	(716) 851-7220

Other Contact Numbers

Mr. Jon Williams, President SBD Holdings 1, Inc. (Site Owner)	(716) 856-3333
Qualified Environmental Professional Mr. Pat Pontoriero MACTEC Engineering & Consulting, P.C.	(412) 279-6661

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 100 Lee Street, Buffalo, NY

Nearest Hospital Name: Mercy Hospital

Hospital Location: 565 Abbott Road, Buffalo, NY

Hospital Telephone: (716) 826-7000

Directions to the Hospital:

1. Exit the site and turn right onto South Park Avenue.
2. Continue straight - S. Park Avenue becomes US-62, then CR-4 (Abbott Road), 1.1 miles. Follow signs to the hospital emergency room entrance.

Total Distance: Approximately 2 miles

Total Estimated Time: Five to 10 minutes, depending on traffic

Map Showing Route from the site to the Hospital:



2.5.3 Response Procedures

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Emergency Contact Numbers). The list will be posted prominently at the site and made readily available to all personnel at all times. Responding to emergencies or spills associated with operations conducted by site occupants or tenants will be the responsibility of the occupant or tenant involved. Emergencies or spills known or suspected to have been caused by remaining contamination will be addressed in the following manner:

1. Any person noticing or suspecting a release should contact the owner and appropriate emergency response agencies, as listed in Section 2.5.1.
2. The person making the initial report should give as much information as possible including:
 - Substance spilled and approximate amount.
 - Location and source of spill.
 - Approximate time spill began or time first noticed.
 - Is release ongoing?
 - Does the spill pose an immediate threat to human health or the environment?
3. Personnel at the scene of the spill shall cease activities and take whatever means are safe and available to restrain further spillage and contain the materials that have been released. The individual(s) providing initial response should first identify any clear health hazards and take appropriate measures to avoid personal injury prior to initiating any response actions. In no case should a person attempt any action if unfamiliar with the material spilled, or if there exists reasonable doubt concerning safety or risk of injury. Specific caution should be taken before attempting to eliminate the spill source of flammable materials. Flammable materials such as solvents or gasoline pose the additional threat of fire or explosion that may endanger the lives of others present at the site and must be handled with extreme care. The need for appropriate personal protective equipment and response equipment (i.e., non-sparking tools) should be evaluated by the individual(s) that have discovered the release prior to initiating any response measures. The primary motivation for interim response measures by the individuals observing the spill or release is to block potential routes of entry into storm drains or other watercourses and to prevent contamination to soil, surface water, and groundwater.
4. After initiating preliminary containment measures as described in paragraph 3, personnel involved will secure the area affected.
5. Upon notification, the site owner (or tenant, if applicable) will proceed to the spill area.
6. It is the responsibility of the site owner (or tenant, if applicable) to determine the potential severity of a spill and the need to verbally notify the local fire department, local emergency response agencies, the United States Environmental Protection Agency (USEPA) and/or the National Response Center (NRC).
7. If the site owner (or tenant, if applicable) determines the spill to be of a minor consequence and below applicable reporting thresholds, he or she may direct the resumption of normal activities at the site.

8. If the site owner (or tenant, if applicable) determines that the spill is significant and/or reportable due to type or quantity of material spilled, he or she will initiate an appropriate response effort. If the Site does not have the internal resources available to effectively handle the spill response, the site owner (or tenant, if applicable) will arrange for assistance from outside resources.
9. It is the responsibility of the site owner (or tenant, if applicable) to determine the most effective means of cleanup and proper methods to ultimately dispose of the spilled materials. In most cases this will mean placing the spill residue in a suitable container (e.g., drums). Specific care should be taken in the event of a corrosive spill as these materials often interact with standard steel drums.
10. All spilled materials containerized as part of a spill response will be marked as to the type and quantity of the materials contained and the date.
11. Records and written documentation regarding the emergency or spill event shall be maintained by the site owner (or tenant, if applicable), as required by law.
12. The site owner (or tenant, if applicable) will be responsible for assessing and preparing any reports or notifications required for external agencies (NYSDEC, federal USEPA, local fire department, NRC, etc.).

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards;
- Assessing achievement of the defined remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for observation wells;
- Observation well decommissioning procedures; and
- Annual inspection and periodic certification.

Monitoring of the performance of the remedy and overall reduction in contamination on-site will be conducted for specific media as described below. The frequency thereafter will be determined based on available data and must be approved by NYSDEC. Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals and/or if the EC/IC can be modified. Monitoring programs are summarized in the table below and outlined in detail in Sections 3.2, 3.3, and 3.4.

Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Shallow Groundwater**	Annually at treatment facility influent point - composite sample from 4 extraction wells	Groundwater	Field parameters, VOCs, SVOCs, metals, leachate parameters
Groundwater elevations	Quarterly	Groundwater	Elevation to verify inward gradient
Site cover system, slopes, wells, surface drainage	Quarterly	Visual inspection only	Visual inspection only
Sediment Containment Structure	Initial monitoring then once every 5 years for 20 years	multi-beam bathymetry	multi-beam bathymetry

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

** Monitoring also described in Areas A and D GWES OM&M Manual (Appendix B)

3.2 COVER SYSTEM MONITORING

On a quarterly basis, a visual inspection of the site is conducted to document the condition of the cover system and identify deficiencies that require maintenance or repair. Specifically, the quarterly inspection documents the following:

- The condition of the soil cover, including
 - areas with missing or insufficient grass/vegetation;

- areas where runoff or erosion has compromised the soil cover and/or exposed the flexible membrane liner; and
 - areas where animal burrows or the presence of woody and invasive vegetation has potentially compromised the integrity of the soil cover.
- The condition of site slopes to identify erosion or slope failure areas that could potentially compromise the integrity of the barrier wall or cover system;
- The condition of surface drainage structures to ensure that storm water is not causing erosion of the cover system or site slopes; and
- The condition of access roads, extraction and observation wells, gas vent wells and other ancillary components of the remedy.

The results of each inspection, including identification of conditions requiring repair or maintenance, are documented on an inspection checklist. Necessary repairs will be completed, where possible, prior to the next inspection.

3.3 MEDIA MONITORING PROGRAM

Groundwater and treated water discharge effluent requires monitoring after completion of the remedial action. The monitoring requirements, sampling protocols, and quality assurance/quality control (QA/QC) procedures for handling samples are described in this section. The project Quality Assurance Project Plan (QAPP) is included as Appendix E.

3.3.1 Groundwater Monitoring

Groundwater monitoring for the shallow aquifer is performed on a periodic basis to assess the performance of the remedy.

A network of paired perimeter observation wells (12 observation wells total) were installed to monitor groundwater elevations within the barrier wall and outside the barrier wall, i.e., between the barrier wall and the Buffalo River. Monitoring of the paired wells is currently conducted monthly to confirm that an inward gradient away from the Buffalo River is maintained by the groundwater extraction system. The wells were sampled for

chemical parameters after completion of the remedial action to set a baseline standard. If required, future sampling of the wells for chemical parameters can be performed for comparison to the baseline results.

Figure 2 shows the observation well locations around the perimeter of Area D. Table 1 provides a summary of the available construction information, including total depths and screened intervals, for the perimeter observation wells in Area D.

Until 2007, influent groundwater samples were collected annually from a sampling port at the extracted groundwater discharge point into the treatment facility. In 2007, the extracted groundwater from Area D was combined with groundwater extracted from Area A. The Area D treatment facility that is located on the Area A site is now used to treat the combined flow from Areas A and D. Currently, a composite influent sample from the four Area D extraction wells is collected annually from a point prior to combining the Area D and Area A groundwater for treatment.

The annual extraction well influent samples are analyzed for field parameters and sent to an offsite laboratory for analysis of VOCs, SVOCs, metals, and leachate parameters. Table 2 lists the field and laboratory parameters that comprise the testing program. Treated discharge effluent is sampled monthly to ensure compliance with Buffalo Sewer Authority (BSA) discharge requirements. Sampling procedures and analytical methods shall be as specified in the subsections below.

The sampling frequency and parameters may be modified with the written approval of the NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

Should groundwater sampling of the perimeter observation wells be required, all observation well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix F. Other observations (e.g., well integrity, etc.) will

be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater observation well network.

Low-flow groundwater sampling techniques will be employed during each sampling event following USEPA Region I guidance. However, if low-flow sampling is not possible (e.g., insufficient water level depth in the well or groundwater recharge rate is too slow) an alternate sampling technique may be used. The wells will be sampled using peristaltic pumps or USEPA-approved submersible pumps (e.g., Grundfos® or bladder type). The tubing will be securely fastened to the well casing or cap during sampling to prevent disturbance of any sediments in the well. Pumps will be operated at less than 500 milliliters per minute during purging and sampling.

The following equipment and supplies may be used during groundwater sample collection:

- Low Flow Groundwater Data Sheet;
- field log book;
- peristaltic pump, submersible pump or bladder pump and control box;
- appropriate hoses and connectors for dedicated and non-dedicated systems;
- compressed air or nitrogen source (with regulator) to supply bladder pump;
- alternate purging and sampling device (for alternative sampling method);
- PID meter;
- multi-parameter water quality meter equipped with a flow-through cell;
- water level indicator;
- volumetric measuring device;
- engineers rule;
- sample containers;
- disposable or digital camera;
- decontamination supplies;
- plastic sheeting to establish a clean area for equipment staging and sample collection;
- tools for opening well protective casings; and
- containers for temporary storage of purge water.

Attempts should be made to collect inorganics and metals samples with turbidity measuring below 50 Nephelometric Turbidity Units (NTUs). If the field turbidity

measurement exceeds 50 NTUs and is unavoidable for a particular well, a filtered sample will be collected through a 0.45 micron filter in addition to the unfiltered fraction.

Non-dedicated groundwater sampling equipment will be decontaminated prior to use. Calibration of the monitoring equipment will be in accordance with the USEPA analytical method and the manufacturer's suggested procedures and will be completed prior to each day's sampling activities and as required during the course of the day. Daily instrument calibration data will be recorded in the field log book or on a separate calibration record. Purge water will be containerized and discharged to the on-site treatment system or allowed to infiltrate in the immediate area of the well.

Sampling techniques for extraction well influent samples collected from the sampling port at the treatment facility follow the protocols for observation well sampling, i.e., samples are obtained from the sample port at low flows and sample turbidity is maintained at below 50 NTUs, if possible. Monitoring instruments are calibrated and decontaminated as described for the observation well sampling.

3.3.1.2 Water Level Measurements

The following equipment and supplies are used during water level measurement activities:

- field log book;
- water level indicator;
- engineers rule;
- decontamination supplies; and
- tools for opening well protective casings.

