PARSONS

August 06, 2010

Mr. Julio Vazquez
U.S. Environmental Protection Agency, Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Mr. Kuldeep K. Gupta, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
Remedial Bureau A, Section C
625 Broadway
Albany, NY 12233-7015

Mr. Mark Sergott
Bureau of Environmental Exposure Investigation, Room 300
New York State Department of Health
547 River Street, Flanigan Square
Troy, NY 12180

SUBJECT: Draft Well Decommissioning Plan for 18 SWMUs, Seneca Army Depot Activity, Seneca Army Depot Activity, Seneca County, New York; EPA Site ID# NY0213820830 and NY Site ID# 8-50-006

Dear Mr. Vazquez/Mr. Gupta/Mr. Sergott:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Draft Well Decommissioning Plan for 18 SWMUs (SEADs 4, 5, Ash Landfill, 11, 12, 24, 25, 26, 27, 48, 59, 63, 67, 70, 71, 119B, 121C, and 122B) at the Seneca Army Depot Activity in Seneca County, New York (EPA Site ID# NY0213820830 and NY Site ID# 8-50-006). This work plan is essentially equivalent to the one that has been previously been approved for the decommissioning of wells at SEAD-13 at the Depot.

Parsons anticipates that we will initiate the decommissioning activities at the identified sites shortly after Labor Day once we confirm the availability of the driller and field personnel so that we can complete field activities associated during the summer and fall 2010.

Should you have any questions, please do not hesitate to call me at (617) 449-1565 to discuss them.

Sincerely,

Jeffrey W. Adams
Project Manager

Enclosures

cc: M. Hoaney, TechLaw
S. Absolom, SEDA
R. Battaglia, USACE, NY
J. Nohrstedt, USACE, Huntsville
K. Hoddinott, USACHPPM

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PARSONS

August 06, 2010

Mr. John Nohrstedt
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
Attn: CEHNC-FS-IS
4820 University Square
Huntsville, Alabama 35816-1822

SUBJECT: **Draft Well Decommissioning Plan for 18 SWMUs, Seneca Army Depot Activity, Seneca County, New York; Contract W912DY-08-D-0003, Delivery Order 0008**

Dear Mr. Nohrstedt:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Draft Well Decommissioning Plan for 18 SWMUs (SEADs 4, 5, Ash Landfill, 11, 12, 24, 25, 26, 27, 48, 59, 63, 67, 70, 71, 119B, 121C, and 122B) at the Seneca Army Depot Activity in Seneca County, New York. This work plan is essentially equivalent to the one that has been previously been approved for the decommissioning of wells at SEAD-13 at the Depot. This work was performed in accordance with the Scope of Work for Delivery Order 0008 under Contract W912DY-08-D-0003.

Parsons anticipates that we will initiate the decommissioning activities at the identified sites shortly after Labor Day once we confirm the availability of the driller and field personnel so that we can complete field activities associated during the summer and fall 2010.

Parsons appreciates the opportunity to provide you with the Final Well Abandonment Plan for this work. Should you have any questions, please do not hesitate to call me at (617) 449-1565 to discuss them.

Sincerely,

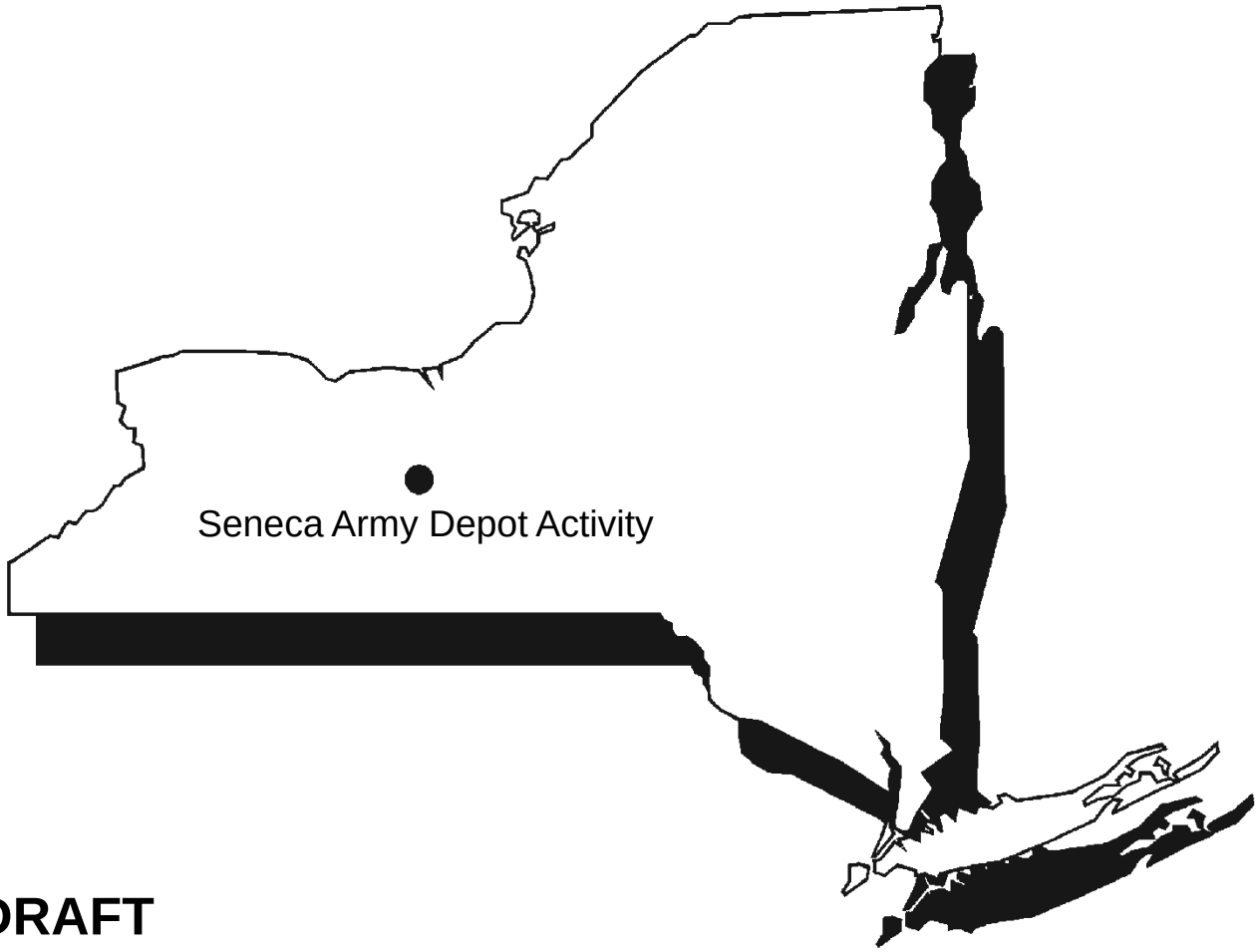
Jeffrey W. Adams
Project Manager

Enclosures

cc: S. Absolom, SEDA
K. Hoddinott, USACHPPM
R. Battaglia, USACE, NY

US Army, Engineering & Support Center
Huntsville, AL

Seneca Army Depot Activity
Romulus, NY



DRAFT
WELL DECOMMISSIONING PLAN

SEAD-4, SEAD-5, ASH LANDFILL OPERABLE UNIT, SEAD-11, SEAD-12, SEAD-24, SEAD-25, SEAD-26, SEAD-27, SEAD-48, SEAD-59, SEAD-63, SEAD-67, SEAD-70, SEAD-71, SEAD-119B, SEAD-121C, AND SEAD-122B
SENECA ARMY DEPOT ACTIVITY

Contract No. W912DY-08-D-0003
Task Order No. 0008
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

PARSONS
AUGUST 2010

WELL DECOMMISSIONING PLAN

FOR

The Munitions Washout Facility (SEAD-4), Former Sludge Waste Piles (SEAD-5), The Ash Landfill Operable Unit (SEADs 3, 6, 8, 14 and 15), Old Construction Debris Landfill (SEAD-11), Radioactive Waste Burial Sites (SEAD-12), Abandoned Powder Burning Pit (SEAD-24), Fire Training and Demonstration Pad (SEAD-25), Fire Training Pit (SEAD-26), Steam Cleaning Waste Tank in Building 360 (SEAD-27), Row E0800 Pitchblende Ore Storage Igloos (SEAD-48), Fill Area West of Building 135 (SEAD-59), Miscellaneous Components Burial Site (SEAD-63), Dump Site East of Sewage Treatment Plant No. 4 (SEAD-67), Fill Area Adjacent to Building T-2110 Area (SEAD-70), Alleged Paint Disposal Area (SEAD-71), Former Small Arms Range at the Lake Housing Area (SEAD-119B), Defense Reutilization and Marketing Office (DRMO) Yard (SEAD-121C), and Small Arms Range at the Airfield Parcel (SEAD-122B)

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER

HUNTSVILLE, ALABAMA

and

SENECA ARMY DEPOT ACTIVITY

ROMULUS, NEW YORK

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Contract Number W912DY-08-D-0003
Task Order No. 0008
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

August 2010

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LIST OF ACRONYMS

AOC(s)	Area(s) of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EPA	Environmental Protection Agency
FFA	Federal Facilities Agreement
IAG	Inter-Agency Agreement
LUC(s)	Land Use Control(s)
NA	No Action
NFA	No Further Action
NYSDEC	New York State Department of Environmental Conservation
OE	Ordnance and Explosives
PAH(s)	Polycyclic Aromatic Hydrocarbon(s)
ROD(s)	Record(s) of Decision
SCIDA	Seneca County Industrial Development Agency
SEDA	Seneca Army Depot Activity
SVOC(s)	Semivolatile Organic Compound(s)
SWMU	Solid Waste Management Unit
USAEHA	U.S. Army Environmental Hygiene Agency
USAESCH	U.S. Army, Engineering and Support Center

1.0 INTRODUCTION

1.1 BACKGROUND

The Seneca Army Depot Activity (SEDA or the Depot) is a 10,587-acre former military facility located in Seneca County near Romulus, New York, that was owned by the United States Government and operated by the Department of the Army from 1941 until 2000. SEDA is located between Seneca Lake and Cayuga Lake and is bordered by New York State Highway 96 to the east, New York State Highway 96A to the west, and sparsely populated farmland to the north and south. Prior to construction of SEDA, the land was primarily used for agricultural, farming, and residential purposes.

The Depot was nominated and designated for closure under the 1995 Department of Defense (DoD) Base Realignment and Closure (BRAC) process and the Army terminated its military mission at the facility on September 30, 1999, and closed the facility on September 30, 2000. Since September 2000, the Army has maintained a caretaker role at the Depot as environmental obligations at the former facility have been completed. Since 200, portions of the Depot have been deeded to the State of New York and the Seneca County Industrial Development Agency (SCIDA) for redevelopment and reuse. Nearly 8,500 acres of land at the former Depot has been transferred to other entities since 2000.

SEDA was proposed for inclusion on the National Priority List (NPL) as a Federal Facility site in July 1989; Congress approved and finalized the Depot's listing in August 1990. In accordance with requirements of Section 120 of CERCLA (Title 42, *U.S. Code*, § 9620), the US Army, the Environmental Protection Agency (EPA), and New York State Department of Environmental Conservation (NYSDEC) negotiated and signed a Federal Facilities Agreement (FFA) or an Interagency Agreement (IAG) governing site investigation and remediation of the Depot in January 1993. This agreement determined that future investigations were to be based on CERCLA guidelines and RCRA was considered an Applicable or Relevant and Appropriate Requirement (ARAR) pursuant to Section 121 of CERCLA.

1.2 PURPOSE

The purpose of this work plan is to describe well decommissioning procedures that will be used to decommission approximately 180 groundwater monitoring wells located at 18 former solid waste management units (SWMUs) or areas of concern (AOCs) within SEDA. This plan has been prepared for the Depot and the U.S. Army, Engineering and Support Center, Huntsville (USAESCH) under Contract W912DY-08-D-003, Task Order No. 8.

1.3 WELL DECOMMISSIONING

At this time, the Army has determined that approximately 180 wells within 18 former SWMUs can be decommissioned because they are no longer needed for environmental sampling and analysis or monitoring purposes. Wells that have been selected for decommissioning are located in the following former SWMUs or AOCs:

- SEADs-3, 6, 8, 14, & 15 – the Ash Landfill Operable Unit;
- SEAD-4, the former Munitions Washout Facility Leach Field;
- SEAD-5 the former Sewage Sludge Waste Piles;
- SEAD-11, the former Old Construction Landfill;
- SEAD-12, the former Radiological Waste Burial Pit Site;
- SEAD-24, the former Abandoned Powder Burning Pit;
- SEAD-25, the former Fire Training and Demonstration Pad;
- SEAD-26, the former Fire Training Pit;
- SEAD-27, the former Steam Cleaning Waste Tank in Building 360;
- SEAD-48, the former Pitchblende Storage Igloos;
- SEAD-59, the former Fill Area West of Building 135;
- SEAD-63, the former Miscellaneous Components burial Site;
- SEAD-67, the former Dump Site east of Sewage Treatment Plan No. 4;
- SEAD-70, the former Building 2100 Filled Area;
- SEAD-71, the former Alleged Paint Disposal Area;
- SEAD-119B, the former Small Arms Range at Lake Shore Housing;
- SEAD-121C, the former Defense Reutilization and Marketing Office (DRMO) Yard; and
- SEAD-122B, the former Small Arms Range at the Airfield.

The location of these SWMUs is shown on **Figure 1**.

The Army has commissioned Parsons Infrastructure & Technology Group Inc. (Parsons) to prepare and submit a work plan that describes the procedures that will be implemented to safely abandon the unneeded monitoring wells for regulatory agency review and approval. This Plan has been prepared in accordance with the procedures and recommendations provided in NYSDEC's Draft guidance issued January 8, 2009, titled *Groundwater Monitoring Well Decommissioning.*

Wells selected for decommissioning within this work plan are not needed for continuing monitoring of groundwater quality or conditions at sites where they are installed. In some cases (e.g., SEADs 25 and Ash Landfill Operable Unit), wells installed at a site where long-term monitoring is ongoing will be abandoned because they are not currently used in the long-term monitoring program that is underway. In some other cases (e.g., SEADs 12 and 70), long-term monitoring of groundwater is not anticipated to be required at the site, but remedial determinations have not been negotiated and finalized; if long-term monitoring is needed once the RODs for these sites are negotiated and finalized, new wells will be installed as needed to suit the needs of the required monitoring program.

Finally, in most other cases, the wells selected for decommissioned have been chosen because no groundwater monitoring program is required per the terms of the final ROD approved for the site.

1.4 AREA OF CONCERN (AOC) DESCRIPTION AND STATUS

Specific information pertinent to the environmental conditions at the 18 former AOCs at which wells are scheduled for abandonment are presented, discussed, and summarized in the following material. The Army proposes to decommission selected existing monitoring wells within the 18 AOCs during the project. Wells selected for abandonment at the 18 sites have been selected because they are no longer needed, or they are not expected to be needed, for long-term monitoring of groundwater at the identified AOCs. Wells at sites classified as such are no longer necessary for further analysis of site conditions. Brief descriptions of each of the AOCs are presented below, along with summaries of any submitted reports and the proposed or agreed-to plans for each.

1.4.1 AOC Site Descriptions and Status

SEAD-4: The Munitions Washout Facility

SEAD-4 consists of two parcels of land that encompass approximately 47.5 acres and that sit on opposite sides of Seneca Road in the southwestern portion of the former Depot. The portion of SEAD-4 located to the north and east of Seneca Road sits atop and on the on the southwestern face of a downwardly sloping hill that flattens out near Seneca Road. This portion of SEAD-4 previously contained numerous paved and dirt access roads, several buildings, out structures, and man-made drainage ditches once associated with the former Munitions Washout facility, many of which have now been demolished and removed. The southwestern portion of SEAD-4 is and has been largely undeveloped over time. Unoccupied closed buildings and building remnants are located adjacent to the southwestern edge of Seneca Road, but these give way to unoccupied and undeveloped areas as one traverses this portion of the site towards the railroad line that runs to the west. Numerous earthen drainage ditches lead to the south and west towards the location of a former pond that once was located in this portion of the site, but which was drained and removed during the soil excavation and disposal remedial action conducted at this AOC. The locations of monitoring wells at SEAD-4, with the wells selected for decommissioning highlighted, are shown on **Figure 2**.

SEAD-5: Former Sludge Waste Piles

SEAD-5 is a rectangular parcel of land encompassing approximately 3.1 acres in the east-central portion of the Depot. SEAD-5 is located approximately 600 feet west of Building 135 and approximately 3,000 feet west-southwest of the Depot's main entrance on State Route 96. During the 1980s, sewage sludge from the wastewater treatment plants in Buildings 4 and 715 was stockpiled at SEAD-5; sludge generated from the plants was removed from drying beds near the buildings then transported to SEAD-5 bi-monthly where it was staged until its disposal. Portions of SEAD-5 were also used as part of the Depot's former Department of Public Works storage and staging area for heavy equipment, materials, and supplies.

At present land within and surrounding SEAD-5 is used by the Seneca County Highway Department as a staging and storage area for its equipment and supplies. During 2009, a soil cover was

constructed over an area of SEAD-5 where soils were determined to contain levels of carcinogenic polyaromatic hydrocarbons (cPAHs) at levels that posed potential risk or health hazards to future commercial and industrial users of the property. The soil cover was constructed of reclaimed soil from non-time critical removal actions conducted at the Depot, as well as a demarcation barrier (i.e., colored "snow fence") that is overlain by 1-foot of borrow material (i.e., bank run sand, gravel, and crushed concrete). The soil cover overlies an area of approximately 1.6 acres of land that is located adjacent to and south of the unnamed dirt road that runs along the northern bound of SEAD-5. This dirt road originates at the intersection of Administration Avenue, 4th Avenue and South Street in the former Administration Area of the Depot and travels westward toward what previously was the location of munitions deactivation furnaces. Provisions of the final ROD for SEAD-5 prohibit unauthorized excavations or other activities that might compromise the integrity of the cover.

The locations of monitoring wells at SEAD-5, with the wells selected for decommissioning highlighted, are shown on **Figure 3**.

SEADs 3, 6, 8, 14 and 15: The Ash Landfill Operable Unit

The Ash Landfill Operable Unit is located in the west-central portion of the Depot and encompasses an area of approximately 46.7 acres. From 1941 to 1974, uncontaminated trash was burned in a series of burn pits near the former incinerator building (Building 2207). Building 2207 was demolished in 2006. According to a U.S. Army Environmental Hygiene Agency (USAEHA) Interim Final Report, Groundwater Contamination Survey No. 38-26-0868-88 (July 1987), the ash from the refuse burning pits was buried in the Ash Landfill (SEAD-6) from 1941 until the late 1950s or early 1960s. According to an undated aerial photograph of the incinerator during operation, the active area of the Ash Landfill extended at least 500 feet north of the incinerator building, near a bend in a dirt road. A fire destroyed the incinerator on May 8, 1979, and the landfill was subsequently closed. Post-closure, the landfill was apparently covered with native soil of various thicknesses, but was not closed with an engineered cover or cap. Other areas at the site were used as a grease pit and for burning debris, and for the burial of non-combustible materials at a site on the south and west sides of the intersection of Smith Farm and North South Base Line roads.

The locations of monitoring wells at the Ash Landfill, with the wells selected for decommissioning highlighted, are shown on **Figure 4**.

SEAD-11: Old Construction Debris Landfill

The former Old Construction Debris Landfill (SEAD-11) was located in the southwestern portion of the Seneca Army Depot Activity. During its existence, SEAD-11 measured approximately 4 acres in size. Prior to the interim removal action (IRA), which was conducted between October 2006 and January 2007 and during which all buried debris and fill was excavated and transported off-site for disposal at a licenses landfill, SEAD-11 was characterized as a terraced area of elevated topography that was set on the western face of downwardly sloping terrain that ends near the Depots outer security fence line, in the vicinity of the former airfield. The current SEAD-11 site is vacant, and generally follows the pre-disposal activity sloping terrain that predominates this portion of the Depot.

The locations of monitoring wells at SEAD-11, with the wells selected for decommissioning highlighted, are shown on **Figure 5**.

SEAD-12: Radioactive Waste Burial Sites

SEAD-12 is located in the north-central portion of SEDA in the former secured Weapons Storage Area (WSA); SEAD-12 encompasses the northern 360 acres of the former WSA. The portion of SEAD-12 located north of Service Road Number 2 was used for disposal of laboratory and maintenance wastes and military components. This portion of SEAD-12 also includes Buildings 802 through 807, 810, 812 and 825 which were part of the WSA facility at SEDA. The eastern, western, and southern portions of SEAD-12 are primarily open fields and include Buildings 813 through 817, 819, and 823.

The locations of monitoring wells at SEAD-12, with the wells selected for decommissioning highlighted, are shown on **Figures 6a** and **6b.**

SEAD-24: Abandoned Powder Burning Pit

The former SEAD-24 site is located in the west-central portion of SEDA. The burning pit previously located at this AOC comprised an area approximately 325 feet by 150 feet; it was surrounded on the east, south and west by a U-shaped, vegetated berm that is approximately 4 feet high. The historic burn pit and berm area was excavated and removed during a time-critical removal action (TCRA) that was conducted between 2003 and 2006.

The overall former SEAD-24 site is bounded by West Kendaia Road to the north and by areas of open grassland and low brush to the east, south and west. SEDA railroad tracks are located approximately 400 feet east of the former U-shaped berm. The Abandoned Powder Burning Pit was active during the 1940s and 1950s. Although operating practices at this site are unknown, black powder, M10 and M16 solid propellants, and explosive trash were probably disposed here by burning. Petroleum hydrocarbon fuel may have been used to initiate burns.

The locations of monitoring wells at SEAD-24, with the wells selected for decommissioning highlighted, are shown on **Figure 7**.

SEAD-25: The Fire Training and Demonstration Pad

The Fire Training and Demonstration Pad (SEAD-25) is located in the east-central portion of SEDA. The site is bounded to the east by Administration Avenue, to the south by Ordnance Drive, to the west by grassland, brush and conifers, and to the north by grassland and a baseball field. SEAD-25 was in use from the late 1960s to the late 1980s when the AOC was used for fire control training. During the 1980s, the pad was used twice for firefighting demonstrations. A remedial action focused on the excavation of volatile organic compound and semi-volatile organic compound contaminated soil from the area was conducted in 2005.

The locations of monitoring wells at SEAD-25, with the wells selected for decommissioning highlighted, are shown on **Figure 8**.

SEAD-26: The Fire Training Pit and Area

The Fire Training Pit and Area (SEAD-26) is located in the southeastern portion of SEDA. The site is bounded to the east and west by SEDA railroad tracks; on the south by grassland and low brush; and on the north by 7th Street. SEAD-26 was in use from 1977 to 1994. The site was used one to four times a year for firefighting training. During training various flammable materials were floated on water, ignited, and extinguished.

The locations of monitoring wells at SEAD-26, with the wells selected for decommissioning highlighted, are shown on **Figure 9**.

SEAD-27: Steam Cleaning Waste Tank in Building 360

Located in the east-central portion of the Depot, Building 360 is the former location of equipment refurbishing and reconstruction operations. During operations, equipment such as lathes, presses, and metal-working machines were degreased with steam, high-pressure water, and detergents in the cleaning area then moved to other portions of Building 360 for rehabilitation. The Steam Cleaning Waste Tank (SEAD-27) is located in Building 360. It is a belowground, concrete tank above which track-mounted cars loaded with equipment requiring cleaning were positioned and steam cleaned. The floor surrounding and overlying the waste tank slopes towards the tank to channel all condensate and over spray back towards the tracks and collection grates. The maximum capacity of the Steam Cleaning Waste Tank is approximately 5,000 gallons when filled to near the top or 1,100 gallons to the 2-foot freeboard mark. Use of the Steam Cleaning Waste Tank began in 1976 and ceased in January 1990.

The locations of monitoring wells at SEAD-27, with the wells selected for decommissioning highlighted, are shown on **Figure 10**.

SEAD-48: Row E0800 Pitchblende Ore Storage Igloos

SEAD-48 is located in the southern part of the Depot along the southern side of Igloo Road No. 39, bounded to the east by Fayette Road and to the west by Seneca Road. SEAD-48 consists of 11 ammunition storage bunkers (i.e., igloos) identified as Igloos E0801 through E0811. Each igloo is constructed of reinforced concrete that is shaped like a half-cylinder and measure 26.8 feet wide by 81 feet long by 13 feet high at their highest point. During the 1940s, 1,823 barrels of pitchblende, a uranium containing ore, were stored in the igloos for approximately three months. Upon the removal of the pitchblende, the igloos became a storage site for non-radioactive munitions through the late 1970s. Licensed radioactive commodities were stored in Igloos E0801 and E0802 until the late 1970s.

The locations of monitoring wells at SEAD-48, with the wells selected for decommissioning highlighted, are shown on **Figure 11**.

SEAD-59: Fill Area West of Building 135

The Fill Area West of Building 135 (SEAD-59) is located in the east-central portion of SEDA. SEAD-59 is approximately 4 acres in size and encompasses an area along both sides of an unnamed

dirt road that runs from the intersection of South Street, 4th Avenue and Administration Avenue westerly through the former Depot and current Seneca County Highway Department maintenance yard and into the area previously occupied by the Army's historic Deactivation Furnaces (SEAD-16 and SEAD-17) Historically, SEAD-59 was used for the disposal of construction debris and oily sludge, and as the Army's version of a local Department of Public Works yard where vehicles and materials were staged.

The locations of monitoring wells at SEAD-59, with the wells selected for decommissioning highlighted, are shown on **Figure 12**.

SEAD-63: Miscellaneous Components Burial Site

Located inside the former secured WSA adjacent to SEAD-12 in the northern area of the former Depot, SEAD-63 is bounded by paved roads on the north, south, and west and by open grassland to the east. The area is an undeveloped site approximately 480 ft. by 300 ft. with vegetation covering much of the ground. SEAD-63 was used from the 1950s to 1980s as a disposal area for classified parts. During this period, multiple disposal pits were excavated along a north-south line measuring approximately 200 ft. in length. SEDA personnel associated with SEAD-63 identified the types of materials disposed at this site as metal parts and "inert materials."

The locations of monitoring wells at SEAD-63, with the wells selected for decommissioning highlighted, are shown on **Figure 13**.

SEAD-67: Dump Site east of Sewage Treatment Plant No. 4

The Dump Site east of Sewage Treatment Plant No. 4 (SEAD-67) is located in the east central portion of the Depot off of West Romulus Road. SEAD-67 was previously comprised of five waste piles and two berm structures that were located east of sewage treatment plant No. 4 and south of West Romulus Road in the east-central portion of SEDA. Little is known about the history of SEAD-67 or the origin of the bermed structures and the waste piles. The contents of the piles and the bermed structures were removed during a TCRA conducted between 2002 and 2004 when all of the stockpiled soil and other surface soils were excavated and disposed off-site at a licensed landfill. An Expanded Site Inspection performed at SEAD-67 indicated that soil at SEAD-67 had been impacted by SVOCs, polynuclear aromatic hydrocarbons (PAHs), and mercury.

The locations of monitoring wells at SEAD-67, with the wells selected for decommissioning highlighted, are shown on **Figure 14**.

SEAD-70: Fill Area Adjacent to former Building T-2110

The fill area that comprises SEAD-70 is located on the southern side of East-West Baseline Road approximately 750 feet west of the intersection with North-South Base Line Road. The AOC is a mounded landfill once used for construction debris. It is located on the southeastern side of the former Building T-2110, a collapsed wooden barn, which was demolished and removed in 2006.

The locations of monitoring wells at SEAD-70, with the wells selected for decommissioning highlighted, are shown on **Figure 15**.

SEAD-71: the Alleged Paint Disposal Area

The Alleged Paint Disposal Area (SEAD-71) is located in the east-central portion of SEDA. SEAD-71 (the Alleged Paint Disposal Area) is wedge shaped and is located west of 4th Avenue near Buildings 114 and 127. The AOC is approximately 2.4 acres in size and bounded on the north and south by railroad tracks serving Buildings 114 and 127. The topography is relatively flat with a gentle slope to the southwest.

Prior to the RI, rumors suggested that paints and/or solvents were disposed at SEAD-71 in burial pits. The results of the RI test pitting operations failed to confirm the paint and oil disposal rumors, but did indicate that the area had been used for the disposal of construction debris, including sheet metal, asphalt, chain link fencing, sand and stone, piping, railroad ties, wood and cinders.

The locations of monitoring wells at SEAD-71, with the wells selected for decommissioning highlighted, are shown on **Figure 12**.

SEAD-119B: Former Small Arms Range at the Lake Housing Area

The former Small Arms Range at the Lake Housing Area is located approximately 5,000 feet west of the main area of SEDA where military personnel were previously billeted. This area is outside of the current SEDA boundaries. The site is bounded on the north by the gorge of the Kendaia Creek and by Scorpion Road on the south. The most recent photographs of SEAD-119B indicate that the site is currently overgrown with thick brush and small trees. According to the ordnance and explosives (OE) Archive Search Report (ASR) (USACE, 1998), the Former Small Arms Range at the Lake Housing Area first appears on site plans in 27 February 1955 as part of the Sampson Air Force Base. Not much is known about the operation of SEAD-119B, but during operations a historic earthen berm located at the range served as a backstop for small arms bullets. It is likely that the berm was subsequently bulldozed potentially surface or near-surface soils contain small arms projectiles.

The locations of monitoring wells at SEAD-119B, with the wells selected for decommissioning highlighted, are shown on **Figure 16**.

SEAD-121C: Defense Reutilization and Marketing Office (DRMO) Yard

Located roughly 4,000 ft. southwest of the former Depot's main entrance off State Route 96, the DRMO Yard (SEAD-121C) is a triangular gravel lot encompassing approximately 8.75 acres. Several man-made features are prominent within the DRMO Yard including one storage building; an earthen-bottom, open storage cell; an elongated, segmented, rectangular-shaped, open concrete storage structure; and a multi-chambered, open storage cell. The DRMO Yard was used by the Army to store scrap metal, vehicles, and other items that were no longer needed for national defense, or that did not comply with legislative and regulatory requirements.

The locations of monitoring wells at SEAD-121C, with the wells selected for decommissioning highlighted, are shown on **Figure 17**.

SEAD-122B: Small Arms Range at the Airfield Parcel

SEAD-122B, which is located off Depot property near the SEDA airfield, was used as a small arms range for small arms qualification of base and security personnel beginning in the 1950s. The area consists of two bermed small arms ranges, one used for small arms and the second for machine gun targeting.

The locations of monitoring wells at SEAD-122B, with the wells selected for decommissioning highlighted, are shown on **Figure 18**.

1.4.2 SEAD Status

The text below summarizes the status of each SEAD at which wells are scheduled for decommissioning. The following list also provides a summary listing of the status of the RODs and the applicable LUCs.

- SEAD-4: The Munitions Washout Facility – approved ROD; NFA with release of land for unrestricted use and unlimited exposures.
- SEAD-5: Former Sludge Waste Piles – approved ROD; LUCs required.
- SEAD-3, 6, 8, 14 and 15: The Ash Landfill Operable Unit – approved ROD; LUCs, and long-term monitoring groundwater monitoring required.
- SEAD-11: Old Construction Debris Landfill – approved ROD; NFA with release of land for unrestricted use and unlimited exposures.
- SEAD-12: Radioactive Waste Burial Sites – to be determined.
- SEAD-24: Abandoned Powder Burning Pit – approved ROD; NFA with release of land for unrestricted use and unlimited exposures.
- SEAD-25: The Fire Training and Demonstration Pad – approved ROD; LUCs and long-term groundwater monitoring required.
- SEAD-26: The Fire Training Pit and Area – approved ROD; LUCs required.
- SEAD-27: Steam Cleaning Waste Tank in Building 360 – approved ROD; LUCs required.
- SEAD-48: Row E0800 Pitchblende Ore Storage Igloos – approved ROD; NFA with land released for unrestricted use and unlimited exposures.
- SEAD-59: Fill Area West of Building 135 – approved ROD; LUCs required.
- SEAD-63: Miscellaneous Components Burial Site – approved ROD; NFA with release for land for unrestricted use and unlimited exposures.
- SEAD-67: Dump Site east of Sewage Treatment Plant No. 4 – approved ROD; LUCs required.
- SEAD-70: Fill Area Adjacent to Building T-2110 – to be determined.
- SEAD -71: Alleged Paint Disposal Area – approved ROD; LUCs required.

- SEAD-119B: Former Small Arms Range at the Lake Housing Area – NFA, not a site.
- SEAD-121C: Defense Reutilization and Marketing Office (DRMO) Yard – approved ROD; LUCs required.
- SEAD-122B: Small Arms Range at the Airfield Parcel – approved ROD; LUCs required.

2.0 MONITORING WELL DECOMMISSIONING PLAN

Groundwater monitoring wells, listed in **Table 2-1**, will be abandoned in accordance with the procedures outlined in NYSDEC's Draft guidance document, issued January 8, 2009, titled *Groundwater Monitoring Well Decommissioning Procedures*. A tentative schedule for decommissioning the wells at the 18 AOCs is provided in **Figure 19**.

The decommissioning of wells at the 18 AOCs in SEDA will be performed by personnel of Parsons and a qualified subcontractor selected and approved in accordance with Federal procurement requirements and guidelines, prior to the start of the planned work. The EPA and the NYSDEC will be informed as to the identity of the selected subcontractor(s) and of the updated work schedule at least two weeks prior to the initiation of field work.

2.1 SELECTION OF DECOMMISSIONING METHOD

The monitoring well decommissioning will be completed using one of NYSDEC's four recommended decommissioning methods: (1) Grouting in place; (2) Perforating the casing followed by grouting in place; (3) Grouting in place followed by case pulling; and (4) Over-drilling and grouting with or without a temporary casing. NYSDEC's method selection decision chart is provided as **Figure 2-2** to aid in the determination of the abandonment method. The guidance document is included for reference in **Appendix A**. Generally, NYSDEC's preferred approach to well abandonment is grouting in place if the well seal has not been compromised; and, in cases where the well seal has been compromised, perforating the well casing and grouting the perforated well in place.

The selection of the decommissioning method will be based on field inspections of the condition of the well and a review of the geologic and hydrogeologic conditions at the site. The depths of the wells at the AOCs are presented in **Table 2-1** and the soil boring logs and well completion logs are provided in **Appendix B**. The review of the historical well data indicates that there are a number of broad similarities for all of the wells planned for decommissioning or abandonment. The lithologic properties identified around all of the wells are fairly similar, as all of them extend through two or three similar lithologic units; fill, glacial till, and/or extremely weathered shale bedrock. Other than those areas on the Depot where competent bedrock is exposed, a single distinct unit of glacial till covers the site, and all of the wells in question pass though this till.

2.2 PRELIMINARY INSPECTION

Prior to decommissioning a well, the condition and construction of the well will be inspected, and the available well construction information will be reviewed. The inspection of each well will ensure that the well is accessible to the equipment needed in the decommissioning process and that there are no other issues (i.e. bees/wasps in the protective casing, excessive mud or standing water) that need to be resolved. Any necessary brush cutting and removal will be competed prior to the decommissioning contractor's arrival on-site. A sample inspection daily report and monitoring well field inspection log are provided as **Tables 2-2** and **2-3**, respectively.

2.3 DECOMMISSIONING PROCEDURES

Procedures for the four preferred decommissioning methods (i.e., grouting in place, perforating the casing followed by grouting in place, grouting in place followed by case pulling, and over drilling and grouting) are outlined in detail in the guidance document, which is presented in **Appendix B**.

A well decommissioning record to document the abandonment of each well is provided as **Table 2-4**. If needed, a corrective measure report and a problem identification report will be completed, shown in **Tables 2-5** and **2-6**.

2.4 BACKFILLING AND SITE RESTORATION

The top 5 feet of the decommissioned well's borehole will be backfilled with fill material physically similar to the native soils. Concrete and asphalt locations will be repaired using equivalent materials of the same thickness; vegetated areas will be reseeded, and top soil will be used in other areas. Any solid waste generated during the well abandonment process will be disposed of properly.

3.0 REPORT

A Final Report shall be prepared to document the closure of the wells, any problems encountered, and the final site status.

4.0 REFERENCES

New York State Department of Environmental Conservation, 2009. Draft Groundwater Monitoring Well Decommissioning Procedures, January 2009.

Parsons, 2004a. Final Findings Report, Small Arms Range, Lake Housing Area (SEAD-119B), Seneca Army Depot Activity, March 2004.

Parsons, 2004b. Final Record of Decision for the Fire Training and Demonstration Pad (SEAD-25) and the Fire Training Pit (SEAD-26), Seneca Army Depot Activity, July 2004

Parsons, 2005. Final Record of Decision for the Ash Landfill Operable Unit, Seneca Army Depot Activity, January 2005.

Parsons, 2006. Final Record of Decision, No Action / No Further Action, for SWMUs SEAD-58 and SEAD-63, Seneca Army Depot Activity, August 2006

Parsons, 2007. Final Record of Decision for Seventeen SWMU Requiring Land Use Controls (SEADs 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and 122E) Seneca Army Depot Activity, March 2007.

Parsons, 2008a. Record of Decision for the Defense Reutilization and Marketing Office Yard (SEAD-121C) and the Rumored Cosmoline Oil Disposal Area (SEAD-121I, Seneca Army Depot Activity, June 2008.

Parsons, 2008b. Record of Decision for the Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38), Seneca Army Depot Activity, August 2008.

Parsons, 2009a. Record of Decision for the Fill Area West Of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71), Seneca Army Depot Activity, March 2009

Parsons, 2009b. Final Record of Decision for Five Former Solid Waste Management Units, SEAD-1, 2, 5, 24, & 48, Seneca Army Depot Activity, April 2009

Parsons, 2009c. Final Record of Decision for the Old Construction Debris Landfill (SEAD-11), Seneca Army Depot Activity, October 2009

Seneca Army Depot Activity, 2006. Final Land Use Control Remedial Design for SEAD 27, 66, and 64A, Seneca Army Depot Activity, Romulus, New York, December 2006.

Seneca Army Depot Activity, 2008. Addendum 2, SEAD 13, 39, 40, 41, 43/56,69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and 122E – Land Use Control Remedial Design for SEAD 27, 66, and 64A, Seneca Army Depot Activity, Romulus, New York, April 2008.

TABLES

Table 2-1
Groundwater Wells To Be Decommissioned
Seneca Army Depot Activity

Location	Well ID	Northing	Easting	Monitoring Well Type	Well Depth from Ground Surface (ft bgs)	Top of PVC from Well Bottom (ft)	Riser Height from Ground Surface (ft)	Well Screen Interval (ft)	Well Diameter (inches)	Well Material Type	Drilled Boring Diameter (inches)	Protective Well Casing Present	Bollards Present	Truck or Track Accessible	Proposed Abandonment Method
TASK 2															
SEAD-13	MW13-1	998728.88	750506.5	Overburden	12.0			4.3 - 11.1	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-2	998755.38	750226.06	Overburden	16.0			6.3 - 15.3	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-3	998884.31	750255.94	Overburden	24.0			8.9 - 22.9	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-4	998909.81	749948.88	Overburden	8.5			3.5 - 7.5	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-5	999035.94	749874.13	Overburden	16.0			6.3 - 15.3	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-6	999029.5	750345.88	Overburden	10.0			5.0 - 9.0	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-7	998815.27	749980.43	Overburden	8.0			5.0 - 7.0	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-8														
SEAD-13	MW13-9	998663.96	750366.52												
SEAD-13	MW13-10	998964.4333	750023.7785	Overburden	15.0	18.5		4.5 - 14.5	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-11	998857.0719	750060.1322	Overburden	15.0	18.5		4.5 - 14.5	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-12	999298	750894.75	Overburden	11.3	14.8		2.0 - 9.3	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-13	999309.5	750986.44	Overburden	15.0	18.5		4.5 - 14.5	2	PVC	8.5	Y		Unknown	
SEAD-13	MW13-14	999231.2137	750525.1669	Overburden	15.0			4.5 - 14.5	2	PVC				Unknown	
TASK 4															
SEAD-05	MW5-1	998728.88	750506.5	Overburden	11.9			4.3 - 11.0	2	PVC		Y	3	Unknown	Over-drilling
SEAD-05	MW5-2	998755.38	750226.06	Overburden	10			3.3 to 9.1	2	PVC		Y	3	Truck	Casing Pulling
SEAD-05	MW5-3	998884.31	750255.94	Overburden	8.5			3.5 to 7.4	2	PVC		Y	3	Unknown	Over-drilling
SEAD-59	MW59-1	998909.81	749948.88	Overburden	9.2			4.2 to 8.1	2	PVC		Y	3	Truck	Casing Pulling
SEAD-59	MW59-2	999035.94	749874.13	Overburden	11.4			4.7 to 10.5	2	PVC		Y	3	Truck	Casing Pulling
SEAD-59	MW59-3	999029.5	750345.88	Overburden	8.8			3.7 to 7.7	2	PVC		Y	3	Truck	Casing Pulling
SEAD-59	MW59-4	998815.27	749980.43		*15*	8.43	1.32					Y	3	Truck	Over-drilling
SEAD-59	MW59-5				*15*							Y	3	Unknown	Over-drilling
SEAD-59	MW59-6	998663.96	750366.52		*15*	12.45	2.57					Y	3	Unknown	Over-drilling
SEAD-59	MW59-7	998964.4333	750023.7785		*15*	14.5	2.74					Y	3	Truck	Over-drilling
SEAD-59	MW59-8	998857.0719	750060.1322		*15*	13.22	2.31					Y	3	Truck	Over-drilling
SEAD-71	MW71-1	999298	750894.75	Overburden	9.4			4.3 to 8.3	2	PVC		Y	3	Truck (area fenced and materials need to be moved)	Casing Pulling
SEAD-71	MW71-2	999309.5	750986.44	Overburden	6.6			3.8 to 5.8	2	PVC		Y	3	Truck (area fenced and materials need to be moved)	Casing Pulling
SEAD-71	MW71-3	999229.81	750869	Overburden	6.4			3.6 to 5.5	2	PVC		Y	3	Truck	Casing Pulling
SEAD-71	MW71-4	999231.2137	750525.1669		18.4	20.67	2.27					Y	3	Truck (located in RR track area)	Over-drilling
TASK 5															
SEAD-12	MW12-01	1015591.7	745456.8	Overburden	9	11.5	2.5	4 - 8.5				Y	3	Truck	Casing Pulling
SEAD-12	MW12-02	1013710.3	745536.3	Overburden	6	8.5	2.5	2.8 - 5.8				Y	3	Truck	Casing Pulling
SEAD-12	MW12-03	1015079.9	745477	Overburden	18	20.5	2.5		2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-04	1016353.4	744983.6	Overburden	12.2	14.7	2.5		2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12-05	1016284.4	743429		18.4	20.9	2.5	4.9 - 17.9				Y	3	Truck	Over-drilling
SEAD-12	MW12-06	1016120.641	742086.6072		11.8	14.3	2.5	4.2 - 11.3				Y	3	Truck (located in Kids Peace property)	Over-drilling
SEAD-12	MW12-07	1015394.579	744855.8807	Overburden	13.6	16.15	2.55	8.55 - 14.55	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12-08	1015208.876	745182.9424	Overburden	12	14.6	2.6	7.2 - 14.05	2	PVC	8	Y	3	Truck	Casing Pulling

Table 2-1
Groundwater Wells To Be Decommissioned
Seneca Army Depot Activity

Location	Well ID	Northing	Easting	Monitoring Well Type	Well Depth from Ground Surface (ft bgs)	Top of PVC from Well Bottom (ft)	Riser Height from Ground Surface (ft)	Well Screen Interval (ft)	Well Diameter (inches)	Well Material Type	Drilled Boring Diameter (inches)	Protective Well Casing Present	Bollards Present	Truck or Track Accessible	Proposed Abandonment Method
SEAD-12	MW12-09	1015955.513	744009.168	Overburden	14.1	16.6	2.5	8.7 - 15.8	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12-10	1015189.846	745007.4668	Overburden/Bedrock	17	19.5	2.5	6.5-16.5	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-11	1015123.089	744975.8444	Overburden/Bedrock	13.1	15.6	2.5	7.5 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-12	1015162.954	744888.0145	Overburden/Bedrock	13	15.5	2.5	5.5 - 12.5	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-13	1015212.377	744875.6862	Overburden/Bedrock	13	15.8	2.8	5.5 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-14	1015306.316	744664.5159	Overburden/Bedrock	14	16.5	2.5	6.1 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-15	1015521.901	744743.1108	Overburden/Bedrock	13.1	15.7	2.6	8 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-16	1015979.89	743879.1864	Overburden/Bedrock	14.2	16.65	2.45	6.4 - 13.4	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-17	1015807.672	743883.226	Overburden/Bedrock	18.4	21.3	2.9	5.4 - 17.5	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-18	1016052.372	743572.7763	Overburden/Bedrock	14.5	17	2.5	6 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-19	1013585.11	742593.6179	Overburden/Bedrock	11	13.7	2.7	5.5 - 10	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-20	1013484.551	742579.8286	Overburden/Bedrock	14.4	17.1	2.7	5.8 - 13.8	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-21	1013550.626	742955.5327	Overburden/Bedrock	11.2	14.1	2.9	5.6 -10.4	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-22	1013588.108	741426.1379	Bedrock	12.6	15.5	2.9	4.4-11	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-23	1013490.534	741441.3235	Bedrock	13.3	15.7	2.4	4.7- 12	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-24	1012214.574	742040.503	Overburden/Bedrock	10	12.5	2.5	4.7- 9.6	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-25	1012127.712	742084.164	Overburden	10.3	13.2	2.9	4.95 - 9.85	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-26	1012155.909	742161.7122	Overburden	10.1	12.7	2.6	4.75 - 9.5	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-27	1012826.292	743875.0482	Overburden	10	13	3	4.5 - 9.25	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-29	1013765.552	744296.95	Bedrock	14	16.8	2.8	6 - 13.2	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-30	1013819.883	744281.4139	Bedrock	14.1	16.8	2.7	5.8 - 13	2	PVC	8	Y	3	Truck	Over-drilling
SEAD-12	MW12-31	1012105.078	744693.7058	Bedrock	10	12.7	2.7	5 - 10	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-32	1012146.997	744711.3122	Overburden	10.5	13.1	2.6	5 - 10	2	PVC	8	Y	3	Unknown	Casing Pulling
SEAD-12	MW12-33	1015645.26	744634.3651		15	17.5	2.5	6 - 13				Y	3	Truck	Casing Pulling
SEAD-12	MW12-34	1015800.321	744650.6525		15	17.5	2.5	6.25 - 13.6				Y	3	Truck	Casing Pulling
SEAD-12	MW12-35	1015919.123	743562.801	Bedrock	38	40.5	2.5	27.5- 37.5	2	PVC	8	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-12	MW12-37	1014123.316	744790.3965	Bedrock	10.7	13.1	2.4	5 - 10	2	PVC	8	Y	3	Unknown	Over-drilling
SEAD-12	MW12-38	1014091.533	744716.7817	Overburden	10.5	12.5	2	5 - 10	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12-39	1013934.991	744716.7185	Overburden	10.5	12.5	2	5 - 10	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12-40	1014236.369	744470.3013	Overburden	10.9	13.6	2.7	5.5 - 10.5	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-12	MW12A-01	1015496.5	745165.94	Overburden	14			4 - 13	2	PVC		Y	3	Truck	Casing Pulling
SEAD-12	MW12A-02	1015117.1	744926.75	Overburden	12			4.3 to 11.1	2	PVC		Y	3	Truck	Casing Pulling
SEAD-12	MW12A-03	1015521.4	744532.25	Overburden	15.1			3.5 to 14.0	2	PVC		Y	3	Truck	Casing Pulling
SEAD-12	MW12B-01	1015934.4	743739.69	Overburden	17.8			5.3 to 17.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-12	MW12B-02	1015920.1	743522.88	Overburden	14			3.9 to 12.9	2	PVC		Y	3	Truck	Casing Pulling
SEAD-12	MW12B-03	1015995.9	743517.06	Overburden	14.6			4.6 to 13.5	2	PVC		Y	3	Truck	Casing Pulling
SEAD-48	MW48-1	988650 (approx)	745950 (approx)	Overburden	8		2.5	2.5 - 7.5	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-2	988615 (approx)	744685 (approx)	Overburden	7.6		2.5	2.5 - 7	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-3	988680 (approx)	746770 (approx)	Overburden	8		2.5	2.5 - 7.5	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-4	988695 (approx)	747355 (approx)	Overburden	8		2.5	2.5 - 7.5	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-5	988725 (approx)	748030 (approx)	Overburden	13		2.5	2.5 - 12.5	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-6	988750 (approx)	748850 (approx)	Overburden	8		2.5	2.5 - 7.5	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-7	989365 (approx)	747045 (approx)	Overburden	9.5		2.5	2.5 - 9	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-48	MW48-8	988020 (approx)	747695 (approx)	Overburden	6		2.5	2.5 - 6	2	PVC	6	Y		Unknown	Casing Pulling
SEAD-63	MW63-1	1013123.9	741608.56	Overburden	8.7			3.6 to 7.5	2	PVC		Y	3	Truck	Casing Pulling
SEAD-63	MW63-2	1012980.3	741136.13	Overburden	8.1			3.0 to 7.0	2	PVC		Y	3	Truck	Casing Pulling
SEAD-63	MW63-3	1013182.1	741130.19	Overburden	8.1			3.0 to 7.0	2	PVC		Y	3	Truck	Casing Pulling
TASK 6															
SEAD-121C	MW121C-3	997507.91	749999.17		*15*							Y		Truck	Over-drilling
SEAD-121C	MW121C-4	996866.95	749922.29		*15*							Y		Truck	Over-drilling
SEAD-121C	MW121C-5	996896.87	749448.53		*15*							Y		Truck	Over-drilling
SEAD-121C	MW121C-6	997040.99	749613.64		*15*							Y		Truck	Over-drilling

Table 2-1
Groundwater Wells To Be Decommissioned
Seneca Army Depot Activity

Location	Well ID	Northing	Easting	Monitoring Well Type	Well Depth from Ground Surface (ft bgs)	Top of PVC from Well Bottom (ft)	Riser Height from Ground Surface (ft)	Well Screen Interval (ft)	Well Diameter (inches)	Well Material Type	Drilled Boring Diameter (inches)	Protective Well Casing Present	Bollards Present	Truck or Track Accessible	Proposed Abandonment Method
SEAD-122B	MW-1	986840.19	739802.9	Overburden	16.5	18.52	2.02	6.0-16.0	2	PVC	8.25	Y		Truck (on property used by NYS Police)	Over-drilling
SEAD-122B	MW-2	986779.02	739393.06	Overburden	16	17.99	1.99	6.0-16.0	2	PVC	8.25	Y		Truck (on property used by NYS Police)	Over-drilling
SEAD-122B	MW-3	987014.26	739409.59	Overburden	14.5	16.62	2.12	4.0-14.0	2	PVC	8.25	Y		Truck (on property used by NYS Police)	Casing Pulling
SEAD-70	MW70-1	1007329.9	740889.13	Overburden	10.4			3.7 to 9.6	2	PVC		Y	3	Truck	Casing Pulling
SEAD-70	MW70-2	1007329.7	740555.63	Overburden	11.6			4.0 to 10.7	2	PVC		Y	3	Truck	Casing Pulling
SEAD-70	MW70-3	1007173.3	740552.25	Overburden	9.4			4.3 to 8.3	2	PVC		Y	3	Truck	Casing Pulling
SEAD-70	MW70-4	1007055.1	740563.5	Overburden	10.1			3.6 to 9.3	2	PVC		Y	3	Truck	Casing Pulling
TASK 7															
SEAD-25	MW25-04D	998023.3883	750983.1189	Bedrock	23.8	25.4		13.7 - 22.7	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-25	MW25-05D	998081.3786	750938.3683	Bedrock	21.7	23.3		11.5 - 20.5	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-25	MW25-07D	998279.0181	751016.2292	Bedrock	30.2	32		20 -30	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-25	MW25-12D	997867.0397	750966.7103	Bedrock	24.2	25.4		14 -24	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-25	MW25-14D	997867.0994	750875.7165	Bedrock	23.2	24.8		13 -23	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-25	MW25-16D	997975.0098	750771.8704	Bedrock	25	26.4		15 - 25	2	PVC		Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-26	MW26-01	992228.7434	751589.2004	Bedrock	6	8.23	2.233	3.3 - 6	2	PVC	8.5	Y	3	Truck	Casing Pulling
SEAD-26	MW26-02	992769.4315	751106.8867	Overburden	14	16.4	2.399	4.0-14.0	2	PVC	8.5	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-26	MW26-03	992215.6709	751115.0404	Overburden/Bedrock	14	16.35	2.353	4.3 - 13.3	2	PVC	8.5	Y	3	Truck	Over-drilling
SEAD-26	MW26-04	991690.1854	751127.6237	Overburden/Bedrock	11.5	13.91	2.41	6.4 -11.5	2	PVC	8.5	Y	3	Truck	Over-drilling
SEAD-26	MW26-05	992272.1148	751168.1856	Overburden/Bedrock	15	17.1	2.1	5.0-15.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-06	992234.8911	751251.0741	Overburden/Bedrock	15	17		5.0-15.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-07	992178.7365	751195.6651	Overburden/Bedrock	18	21.3		8.0-18.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-08	991756.145	751204.2657	Overburden/Bedrock	11.5	13.4	1.9	6.3 -10.3	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-09	991724.1357	751224.9496	Overburden/Bedrock	12.2	14.3		7.0-11.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-10	991653.8949	751205.9184	Overburden/Bedrock	12	13.8		4.3 - 12	2	PVC		Y	3	Truck	Over-drilling
SEAD-26	MW26-11	992691.2201	751235.2629	Overburden/Bedrock	15	16.4	1.4	4.4 15	2	PVC		Y	3	Truck	Over-drilling
TASK 8															
SEAD-24	MW24-01	998948.83	740101.57	Overburden	10	12.37	2.372	4.9 - 8.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-24	MW24-02	999255.17	739843.61	Overburden	16	18.32	2.32	5.9 - 14.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-24	MW24-03	998999.77	739750.62	Overburden	15	17.45	2.451	4.9 - 13.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-67	MW67-1	1002498.4	748911.69	Overburden	11.3			3.7 to 10.5	2	PVC		Y	3	Unknown	Casing Pulling
SEAD-67	MW67-2	1002256.7	748953.25	Overburden	11.8			4.2 to 10.9	2	PVC		Y	3	Unknown	Casing Pulling
SEAD-67	MW67-3	1002492.1	748794.94	Overburden	11.3			3.4 to 10.2	2	PVC		Y	3	Unknown	Casing Pulling
TASK 9															
SEAD-06 Ash Landfill	MW-31	994473.894	739869.345	Overburden/Bedrock	9.4	10.34		4.2 to 9.2	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-30	994586.276	739891.668	Overburden/Bedrock	7			2.0 to 7.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-33	994429.11	739989.204	Overburden/Bedrock	8.5	10.39		3.5 to 8.5	2	PVC		Y	3	Truck	Over-drilling

Table 2-1
Groundwater Wells To Be Decommissioned
Seneca Army Depot Activity

Location	Well ID	Northing	Easting	Monitoring Well Type	Well Depth from Ground Surface (ft bgs)	Top of PVC from Well Bottom (ft)	Riser Height from Ground Surface (ft)	Well Screen Interval (ft)	Well Diameter (inches)	Well Material Type	Drilled Boring Diameter (inches)	Protective Well Casing Present	Bollards Present	Truck or Track Accessible	Proposed Abandonment Method
SEAD-06 Ash Landfill	MW-34	993641.89	739975.8	Overburden/Bedrock	16.2	18.15		6.5 - 16.1	2	PVC	6.25	Y	3	Unknown off base in farm yard	Over-drilling
SEAD-06 Ash Landfill	MW-35D	994450.265	739581.475	Bedrock	54	56.3	2.3	29 - 54	2	PVC	10.25	Y	3	Unknown off base in farm yard	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-36	994467.85	739577.77	Overburden/Bedrock	14.71	16.43	1.72	4.7 - 14.7	2	PVC	6.25	Y	3	Unknown off base in farm yard	Over-drilling
SEAD-06 Ash Landfill	MW-38D	995521.008	739695.393	Bedrock	29.7	32.23	2.53	9.7 - 29.7	2	PVC	8	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-43	995184.817	740805.392	Overburden/Bedrock	5.5	7.63	2.13	2.9 - 4.9	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-48	995347.631	740154.289	Overburden/Bedrock	9	11.32	2.32	3.5 - 8.5	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-49D	995171.215	740321.557	Bedrock	35.5	37.8	2.3	15.4 - 34.5	2	PVC	10	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-50D	995165.986	740317.179	Bedrock	57.8	59.58	1.78	37.8 - 57.2	2	PVC	10.5	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-53	994820.784	739844.61	Overburden/Bedrock	8	10.41	2.41	4 - 7.8	2	PVC	4.25	Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-54D	994826.338	739840.663	Bedrock	32.6	51.9	2.1	13.3 - 32.3	2	PVC	10	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-55D	994820.83	739837.662	Bedrock	55.9	58.26	2.36	35.9 - 55.3	2	PVC	10.5	Y	3	Truck	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-57D	994768.367	739436.205	Bedrock	33	34.12	1.82	13.3 - 32.3	2	PVC	10	Y	3	Unknown off base in farm yard	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-58D	994762.324	739433.946	Bedrock	55.3	57.29	1.99	35.29 - 54.65	2	PVC	10.5	Y	3	Unknown off base in farm yard	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-59	994259.667	740825.707	Overburden/Bedrock	8.5	9.1		3.4 - 7.4	2	PVC		Y	3	Unknown	Over-drilling
SEAD-06 Ash Landfill	MW-60	994145.864	740899.619	Overburden/Bedrock	8.5	9.5		3.4 - 7.4	2	PVC		Y	3	Unknown	Over-drilling
SEAD-06 Ash Landfill	PT-15	994183.74	739974.54	Overburden/Bedrock	15.4	19.5			2	PVC		Y		Unknown	Over-drilling
SEAD-06 Ash Landfill	PT-25	994377.25	739840.14	Overburden/Bedrock	9.5	12.03		4.0 - 9.0	2	PVC		Y		Truck	Over-drilling
SEAD-06 Ash Landfill	PT-16	995521.19	739682.31	Overburden/Bedrock	9.1	11.04		4.0 - 9.0	2	PVC		Y		Truck	Over-drilling
SEAD-06 Ash Landfill	PT-23	995250.93	739850.04	Overburden/Bedrock	9.7	12.08		4.0 - 9.0	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	PT-20	994732.33	740194.06	Overburden/Bedrock	9.4	11.8		3.8 - 8.8	2	PVC		Y		Truck	Over-drilling
SEAD-06 Ash Landfill	PT-21A	994924.11	740214.13		*15*							Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-05				*15*							Y		Unknown	Over-drilling
SEAD-06 Ash Landfill	MW-12A				*15*							Y		Unknown	Over-drilling
SEAD-06 Ash Landfill	MW-21				*15*							Y		Unknown	Over-drilling
SEAD-06 Ash Landfill	MW-28	995073.237	739765.473	Overburden/Bedrock	8.6	10.39		3.1 to 8.1	2	PVC		Y	3	Truck	Over-drilling
SEAD-06 Ash Landfill	MW-35				*15*							Y	3	Unknown	Over-drilling
SEAD-06 Ash Landfill	MW-37	996634.22	739365.591	Overburden	11.7	13.59	1.89	6.7 - 11.7	2	PVC	8	Y	3	Truck	Casing Pulling
SEAD-06 Ash Landfill	MW-41D	995948.132	741843.734	Bedrock	44.5	47.02	2.52	14.5 - 44.5	2	PVC	10.25	Y	3	Unknown	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-42D	994341.349	741606.6	Bedrock	45	47.04	2.34	24.7 - 44.7	2	PVC	10.25	Y	3	Unknown	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-47	995088.598	739188.829	Overburden/Bedrock	5.5	8.26	2.76	3.5 - 5.0	2	PVC		Y	3	Unknown off base in farm yard	Over-drilling

Table 2-1
Groundwater Wells To Be Decommissioned
Seneca Army Depot Activity

Location	Well ID	Northing	Easting	Monitoring Well Type	Well Depth from Ground Surface (ft bgs)	Top of PVC from Well Bottom (ft)	Riser Height from Ground Surface (ft)	Well Screen Interval (ft)	Well Diameter (inches)	Well Material Type	Drilled Boring Diameter (inches)	Protective Well Casing Present	Bollards Present	Truck or Track Accessible	Proposed Abandonment Method
SEAD-06 Ash Landfill	MW-51D	995083.605	739188.678	Bedrock	33.3	35.94	2.64	13.3 - 32.3	2	PVC	10	Y	3	Unknown off base in farm yard	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MW-52D	995078.253	739189.03	Bedrock	56.7	59.36	1.05	36.7 - 56.07	2	PVC	10.5	Y	3	Unknown off base in farm yard	Casing Perforating/Grouting in Place
SEAD-06 Ash Landfill	MWT-11	994615.116	739791.2916		*15*							Y	3	Truck(jersey barrier on top of well)	Over-drilling
TASK 10															
SEAD-119B	MW119-1	999187.45	733603.32		*15*									Truck	Over-drilling
SEAD-119B	MW119-2	999235.09	733305.07		*15*									Truck	Over-drilling
SEAD-119B	MW119-3	999012.97	733407.82		*15*									Truck	Over-drilling
TASK 11															
SEAD-27	MW-1	997165.98	749991.67		*15*									Truck	Over-drilling
SEAD-27	MW-2	997149.31	749926.33		*15*									Truck	Over-drilling
PBC II															
SEAD-4	MW4-1	999187.45	733603.32	Overburden	10.5			5.4 - 9.4	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-4	MW4-2	987818.31	744938.98	Overburden	4			2.2 - 3.2	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-4	MW4-3	987226.64	745020.76	Overburden	9			3.9 - 7.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-4	MW4-4	987026.91	744172	Overburden	10			4.9 - 8.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-4	MW4-5	999012.97	733407.82	Overburden	6			3.1 - 5.1	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-4	MW4-6	987261.57	744333.8	Overburden	9.9			4.5 - 9.4	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-7	987525.87	744761.6	Overburden	6.4			3.2 - 5.2	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-8	986990.62	744352.19	Overburden	10			4.6 - 9.5	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-9	986867.47	745166.94	Overburden	6.2			3.4 - 5.4	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-10	986620.39	745454.9	Overburden	8.1			2.6 - 7.5	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-11	986944.99	745680.33	Overburden	9			3.6 - 8.2	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-12	987174.73	745493.52	Overburden	11			5.6 - 10.2	2	PVC	8	Y		Truck	Casing Pulling
SEAD-4	MW4-13	988053.51	745097.44	Overburden	6.8			3.9 - 5.9	2	PVC	8	Y		Truck	Casing Pulling
PBC II															
SEAD-11	MW11-1	987710.92	744223.74	Overburden	14.2			6.1 - 14.2	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-11	MW11-2	987947.64	743550.97	Overburden	8.5			3.4 - 7.4	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-11	MW11-3	987404.04	743517.47	Overburden	9			3.9 - 7.9	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-11	MW11-4	987664.42	743443.95	Overburden	10.5			5.4 - 9.4	2	PVC	8.5	Y		Truck	Casing Pulling
SEAD-11	MW11-5	987780.7	743542.5	Overburden	11			4.24 - 8.82	2	PVC	10	Y		Truck	Casing Pulling
SEAD-11	MW11-6	987550.5	743444.4	Overburden	8.5			2.82 - 7.40	2	PVC	10	Y		Truck	Casing Pulling
SEAD-11	MW11-7	987462.8	743485.7	Overburden	6			2.5 - 5.1	2	PVC	10	Y		Truck	Casing Pulling

Notes:

1. Blank in a row indicates no information was available on well.
2. An italicized number indicates an assumption.

Table 2-2
Example Daily Report
Daily Report for Well Decommissioning
(Contract W912DY-08-D-0003 TO#08; Job 747547)

Date [Enter] **Day** [Enter] **Weather Conditions** [Enter]

Personnel On-Site (use Table, Insert, Rows above or below to add extra spaces**)**
Working Hrs [Enter] hrs

Affiliation	Position	Name	Time or Hours

Visitors

Equipment On-Site (use Table, Insert, Rows above or below to add extra spaces)

Type	#	Type	#	Type	#

Health and Safety:
PPE Level(s) D

Tool Box Meeting **Time:** [Enter] hours
[Enter]

Work Performed:
[Enter]

Sampling
[Enter]

Table 2-2 (continued)
Example Daily Report
Daily Report for Well Decommissioning
(Contract W912DY-08-D-0003 TO#08; Job 747547)

Disposal (Use right click, update field function to total Cumulative numbers)

Loads (to Date)	Loads Today	Cum Loads	Est Tons (to Date)	Est Tons Today	Cum Est. Tons
0	0	0	0	0	0
		0			0

Delivered Material (use Table, Insert, Rows above or below to add extra spaces)

Material	Loads	Cubic Yards	Tons

Prepared By: _____
[Enter]

Reviewed By: _____ Date: _____

Table 2-3
Monitoring Well Inspection Log
Well Abandonment Plan
Seneca Army Depot Activity

SITE NAME: SITE ID: _____

INSPECTOR: _____

MONITORING WELL FIELD INSPECTION LOG

DATE/TIME: _____

WELL ID: _____

	YES	NO
WELL VISIBLE? (If not, provide directions below)……..		
WELL ID VISIBLE?……		
WELL LOCATION MATCH SITE MAP? (if not, sketch actual location on back)…….		

WELL I.D. AS IT APPEARS ON PROTECTIVE CASING OR WELL:

	YES	NO
SURFACE SEAL PRESENT?……		
SURFACE SEAL COMPETENT? (if cracked, heaved, etc., describe below)……..		
PROTECTIVE CASING IN GOOD CONDITION? (if damaged, describe below)…….		

HEADSPACE READING (ppm) AND INSTRUMENT USED…….. _____

TYPE OF PROTECTIVE CASING AND HEIGHT OF STICKUP IN FEET (if applicable)…….. _____

PROTECTIVE CASING MATERIAL TYPE:…… _____

MEASURE PROTECTIVE CASING INSIDE DIAMETER (inches):…….

	YES	NO
LOCK PRESENT?……..		
LOCK FUNCTIONAL?…….		
DID YOU REPLACE THE LOCK?……		
IS THERE EVIDENCE THAT THE WELL IS DOUBLE CASED? (if yes, describe below)……..		
WELL MEASURING POINT VISIBLE?……..		

MEASURE WELL DEPTH FROM MEASURING POINT (Feet):……. _____

MEASURE DEPTH TO WATER FROM MEASURING POINT (Feet):…… _____

MEASURE WELL DIAMETER (Inches):……. _____

WELL CASING MATERIAL:…… _____

PHYSICAL CONDITION OF VISIBLE WELL CASING:…… _____

ATTACH ID MARKER (if well ID is confirmed) AND IDENTIFY MARKER TYPE…….. _____

PROXIMITY TO UNDERGROUND OR OVERHEAD UTILITIES……... _____

DESCRIBE ACCESS TO WELL: (include accessibility to truck mounted rig, natural obstructions, overhead power lines, proximity to permanent structures, etc.); ADD SKETCH OF LOCATION ON BACK, IF NECESSARY.

DESCRIBE WELL SETTING: (for example, located in a field, in a playground, on pavement, in a garden, etc.); AND ASSESS THE TYPE OF RESTORATON REQUIRED.

IDENTIFY ANY NEARBY POTENTIAL SOURCES OF CONTAMINATION, IF PRESENT (e.g. gas lines, salt pile, etc.):

REMARKS:

Table 2-4
Well Decommissioning Record
Well Abandonment Plan
Seneca Army Depot Activity

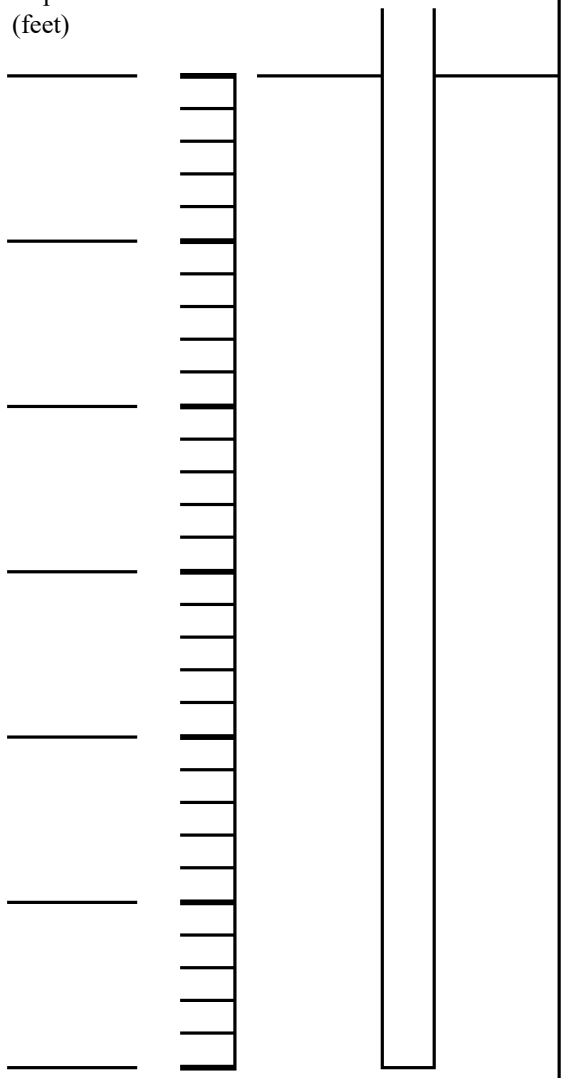
WELL DECOMMISSIONING RECORD

Site Name:	Well ID:
Site Location:	Driller:
Drilling Company:	Inspector:
	Date:

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING	
Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	
CASING PULLING	
Method employed	
Casing retrieved (feet)	
Casing type/dia. (in.)	
CASE PERFORATING	
Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	
GROUTING	
Interval grouted (FBLS)	
# of batches prepared	
For each batch record:	
Quantity of water used (gal.)	
Quantity of cement used (lbs.)	
Cement type	
Quantity of bentonite used (lbs.)	
Quantity of calcium chloride used (lbs.)	
Volume of grout prepared (gal.)	
Volume of grout used (gal.)	

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

Table 2-5
Example Corrective Measures Report
Well Abandonment Plan
Seneca Army Depot Activity

CORRECTIVE MEASURES REPORT

Date_____

Project _____ Job Number_____

Contractor _____

Subject _____

Day	Su	M	T	W	Th	F	Sa

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
Temp.	<32F	32-40F	40-70F	70-80F	80-90F
Wind	No	Light	Strong		
Humidity	Dry	Mod.	Humid		

CORRECTIVE MEASURES TAKEN (Reference Problem Identification Report No.):_____

RETESTING LOCATION:_____

SUGGESTED METHOD OF MINIMIZING RE-OCCURRENCE:_____

SUGGESTED CORRECTIVE MEASURES: _____

APPROVALS:

QA ENGINEER:_____

PROJECT MANAGER: _____

Distribution:
1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel
Signature: _____

Table 2-6
Example Problem Identification Report
Well Abandonment Plan
Seneca Army Depot Activity

PROBLEM IDENTIFICATION REPORT

Date_____

Project _____ Job Number_____

Day | Su | M | T | W | Th | F | Sa |

Contractor _____

Subject _____

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
Temp.	<32F	32-40F	40-70F	70-80F	80-90F
Wind	No	Light	Strong		
Humidity	Dry	Mod.	Humid		

PROBLEM DESCRIPTION (Reference Daily Report No.):_____

PROBLEM LOCATION – REFERENCE TEST RESULTS AND LOCATION (Note: Use sketches on back of form as appropriate):_____

PROBABLE CAUSES:_____

SUGGESTED CORRECTIVE MEASURES: _____

APPROVALS:

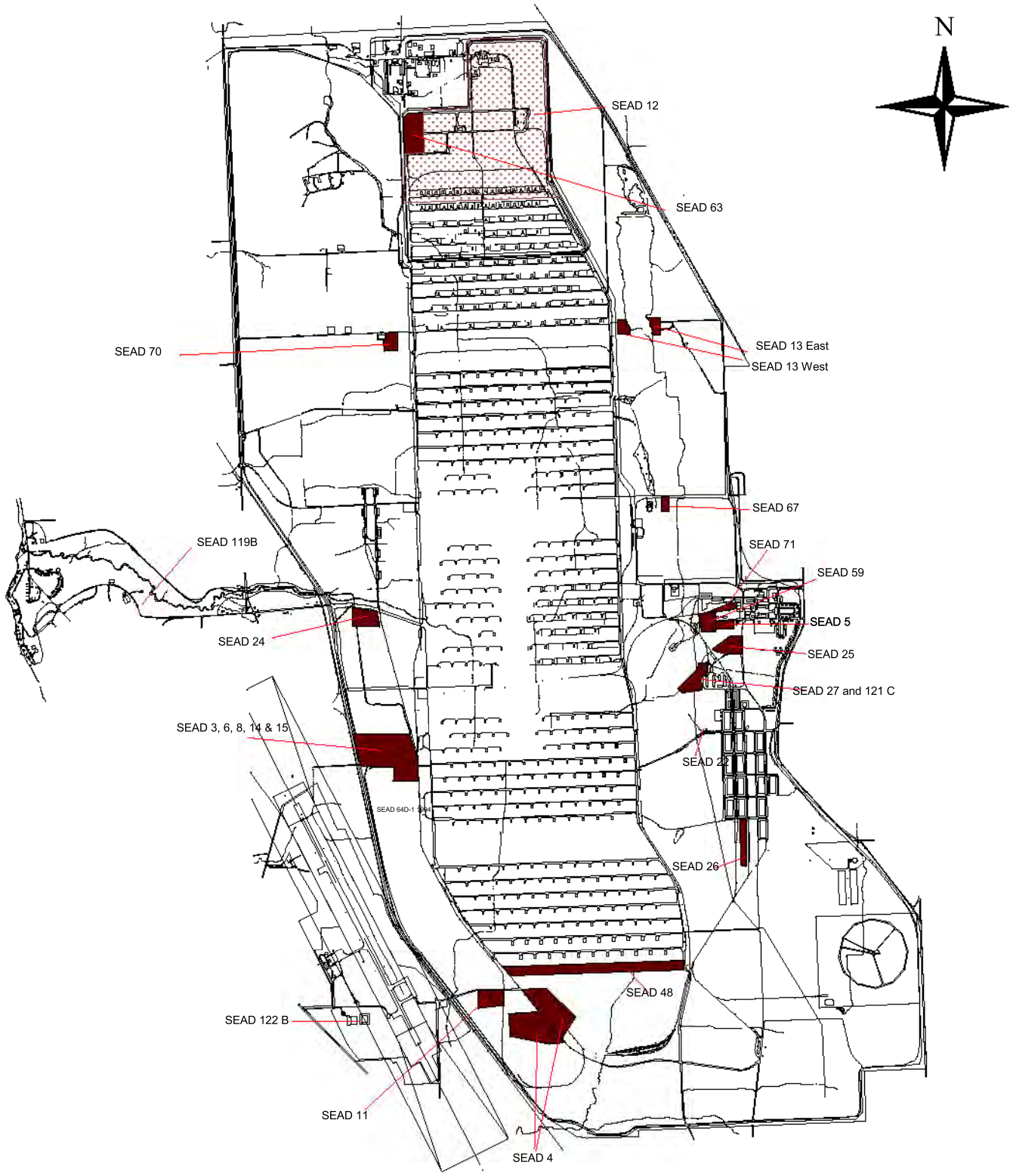
QA ENGINEER:_____

PROJECT MANAGER: _____

Distribution:
1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel
Signature: _____

FIGURES



LEGEND

Location of SEAD-12 where wells are to be abandoned.

Locations where monitoring wells to be abandoned are located.

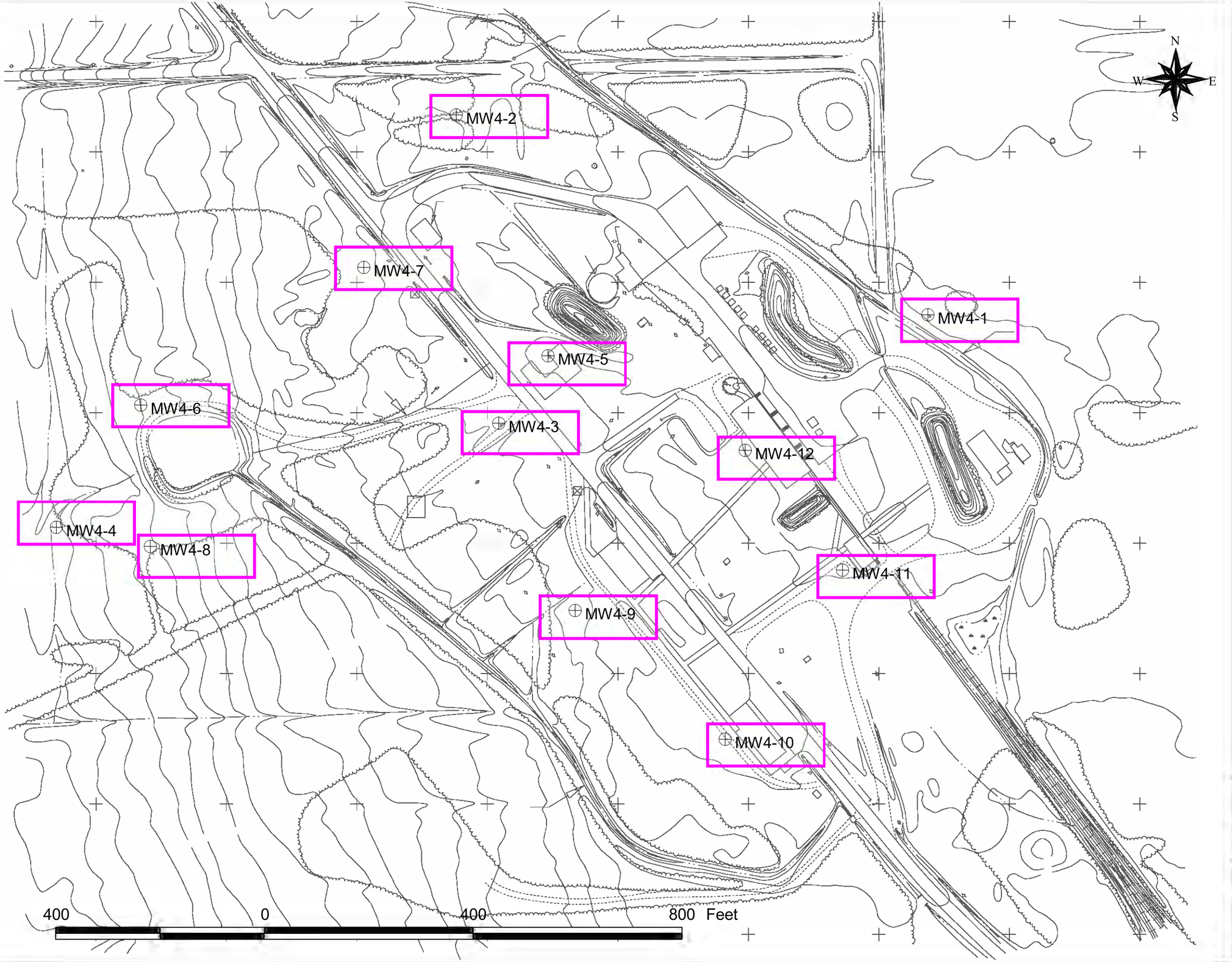
o:\seneca\well abandonment\well abandonment.apr

PARSONS

SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

FIGURE 1
Location of SWMUs

Job #: 747547 | August 2010



Legend

MW4-2

Monitoring Well and Id

Well to be Decommissioned

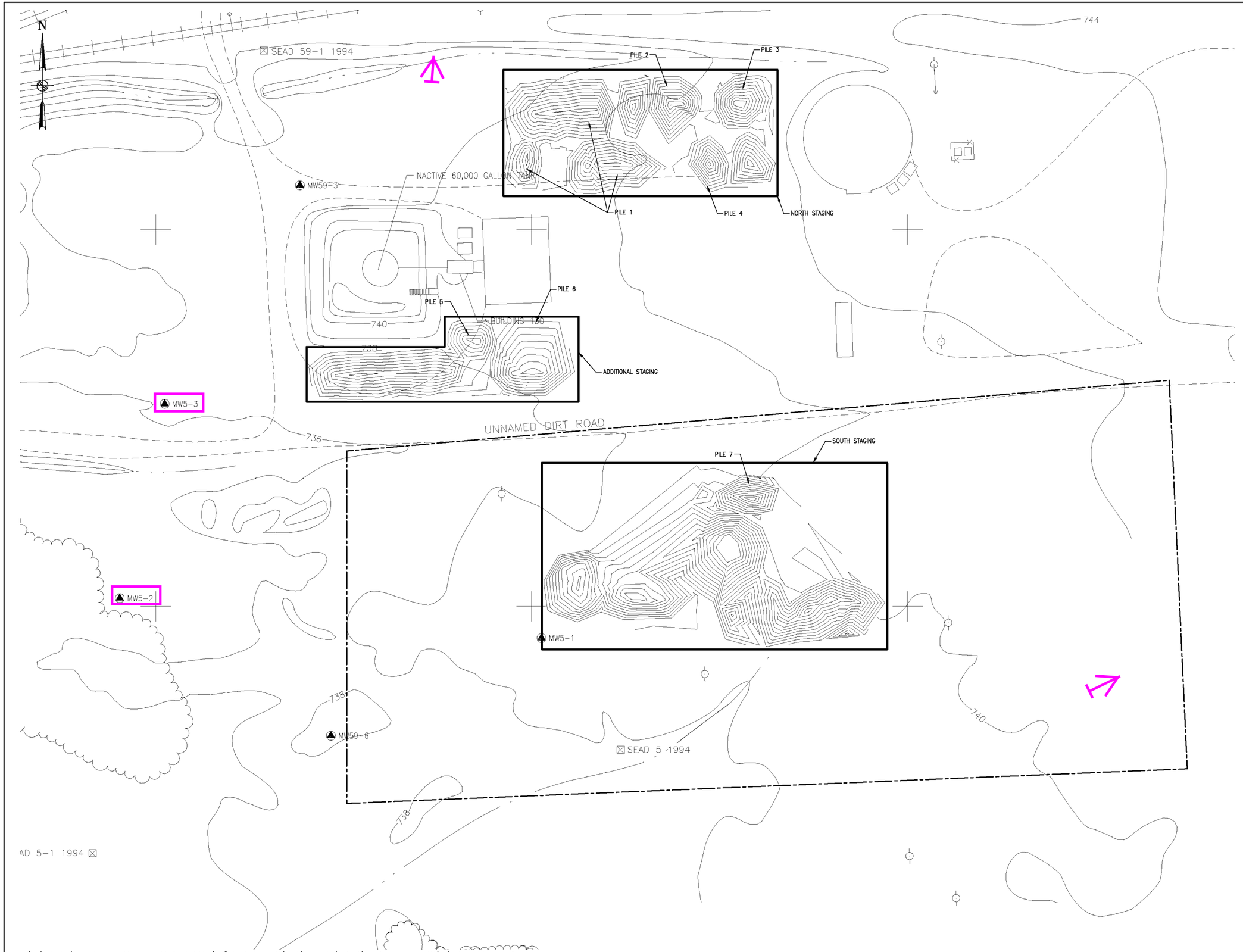
PARSONS

SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

Figure 2
Wells to be Decommissioned
SEAD-4

Job #: 747547

August 2010



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD

ROAD SIGN	DECIDOUS TREE	GUIDE POST
FIRE HYDRANT	MANHOLE	MAILBOX/RR SIGNAL
POLE	UTILITY BOX	OVERHEAD UTILITY POLE

- SURVEY MARKER
- MW5-1 GROUNDWATER MONITORING WELL
- 735 EXISTING MAJOR ELEVATION CONTOUR
- 738 EXISTING MINOR ELEVATION CONTOUR
- SEAD-5 BOUNDARY

NOTES:

1. LOCATIONS OF SOIL STOCKPILES EXCAVATED FROM SEAD-59 AND SEAD-71 ARE BASED ON PRE-CONSTRUCTION GPS SURVEY.
2. BOUNDARY OF SEAD-5 IS BASED ON THE FORMER SEWER SLUDGE WASTE PILES LAND PARCEL BOUNDARY.

Well to be Decommissioned

STOCKPILE VOLUMES	
STOCKPILE	VOLUME (C.Y.)
PILE 1	864.43
PILE 2	252.45
PILE 3	163.51
PILE 4	198.84
PILE 5	601.89
PILE 6	318.92
PILE 7	3219.95
TOTAL	5619.99

30 15 0 30 60

SCALE

PARSONS
100 HIGH STREET, 4TH FLOOR - BOSTON, MA 02110-1713

CLIENT/PROJECT TITLE:

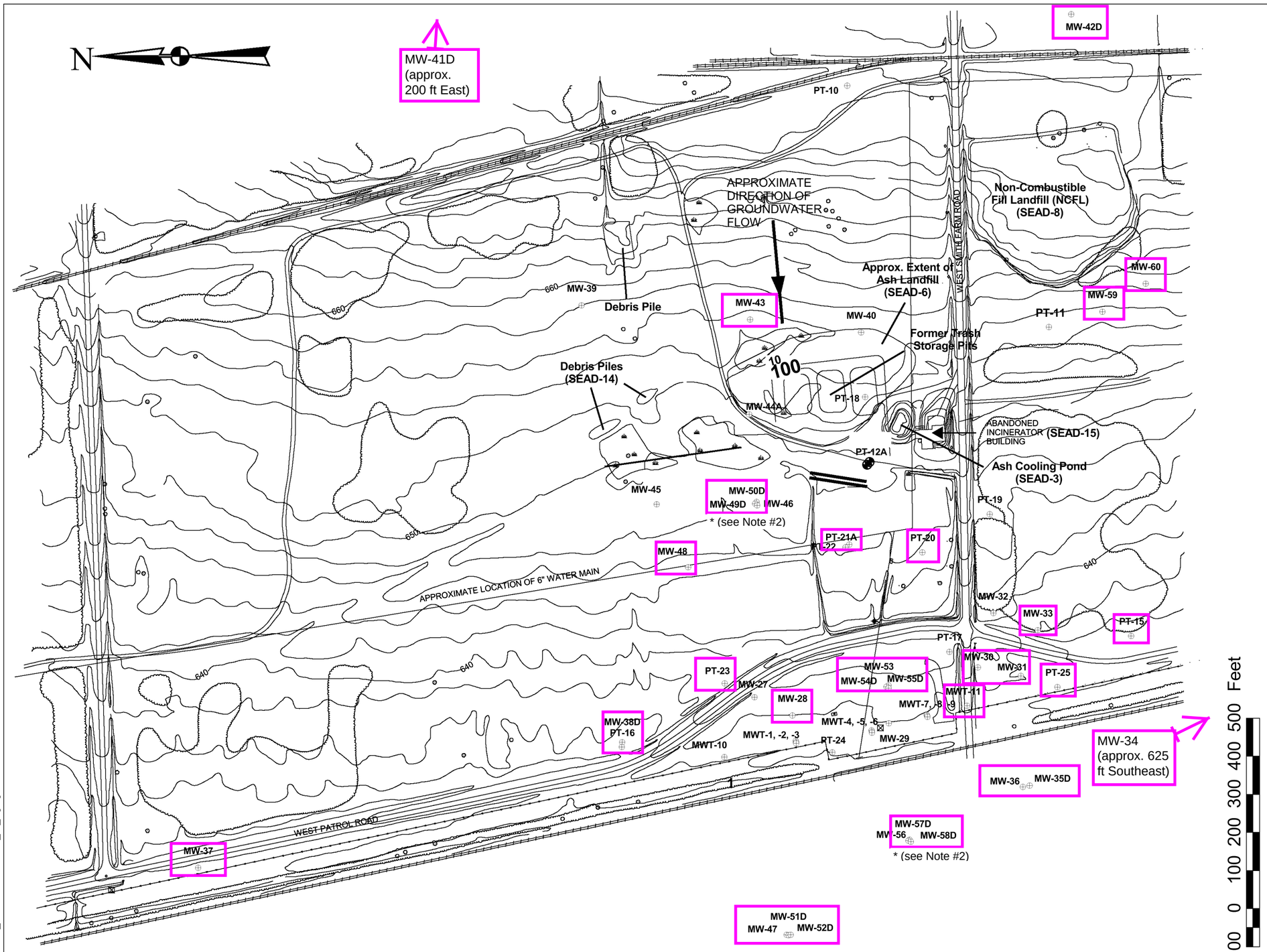
SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 3
Wells to be Decommissioned
SEAD-5

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS SHOWN	RR	BBO	JA	12/02/09	-

FILE: P:\PIT\PROJECTS\HUNTSVILLE NEW CONTRACT W912DY-08-D-0003\TO#06 - SEAD 5 RAOP\RAOP\PRE-DRAFT\FIGURES\FIGURE 3.DWG, DATE: 12/09/2009 08:32:10AM, p0018397



LEGEND

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND & DESIGNATION
- OUTLINE OF FORMER TRASH PITS (IDENTIFIED FROM AERIAL PHOTO)
- APPROXIMATE EXTENT OF DEBRIS PILE
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- PT-22 MONITORING WELL AND DESIGNATION
- MW-37 RAILROAD
- 6" WATER MAIN
- APPROX EXTENT OF IRM SOIL TREATMENT
- 1,000 GROUNDWATER ISOCONTOUR (ug/L)
- 75 TOTAL CHLORINATED ETHENES (ug\L) FROM SAMPLES COLLECTED IN JANUARY 2000
- 10U NO CHLORINATED ETHENES DETECTED

NOTE:
THE CONCENTRATIONS SHOWN ON THIS FIGURE ARE FOR WELLS SCREENED IN THE TILLED/WEATHERED SHALE AQUIFER.

Note #2 : MW-46 and MW-56 are not to be abandoned.

Well to be Decommissioned

PARSONS

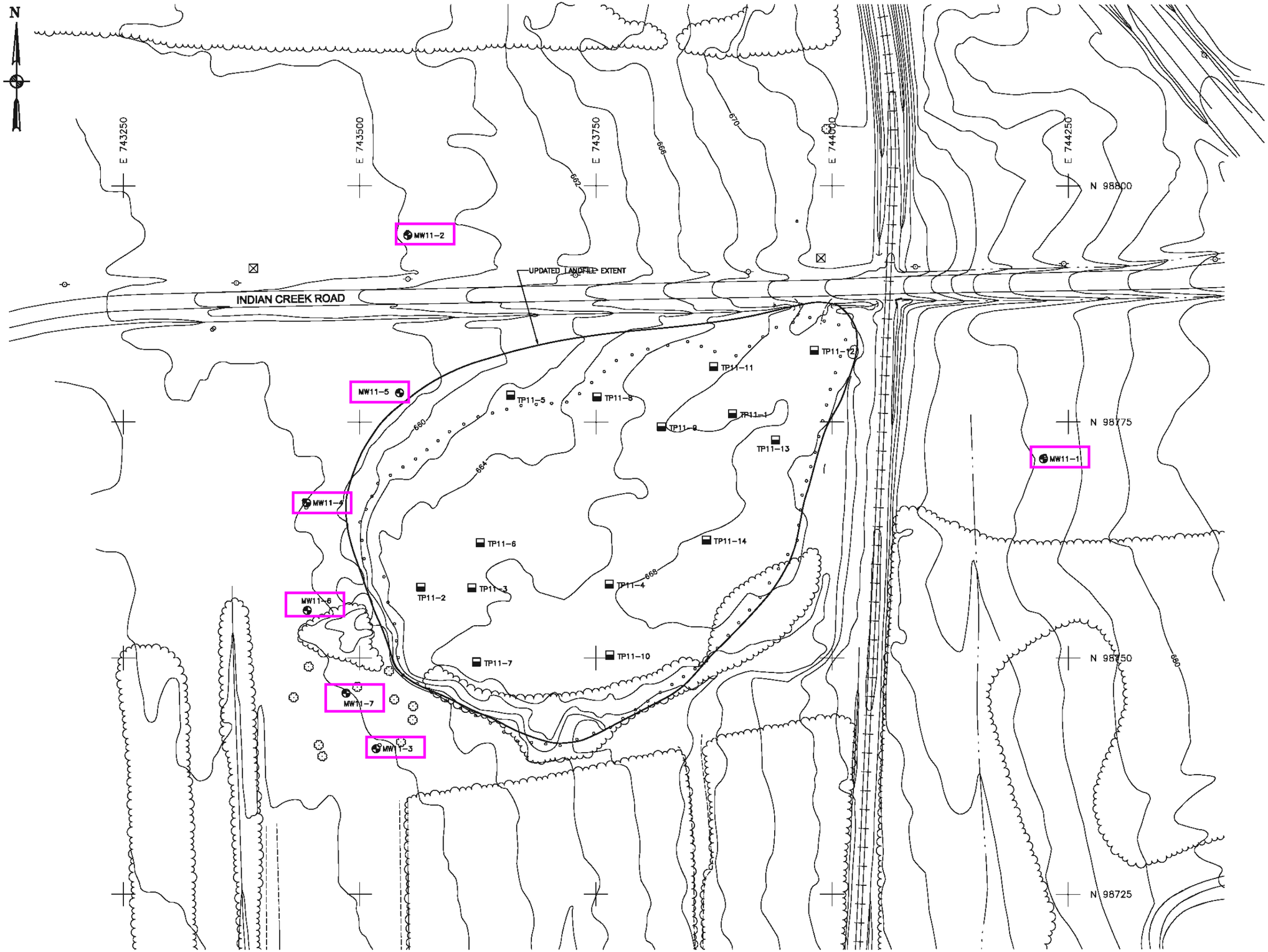
SENECA army DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 4
Wells to be Decommissioned
Ash Landfill Operable Unit

MARCH 2006

O:\Seneca\Ash_lf\Ash RD WP\ash_rd_wp.apr



LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- 650 CONTOUR ELEVATION
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- PREVIOUS DELINEATION OF LANDFILL EXTENT
- UPDATED LANDFILL EXTENT
- DECIDUOUS TREE
- MW11-6 MONITORING WELL
- TP11-2 HISTORIC TEST PIT LOCATION

Well to be Decommissioned

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT

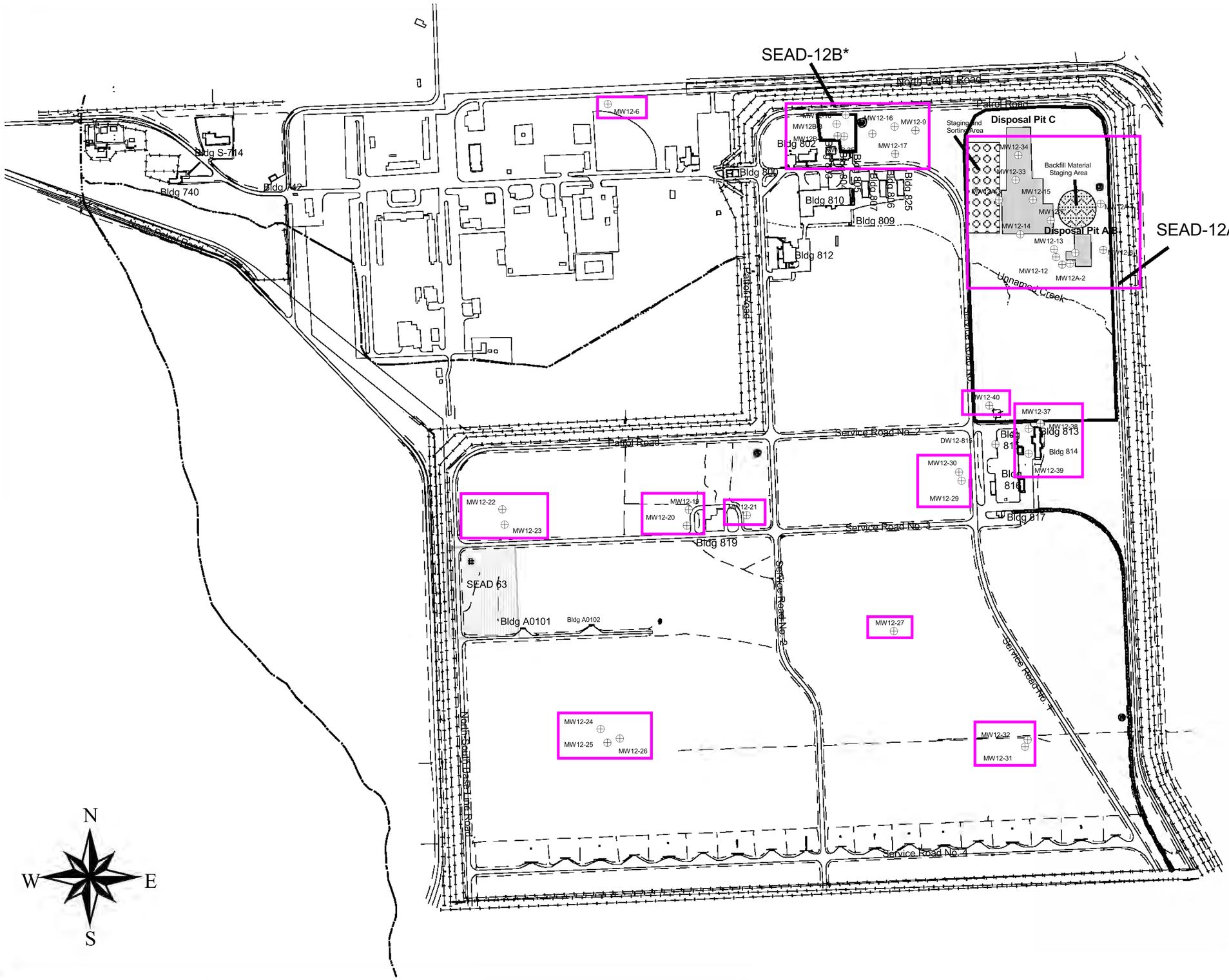
Monitoring Well Decommissioning

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734543-01000

Figure 5
Wells to be Decommissioned
SEAD-11

SCALE	DATE	REV
1" = 100'	JULY 2006	-

P:\PIT\Projects\Seneca PBC II\SEAD-11\Figures\Figure 1-1.dwg



LEGEND

MW12-15 MONITORING WELL LOCATION

DISPOSAL PIT AREA

SEAD-63

BUILDINGS (bldgs)

BACKFILL MATERIAL STAGING AREA

STAGING AND SORTING AREA

FENCE

ROADS

SURFACE WATER

Wells to be Decommissioned

Note:
* The SEAD-12 site boundary was expanded from the original site boundary which only consisted of two seperate areas, known as SEAD-12A and SEAD-12B.

500 0 500 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 6a
Wells to be Decommissioned, SEAD-12

March 2009

O:\SENECA\SEAD-12\fs_2007\12-TP_SB_LOC.APR

INSET

70 0 70 140 Feet

MW12-06
MW12-18
MW12B-3
TP12B-3
SB12-6
TP12B-2
SB12-5A
SB12-5B
Bldg 742
MW12-16
MW12B-1
MW12-09
SB12-12
SB12-11
MW12B-2
SB12-10
MW12-35
TP12B-1
SB12B-1
TP12-26
TP12-25
MW12-17

MW12-06
MW12-04
North Patrol Road
MW12-18
MW12-16 Former Dry Waste Disposal Pit
MW12-09
MW12-35
MW12-17
Bldg 802
Bldg 803
Bldg 804
Bldg 805
Bldg 806
Bldg 807
Bldg 835
Bldg 800
Bldg 810
Bldg 809
Bldg 812
Patrol Road
Disposal Pit C
MW12-34
MW12-33
MW12-15
MW12-01
MW12-07
Disposal Pit A/B
MW12-14
MW12-13
MW12-08
MW12-12
MW12-10
MW12-11
MW12-03
Unnamed Creek
Service Road No. 1
MW12-40
MW12-37
MW12-38
Bldg 815
Bldg 813
Bldg 814
MW12-39
MW12-30
TP12-18
TP12-19
MW12-29
Bldg 816
MW12-02
Bldg 817
SB12-36
Service Road No. 2
Service Road No. 3
Patrol Road
SB12-9
MW12-22
MW12-23
TP12-16
TP12-15
MW12-19
MW12-20
TP12-17
MW12-21
Bldg 819
SEAD 63
Bldg A0101
Bldg A0102
TP12-13
MW12-27
TP12-21
SB12-28
TP12-14
SB12-8
TP12-9
TP12-12
TP12-11
MW12-24
MW12-25
MW12-26
TP12-10
MW12-32
MW12-31
TP12-24
TP12-22A
TP12-22B
North-South Base Line Road
Service Road No. 4

N1016250
N1015750
N1015250
N1014750
N1014250
N1013750
N1013250
N1012750
N1012250
N1011750
E739760
E742
E74250
E74175
E741250
E740750
625
630
635
640
645
650
655
660
620
615

N

LEGEND

TP12-20
TESTPIT LOCATION

SB12-10
SOIL BORING LOCATION

MW12-15
MONITORING WELL LOCATION

POTENTIAL RELEASE AREA

SEE FIGURE 1-8 FOR SRI SAMPLE LOCATIONS FROM TEST PIT AND STOCKPILE

NOTE: DISPOSAL PIT A/B AND C SAMPLING LOCATIONS ARE PROVIDED FIGURES 2-2 THROUGH 2-5

Wells to be Decommissioned

500 0 500 Feet

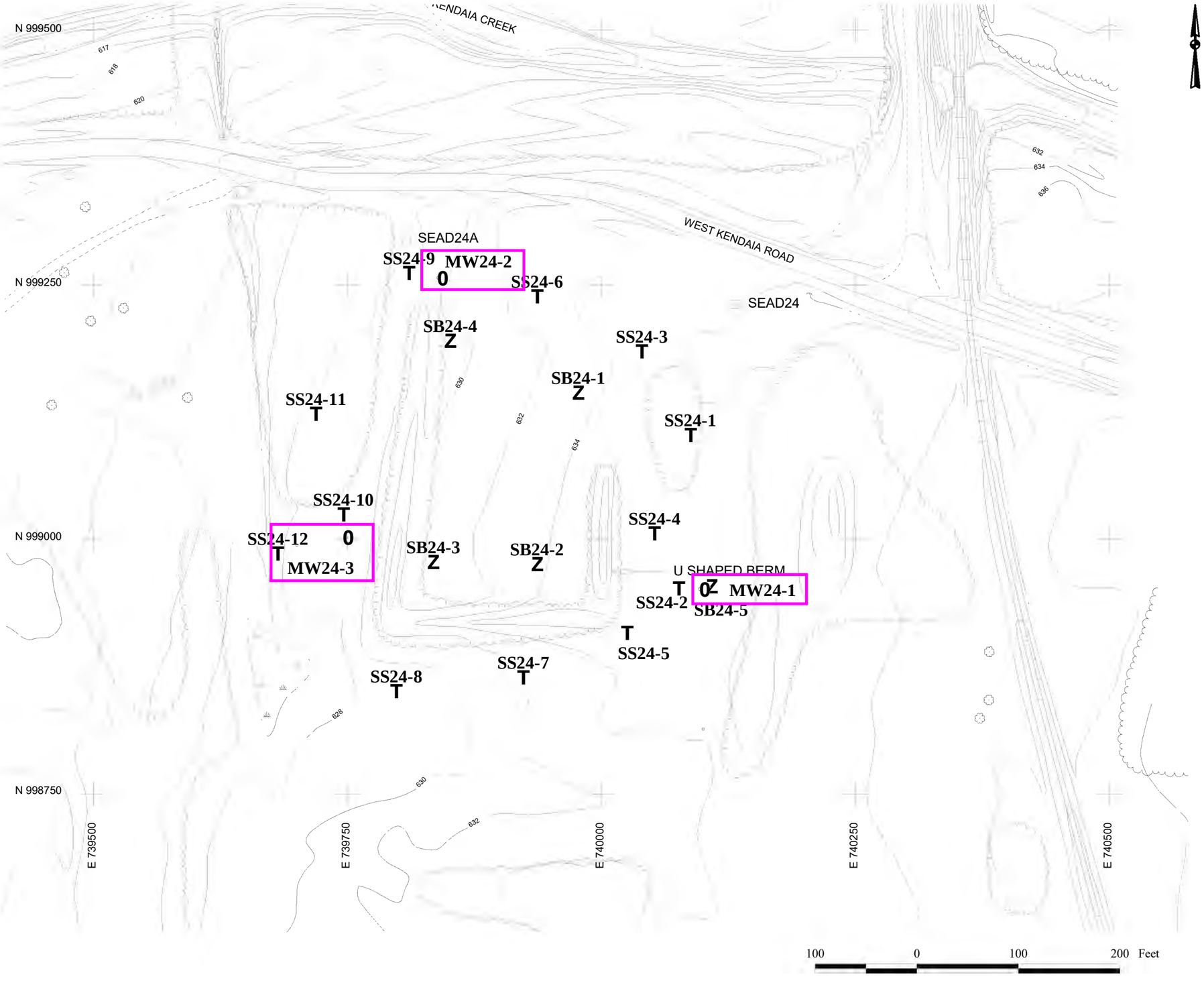
PARSONS

SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

Figure 6b
Wells to be Decommissioned
SEAD-12

SCALE	DATE	REV
1:500	JUN 2007	Sheet 1 of 1

O:\SENECA\SEAD-12\fs_2007\12-TP_SB_LOC.APR



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N

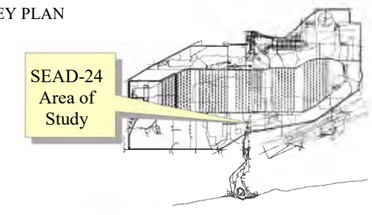
LEGEND

Well to be Decommissioned

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- EXISTING MONITORING WELL AND DESIGNATION
- EXISTING TEST PIT AND DESIGNATION
- PROPOSED MONITORING WELL AND DESIGNATION
- PROPOSED TEST PIT AND DESIGNATION

S	Soil Samples
T	Surface Soil Samples
Z	Berm Soil Samples
%	Surface Water/ Sediment Samples
U	Surface Water Samples
I	Sediment Samples
2	GroundWater Samples
'	GeoProbe Samples

KEY PLAN



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

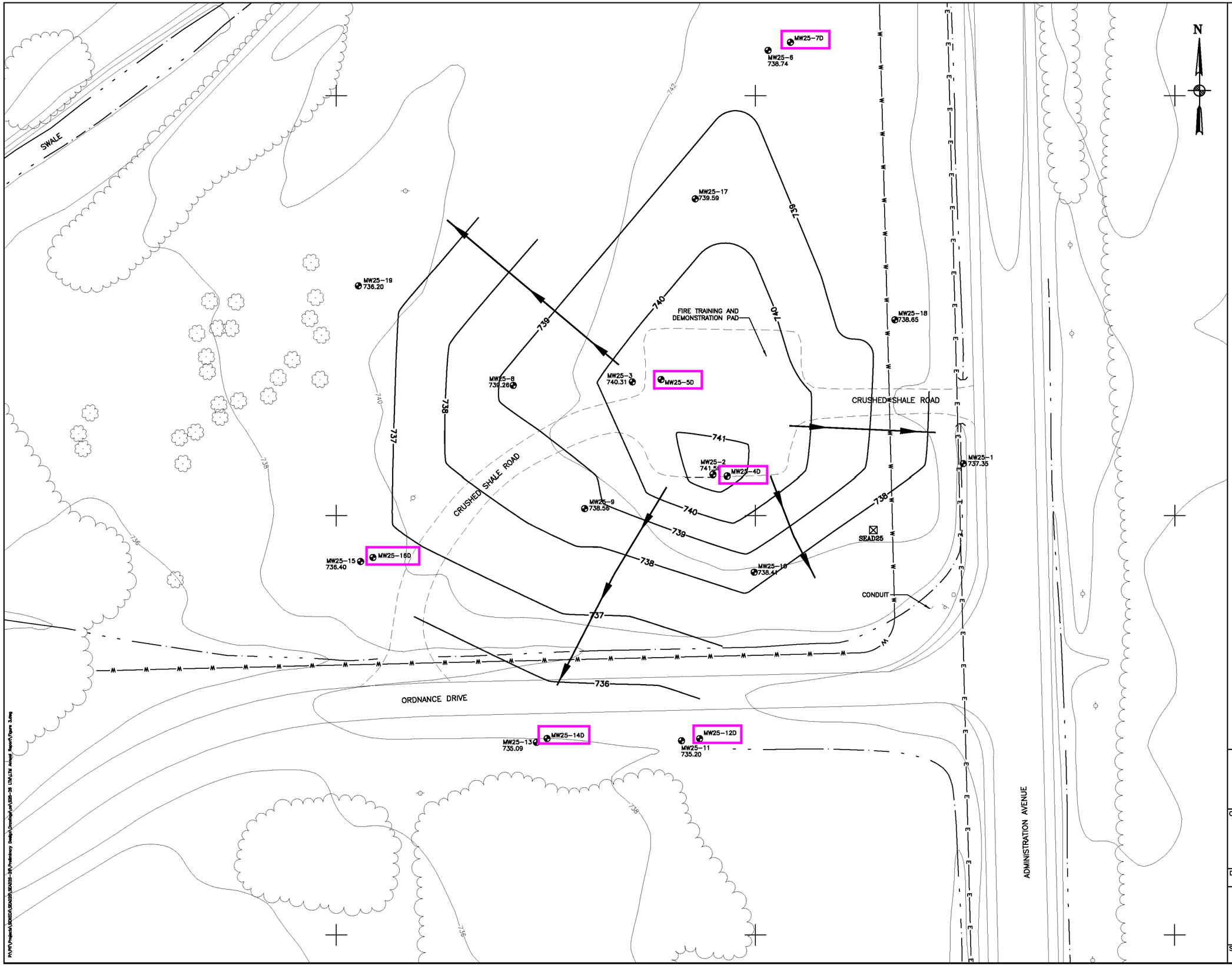
SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 7
Wells to be Decommissioned
SEAD-24

JOB NUMBER: 734530-01001

DATE: MARCH 2001



LEGEND

- DRAINAGE DITCH
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- UNDERGROUND ELECTRIC UTILITY LINE
- UNDERGROUND WATER UTILITY LINE
- ROAD SIGN
- OVERHEAD UTILITY POLE
- HYDRANT
- MANHOLE
- UTILITY BOX
- DECIDOUS TREE
- COORD. GRID (250' GRID)
- POLE
- SEAD-25 — SURVEY MONUMENT
- MW25-19 740.1 — MONITORING WELL LOCATION & ELEVATION OF WATER TABLE
- 740 — GROUNDWATER CONTOUR
- INDICATES PREDOMINANT FLOW DIRECTION

Well to be Decommissioned

NOTES:

1. TOPOGRAPHY BASED ON AERIAL SURVEY BY:

   LOCKWOOD SURVEY
   36 KARLAN DRIVE
   ROCHESTER NEW YORK

2. HORIZONTAL DATUM IS BASED ON NAD83 PER SENECA ARMY DEPOT SEAD 26A MONUMENTS SURVEY CONTROL COORDINATES DATED 1994.

3. VERTICAL DATUM IS BASED ON NAD88.

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

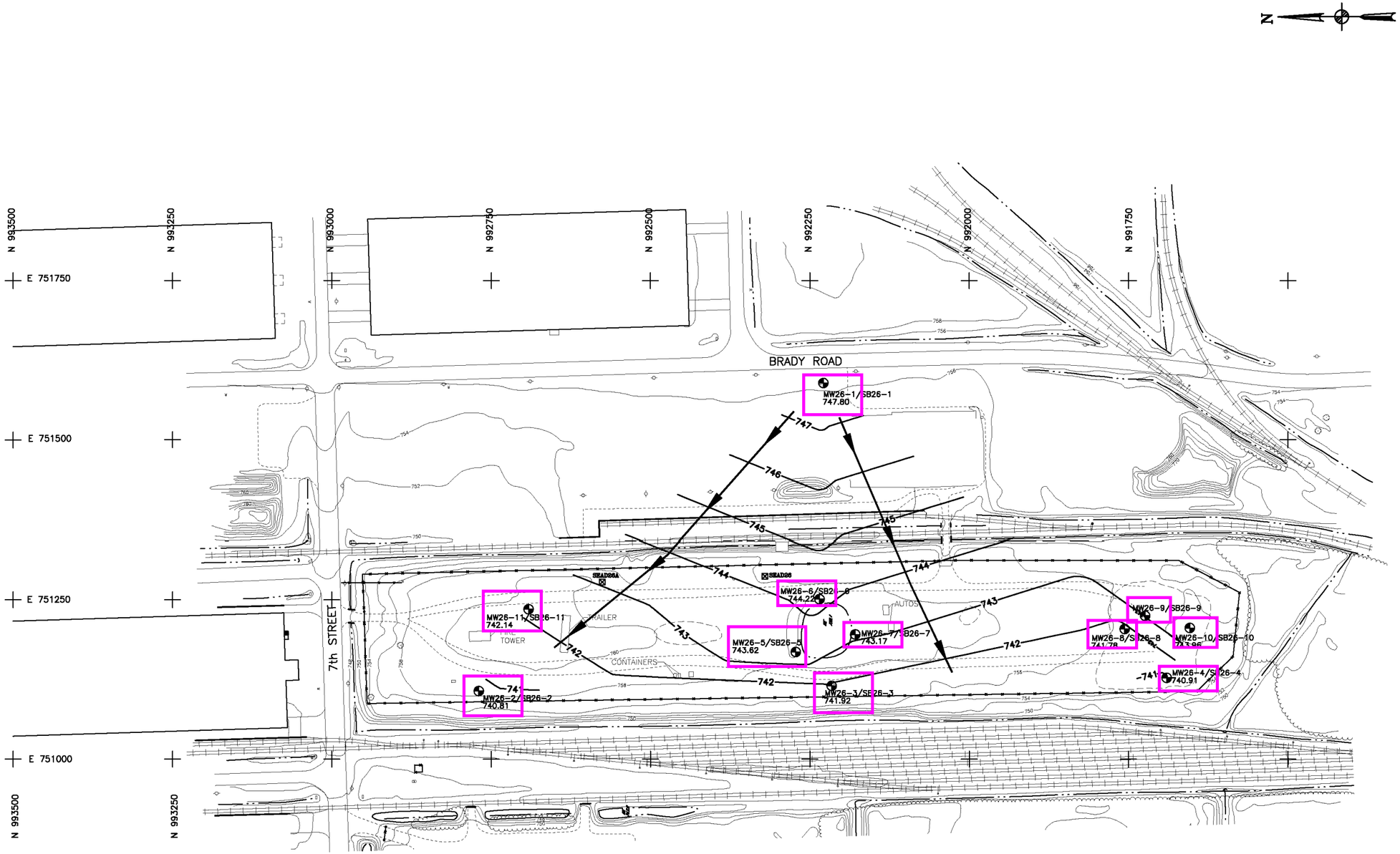
SENECA ARMY DEPOT
Monitoring Well Decomissioning

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	744538-05200

Figure 8
Wells to be Decommissioned
SEAD-25

SCALE	DATE	REV
AS SHOWN	JANUARY 2007	

P:\PT\Projects\SENECA\SEAD25\SEAD25-3yr\Preliminary Design\Drawings\wt\SEAD-25 1YR\1YR Design Report\Figure 3.dwg



LEGEND

- DRAINAGE DITCH
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- UNDERGROUND ELECTRIC UTILITY LINE
- UNDERGROUND WATER UTILITY LINE
- ROAD SIGN
- OVERHEAD UTILITY POLE
- HYDRANT
- MANHOLE
- UTILITY BOX
- DECIDOUS TREE
- COORD. GRID (250' GRID)
- POLE
- SEAD-26 — SURVEY MONUMENT
- MW26-8 744.22 — MONITORING WELL LOCATION & ELEVATION OF WATER TABLE
- 740 — GROUNDWATER CONTOUR
- INDICATES PREDOMINANT FLOW DIRECTION

Well to be Decommissioned

NOTES:

1. TOPOGRAPHY BASED ON AERIAL SURVEY BY:
   LOCKWOOD SURVEY
   36 KARLAN DRIVE
   ROCHESTER NEW YORK
2. HORIZONTAL DATUM IS BASED ON NAD83 PER SENECA ARMY DEPOT SEAD 26A MONUMENTS SURVEY CONTROL COORDINATES DATED 1994.
3. VERTICAL DATUM IS BASED ON NAD88.

80 0 80 160
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT

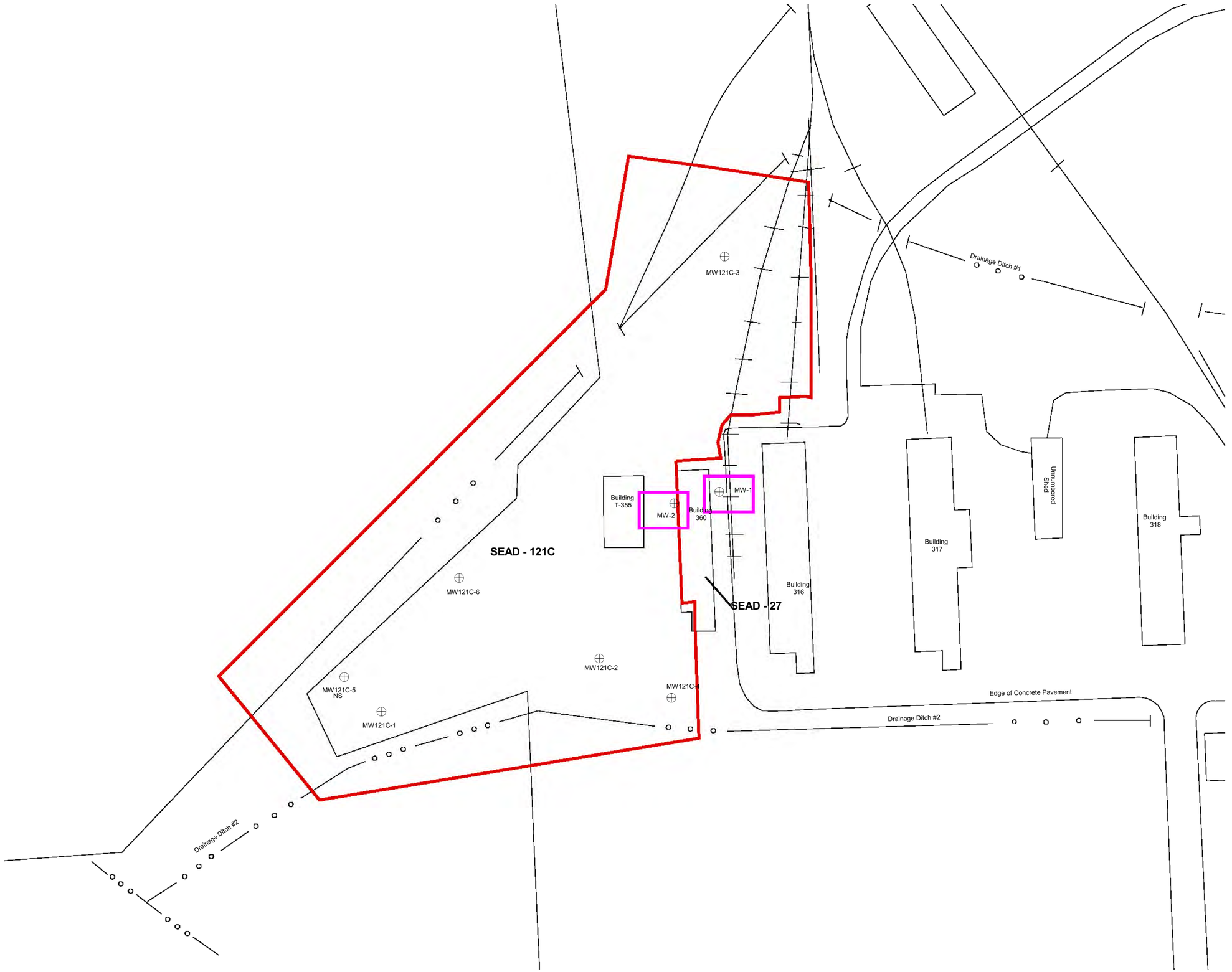
Monitoring Well Decommissioning

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	744538-05200

Figure 9
Wells to be Decommissioned
SEAD-26

SCALE	DATE	REV
AS SHOWN	JANUARY 2007	

P:\PT\Projects\SENECA\SEAD26\SEAD26-26\Preliminary Design\Concept\Art\SEAD-26 LTM\LTM Annual Report\Figure 4.dwg



LEGEND

- Railroad Tracks
- Site Boundary
- Surface Water
- MW121C-6 — Monitoring Well
- Well to be Decommissioned

N

40 0 40 80 120 160 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 10
Wells to be Decommissioned
SEAD-27

Job #: 736026-01002 | April 2004

N

SWSD48-1
MW48-1
SS48-14
SS48-13
SWSD48-2
SWSD48-50
SWSD48-51
SWSD48-24
SWSD48-23
SWSD48-22
SWSD48-25
SWSD48-26
SWSD48-21
SWSD48-20
SWSD48-19
SWSD48-18
SWSD48-17
MW48-5
MW48-6
MW48-7
MW48-8
MW48-4
SS48-3
SS48-5
SS48-6
SS48-7
SS48-8
SB48-1
SB48-2
SB48-3
SWSD48-5
SWSD48-6
SWSD48-7
SWSD48-8
SWSD48-9
SWSD48-10
SWSD48-11
MW48-9
MW48-10
MW48-11
MW48-12
SB48-6
SB48-7
SB48-8
MW48-3
MW48-2
SS48-11
SS48-10
SS48-9
SWSD48-4
SWSD48-3
MW48-13
SS48-15
MW48-14
SS48-12
E0801
E0802
E0803
E0804
E0805
E0806
E0807
E0808
E0809
E0810
E0811
690
670
680
700

TO BE COLLECTED
AT MOUTH OF
INDIAN CREEK
SWSD48-32
SWSD48-33

TO BE COLLECTED
ALONG INDIAN CREEK
TO SENECA LAKE
SWSD48-27
SWSD48-28
SWSD48-29
SWSD48-30
SWSD48-31

TO BE COLLECTED
ALONG SILVER AND
INDIAN CREEK
SWSD48-12
SWSD48-13
SWSD48-14
SWSD48-15
SWSD48-16

TO BE COLLECTED
ALONG INDIAN CREEK
UPGRADIENT OF SITE
SWSD48-52
SWSD48-53

ACAD\SENECA\RIFS\SEAD48\SD48PSP.DWG

PROPOSED SOIL BORING
PROPOSED MONITORING WELL
PROPOSED SURFACE SOIL SAMPLE
PROPOSED SURFACE WATER/SEDIMENT SAMPLE

LEGEND

MINOR WATERWAY
MAJOR WATERWAY
FENCE
UNPAVED ROAD
BRUSH LINE
LANDFILL EXTENT
RAILROAD
760
GROUND SURFACE ELEVATION CONTOUR

SURVEY MONUMENT
WETLANDS
ROAD SIGN
DECIDUOUS TREE
FIRE HYDRANT
MANHOLE
GUIDE POST
POLE
UTILITY BOX
COORDINATE GRID (250' GRID)
OVERHEAD UTILITY POLE
MAILBOX/RR SIGNAL

Well to be Decommissioned

300 0 300 600
1" = 600'

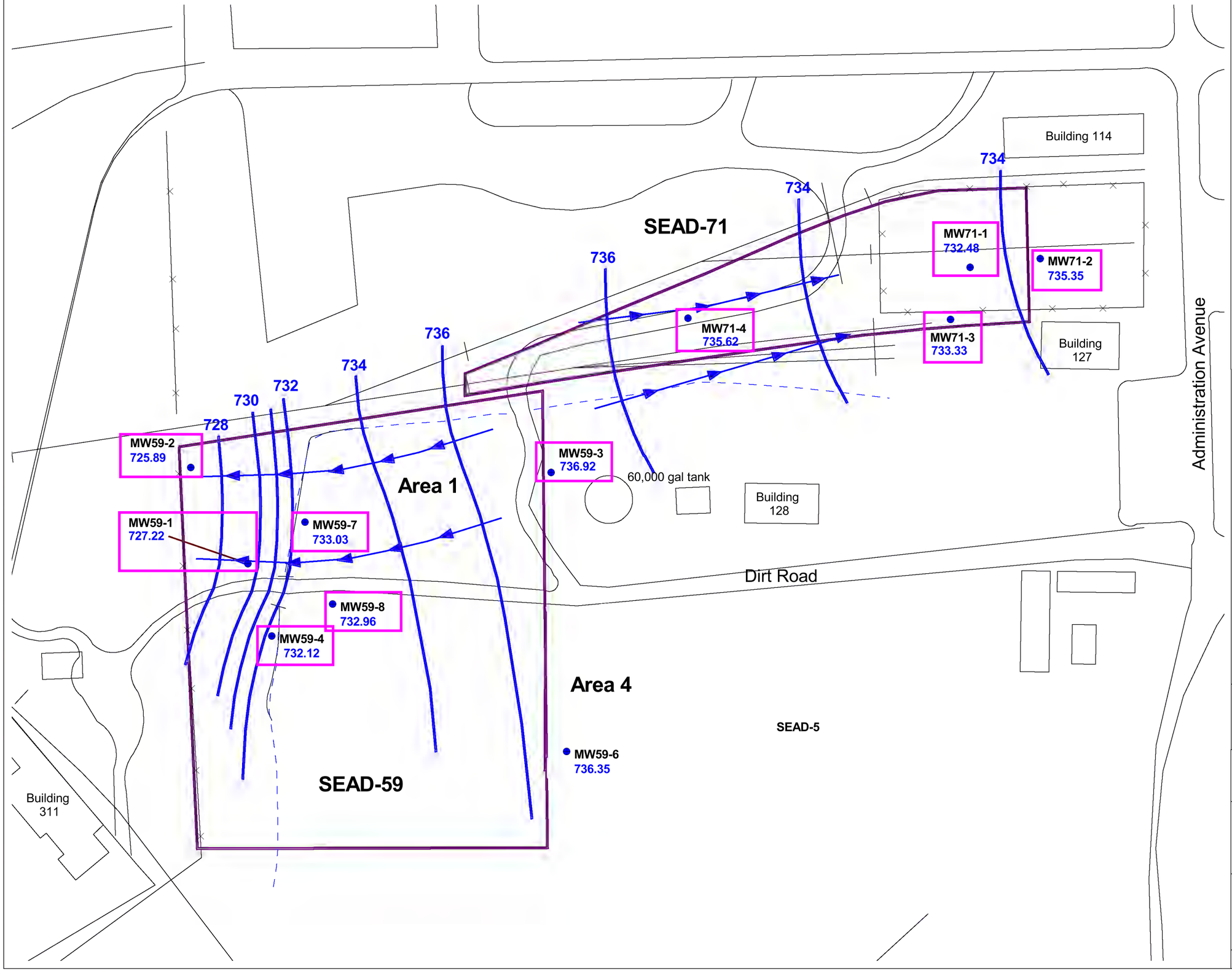
PARSONS
PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

DEPT. ENVIRONMENTAL ENGINEERING
Dwg. No. 727651-02002

Figure 11
Wells to be Decommissioned
SEAD-48

SCALE 1" = 600'
DATE DECEMBER 1995
REV A



LEGEND

- Existing Monitoring Well
- Groundwater Contour
- Direction of Groundwater Flow
- Stream
- Fence
- Railroad Tracks
- Approximate SEAD Boundary
- Well to be Decommissioned