The depth to groundwater is measured from the surveyor's mark on the well riser or, in the absence of such mark, from the highest point on the rim of the well casing or riser. Water level measurements at the various wells are obtained using an electronic water level meter. The water level is measured to 0.01 feet. The measured value is checked by raising the probe 1 to 2 feet and re-measuring the water level. The probe end of the water level meter is decontaminated between observation wells. The height of the protective casing stick-up and protective casing/well casing differential is also recorded.

3.3.1.3 Field Sample Custody

Sample collection activities are recorded in a bound field notebook. Details of each individual sample collection are documented in the field log book and/or on a sampling log (Appendix F). Sample labels are prepared that include the sample designation, date and time of sampling, requested analyses, and preservatives used. A uniquely numbered chain of custody (COC) form is prepared and signed in the field by the sampling team. Samples are shipped by overnight carrier or courier in a sealed cooler packed with ice.

COC forms are provided by the analytical laboratory and completed by the samplers. The following information is included on the COC form when shipping samples:

- project name, number, and location
- COC number
- EIM Site ID
- location ID
- field sample ID
- date and time of collection
- sample matrix
- sample purpose (or QC code)
- analytical methods
- sample preservation information
- bottle types and number of sample containers
- signature of sampler and sample manager and time relinquished
- bill of lading (as necessary)
-

Custody procedures associated with sample collection are divided into field custody, field notebooks/documentation, and transfer of custody/shipment. A unique COC number is generated for each sample. The COC number is identified as follows:

BCC-Area D-####-mmyy

where:

= observation well ID number

mmyy = date of sample collection (e.g., 0512 would designate May 2012)

Chains of Custody are handwritten in the field and provided to the Site Data Manager.

3.3.1.4 Analytical Protocols

This section provides a description of the proposed offsite laboratory analytical program and the analytical methods used to analyze water samples collected during groundwater monitoring activities. The majority of offsite analytical data is generated using USEPA SW-846 analytical procedures (USEPA, 2008).

Sample analyses are completed by a laboratory that is certified by the State of New York and the National Environmental Laboratory Accreditation Program (NELAP).

Groundwater analytical methods and parameters are summarized below:

- VOCs by Method 8260B
- SVOCs by Method 8270C
- TAL Metals by Method 6010B including mercury by Methods 7470A and 7471A

Container size and type, preservative, and holding time requirements for groundwater samples for each analytical group are consistent with USEPA SW-846 requirements.

3.3.1.5 Quality Assurance/Quality Control

Several types of field QC samples are collected to provide additional data that are used to evaluate whether the sample collection and handling procedures have affected the quality of the samples. These samples include:

Field Duplicates- Field duplicate samples are samples that have been divided into two or more portions at the same step in the sample collection process. The field duplicated samples consist of two samples taken from a single purged well or from the

sample port. The field duplicate samples are shipped along with field samples and analyzed by the same laboratory.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Spikes are known amounts of specific chemical constituents added by the laboratory to selected samples to evaluate the effect of the sample matrix on the preparation and analytical procedures. Matrix spikes are performed in duplicate and are referred to as MS/MSDs.

Trip Blank - Trip blanks assess potential contamination of the samples by VOCs during sample transport. The trip blank consists of a VOC sample container filled at the laboratory with water (water samples). These containers are shipped to the Site with the sample containers, transported with the sample bottles to the sampling location, and an unopened trip blank is returned to the laboratory with each shipment of samples for analysis.

3.3.1.6 Data Management

Management of analytical data includes the following tasks:

- Organization and storage of project field records including logbooks, instrument calibration records, exploration records, field sample collection records, and sample handling and COC documents.
- Tracking of off-site laboratory samples and receipt of laboratory deliverables.
- Receipt, organization, and storage of laboratory data packages.
- Receipt of electronic data and entry of results into the project database.
- Data quality review at a validation level specified in the project-specific plan.
- Entry of data validation qualifiers and preparation of final data tables.
- Preparation of tables and figures for use in contamination assessments.

The data management process includes procedures necessary to ensure consistent and complete collection of field data, tracking of the laboratory analytical and validation

processes, consistent and timely production of electronic data deliverables (EDDs) from laboratories, and accurate and timely entry of EDDs into Owner and NYSDEC database systems, as appropriate.

Prior to the field program, the Site data manager set up the valid values for use in a database. Valid values consist of the contractor names, laboratory names, method names, units of measure, parameter lists for each method, and QC codes for the field QC samples. Validation requirements, such as holding times and surrogate recoveries for each method and appropriate validation qualifiers are entered at this time as well.

COC information is entered by the Site Data Manager into an electronic database. The electronic COC data is compared to the laboratory EDDs to track the completeness of the laboratory data deliverables.

Imperfect EDDs are returned to the laboratory for correction. Returning the EDDs to the laboratory for correction prior to use or upload minimizes discrepancies between hard copy analytical reports and electronic files. Field data are entered in an EXCEL template or other appropriate electronic file after it has been documented as being checked. Field data are stored in the project files, along with supporting metadata such as author/creator of data, date, location, brief description. Ten percent of the analytical data and field data are compared against hard copy. Additional data review is completed if errors are noted.

Hardcopy data deliverables are specified for each field program depending on the level of review planned for the sample set and the planned use of the data. Level 2 validation is used for the groundwater monitoring sampling events. As such, a Level 2 data package is provided by the laboratory. For VOCs, SVOCs, and TAL metals, the laboratory provides hard copy deliverable packages that are equivalent to Contract Laboratory Program (CLP) data package specifications. Modified CLP type forms are acceptable providing they contain equivalent information. Deliverable packages include a narrative that summarizes activities and any problems or issues, forms summarizing sample and QC blank results, forms summarizing all QC measurement parameters specified in the method, and all associated raw data generated in support of the reported results. Results of QC measurements include calibration data summaries, laboratory

control data summaries, MS/MSD summaries (for samples requested on the COC), surrogate summaries, and laboratory duplicate summaries.

3.3.1.7 Data Review and Validation

Analytical data are validated in accordance with the scope established for each field investigation. Validation is completed prior to use as final data in investigation reports.

Accuracy and precision limits have been identified for the analytical quality control measurements that are performed in association with the collection and analysis of field samples. Accuracy and precision limits follow USEPA Region 2 guidelines. QC limits for surrogates, spikes, and duplicates are consistent with USEPA requirements. These limits are used to review and evaluate data quality and data usability during data validation.

A data validation scope for the monitoring program at the Site is designated at Level 2 validation. **Level 2** includes the following data checks and evaluations:

- A review of the data set narrative to identify any issues that the lab reported in the data deliverable;
- A check of sample integrity (sample collection, preservation, and holding times);
- An evaluation of basic QC measurements used to assess the accuracy and precision of data including QC blanks, laboratory control samples (LCS), MS/MSDs, surrogate recovery, when applicable, and field or lab duplicate results; and,
- A review of sample results, target compounds, and detection limits to verify that project analytical requirements are met.

A database system may be used to complete a computerized Level 2 review of each data package to check that the project quality control requirements are being met. Data qualifiers will be applied to results that do not meet project goals. A summary of

data validation actions will be provided for each sample set. The summaries will be reviewed and approved by the project chemist prior to finalization of the validated data. The data will be evaluated/qualified based on the following parameters (if available/applicable) and specified criteria:

A data validation summary report will be prepared for data sets reported from each distinct sample collection effort. The validation report will include a summary of analytical methods performed, listings of samples included in the review, and summaries of data validation actions or observations.

3.3.1.8 Observation Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the site observation wells, the wells will be physically agitated/surged and redeveloped. Additionally, observation wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

Repairs and/or replacement of wells in the observation well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of observation wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Observation wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 SEDIMENT DEPOSIT AREA MONITORING

Every five years for a 20-year period, an evaluation of the SDA (Figure 2) will be conducted to verify that the Sediment Containment Structure and overlying sediment continue to isolate the material beneath the Sediment Containment Structure . The

evaluation will consist of performing multi-beam bathymetry over the area of Sediment Containment Structure. The multi-beam bathymetry surveys will demonstrate potential changes in the sediment elevation. A comparison of the sediment elevations from the bathymetry surveys to the elevations of the Sediment Containment Structure will demonstrate whether any area of the Sediment Containment Structure has been inadvertently breached or jeopardized.

3.5 SITE-WIDE INSPECTION

Site-wide inspections are performed on a regular schedule at a minimum of quarterly each year. Site-wide inspections are also performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form is completed (Appendix G). The form compiles sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- The condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.6 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses are performed in accordance with quality assurance/quality control (QA/QC) requirements described in Section 3.0 of this SMP and in the Quality Assurance Project Plan (QAPP) included as Appendix E, or similar plan approved by NYSDEC. Main QA/QC components include:

- QA/QC Objectives for Data Measurement;

- **Sampling Program:**
 - Sample containers are properly washed, decontaminated, and appropriate preservative added (if applicable) prior to their use by the analytical laboratory. Containers with preservative are tagged as such.
 - Sample holding times are in accordance with the NYSDEC ASP requirements.
 - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) are collected as necessary.
- **Sample Tracking and Custody;**
- **Calibration Procedures:**
 - All field analytical equipment is calibrated immediately prior to each day's use. Calibration procedures conform to manufacturer's standard instructions.
 - The laboratory follows all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- **Analytical Procedures;**
- **Preparation of a Data Usability Summary Report (DUSR), which presents the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.**
- **Internal QC and Checks;**
- **QA Performance and System Audits;**
- **Preventative Maintenance Procedures and Schedules; and**
- **Corrective Action Measures.**

3.7 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections are kept on file at the site. All forms, and other relevant reporting formats used during the monitoring/inspection events, are (1) subject to approval by NYSDEC and (2) submitted at the time of the annual report or Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results are reported to NYSDEC on a periodic basis in annual reports or the Periodic Review Report. The annual report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater, soil, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions (or other sampled media) have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in the table below.

Table: Schedule of Monitoring/Inspection Deliverables

Task	Reporting Frequency*
Annual Report or Periodic Review Report – Area D	Annually
Sediment Deposit Area Monitoring	Every 5 years for 20 years

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

4.1 GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

The site remedy includes a groundwater extraction and treatment system that consists of four (4) extraction wells on the Area D site and a treatment facility that is located on the Area A site. The treatment facility primary equipment includes an equalization tank, bag filtration vessels, and activated carbon vessels. Treated effluent is discharged to the Buffalo Sewer Authority. O&M activities for the groundwater extraction and treatment system are detailed in the Areas A and D OM&M Plan, which is included as Appendix B to this SMP. The Areas A and D OM&M Plan includes maintenance activities for the groundwater treatment system components and has been updated to include modifications to treatment system maintenance since the system was brought on line in 2000.