N

200 0 200 400 Feet

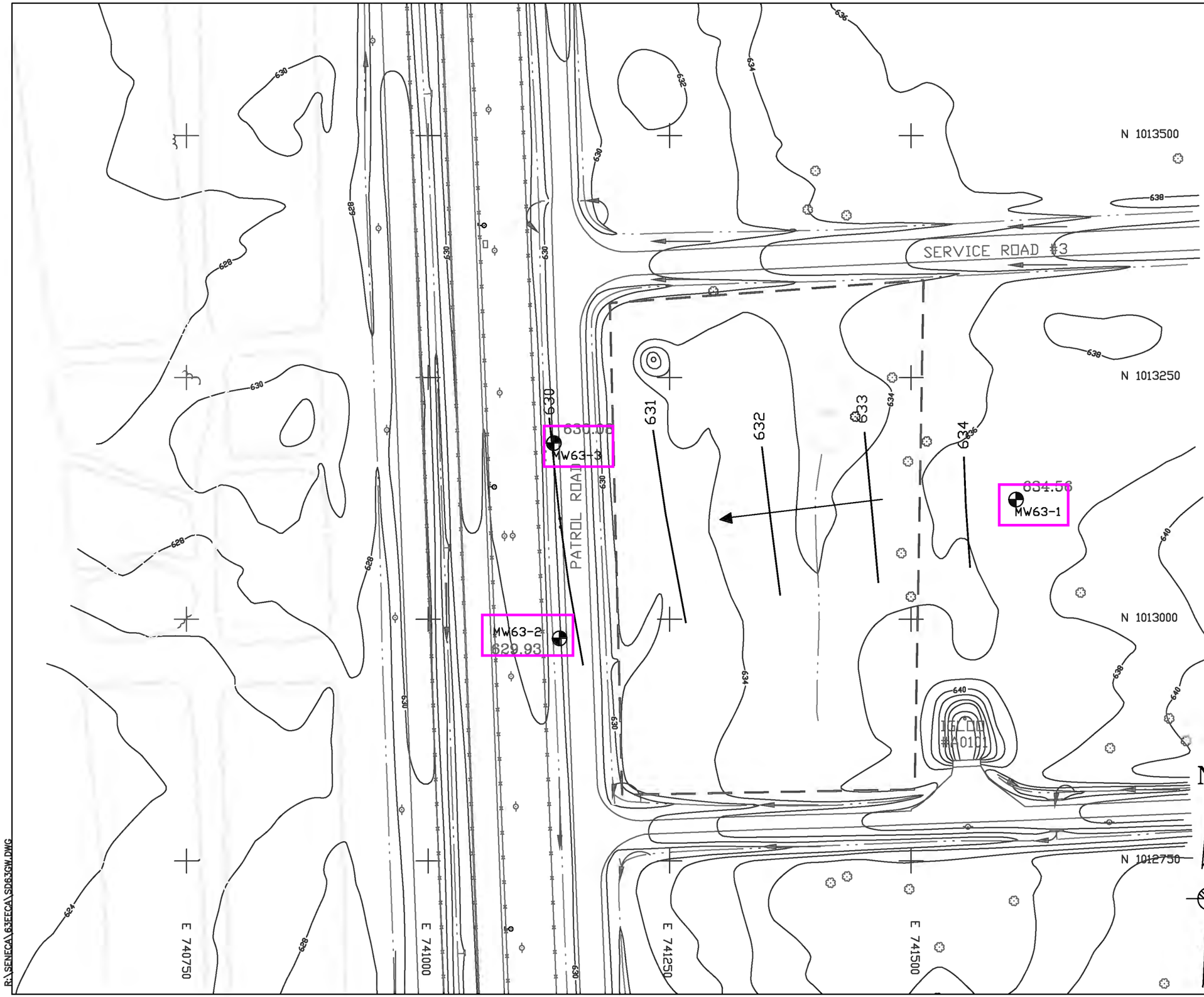
PARSONS

SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 12
Wells to be Decommissioned
SEAD-59 and 71

JUNE 2005	743519-03000



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- 634.56 MW63-1 — MONITORING WELL WITH WATER TABLE ELEVATION
- GROUNDWATER ELEVATION CONTOUR (ARROW INDICATES DIRECTION OF FLOW)

GROUNDWATER LEVEL MEASUREMENTS MADE ON 7/06/94

- DIRECTION OF SURFACE WATER FLOW
- APPROXIMATE AOC BOUNDARY
- Wells to be Decommissioned

50 0 50 100
(feet)

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

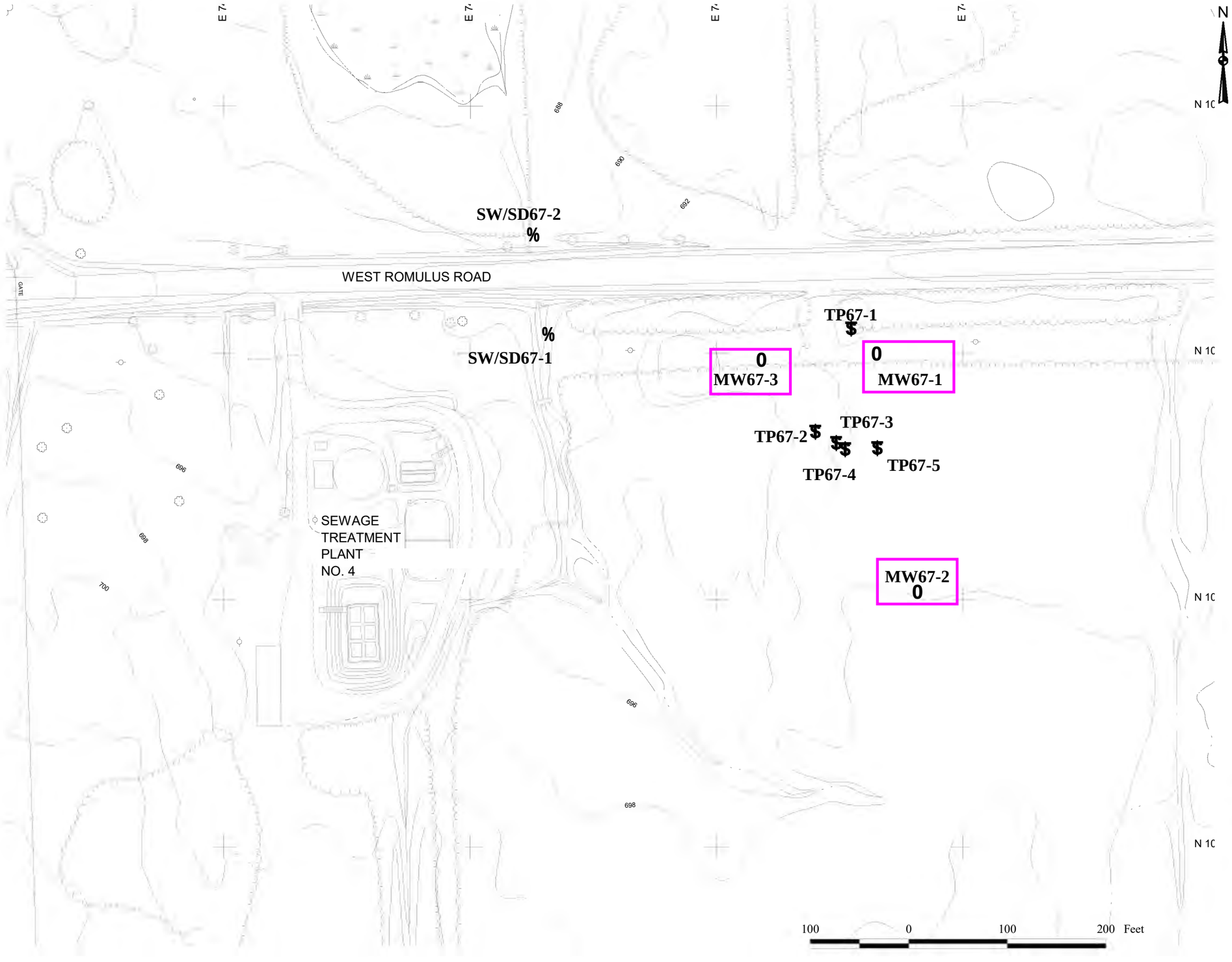
CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734364-01001

Figure 13
Wells to be Decommissioned
SEAD-63

SCALE	DATE	REV
AS NOTED	SEPTEMBER 1999	A

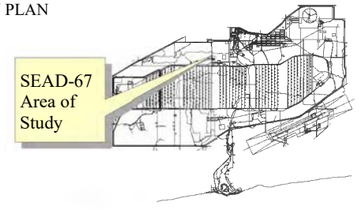
R:\SENECA\63EECA\SD63GW.DWG



LEGEND

- Well to be Decommissioned
- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- EXISTING MONITORING WELL AND DESIGNATION
- EXISTING TEST PIT AND DESIGNATION
- PROPOSED MONITORING WELL AND DESIGNATION
- PROPOSED TEST PIT AND DESIGNATION
- $ Soil Samples
- T Surface Soil Samples
- Z Berm Soil Samples
- % Surface Water/ Sediment Samples
- U Surface Water Samples
- I Sediment Samples
- 2 GroundWater Samples
- GeoProbe Samples

KEY PLAN



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 14
Wells to be Decommissioned
SEAD-67

JOB NUMBER: 734516-01001

DATE: MARCH 2001

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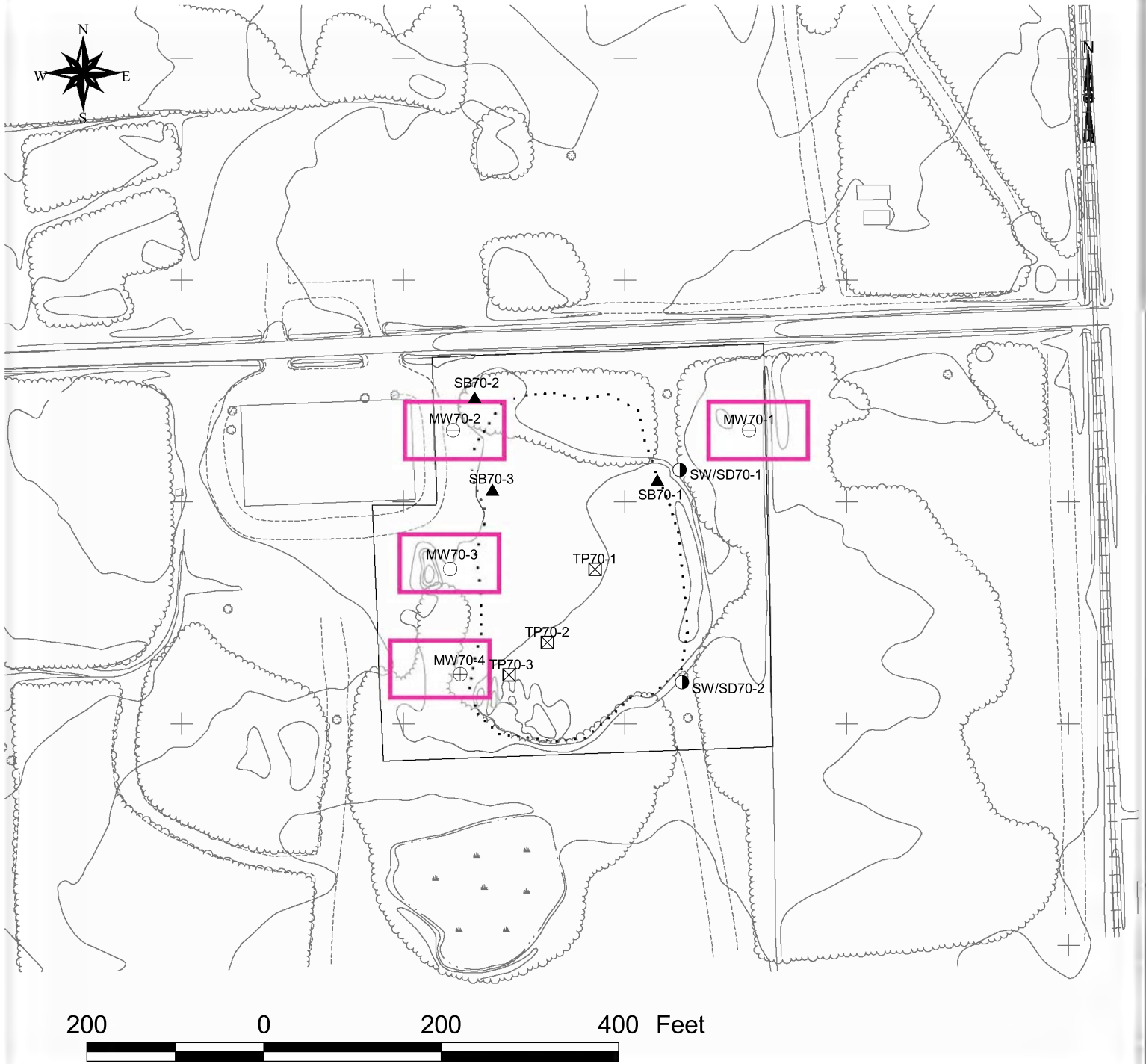


Legend:

Monitoring Well Location

Wells to be Abandoned

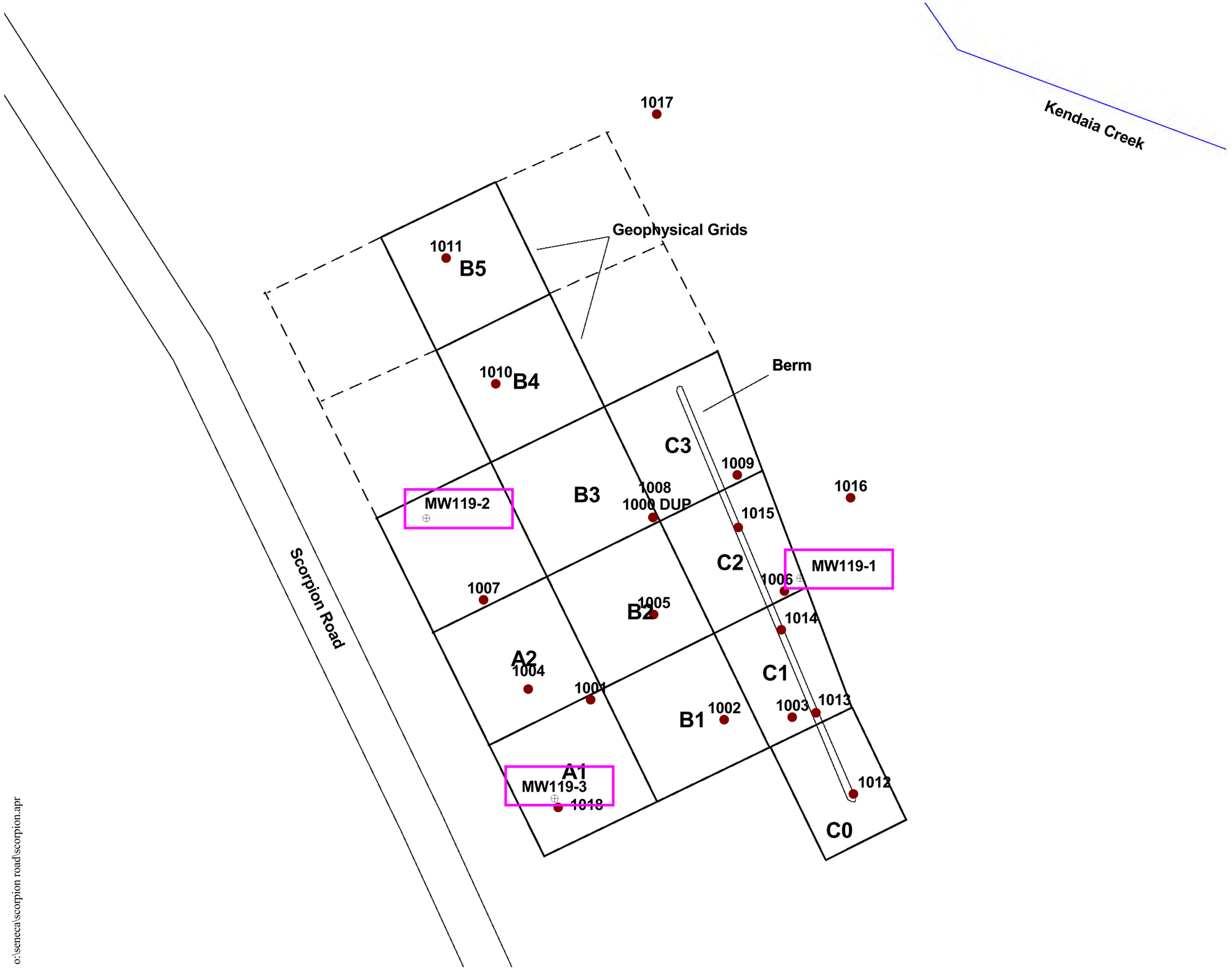
PARSONS

SENECA ARMY DEPOT ACTIVITY
Monitoring Well Decommissioning

Figure 15
Wells to be Decommissioned
SEAD-70

SEPTEMBER 2008

O:\Seneca\SEAD-70\S-70 soil removal.apr\Well Abandonment



o:\seneca\scorpion road\scorpion.apr

LEGEND

0001 — Surface Soil Sample Location

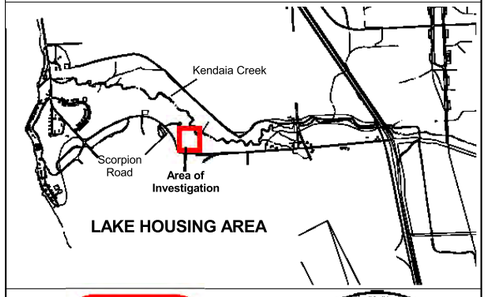
MW119-1 — Monitoring Well Location

Well to be Decommissioned

Note: Berm is approximately 4 ft wide by 4 ft high

N

50 0 50 100 Feet



PARSONS

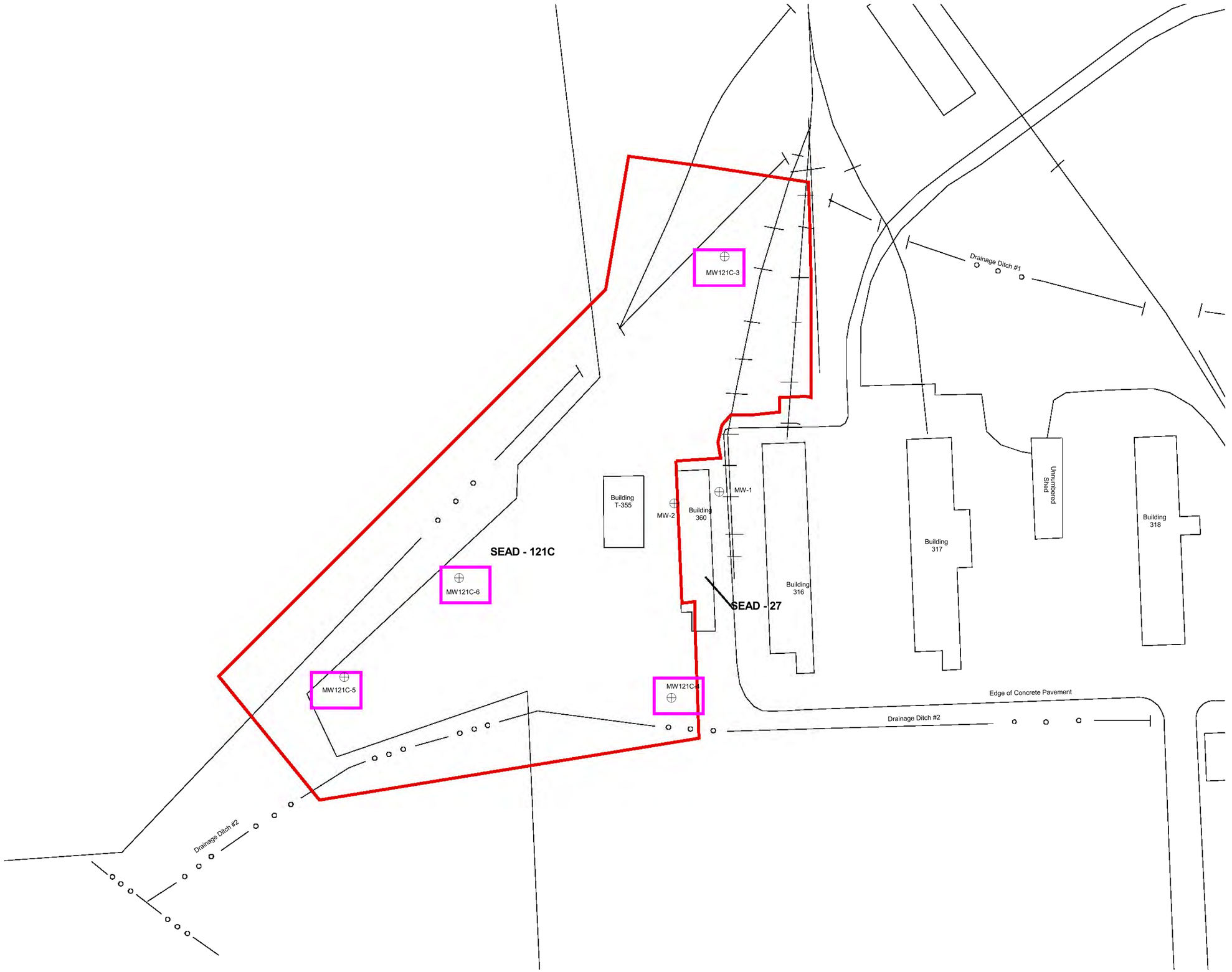
SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 16
Wells to be Decommissioned
SEAD-119B

JOB NUMBER: 739855-01003

DATE: March 2004



LEGEND

- Railroad Tracks
- Site Boundary
- Surface Water
- MW121C-6 — Monitoring Well
- Well to be Decommissioned

N

40 0 40 80 120 160 Feet

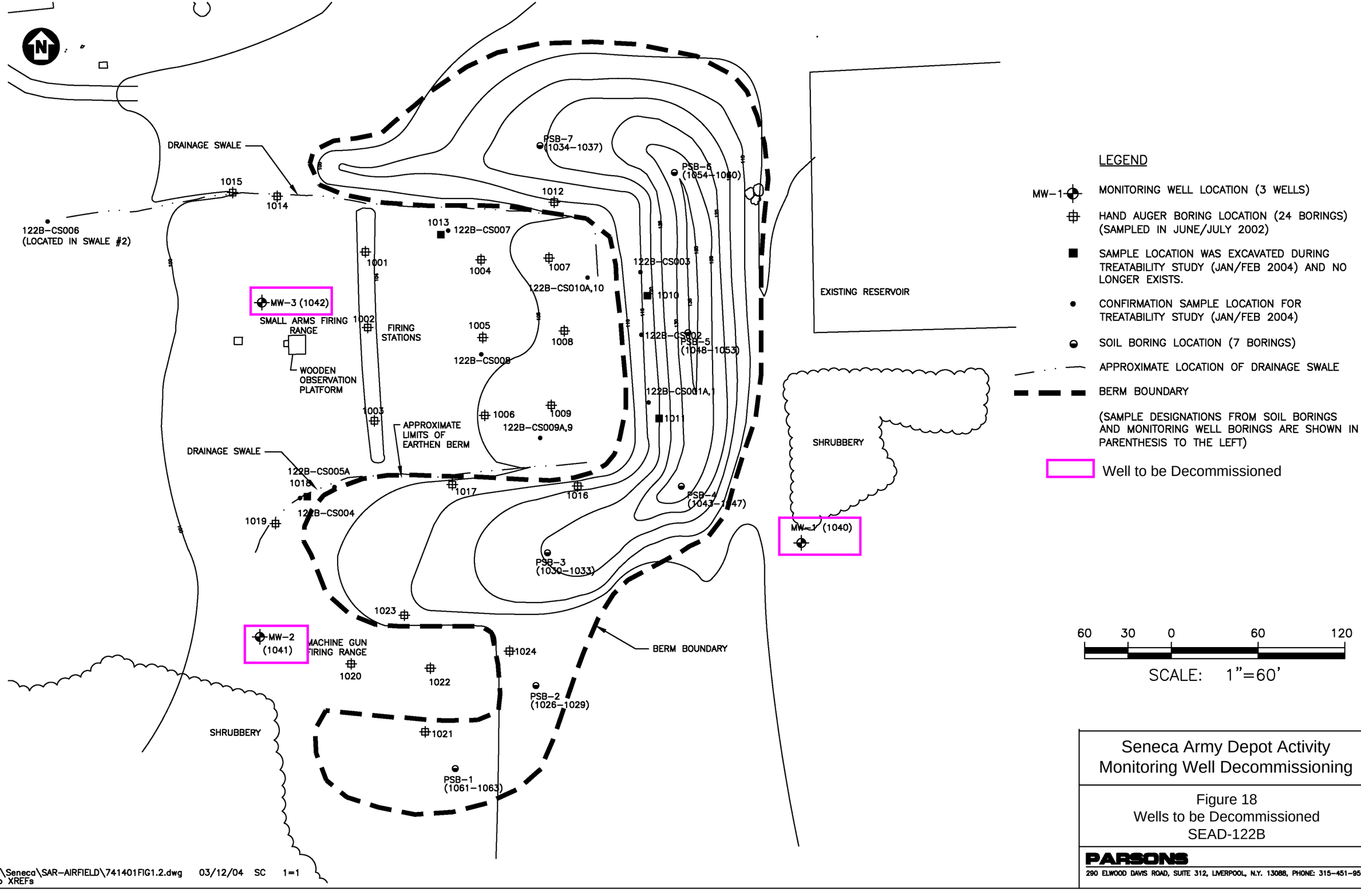
PARSONS

SENECA ARMY DEPOT ACTIVITY

Monitoring Well Decommissioning

Figure 17
Wells to be Decommissioned
SEAD-121C

Job #: 736026-01002 | April 2004



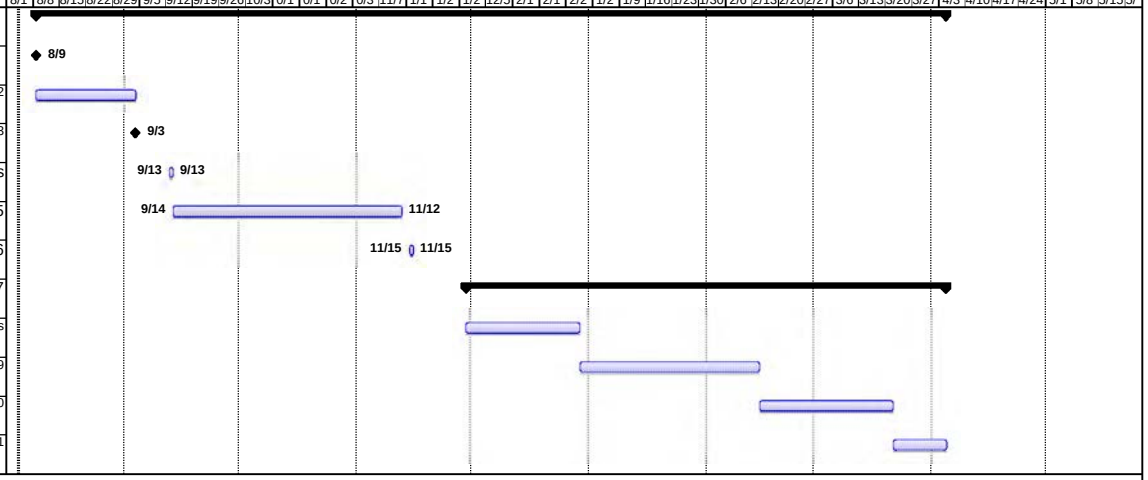
Seneca Army Depot Activity
Monitoring Well Decommissioning

Figure 18
Wells to be Decommissioned
SEAD-122B

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

Figure 19
DECOMMISSIONING OF MONITORING WELLS - - 18 SWMUs
Seneca Army Depot Activity

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Well Decommissioning Plan SEAD-13**	**171 days**	**Mon 8/9/10**	**Mon 4/4/11**	
2	Submittal of Well Abandonment Workplan	0 days	Mon 8/9/10	Mon 8/9/10	
3	Regulatory Reivew of Work Plan	20 days	Mon 8/9/10	Fri 9/3/10	2
4	Approval of Well Abandonment Work Plan	0 days	Fri 9/3/10	Fri 9/3/10	3
5	Mobilization	1 day	Mon 9/13/10	Mon 9/13/10	FS+4 days
6	Monitoring Well Decommissioning	44 days	Tue 9/14/10	Fri 11/12/10	5
7	Demobilization	1 day	Mon 11/15/10	Mon 11/15/10	6
8	**Report**	**90 days**	**Tue 11/30/10**	Mon 4/4/11	7
9	Prepare Draft Report	22 days	Tue 11/30/10	Wed 12/29/10	7FS+10 days
10	Regulatory Review Period	33 days	Thu 12/30/10	Mon 2/14/11	9
11	Prepare Final Report	25 days	Tue 2/15/11	Mon 3/21/11	10
12	Regulatory Acceptance	10 days	Tue 3/22/11	Mon 4/4/11	11



Project: SEAD-13 Well Abandonment S
Date: Wed 8/4/10

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary | Deadline

Figure 19 Schedule.mpp

APPENDICES

Appendix A NYSDEC's Guidance: Groundwater Monitoring Well Decommissioning Procedures (*Draft, January 8, 2009*)

Appendix B Soil Boring and Well Completion Logs

APPENDIX A

NYSDEC'S GUIDANCE: GROUNDWATER MONITORING WELL DECOMMISSIONING PROCEDURES (*DRAFT, JANUARY 8, 2009*)

CP- Monitoring Well Decommissioning Policy

Issuing Authority: Commissioner Alexander G. Grannis	
Date Issued:	**Latest Date Revised:** New (draft 01-08-2009)

I. Summary:

Monitoring wells provide essential access to the subsurface for scientific and engineering investigations (including monitoring wells installed for leak detection purposes). To a degree, every monitoring well is an environmental liability because of the potential to act as a conduit for pollution to reach the groundwater. To limit the environmental risk, a monitoring well must be properly decommissioned when its effective life has been reached. This document provides procedures to satisfactorily decommission monitoring wells in New York State. This policy also pertains to other temporary wells such as test wells, de-watering wells and other small diameter, non-potable water wells.

II. Policy:

Environmental monitoring wells should be decommissioned when:

1. they are no longer needed;
2. re-use by another program is not an option; or
3. the well's integrity is suspect or compromised.

The method for decommissioning will be determined based upon well construction and environmental parameters. The method selected must be designed to protect groundwater and implemented according to current best engineering practices while following all applicable federal, state and local regulations. *Groundwater Monitoring Well Decommissioning Procedures* shall be maintained as an addendum to this policy.

This policy is applicable to all New York State Department of Environmental Conservation (DEC) programs that install, utilize and maintain monitoring wells for the study of groundwater, except monitoring wells for landfills regulated under 6 NYCRR Part 360 decommissioned in accordance with those regulations [*see* 6 NYCRR 360-2.11(a)(8)(iv)]. There is no specific time frame to dictate when to decommission a well; timing is dependant upon the use and condition of the well and shall be determined on an individual basis. Best professional judgment must be exercised when using the decommissioning procedures. Outside of DEC use, this policy is mandatory when incorporated into the specifications of a state contract, an Order on Consent or a permit. In all other situations, it shall serve as guidance.

III. Purpose and Background:

This document establishes a monitoring well decommissioning policy and provides technical guidance. Synonyms for well decommissioning include "plugging," "capping" and "abandoning. For consistency, only the term "decommissioning" is used within this document.

Unprotected, neglected and improperly abandoned monitoring wells are a serious environmental liability. They can function as a pollution conduit for surface contaminants to reach the subsurface and pollute our groundwater. They also can cause unwanted mixing of groundwaters, which degrade the overall water quality within an aquifer. Improperly constructed, poorly maintained or damaged monitoring wells can yield anomalous poor data that can compromise the findings of an environmental investigation or remediation project. Unneeded or compromised monitoring wells should be properly decommissioned in order to prevent harm to our groundwater.

Since 1980, the DEC has installed, directed or overseen the installation of thousands of monitoring wells throughout New York for various state and federal programs, such as Superfund, solid waste, Resource Conservation and Recovery Act (RCRA), spill response, petroleum bulk storage and chemical bulk storage. This guidance addresses the environmental liability associated with this aging network of wells.

Within its boring zone, a successfully decommissioned well prevents the following:

1. Migration of existing or future contaminants into an aquifer or between aquifers;
2. Migration of existing or future contaminants within the vadose zone;
3. Potential for vertical or horizontal migration of fluids in the well or adjacent to the well; and
4. Any change in the aquifer yield and hydrostatic head, unless due to natural conditions.

Monitoring well construction in New York varies considerably with factors such as age of the well, local geology and either the presence or absence of contamination. The predominant type of monitoring well in New York is the shallow, watertable monitoring well constructed of polyvinyl chloride plastic (PVC). The best method for decommissioning should be selected to suit the conditions and circumstances. Each decommissioning situation is to be evaluated separately using this guidance before a method is chosen and implemented.

IV. Responsibility:

The Division of Environmental Remediation (DER) is responsible for updating this policy and the *Groundwater Monitoring Well Decommissioning Procedures* (addendum) in consultation with the Division of Solid and Hazardous Materials (DSHM) and the Division of Water (DOW). Compliance with the guidance does not relieve any party of the obligation to properly decommission a monitoring well. Oversight responsibility will be carried out by the DEC Regional Engineer.

V. Procedure:

Groundwater Monitoring Well Decommissioning Procedures, the addendum to this policy, provides guidance on proper decommissioning of monitoring wells in New York State.

VI. Related References:

- Groundwater Monitoring Well Decommissioning Procedures, October 1986. Prepared by Malcolm Pirnie, Inc. for the New York State Department of Environmental Conservation, Division of Environmental Remediation.

- American Society for Testing and Materials, A.S.T.M. D 5299-99. Standard Guide for the Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities. A.S.T.M. Philadelphia. 2005.

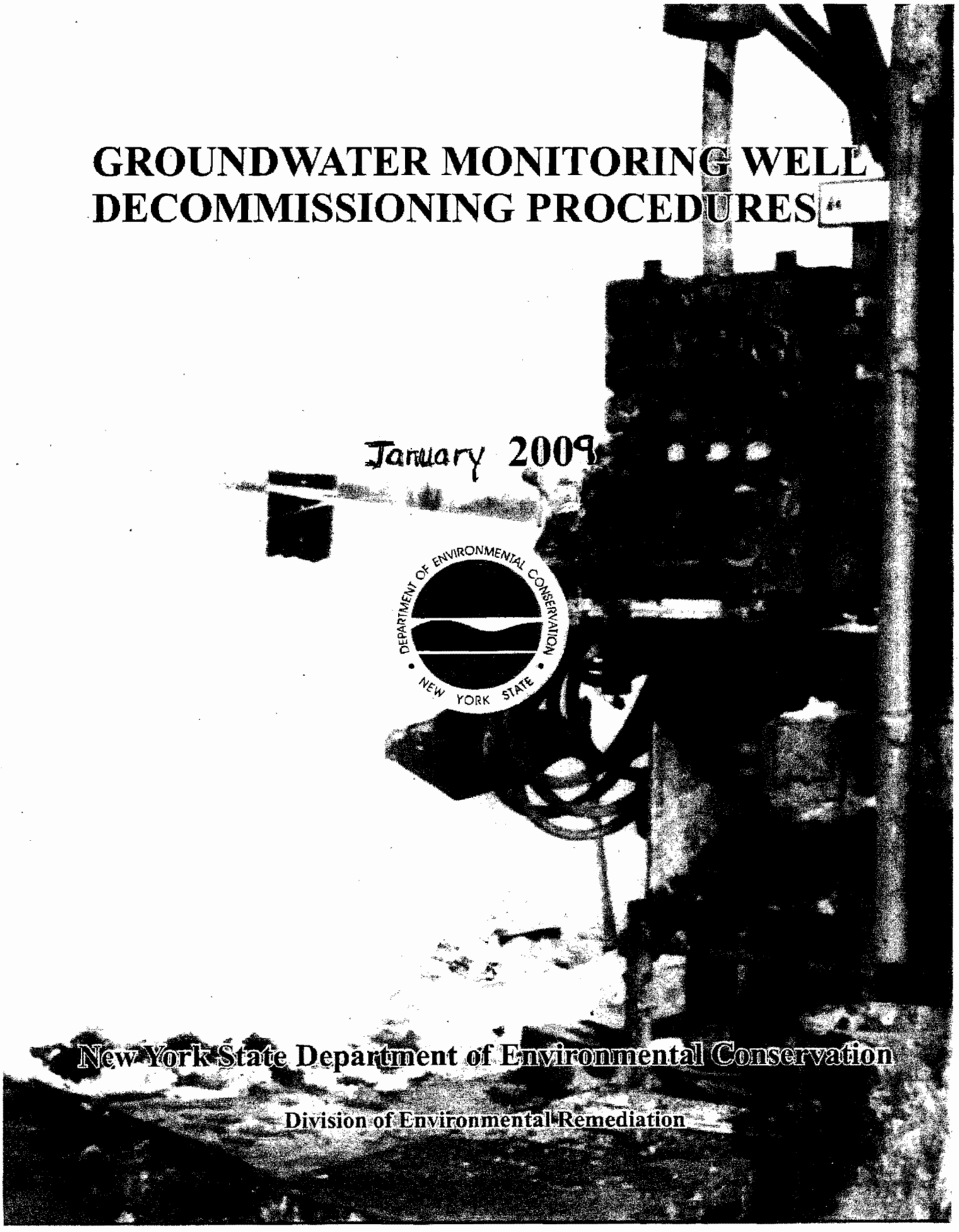
- New York State Department of Environmental Conservation, Division of Solid Waste, 6 NYCRR Part 360 Solid Waste Management Facilities, 1989.

- New York State Department of Environmental Conservation, Region 1 - Water Unit, Specifications for Abandoning Wells and Boreholes in Unconsolidated Materials, undated.

- United States Environmental Protection Agency, the Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034.

GROUNDWATER MONITORING WELL DECOMMISSIONING PROCEDURES

January 2009



New York State Department of Environmental Conservation

Division of Environmental Remediation

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INTRODUCTION

This document, *Groundwater Monitoring Well Decommissioning Procedures*, is the addendum to CP- , Monitoring Well Decommissioning Policy, which provides acceptable procedures to be used as guidance when decommissioning monitoring wells in New York State. Please note that this document does not address some site-specific special situations that may be encountered in the field. Compliance with the procedures set forth in this document does not relieve any party of the obligation to properly decommission a monitoring well.

Unprotected, neglected and improperly abandoned monitoring wells are a serious environmental liability. They can function as a pollution conduit for surface contaminants to reach the subsurface and pollute our groundwater. They also can cause unwanted mixing of groundwaters, which degrade the overall water quality within an aquifer. Improperly constructed, poorly maintained or damaged monitoring wells can yield anomalous poor data that can compromise the findings of an environmental investigation or remediation project. Unneeded or compromised monitoring wells should be properly decommissioned in order to prevent harm to our groundwater.

Previous versions of this guidance have been issued since 1995. Originally developed as a specification for well decommissioning at Love Canal, the procedures were rewritten to make them applicable across the state. From an engineering standpoint, the guidance has changed very little. The DEC realizes that most situations do not require a complex procedure.

If you have any questions, please contact Will Welling at (518) 402-9814.

Sincerely,

Gerald J. Rider, Jr., P.E.
Chief, Remedial Section D
Remedial Bureau E

1.0 PREPARATION

If an unneeded monitoring well remains in good usable condition, an alternative to decommissioning might be the reuse by another agency program. DEC encourages reuse in situations where a well will continue to be used and responsibly cared for.

When reuse is not an option, the first step in the well decommissioning process is to review all pertinent well construction information. One must know the well depth and construction details. GPS coordinates and permanent labeling (if available) will be useful in confirming the well to be decommissioned. An inspection must be performed prior to decommissioning in order to verify the construction and condition of each well. Specific details and subsurface conditions form the basis for decisions throughout the decommissioning process.

Well Details

1. Is the well a single stem riser (all one diameter)?
2. Is the well a simple overburden well (no penetration into bedrock)?
3. Does the well riser consist of telescoping diameters of pipe which decrease with depth?
4. Is the well seal compromised (leaking, inadequate or damaged)?
5. If the well is PVC, is it 25 feet or shallower and not grouted into rock?
6. Can the riser be pulled and is removal of the well desired?
7. Is the well a bedrock well?
8. If the monitoring well is a bedrock well, does it have an open hole?
9. Is there a well assembly (riser and screen) installed within the bedrock hole?

Subsurface Conditions

10. Is the soil contaminated?
11. Does the well penetrate a confining layer?
12. If the well penetrates a confining layer, might overdrilling or casing pulling cause contamination to travel up or down through a break in the confining layer?
13. Does the screened interval cross multiple water-bearing zones?

For additional collection and verification of information, the "Monitoring Well Field Inspection Log" (Figure 1) can be used during a field inspection. After the well has been located and the information gathered, one is ready to select the decommissioning procedure in accordance with Section 2.

Special conditions, such as access problems, well extensions through capped and covered landfills and seasonal weather patterns affecting construction, should be assessed in the planning stage. Decommissioning work requiring the use of heavy vehicular equipment on landfill caps should be scheduled during dry weather (if possible) so as to minimize damage to the cover. If work must be performed during the spring, winter or inclement weather, special measures to reduce ruts should be employed to maintain the integrity of a completed landfill cover system. As an example, placement of plywood under vehicular equipment can eliminate deep ruts that would require repair.

2.0 DECOMMISSIONING METHODS

The primary rationale for well decommissioning is to remove any potential groundwater pathway. A secondary rationale, often important to the property owner or owner of the well, is to physically remove the well. Removed well materials may be recycled and will not interfere with future construction excavation. The previous versions of these decommissioning procedures have stressed that physical removal of the well by pulling is preferable to leaving casing in the ground. Due to the added effort, expense and risk involved with pulling, the decision of whether to pull or not should be a separate consideration aside from selecting the sealing procedure.

One should select a decommissioning procedure that takes into account the geologic and hydrogeologic conditions at the well site; the presence or absence of contamination in the groundwater; and original well construction details. The selection process for well decommissioning procedures is provided by the flow chart, Figure 2. Answers to the questions in the preceding section are the input for this flow chart. The four primary well decommissioning methods are:

1. Grouting in-place;
2. Perforating the casing followed by grouting in-place;
3. Grouting in-place followed by casing pulling;
4. Over-drilling and grouting with or without a temporary casing.

In a complex situation, one or more decommissioning procedures may be used for different intervals of the same well.

The remainder of Section 2 discusses the well decommissioning methods and the selection process. Refer to Figure 2 for a flow chart diagram of the complete procedure selection process. The DEC Project Manager has the discretion to deviate from the flow chart, (Figure 2), based on site conditions and professional judgement.

2.1 Grouting In-Place

Grouting in-place is the simplest and most frequently used well decommissioning method and grouting itself is the essential component of all the decommissioning methods. The grout seals the borehole and any portion of the monitoring well that may be left in the ground. Because dirt and foreign objects can fall into an open well, whenever possible a well should be sealed first with grout before attempting subsequent decommissioning steps.

For the purpose of these decommissioning procedures, the well seal is defined as the bentonite seal above the sand pack. Aside from obvious channeling by in-flowing surface water around the well, an indication of the well seal integrity may be obtained through review of the boring logs and/or a comparison of groundwater elevations if the well is part of a cluster. Any problems noted on the boring logs pertaining to the well seal, such as bridging of bentonite pellets or running sands, or disparities between field notes (if available) and the well log would indicate the potential for a poor (compromised) well seal.

If the well seal is not compromised and there is no confining layer present, a single-stem, 2-inch PVC, monitoring well can be satisfactorily decommissioned by grouting it in-place. If the seal is compromised, casing perforation may be called for as discussed in Section 2.2.

As discussed in Section 2.4 and its sub-sections, this method is specified for the bedrock portion of a well, and is used for decommissioning small diameter cased wells. Grouting in-place involves filling the casing with grout to a level of five feet below the land surface, cutting the well casing at the five-foot depth, and removing the top portion of the casing and associated well materials from the ground. The casing must be grouted according to the procedures in Section 6. In addition, the upper five feet of the borehole is filled to land surface and restored according to the procedures described in Section 7.

For open-hole bedrock wells, the procedure involves filling the opening with grout to the top of rock according to the procedures in Section 5. A thicker grout may be required to fill any bedrock voids. If excessive grout is being lost down-hole, consider grouting in stages to reduce the pressure caused by the height of the grout column.

The standard mix with the maximum amount of allowable water will be required to penetrate the well screen and sand pack when a well assembly has been installed within a bedrock hole. For an assembly such as this, the grout should be mixed thinly enough to penetrate

the slots and sand pack. The grout mixes are discussed in Sections 6.1 and 6.2.

It should be noted that for wells located on landfills regulated under 6NYCRR Part 360, the screened interval of the well must be sealed separately and hydrostatically tested to ensure its adequacy before sealing the remaining borehole. For a Part 360 landfill, the pressure test will have to be performed unless a waiver is granted by the DEC. As an alternative to pressure testing the screened interval, it may be acceptable to grout the entire screen and riser. The Standard Operating Procedure (SOP) for the hydrostatic test has been included under Appendix A.

2.2 Casing Perforating/Grouting In-Place

Casing perforation followed by grouting in-place is the preferred method to use if there is poor documentation of the grouting of the well annulus, or the annulus was allowed to be back-filled with cuttings. The grout will squeeze through the perforations to seal any porous zones along the outside of the casing. The procedure involves puncturing, cutting or splitting the well casing and screen followed by grouting the well. A variety of commercial equipment is available for perforating casings and screens in wells with four-inch or larger inside diameters. Due to the diversity of applications, experienced contractors must recommend a specific technique based on site-specific conditions. A minimum of four rows of perforations several inches long around the circumference of the pipe and a minimum of five perforations per linear foot of casing or screen is recommended (American Society for Testing and Materials, Standard D 5299-99, 1999). After the perforating is complete, the borehole must be grouted according to the procedures in Section 6 and the upper five feet of borehole restored according to the procedures in Section 7.

2.3 Casing Pulling

Casing pulling should be used in cases where the materials of the well assembly are to be recycled, or the well assembly must be removed to clear the site for future excavation or re-development. Casing pulling is an acceptable method to use when no contamination is present; contamination is present but the well does not penetrate a confining layer; and when both contamination and a confining layer are present but the contamination cannot cross the confining layer. Additionally, the well construction materials and well depth must be such that pulling will not break the riser. When contamination is likely to cross the confining layer during pulling, a temporary casing can be used. See Section 2.4.

Casing pulling involves removing the well casing by lifting. Grout is to be added during pulling; the grout will fill the space once occupied by the material being withdrawn. An acceptable procedure to remove casing involves puncturing the bottom of the well or using a casing cutter to cut away the screen, grouting, using jacks to free casing from the hole, and lifting the casing out by using a drill rig, backhoe, crane, or other suitable equipment. Additional grout must be added to the casing as it is withdrawn. Grout mixing and placement procedures are provided in Section 6. In wells or well points in which the bottom cannot be punctured, the casing or screened interval will be perforated or cut away prior to being filled with grout. This procedure should be followed for wells installed in collapsible formations or for highly contaminated wells.

At sites in which well casings have been grouted into the top of bedrock, the casing pulling procedure should not be attempted unless the casing can be first cut or freed from the rock.

2.4 Over-Drilling

Over-drilling is the technique used to physically remove an entire monitoring well, its sand pack and the old grout column and fill. In situations where PVC screens and risers are expected to sever and removal of all well materials is required, over-drilling will be required. Over-drilling is called for when a riser can't be pulled and it penetrates a confining layer. Compared to the other procedures, over-drilling is the least common method of well decommissioning.

A "temporary casing" may be necessary when extraordinary conditions are present, such as a high concentration of mobile contaminants in the overburden, depth to water is shallow, there is poor construction documentation or shoddy construction practices. The approach involves installing a large diameter steel casing around the outside of the well followed by drilling / pulling /grouting within this casing. The casing is withdrawn at the end of pulling, grouting and (perhaps) drilling. If the confining layer is less than 5 feet thick, the casing should be installed to the top of the confining layer. Otherwise, it is installed to a depth of 2 feet below the top of the confining layer. After the outer casing has been set, the well can be removed and grouted through pulling if possible or removed and grouted by drilling inside the casing.

Over-drilling is used where casing pulling is determined to be unfeasible, or where installation of a temporary casing is necessary to prevent cross-contamination, such as when a confining layer is present and contamination in the deeper aquifer could migrate to the upper aquifer as the well is pulled. The over-drilling method should:

- Follow the original well bore;
- Create a borehole of the same or greater diameter than the original boring; remove all of the well construction materials.

In over-drilling the difficulty lies in keeping the augers centered on the old well as the bit is lowered; it will tend to wander off. As a precaution, the well column should be filled with grout before over-drilling. Then without allowing the grout to dry, the driller proceeds with over-drilling the well. Grouting first guarantees that if the drill wanders off the old well and the effort is less than 100% successful, the remaining well portion will at least have been grouted. There are many methods for over-drilling. Please note that the following methods are not suitable for all types of casing, and the advice of an experienced driller should be sought:

- Conventional augering (i.e., a hollow stem auger fitted with a pilot bit). The pilot bit will grind the well construction materials, which will be brought to the well surface by the auger.
- A conventional cable tool rig to advance "temporary" casing having a larger diameter than the original boring. The cable tool kit is advanced within the casing to grind the well construction materials and soils, which are periodically removed with large diameter bailer. This method is not applicable to bedrock wells.
- An over-reaming tool with a pilot bit nearly the same size as the inside diameter of the casing and a reaming bit slightly larger than the original borehole diameter.

This method can be used for wells with steel casings.

- A hollow-stem auger with outward facing carbide cutting teeth having a diameter two to four inches larger than the casing.

Prior to over-drilling, the bottom of the well should be perforated or cut away, and the casing filled with grout as with casing removal by pulling.

In all cases above, over-drilling should advance beyond the original bore depth by a distance of half a foot to ensure complete removal of the construction materials. Oversight attention should be focused on the drill cuttings, looking for fragments of well materials. Absence of these indicators is a sign that the drill has wandered off the well. If wandering is suspected, having previously filled the well with grout, the remaining portion which cannot be over-drilled can be considered grouted in-place. When the over-drilling is complete, grout should be tremied within the annular space between the augers and well casings. The grout level in the borehole should be maintained as the drilling equipment and well materials are sequentially removed. As with all the other methods, the upper five feet of borehole should be restored according to the procedures in Section 7.

3.0 SELECTION PROCESS AND IMPLEMENTATION

The decommissioning procedure selection flow chart, Figure 2, is to be used to select decommissioning methods. The selection process first identifies the basic monitoring well type. There are only two types of monitoring wells described in this guidance, overburden wells and bedrock wells. Bedrock wells typically have an overburden portion which in the selection process is to be treated as an overburden well. Techniques are specified for wells based upon their type and the other physical conditions present. Decommissioning techniques called for by the selection process have their practical limits; construction details dictate when a well stem can be pulled without breaking and when it cannot be pulled. The DEC project manager has the discretion to deviate from the flow chart, (Figure 2), based on site conditions, budgetary concerns and professional judgement. The remainder of this section will discuss types of monitoring wells in various settings along with recommended decommissioning techniques.

3.1 Bedrock Wells

Referring to Figure 2 and Section 2.1, if the well extends into bedrock, the rock hole portion of the well is to be grouted in-place to the top of the rock. The grout mix, however, may vary according to the conditions. A thicker grout may be required to fill voids and a thinner grout may be necessary to penetrate well screen and sand pack. Refer to the grout mixture specifications given in Section 6.1 and 6.2.

Prior to grouting, the depth of the well will be measured to determine if any silt or debris has plugged the well. If plugging has occurred, all reasonable attempts to clear it should be made before grouting. The borehole will then be tremie grouted according to Section 6.4 from the bottom of the well to the top of bedrock to ensure a continuous grout column.

After the rock hole is grouted, the overburden portion of the well is decommissioned using appropriate techniques described below. If the bedrock extends to the ground surface, grouting can extend to the ground surface or to slightly below so that the site can be restored as appropriate

in accordance with Section 7.

3.2 Uncontaminated Overburden Wells

For overburden wells and the overburden portion of bedrock wells, the first factor in determining the decommissioning method is whether the overburden portion of the well exhibits contamination, as determined through historical groundwater and/or soil sampling results. If the overburden is uncontaminated, the next criteria considers whether the well penetrates a confining layer. In the case that the overburden portion of the well does not penetrate a confining layer, the casing can either be tremie-grouted and pulled or tremie grouted and left in place. As a general rule, PVC wells greater than 25-feet deep should not be pulled unless site-specific conditions or other factors indicate that the well can be pulled without breaking. If the well cannot be pulled, the well should be grouted in-place as accordance with Sections 2.1 and 2.2.

If a non-telescoped overburden well penetrates a confining layer, the casing should be removed by pulling (if possible) in accordance with Section 2.3. If the casing cannot be removed by pulling, the well should be grouted in-place or where complete removal is required, removed by over-drilling. Over-drilling will be based upon the site-specific conditions and requirements. If pulling is attempted and fails (i.e., a portion of the riser breaks) the remaining portion of the well should be removed by using the conventional augering procedure identified in Section 2.4. Note that if the riser is broken during pulling, it is highly unlikely that the driller will be able to target it to over-drill it. This is the reason why all wells should be grouted first. In all cases, after the well construction materials have been removed to the extent possible, the borehole will be grouted in accordance with Section 6 and the upper five feet will be restored in accordance with Section 7.

3.3 Contaminated Overburden Monitoring Wells/Piezometers

Contamination in the overburden plays a role in the selection process. Any contamination present in the overburden must not be allowed to spread as a result of the decommissioning construction. For wells and piezometers suspected or known to be contaminated with light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL), often referred to as "product," the decision to decommission the well should be reviewed. Such gross contamination is a special condition and requires design of the decommissioning procedure. If decommissioning is determined to be the proper course of action, measurement of the non-aqueous phase liquid volume will be determined and this liquid will be removed.

If an overburden well (or the overburden portion of a bedrock well) is contaminated with LNAPL, DNAPL and /or dissolved fractions as indicated by historical sampling results, one must evaluate the potential for contamination to cross an overburden confining layer (if one exists) during decommissioning. A rock or soil horizon of very low permeability is known as a confining layer. Contamination in the overburden lying above a confining layer is a significant condition to recognize. To prevent mobile contaminants from crossing a confining layer during pulling or over-drilling, a temporary casing should be installed to isolate the work zone. One should follow the procedure selection flow chart. Some contaminated conditions call for over-drilling or a specially designed procedure.

A well in contaminated overburden may be grouted in-place as long as the grout fully

seals the well and boring zone. If a well in contaminated overburden was constructed allowing formation collapse as annular backfill or if the well has a compromised well seal, one must either physically remove the well or thoroughly perforate the riser and grout it in-place.

If physical removal of the well is required and the overburden contaminants are likely to be dragged upward or downward during decommissioning, a temporary casing should be used to seal off the construction work zone. Casing pulling and overdrilling can be safely accomplished within the temporary casing. Section 2.4 discusses the temporary casing technique.

3.4 Telescoped Riser

If the riser is telescoped in one or more outer casings, the decommissioning approach depends upon the integrity of the well seal. If there is no evidence that the well seal integrity is compromised, the riser should be grouted in-place in accordance with Sections 2.1 or 2.2 and the upper 5 feet of the well surface should be restored in accordance with Section 7. If indications are that the well seal is not competent, it will be necessary to design and implement a special procedure to perforate and grout or remove the well construction materials. The presence and configuration of the outer casing(s) will be specific in the individual wells and will be a key factor in the decommissioning approach. The special procedure must mitigate the potential for cross-contamination during removal of the well construction materials.

4.0 LOCATING AND SETTING-UP ON THE WELL

Prior to mobilizing to decommission a monitoring well, one should notify the property owner and/or other interested parties including the governing regulatory agency. It is advisable that when at the well location, one should review the proposed well decommissioning procedure. Verify well locations and identification by their identifying markers and GPS coordinates. Lastly, verify the depth of each well with respect to depth recorded on the well construction log.

5.0 REMOVING THE PROTECTIVE CASING

Most monitoring wells installed in non-traffic locations are finished with an elevated, protective casing (guard pipe) and a concrete rain pad. Wells at gasoline stations, usually being in high-traffic areas, are typically finished with a flush-mount, curb box and protective 8" dia steel inspection plate rather than a stick-up riser. The curb box is usually easily removed from around the flush-mount well before pulling or over-drilling. In the case of stick-up wells, the riser pipe may be bonded to the guard pipe and rain pad. When the protective casing and concrete pad of a stick-up monitoring well are "yanked out," a PVC riser will typically break off at the bottom of the guard pipe several feet below grade. Once this happens, it may become impossible to center a drill rig upon the well. The riser may become splintered and structurally unstable for pulling. Unless grouted first, the well may fill with dirt. Before pulling a casing or over-drilling a well, a method must be devised for removing these protective surface pieces without jeopardizing the remaining decommissioning effort.

Generally, unless the protective casing is loose and can be safely lifted off by hand, *one should fill the monitoring well with grout before removing the outer protective casing.* This will ensure that the well is properly sealed regardless of any problems later when removing the protective casing. Remove the protective casing or road box vault initially only if the stick-up or vault will interfere with subsequent down-hole work which must be done before grouting. This

down-hole work may include puncturing, perforating or cutting the screen or riser. But as a general procedure don't remove the protective casing or road box until after initial grouting is complete.

The procedure for removing the protective casing of a well depends upon the decommissioning method specified for the monitoring well. The variety of protective casings available preclude developing a specific removal procedure but often one can simply break up the concrete seal surrounding the casing and jack or hoist the protective casing out of the ground. A check should be made during pulling to ensure that the inner well casing is not being hoisted with the protective casing. If this occurs, the well casing should be cut off after the base of the protective casing is lifted above the land surface. At well locations where the riser has been extended, the burial of a previous concrete pad may require the excavation of soil to the top of the concrete pad to remove the well.

Steel well casing should be removed approximately five feet below the land surface so as to be below the frost line and out of the way of any subsequent shallow digging. The upper five feet of casing and the protective casing can be removed in one operation if a casing cutter is used.

Waste handling and disposal must be consistent with the methods used for the other well materials unless an alternate disposal method can be employed (i.e., steam cleaning followed by disposal as non-hazardous waste).

6.0 SELECTING, MIXING, AND PLACING GROUT

This section gives recipes for the "standard grout mixture" and the thicker "special grout mixture." Mixing and placing grout is also discussed in this section. The goal of well decommissioning is to eliminate the capability of water to travel up or down within the volume of the former well and its boring. Success depends upon the correct grout mixture and placement where it is needed. There are two types of grout mixes that may be used to seal monitoring wells: a standard mix and a special mix. Both mixes use Type 1 Portland cement and four percent bentonite by weight. However, the special mix uses a smaller volume of water and is used in situations where excessive loss of the standard grout mix is possible (e.g., highly-fractured bedrock or coarse gravels).

6.1 Standard Grout Mixture

For most boreholes, the following standard mixture will be used:

- One 94-pound bag Type I Portland cement;
- 3.9 pounds powdered bentonite; and
- 7.8 gallons potable water.

Slightly more water may be used in order to penetrate a sand pack when a well screen transects multiple flow zones. This mixture results in a grout with a bentonite content of four percent by weight and will be used in all cases except in boreholes where excessive use of grout is anticipated. In these cases a special thicker mixture will be used.

6.2 Special Mixture

In cases where excessive use of grout is anticipated, such as high permeability formations and highly fractured or cavernous bedrock formations, the following special mixture will be used:

- one 94-pound bag type I Portland cement;
- 3.9 pounds powdered bentonite;
- 1 pound calcium chloride; and
- 6.0-7.8 gallons potable water (depending on desired thickness).

The special mixture results in a grout with a bentonite content of four percent by dry weight. It is thicker than the standard mixture because it contains less water. This grout is expected to set faster than the Standard Grout Mixture due to the added calcium chloride. The least amount of water that can be added for the mixture to be readily pumpable is 6 gallons per 94-pound bag of cement.

6.3 Grout Mixing Procedure

To begin the grout-mixing procedure, calculate the volume of grout required to fill the borehole. If possible, the mixing basin should be large enough to hold all of the grout necessary for the borehole.

Mix grout until a smooth, homogeneous mixture is achieved. Grout can be mixed manually or with a mechanized mixer. Colloidal mixers should not be used as they tend to excessively decrease the thickness of the grout for the above recipes.

6.4 Grout Placement

This guidance requires that grout be placed in the well from the bottom to the top by means of a "tremie." A tremie is a pipe, a hose or a tube extending from the grout supply to the bottom of the well. The tremie delivers the grout all the way down through the water column without its being diluted and mixed with the water that may be present in the well. The tremie pipe or tube is withdrawn as (or after) the well is filled with grout.

Using the tremie, grout is placed in the borehole filling from the bottom to the top. Two-inch and larger wells should use tremie tubing of not less than 1-inch diameter. Smaller diameter wells will call for a smaller tremie pipe. Grout will then be pumped in until the grout appears at the land surface (when grouting open holes in bedrock, the grout level only needs to reach above the bedrock surface). Any groundwater displaced during grout placement, if known to be contaminated, will be contained for proper disposal.

At this time the rate of settling should be observed. If grouting the well in place, the well casing remains in the hole. But if the decommissioning method has involved down-hole tools such as hollow-stem augers or temporary casing for overdrilling, these will be removed from the hole. As each section is removed, grout will be added to keep the level between 0 and 5 feet below grade. If the grout level drops below the land surface to an excessive degree, an alternate grouting method must be used. One possibility is to grout in stages; i.e., the first batch of grout is allowed to partially cure before a second batch of grout is added.

As previously described in Section 5.0, the outer protective casing "stick-up" should be removed only after a well has been properly filled with grout. This will ensure that the well is properly sealed regardless of any breakage which may occur when removing the stick-up. It is important to reiterate that when either casing pulling or over-drilling are required, due to the uncertainty of successfully pulling a well or over-boring a well, we insist that the driller tremie grout the well first. Then without allowing the grout to dry, the driller proceeds with pulling the casing or over-drilling the well.

Upon completion of grouting, ensure that the final grout level is approximately five feet below land surface. A ferrous metal marker will be embedded in the top of the grout to indicate the location of the former monitoring well. Lastly, a fabric "utility" marking should be placed one foot above the grout so an excavator can see it clearly.

7.0 BACKFILLING AND SITE RESTORATION

The uppermost five feet of the borehole at the land surface should be filled with material physically similar to the natural soils. The surface of the borehole should be restored to the condition of the area surrounding the borehole. For example, concrete or asphalt will be patched with concrete or asphalt of the same type and thickness, grassed areas will be seeded, and topsoil will be used in other areas. All solid waste materials generated during the decommissioning process must be disposed of properly.

8.0 DOCUMENTATION

A form which may be used in the field to record the decommissioning construction is included as Figure 3. Additional documentation may be required by a DEC project manager and samples are included in Appendix B. Programs within the DEC that maintain geographic data on monitoring wells strive to keep that data up to date. Owners of these data sets must be notified when a well is decommissioned. Historical groundwater quality data is linked to monitoring well locations so when a well is decommissioned, existing GIS data must be updated to reflect that fact but the coordinate location in the GIS database should not be eliminated. A metal detector may not be able to detect a deeply buried marker so if this locator is important for future utility runs or foundations, a map should be submitted to the property owner and the town engineer showing the decommissioned well locations. Global Positioning System (GPS) coordinates should be indicated on this map. Lastly, whatever documentation is produced should be provided to the property owner, the DEC, and all other parties involved.

9.0 FIELD OVERSIGHT

Over-drilling requires careful observation to detect whether the drill has wandered off the well. Grout preparation and tremie work should be carefully observed. The successful implementation of a decommissioning work plan depends upon proper direction, observation and oversight. Methods to be employed must be clearly worked through and all parties must understand what they have to do before going into the field. Flexibility is allowed where necessary but the work effort must be thorough and effective to protect our groundwater.

10.0 RELATED REFERENCES

- *Groundwater Monitoring Well Decommissioning Procedures*, October 1986. Prepared by Malcolm Pirnie, Inc., for the New York State Department of Environmental Conservation, Division of Environmental Remediation.

- American Society for Testing and Materials, A.S.T.M. D 5299-99, Standard Guide for the Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities. A.S.T.M.. Philadelphia. 2005.

- New York State Department of Environmental Conservation, Division of Solid Waste, 6 NYCRR Part 360 Solid Waste Management Facilities, 1989.

- New York State Department of Environmental Conservation, Region I - Water Unit, Specifications for Abandoning Wells and Boreholes in Unconsolidated Materials, undated.

- United States Environmental Protection Agency, The Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034.

FIGURES

APPENDICES

FIGURE 1

MONITORING WELL FIELD INSPECTION LOG

SITE NAME: _____ SITE ID.: _____

INSPECTOR: _____

MONITORING WELL FIELD INSPECTION LOG

DATE/TIME: _____

WELL ID.: _____

	YES	NO
WELL VISIBLE? (If not, provide directions below)		
WELL I.D. VISIBLE?		
WELL LOCATION MATCH SITE MAP? (if not, sketch actual location on back)		

WELL I.D. AS IT APPEARS ON PROTECTIVE CASING OR WELL: _____

	YES	NO
SURFACE SEAL PRESENT?		
SURFACE SEAL COMPETENT? (If cracked, heaved etc., describe below)		
PROTECTIVE CASING IN GOOD CONDITION? (If damaged, describe below)		

HEADSPACE READING (ppm) AND INSTRUMENT USED: _____

TYPE OF PROTECTIVE CASING AND HEIGHT OF STICKUP IN FEET (If applicable): _____

PROTECTIVE CASING MATERIAL TYPE: _____

MEASURE PROTECTIVE CASING INSIDE DIAMETER (Inches): _____

	YES	NO
LOCK PRESENT?		
LOCK FUNCTIONAL?		
DID YOU REPLACE THE LOCK?		
IS THERE EVIDENCE THAT THE WELL IS DOUBLE CASED? (If yes,describe below)		
WELL MEASURING POINT VISIBLE?		

MEASURE WELL DEPTH FROM MEASURING POINT (Feet): _____

MEASURE DEPTH TO WATER FROM MEASURING POINT (Feet): _____

MEASURE WELL DIAMETER (Inches): _____

WELL CASING MATERIAL: _____

PHYSICAL CONDITION OF VISIBLE WELL CASING: _____

ATTACH ID MARKER (if well ID is confirmed) and IDENTIFY MARKER TYPE: _____

PROXIMITY TO UNDERGROUND OR OVERHEAD UTILITIES: _____

DESCRIBE ACCESS TO WELL: (Include accessibility to truck mounted rig, natural obstructions, overhead power lines, proximity to permanent structures, etc.); ADD SKETCH OF LOCATION ON BACK, IF NECESSARY.

DESCRIBE WELL SETTING (For example, located in a field, in a playground, on pavement, in a garden, etc.) AND ASSESS THE TYPE OF RESTORATION REQUIRED.

IDENTIFY ANY NEARBY POTENTIAL SOURCES OF CONTAMINATION, IF PRESENT (e.g. Gas station, salt pile, etc.):

REMARKS:

FIGURE 2

DECOMMISSIONING PROCEDURE SELECTION

NYSDEC Monitoring Well Decommissioning Procedure Selection

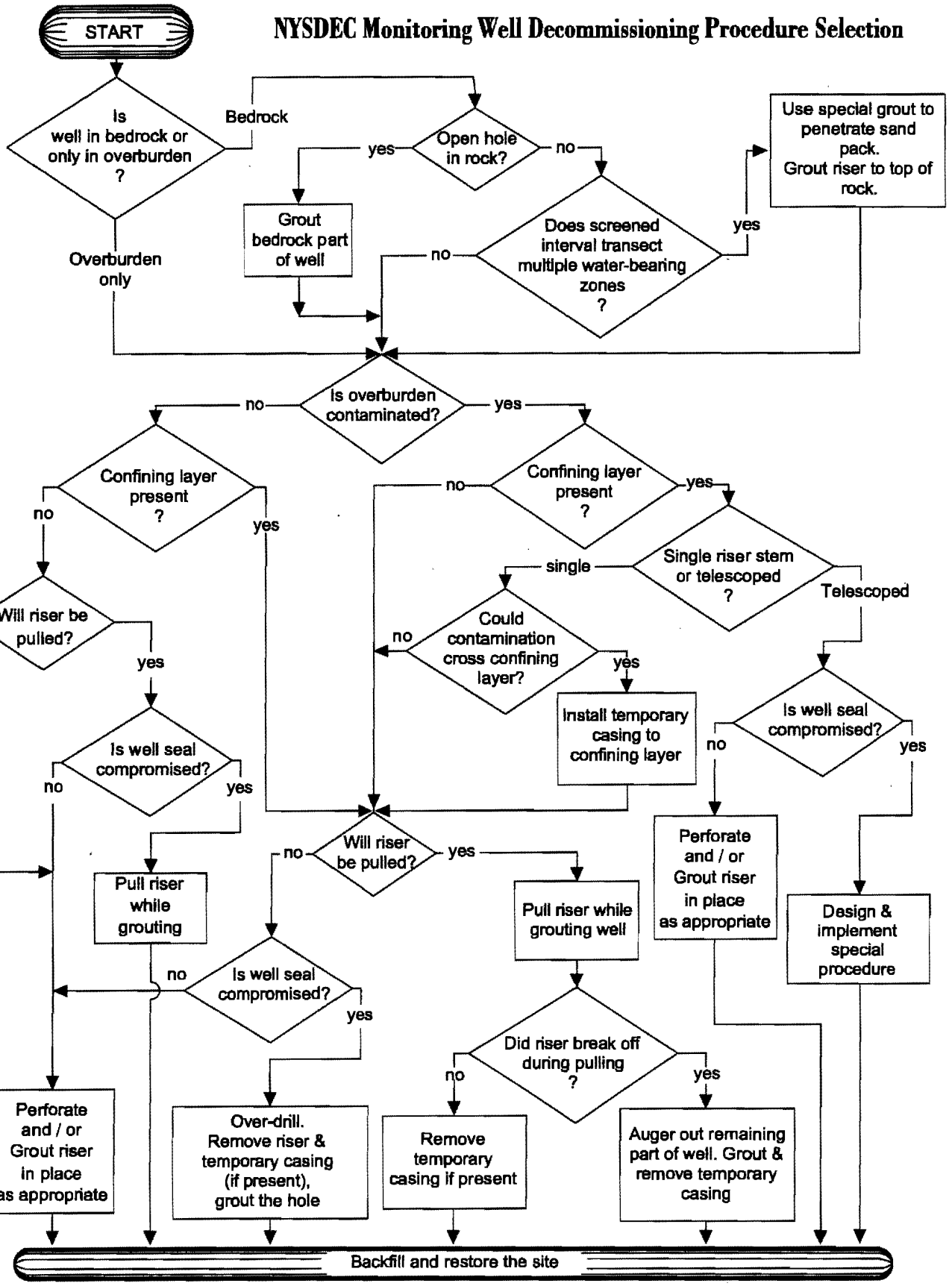


FIGURE 2

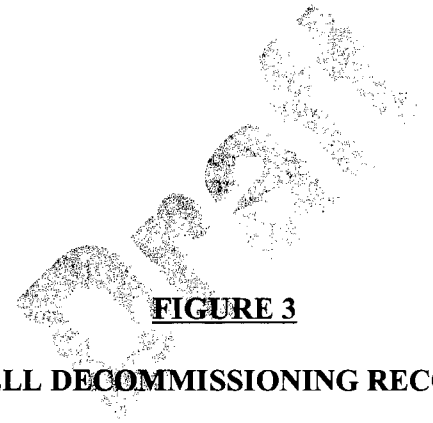


FIGURE 3

WELL DECOMMISSIONING RECORD

WELL DECOMMISSIONING RECORD

Site Name:	Well I.D.:
Site Location:	Driller:
Drilling Co.:	Inspector:
	Date:

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING
- Interval Drilled
- Drilling Method(s)
- Borehole Dia. (in.)
- Temporary Casing Installed? (y/n)
- Depth temporary casing installed
- Casing type/dia. (in.)
- Method of installing

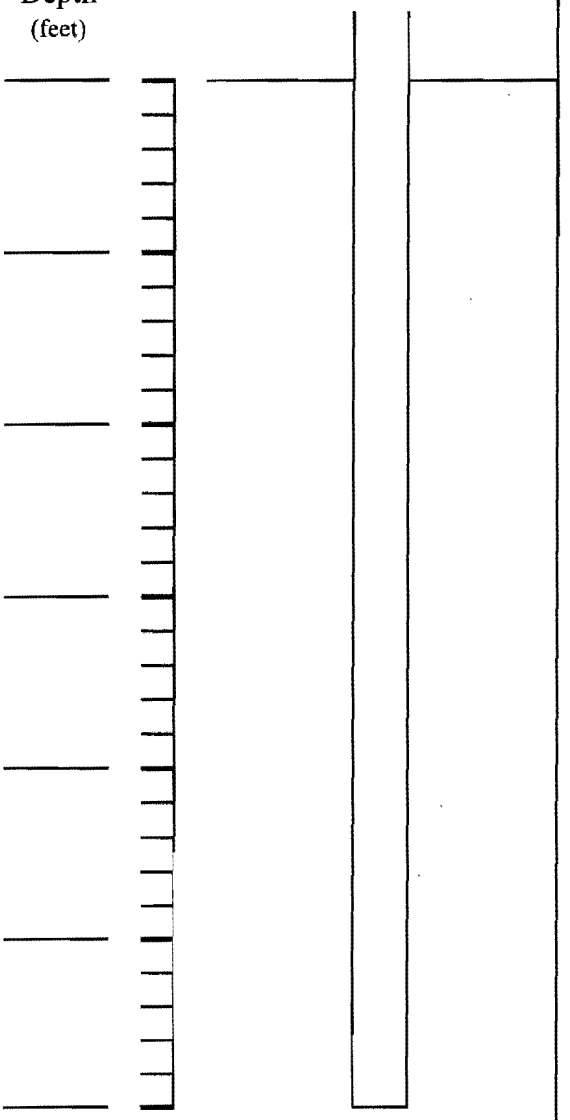
CASING PULLING
- Method employed
- Casing retrieved (feet)
- Casing type/dia. (in)

CASING PERFORATING
- Equipment used
- Number of perforations/foot
- Size of perforations
- Interval perforated

GROUTING
- Interval grouted (FBLS)
- # of batches prepared

For each batch record:
- Quantity of water used (gal.)
- Quantity of cement used (lbs.)
- Cement type
- Quantity of bentonite used (lbs.)
- Quantity of calcium chloride used (lbs.)
- Volume of grout prepared (gal.)
- Volume of grout used (gal.)

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

APPENDIX A

HYDRAULIC PRESSURE TESTING OF SCREENED INTERVAL

Appendix A

HYDRAULIC PRESSURE TESTING OF SCREENED INTERVAL

1.0 INTRODUCTION

This guideline presents a method for evaluating the integrity of a grout seal in the screened interval of a well being decommissioned by grouting in place.

2.0 METHODOLOGY

1. Grout the screened interval of the well using a tremie pipe, up to a level of one to two feet above the screened section.

2. Allow the grout to set for a period of not less than 24 hours and not greater than 72 hours before pressure testing of the grouted interval is begun.

3. Place a pneumatic packer at a maximum of four and one half feet above the top of the screened section of the well casing.

4. Apply an inflation pressure to the packer, not exceeding the pressure rating of the well casing material. If the interval between the top of the grout and the bottom of the packer is not saturated, use potable water to fill the interval.

5. Apply a gauge pressure of 5 psig at the well head to the interval for a period of 5 minutes to allow for temperature stabilization. After 5 minutes maintain the pressure at 5 psig for 30 minutes.

6. The grout seal shall be considered acceptable if the total loss of water to the seal does not exceed 0.5 gallons over a 30-minute period.

7. If the grout seal is determined to be unacceptable, an additional 5 feet of grout will ve added to the well casing with a tremie pipe. The interval will be retested as described above.

APPENDIX B - REPORTS

APPENDIX B1 - INSPECTOR'S DAILY REPORT

APPENDIX B2 - PROBLEM IDENTIFICATION REPORT

APPENDIX B3 - CORRECTIVE MEASURES REPORT

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION _____ FROM _____ TO _____
WEATHER _____ TEMP _____ A.M. _____ P.M. _____ DATE _____

CONTRACTOR'S WORK FORCE AND EQUIPMENT											
DESCRIPTION	*H*	*#*	*DESCRIPTION*	*H*	*#*	*DESCRIPTION*	*H*	*#*	*DESCRIPTION*	*H*	*#*
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air compressor					

SEE REVERSE SIDE FOR SKETCH YES ☐ NO ☐

WORK PERFORMED: _____

PAY ITEMS

CONTRACT		STA				
Number	ITEM	FROM	TO	DESCRIPTION	QUANTITY	REMARKS

TEST PERFORMED: _____
PICTURES TAKEN: _____

VISITORS: _____

QA PERSONNEL
SIGNATURE _____

REPORT NUMBER _____
SHEET _____ Of _____

MEETINGS HELD AND RESULTS

REMARKS

REFERENCES TO OTHER FORMS

SKETCHES

SAMPLE LOG

SAMPLE NUMBER

APPROXIMATE LOCATION OF STOCKPILE

NUMBER OF STOCKPILE

DATE OF COLLECTION

CLIMATIC CONDITIONS

FIELD OBSERVATION

CORRECTIVE MEASURES REPORT

Date _____

Day | Su | M | T | W | Th | F | Sa |

Project _____ Job Number _____

Contractor _____

Subject _____

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
TEMP.	<32F	32-40F	40-70F	70-80F	80-90F
WIND	No	Light	Strong		
HUMIDITY	Dry	Mod.	Humid		

CORRECTIVE MEASURES TAKEN (Reference Problem Identification Report No.): _____

RETESTING LOCATION: _____

SUGGESTED METHOD OF MINIMIZING RE-OCCURRENCE: _____

SUGGESTED CORRECTIVE MEASURES: _____

APPROVALS:

QA ENGINEER: _____

PROJECT MANAGER: _____

Distribution:
1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel
Signature: _____

PROBLEM IDENTIFICATION REPORT

Date _____

Project _____ Job Number_____

Contractor _____

Subject _____

Day	Su	M	T	W	Th	F	Sa

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
TEMP.	<32F	32-40F	40-70F	70-80F	80-90F
WIND	No	Light	Strong		
HUMIDITY	Dry	Mod.	Humid		

PROBLEM DESCRIPTION Reference Daily Report Number 1: _____

PROBLEM LOCATION - REFERENCE TEST RESULTS AND LOCATION (Note: Use sketches on back of form as appropriate):

PROBABLE CAUSES: _____

SUGGESTED CORRECTIVE MEASURES: _____

APPROVALS:

QA ENGINEER: _____

PROJECT MANAGER: _____

Distribution:
1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel
Signature: _____

APPENDIX B

SOIL BORING AND WELL COMPLETION LOGS

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-4

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OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW4-1

PROJECT: 10 SWMU
LOCATION: SEAD 4
PROJECT NO: 720477
INSPECTOR: ES/EB
CHECKED BY: _____

DRILLING CONTRACTOR: Empire
DRILLER: Scott
DRILLING COMPLETED: 12-6-93
BORING DEPTH: 10.5'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 4
POW DEPTH: 10.5'
INSTALLATION STARTED: 12-6-93
INSTALLATION COMPLETED: 12-6-93
SURFACE COMPLETION DATE: 12-6-93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 698.392

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH: _____

RISER:
TR: _____ TYPE: PVC-40 DIAMETER: 2" LENGTH: _____

SCREEN:
TSC: 5.4' TYPE: PVC 40 DIAMETER: 2" LENGTH: 4' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 9.4' POW: 10.5'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 2.5'

SEAL: TBS: 2.5' TYPE: bentonite pellets LENGTH: 2'

SAND PACK: TSP: 4.5' #1 5.0' #1 TYPE: #3 & #1 LENGTH: 6.0'

SURFACE COLLAR:
TYPE: _____ RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: _____ DEPTH 2: _____ DEPTH 3: _____ DEPTH 4: _____

COMMENTS:

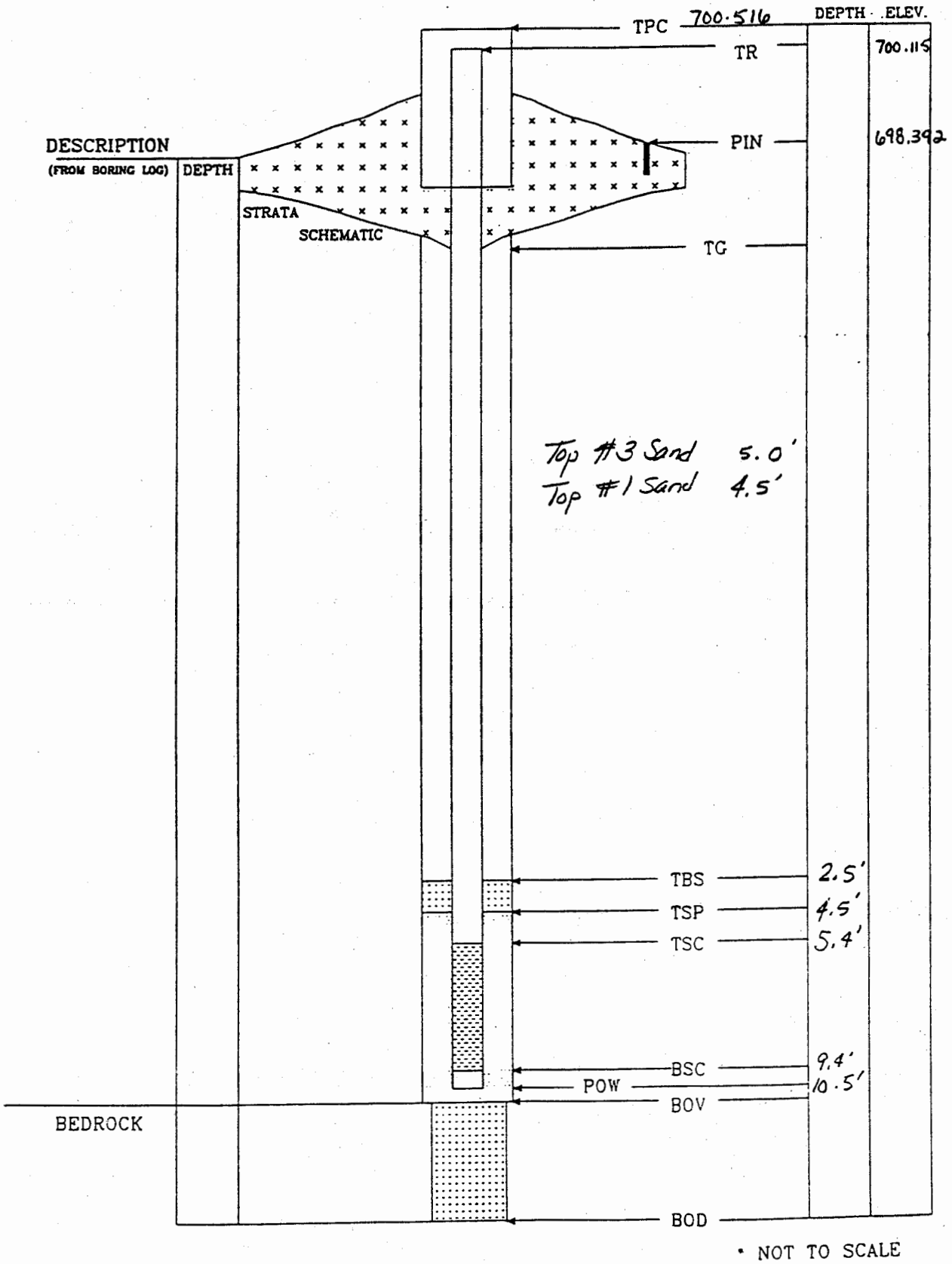
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC. | CLIENT: | WELL #: MW4-1

DATE: 12-6-83



• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW-4-2

PROJECT: 10 SWMU
LOCATION: SEAD 4
PROJECT NO: 720477
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Bob
DRILLING COMPLETED: 11/10/93
BORING DEPTH: 4.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 4
POW DEPTH: 4.0'
INSTALLATION STARTED: 11/10/93
INSTALLATION COMPLETED: 11/10/93
SURFACE COMPLETION DATE: 11/10/93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 699.448

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH:

RISER:
TR: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 22 TYPE: PVC-40 DIAMETER: 1 1/2" LENGTH: 10' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 3.2' POW: 4.0'

GROUT:
TG: ground TYPE: Cem.-bentonite LENGTH:

SEAL: TBS: 1.0' TYPE: bentonite pellets LENGTH: 0.5'

SAND PACK: TSP: 1.5'-#1 1.0'-#3 TYPE: #3 + #1 LENGTH: 2.5'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

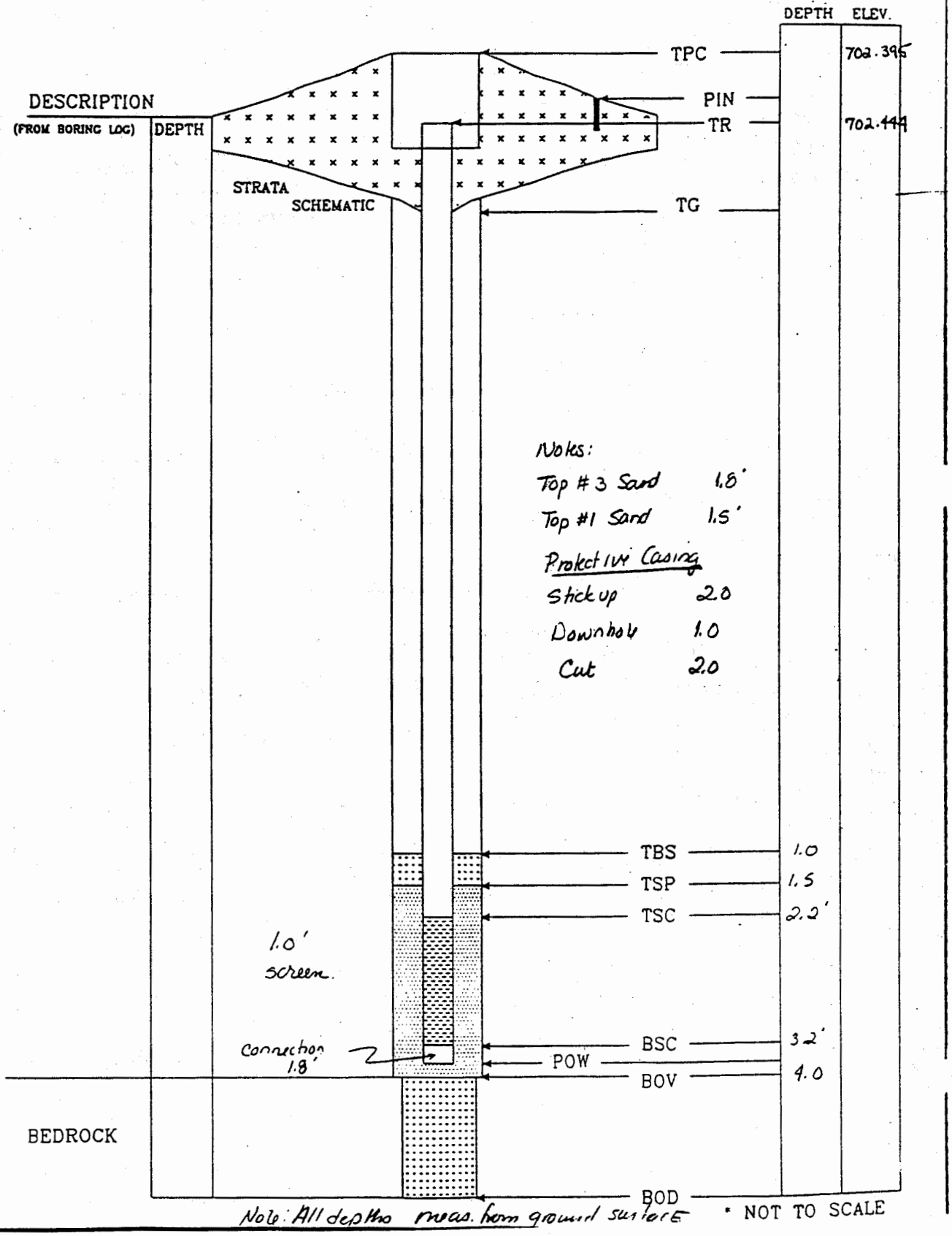
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC.	CLIENT: ACOE	WELL #: MW4-2

DATE 11/10/93



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW4-3

PROJECT: 10 SWMU
LOCATION: SEAD 4
PROJECT NO: 720477
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Bob
DRILLING COMPLETED: 11/10/93
BORING DEPTH: 9.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 4
POW DEPTH: 9.0'
INSTALLATION STARTED: 11/10/93
INSTALLATION COMPLETED: 11/10/93
SURFACE COMPLETION DATE: 11/10/93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 697.669

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 3.9' TYPE: PVC-40 DIAMETER: 1 1/2" LENGTH: 4.0' SLOT SIZE: .01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 7.9' POW: 9.0'

GROUT:
TG: Ground TYPE: Cem-bentonite LENGTH: 1.4'

SEAL: TBS: 1.4 TYPE: bentonite pellets LENGTH: 1.0'

SAND PACK: TSP: #3-2.9' #1-2.9' TYPE: #3 & #1 LENGTH: 6.6'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

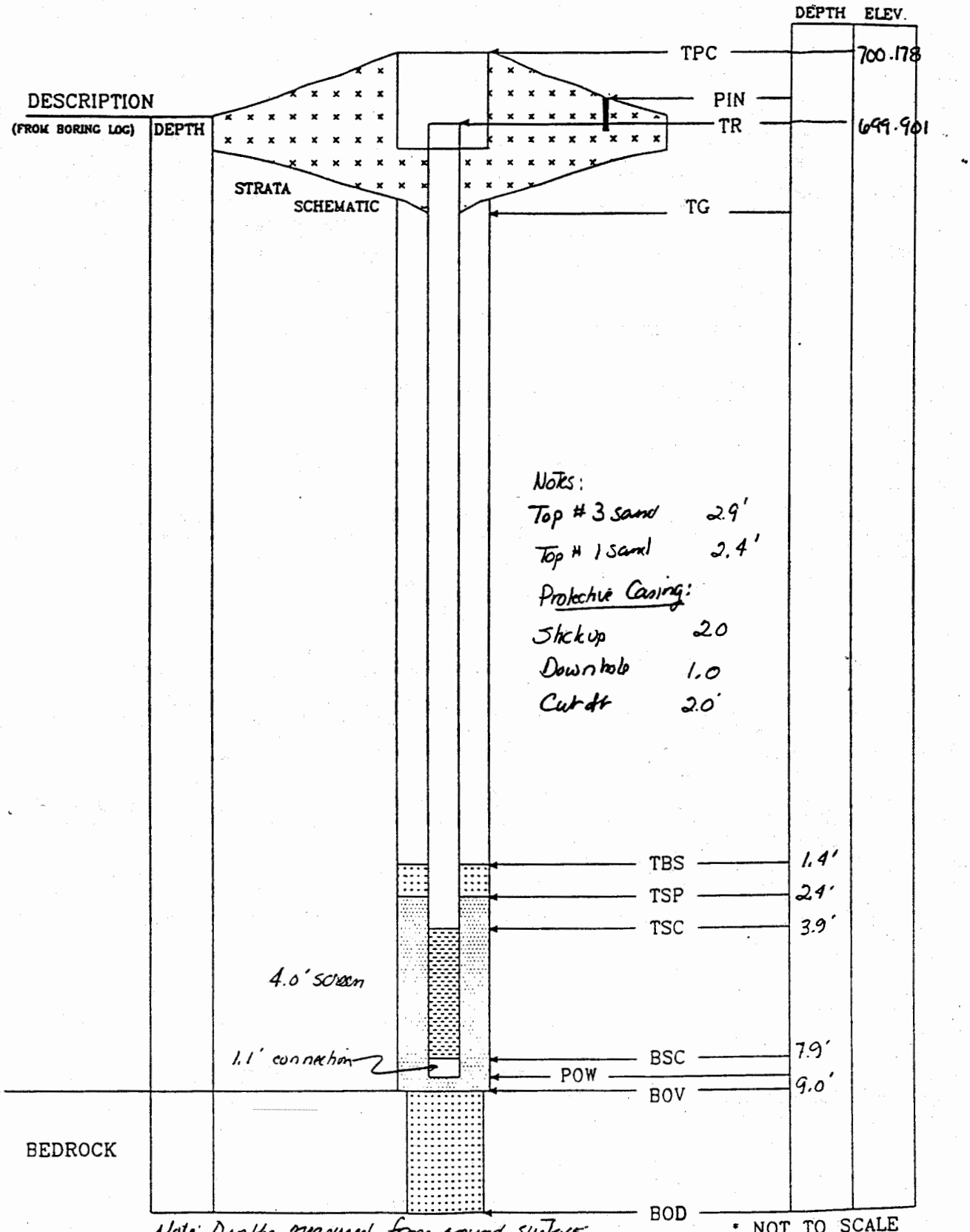
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC.	CLIENT: ACOE	WELL #: MW4-3

DATE: 11/10/93



Note: Depths measured from ground surface

* NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW4-4

PROJECT: 10 SWMU
LOCATION: SEAD 4
PROJECT NO: 720477
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Scott
DRILLING COMPLETED: 12-5-93
BORING DEPTH: 10'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 4
POW DEPTH: 10.0'
INSTALLATION STARTED: 12-5-93
INSTALLATION COMPLETED: 12-5-93
SURFACE COMPLETION DATE: 12-5-93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 678.217

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.9' TYPE: PVC-40 DIAMETER: 2" LENGTH: 4.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 8.9' POW: 10.0'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 2.5'

SEAL: TBS: 2.5' TYPE: bentonite pellets LENGTH: 1.5'

SAND PACK: TSP: 4.0'-#1 4.5'-#3 TYPE: #3 and #1 LENGTH: 6.0'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

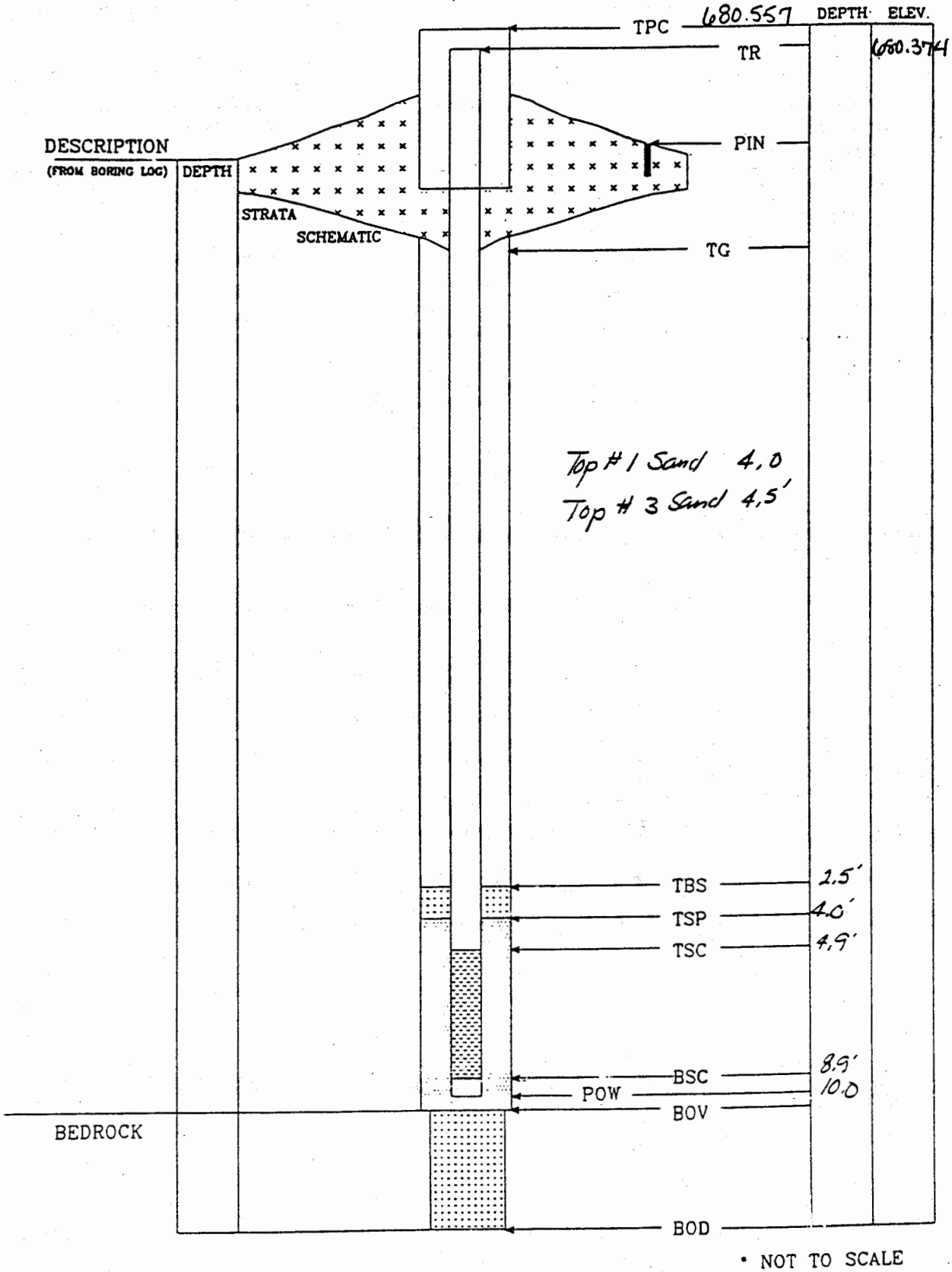
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC. | CLIENT: | WELL #: MW 4-4

DATE: 12-5-93



• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW4-5

PROJECT: 10 SWMU
LOCATION: SEAD 4
PROJECT NO: 720477
INSPECTOR: ES/LB
CHECKED BY: _____

DRILLING CONTRACTOR: Empire
DRILLER: John W.
DRILLING COMPLETED: 12-5-93
BORING DEPTH: 6.0
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 4
POW DEPTH: 6.0'
INSTALLATION STARTED: 12/5/93
INSTALLATION COMPLETED: 12/5/93
SURFACE COMPLETION DATE: 12/5/93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 699.182

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH: _____

RISER:
TR: _____ TYPE: PVC - 40 DIAMETER: 2" LENGTH: _____

SCREEN:
TSC: 3.1 TYPE: PVC-40 DIAMETER: 2" LENGTH: 20' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 5.1 POW: 6.0'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 1.3'

SEAL: TBS: 1.3 TYPE: bentonite pellets LENGTH: .7'

SAND PACK: TSP: 2'-#1 2.5'-#3 TYPE: #3 and #1 LENGTH: 4.0'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1 THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: _____ DEPTH 2: _____ DEPTH 3: _____ DEPTH 4: _____

COMMENTS:

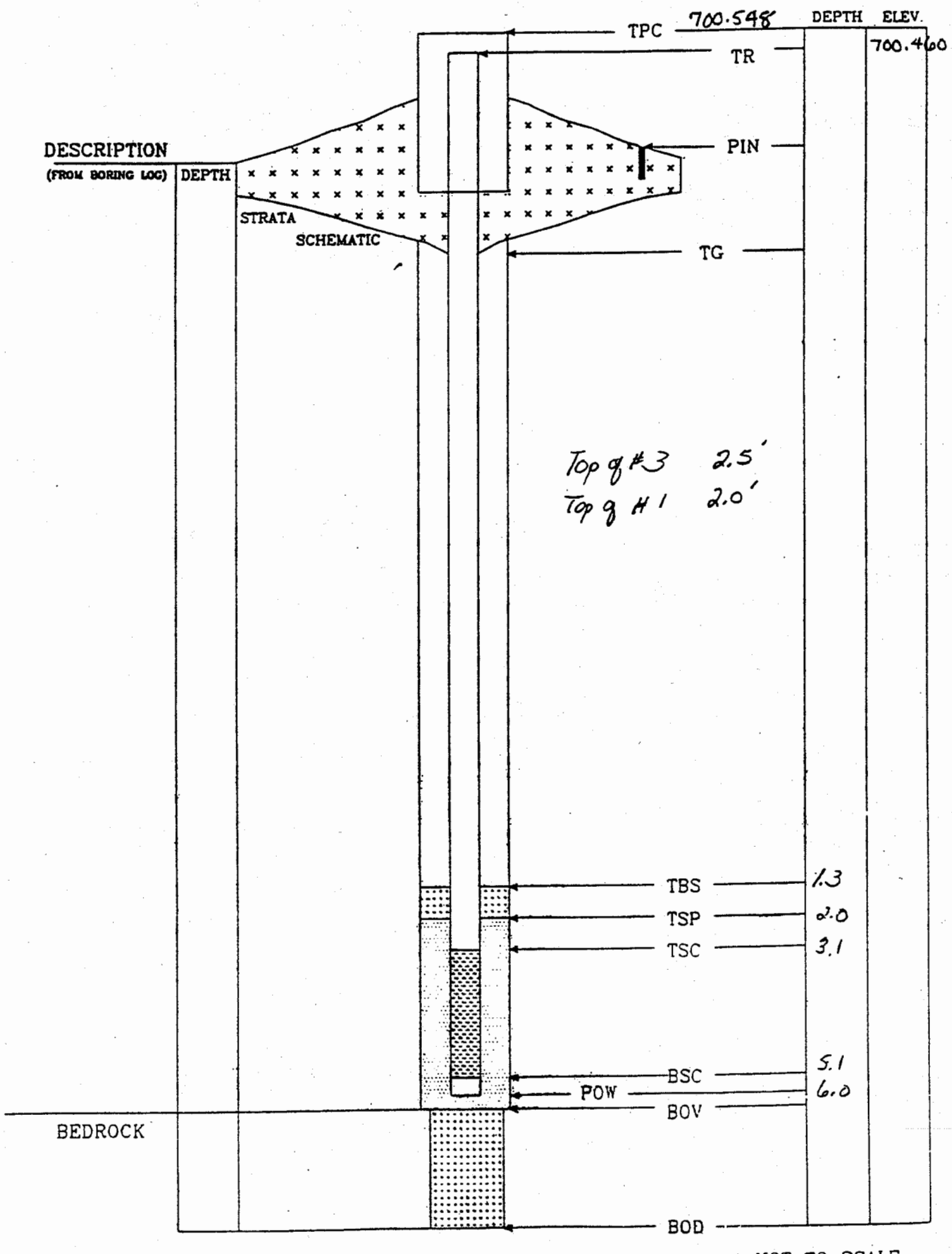
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC. | CLIENT: | WELL #: MW4-5

DATE: 12-5-93



* NOT TO SCALE

Parsons ES Inc.	WELL NUMBER: MW4-6

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot
LOCATION: Sead 4

PROJECT NO: 734539-01001
INSPECTOR: LCB
CHECKED BY:

DRILLING CONTRACTOR: Maxim
DRILLER: S. Breeds
DRILLING COMPLETED: 12/19/98
BORING DEPTH: 9.9'
DRILLING METHOD(S): 4¼" HSA
BORING DIAMETER(S): 8"

POW DEPTH: 9.8'
INSTALLATION STARTED: 12/19/98
INSTALLATION COMPLETED: 12/19/98
SURFACE COMPLETION DATE: 1/7/99
COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: Sead 4**
COORDINATE SYSTEM: _____ NORTHING: _____ EASTING: _____
DATUM: NGVD 1929
ELEVATIONS: PIN: _____ TOC: _____ TPC: _____

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.3' TYPE: PVC DIAMETER: 2" LENGTH: 6.8'

SCREEN: TSC: 4.5' TYPE: PVC DIAMETER: 2" LENGTH: 4.9' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 9.4' POW: 9.8'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & ~~Grout~~ JB Gravel LENGTH: 2'

SEAL: TBS: 2' TYPE: Bentonite LENGTH: 2'

SAND PACK: TSP: 4.0', 4.5' TYPE: #00, #0 LENGTH: 5.9'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
BOV–BASE OF OVERBURDEN
TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

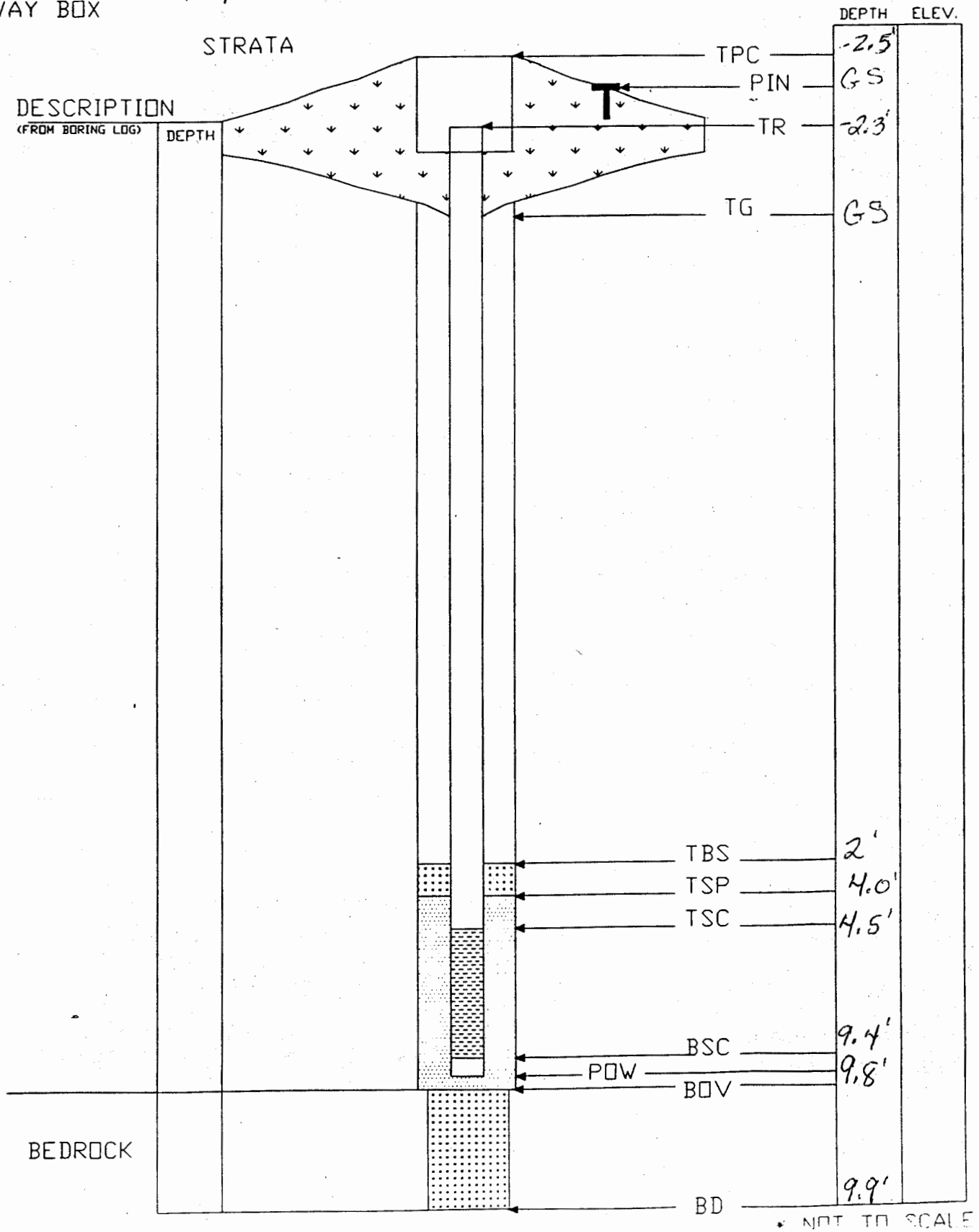
* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW 4-6

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/19/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW4-7

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot
LOCATION: Sead 4

PROJECT NO: 734539-01001
INSPECTOR: LLB
CHECKED BY:

DRILLING CONTRACTOR: Maxim
DRILLER: S. Breeds
DRILLING COMPLETED: 12/20/98
BORING DEPTH: 6'
DRILLING METHOD(S): 4¼" HSA
BORING DIAMETER(S): 8"

POW DEPTH: 6.4'
INSTALLATION STARTED: 12/20/98
INSTALLATION COMPLETED: 12/20/98
SURFACE COMPLETION DATE: 4/7/99
COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: Sead
COORDINATE SYSTEM: _____ NORTHING: _____ EASTING: _____
DATUM: NGVD 1929
ELEVATIONS: PIN: _____ TOC: _____ TPC: _____

PROTECTIVE CASING:
TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER:
TR: -2.1 TYPE: PVC DIAMETER: 2" LENGTH: 5.3'

SCREEN:
TSC: 3.2' TYPE: PVC DIAMETER: 2" LENGTH: 2' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP)
TYPE: PVC BSC: 5.2' POW: 6'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand + Gravel LENGTH: ~~1'~~ 2.8'

SEAL: TBS: 1' TYPE: Bentonite LENGTH: 1.5'

SAND PACK: TSP: 2.5', 3.0' TYPE: #00, #0 LENGTH: 3.5'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
BOV–BASE OF OVERBURDEN

TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

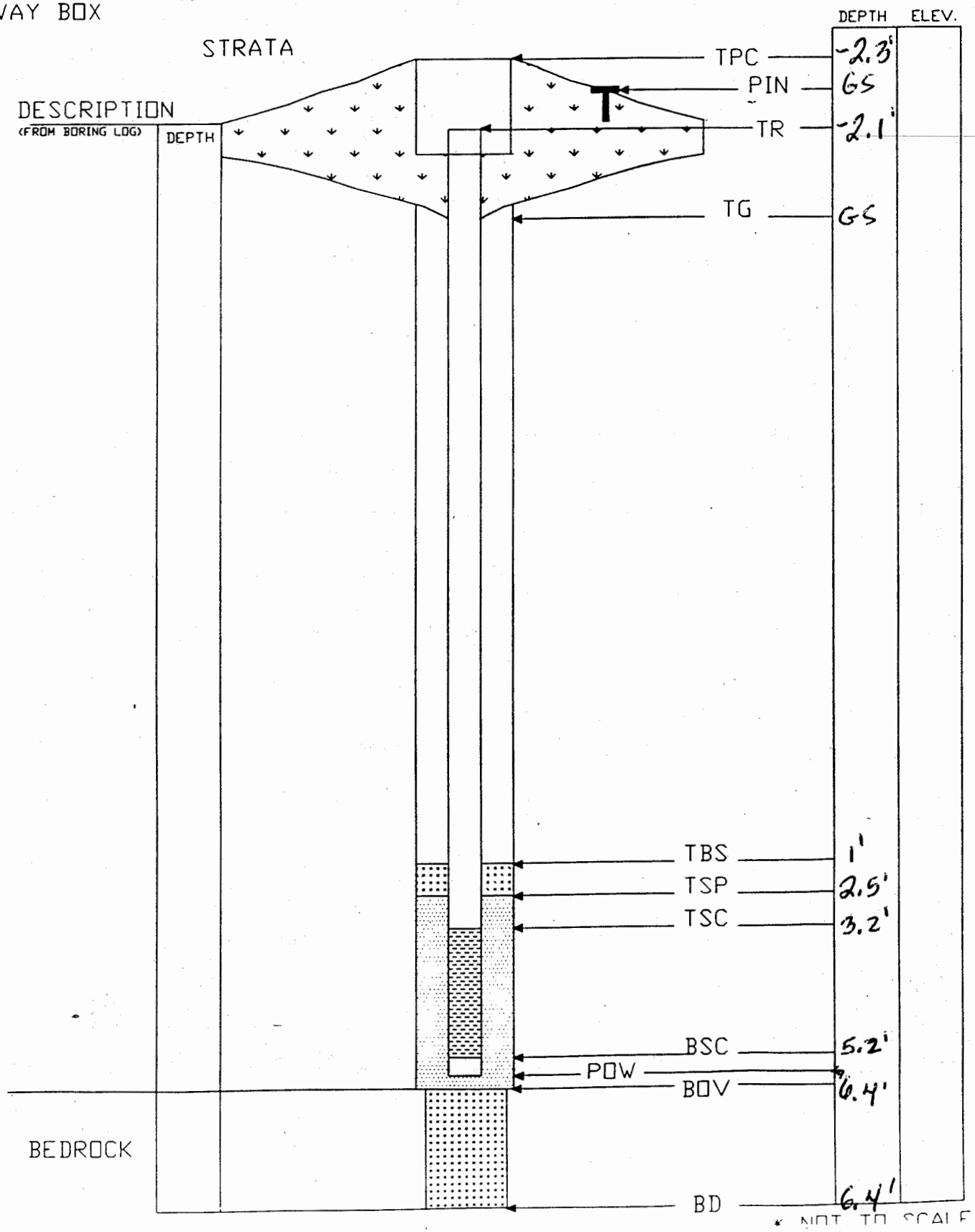
* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW-7

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/20/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW4-8

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot	PROJECT NO: 734539-01001
LOCATION: Sead 4	INSPECTOR: LLB
	CHECKED BY:

DRILLING CONTRACTOR: Maxim	POW DEPTH: 9.9'
DRILLER: S. Breeds	INSTALLATION STARTED: 12/19/98
DRILLING COMPLETED: 12/19/98	INSTALLATION COMPLETED: 12/19/98
BORING DEPTH: 10'	SURFACE COMPLETION DATE: 1/7/99
DRILLING METHOD(S): 4¼" HSA	COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BORING DIAMETER(S): 8"	BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: Sead
COORDINATE SYSTEM: NORTHING: EASTING:
DATUM: NGVD 1929
ELEVATIONS: PIN: TOC: TPC:

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.3' TYPE: PVC DIAMETER: 2" LENGTH: 6.9'

SCREEN: TSC: 4.6' TYPE: PVC DIAMETER: 2" LENGTH: 4.9' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 9.5' POW: 10'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 2'

SEAL: TBS: 2' TYPE: Bentonite LENGTH: 2'

SAND PACK: TSP: 4.0', 4.6' TYPE: #00, #0 LENGTH: 6.0'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
BOV–BASE OF OVERBURDEN

TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

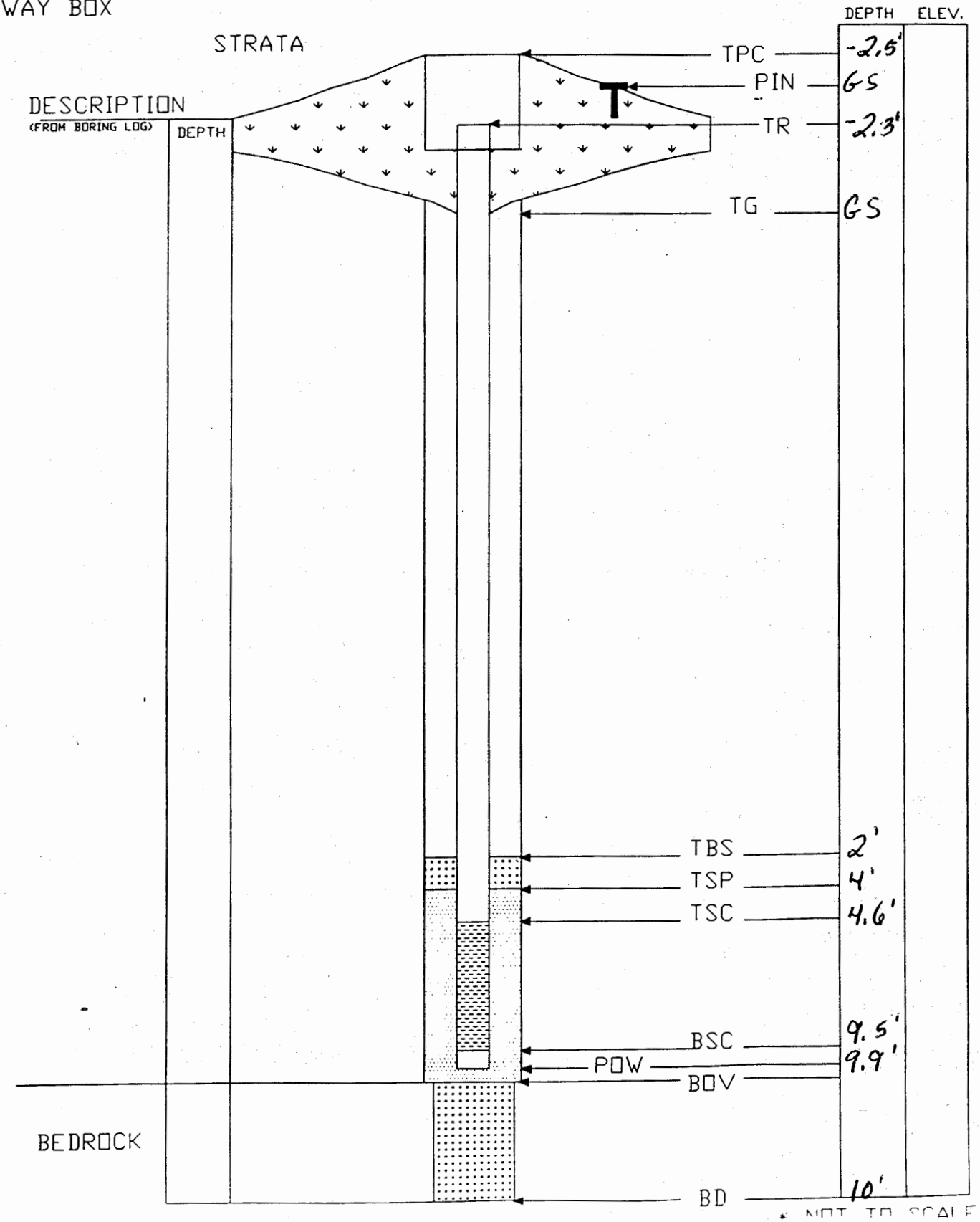
* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW 4-8

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/19/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW4-9

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot	PROJECT NO: 734539-01001
LOCATION: Sead 4	INSPECTOR: LLB
	CHECKED BY:

DRILLING CONTRACTOR: Maxim	POW DEPTH: 6.5'
DRILLER: S. Breeds	INSTALLATION STARTED: 12/20/98
DRILLING COMPLETED: 12/20/98	INSTALLATION COMPLETED: 12/20/98
BORING DEPTH: 6.2'	SURFACE COMPLETION DATE: 1/7/98
DRILLING METHOD(S): 4 1/4" HSA	COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BORING DIAMETER(S): 8"	BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: SEAD
COORDINATE SYSTEM: NORTHING: EASTING:
DATUM: NGVD 1929
ELEVATIONS: PIN: TOC: TPC:

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.3' TYPE: PVC DIAMETER: 2" LENGTH: 5.7'

SCREEN: TSC: 3.4' TYPE: PVC DIAMETER: 2" LENGTH: 2' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 5.4' POW: 6.2'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 1'

SEAL: TBS: 1' TYPE: Bentonite LENGTH: 1.5'

SAND PACK: TSP: 2.5', 3.0' TYPE: #00, #0 LENGTH: 3.8'

COMMENTS:

LEGEND (DEPTH TO):

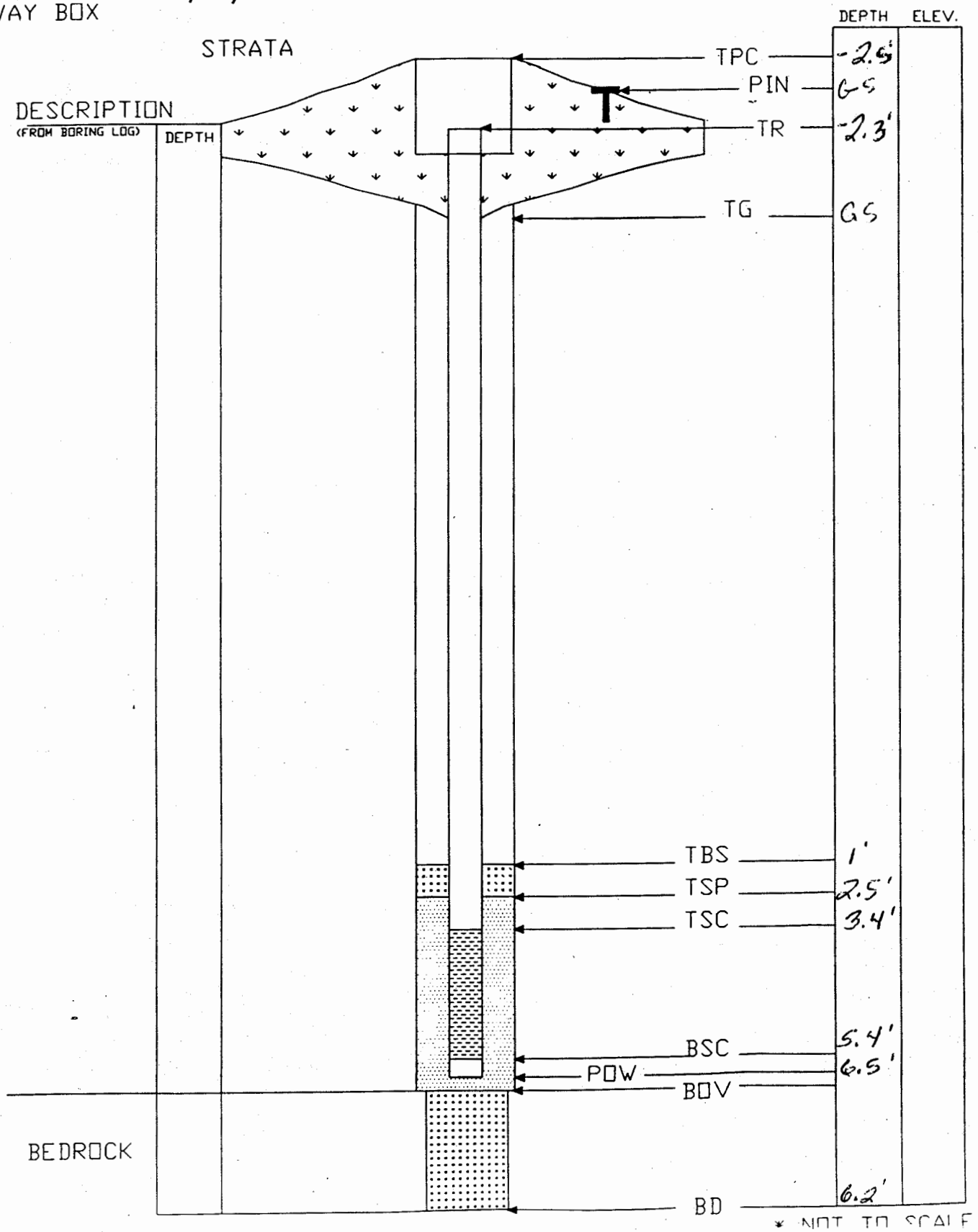
TPC–TOP OF PROTECTIVE CASING:	TBS–TOPOF BENTONITE SEAL
TR–TOP OF RISER	TSP–TOP OF SANDPACK
PIN–SURVEYED GROUND SURFACE	TSC–TOP OF SCREEN
TG–TOP OE GROUT	BSC–BOTTOM OF SCREEN
BD–BOTTOM OF DRILL HOLE	POW–POINT OF WELL
BOV–BASE OF OVERBURDEN	* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW 4-9

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/20/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW4-10

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot
LOCATION: Sead 4

PROJECT NO: 734539-01001
INSPECTOR: LLB
CHECKED BY:

DRILLING CONTRACTOR: Maxim
DRILLER: S. Breeds
DRILLING COMPLETED: 12/17/98
BORING DEPTH: 8.0'
DRILLING METHOD(S): 4¼" HSA
BORING DIAMETER(S): 8"

POW DEPTH: 8.1"
INSTALLATION STARTED: 12/17/98
INSTALLATION COMPLETED: 12/17/98
SURFACE COMPLETION DATE: 1/7/98
COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: SEAD
COORDINATE SYSTEM: NORTHING: EASTING:
DATUM: NGVD 1929
ELEVATIONS: PIN: TOC: TPC:

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.1' TYPE: PVC DIAMETER: 2" LENGTH: 4.7'

SCREEN: TSC: 2.6' TYPE: PVC DIAMETER: 2" LENGTH: 4.9' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 7.5' POW: 8.0'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 1.0'

SEAL: TBS: 1.0' TYPE: Bentonite LENGTH: 1.0'

SAND PACK: TSP: 2.0', 2.5' TYPE: #00, #0 LENGTH: 6.0'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
BOV–BASE OF OVERBURDEN

TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

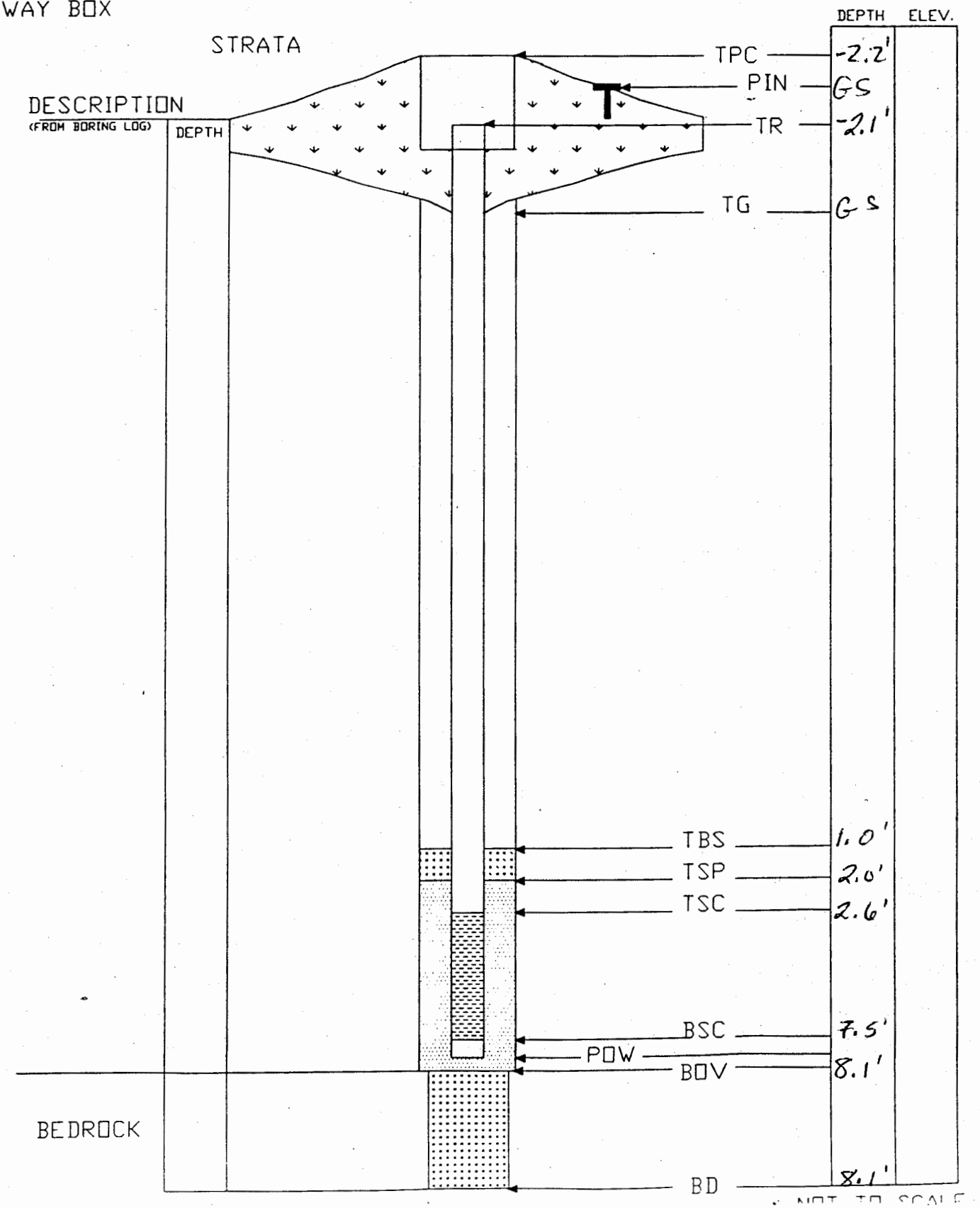
Parsons ES Inc.