4.2 SITE COVER SYSTEM

Routine maintenance for the cap includes mowing and brush removal on an annual basis. The mowing and brush removal is conducted no earlier than the second week of September so as not to disturb the habitat for local fauna. An animal trapper is on call to remove burrowing animals that could adversely affect the cap integrity. In addition, the cap is monitored for invasive vegetation, e.g., Japanese knotweed. Invasive vegetation is physically removed by cutting or mowing and may be supplemented by selective application of herbicide to control invasive vegetative growth.

The storm drainage structures will be inspected during each scheduled site inspection. Drainage channels, culverts, and discharge areas will be evaluated for settlement, debris, erosion, or other adverse condition that could affect the performance of the structures and ultimately adversely affect the site cover. The severity of the impact to the storm drainage structures will be evaluated for each individual incident with repairs being performed as soon as practical after identification of an issue.

Riprap placed on the Area D slopes for erosion protection will be inspected during each scheduled site inspection. Settling or erosion of the riprap that exposes underlying soil or that infringes upon the Army Corps of Engineers Buffalo River dredge limit will be re-graded and repaired. Woody vegetation that could damage or affect the performance of the riprap will be removed and necessary repairs conducted as soon as practical.

4.3 SEDIMENT DEPOSIT AREA

Routine maintenance is not anticipated for the cover system over the sediment deposit area (SDA). Should monitoring identify that the cover system has been removed, repairs will be undertaken as soon as practical. Repairs will include the replacement of the geotextile and riprap over the damaged area. The geotextile and riprap will overlap the area scheduled for repair by a minimum four (4) feet on all sides to ensure coverage and containment of the impacted sediment.

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted on a quarterly basis. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe event has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

Inspections and monitoring events will be recorded on the appropriate forms for their respective system including the inspection form for the Site Cover System. Currently, a general site-wide inspection form is completed during the quarterly site-wide inspections, which includes the site cover system (see Appendix G). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,

- The site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare the following certification:

For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices;
- No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

- The information presented in this report is accurate and complete.

Every five years the following certification will be added: “The assumptions made in the qualitative exposure assessment remain valid.”

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as South Buffalo Development LLC’s agent for the site.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the quarterly site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables that include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
 - The compliance of the remedy with the requirements of the site-specific RAWP;
 - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
 - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
 - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
 - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, the site owner will submit a corrective measures plan to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

TABLES

Table 1
 Observation Well Construction Data
 Area D Site Management Plan
 Former Buffalo Color Facility, Buffalo, NY

Well Number	Ground Elevation	Top of Casing Elevation	Well Diameter (inches)	Filter Pack Size (Morie)	Depth to Top of Filter Pack (feet)	Depth to Bottom Filter Pack (feet)	Depth to Top of Bentonite (feet)	Depth to Bottom Bentonite (feet)	Bentonite Length (feet)	Screen Slot Size (inches)	Total Depth (feet)	Depth to Top of Screen (feet)	Depth to Bottom of Screen (feet)	Screen Length (feet)
OW-1I	585.6	587.80	6	00	10.80	28.35	4.75	10.80	6.05	0.010	27.80	12.80	27.80	15.00
OW-1E	581.5	583.20	2	00	10.30	23.70	2.70	10.30	7.60	0.010	23.20	13.20	23.20	10.00
OW-2I	586.6	588.37	6	00	10.37	29.59	4.59	10.37	5.78	0.010	29.09	14.09	29.09	15.00
OW-2E	581.3	583.05	2	00	10.35	23.55	2.75	10.35	7.60	0.010	23.05	13.05	23.05	10.00
OW-3I	586.4	588.38	6	00	10.58	28.88	4.87	10.58	5.71	0.010	28.28	13.01	28.01	15.00
OW-3E	580.9	582.68	2	00	10.38	23.18	1.78	10.38	8.60	0.010	22.78	12.78	22.78	10.00
OW-4I	586.0	588.10	6	00	10.70	28.65	4.65	10.70	6.05	0.010	28.15	13.15	28.15	15.00
OW-4E	581.7	582.93	2	00	9.83	24.66	2.15	9.83	7.68	0.010	22.93	12.93	22.93	10.00
OW-5I	586.4	588.11	6	00	10.31	28.36	3.86	10.31	6.45	0.010	28.36	13.36	28.36	15.00
OW-5E	581.3	582.65	2	00	9.95	24.50	2.65	9.95	7.30	0.010	22.65	12.65	22.65	10.00
OW-6I	587.9	589.60	6	00	10.30	30.10	4.60	10.30	5.70	0.010	29.60	14.60	29.60	15.00
OW-6E	581.5	583.23	2	00	10.33	25.46	2.53	10.33	7.80	0.010	23.23	13.23	23.23	10.00

Notes:

Observation well depths are below top of casing.
 All wells constructed of Type 304 stainless steel.
 All well screens are wire wrapped Type 304 stainless steel.

Table 2

Groundwater Monitoring Parameters
Area D Site Management Plan
Former Buffalo Color Facility, Buffalo, NY

Groundwater Field Parameters	Quarterly Parameters	Annual Parameters	Suggested Method⁴
Static Water Level (in wells and sumps)	X	X	--
Specific Conductance		X	9050A
Temperature		X	--
pH		X	9040C/9041A
Turbidity		X	--
Field Observations ¹			
Leachate Parameters			
Total Kjeldahl Nitrate (TKN)		X	351.1-351.4
Ammonia		X	350.1-350.3
Nitrate		X	9216
Chemical Oxygen Demand (COD)		X	410.4
Biochemical Oxygen Demand (BOD ₅)		X	5210B
Total Organic Carbon (TOC)		X	9060
Total Dissolved Solids (TDS)		X	160.1
Sulfate		X	9035/9036/9038
Alkalinity		X	310.1-310.2
Phenols		X	8040
Chloride		X	9250/9251/9253
Total Hardness		X	130.2
Bromide		X	320.1
Color		X	110.2-110.3
Metals			
Potassium		X	7610
Sodium		X	7770
Iron		X	7380/7381
Manganese		X	7460/7461
Magnesium		X	7450
Lead		X	7420/7421
Cadmium		X	7130/7131
Calcium		X	7140
Mercury		X	7470A/7471A
Total Metals ^{2,3} and Cyanide		X	6010B
Volatile Organic Compounds		X	8260
Semivolatile Organic Compounds		X	8270

Notes:

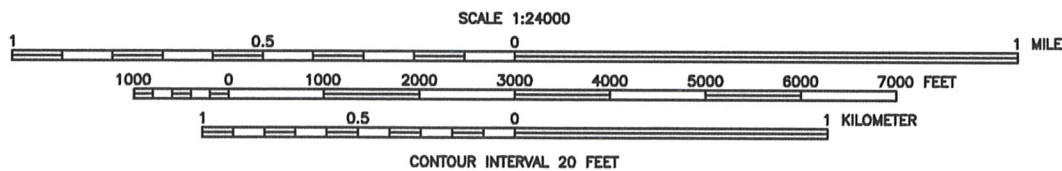
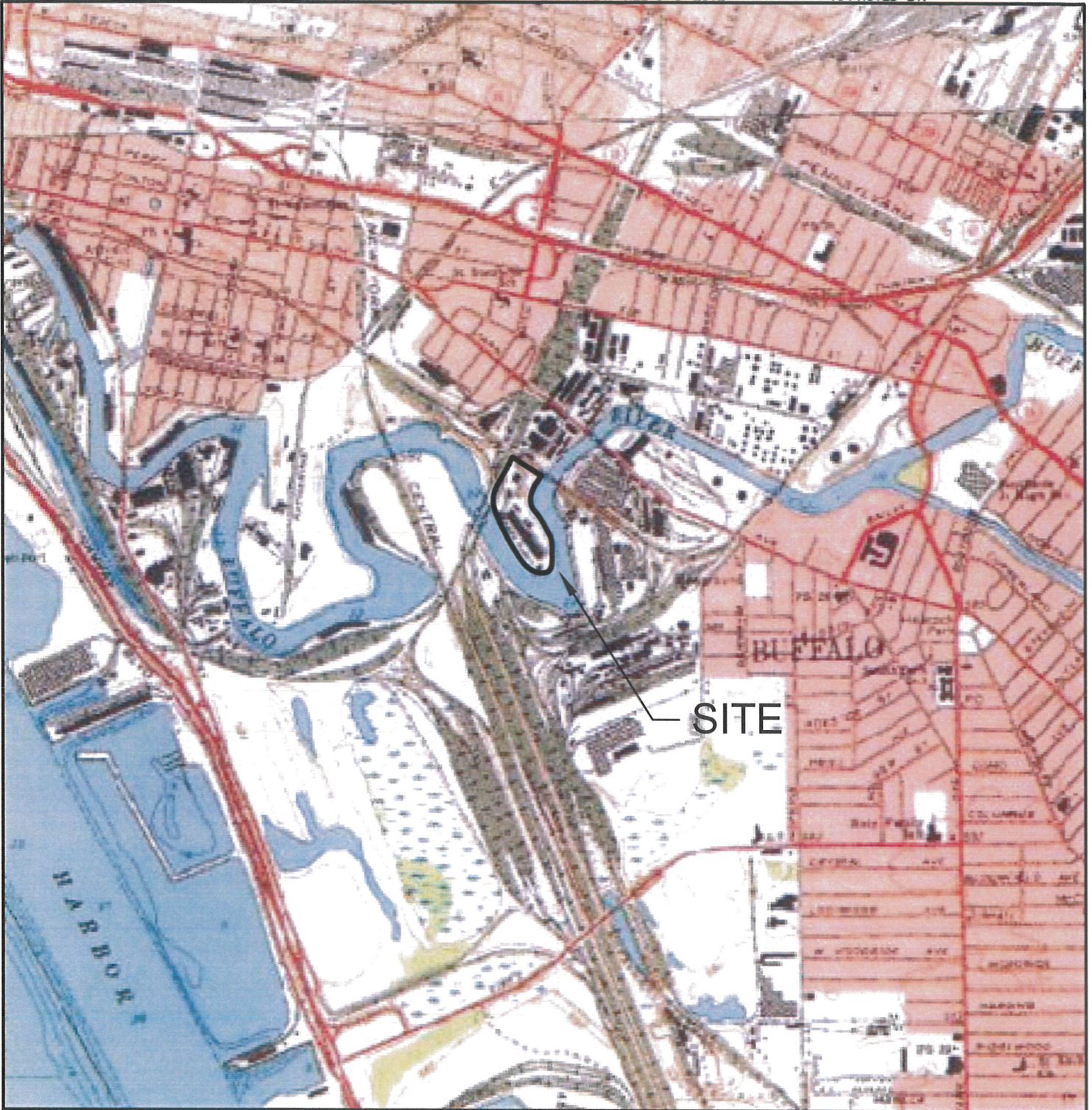
All samples must be whole and unfiltered except as otherwise specified by NYSDEC.