WELL: MW4-10

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/17/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW4-11

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot
LOCATION: Sead 4

PROJECT NO: 734539-01001
INSPECTOR: CLB
CHECKED BY:

DRILLING CONTRACTOR: Maxim
DRILLER: S. Breeds
DRILLING COMPLETED: 12/20/98
BORING DEPTH: 9'
DRILLING METHOD(S): 4 1/4" HSA
BORING DIAMETER(S): 8"

POW DEPTH: 9'
INSTALLATION STARTED: 12/20/98
INSTALLATION COMPLETED: 12/20/98
SURFACE COMPLETION DATE: 1/7/99
COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: SEAD
COORDINATE SYSTEM: _____ NORTHING: _____ EASTING: _____
DATUM: NGVD 1929
ELEVATIONS: PIN: _____ TOC: _____ TPC: _____

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.5' TYPE: PVC DIAMETER: 2" LENGTH: 6.1'

SCREEN: TSC: 3.6' TYPE: PVC DIAMETER: 2" LENGTH: 4.6' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 8.2' POW: 9'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 1.5'

SEAL: TBS: 1.5' TYPE: Bentonite LENGTH: 1.5'

SAND PACK: TSP: 3.0', 3.5' TYPE: #00, #0 LENGTH: 6.0'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
OV–BASE OF OVERBURDEN

TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

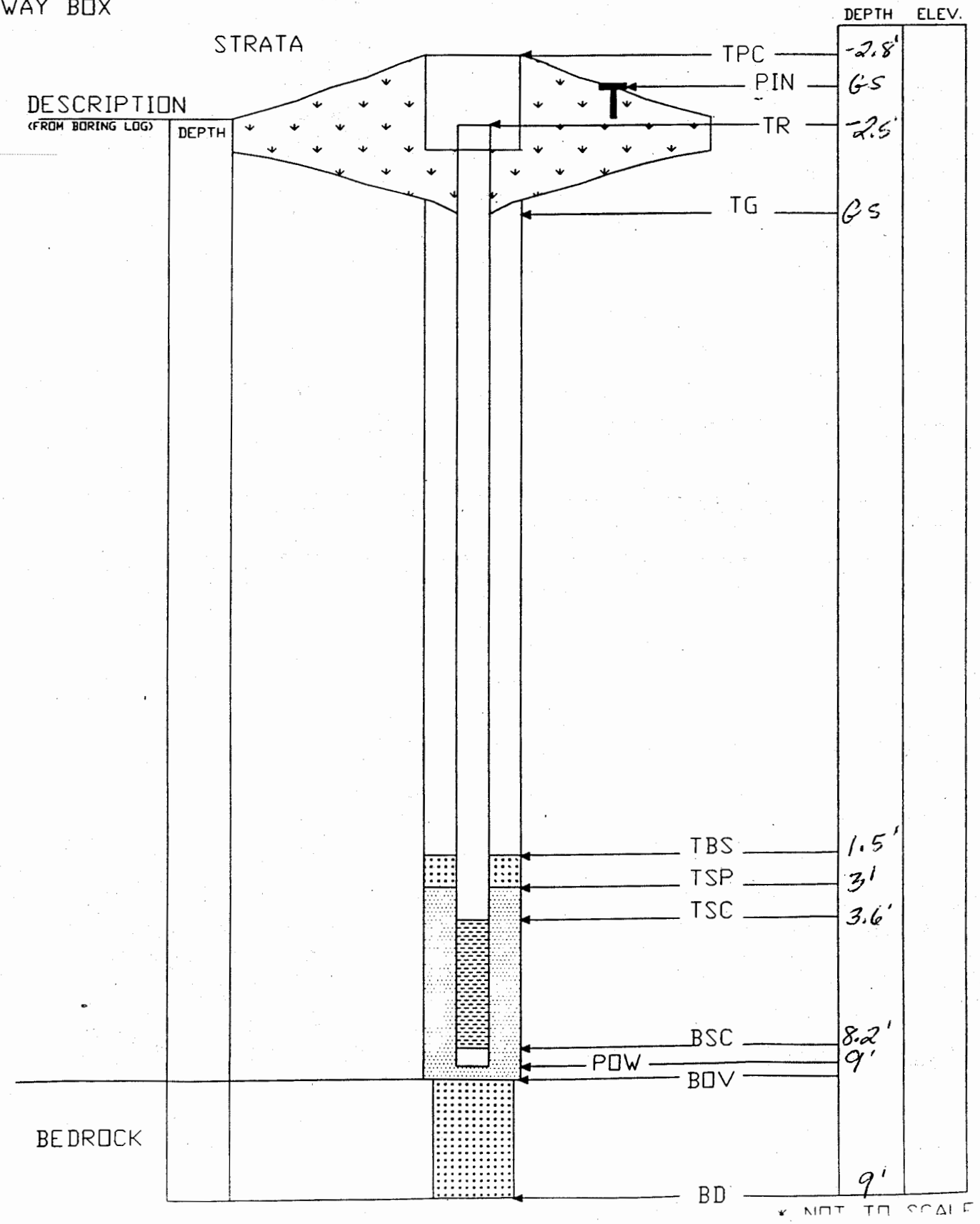
* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW 4-11

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/20/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW 4-12

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot
LOCATION: Sead 4

PROJECT NO: 734539-01001
INSPECTOR: LLB
CHECKED BY:

DRILLING CONTRACTOR: Maxim
DRILLER: S. Breeds
DRILLING COMPLETED: 12/21/98
BORING DEPTH: 11'
DRILLING METHOD(S): 4¼" HSA
BORING DIAMETER(S): 8"

POW DEPTH: 11'
INSTALLATION STARTED: 12/21/98
INSTALLATION COMPLETED: 12/21/98
SURFACE COMPLETION DATE: 1/7/99
COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: SEAD
COORDINATE SYSTEM: NORTHING: EASTING:
DATUM: NGVD 1929
ELEVATIONS: PIN: TOC: TPC:

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.4' TYPE: PVC DIAMETER: 2" LENGTH: 8.0'

SCREEN: TSC: 5.6' TYPE: PVC DIAMETER: 2" LENGTH: 4.6' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 10.2' POW: 11'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 2.6'

SEAL: TBS: 2.6' TYPE: Bentonite LENGTH: 2.0'

SAND PACK: TSP: 4.6', 5.6' TYPE: #00, #0 LENGTH: 6.4'

COMMENTS:

LEGEND (DEPTH TO):

TPC–TOP OF PROTECTIVE CASING:
TR–TOP OF RISER
PIN–SURVEYED GROUND SURFACE
TG–TOP OE GROUT
BD–BOTTOM OF DRILL HOLE
BOV–BASE OF OVERBURDEN

TBS–TOPOF BENTONITE SEAL
TSP–TOP OF SANDPACK
TSC–TOP OF SCREEN
BSC–BOTTOM OF SCREEN
POW–POINT OF WELL

* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

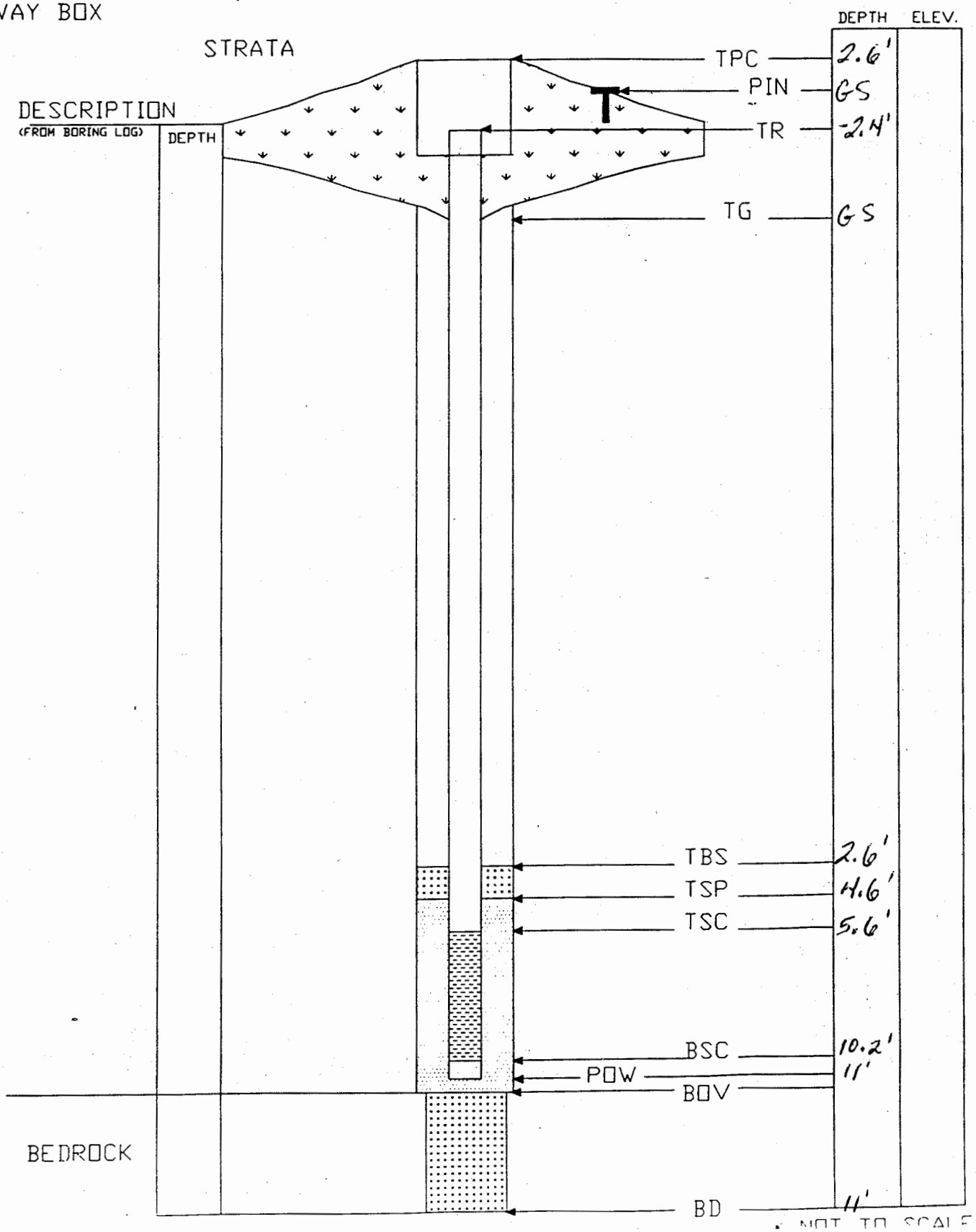
Parsons ES Inc.

WELL: MW 4-12

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/21/98

ROADWAY BOX



Parsons ES Inc.	WELL NUMBER: MW 4-13

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

CLIENT/PROJECT: Seneca Army Depot	PROJECT NO: 734539-01001
LOCATION: SEAD 4	INSPECTOR:
	CHECKED BY:

DRILLING CONTRACTOR: Maxim	POW DEPTH: 6.8'
DRILLER: S. Breeds	INSTALLATION STARTED: 12/20/98
DRILLING COMPLETED: 12/20/98	INSTALLATION COMPLETED: 12/20/98
BORING DEPTH: 6.7'	SURFACE COMPLETION DATE: 1/7/99
DRILLING METHOD(S): 4¼" HSA	COMPLETION CONTRACTOR/CREW: Maxim/Breeds
BORING DIAMETER(S): 8"	BEDROCK CONFIRMED: Y

ASSOCIATED SWMU/AOC: SEAD
COORDINATE SYSTEM: NORTHING: EASTING:
DATUM: NGVD 1929
ELEVATIONS: PIN: TOC: TPC:

PROTECTIVE CASING: TYPE: Steel DIAMETER: 4" LENGTH: 5'

RISER: TR: -2.3' TYPE: PVC DIAMETER: 2" LENGTH: 6.2'

SCREEN: TSC: 3.9' TYPE: PVC DIAMETER: 2" LENGTH: 2' SLOT SIZE: 10

POINT OF WELL:(SILT SUMP) TYPE: PVC BSC: 5.9' POW: 6.7'

SURFACE SEAL: TYPE: Grout DIAMETER: 2' THICKNESS: 1'

GROUT: TG: GS TYPE: Sand & Gravel LENGTH: 1'

SEAL: TBS: 1' TYPE: Bentonite LENGTH: 1.5'

SAND PACK: TSP: 2.5', 3.0' TYPE: #00, #0 LENGTH: 4.2'

COMMENTS:

LEGEND (DEPTH TO):

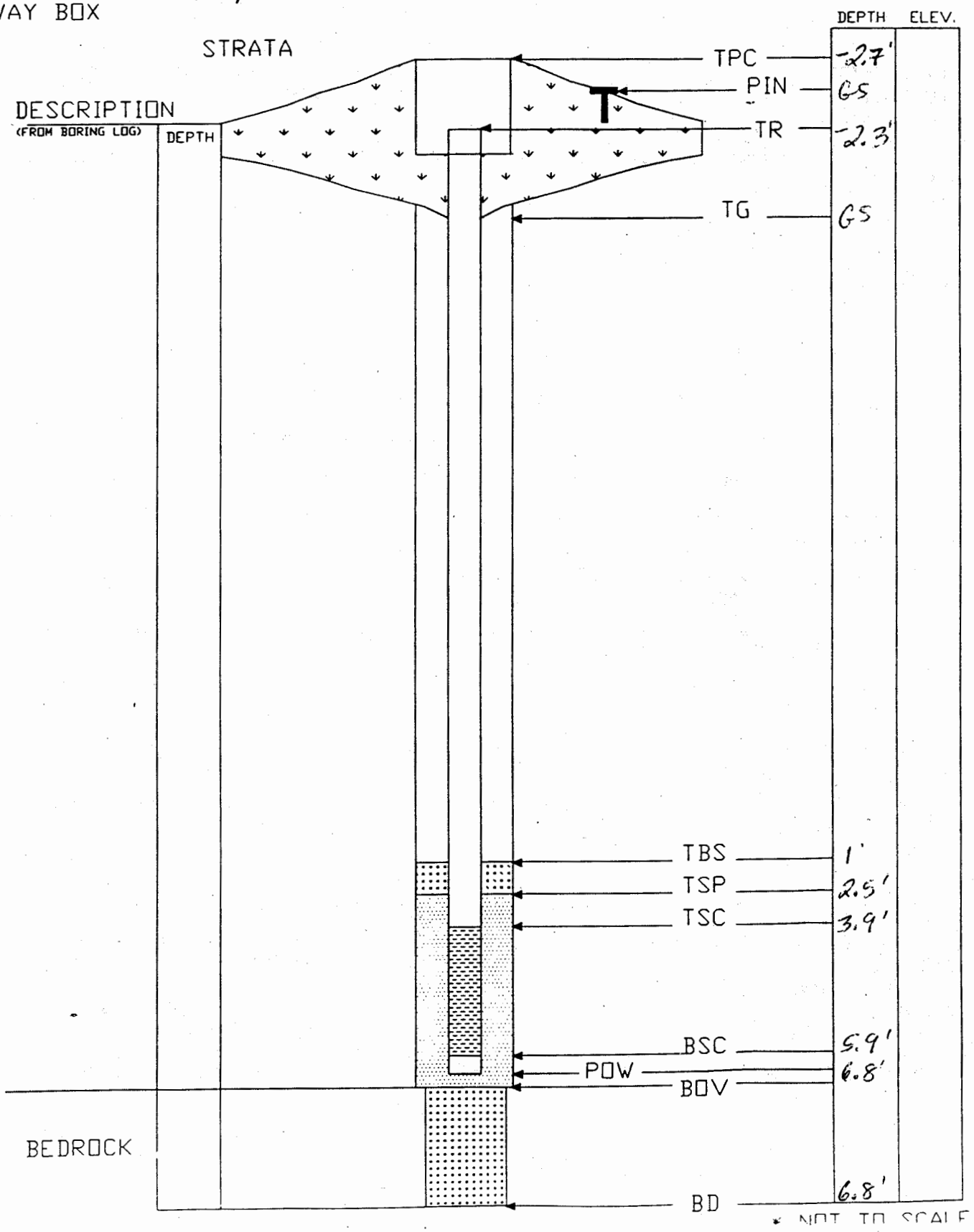
TPC–TOP OF PROTECTIVE CASING:	TBS–TOPOF BENTONITE SEAL
TR–TOP OF RISER	TSP–TOP OF SANDPACK
PIN–SURVEYED GROUND SURFACE	TSC–TOP OF SCREEN
TG–TOP OE GROUT	BSC–BOTTOM OF SCREEN
BD–BOTTOM OF DRILL HOLE	POW–POINT OF WELL
BOV–BASE OF OVERBURDEN	* ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

Parsons ES Inc.	WELL: MW 4-13

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL

DATE INSTALLED: 12/20/98

ROADWAY BOX



* NOT TO SCALE

SOIL BORING AND WELL COMPLETION LOGS

SEAD-5

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COMPLETION REPORT OF WELL No. MW5-1

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/16/94
WELL INSTALLATION COMPLETED: 03/16/94

WELL LOCATION (N/E): 998728.7 750506.4
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 738.4
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	738.4
OL GM						
ML				1.5	TBS	736.9
ML						
CL				2.9	TSP	735.5
ML-CL						
ML-CL				4.3	TSC	734.1
	5					
ML						
ML						
SM						
SM	10			11.0	BSC	727.4
	11.9			11.9	POW	726.6

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.8

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 2, 4

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.4

SANDPACK
Type: #1, #3
Interval: 8.95

WELL DEVELOPMENT DATA
Date: 3/19/94
Method: BAIL
Duration: 2 DAYS
Rate: 1.5 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
3/18	1500	3.36
3/19	1140	3.78
3/19	1300	9.40

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.12	6.0	650	1.21

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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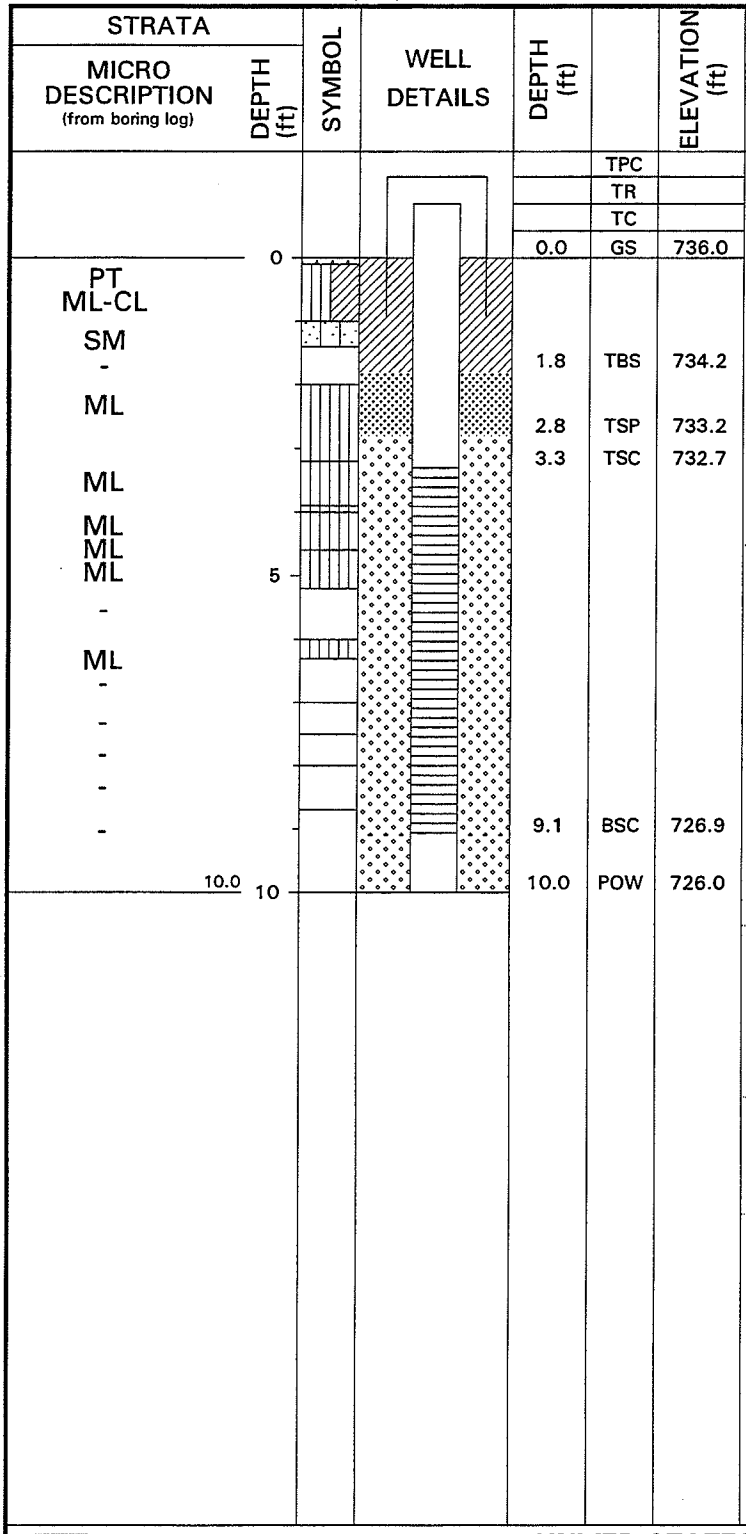
ENGINEERING-SCIENCE, INC.

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW5-1

COMPLETION REPORT OF WELL No. MW5-2

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	998755.5 750226.3
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	736.0
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	03/04/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	03/04/94	CHECKED BY:	KK



WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4, .9

SURFACE SEAL
Type: CEMENT
Interval: 1.8

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 7.2

WELL DEVELOPMENT DATA

Date: 3/8/94
Method: BAIL
Duration: 85 MIN
Rate: 2.1 L/MIN

WATER LEVELS

Date	Time	Depth,TR
3/8	1000	2.71
3/8	1116	3.18

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.17	4	600	2.42

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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Romulus, New York

COMPLETION REPORT OF WELL No. MW5-2

COMPLETION REPORT OF WELL No. MW5-3

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/17/94
WELL INSTALLATION COMPLETED: 03/17/94

WELL LOCATION (N/E): 998884.9 750255.7
REFERENCE COORDINATE SYSTEM: NEW YORK STATE PLAN
GROUND SURFACE ELEVATION (ft): 736.9
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)
ML	0
ML	
ML	
-	
SM	
ML	
ML-CL	
-	
CL-ML	
GM-GC	5
CL	
-	
CL	
-	
ML	8.8
-	

SYMBOL / WELL DETAILS

DEPTH (ft)		ELEVATION (ft)
	TPC	
	TR	
	TC	
0.0	GS	736.9
0.8	TBS	736.1
2.5	TSP	734.4
3.5	TSC	733.4
7.4	BSC	729.5
8.5	POW	728.4

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 8
Type: ROADWAY BOX
Interval: 1

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 2.9

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: .8

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE
Interval: 1.7

SANDPACK
Type: #1, #3
Interval: 6

WELL DEVELOPMENT DATA
Date: 3/20/94
Method: BAIL/PUMP
Duration: 2 DAYS
Rate: .100 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.00	5	900	11.6

WATER LEVELS

Date	Time	Depth,TR
3/19	1430	3.33
3/19	1550	6.06
3/20	1020	5.3

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW5-3

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SOIL BORING AND WELL COMPLETION LOGS

ASH LANDFILL OPERABLE UNIT

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U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
GROUND-WATER MONITORING WELL SUMMARY

PROJECT 38-26-0313 88 DATE 13-21 Oct

WELL NUMBER	MW-18	MW-19	MW-20	MW-22	M
1. Height of Monitoring Well Casing above ground level	30"	30"	30"	30"	30"
2. Total Depth of Well below ground level	9	9	8' 10"	9	17' 5"
3. Depth to Top of Well Screen below ground level	4	4	3' 10"	4	12' 5"
4. Well Screen Length	5	5	5	5	5
5. Well Screen Slot Size	0.010	0.010	0.010	0.010	0.010
6. Well Diameter	2 in ID	2 in ID	2 in ID	2 in ID	2 in ID
7. Monitoring Well Casing Material	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC
8. Monitoring Well Screen Material	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC
9. Grout Thickness below ground level	3' 10"	4	3	3' 11'	10' 6"
10. Depth to Top of Bentonite Seal below ground level	All wells grouted to surface with bentonite				
11. Bentonite Seal Thickness	3' 10"	4	3	3' 11"	10' 6"
12. Depth to Top of Sand Pack	3' 10"	4	3	3' 11"	10' 6"
13. Depth to Static Water Level from top of monitoring well casing	5' 11"	5' 5½"	6' 8"	6' 6"	18' 8½"
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87
14. Depth to Static Water from ground level	654.6	644.0	644.1	645.1	645.8
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87
15. Elevation at ground level	654.6	644.0	644.1	645.1	645.8
16. Elevation - Top of monitoring well casing					
17. Ground-water elevation	651.1	641.0	637.4	641.1	629.2
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87
Comments					

AGENCY
SUMMARY
DATE 13-21 Oct

U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
GROUND-WATER MONITORING WELL SUMMARY

PROJECT 38-26-0313-88 DATE 13-21 Oct 87

WELL NUMBER	MW-23	MW-24	MW-25	MW-26	
1. Height of Monitoring Well Casing above ground level	30"	30"	30"	30"	
2. Total Depth of Well below ground level	9'	9'	9'	9'	
3. Depth to Top of Well Screen below ground level	4'	4'	4'	6'	
4. Well Screen Length	5'	5'	5'	5'	
5. Well Screen Slot Size	0.010"	0.010"	0.010"	0.010"	
6. Well Diameter	2 in ID	2 in ID	2 in ID	2 in ID	
7. Monitoring Well Casing Material	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	
8. Monitoring Well Screen Material	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	Schd 40 PVC	
9. Grout Thickness below ground level	4	3	4	4' 10"	
10. Depth to Top of Bentonite Seal below ground level	All wells grouted to surface with bentonite				
11. Bentonite Seal Thickness	4	3	4	4' 10"	
12. Depth to Top of Sand Pack	4	3	4	4' 10"	
13. Depth to Static Water Level from top of monitoring well casing	5' 5"	4' 9½"	5' 8"	5' 2"	
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	
14. Depth to Static Water from ground level	2' 11"	2' 3½"	3' 2"	2' 8"	
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	
15. Elevation at ground level	638.6	633.3	634.0	617.5	
16. Elevation - Top of monitoring well casing					
17. Ground-water elevation	635.7	631	630.8	615	
Date Measured	19 Oct 87	19 Oct 87	19 Oct 87	19 Oct 87	
Comments					

U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
GROUND-WATER MONITORING WELL SUMMARY

PROJECT Seneca Army Depot 38-26-K928-90 DATE November 1989

WELL NUMBER	MW - 27	MW - 28	MW - 29	MW - 30	MW - 31
1. Height of Monitoring Well Casing above ground level	2.0'	1.9'	1.4'	3.0'	0.8'
2. Total Depth of Well below ground level	8.0'	8.1'	8.6'	7.0'	9.2'
3. Depth to Top of Well Screen below ground level	3.0'	3.1'	3.6'	2.0'	4.2'
4. Well Screen Length	5.0'	5.0'	5.0'	5.0'	5.0'
5. Well Screen Slot Size	0.010"	0.010"	0.010"	0.010"	0.010"
6. Well Diameter	2.0"	2.0"	2.0"	2.0"	2.0"
7. Monitoring Well Casing Material	PVC	PVC	PVC	PVC	PVC
8. Monitoring Well Screen Material	PVC	PVC	PVC	PVC	PVC
9. Grout Thickness below ground level	ALL WELLS GROUTED TO SURFACE WITH BENTONITE:				
10. Depth to Top of Bentonite Seal below ground level	0	0	0	0	0
11. Bentonite Seal Thickness	3.0'	3.1'	3.6'	2.0'	4.2'
12. Depth to Top of Sand Pack	3.0'	3.1'	3.6'	2.0'	4.2'
13. Depth to Static Water Level from top of monitoring well casing	5.0'	4.65'	6.1'	4.2'	2.7'
Date Measured	17 Nov 89	17 Nov 89	17 Nov 89	17 Nov 89	17 Nov 89
14. Depth to Static Water from ground level					
Date Measured					
15. Elevation at ground level					
16. Elevation - Top of monitoring well casing	638.38	636.46	636.42	639.41	635.88
17. Ground-water elevation	633.38	631.81	630.32	635.21	633.18
Date Measured	17 Nov 89	17 Nov 89	17 Nov 89	17 Nov 89	17 Nov 89
Comments					

U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
GROUND-WATER MONITORING WELL SUMMARY

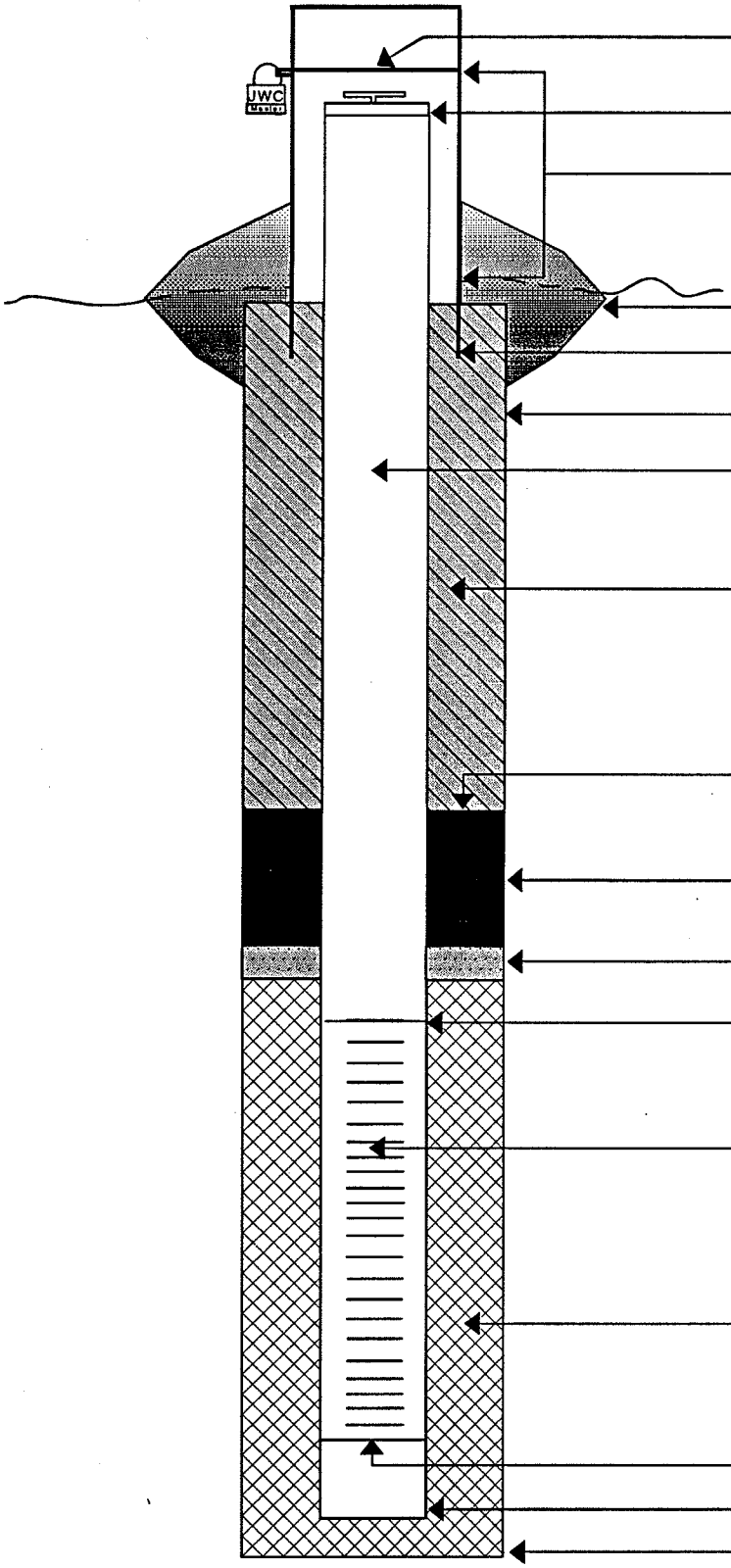
PROJECT Seneca Army Depot 38-26-K928-90 DATE November 1989

WELL NUMBER	MW - 32	MW - 33			
1. Height of Monitoring Well Casing above ground level	1.3'	1.5'			
2. Total Depth of Well below ground level	8.7'	8.5'			
3. Depth to Top of Well Screen below ground level	3.7'	3.5'			
4. Well Screen Length	5.0'	5.0'			
5. Well Screen Slot Size	0.010"	0.010"			
6. Well Diameter	2.0"	2.0"			
7. Monitoring Well Casing Material	PVC	PVC			
8. Monitoring Well Screen Material	PVC	PVC			
9. Grout Thickness below ground level	ALL WELLS GROUTED TO SURFACE WITH BENTONITE				
10. Depth to Top of Bentonite Seal below ground level	0	0			
11. Bentonite Seal Thickness	3.7'	3.5'			
12. Depth to Top of Sand Pack	3.7'	3.5'			
13. Depth to Static Water Level from top of monitoring well casing	3.8'	3.5'			
Date Measured	17 Nov 89	17 Nov 89			
14. Depth to Static Water from ground level					
Date Measured					
15. Elevation at ground level					
16. Elevation - Top of monitoring well casing	640.92	638.68			
17. Ground-water elevation	637.12	635.18			
Date Measured	17 Nov 89	17 Nov 89			
Comments					

AEHA Form 93-R, 1 JUN 88 (HSHB-ME-SG) *Previous editions of this form are obsolete.*

OVERBURDEN MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-34)	Drilling Method	Hollow Stem Auger
Date	October 24, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 633.18'

Elevation Top of Riser: 632.89'

Length of Exposed Guardpipe: 2.18'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 6.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Not Required

Elevation/Top of Seal: 631.0'

Type of Seal: Bentonite

Type of Sandpack: # 3 Sand

Elevation/Top of Screen: 624.5'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 10'

I.D. Screen: 2"

Type of Sand Pack: # 3 Sand

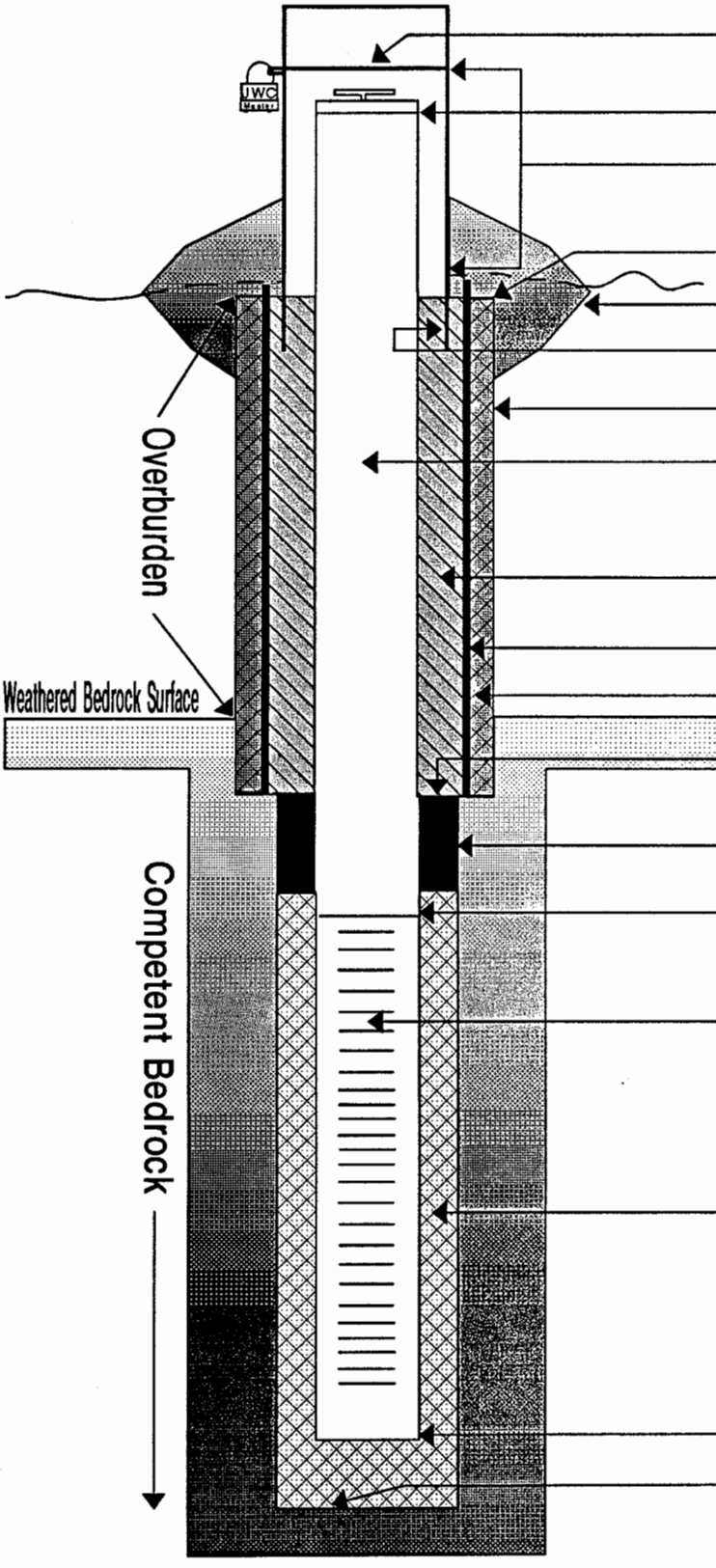
Elevation/Bottom of Screen: 614.5'

Bottom of Sump:

Elevation/Bottom of Hole: 614.5'

BEDROCK MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-35D)	Drilling Method	Hol.Stem Auger/Air Rotary
Date	November 5, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 631.88'

Elevation Top of Riser: 631.90'

Length of Exposed Guardpipe: 2.28'

Elevation/Ground Surface: 629.6'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 10.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Cement/Bentonite

PVC I.D. (Surface to Bedrock): 6"

Type of Grout (outside PVC): Cem./Bent.

Elevation/Depth Top of Seal: 606.2'

Type of Seal: Bentonite

Elevation/Depth Top of Screen: 600.6'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 25'

I.D. Screen: 2"

Type of Sand Pack: #3 Sand

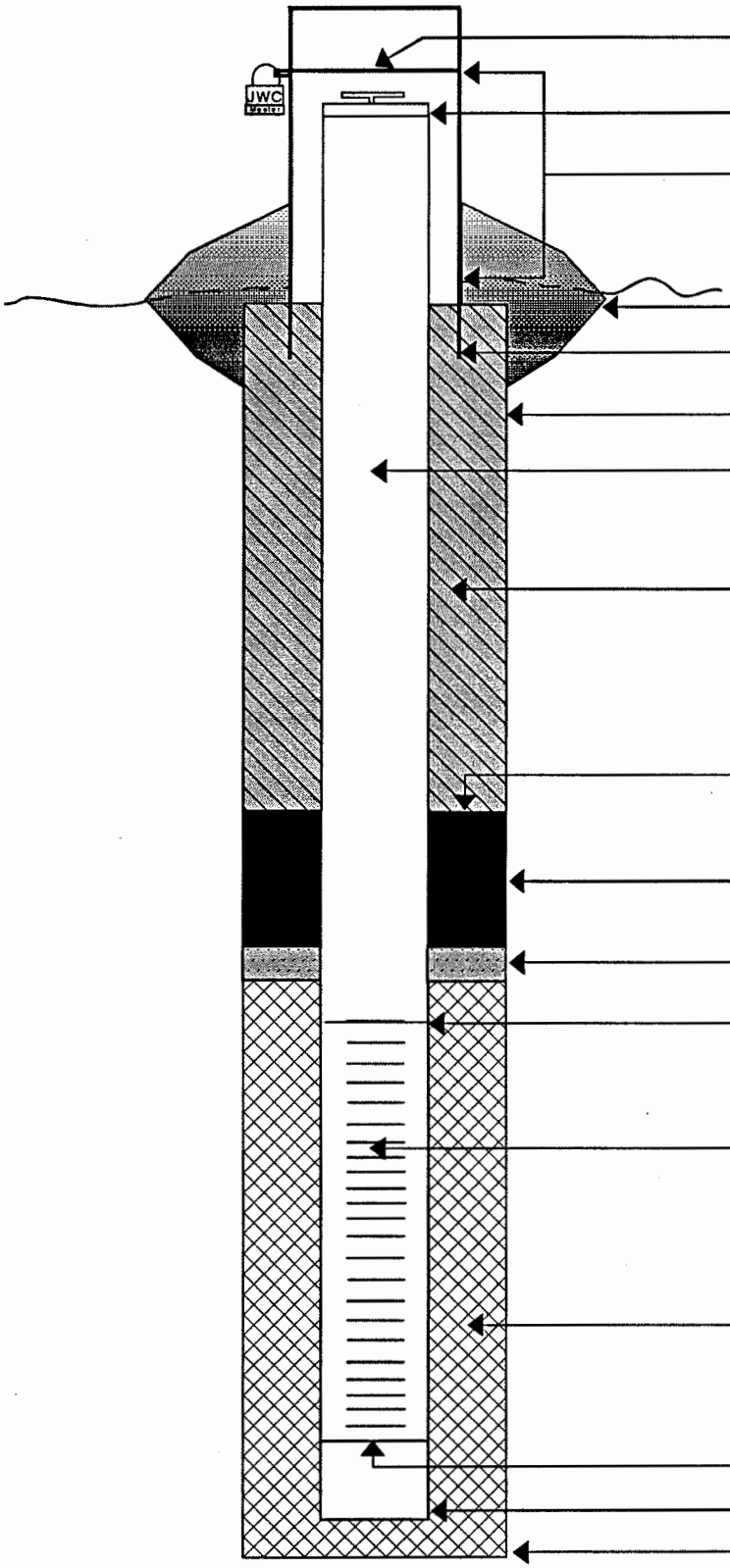
Diameter of Hole in Bedrock:
Core/Rock: 6.25"

Elevation/Bottom of Screen: 575.6'

Elevation/Bottom of Hole: 575.1'

OVERBURDEN MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-36)	Drilling Method	Hollow Stem Auger
Date	October 30, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 632.04'

Elevation Top of Riser: 631.73'

Length of Exposed Guardpipe: 2.03'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 6.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Not Required

Elevation/Top of Seal: 630.1'

Type of Seal: Bentonite

Type of Sandpack: # 3 Sand

Elevation/Top of Screen: 625.3'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 10'

I.D. Screen: 2"

Type of Sand Pack: # 3 Sand

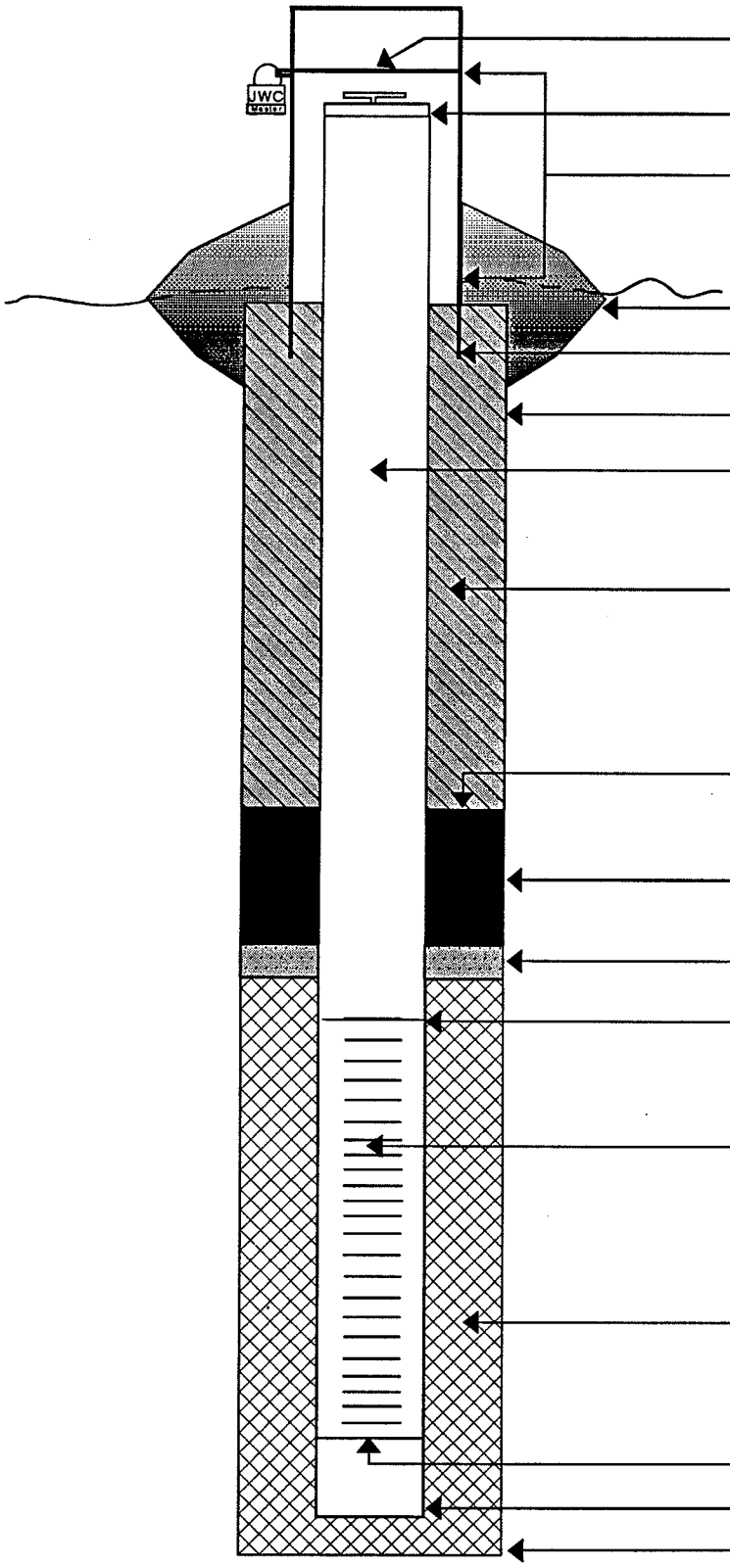
Elevation/Bottom of Screen: 615.3'

Bottom of Sump:

Elevation/Bottom of Hole: 615.3'

OVERBURDEN MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-37)	Drilling Method	Hollow Stem Auger
Date	October 25, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 633.02'

Elevation Top of Riser: 632.89'

Length of Exposed Guardpipe: 2.02'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 6.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Not Applicable

Elevation/Top of Seal: 631.0'

Type of Seal: Bentonite

Type of Sandpack: # 3 Sand

Elevation/Top of Screen: 624.3'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 5'

I.D. Screen: 2"

Type of Sand Pack: # 3 Sand

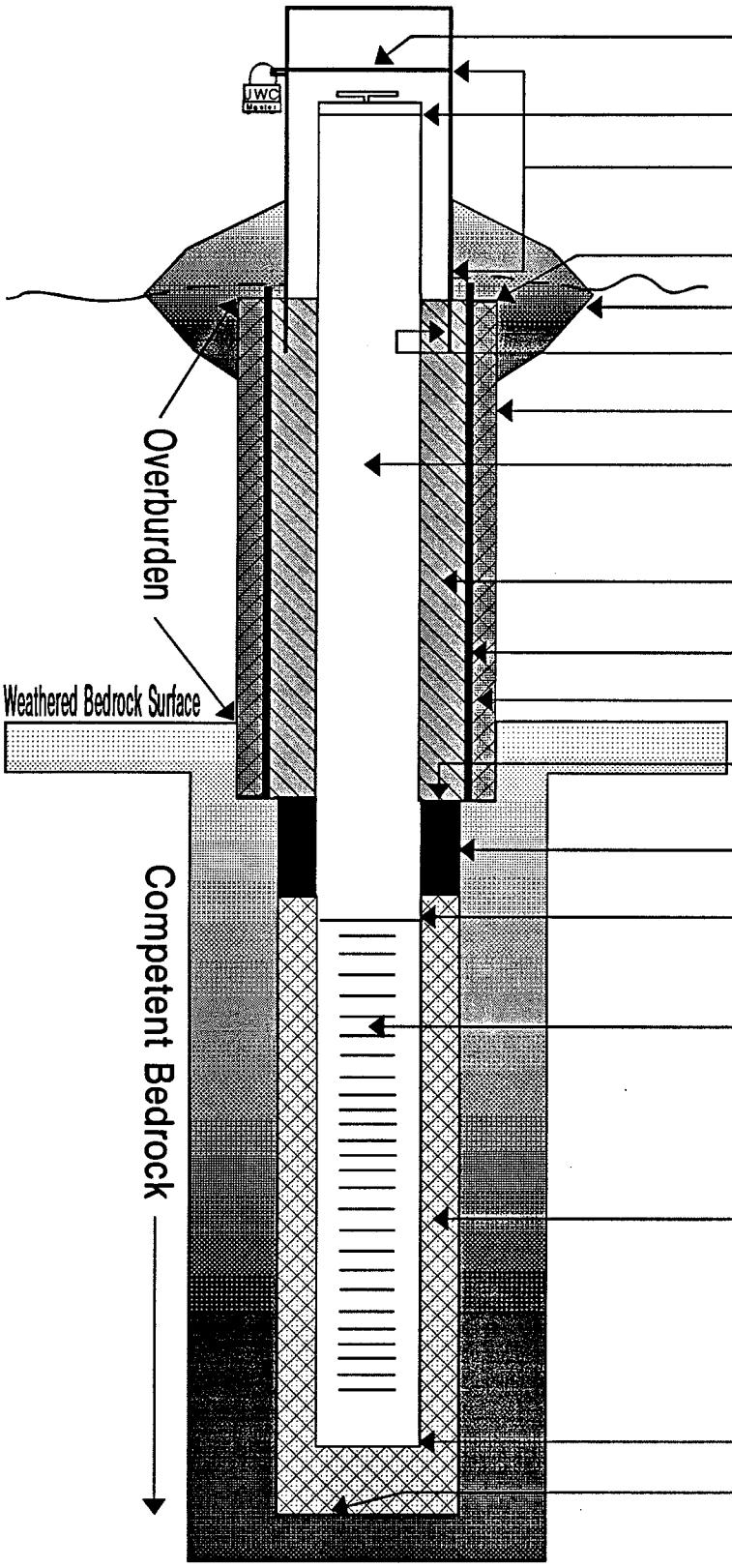
Elevation/Bottom of Screen: 619.3'

Bottom of Sump:

Elevation/Bottom of Hole: 619.3'

BEDROCK MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-38D)	Drilling Method	Hol.Stem Auger/Air Rotary
Date	November 6, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 638.04'

Elevation Top of Riser: 637.93'

Length of Exposed Guardpipe: 2.64'

Elevation/Ground Surface: 635.4'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 10.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Cement/Bentonite

PVC I.D. (Surface to Bedrock): 6"

Type of Grout (outside PVC): Cem./Bent.

Elevation/Depth Top of Seal: 630.5'

Type of Seal: Bentonite

Elevation/Depth Top of Screen: 625.7'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 20'

I.D. Screen: 2"

Type of Sand Pack: #3 Sand

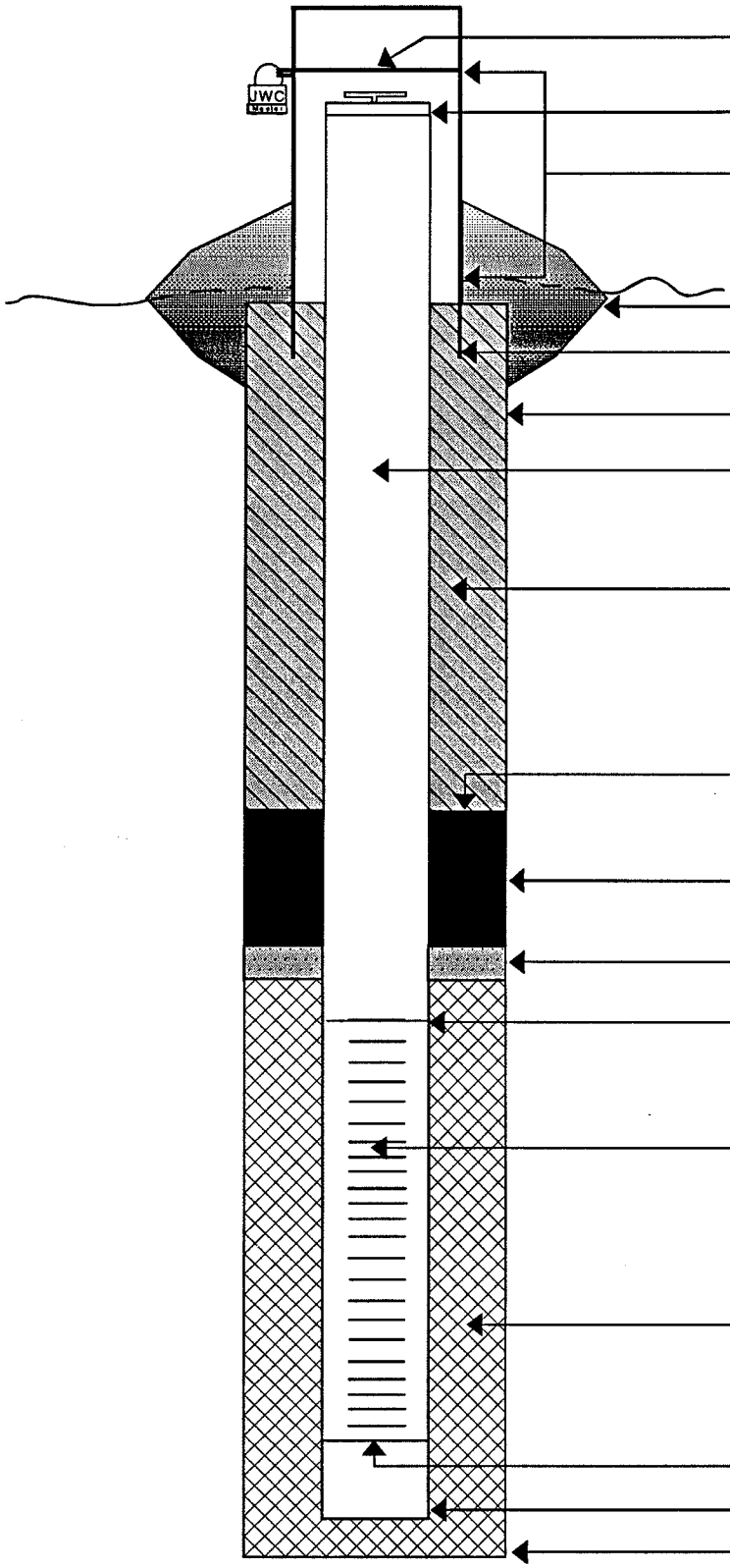
Diameter of Hole in Bedrock:
Core/Rock: 6.25"

Elevation/Bottom of Screen: 605.7'

Elevation/Bottom of Hole: 605.4'

OVERBURDEN MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-39)	Drilling Method	Hollow Stem Auger
Date	October 28, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 659.95'

Elevation Top of Riser: 659.76'

Length of Exposed Guardpipe: 2.15'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 6.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Not Required

Elevation/Top of Seal: 657.8'

Type of Seal: Bentonite

Type of Sandpack: # 3 Sand

Elevation/Top of Screen: 651.3'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 5'

I.D. Screen: 2"

Type of Sand Pack: # 3 Sand

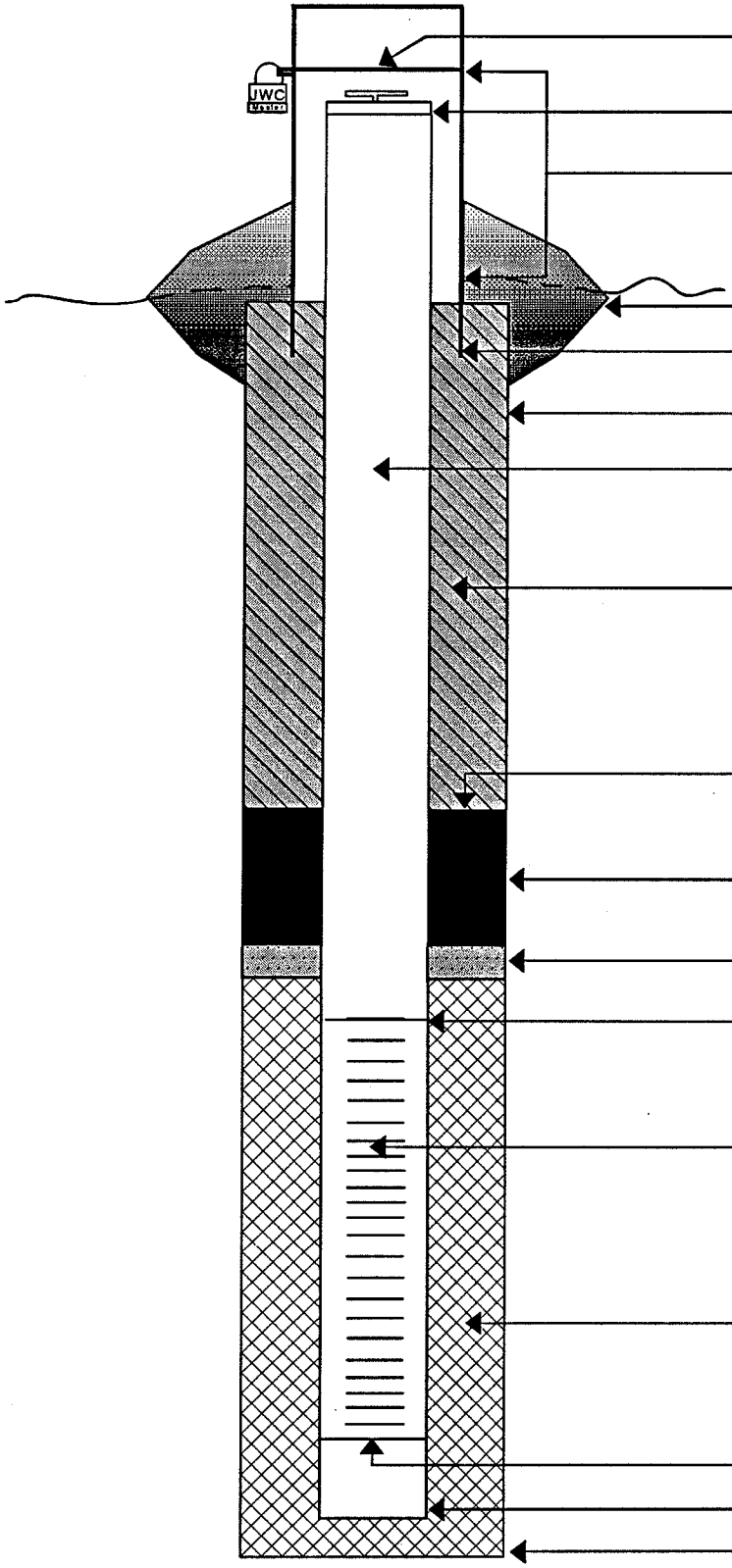
Elevation/Bottom of Screen: 646.3'

Bottom of Sump:

Elevation/Bottom of Hole: 646.3'

OVERBURDEN MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-40)	Drilling Method	Hollow Stem Auger
Date	October 29, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 659.49'

Elevation Top of Riser: 659.32'

Length of Exposed Guardpipe: 2.49'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 6.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Not Required

Elevation/Top of Seal: 657.0'

Type of Seal: Bentonite

Type of Sandpack: # 3 Sand

Elevation/Top of Screen: 651.8'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 7'

I.D. Screen: 2"

Type of Sand Pack: # 3 Sand

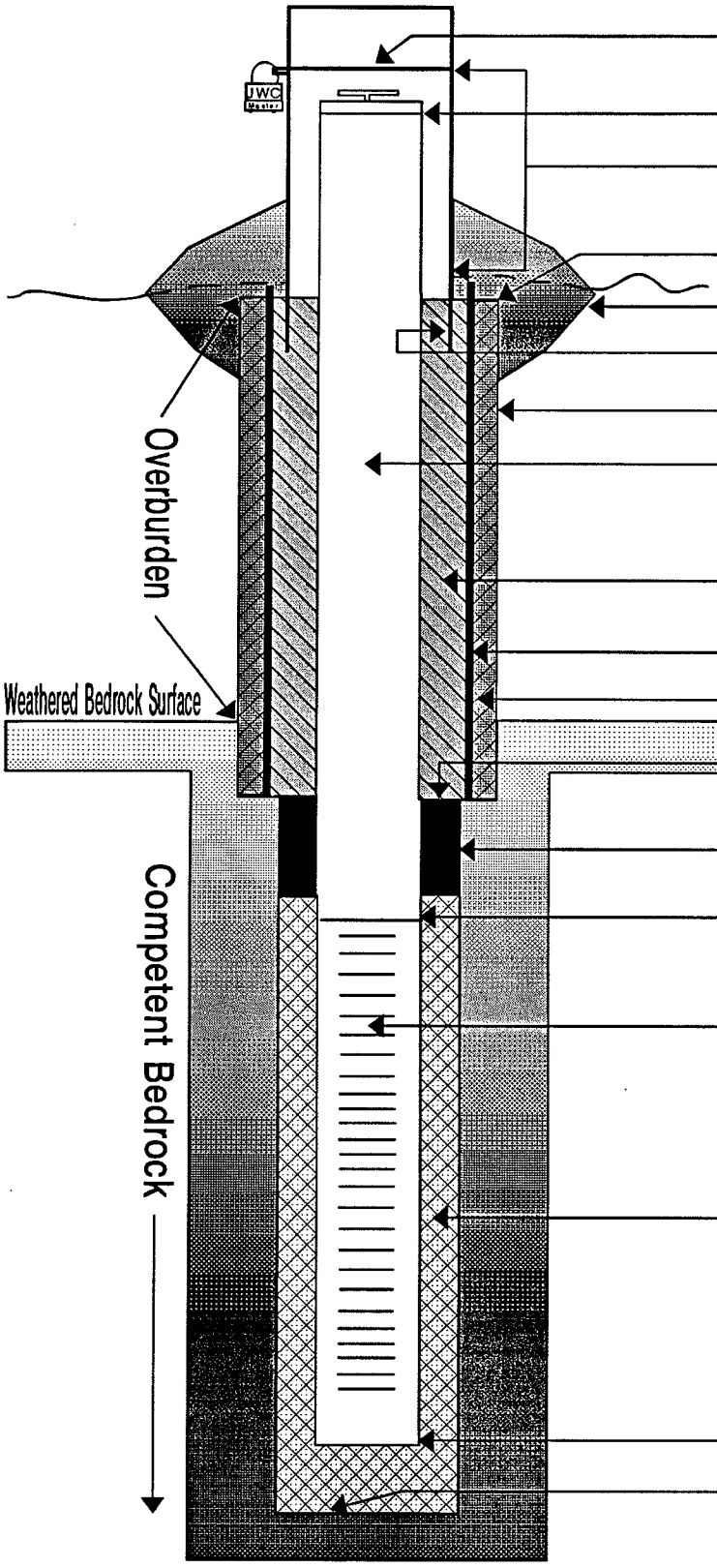
Elevation/Bottom of Screen: 644.8'

Bottom of Sump:

Elevation/Bottom of Hole: 644.8'

BEDROCK MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-41D)	Drilling Method	Hol.Stem Auger/Air Rotary
Date	November 6, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 694.04'

Elevation Top of Riser: 694.02'

Length of Exposed Guardpipe: 2.44'

Elevation/Ground Surface: 691.6'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 10.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Cement/Bentonite

PVC I.D. (Surface to Bedrock): 6"

Type of Grout (outside PVC): Cem./Bent.

Elevation/Depth Top of Seal: 682.8'

Type of Seal: Bentonite

Elevation/Depth Top of Screen: 677.1'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 30'

I.D. Screen: 2"

Type of Sand Pack: #3 Sand

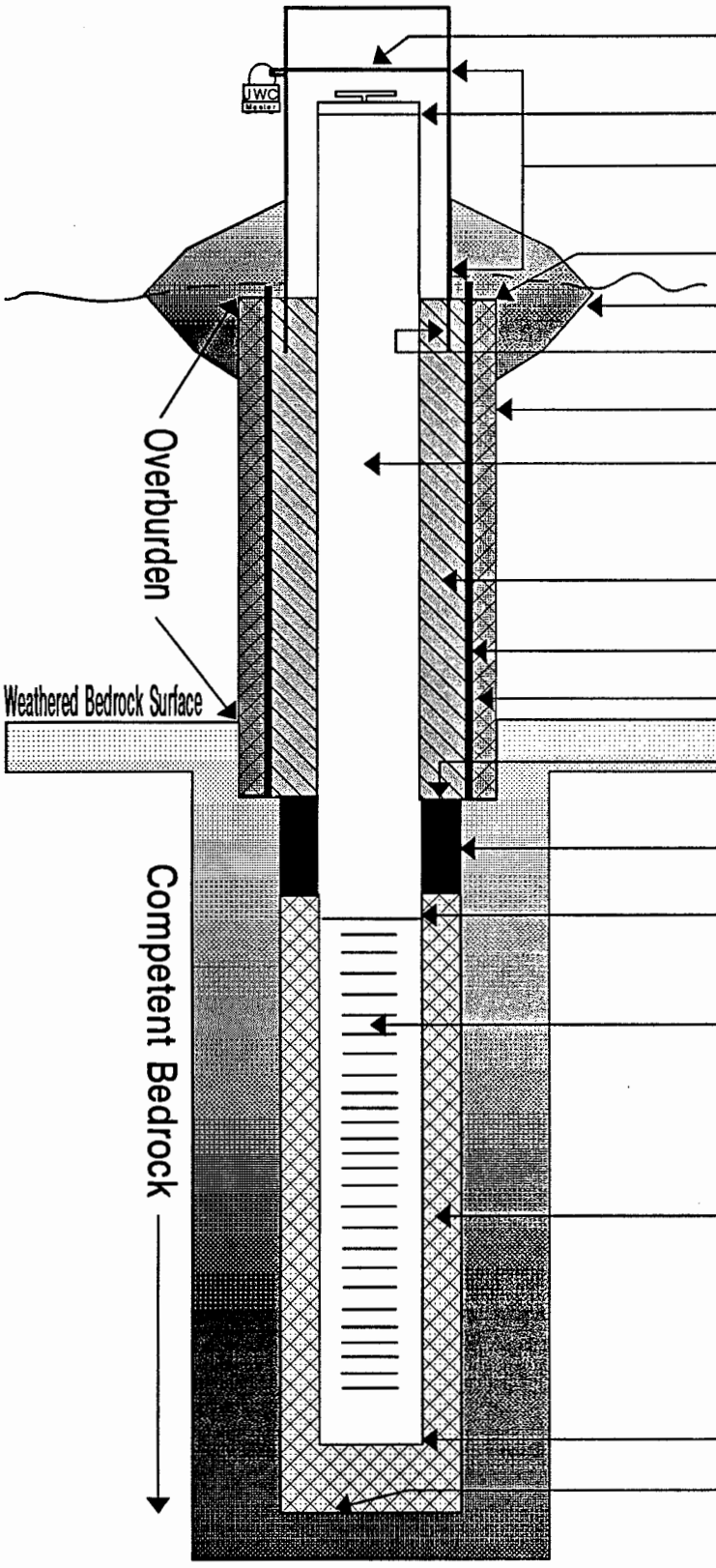
Diameter of Hole in Bedrock:
Core/Rock: 6.25"

Elevation/Bottom of Screen: 647.1'

Elevation/Bottom of Hole: 646.6'

BEDROCK MONITORING WELL

Project	Seneca Army Depot	Driller	Empire Soils, Inc.
Location	Ash Landfill (MW-42D)	Drilling Method	Hol.Stem Auger/Air Rotary
Date	November 8, 1991	Development Method	Teflon Bailer



Elev.(Top of Surface casing): 683.18'

Elevation Top of Riser: 683.04'

Length of Exposed Guardpipe: 2.48'

Elevation/Ground Surface: 680.7'

Type of Surface Seal: Concrete Collar

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 10.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: Schedule 40 PVC

Type of Grout: Cement/Bentonite

PVC I.D. (Surface to Bedrock): 6"

Type of Grout (outside PVC): Cem./Bent.

Elevation/Depth Top of Seal: 661.9'

Type of Seal: Bentonite

Elevation/Depth Top of Screen: 656.0'

Type of Screen: Machine Slotted

Slot Size x Length: .010 x 20'

I.D. Screen: 2"

Type of Sand Pack: #3 Sand

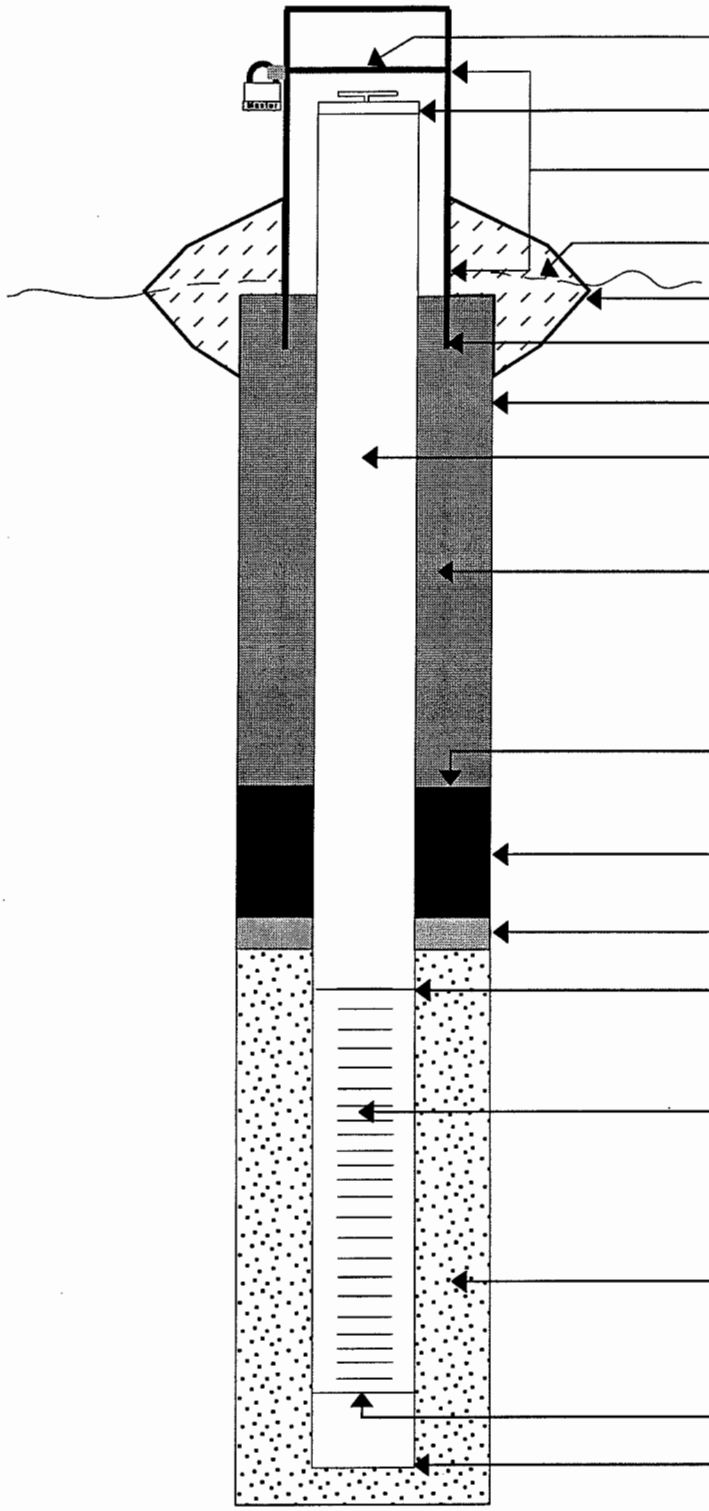
Diameter of Hole in Bedrock:
Core/Rock: 6.25"

Elevation/Bottom of Screen: 636.0'

Elevation/Bottom of Hole: 635.7'

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/3/93	**WELL NAME**	MW-43



Elevation of Top of Surface casing: 657.90'

Elevation Top of Riser: 657.73'

Length of Exposed Guardpipe: 2.30'

Elevation of Ground Surface: 655.60'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 653.50'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 652.6'

Type of Screen: PVC

Slot Size x Length: .010" X 2'

I.D. Screen: 2"

Type of Sand Pack: COARSE

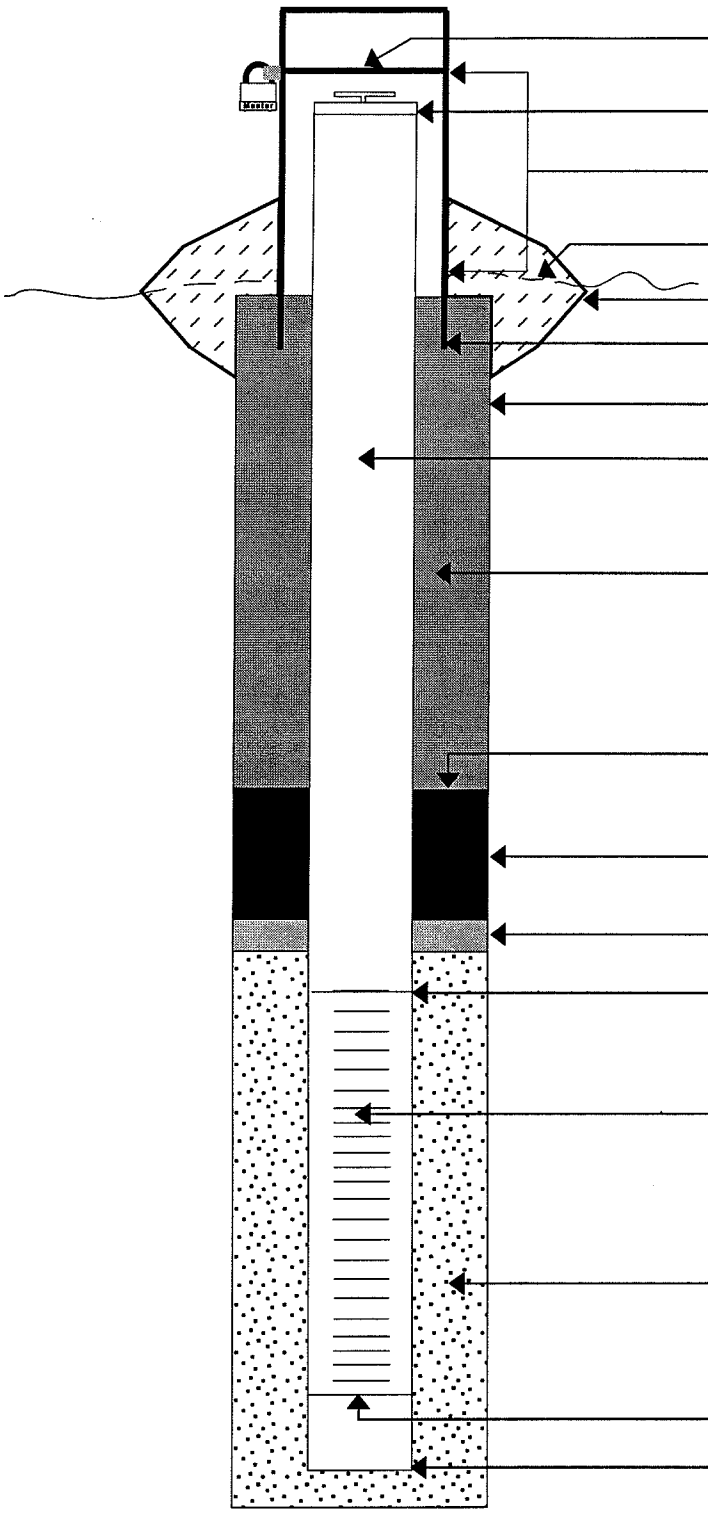
Elevation/Depth Bottom of Screen: 650.6'

Elevation/Depth Bottom of Hole: 650.1'

ALL ELEVATIONS RELATIVE TO MSL

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/3/93	**WELL NAME**	MW-44



Elevation of Top of Surface casing: 654.11'

Elevation Top of Riser: 653.85'

Length of Exposed Guardpipe: 2.11'

Elevation of Ground Surface: 652.00

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 651.10'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 648.75'

Type of Screen: PVC

Slot Size x Length: .010" X 5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

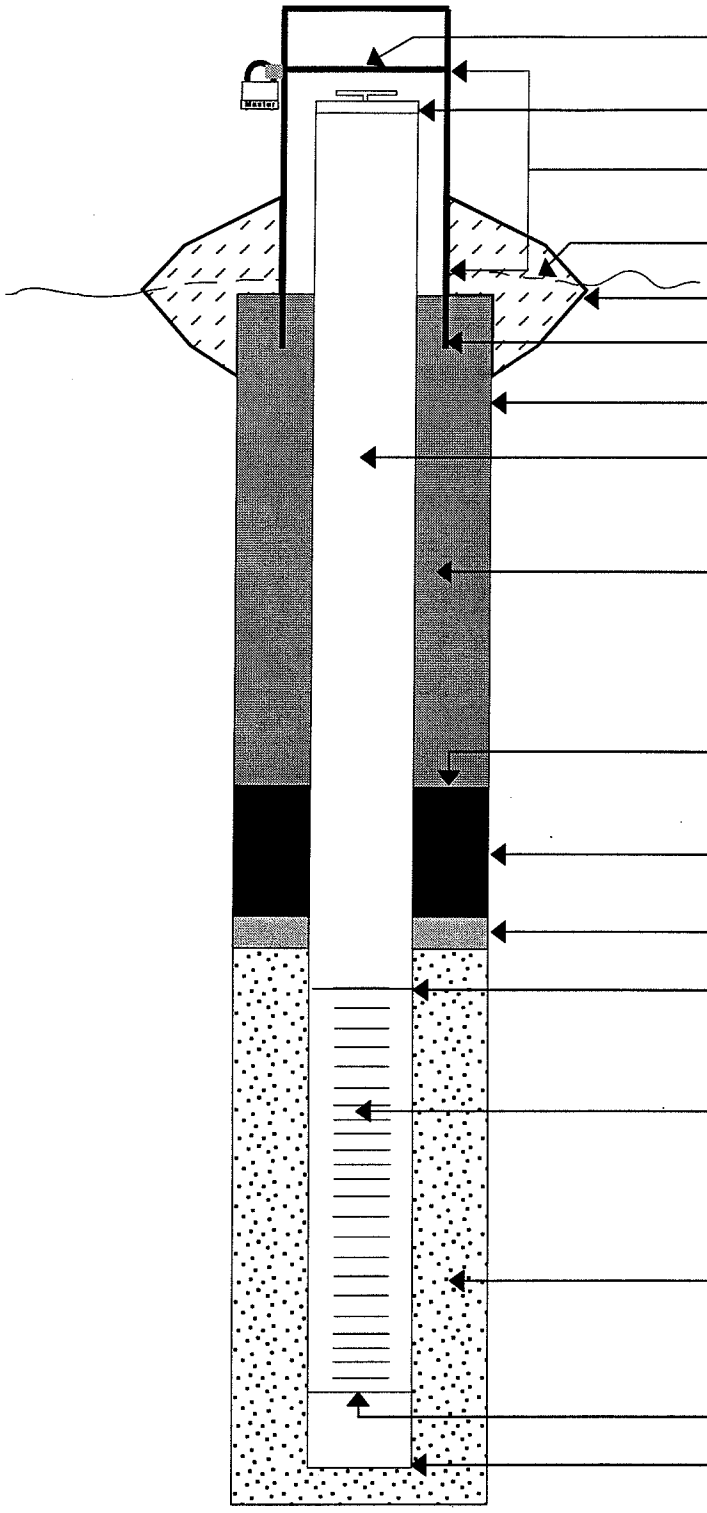
Elevation/Depth Bottom of Screen: 643.75'

Elevation/Depth Bottom of Hole: 643.25'

ALL ELEVATIONS RELATIVE TO MSL

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	AMERICAN AUGER
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA
DATE	5/5/93	WELL NAME	MW-45



Elevation of Top of Surface casing: 651.13'

Elevation Top of Riser: 650.90'

Length of Exposed Guardpipe: 2.53'

Elevation of Ground Surface: 648.60

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 646.10'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 645.10'

Type of Screen: PVC

Slot Size x Length: .010" X 5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

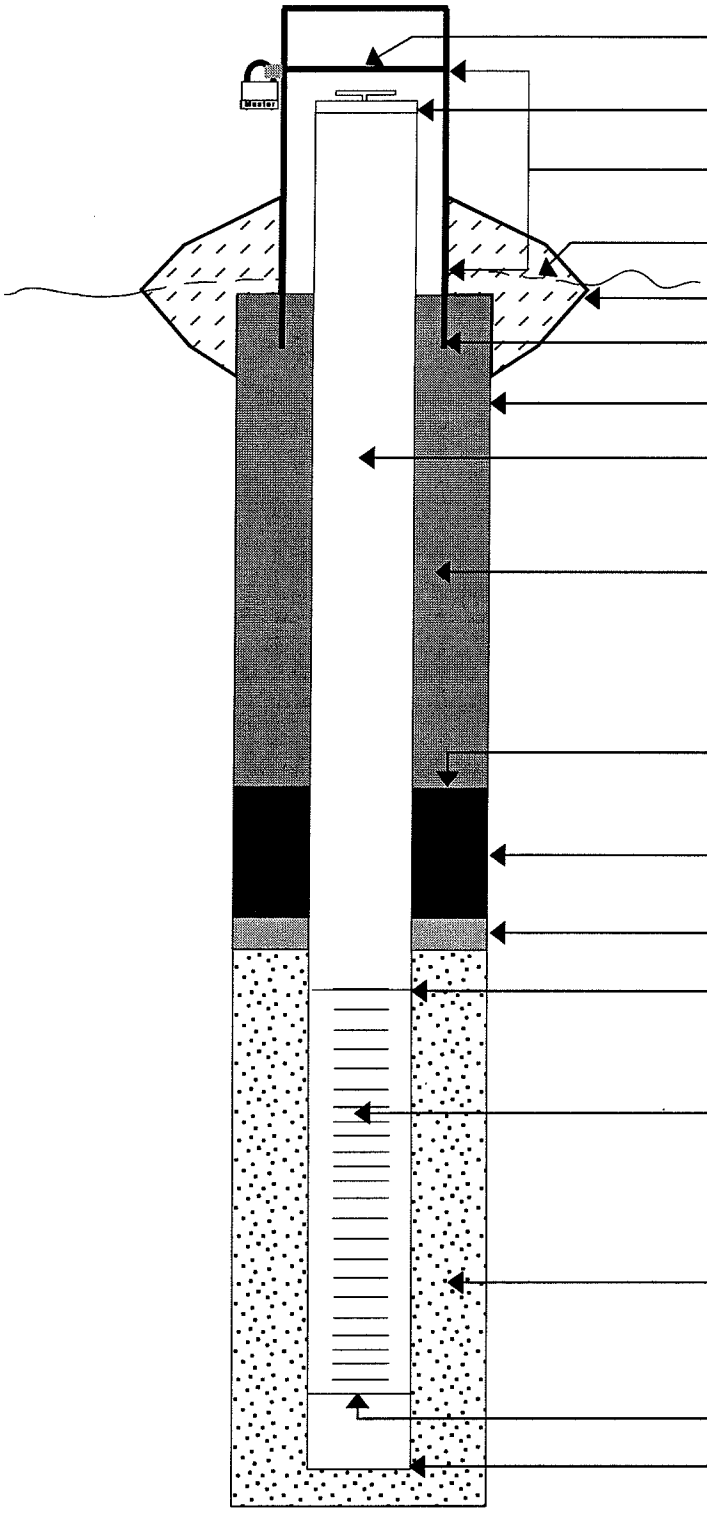
Elevation/Depth Bottom of Screen: 640.10'

Elevation/Depth Bottom of Hole: 639.60

ALL ELEVATIONS RELATIVE TO MSL

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/5/93	**WELL NAME**	MW-46



Elevation of Top of Surface casing: 650.65'

Elevation Top of Riser: 650.41'

Length of Exposed Guardpipe: 2.55'

Elevation of Ground Surface: 648.10'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 645.60'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 644.60'

Type of Screen: PVC

Slot Size x Length: .010" X 5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

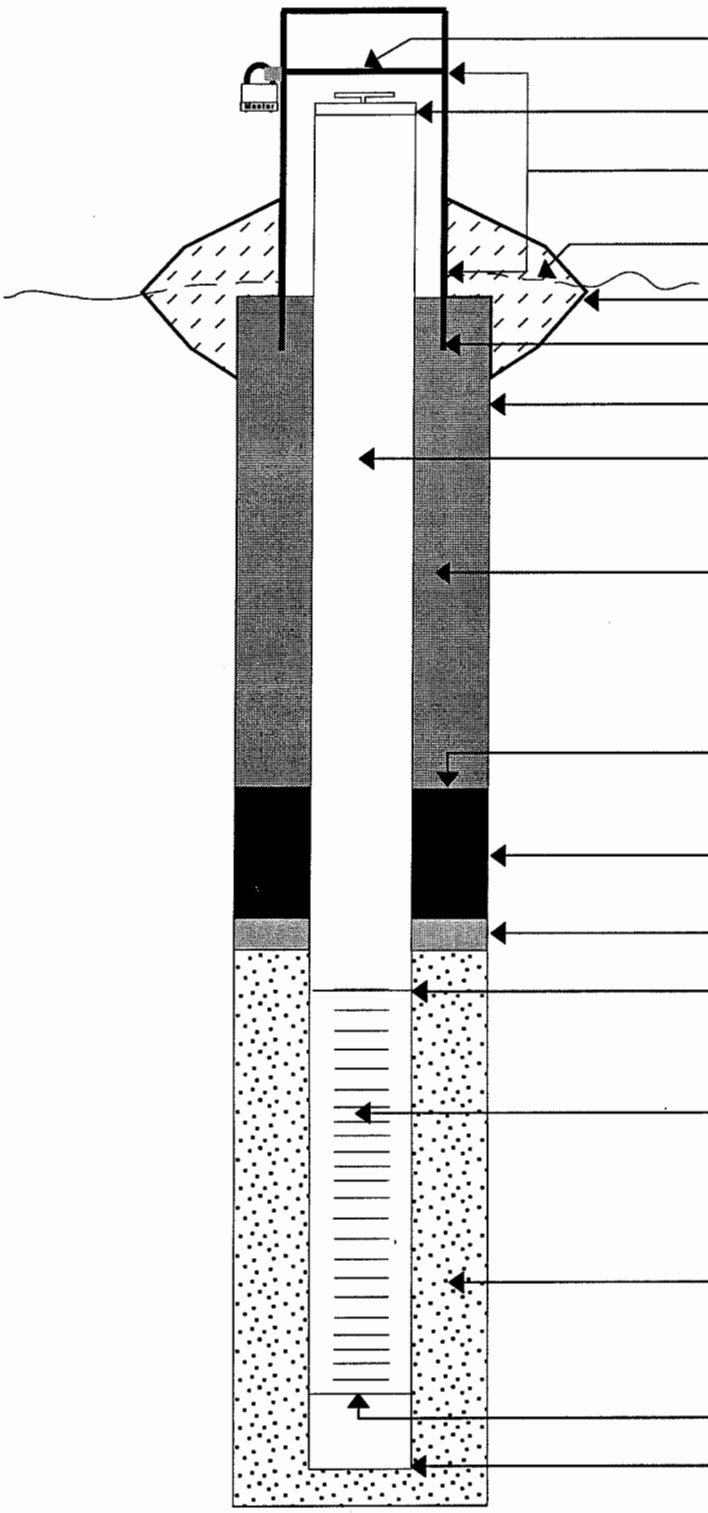
Elevation/Depth Bottom of Screen: 639.60

Elevation/Depth Bottom of Hole: 639.10

ALL ELEVATIONS RELATIVE TO MSL

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/11/93	**WELL NAME**	MW-47



Elevation of Top of Surface casing: 628.54'

Elevation Top of Riser: 628.06'

Length of Exposed Guardpipe: 3.24'

Elevation of Ground Surface: 625.30'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 624.65'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 621.80'

Type of Screen: PVC

Slot Size x Length: .010" X 1.5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

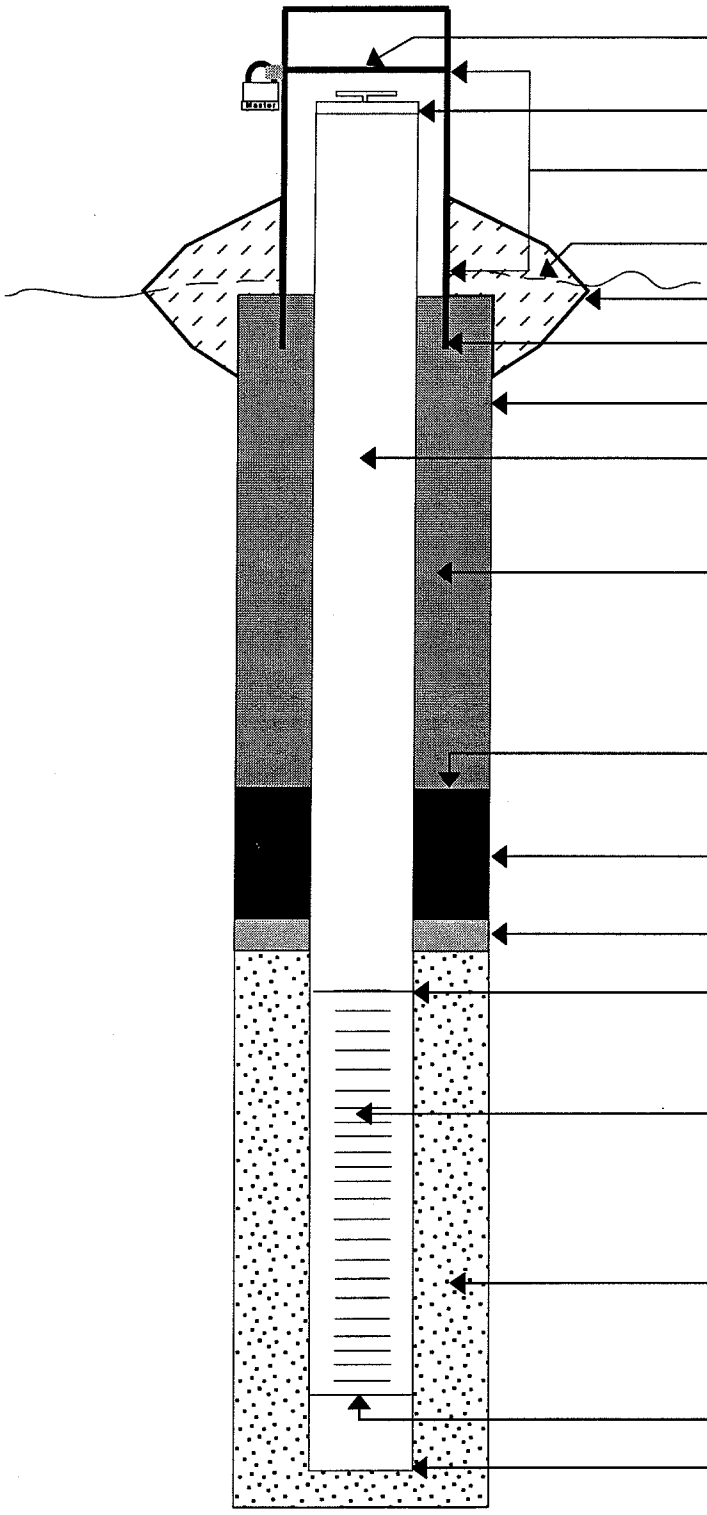
Elevation/Depth Bottom of Screen: 620.30

Elevation/Depth Bottom of Hole: 619.80

ALL ELEVATIONS RELATIVE TO MSL

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/4/93	**WELL NAME**	MW-48



Elevation of Top of Surface casing: 648.57'

Elevation Top of Riser: 648.32'

Length of Exposed Guardpipe: 2.57'

Elevation of Ground Surface: 646.00'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 643.50'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 642.50'

Type of Screen: PVC

Slot Size x Length: .010" X 5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

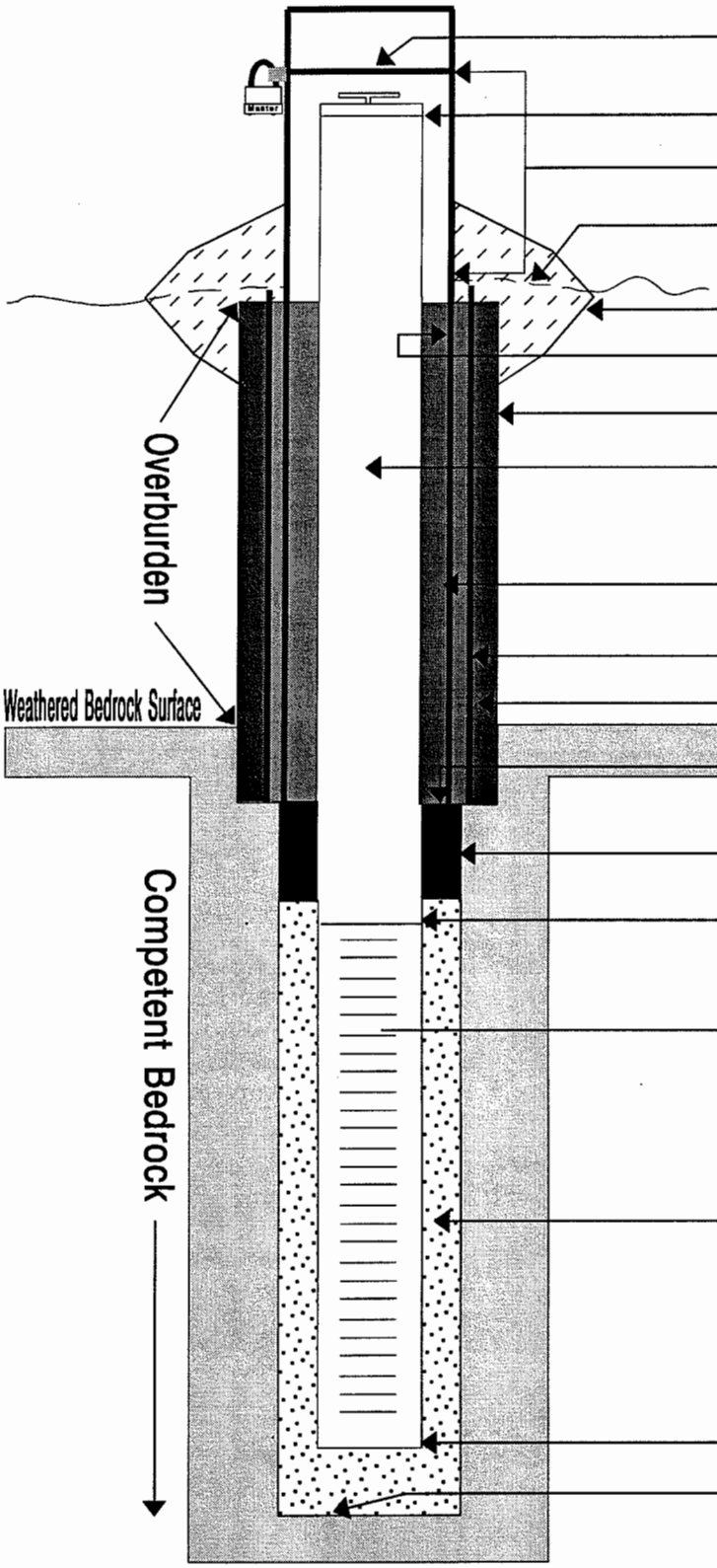
Elevation/Depth Bottom of Screen: 637.50'

Elevation/Depth Bottom of Hole: 637.00'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	AMERICAN AUGER
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA
DATE	5-5-93	WELL NAME	MW-49D



Elev.(Top of Surface casing): 650.64'

Elevation Top of Riser: 650.50'

Length of Exposed Guardpipe: 2.49'

Elevation/Ground Surface: 648.20'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 6"

Diameter of Hole: 10"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Steel I.D. (Surface to Bedrock): 6"

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 639.20'

Type of Seal: BENTONITE CHIPS

Elevation/Depth Top of Screen: 632.70'

Type of Screen: PVC

Slot Size x Length: .010" X 19

I.D. Screen: 2"

Type of Sand Pack: COARSE

Diameter of Hole in Bedrock:
Core/Rock: 4"

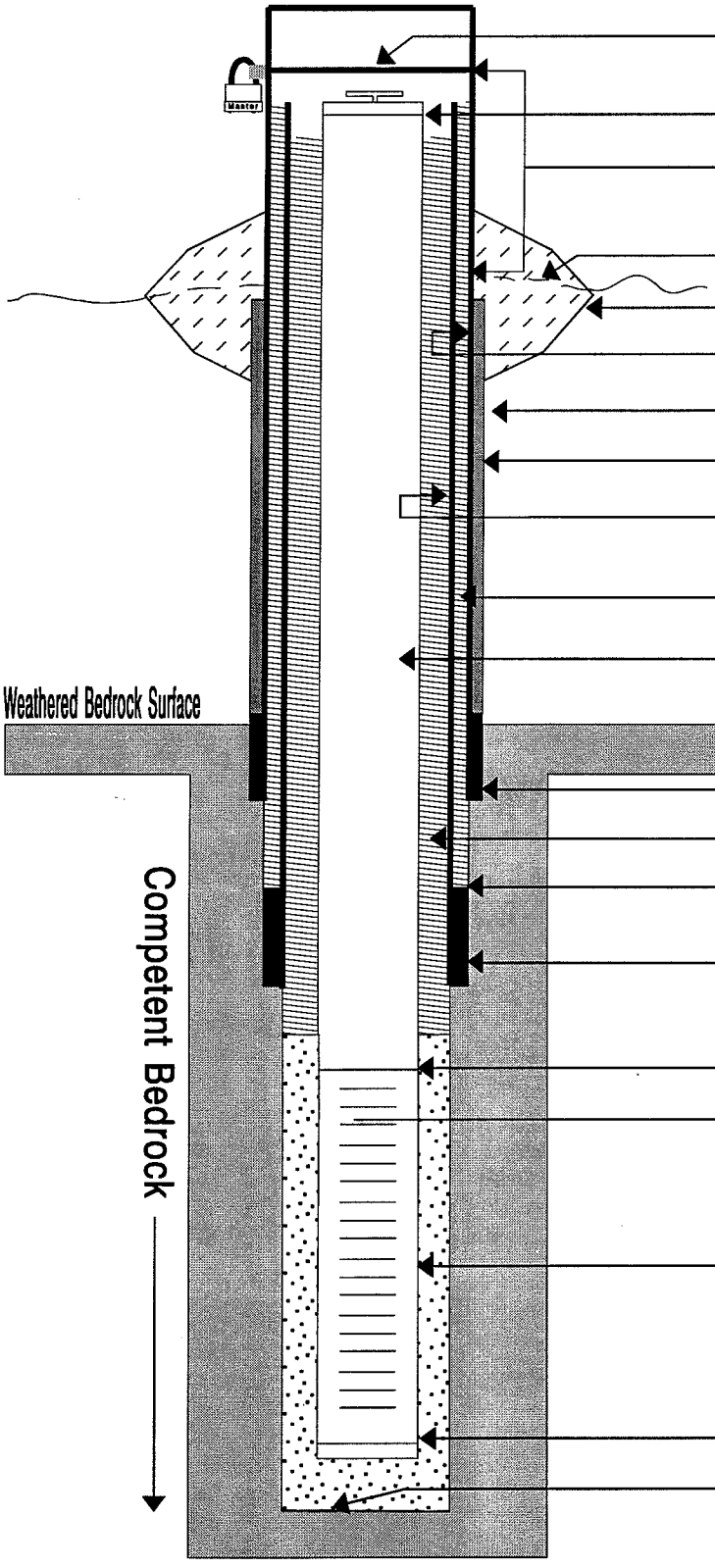
Elevation/Bottom of Screen: 613.70'

Elevation/Bottom of Hole: 612.70'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	MAHER ENVIRONMENTAL
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA AND CORING
DATE	26 MAY 1993	WELL NAME	MW-50D



Elev.(Top of Surface casing): 650.27'

Elevation Top of Riser: 649.88'

Length of Exposed Casing: 2.78'

Elevation of Ground Surface: 648.10'

Type of Surface Seal: CEMENT

I.D. of Surface Guardpipe: 6" (STEEL)

Diameter of Outermost Hole: 10.5"

Type of Grout: CEMENT/BENTONITE

I.D. of Inner Casing: 4"

Type of Casing: STEEL

Type of Grout: VOLCLAY GROUT

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Seal: BENTONITE PELLETS

Type of Seal: VOLCLAY GROUT

Elevation/Depth Top of Seal: 614.60'

Type of Seal: BENTONITE PELLETS

Elevation/Depth Top of Screen: 610.30'

Type of Screen: PVC

Slot Size x Length: 0.010 X 19.40'

I.D. Screen: 2"

Type of Sand Pack: SILICA SAND

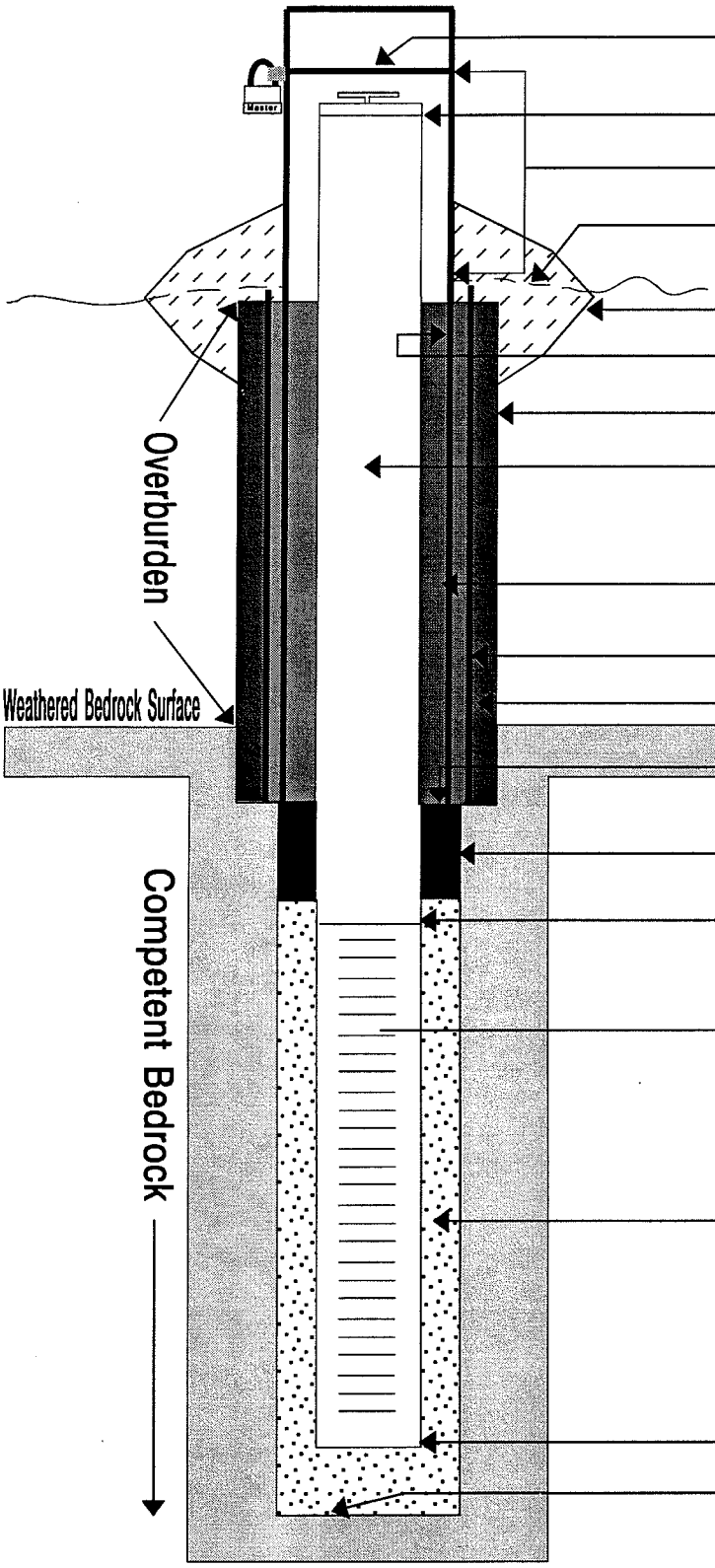
Diameter of Hole in Bedrock: 3.78"

Elevation/Bottom of Screen: 590.90'

Elevation/Bottom of Hole: 590.30'

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	AMERICAN AUGER
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA
DATE	5-10-93	WELL NAME	MW-51D



Elev.(Top of Surface casing): 628.64'

Elevation Top of Riser: 628.24'

Length of Exposed Guardpipe: 3.04'

Elevation/Ground Surface: 625.60'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 6"

Diameter of Hole: 10"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Steel I.D. (Surface to Bedrock): 6"

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 619.10'

Type of Seal: BENTONITE CHIPS

Elevation/Depth Top of Screen: 612.30'

Type of Screen: PVC

Slot Size x Length: .010" X 19

I.D. Screen: 2"

Type of Sand Pack: COARSE

Diameter of Hole in Bedrock:
Core/Rock: 4"

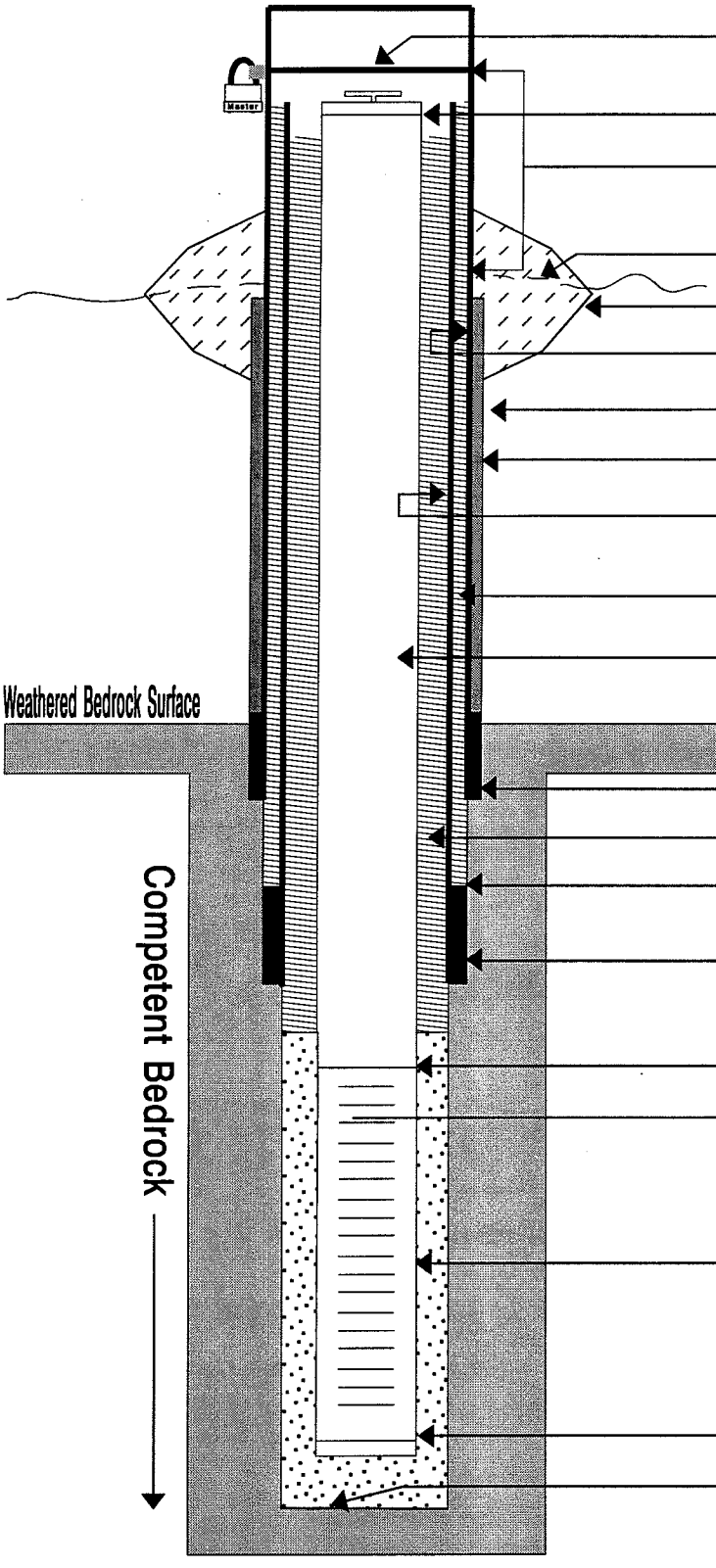
Elevation/Bottom of Screen: 593.30'

Elevation/Bottom of Hole: 592.30'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	MAHER ENVIRONMENTAL
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA AND CORING
DATE	8 JUNE 1993	WELL NAME	MW-52D



Elev.(Top of Surface casing): 626.70'

Elevation Top of Riser: 626.35'

Length of Exposed Casing: 1.40'

Elevation of Ground Surface: 625.30'

Type of Surface Seal: CEMENT

I.D. of Surface Guardpipe: 6" (STEEL)

Diameter of Outermost Hole: 10.5"

Type of Grout: CEMENT/BENTONITE

I.D. of Inner Casing: 4"

Type of Casing: STEEL

Type of Grout: VOLCLAY GROUT

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Seal: BENTONITE PELLETS

Type of Seal: VOLCLAY GROUT

Elevation/Depth Top of Seal: 593.10'

Type of Seal: BENTONITE PELLETS

Elevation/Depth Top of Screen: 588.80'

Type of Screen: PVC

Slot Size x Length: 0.010 X 19.4'

I.D. Screen: 2"

Type of Sand Pack: SILICA SAND

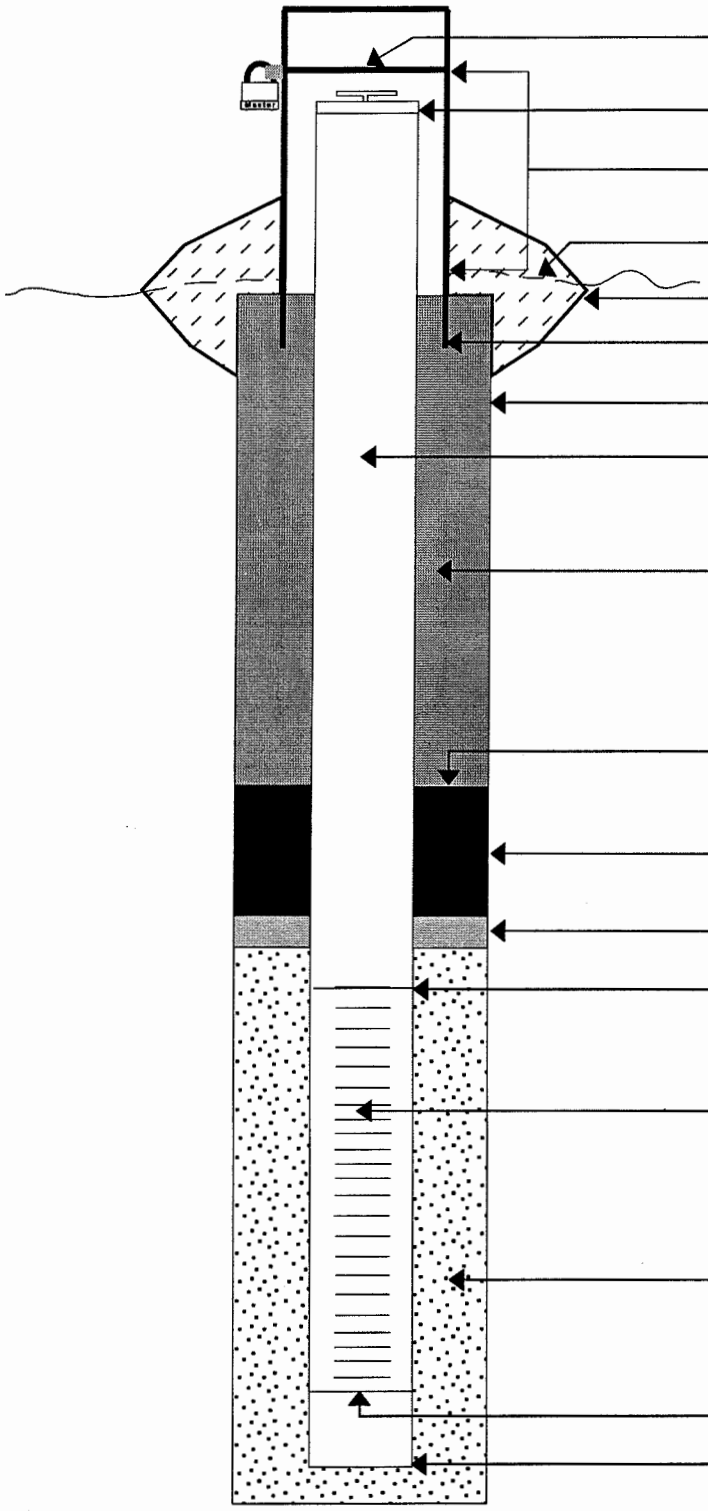
Diameter of Hole in Bedrock: 3.78"

Elevation/Bottom of Screen: 569.40'

Elevation/Bottom of Hole: 568.60'

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/6/93	**WELL NAME**	MW-53



Elevation of Top of Surface casing: 639.63'

Elevation Top of Riser: 639.41'

Length of Exposed Guardpipe: 2.13'

Elevation of Ground Surface: 637.00'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 635.50'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 633.00'

Type of Screen: PVC

Slot Size x Length: .010" X 4'

I.D. Screen: 2"

Type of Sand Pack: COARSE

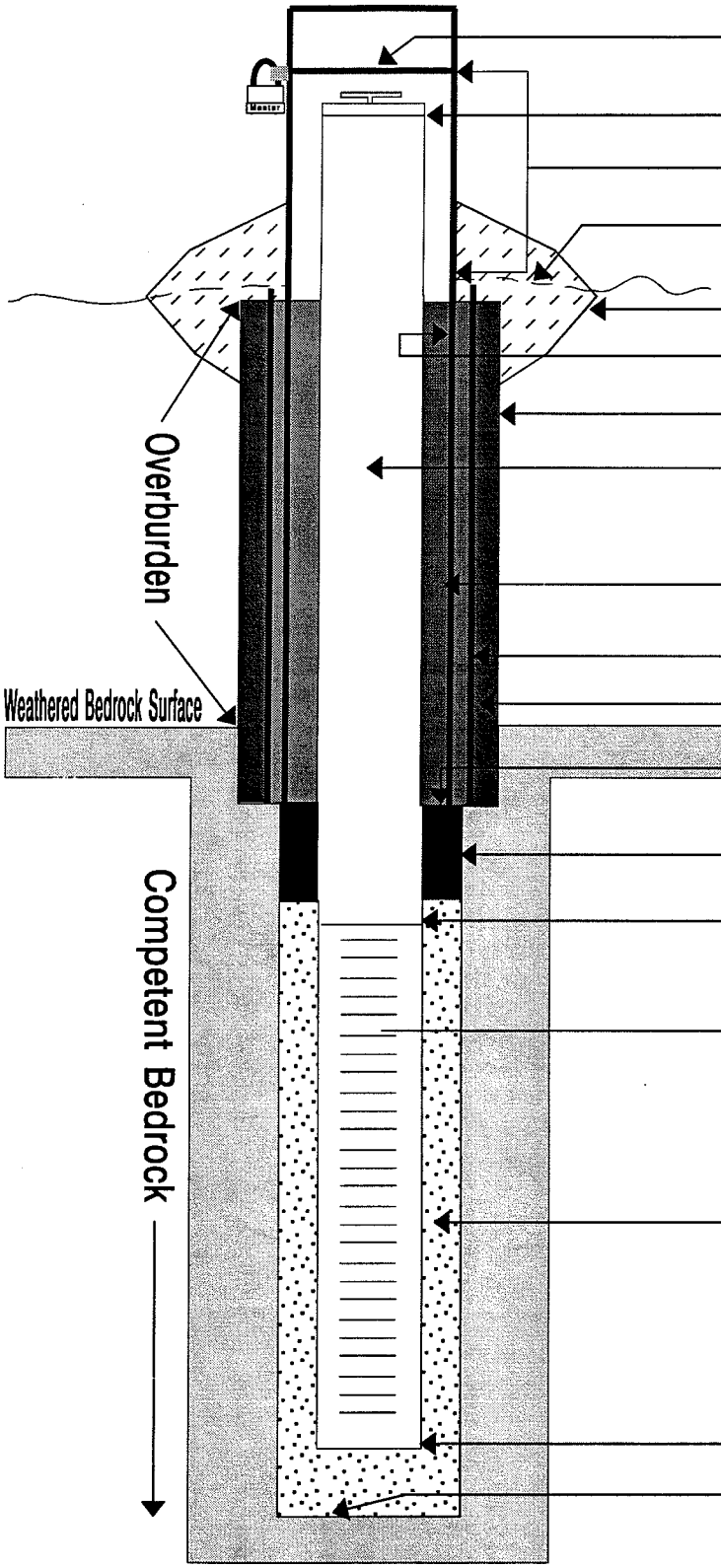
Elevation/Depth Bottom of Screen: 629.00'

Elevation/Depth Bottom of Hole: 629.50'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	AMERICAN AUGER
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA
DATE	5-18-93	WELL NAME	MW-54D



Elev.(Top of Surface casing): 639.34'

Elevation Top of Riser: 639.00'

Length of Exposed Guardpipe: 2.44'

Elevation/Ground Surface: 636.90'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 6"

Diameter of Hole: 10"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Steel I.D. (Surface to Bedrock): 6"

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 629.90'

Type of Seal: BENTONITE CHIPS

Elevation/Depth Top of Screen: 623.60'

Type of Screen: PVC

Slot Size x Length: .010" X 19

I.D. Screen: 2"

Type of Sand Pack: COARSE

Diameter of Hole in Bedrock:
Core/Rock: 4"

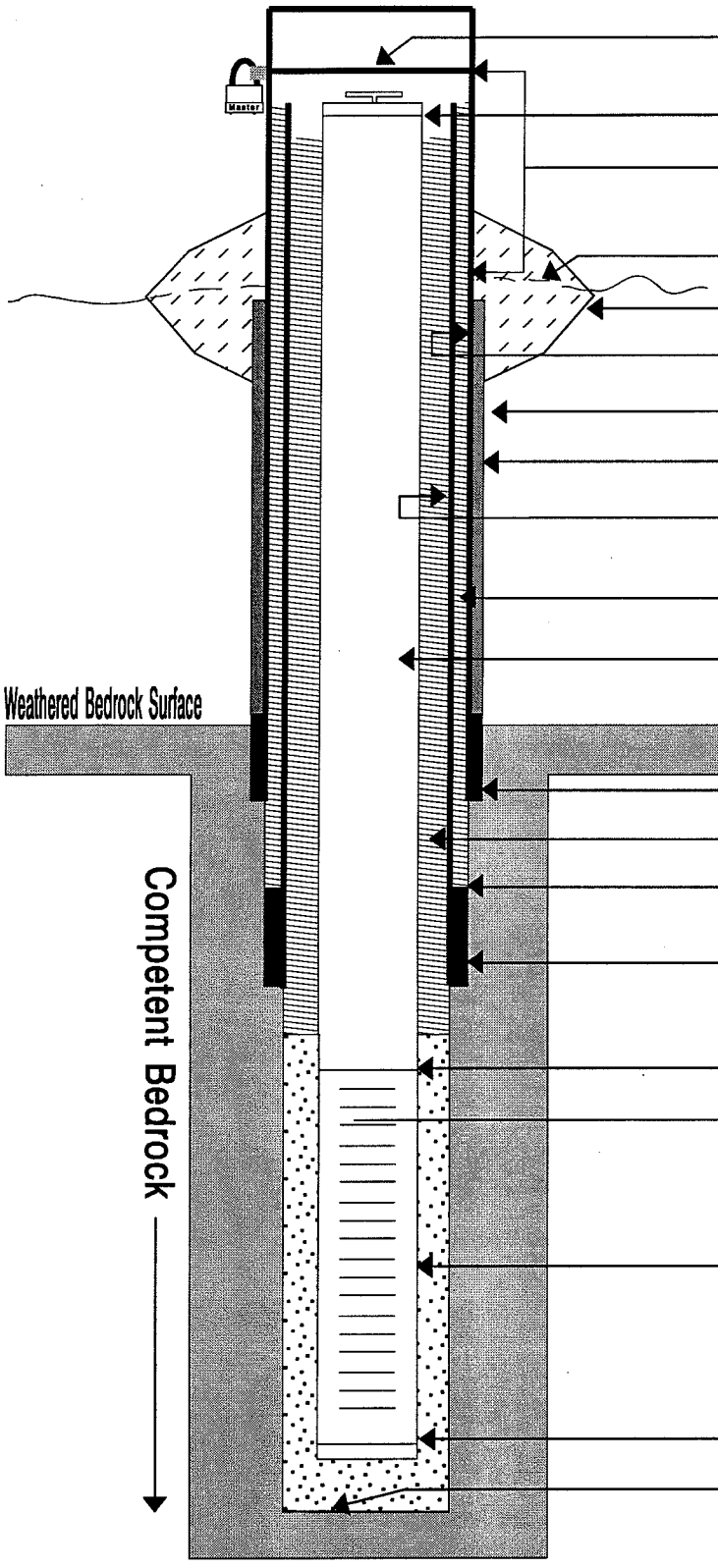
Elevation/Bottom of Screen: 588.10'

Elevation/Bottom of Hole: 587.10'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	MAHER ENVIRONMENTAL
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA AND CORING
DATE	2 JUNE 1993	WELL NAME	MW-55D



Elev.(Top of Surface casing): 639.43'

Elevation Top of Riser: 639.16'

Length of Exposed Casing: 2.63'

Elevation of Ground Surface: 636.80'

Type of Surface Seal: CEMENT

I.D. of Surface Guardpipe: 6" (STEEL)

Diameter of Outermost Hole: 10.5"

Type of Grout: CEMENT/BENTONITE

I.D. of Inner Casing: 4"

Type of Casing: STEEL

Type of Grout: VOLCLAY GROUT

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Seal: BENTONITE PELLETS

Type of Seal: VOLCLAY GROUT

Elevation/Depth Top of Seal: 603.20'

Type of Seal: BENTONITE PELLETS

Elevation/Depth Top of Screen: 601.20'

Type of Screen: PVC

Slot Size x Length: 0.010 X 20'

I.D. Screen: 2"

Type of Sand Pack: SILICA SAND

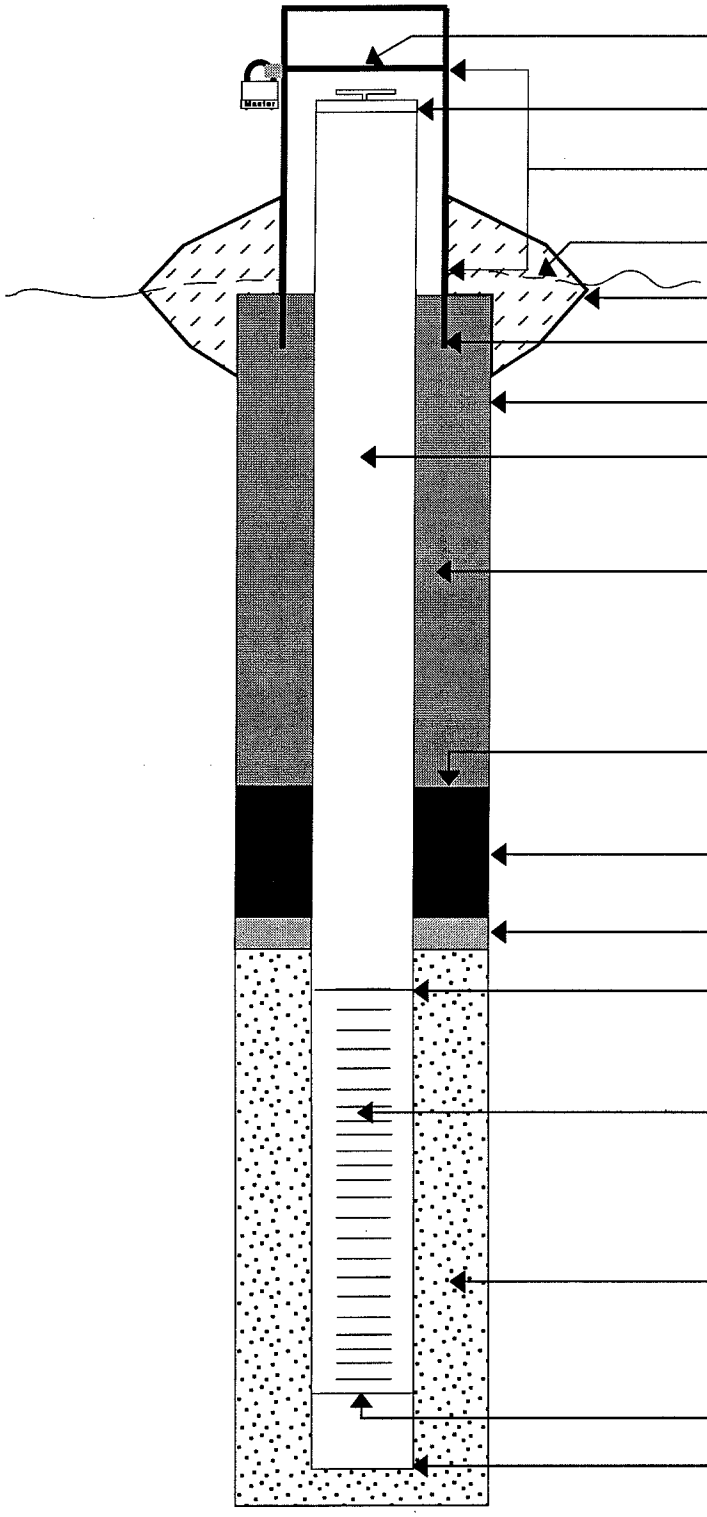
Diameter of Hole in Bedrock: 3.78"

Elevation/Bottom of Screen: 581.20'

Elevation/Bottom of Hole: 580.90'

OVERBURDEN MONITORING WELL

PROJECT	SENECA ARMY DEPOT	**DRILLER**	AMERICAN AUGER
LOCATION	ASH LANDFILL	**DRILLING METHOD**	HSA
DATE	5/11/93	**WELL NAME**	MW-56



Elevation of Top of Surface casing: 630.69'

Elevation Top of Riser: 630.51'

Length of Exposed Guardpipe: 2.79'

Elevation of Ground Surface: 627.90'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 4"

Diameter of Hole: 4.25"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 627.22'

Type of Seal: BENTONITE CHIPS

Type of Sandpack: FINE

Elevation/Depth Top of Screen: 625.70'

Type of Screen: PVC

Slot Size x Length: .010" X 1.5'

I.D. Screen: 2"