- Any unusual conditions (color, odor, surface sheen, etc.) noticed during well development, purging, or sampling must be reported.
- Total metals include: Aluminum, Antimony, Arsenic, Beryllium, Cadmium, Chromium (total and hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Silver, Tellurium, and Zinc.
- The NYSDEC may waive the requirement to analyze Hexavalent Chromium provided that Total, Hexavalent, and Trivalent Chromium values do not exceed 0.05 mg/L.
- Suggested Methods column is provided for information purposes only. Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition Update IV, January 2008. The methods listed are representative procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

Created By: ESW
Checked By: ANW

FIGURES

P:\PROJECTS\Textron\Lycoming\3410080609 LYCOMING 2008\CADD\FINAL\2008 Annual O&M\Site Location Map (A01).dwg



HONEYWELL INTERNATIONAL INC.
BUFFALO, NEW YORK

Project No.: 3410100794



Environment & Infrastructure - Pittsburgh
800 North Bell Avenue
Carnegie, Pennsylvania 15106
2200 Georgetown Drive
Sewickley, Pennsylvania 15143

SITE LOCATION MAP
BUFFALO COLOR AREA D

Figure: 1

P:\PROJECTS\Honeywell\Buffalo River\Buffalo River\Buffalo River\3410100794 - Remedial Design\CADD\FINAL\B(01).dwg Fri, 13 Mar 2015 - 1:16pm stephanie.downs

LEGEND

- SUBSURFACE GW COLLECTION PIPE
- SLURRY CUTOFF WALL
- OW-6E

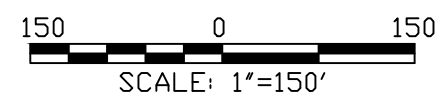
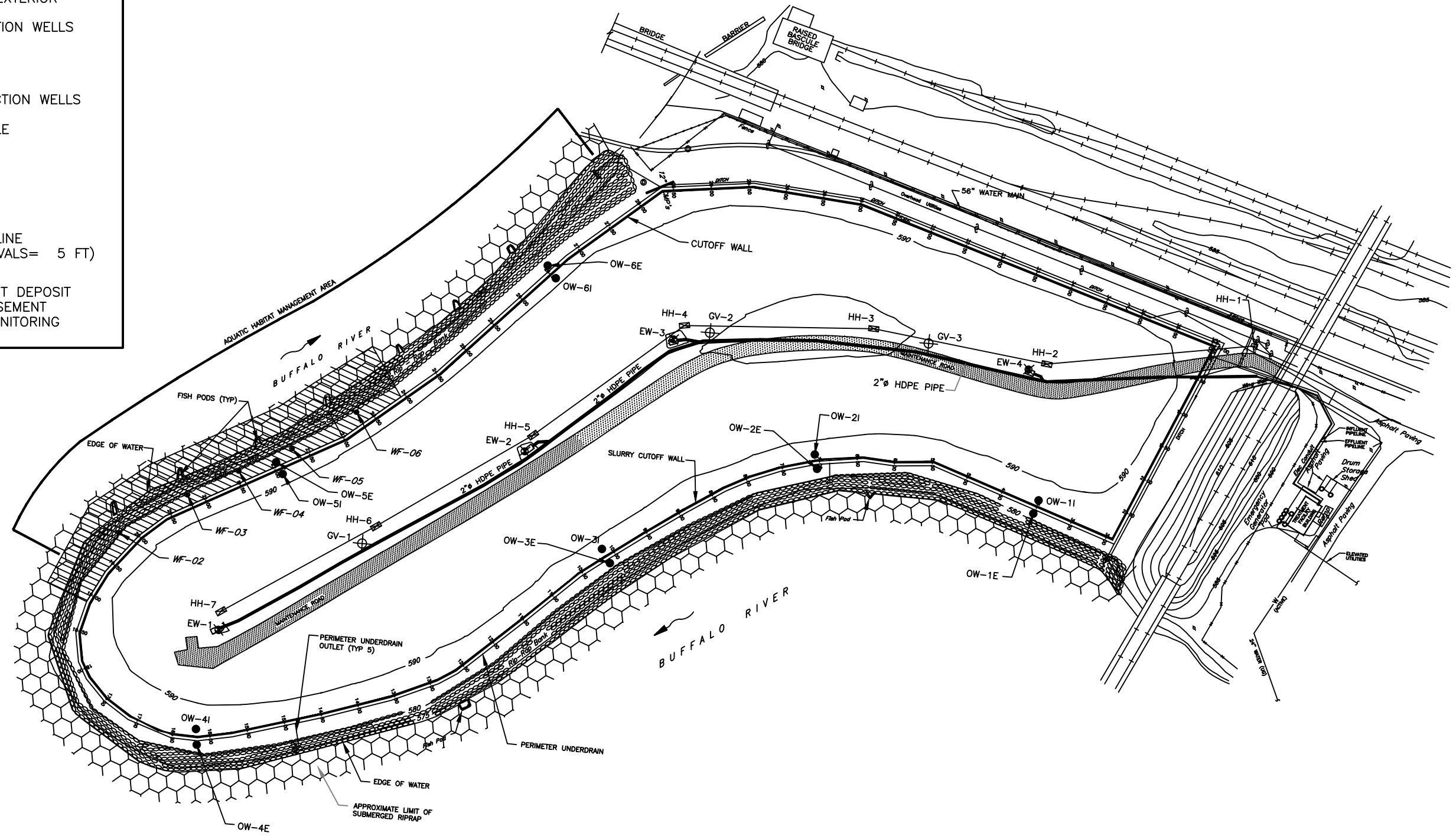
PERIMETER INTERIOR/EXTERIOR
- OW-61