Type of Sand Pack: COARSE

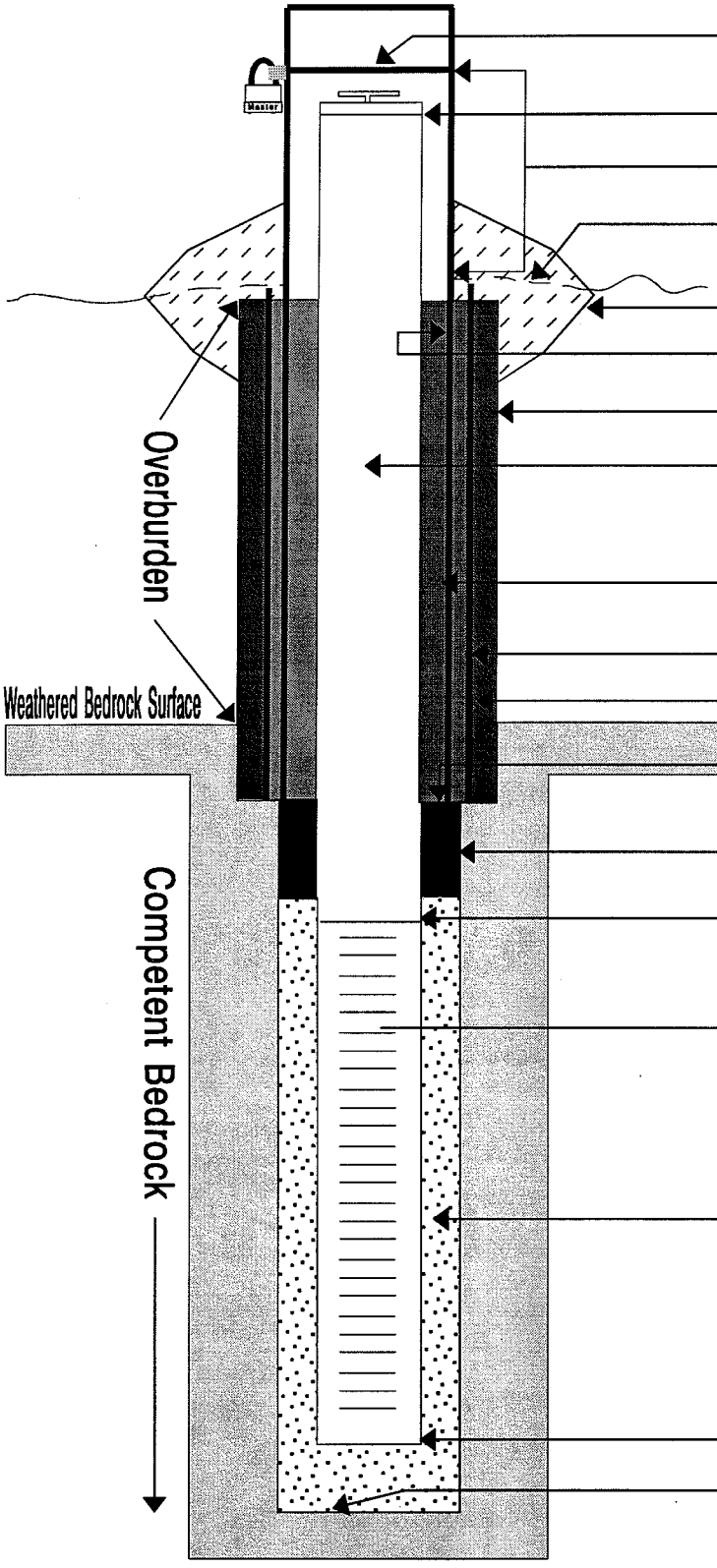
Elevation/Depth Bottom of Screen: 624.20'

Elevation/Depth Bottom of Hole: 623.70'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	AMERICAN AUGER
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA
DATE	5-18-93	WELL NAME	MW-57D



Elev.(Top of Surface casing): 630.27'

Elevation Top of Riser: 629.82'

Length of Exposed Guardpipe: 2.27'

Elevation/Ground Surface: 628.00'

Type of Surface Seal: PORTLAND CEMENT COLLAR

I.D. of Surface Guardpipe: 6"

Diameter of Hole: 10"

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Grout: PORTLAND/BENTONITE

Steel I.D. (Surface to Bedrock): 6"

Type of Grout: PORTLAND/BENTONITE

Elevation/Depth Top of Seal: 621.00'

Type of Seal: BENTONITE CHIPS

Elevation/Depth Top of Screen: 615.70'

Type of Screen: PVC

Slot Size x Length: .010" X 19

I.D. Screen: 2"

Type of Sand Pack: COARSE

Diameter of Hole in Bedrock:
Core/Rock: 4"

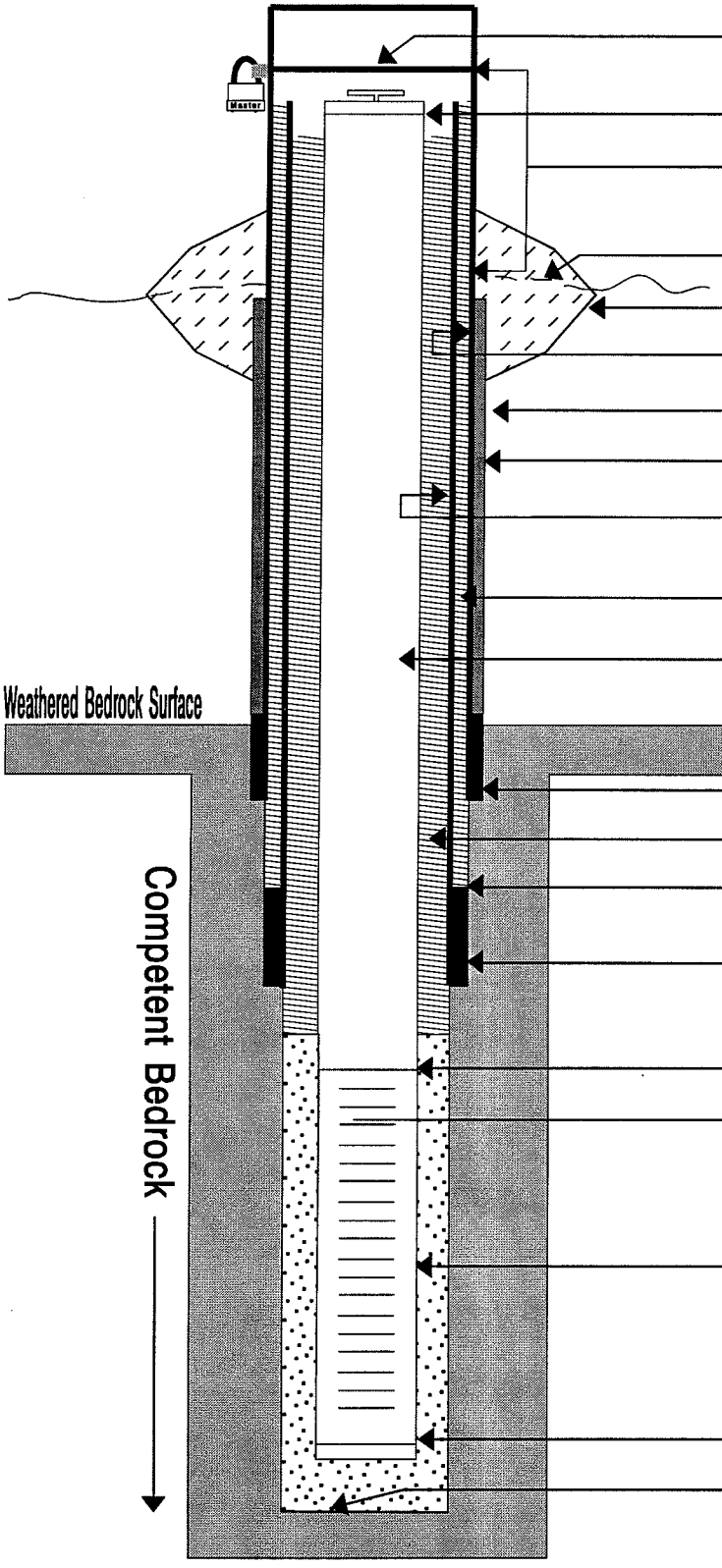
Elevation/Bottom of Screen: 596.70'

Elevation/Bottom of Hole: 595.70'

ALL ELEVATIONS RELATIVE TO MSL

BEDROCK MONITORING WELL

PROJECT	SENECA ARMY DEPOT	DRILLER	MAHER ENVIRONMENTAL
LOCATION	ASH LANDFILL	DRILLING METHOD	HSA AND CORING
DATE	4 JUNE 1993	WELL NAME	MW-58D



Elev.(Top of Surface casing): 629.86'

Elevation Top of Riser: 629.69'

Length of Exposed Casing: 2.16'

Elevation of Ground Surface: 627.70'

Type of Surface Seal: CEMENT

I.D. of Surface Guardpipe: 6" (STEEL)

Diameter of Outermost Hole: 10.5"

Type of Grout: CEMENT/BENTONITE

I.D. of Inner Casing: 4"

Type of Casing: STEEL

Type of Grout: VOLCLAY GROUT

Riser Pipe I.D.: 2"

Type of Riser Pipe: PVC

Type of Seal: BENTONITE PELLETS

Type of Seal: VOLCLAY GROUT

Elevation/Depth Top of Seal: 594.40'

Type of Seal: BENTONITE PELLETS

Elevation/Depth Top of Screen: 592.41

Type of Screen: PVC

Slot Size x Length: 0.010 X 19.36'

I.D. Screen: 2"

Type of Sand Pack: SILICA SAND

Diameter of Hole in Bedrock: 3.78"

Elevation/Bottom of Screen: 573.05'

Elevation/Bottom of Hole: 572.40'

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11-7-06

Dan Lipp (DDL)

1430 SJB on site
Ben gave H+S talk

1530 set up on MW-27
MW-27 is within Biowall
No SS sampling

Top of Rock (TOR) @ 11' bgs

well should have
been at 11.5', pulling
augers will reset
well tomorrow

1700 off site

11-8-06

0700 on site with SJB moving MW-27 4' to the South

MW-27 TOR @ 10'
drilled to 10.5' and set well

MW-27 GS

Chips TO GS

Sand TO 3.5'
- 5.5 screen
- 10' TOR
- 10.5 TD

0850 drillers on stand-by Ben said ~~to~~ stop work while he talks to the office

1020 drillers off stand-by

11-8-06

1025
MW-26 set up

SS-1 HB = ~~20~~ 4, 15, 15
0-2' 20
Black sand & silt some fine gravel (Top Soil)
(dry) no odor

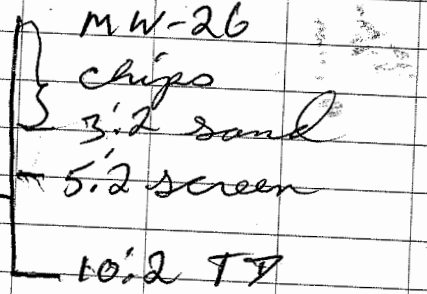
SS-2 HB = 14 ~~/~~ 13
2-4' 15, 14, 14, 13
same as above
(dry) no odor

SS-3 HB 50/1
4-5.6' refusal @ 5.6'
Brown hard packed sand, some fine gravel
(dry) no odor
TOR 5.6'

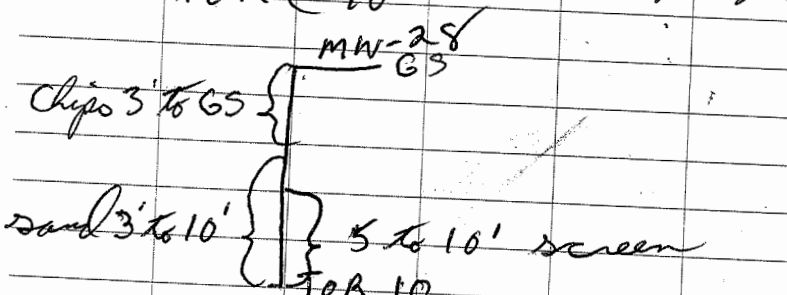
(4) DZ

11-8-06

MW-26 augering to 10'



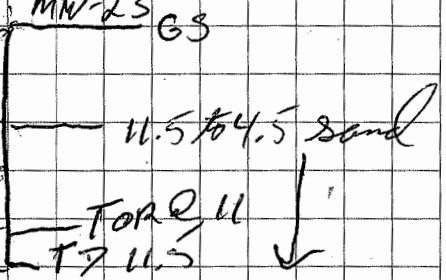
1228 set up on MW-28
MW-28 is within the Boxwall NO SS sampling
TOR @ 10'



11-8-06

DZ (5)

1414 set up on MW-23
MW-23 is within the Boxwall NO SS sampling
TOR @ 11' augered to 11.5'



1540 set up on MW-29

MW-29 HS 5, 6 8-14
SS-1
0-2'
Black sand & silt, (Top Soil)
some fine gravel
(dry) no odor

(6) 11-8-6

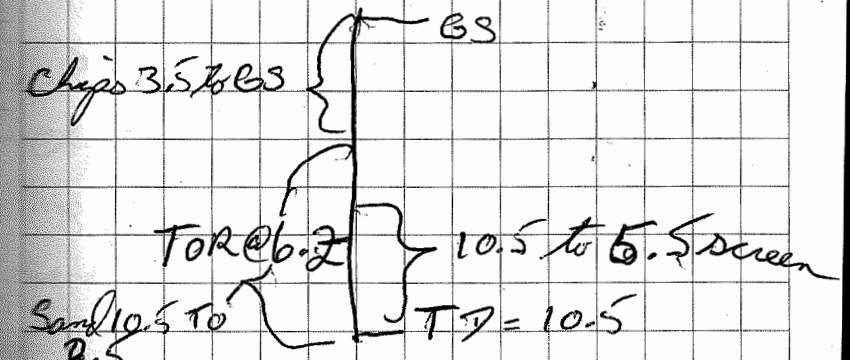
MW-29 HB = 12, 13, 14, 15
SS-2
2-4'
Brow sand and silt some red clay, some fine gravel (dry) no odor

SS-3 HB = 5, 5, 6, 5
4-6'
Gray clay and silt, little fine gravel (dry) no odor

SS-4 HB = 50/2
6-8'
only 2" of recovery shale & gravel (wet) no odor
TOR 6.2
augering to 10.5'

11-8-6 (7)

MW-29



1740 finished MW-29
off site

(8) DJZ 11-9-06

0700 on site with SJB set up on MW-25

MW-25

SS-1 HS=WH, 2, 4, 8
0-2'
(Top Soil) Black sand & silt some fine gravel (moist) (no odor)

SS-2 HS= 7, 14, 14, 15
2-4'
same as above (dry) no odor

SS-3 HS-7, 13, 11, 10
2-6'
same as above (dry) (no odor)

SS-4 18 50/4
6-8
5" of recovery dry gravel TOR @ 6.8'

11-9-06

MW-24 augering down to 10'

MW-25 GS
chips 3' to GS
sand 10 to 3'
screen 10' to 5'
TOR 6.8
TD 10'

0928 set up on PT-18A

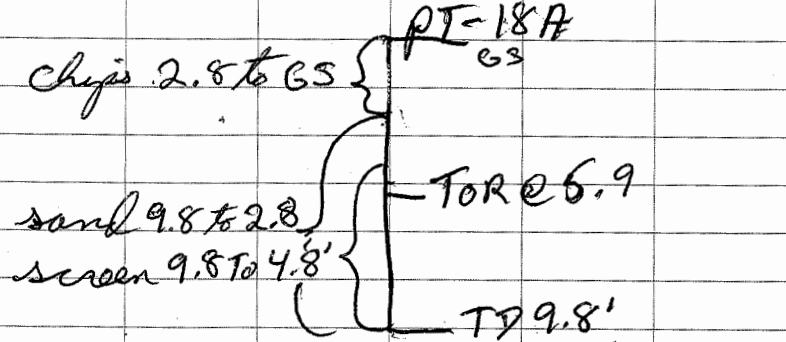
SS-1
PT-18A
0-2' HS = WOH, 2, 3, 3
Black fine sand & silt (Top Soil) some gravel (moist) no odor

SS-2 HS 11, 5, 5 3
2-4'
same as above (dry) no odor

(10) TJT 11-9-06

PT-18A
SS-3 HB 5, 7, 15, 50/4
4'-6'

Hard packed gray silt & clay, some gravel (dry) no odor
TOR@ 5.9'



1050 set up on MW-24

MW-24
SS-1 HB 2, 3, 3, 4
0-2

(Top Soil) fine black sand & silt moist (no odor)

TJT 7.9 (11)

11-9-06

MW-24
SS-2 HB = 6, 13, 15, 17
2-4'

2 to 3' same as above
3 to 4' gray gravel & shale
(dry) no odor

SS-3 HB 11, 8, 9, 8
4-6'

Black & brown fine sand, some silt some gravel
(dry) no odor

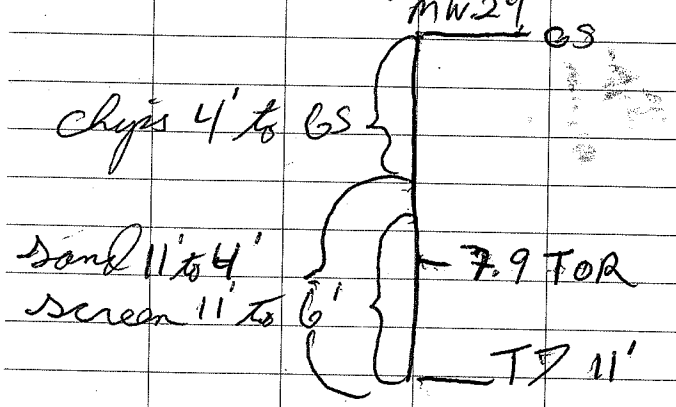
SS-4 HB 13, 15, 38, 50/1
6-8'

Gray silt and gravel
2' of recovery
TOR@ 7.9
augering to 11'

(12)

11-9-06

MW-24



1300 installing protective bollards around wells

1730 off site

(13)

11-10-06

0700 on site, wet, S&B installing forms (pods) and protective casing around all wells

installed pads and protective casing around all well

1400 off site

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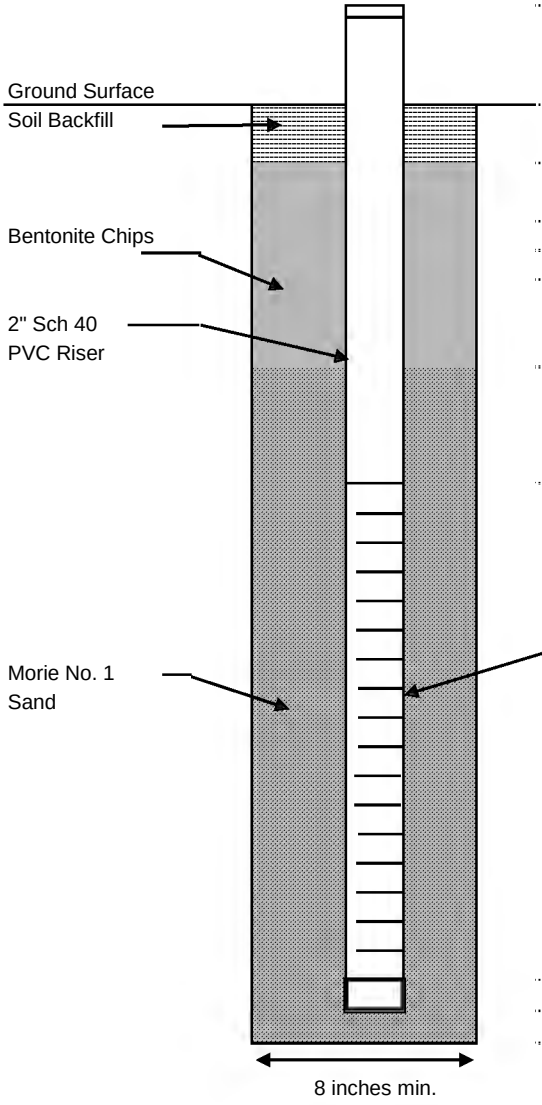
Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	Ash Landfill - Biowall	**Drilling Contractor:**	Geologic Drilling, Inc.
Well Number:	MWT-17R	**Date Started:**	8/22/2005
Geologist:	McAllister	**Date Completed:**	8/22/2005

Surface completion: Temporary



	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of PVC Riser	+	2.3
Ground Surface		0.0
Soil Backfill	-	1.50 - 0.0
Top of Bentonite Chips	-	1.50
Top of Morie No. 01 Sand	-	2.50
Top of Screen	-	3.50
2" Dia., 10 slot, PVC wire wrap	-	4.80 - 9.80
Bottom of screen	-	9.80
Bottom of Sump	-	see Note 1
Bottom of Borehole	-	10.0

Not to scale

Notes:
(1) 6 inch end cap installed at bottom of well screen.

Measured length of casing and screen prior to installation is 15.5 (before the well casing was cut to 2.30

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-11

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OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW11-1

PROJECT: 10 SWMU - | PROJECT NO:
LOCATION: SEAD-11 | INSPECTOR: ES/LB
CHECKED BY:

DRILLING CONTRACTOR: Empire | POW DEPTH: 14.2'
DRILLER: Alan | INSTALLATION STARTED: 11/3/93
DRILLING COMPLETED: 11/3/93 | INSTALLATION COMPLETED: 11/3/93
BORING DEPTH: 14.2' | SURFACE COMPLETION DATE: 11/3/93
DRILLING METHOD(S): HSA | COMPLETION CONTRACTOR/CREW: Empire
BORING DIAMETER(S): 8½" | BEDROCK CONFIRMED (Y/N?)
ASSOCIATED SWMU/AOC: | ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" Steel | LENGTH: 5'

RISER:
TR: | TYPE: PVC-40 | DIAMETER: 2" | LENGTH:

SCREEN:
TSC: 6.1' | TYPE: PVC-40 | DIAMETER: 2" | LENGTH: 7' | SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point | BSC: 13.5' | POW: 14.2' | 0.5 sump

GROUT:
TG: 0.0 | TYPE: Cem-Bent Grout | LENGTH: 3.0

SEAL: TBS: 3.6' | TYPE: Portland | LENGTH: 1.0

SAND PACK: TSP: 4.6' | TYPE: #3 Silica #1 Silica | LENGTH: 0

SURFACE COLLAR:
TYPE: Grout | RADIUS: 2.0' | THICKNESS CENTER: ' | THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: — | DEPTH 2: — | DEPTH 3: | DEPTH 4:

COMMENTS:

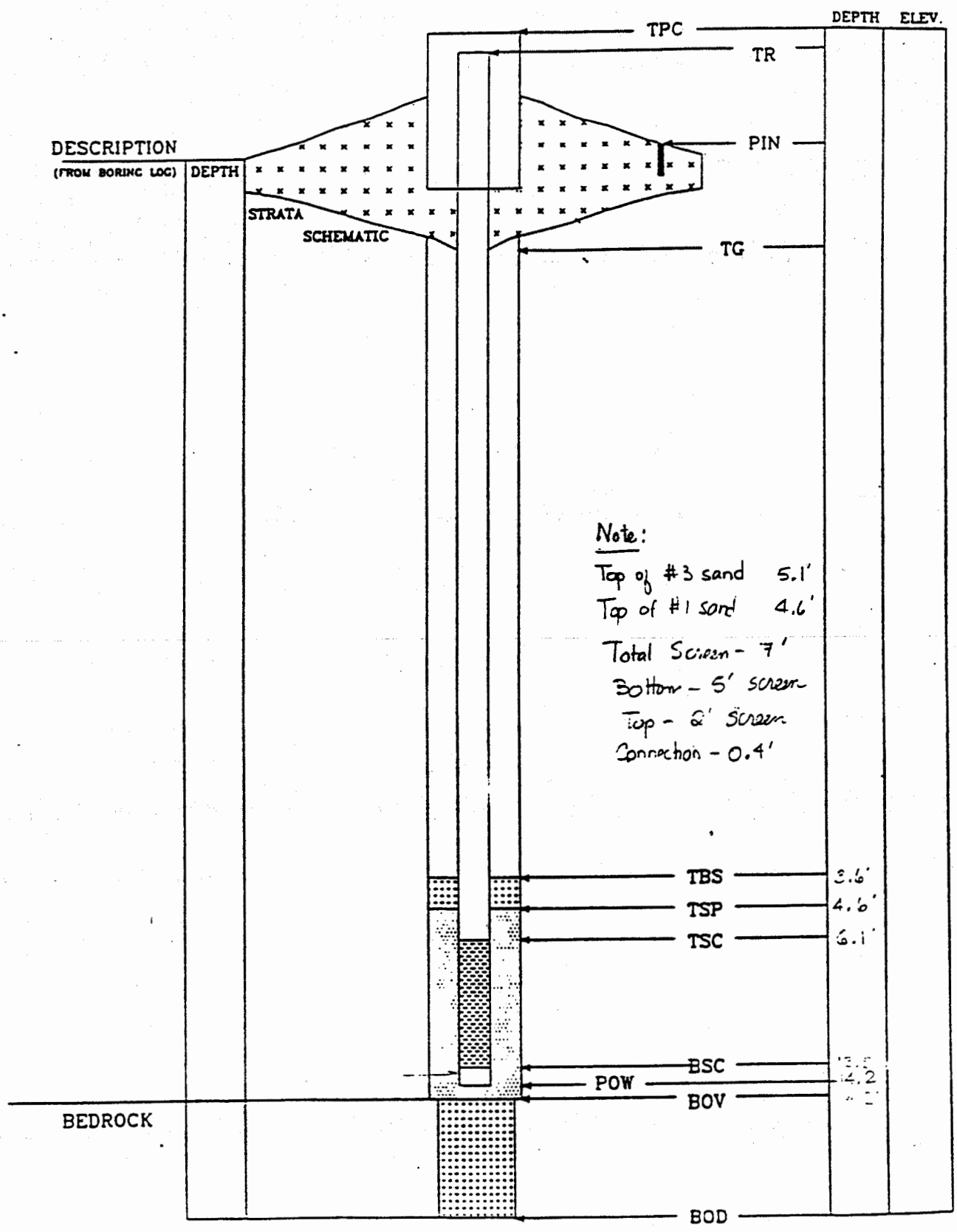
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW11-1

DATE: _____



depths measured from ground surface.

• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW11-2

PROJECT: 10 SWMU
LOCATION: SEAD 11

PROJECT NO:
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: John W.
DRILLING COMPLETED: 11/16/93
BORING DEPTH: 8.5'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 11

POW DEPTH: 8.5'
INSTALLATION STARTED: 11/16/93
INSTALLATION COMPLETED: 11/16/93
SURFACE COMPLETION DATE: 11/16/93
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 34 TYPE: PVC-40 DIAMETER: 1 1/2" LENGTH: 4' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 7.4 POW: 8.5'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 1.8'

SEAL: TBS: 1.8' TYPE: bentonite pellets LENGTH: 0.6'

SAND PACK: TSP: 2.4 TYPE: #3 + #1 LENGTH: 6.7'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

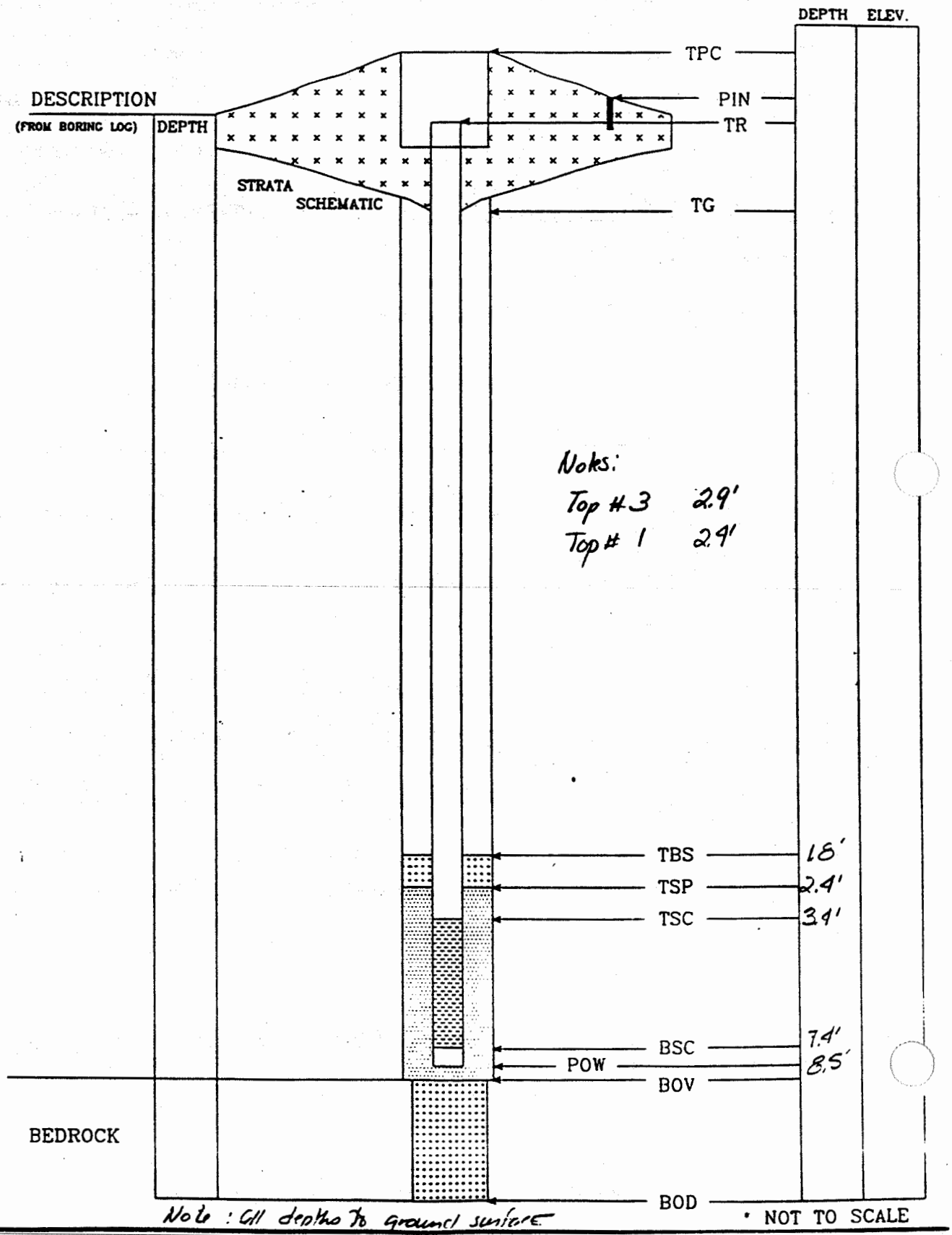
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC.	CLIENT: ACOE	WELL #: MW11-2

DATE 11/16/93



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: | WELL #: MW-11-3

PROJECT: 10-SWMU
LOCATION: SEAD-11
PROJECT NO:
INSPECTOR: ES/LB
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Al
DRILLING COMPLETED: 11/4/93
BORING DEPTH: 9.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 11
POW DEPTH: 9.0'
INSTALLATION STARTED: 11/4/93
INSTALLATION COMPLETED: 11/5/93
SURFACE COMPLETION DATE: 11/5/93
COMPLETION CONTRACTOR/CREW:
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH: 4'- total length

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 3.9' TYPE: PVC-40 DIAMETER: 2" LENGTH: 4.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 7.9' POW: 9.0' 1.1' btw. POW and BSC.

GROUT:
TG: NA TYPE: LENGTH:

SEAL: TBS: near surface TYPE: bentonite pellets LENGTH: 2.4'

SAND PACK: TSP: 2.4'→#1 2.9 #3 TYPE: #3 and #1 LENGTH: 6.6'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:
Well screen is 4.0'
Depth to POW from BSC 1.1' } not change

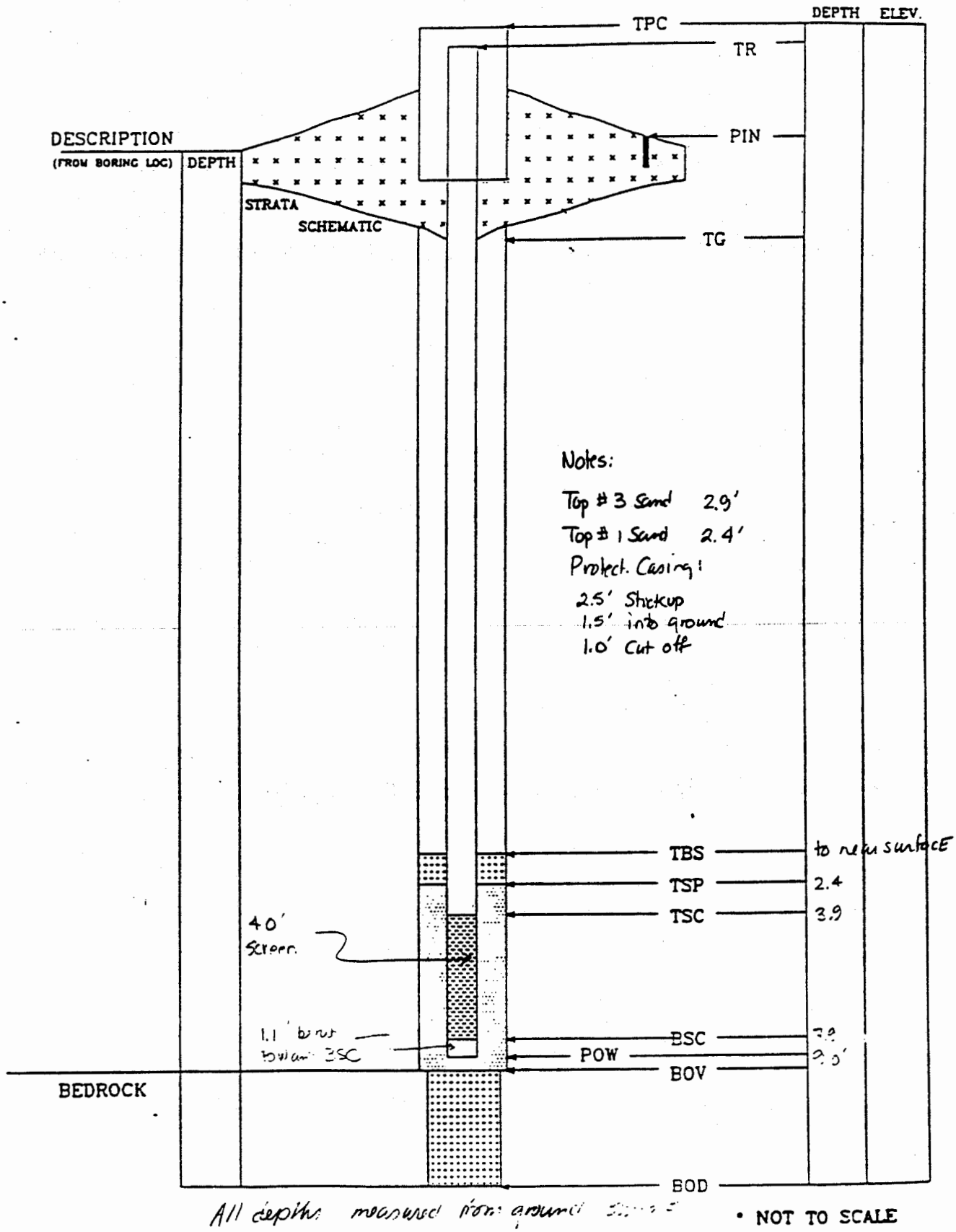
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: | WELL #: MW11-3

DATE: _____



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: | WELL #: MW11-4

PROJECT: 10 SWMU
LOCATION: SEAD-11
PROJECT NO:
INSPECTOR: E/S / LB
CHECKED BY:

DRILLING CONTRACTOR: EMPIRE
DRILLER: AL
DRILLING COMPLETED: 11/4/93
BORING DEPTH: 10.5'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2"
ASSOCIATED SWMU/AOC: 11
POW DEPTH: 10.5'
INSTALLATION STARTED: 11/4/93
INSTALLATION COMPLETED:
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH: 2.9' Stickup

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH: 2.5'

SCREEN:
TSC: 4.8' TYPE: PVC-40 DIAMETER: 2" LENGTH: 5.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 9.8' POW: 10.5' 0.5' point

GROUT:
TG: 0.0 TYPE: Cem-bentonite LENGTH: 2.8'

SEAL: TBS: 2.8' TYPE: bentonite pellets LENGTH: 0.5'

SAND PACK: TSP: 3.3' TYPE: #3 and #1 LENGTH: 7.2

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: — DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

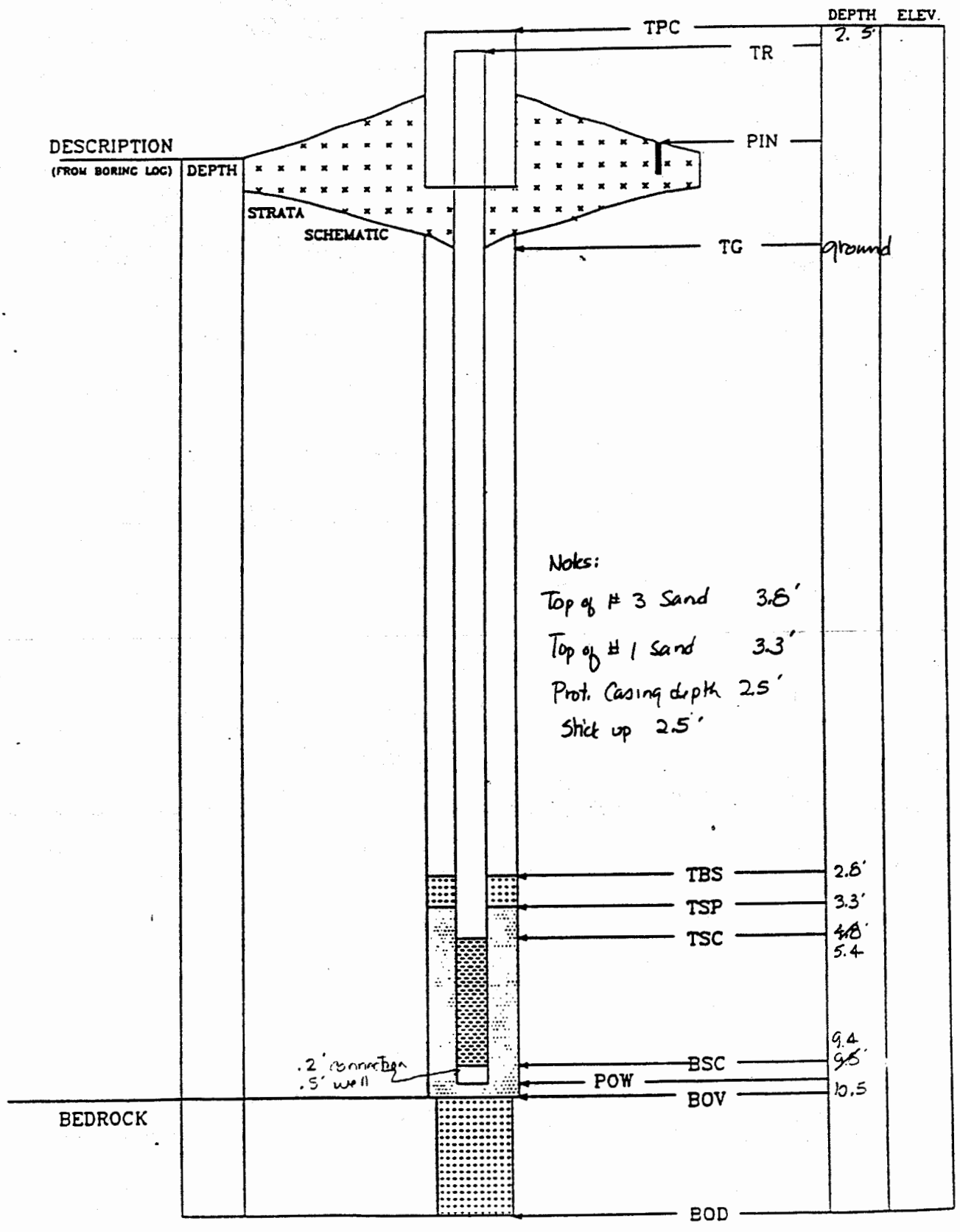
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW11-4

DATE: _____



depths measured from ground surface

• NOT TO SCALE

Final - 11/24

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT:	WELL #: MW11-5

PROJECT: SEAD-11 ee/ca
LOCATION: Seneca Army Depot
PROJECT NO: 734543-01001
INSPECTOR: KKS
CHECKED BY:

DRILLING CONTRACTOR: Parratt + Wolfe
DRILLER: Todd Mench
DRILLING COMPLETED: 10/26/00
BORING DEPTH: 11.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 10.0"
ASSOCIATED SWMU/AOC: SEAD-11
POW DEPTH: 9.5'
INSTALLATION STARTED: 10/26/00
INSTALLATION COMPLETED: 10/26/00
SURFACE COMPLETION DATE: 10/27/00
COMPLETION CONTRACTOR/CREW: Parratt + Wolfe
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4.0" LENGTH: 4', 2" TOR: +2.6

RISER:
TOC: +2.5 TYPE: 2" Sched. 40 DIAMETER: 2" LENGTH: 6.74

SCREEN:
TSC: -4.24' TYPE: PVC wire wrap DIAMETER: 2" LENGTH: 4.58 SLOT SIZE: 0.010

POINT OF WELL: (SILT SUMP)
YPE: Point - PVC BSC: -8.82 POW: -9.5

GROUT:
TG: +0.5' TYPE: Quickcrete LENGTH: 2.25'

SEAL: TBS: -1.75 TYPE: Bentonite LENGTH: 2.0'

SAND PACK: TSP: -3.75 -4.25 TYPE: 00 0 LENGTH (Above TSC) 0.83'

SURFACE COLLAR:
TYPE: Quickcrete RADIUS: 2.0' THICKNESS CENTER: 1.35 THICKNESS EDGE: +0.25

CENTRALIZER DEPTHS
DEPTH 1: N/A DEPTH 2: N/A DEPTH 3: N/A DEPTH 4: N/A

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

Final - 11/24/00

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT:	WELL #: MW11-6

PROJECT: SEAD-11 ee/ca
LOCATION: Seneca Army Depot
PROJECT NO: 734543-01001
INSPECTOR: KKJ
CHECKED BY:

DRILLING CONTRACTOR: Parratt Wolfe
DRILLER: Todd Mench
DRILLING COMPLETED: 10/26/00
BORING DEPTH: 8.5'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 10"
ASSOCIATED SWMU/AOC: SEAD-11
POW DEPTH: 8.08'
INSTALLATION STARTED: 10/26/00
INSTALLATION COMPLETED: 10/26/00
SURFACE COMPLETION DATE: 10/27/00
COMPLETION CONTRACTOR/CREW: P+W - Todd Mench
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4" ID LENGTH: 4' 2" TOR: +2.52

RISER:
TOC: +2.42' TYPE: PVC DIAMETER: 2" LENGTH: 5.25 (TOC)

SCREEN:
TSC: -2.82 TYPE: PVC wire wrap DIAMETER: 2" LENGTH: 4.58' SLOT SIZE: 0.010

POINT OF WELL: (SILT SUMP)
YPE: PVC Point BSC: -7.40 POW: -8.08

GROUT:
TG: +0.25' TYPE: Quickcrete LENGTH: 1.5'

SEAL: Enviroplug chips TBS: -1.32' TYPE: Bentonite LENGTH: 1.0'

SAND PACK: TSP: -2.60 -2.32 TYPE: 0/00 LENGTH: Above TSC 0.5'

SURFACE COLLAR:
TYPE: Quickcrete RADIUS: 2.0' THICKNESS CENTER: 1.5 THICKNESS EDGE: 0.5'

CENTRALIZER DEPTHS
DEPTH 1: N/A DEPTH 2: N/A DEPTH 3: N/A DEPTH 4: N/A

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

8.08
2.42
10.50

10.4

FIGURE A-8

Final 11/24/00

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT:	WELL #: MW11-7

PROJECT: SEAD-11 OC/CA
LOCATION: Seneca Army Depot
PROJECT NO: 734543-01001
INSPECTOR: KKS
CHECKED BY:

DRILLING CONTRACTOR: Parratt + Wolfe
DRILLER: Todd Mench
DRILLING COMPLETED: 10/26/00
BORING DEPTH: 6.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 10"
ASSOCIATED SWMU/AOC: SEAD-11
POW DEPTH: 5.25'
INSTALLATION STARTED: 10/26/00
INSTALLATION COMPLETED: 10/26/00
SURFACE COMPLETION DATE: 10/27/00
COMPLETION CONTRACTOR/CREW: P+W Todd
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4.0" ID LENGTH: 4' 2" TOR: 2.66'

RISER:
TOC: +2.55 TYPE: PVC Sched. 40 DIAMETER: 2" LENGTH: 5.05

SCREEN:
TSC: 2.5' TYPE: PVC wire wrap DIAMETER: 2" LENGTH: 2.6' SLOT SIZE: 0.010

POINT OF WELL: (SILT SUMP)
YPE: PVC - Flat Cap BSC: 5.10' POW: -5.25'

GROUT:
TG: +0.25' TYPE: Quikcrete LENGTH: 1.35'

SEAL: TBS: -1.1' TYPE: Bentonite LENGTH: 1.5'

SAND PACK: TSP: -1.6 -1.4 TYPE: 00 LENGTH: (Above TSC) 1.1'

SURFACE COLLAR:
TYPE: Quikcrete RADIUS: 2.0' THICKNESS CENTER: 1.35 THICKNESS EDGE: +- 0.25

CENTRALIZER DEPTHS
DEPTH 1: N/A DEPTH 2: N/A DEPTH 3: N/A DEPTH 4: N/A

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-12

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COMPLETION REPORT OF WELL No. MW12A-1

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	1015496.7 745165.9
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	656.9
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	06/10/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	06/11/94	CHECKED BY:	KK

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	656.9
ML						
ML				1.5	TBS	655.4
ML				2.9	TSP	654.0
				4.0	TSC	653.0
ML						
	5					
ML						
SM						
SM						
ML	10					
ML						
				13.0	BSC	644.0
	14.0			14.0	POW	642.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.4

SANDPACK
Type: #1, #3
Interval: 11.1

WELL DEVELOPMENT DATA
Date: 6/22/94
Method: BAIL
Duration: 170 MIN
Rate: 1.4 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
6/22	1130	6.30
6/22	1525	6.42

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.24	9.5	590	26.1

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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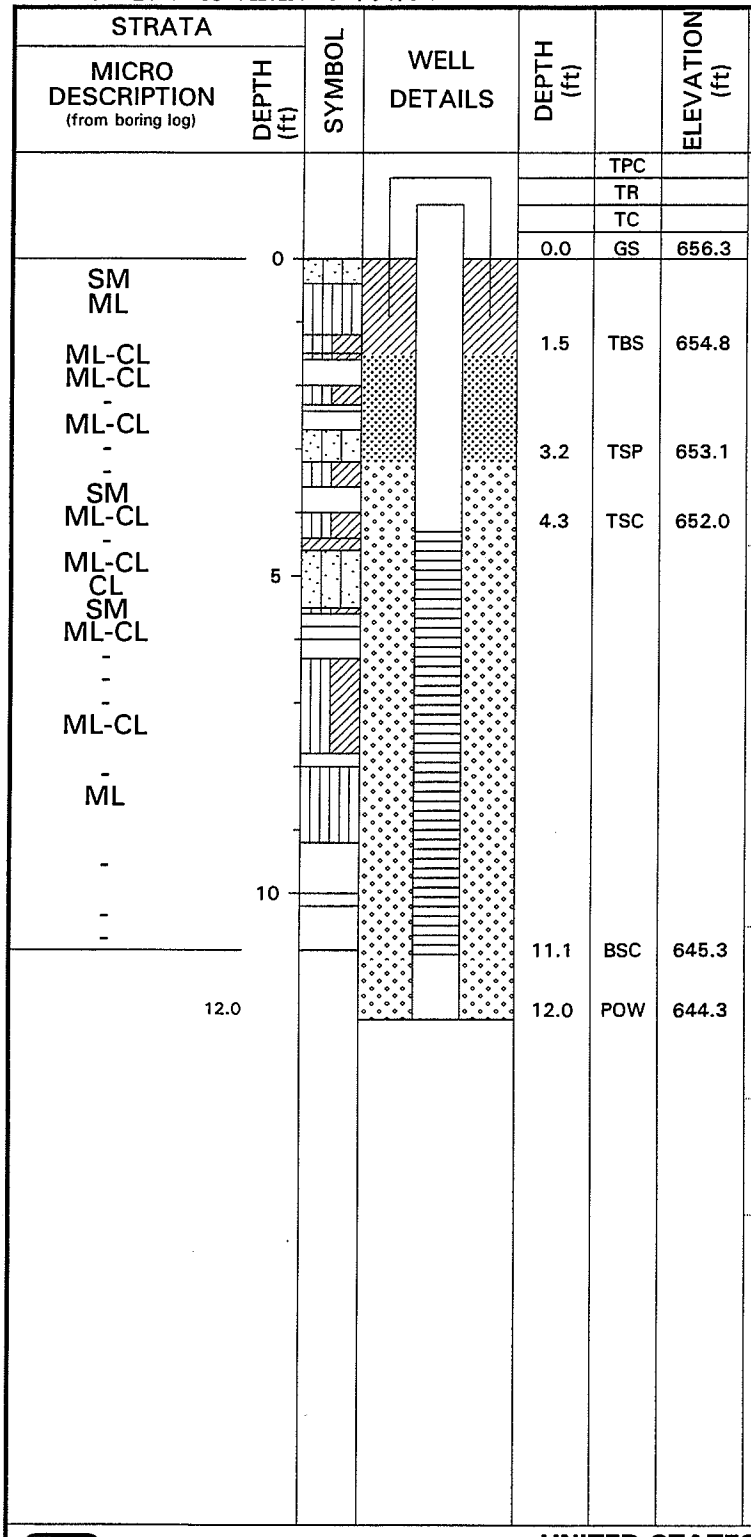
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW12A-1

COMPLETION REPORT OF WELL No. MW12A-2

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	1015117.5 744926.6
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	656.3
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	06/11/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	06/11/94	CHECKED BY:	KK



WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5.35

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95, 1.95

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.7

SANDPACK
Type: #1, #3
Interval: 8.8

WELL DEVELOPMENT DATA
Date: 6/23/94
Method: BAIL
Duration: 130 MIN
Rate: .1140 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
6/23	0930	5.30
6/23	1230	5.36
6/23	1430	5.85

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.11	8.5	425	4.94

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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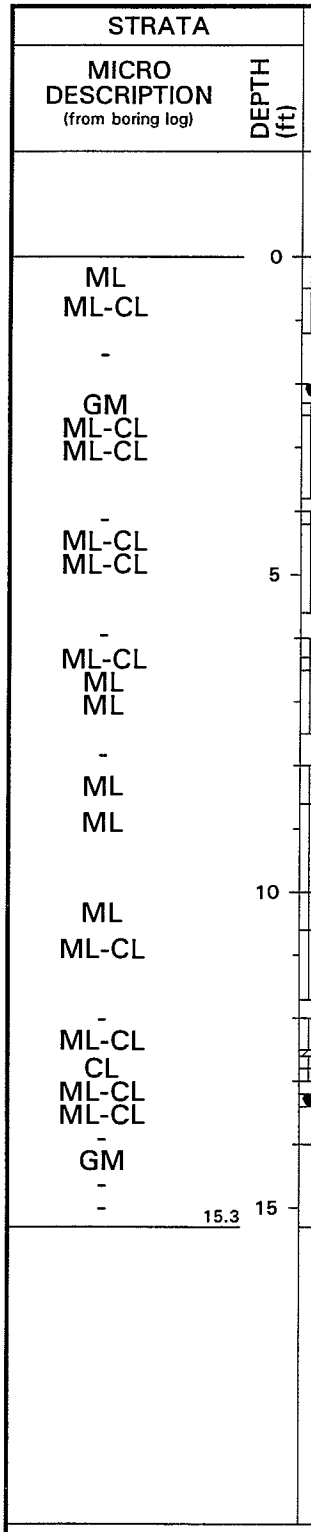
COMPLETION REPORT OF WELL No. MW12A-2

COMPLETION REPORT OF WELL No. MW12A-3

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	1015521.5 744532.2
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	655.6
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	06/12/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	06/12/94	CHECKED BY:	KK



DEPTH (ft)		ELEVATION (ft)
	TPC	
	TR	
	TC	
0.0	GS	655.6
1.5	TBS	654.1
2.5	TSP	653.1
3.5	TSC	652.2
14.0	BSC	641.6
15.1	POW	640.5

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.8

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 9, .8

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 12.8

WELL DEVELOPMENT DATA

Date: 6/22/94
Method: BAIL/PUMP
Duration: 163 MIN
Rate: 2 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
8.02	10	580	20

WATER LEVELS

Date	Time	Depth,TR
6/22	1130	6.06
6/22	1600	6.30

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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COMPLETION REPORT OF WELL No. MW12A-3

COMPLETION REPORT OF WELL No. MW12B-1

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 06/13/94
WELL INSTALLATION COMPLETED: 06/13/94

WELL LOCATION (N/E): 1015934.0 743739.7
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 652.0
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	652.0
ML						
ML						
				1.5	TBS	650.5
ML-CL						
ML						
				4.3	TSP	647.8
ML						
	5			5.3	TSC	646.8
ML						
ML	10					
ML						
ML						
GP						
GP	15					
GP						
				17.0	BSC	635.1
	18.0			17.8	POW	634.2

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 6.25

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 8.9, 1.95

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 2.75

SANDPACK
Type: #1, #3
Interval: 13.55

WELL DEVELOPMENT DATA
Date: 6/25/94
Method: BAIL
Duration: 110 MIN
Rate: .1890 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
6/25	0900	10.22
6/25	1045	10.38

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.96	10	1100	13.7

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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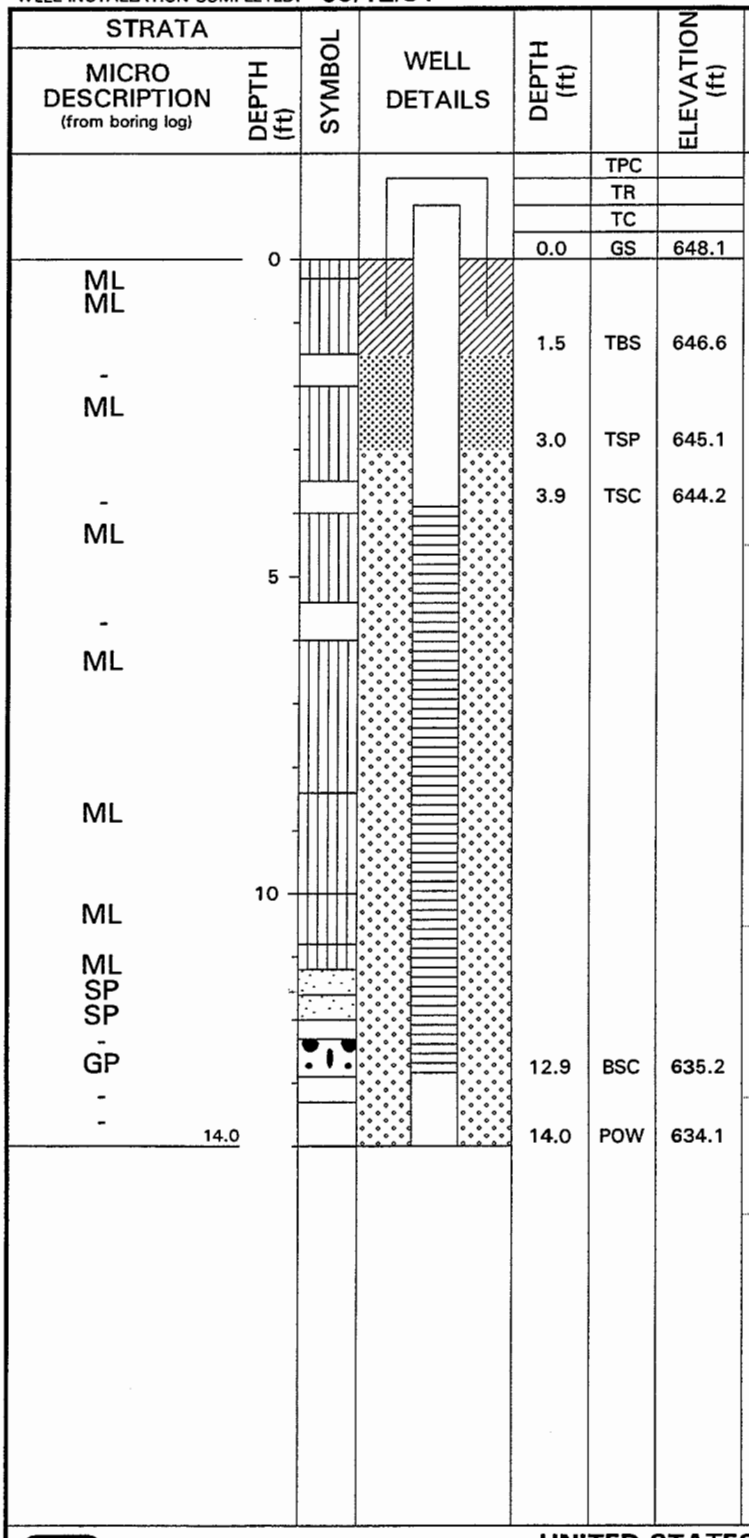
COMPLETION REPORT OF WELL No. MW12B-1

COMPLETION REPORT OF WELL No. MW12B-2

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	1015919.8 743522.9
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	648.1
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	06/12/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	06/12/94	CHECKED BY:	KK



WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.55

SANDPACK
Type: #1, #3
Interval: 11

WELL DEVELOPMENT DATA
Date: 6/23/94
Method: BAIL
Duration: 150 MIN
Rate: .1360 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.15	9.5	800	43.3

WATER LEVELS

Date	Time	Depth,TR
6/23	1545	7.15
6/24	1030	7.36
6/24	1235	7.20

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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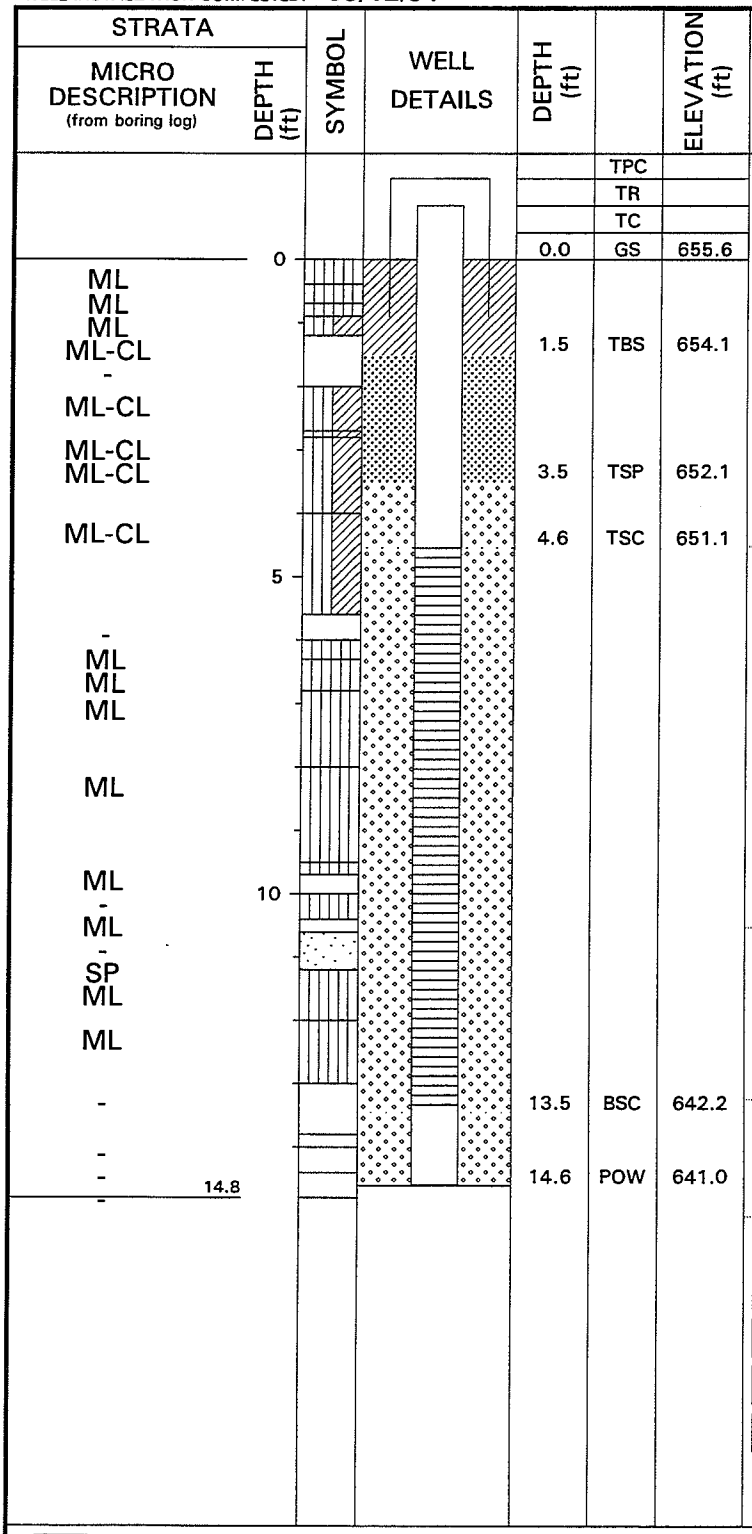
COMPLETION REPORT OF WELL No. MW12B-2

COMPLETION REPORT OF WELL No. MW12B-3

PROJECT:	EIGHT MODERATELY LOW PRIORITY AOCs	WELL LOCATION (N/E):	1015995.8 743517.1
PROJECT LOCATION:	SENECA ARMY DEPOT, ROMULUS NY	REFERENCE COORDINATE SYSTEM:	New York State Plane
DRILLING CONTRACTOR:	EMPIRE SOILS INVESTIGATIONS	GROUND SURFACE ELEVATION (ft):	655.6
DRILLING METHOD:	HOLLOW STEM AUGER	DATUM:	NAD 1983
WELL INSTALLATION STARTED:	06/12/94	GEOLOGIST:	F. O'LOUGHLIN
WELL INSTALLATION COMPLETED:	06/12/94	CHECKED BY:	KK



WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5.55

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 8.9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 2

SANDPACK
Type: #1, #3
Interval: 11.1

WELL DEVELOPMENT DATA
Date: 6/26/94
Method: BAIL
Duration: 235 MIN
Rate: .1030 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
6/26	1010	7.34
6/26	1310	7.66
6/26	1445	7.46

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.19	12	850	15.8

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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Romulus, New York

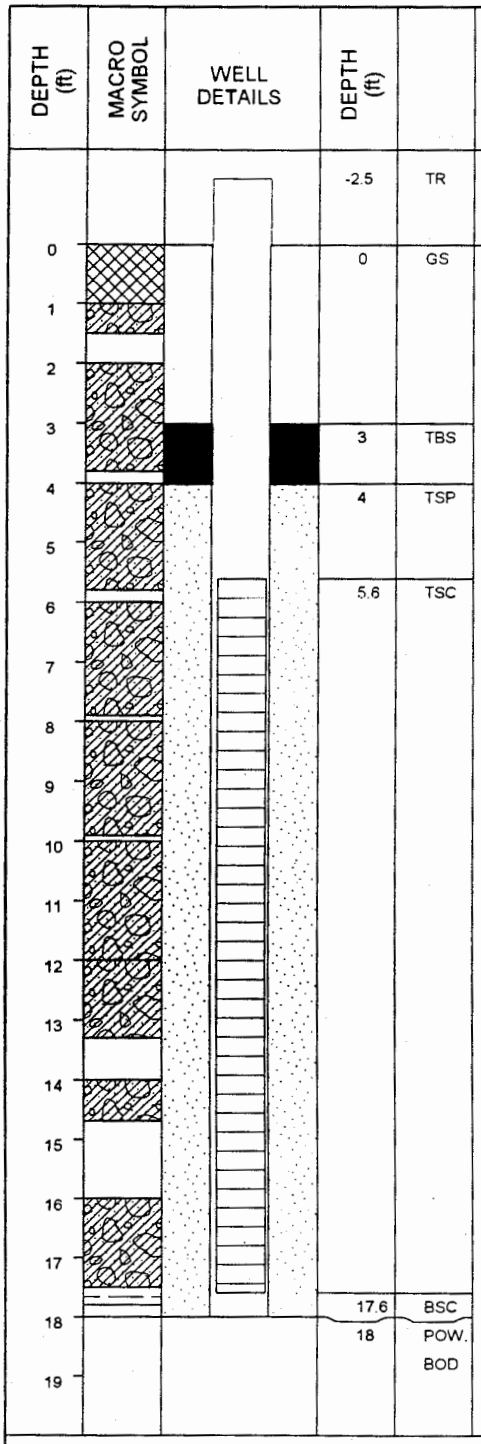
COMPLETION REPORT OF WELL No. MW12B-3

TEMPORARY WELL COMPLETION REPORT: MW12-3

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 11/6/97
WELL INSTALLATION COMPLETED: 11/6/97
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 18
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: EAF
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 12
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1