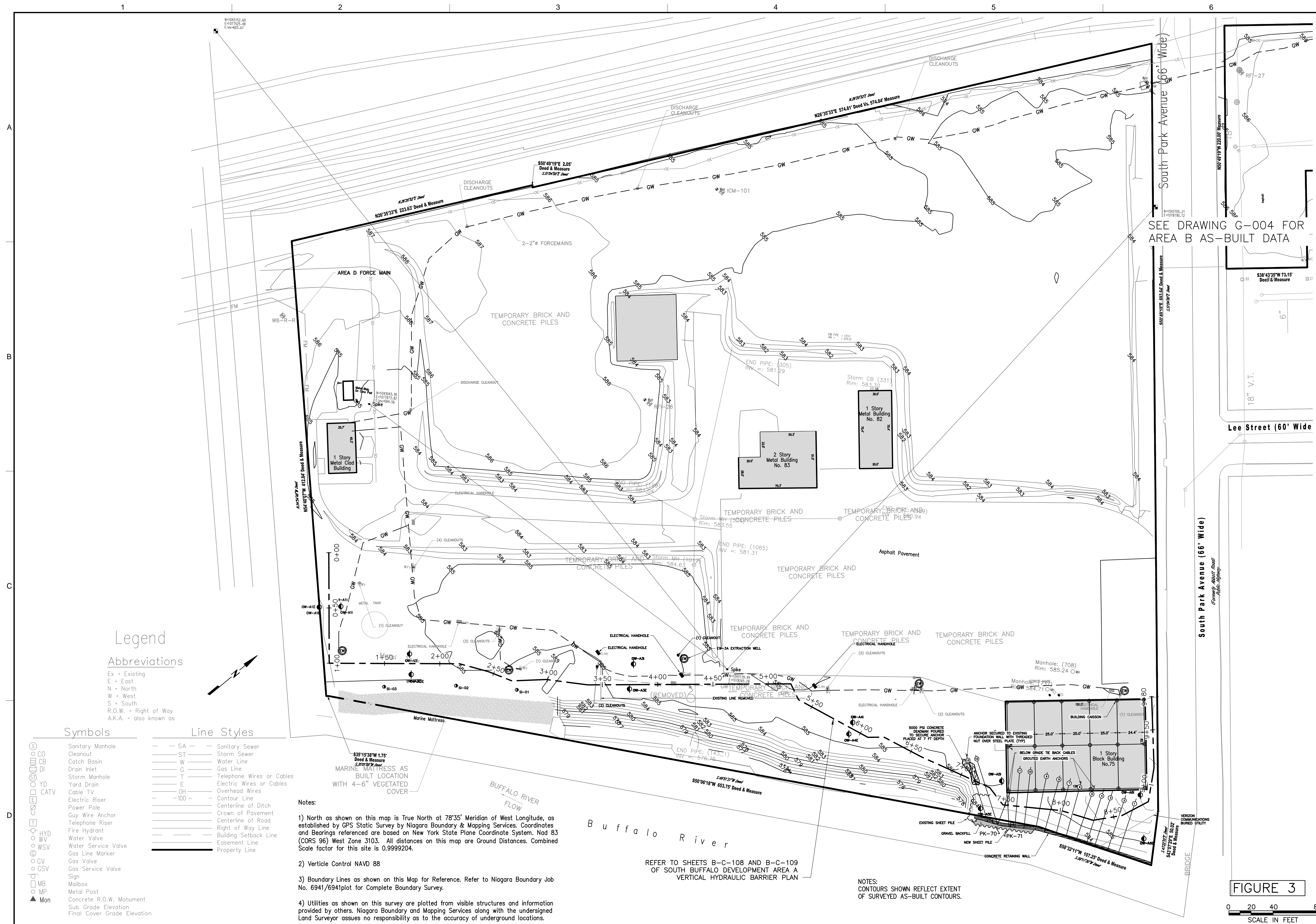
MONITORING OBSERVATION WELLS
- GV-2


GAS VENT
- EW-1

GROUNDWATER EXTRACTION WELLS
- ELECTRICAL HAND HOLE
- RIPRAP
- SUBMERGED RIPRAP
- 580

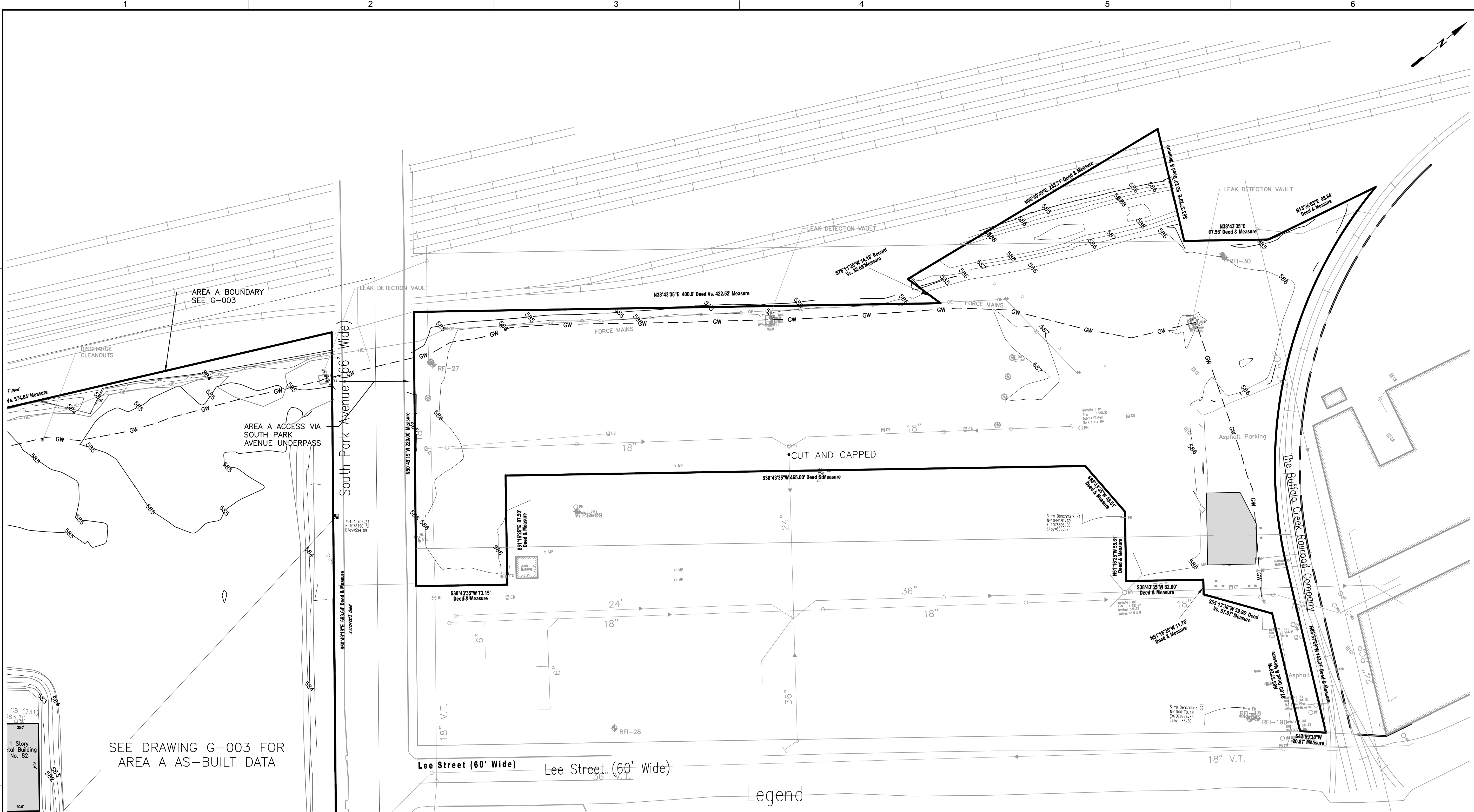
CONTOUR ELEVATION LINE
(CONTOUR LINE INTERVALS= 5 FT)
- APPROXIMATE SEDIMENT DEPOSIT
AREA SUBJECT TO EASEMENT
RESTRICTIONS AND MONITORING





		MACTEC Engineering and Consulting, P.C. P.O. Box 7050, 511 Congress Street Portland, Maine 04112-7050 (207) 775-5401		SBD South Buffalo Development, LLC 333 Garrison Street Buffalo, New York							
AS-BUILT DRAWING AS-BUILT TOPOGRAPHY PLAN AREA A		FORMER BUFFALO COLOR CORPORATION SITE - AREA A/B NYSDEC BCP SITE NO. C916230 BUFFALO, NY		B 11/05/14 A 10/22/14		AS-BUILT DRAWING (REPLACES C-103) AS-BUILT DRAWINGS		B/B MAP B/B MAP			
				NO. DATE		REVISION		BY CHK			
				DSGN		DR		CHK		APVD	
				B. BLAKE		B. BLAKE		M. PETERS		S. PEARSON	

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SEE DRAWING G-003 FOR
AREA A AS-BUILT DATA

NOTES:
CONTOURS SHOWN REFLECT EXTENT
OF SURVEYED AS-BUILT CONTOURS.

Abbreviations

Ex = Existing
E = East
N = North
W = West
S = South
R.O.W. = Right of Way
A.K.A. = also known as

Symbols

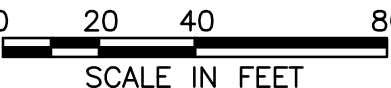
- Sanitary Manhole
- Cleanout
- Catch Basin
- Drain Inlet
- Storm Manhole
- Yard Drain
- Cable TV
- Electric Riser
- Power Pole
- Guy Wire Anchor
- Telephone Riser
- Fire Hydrant
- Water Valve
- Water Service Valve
- Gas Line Marker
- Gas Valve
- Gas Service Valve
- Sign
- Mailbox
- Metal Post
- Concrete R.O.W. Monument
- Subgrade Elevation
- Final Cover Grade

Line Styles

- SA Sanitary Sewer
- ST Storm Sewer
- W Water Line
- G Gas Line
- T Telephone Wires or Cables
- E Electric Wires or Cables
- OH Overhead Wires
- 100 Contour Line
- Centerline of Ditch
- Crown of Pavement
- Centerline of Road
- Right of Way Line
- Building Setback Line
- Easement Line
- Property Line

Notes:
1) North as shown on this map is True North at 78°35' Meridian of West Longitude, as established by GPS Static Survey by Niagara Boundary & Mapping Services. Coordinates and Bearings referenced are based on New York State Plane Coordinate System, Nad 83 (CORS 96) West Zone 3103. All distances on this map are Ground Distances. Combined Scale factor for this site is 0.9999204.
2) Vertice Control NAVD 88
3) Boundary Lines as shown on this Map for Reference. Refer to Niagara Boundary Job No. 6941/6941plot for Complete Boundary Survey.
4) Utilities as shown on this survey are plotted from visible structures and information provided by others. Niagara Boundary and Mapping Services along with the undersigned Land Surveyor assumes no responsibility as to the accuracy of underground locations.

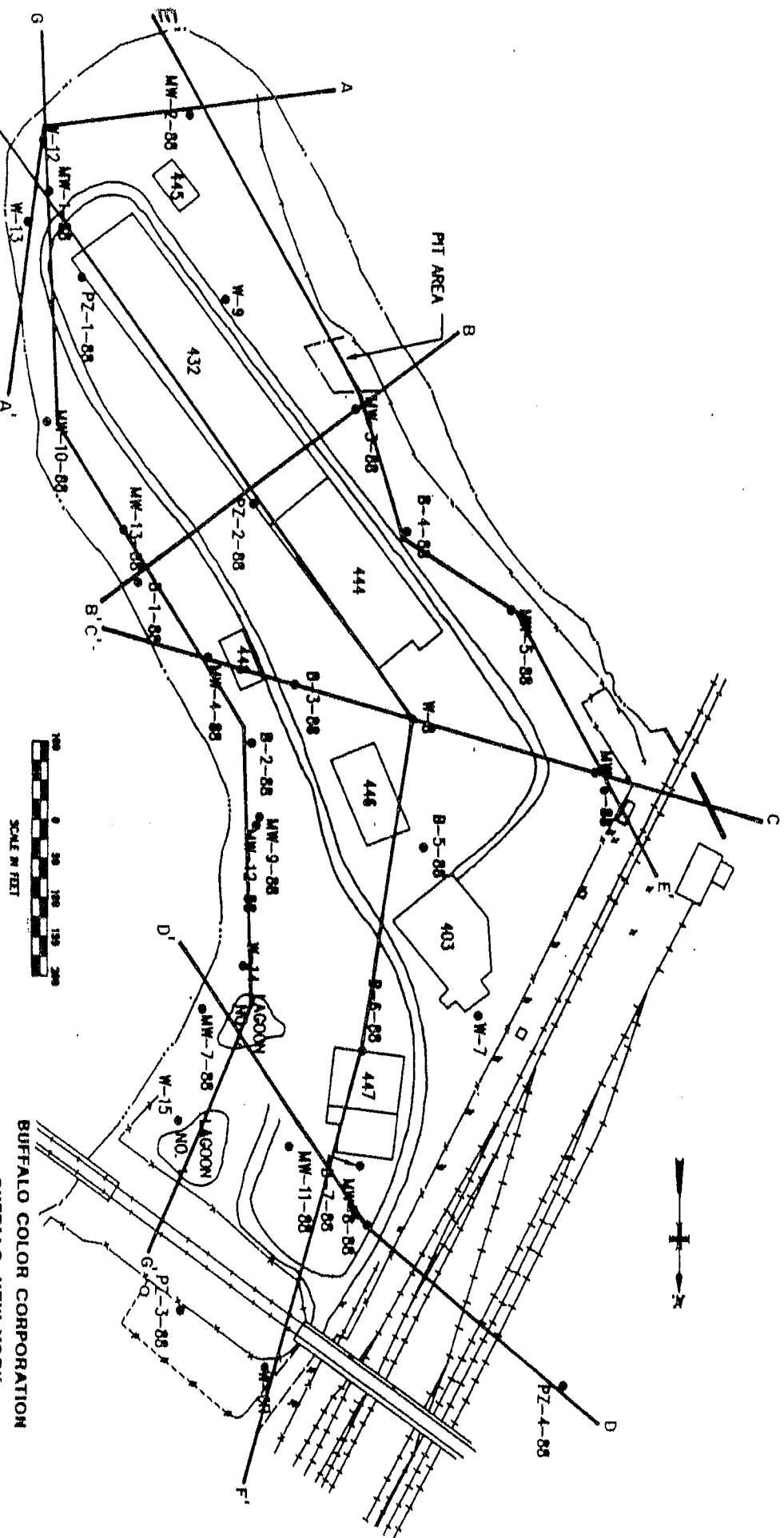
FIGURE 4



LEGEND

- — TEST BORING (B), MONITORING WELL (MW, W), OR PIEZOMETER (PZ)
- 446 — LOCATION OF DEMOLISHED BUILDING 446
- A—A' — CROSS SECTION A-A' LOCATION

FIGURE 5



BUFFALO COLOR CORPORATION
 BUFFALO, NEW YORK
 AREA TO REMEDIAL INVESTIGATION
 CROSS-SECTION LOCATIONS

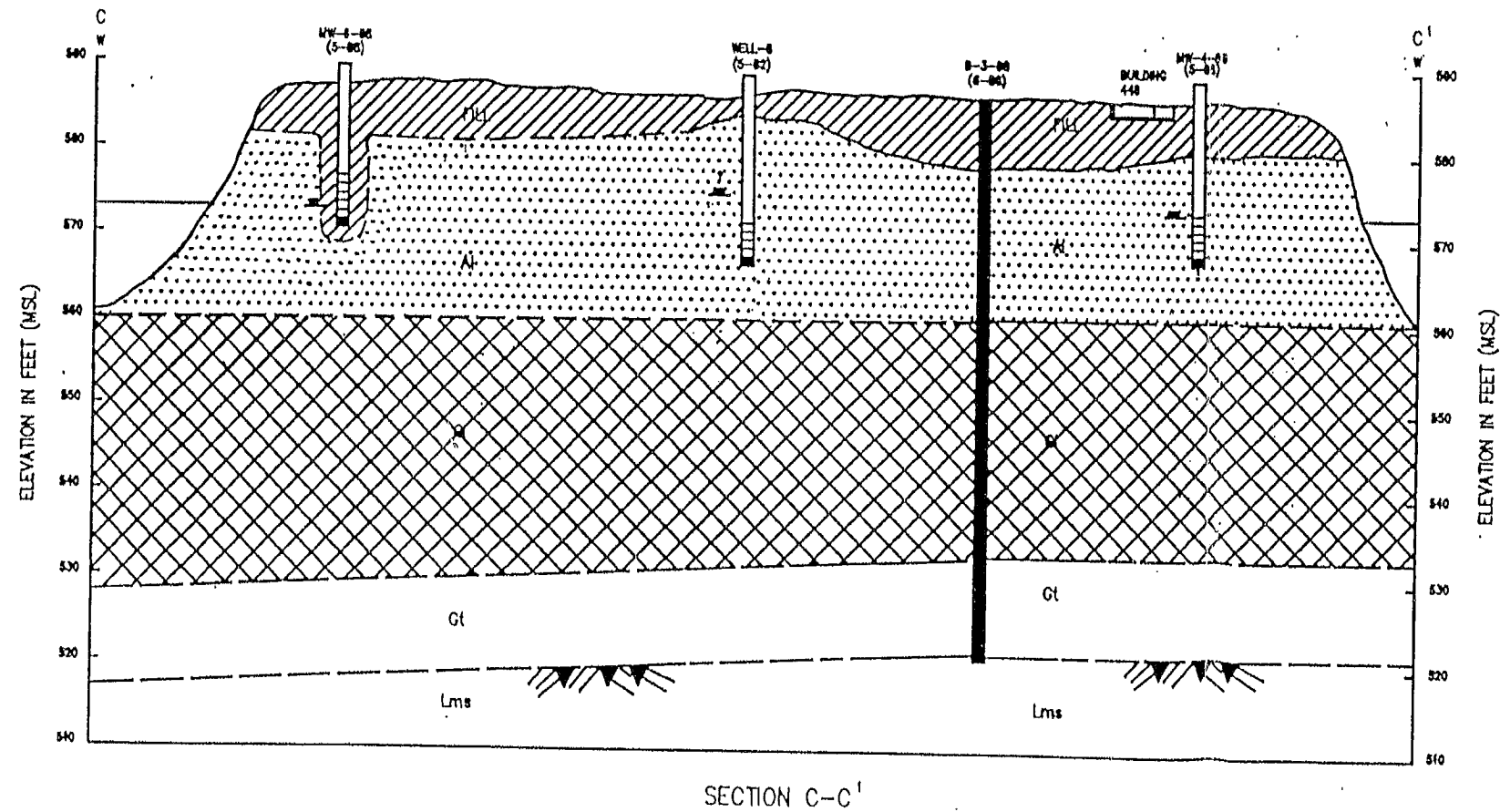
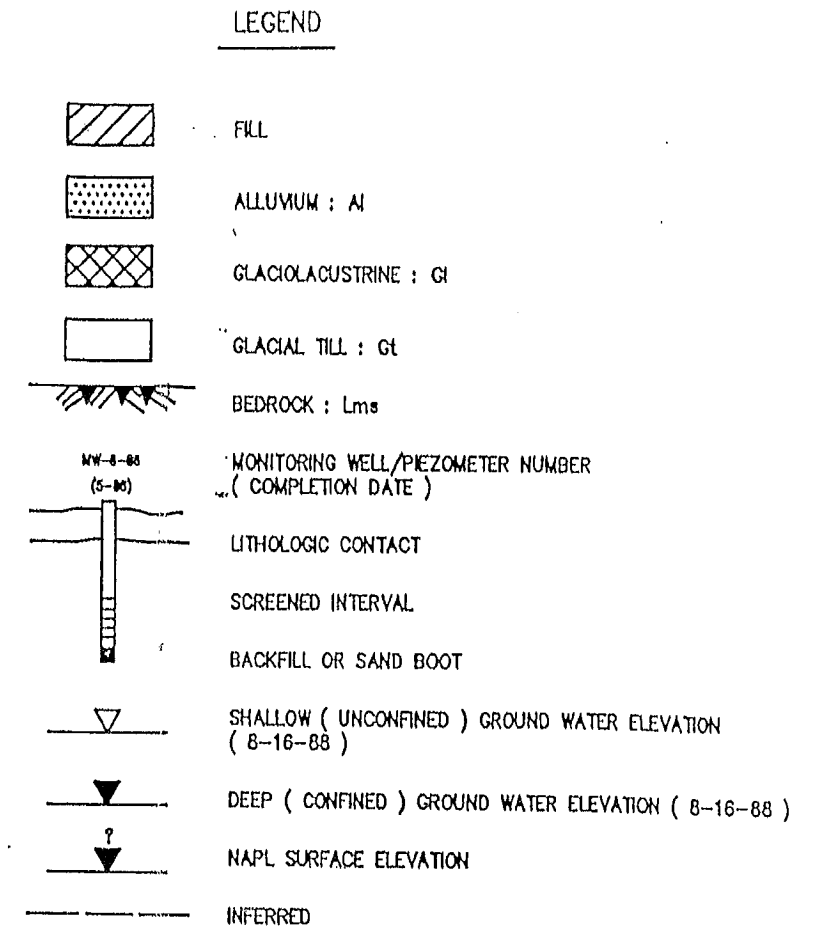
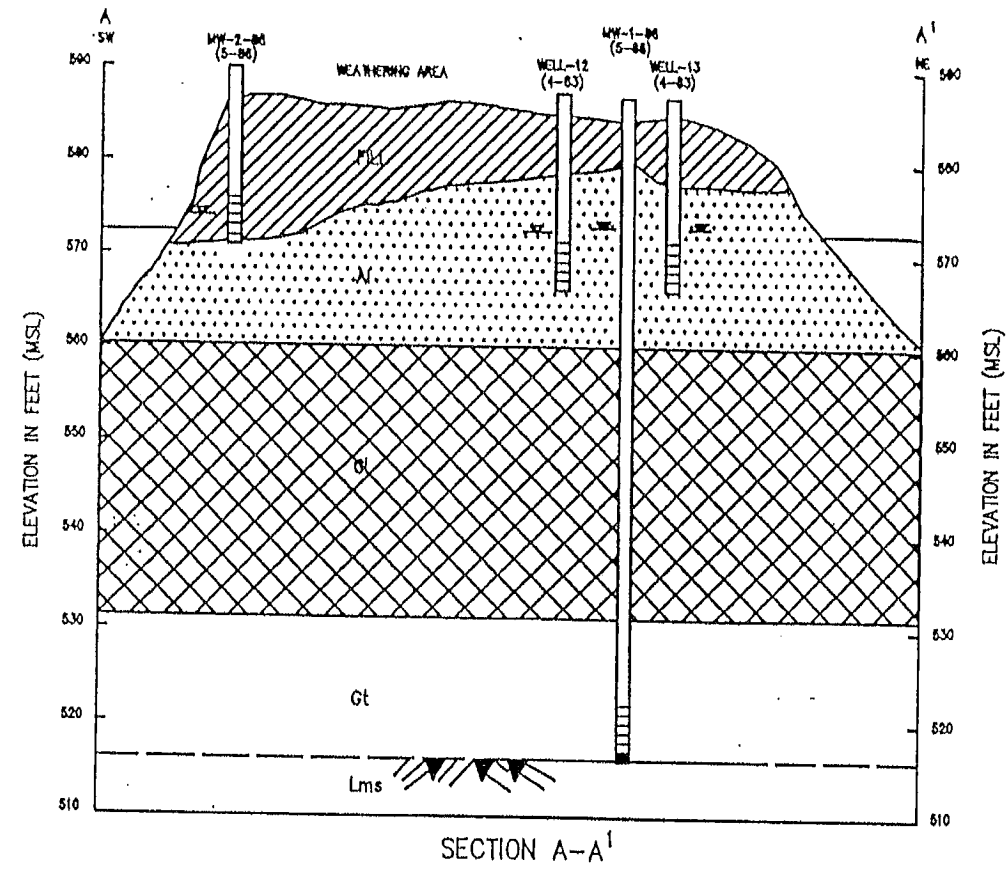
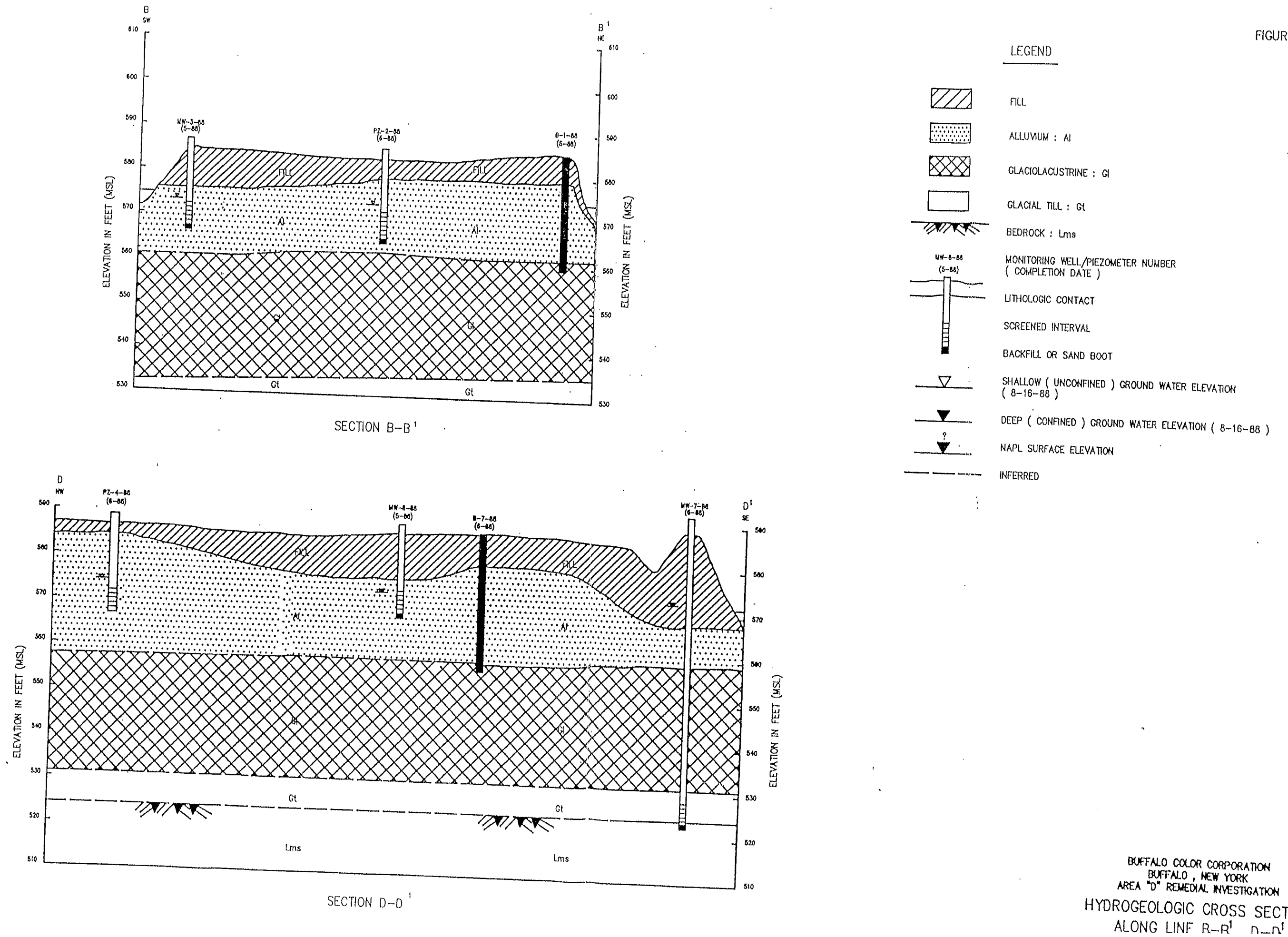
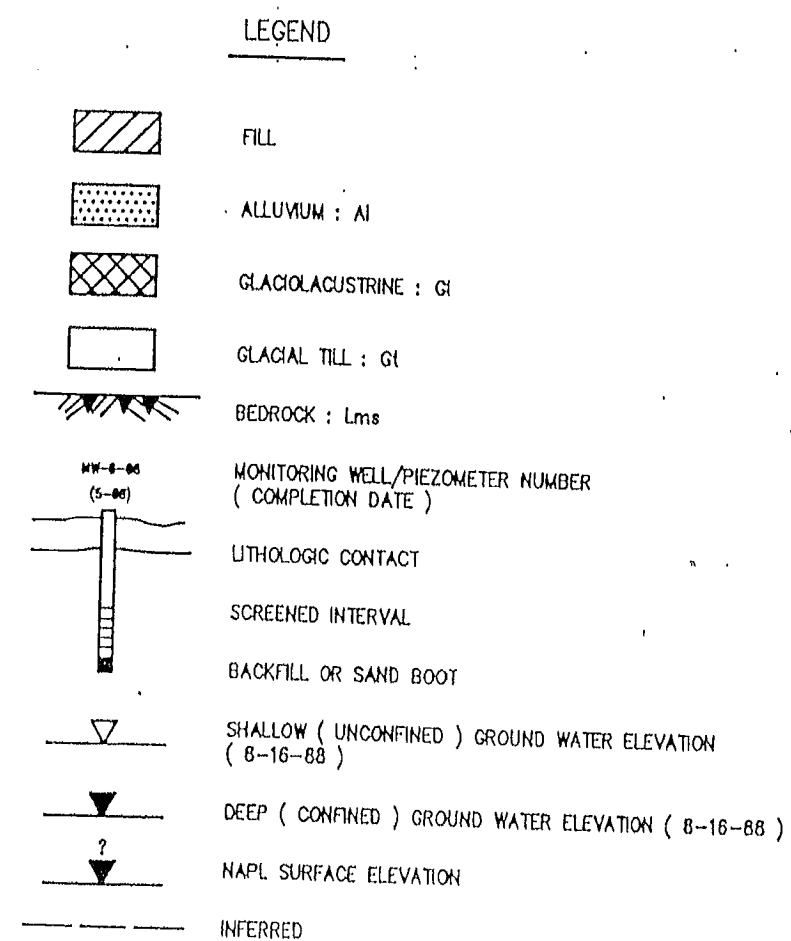
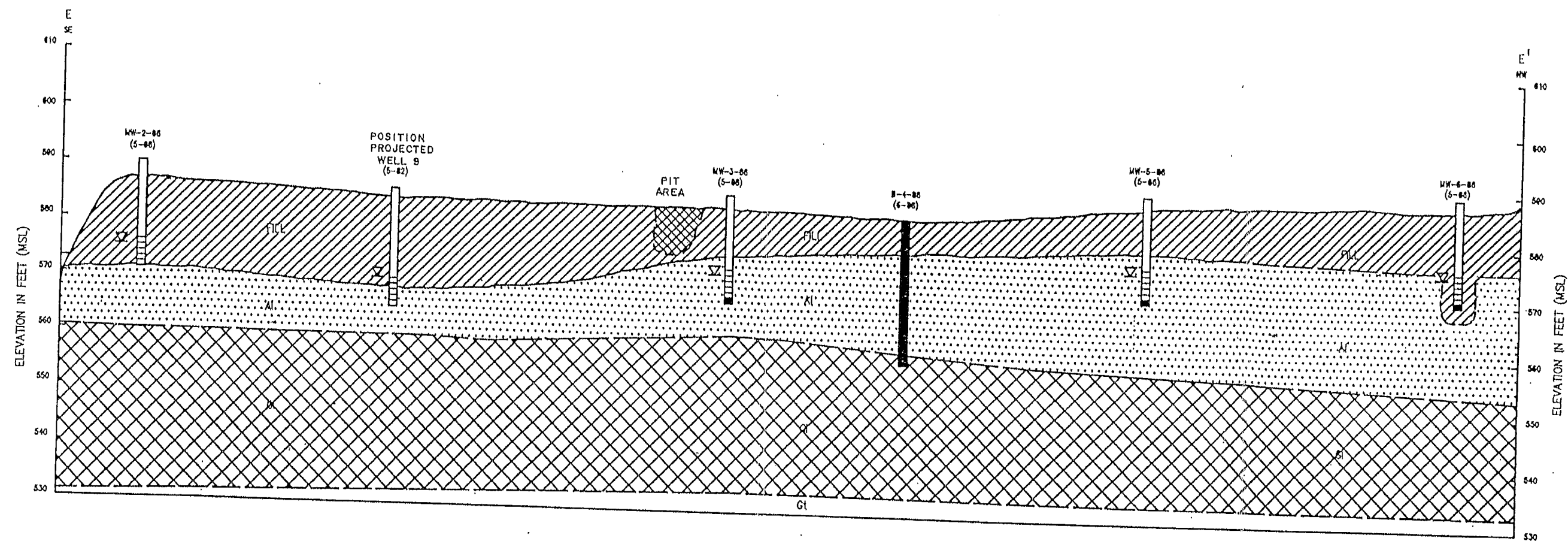
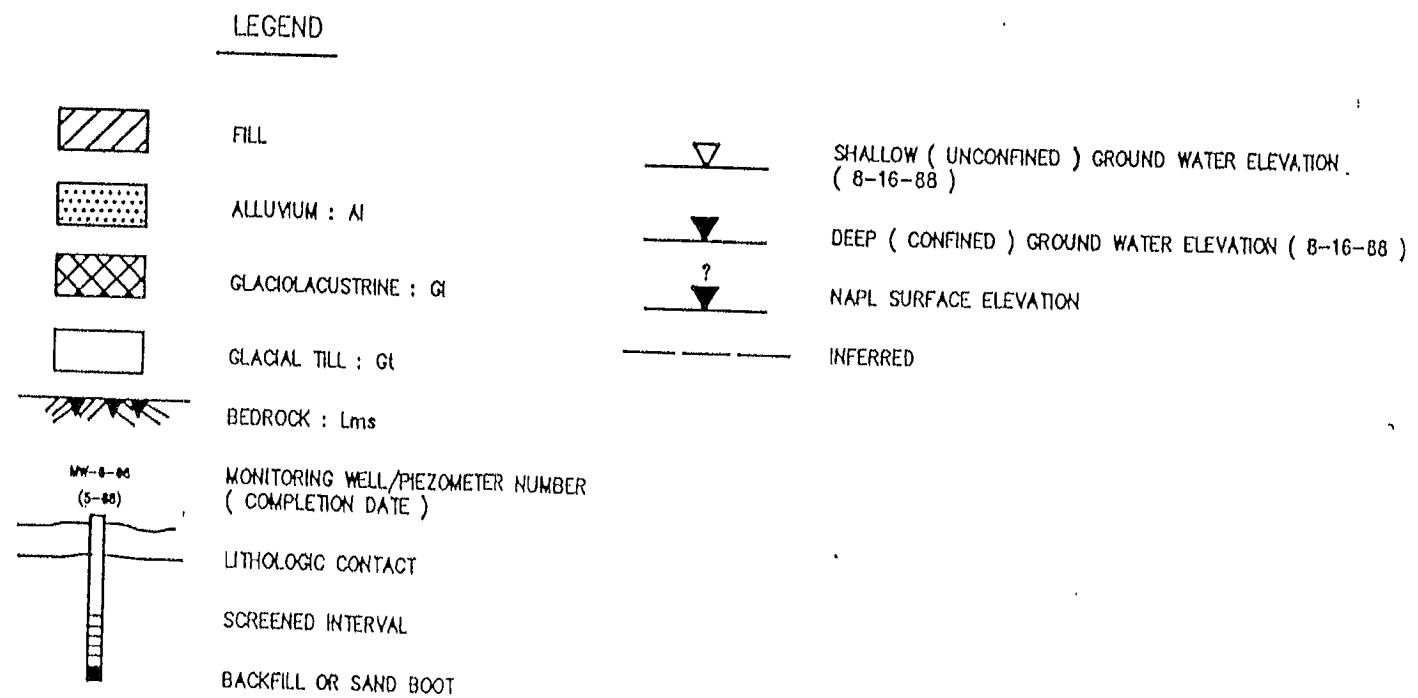
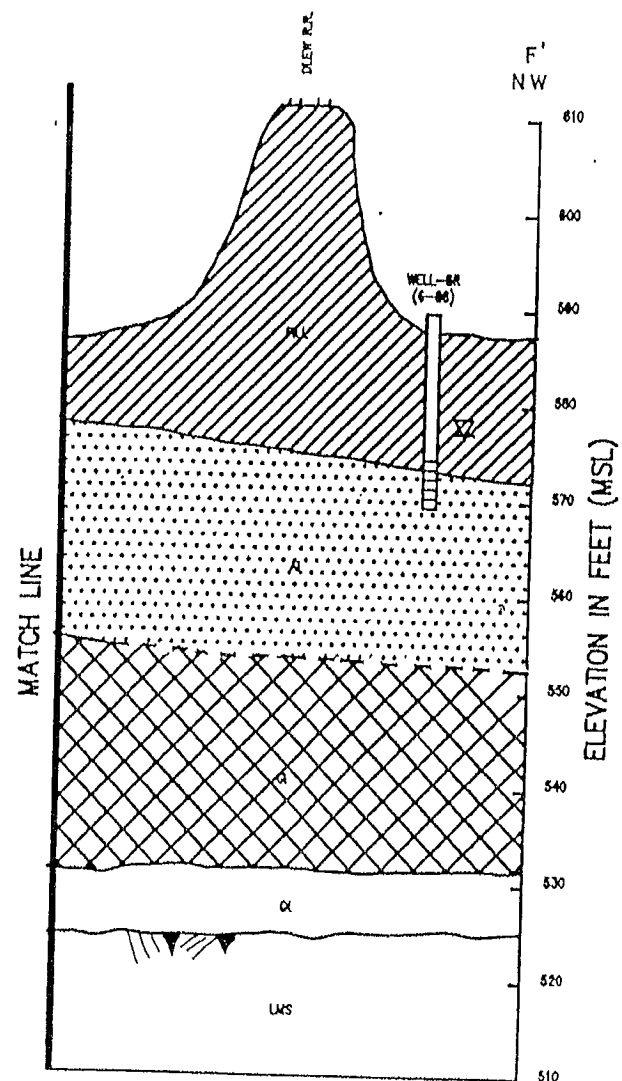
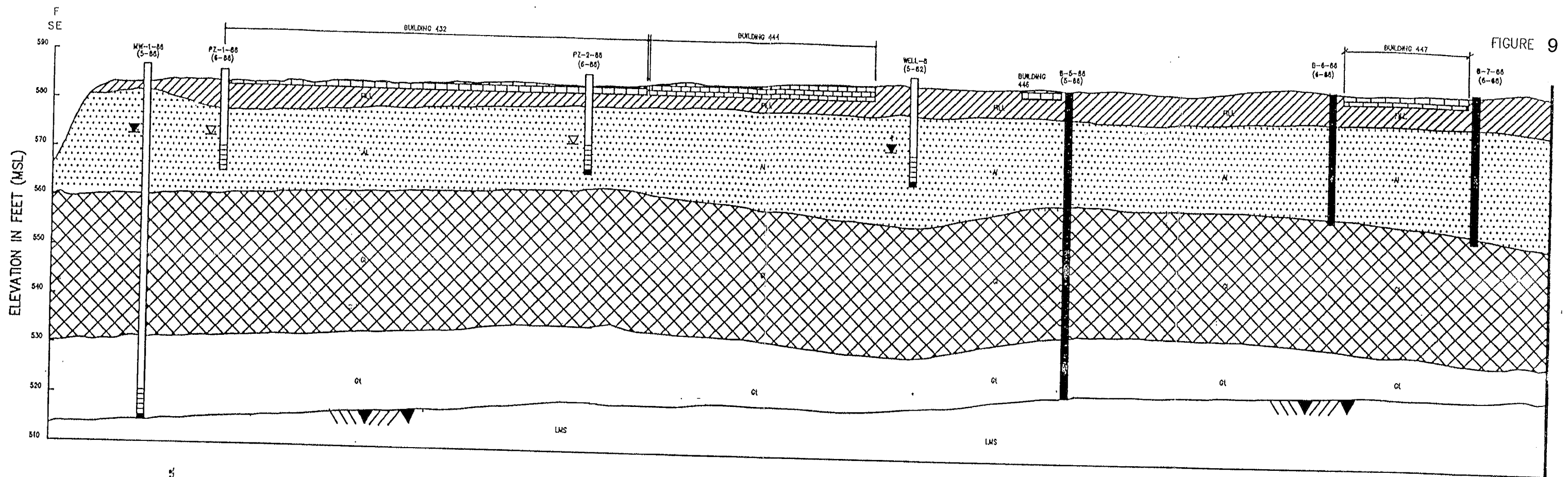


FIGURE 7





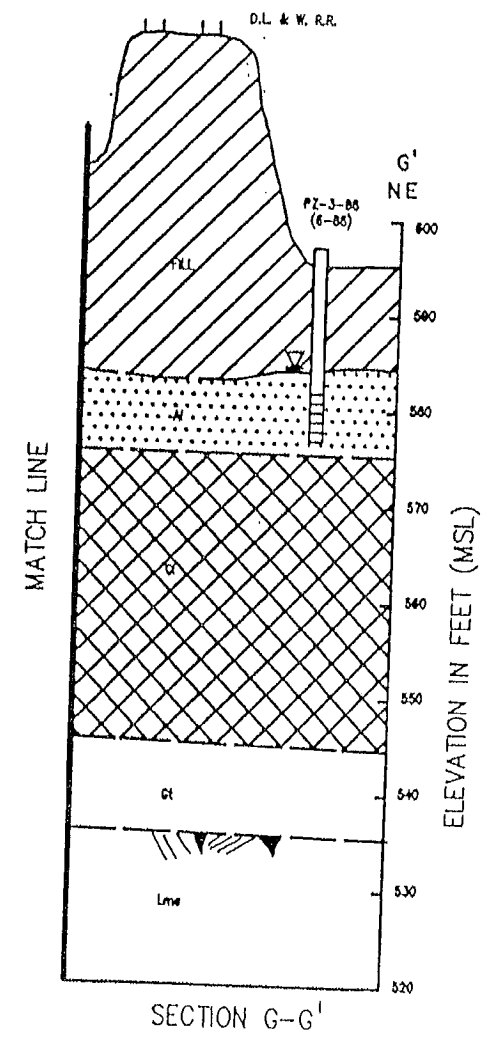
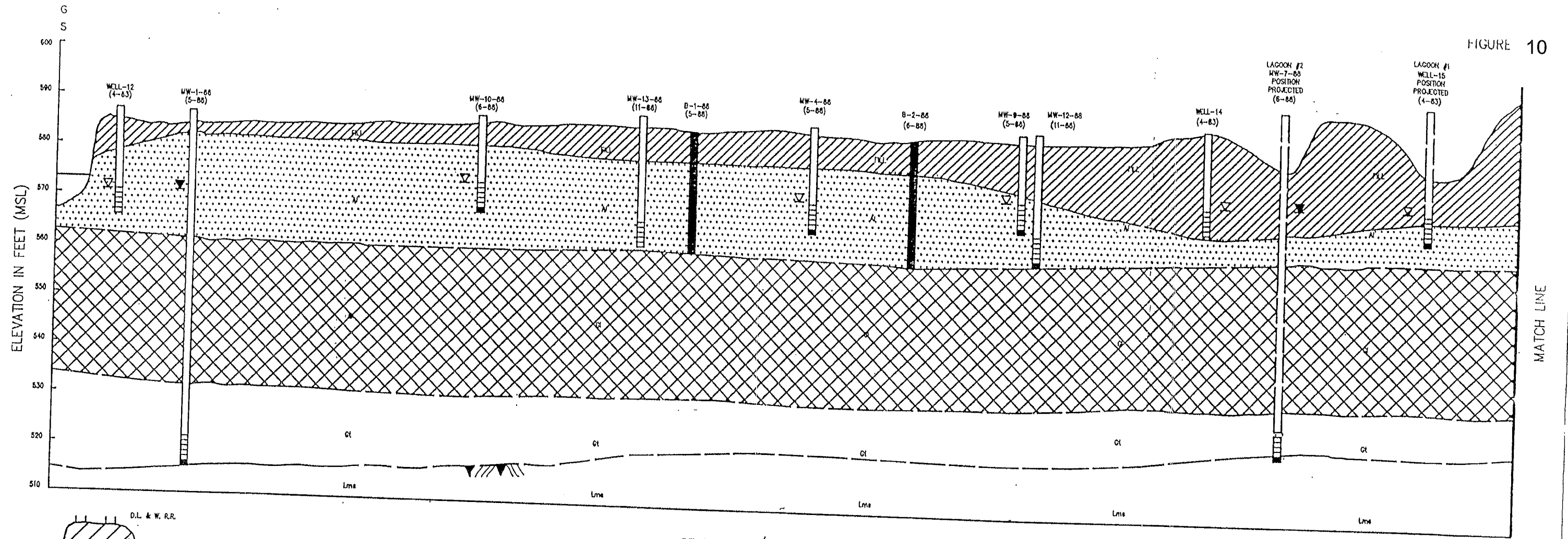
BUFFALO COLOR CORPORATION
 BUFFALO, NEW YORK
 AREA "D" REMEDIAL INVESTIGATION
 HYDROGEOLOGIC CROSS SECTION
 ALONG LINE E-E'
 SCALE: HORIZ. 1" = 100'



F-F'

BUFFALO COLOR CORPORATION
BUFFALO, NEW YORK
AREA "D" REMEDIAL INVESTIGATION
HYDROGEOLOGIC CROSS SECTION
ALONG LINE F-F'

FIGURE 10



LEGEND

	FILL		SHALLOW (UNCONFINED) GROUND WATER ELEVATION (8-16-88)
	ALLUVIUM : AI		DEEP (CONFINED) GROUND WATER ELEVATION (8-16-88)
	GLACIOLACUSTRINE : GI		NAPL SURFACE ELEVATION
	GLACIAL TILL : GT		INFERRED
	BEDROCK : Lms		
	MONITORING WELL/PIEZOMETER NUMBER (COMPLETION DATE)		
	LITHOLOGIC CONTACT		
	SCREENED INTERVAL		
	BACKFILL OR SAND BOOT		

G-G'

BUFFALO COLOR CORPORATION
BUFFALO, NEW YORK
AREA "D" REMEDIAL INVESTIGATION
HYDROGEOLOGIC CROSS SECTION
ALONG LINE G-G'

APPENDIX A
ENVIRONMENTAL EASEMENT