SANDPACK
Type: #0, #00
Length (ft): 14

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

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Romulus, New York

TEMPORARY WELL COMPLETION REPORT: MW12-3

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

1 Parsons ES Inc. | CLIENT: Seneca Army Depot | WELL #: MW12-4

PROJECT: Sead-12 RI/FS | PROJECT NO: 730047-01001

LOCATION: Background, North end | INSPECTOR: EAF

CHECKED BY: _____

DRILLING CONTRACTOR: Maxim Tech | POW DEPTH: 12.4 (BGS)

DRILLER: John Warner | INSTALLATION STARTED: 11/5/97

DRILLING COMPLETED: 11/4/97 | INSTALLATION COMPLETED: 11/5/97

BORING DEPTH: 12.4 (BGS) | SURFACE COMPLETION DATE: 11/7/99

DRILLING METHOD(S): 4¼ HSA | COMPLETION CONTRACTOR/CREW: Maxim Tech

BORING DIAMETER(S): 8" | BEDROCK CONFIRMED (Y/N?) Y

ASSOCIATED SWMU/AOC: Sead-12 | ESTIMATED GROUND ELEVATION: _____

PROTECTIVE SURFACE CASING:

DIAMETER: 4" LENGTH: 5'

RISER:

TR: -2.5 TYPE: Sch 40 pvc DIAMETER: 2" LENGTH: ~~4.8'~~ 7.27

SCREEN:

TSC: 4.77 TYPE: Sch 40 PVC DIAMETER: 2" LENGTH: 7.21' SLOT SIZE: 0.010"

POINT OF WELL: (SILT SUMP)

TYPE: Sump BSC: 11.98 POW: 12.2

GROUT:

None

TG: _____ TYPE: _____ LENGTH: _____

SEAL: TBS: 2.4' TYPE: Bentonite chip LENGTH: 1'

SAND PACK: TSP: 3.4' / 3.9' TYPE: morie #00 / morie #0 LENGTH: 0.5' / 8.3'

SURFACE COLLAR:

TYPE: Concrete RADIUS: 2' THICKNESS CENTER: 1' THICKNESS EDGE: 4"

CENTRALIZER DEPTHS

None

DEPTH 1: _____ DEPTH 2: _____ DEPTH 3: _____ DEPTH 4: _____

COMMENTS:

• ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

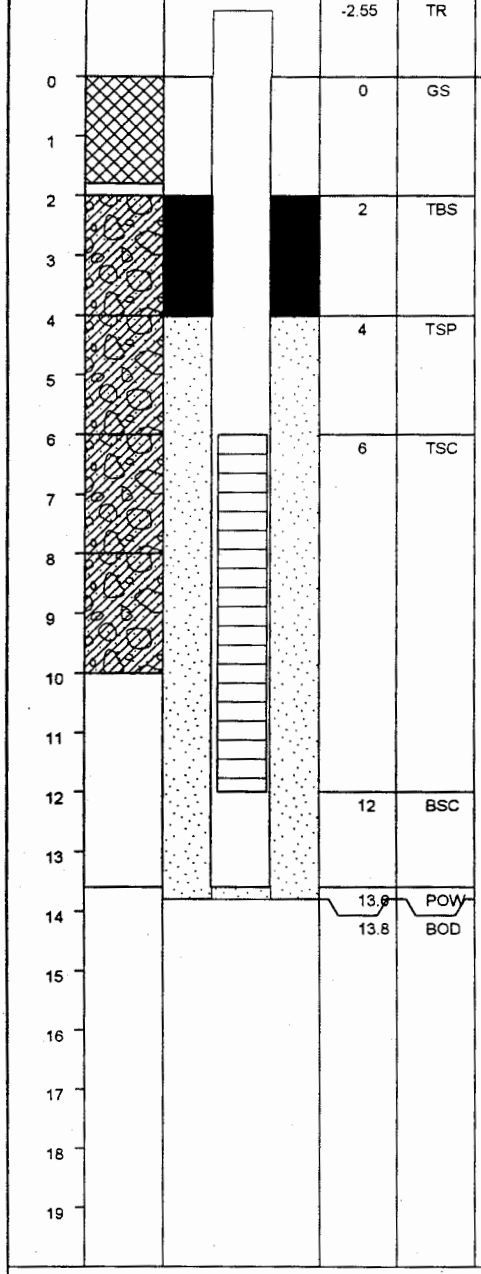
SEE PAGE 2 FOR SCHEMATIC

TEMPORARY WELL COMPLETION REPORT: MW12-7

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/28/98
WELL INSTALLATION COMPLETED 10/28/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 13.6
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.55

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 6
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 9.8

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

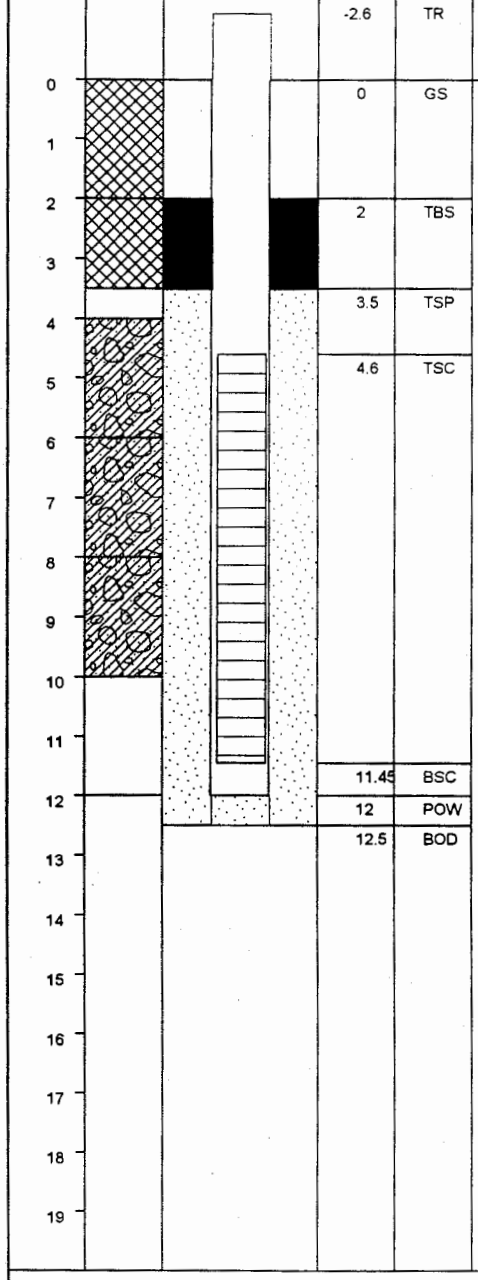
TEMPORARY WELL COMPLETION REPORT: MW12-7

TEMPORARY WELL COMPLETION REPORT: MW12-8

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/28/98
WELL INSTALLATION COMPLETED 11/2/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 12
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.6

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 6.85
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.5

SANDPACK
Type: #0, #00
Length (ft): 9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

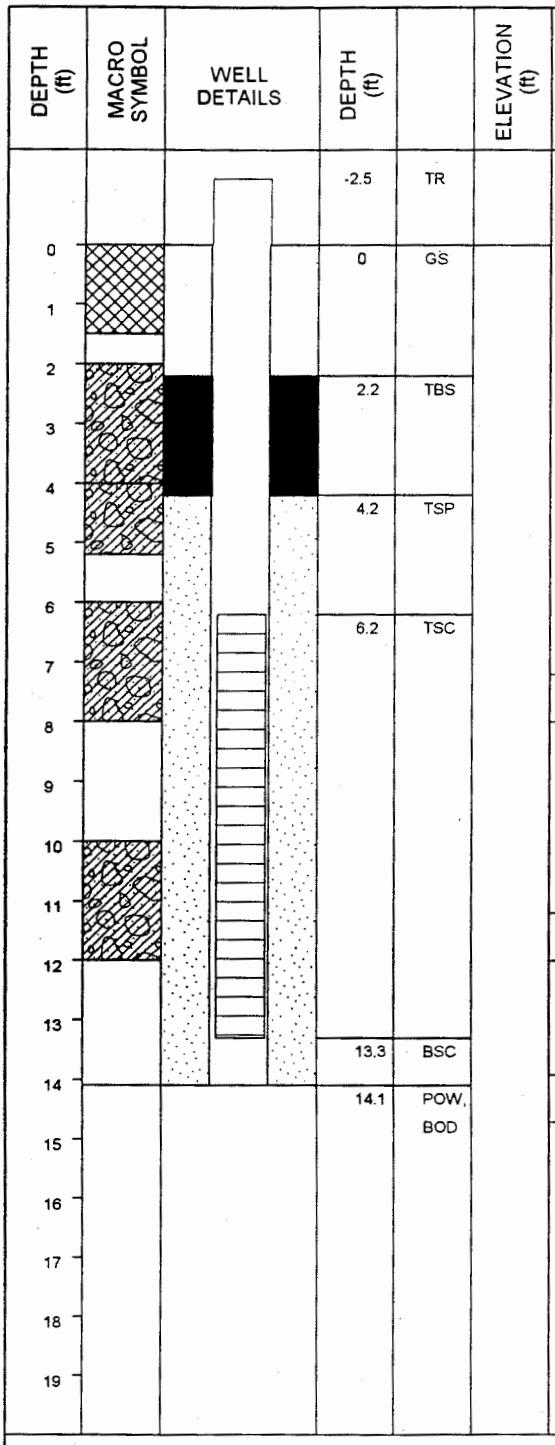
TEMPORARY WELL COMPLETION REPORT: MW12-8

TEMPORARY WELL COMPLETION REPORT: MW12-9

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/17/98
WELL INSTALLATION COMPLETED 10/17/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14.1
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.3

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.1
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 9.9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

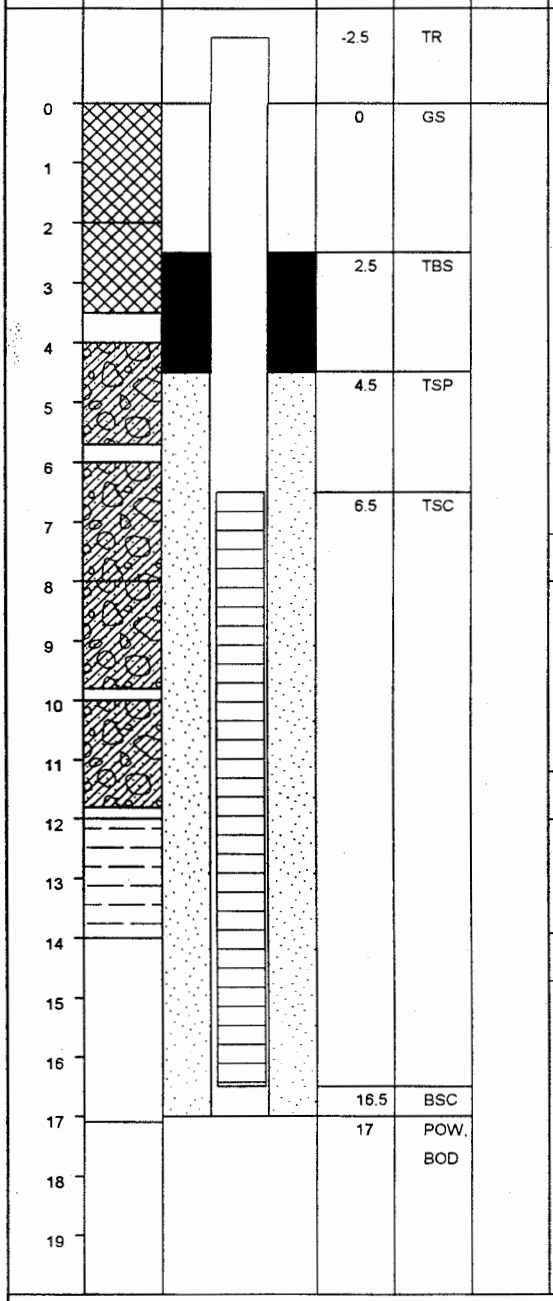
TEMPORARY WELL COMPLETION REPORT: MW12-9

TEMPORARY WELL COMPLETION REPORT: MW12-10

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 9/29/98
WELL INSTALLATION COMPLETED 9/30/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 17.1
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 9

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 10
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 12.5

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

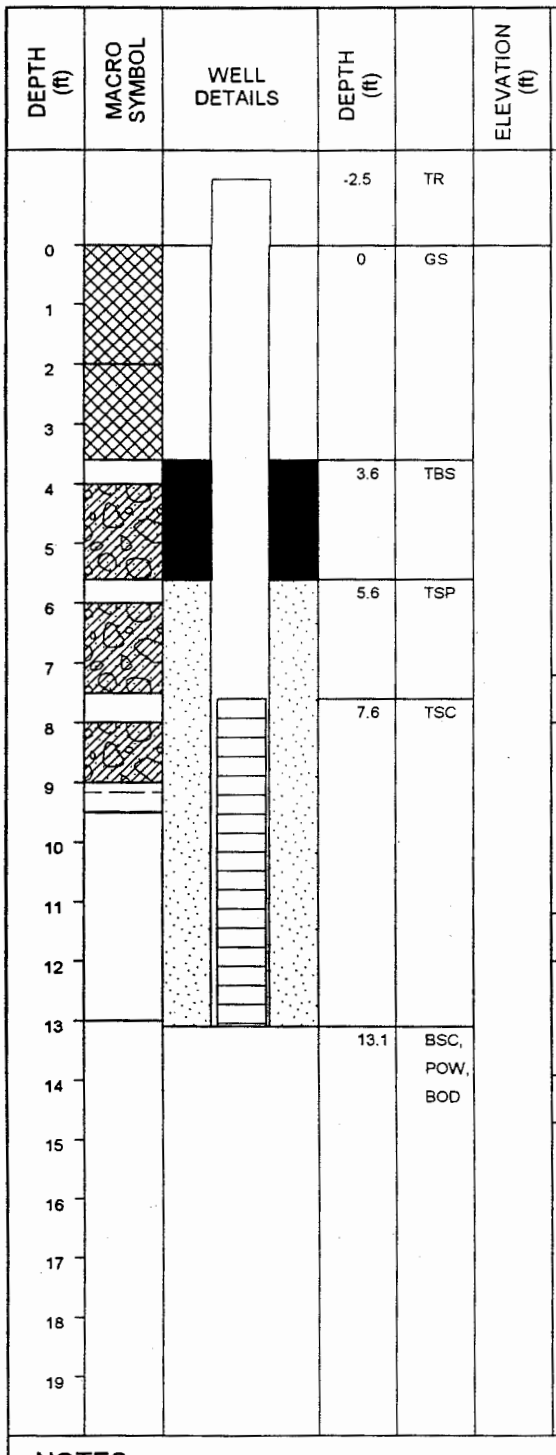
TEMPORARY WELL COMPLETION REPORT: MW12-10

TEMPORARY WELL COMPLETION REPORT: MW12-11

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/29/98
WELL INSTALLATION COMPLETED 10/29/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 13
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-2.5	TR	
0	GS	
3.6	TBS	
5.6	TSP	
7.6	TSC	
13.1	BSC, POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.9

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 5.5
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 7

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

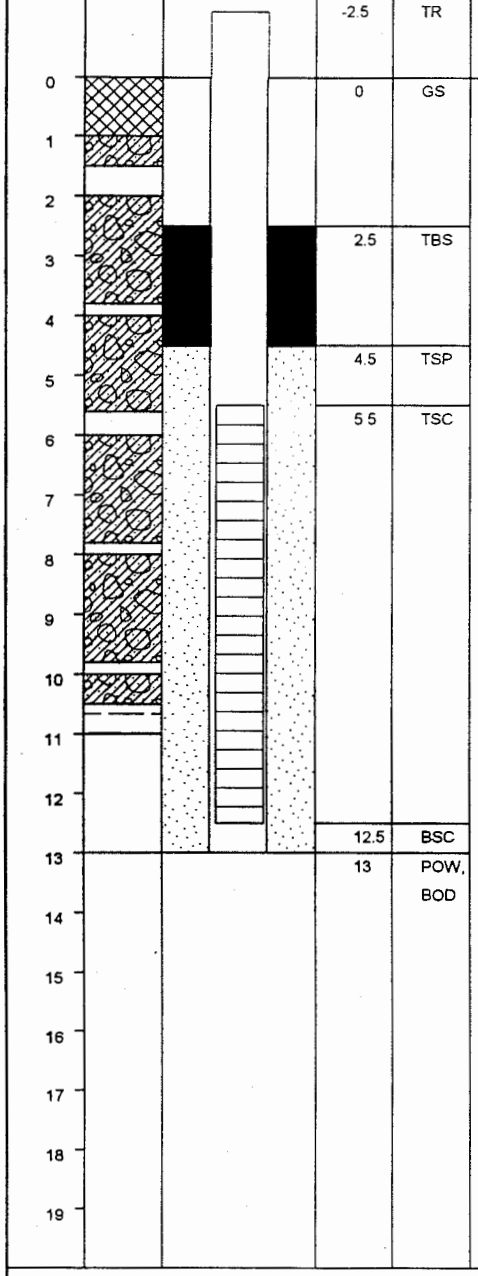
TEMPORARY WELL COMPLETION REPORT: MW12-11

TEMPORARY WELL COMPLETION REPORT: MW12-12

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/6/98
WELL INSTALLATION COMPLETED 10/6/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 13
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft):

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 8.5

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

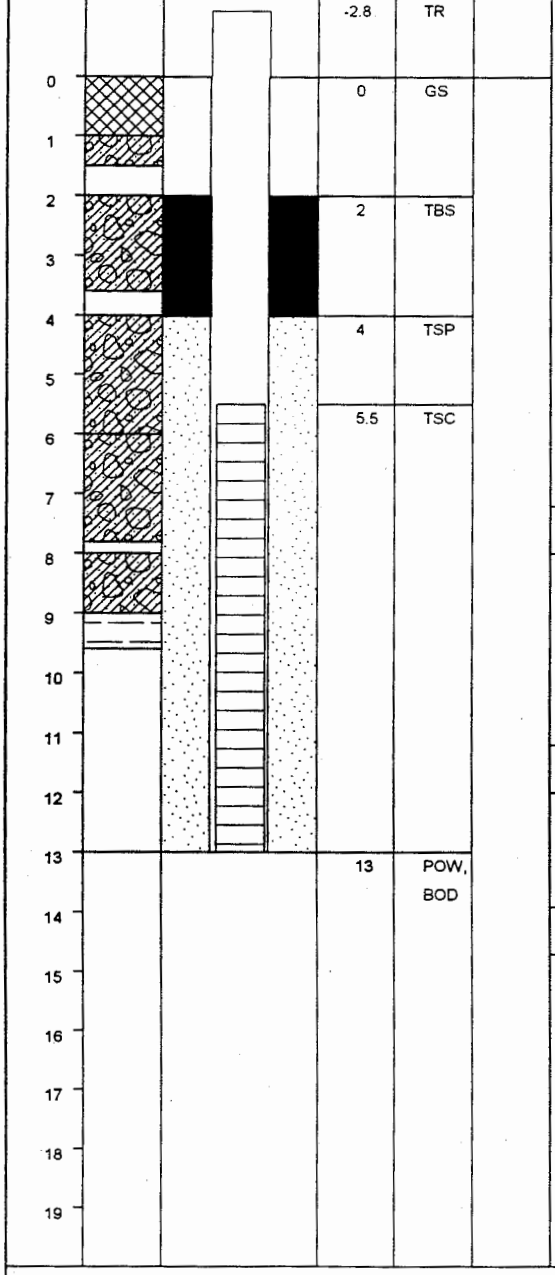
TEMPORARY WELL COMPLETION REPORT: MW12-12

TEMPORARY WELL COMPLETION REPORT: MW12-13

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/1/98
WELL INSTALLATION COMPLETED 10/1/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 13
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 10.3

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.5
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

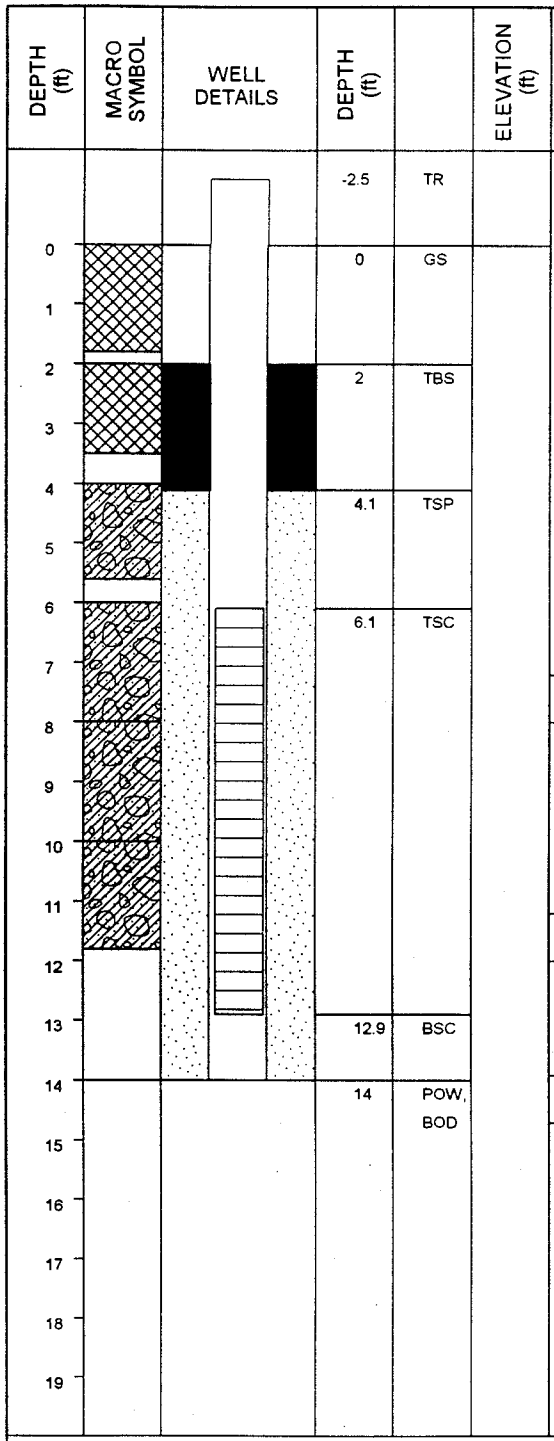
TEMPORARY WELL COMPLETION REPORT: MW12-13

TEMPORARY WELL COMPLETION REPORT: MW12-14

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/15/98
WELL INSTALLATION COMPLETED 10/21/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-2.5	TR	
0	GS	
2	TBS	
4.1	TSP	
6.1	TSC	
12.9	BSC	
14	POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.6

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 6.8
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2.1

SANDPACK
Type: #0, #00
Length (ft): 9.9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

TEMPORARY WELL COMPLETION REPORT: MW12-14

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

1 Parsons ES Inc. | CLIENT: Seneca Army Depot | WELL #: MW12-15

PROJECT: Seneca Sead-12 RI/FS | PROJECT NO: 730097-01001

LOCATION: North of disposal pit ~~A~~ C | INSPECTOR: DRG/JTR

CHECKED BY: DRG

DRILLING CONTRACTOR: Maxim Tech. | POW DEPTH: 13.1

DRILLER: Rodney Bush | INSTALLATION STARTED: 10/1/98

DRILLING COMPLETED: 10/1/98 | INSTALLATION COMPLETED: 10/1/98

BORING DEPTH: 13.1 (BGS) | SURFACE COMPLETION DATE: 10/5/98

DRILLING METHOD(S): 4¼ HSA | COMPLETION CONTRACTOR/CREW: Maxim

BORING DIAMETER(S): 8" | BEDROCK CONFIRMED (Y/N?) Y

ASSOCIATED SWMU/AOC: SEAD-12 | ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:

DIAMETER: 8" LENGTH: 5'

RISER:

TR: 2.6' TYPE: PVC Sch 40 DIAMETER: 2" LENGTH: 10'

SCREEN:

TSC: 5.4 (BGS) TYPE: Sch 40 PVC DIAMETER: 2" LENGTH: 7.2' SLOT SIZE: 0.010"

POINT OF WELL: (SILT SUMP)

TYPE: Sump BSC: 12.6 (BGS) POW: 13.1 (BGS)

GROUT: ~~None~~

TG: ~~+0.9' (BGS)~~ (DRG) ~~Surface (0.0 BGS)~~ TYPE: ~~Bentonite chip~~ (DRG) LENGTH: ~~3.9~~ (DRG) ~~2'~~

SEAL: TBS: 1.9 BGS TYPE: Bentonite chip LENGTH: 2'

SAND PACK: TSP: ~~8~~ 4.4 CCS 3.9 fine TYPE: ~~mesie #0~~ mesie #0 LENGTH: ~~8.7'~~ 0.5'

SURFACE COLLAR:

TYPE: Concrete/Bentonite RADIUS: 2' THICKNESS CENTER: 1' THICKNESS EDGE: 4"

CENTRALIZER DEPTHS None.

DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

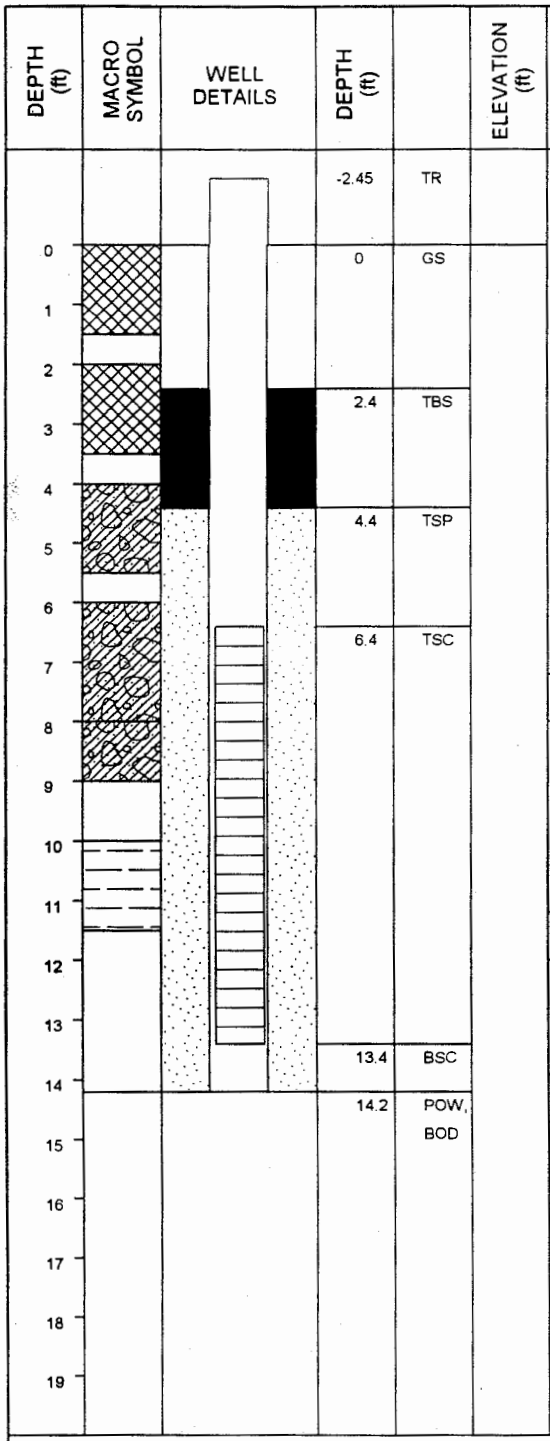
SEE PAGE 2 FOR SCHEMATIC

TEMPORARY WELL COMPLETION REPORT: MW12-16

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/17/98
WELL INSTALLATION COMPLETED 10/17/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14.2
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.85

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 9.8

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

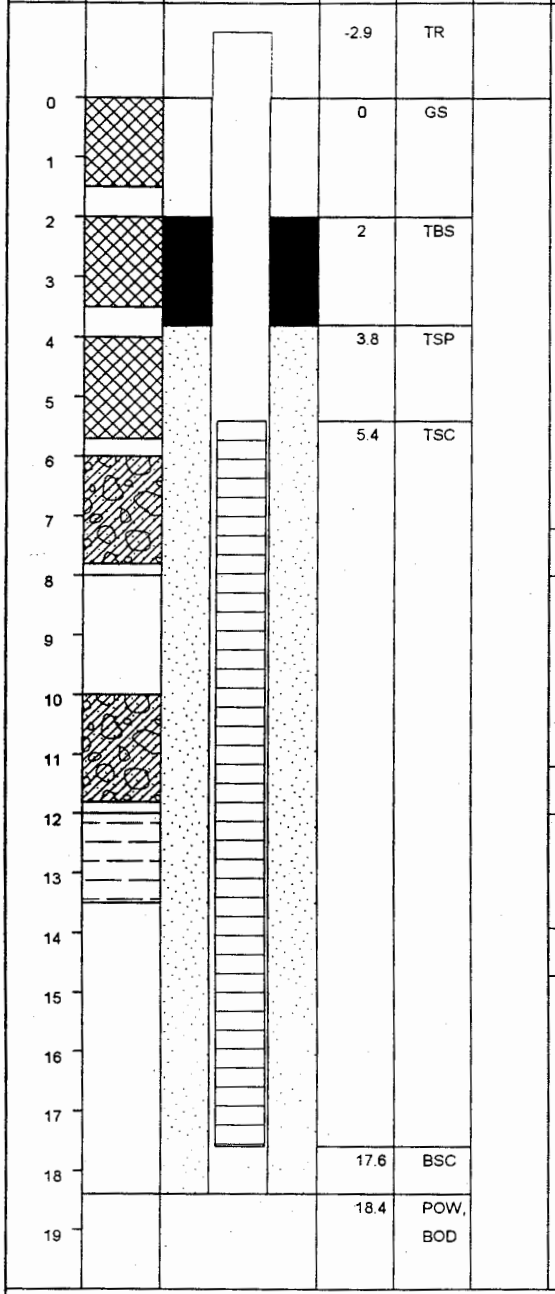
TEMPORARY WELL COMPLETION REPORT: MW12-16

TEMPORARY WELL COMPLETION REPORT: MW12-17

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/17/98
WELL INSTALLATION COMPLETED 10/17/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 18.4
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.3

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 12.2
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.8

SANDPACK
Type: #0, #00
Length (ft): 14.6

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

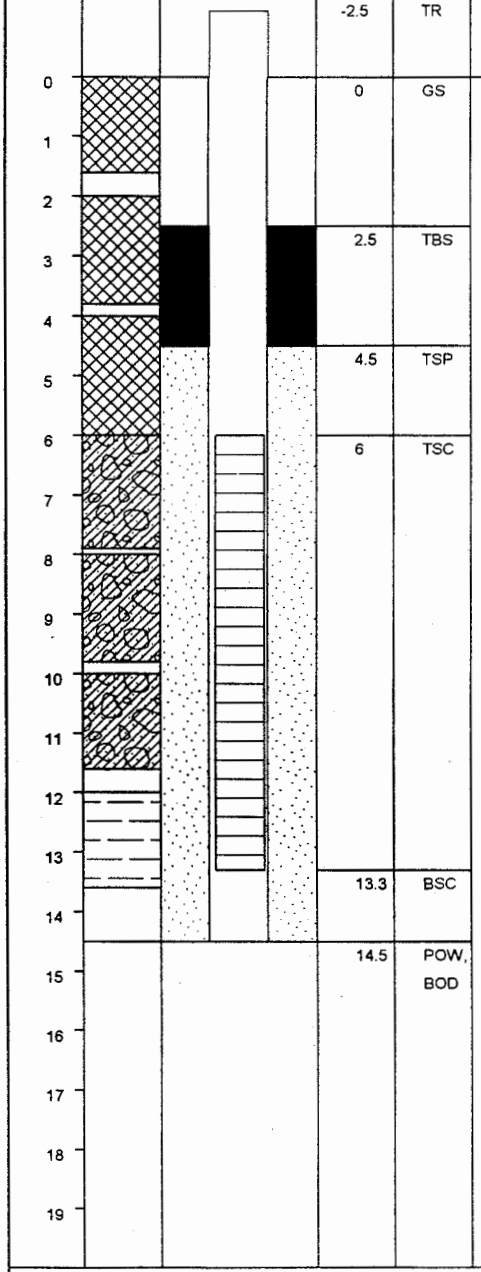
TEMPORARY WELL COMPLETION REPORT: MW12-17

TEMPORARY WELL COMPLETION REPORT: MW12-18

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/2/98
WELL INSTALLATION COMPLETED 10/2/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14.5
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.5

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.3
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 10

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

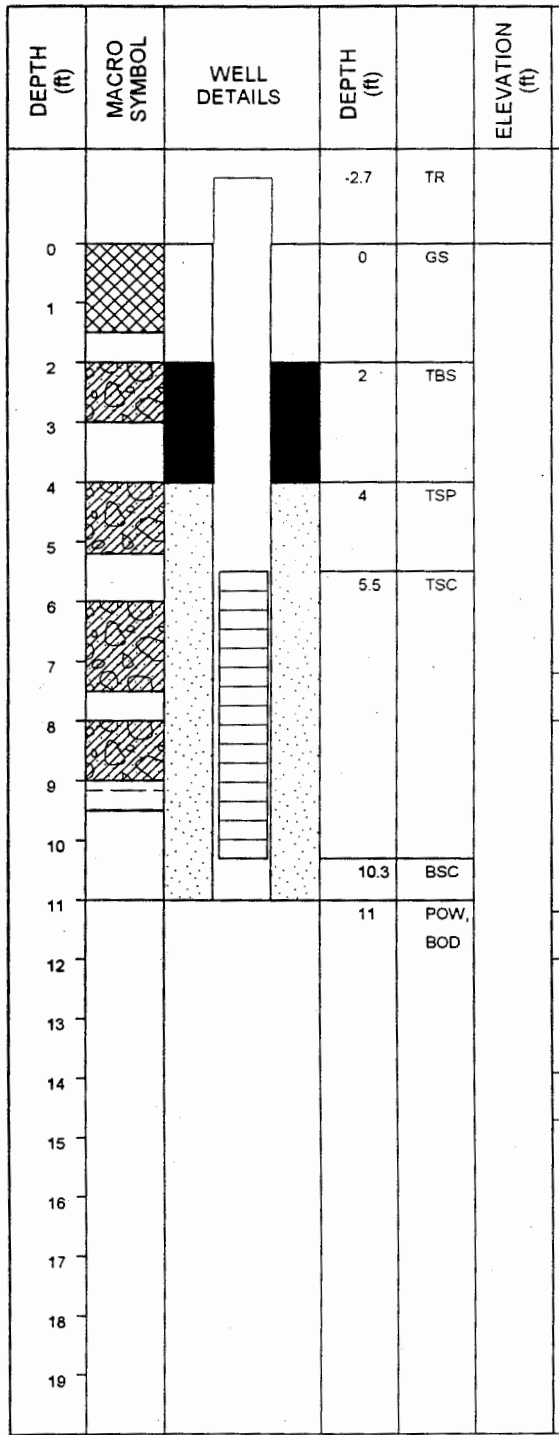
TEMPORARY WELL COMPLETION REPORT: MW12-18

TEMPORARY WELL COMPLETION REPORT: MW12-19

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/3/98
WELL INSTALLATION COMPLETED 10/3/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 11
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-2.7	TR	
0	GS	
2	TBS	
4	TSP	
5.5	TSC	
10.3	BSC	
11	POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.2

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.8
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 7

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

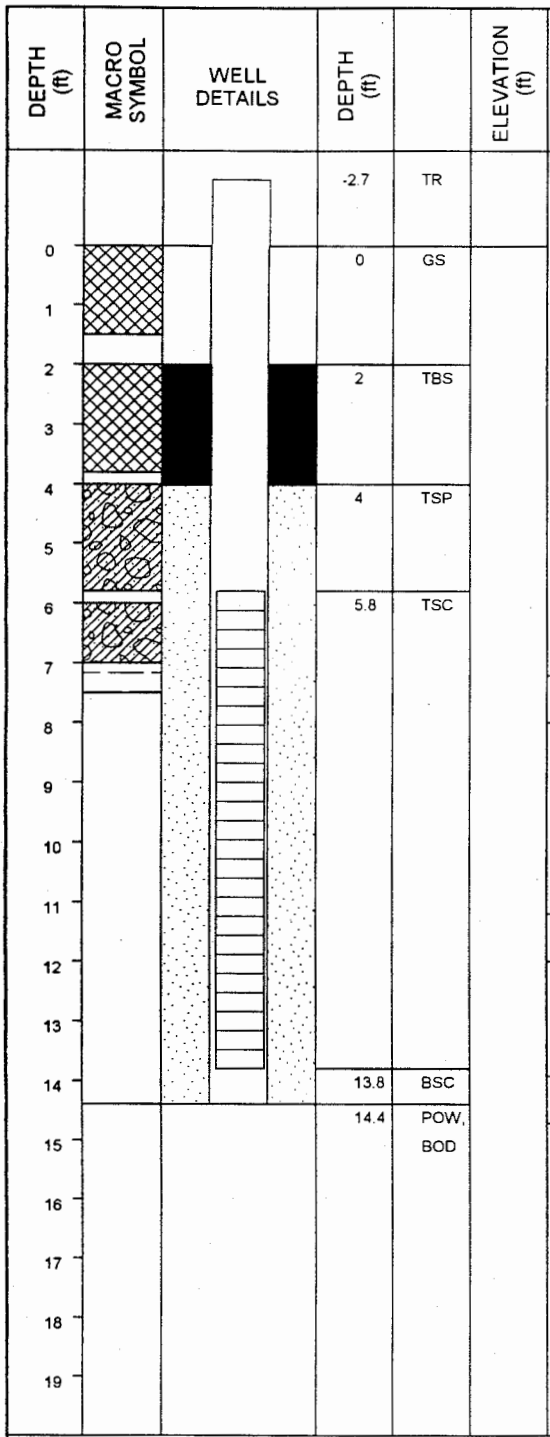
TEMPORARY WELL COMPLETION REPORT: MW12-19

TEMPORARY WELL COMPLETION REPORT: MW12-20

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/3/98
WELL INSTALLATION COMPLETED 10/3/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14.4
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.5

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 10.4

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

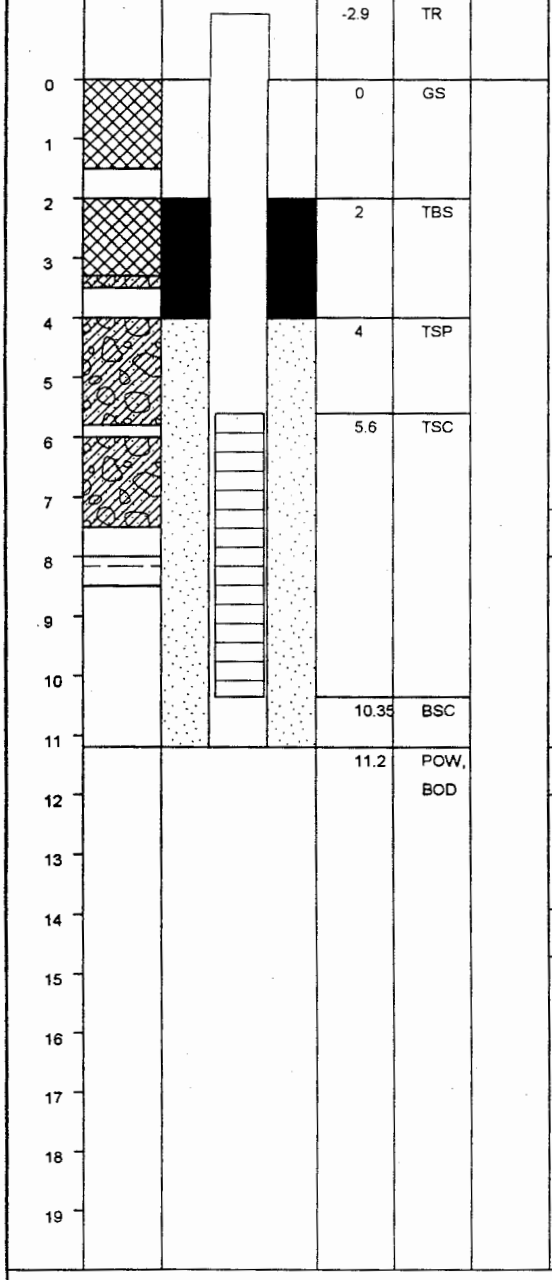
TEMPORARY WELL COMPLETION REPORT: MW12-20

TEMPORARY WELL COMPLETION REPORT: MW12-21

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/3/98
WELL INSTALLATION COMPLETED 10/3/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 11.2
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.3

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.75
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 7

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

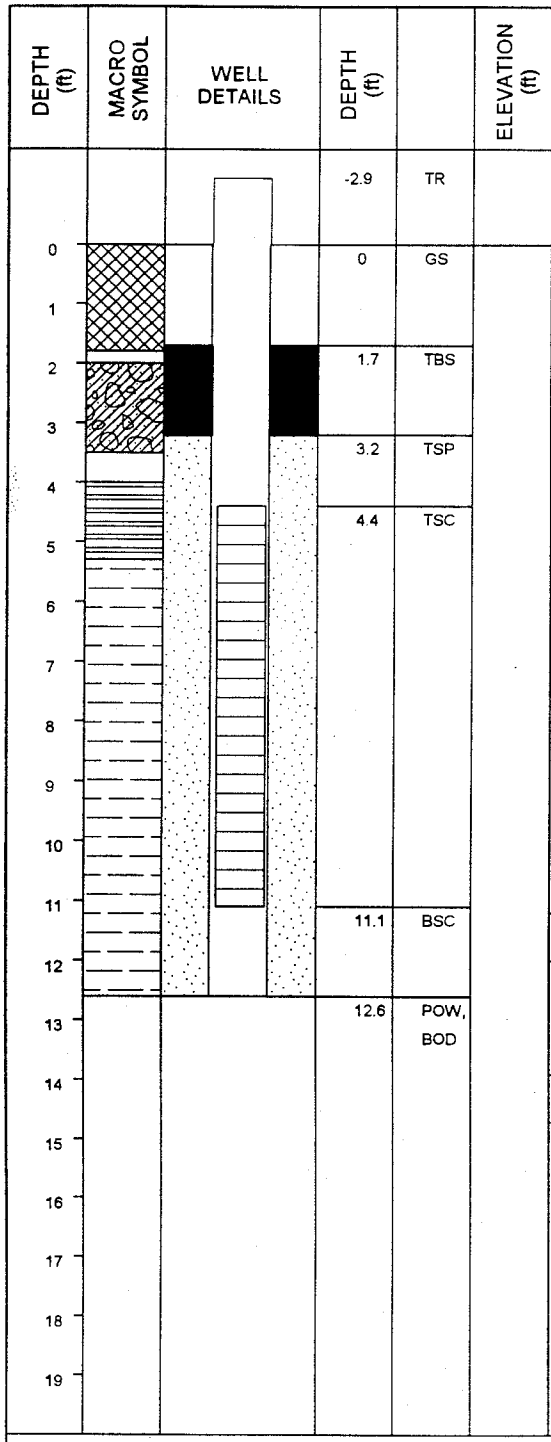
TEMPORARY WELL COMPLETION REPORT: MW12-21

TEMPORARY WELL COMPLETION REPORT: MW12-22

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/4/98
WELL INSTALLATION COMPLETED 10/4/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 12.6
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-2.9	TR	
0	GS	
1.7	TBS	
3.2	TSP	
4.4	TSC	
11.1	BSC	
12.6	POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.3

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 6.7
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.5

SANDPACK
Type: #0, #00
Length (ft): 9.4

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

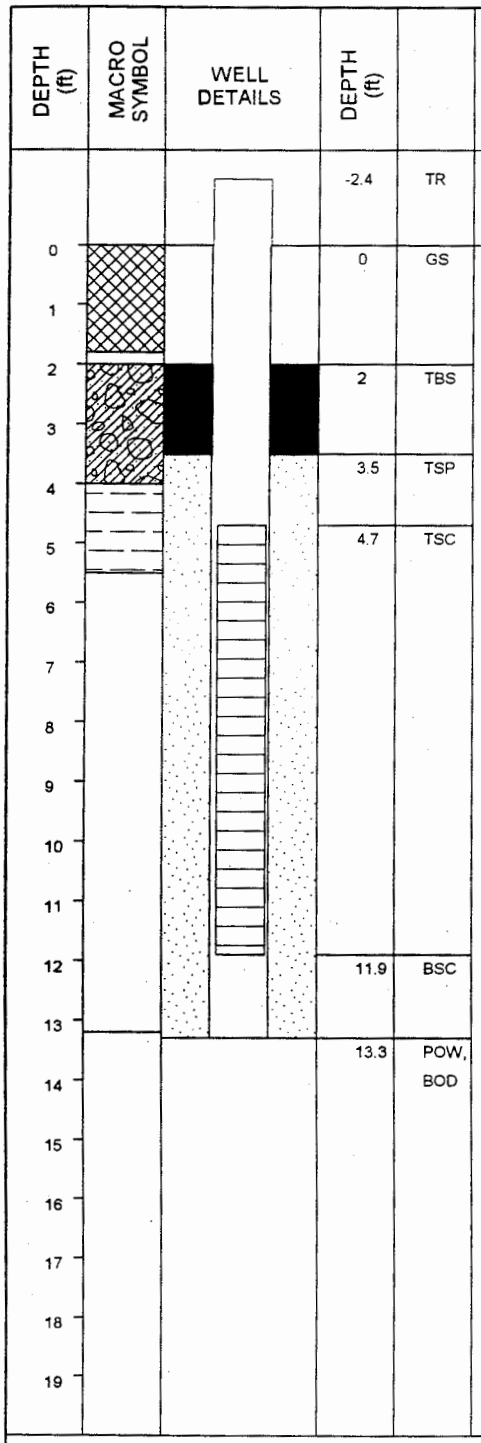
TEMPORARY WELL COMPLETION REPORT: MW12-22

TEMPORARY WELL COMPLETION REPORT: MW12-23

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/5/98
WELL INSTALLATION COMPLETED 10/5/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 13.3
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.1

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.2
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.5

SANDPACK
Type: #0, #00
Length (ft): 8.6

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

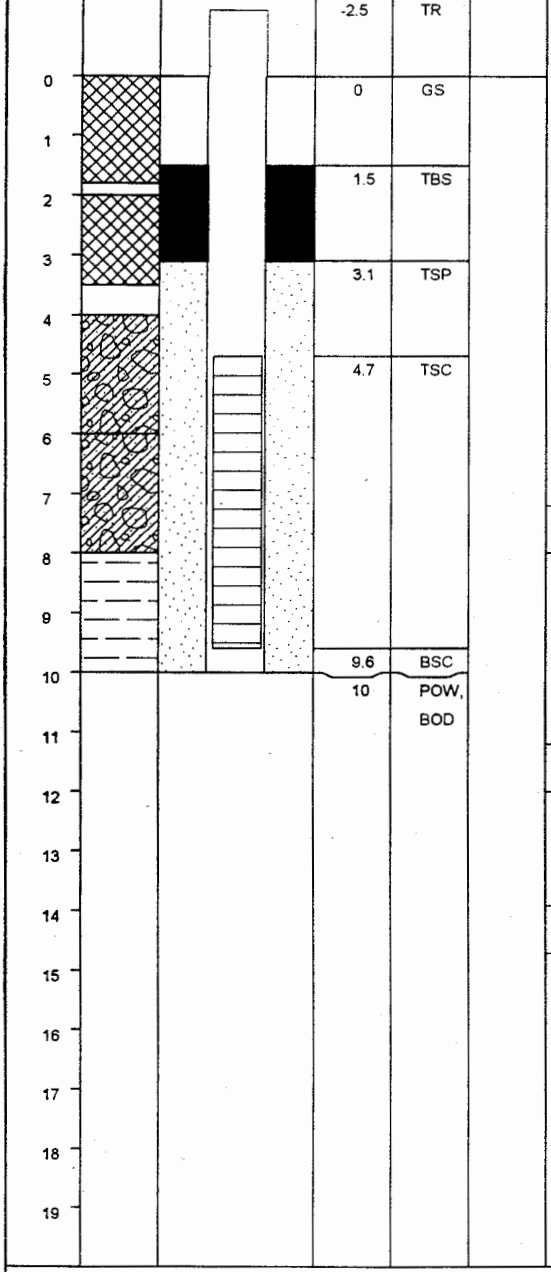
TEMPORARY WELL COMPLETION REPORT: MW12-23

TEMPORARY WELL COMPLETION REPORT: MW12-24

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/19/98
WELL INSTALLATION COMPLETED 10/19/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.2

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.9
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.5

SANDPACK
Type: #0, #00
Length (ft): 6.9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

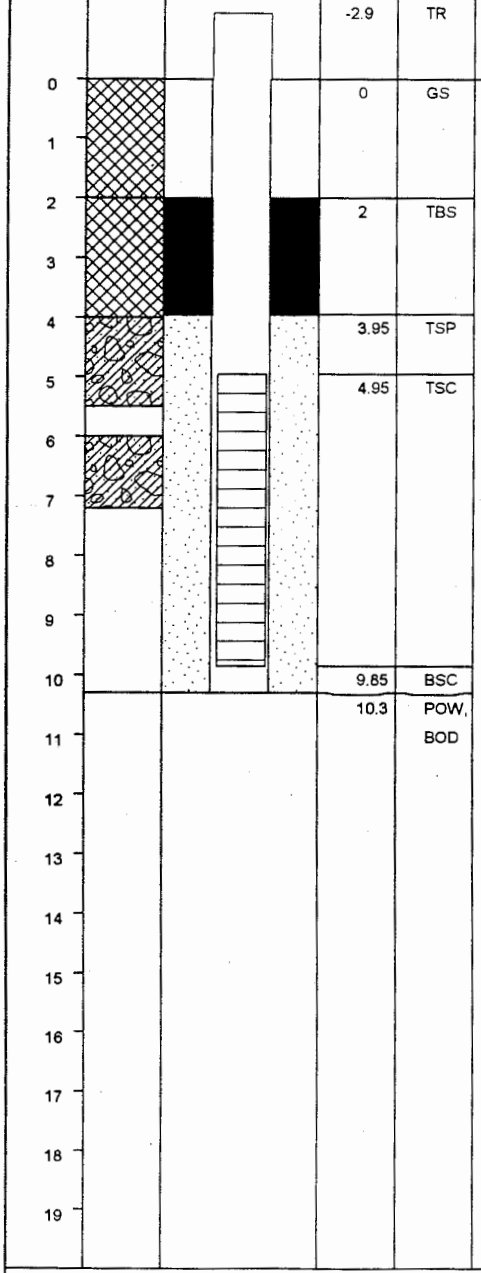
TEMPORARY WELL COMPLETION REPORT: MW12-24

TEMPORARY WELL COMPLETION REPORT: MW12-25

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/18/98
WELL INSTALLATION COMPLETED 10/18/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.3
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.85

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.9
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.95

SANDPACK
Type: #0, #00
Length (ft): 7.4

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

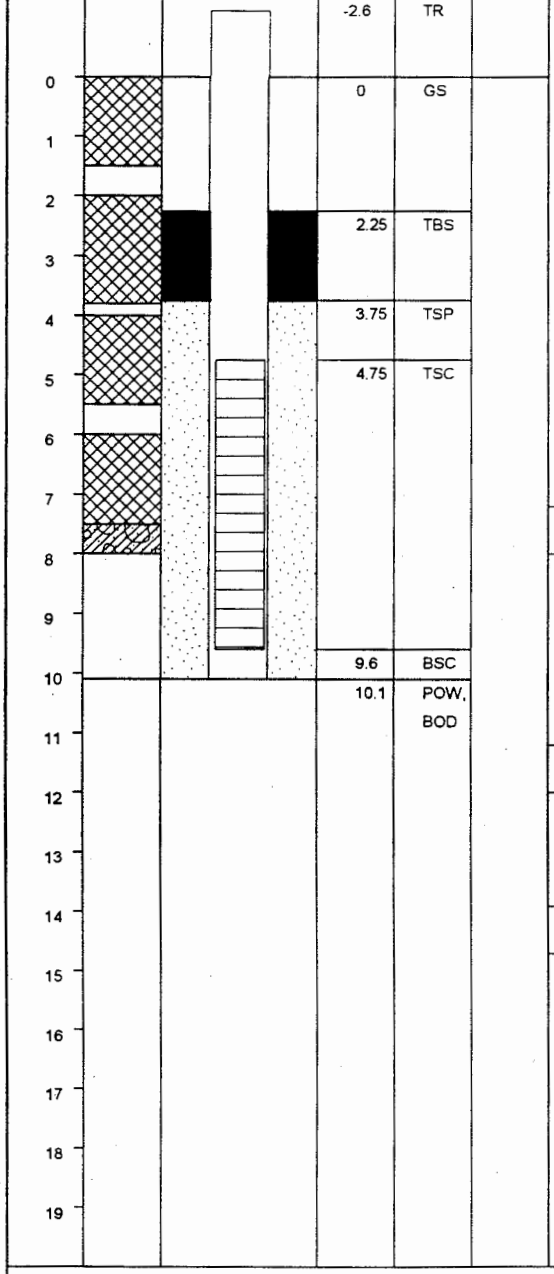
TEMPORARY WELL COMPLETION REPORT: MW12-25

TEMPORARY WELL COMPLETION REPORT: MW12-26

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/18/98
WELL INSTALLATION COMPLETED 10/18/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.1
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-2.6	TR	
0	GS	
2.25	TBS	
3.75	TSP	
4.75	TSC	
9.6	BSC	
10.1	POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.35

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.85
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.5

SANDPACK
Type: #0, #00
Length (ft): 6.4

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

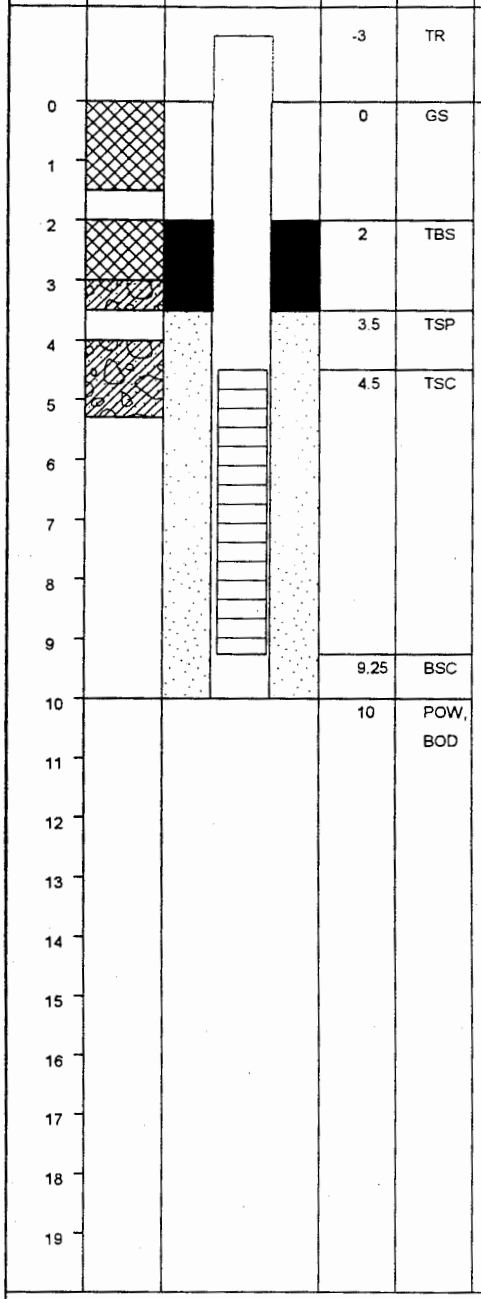
TEMPORARY WELL COMPLETION REPORT: MW12-26

TEMPORARY WELL COMPLETION REPORT: MW12-27

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/4/98
WELL INSTALLATION COMPLETED 10/4/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 12.9
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



DEPTH (ft)		ELEVATION (ft)
-3	TR	
0	GS	
2	TBS	
3.5	TSP	
4.5	TSC	
9.25	BSC	
10	POW, BOD	

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.5

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.75
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 6.5

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

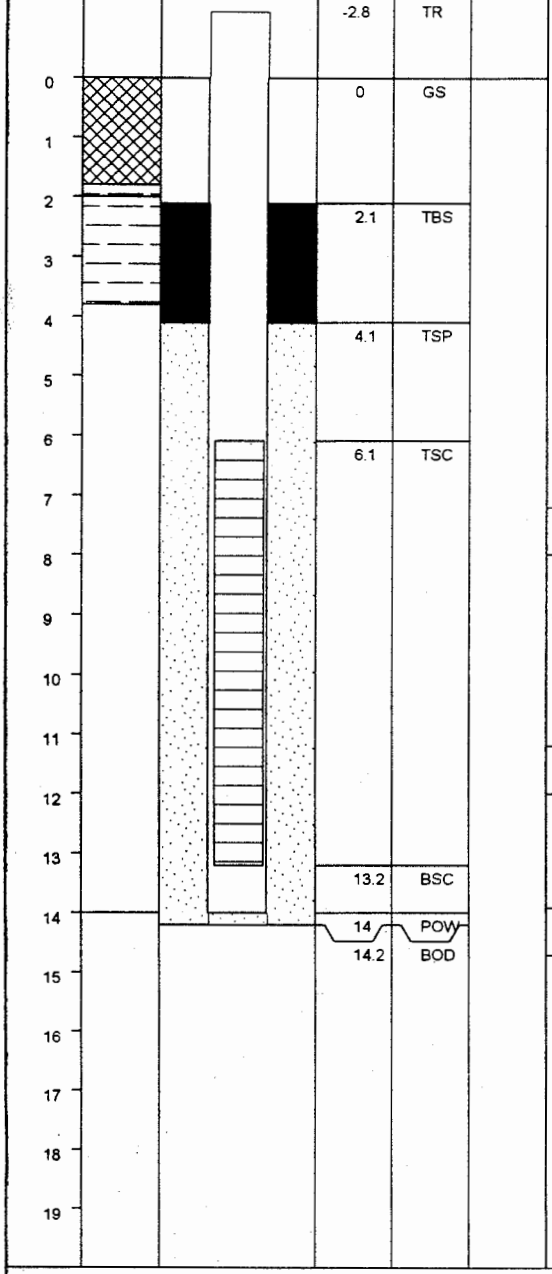
TEMPORARY WELL COMPLETION REPORT: MW12-27

TEMPORARY WELL COMPLETION REPORT: MW12-29

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/15/98
WELL INSTALLATION COMPLETED 10/15/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.9

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.1
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 1.9

SANDPACK
Type: #0, #00
Length (ft): 10.1

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

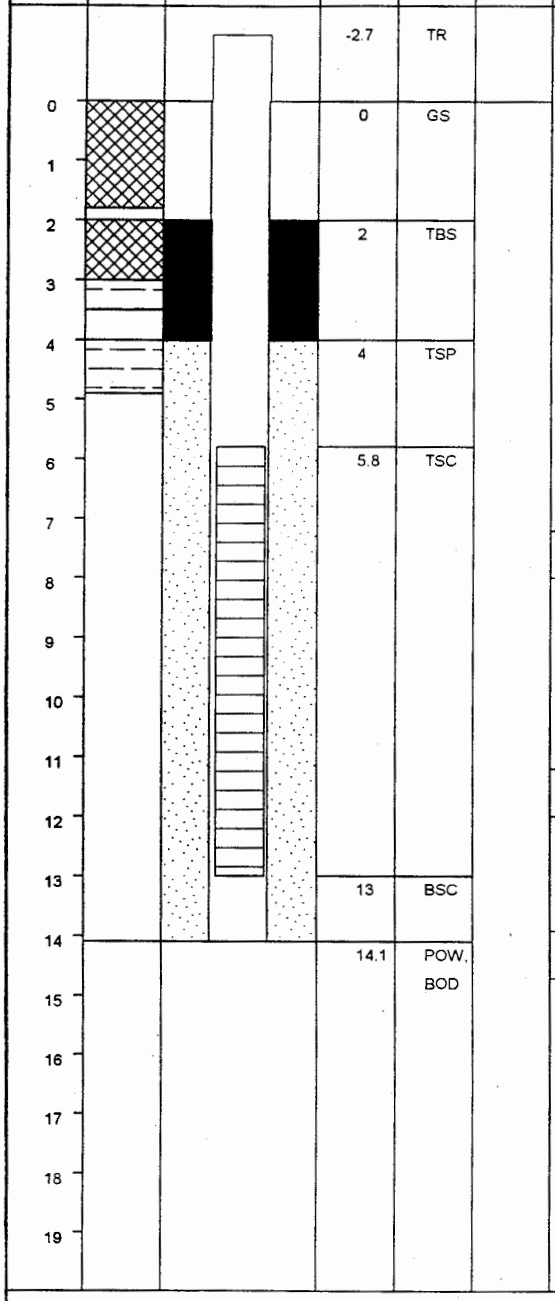
TEMPORARY WELL COMPLETION REPORT: MW12-29

TEMPORARY WELL COMPLETION REPORT: MW12-30

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/16/98
WELL INSTALLATION COMPLETED 10/16/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 14.1
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.5

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.2
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 10.1

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

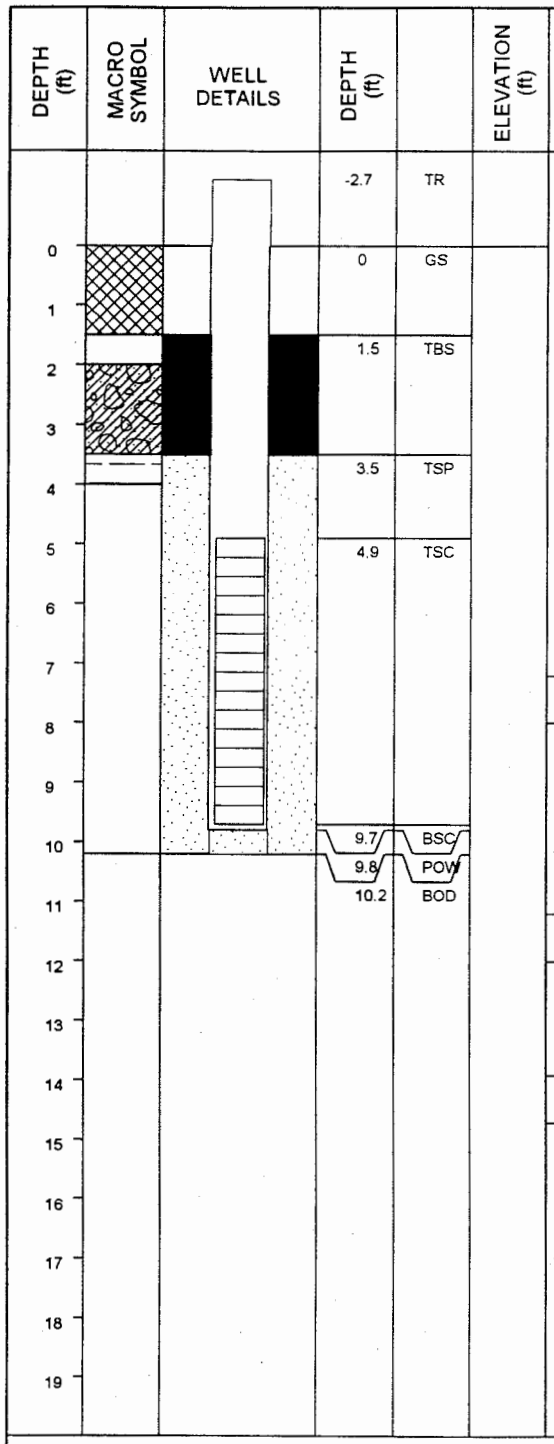
TEMPORARY WELL COMPLETION REPORT: MW12-30

TEMPORARY WELL COMPLETION REPORT: MW12-31

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/26/98
WELL INSTALLATION COMPLETED 10/26/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 9.8
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.6

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.8
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 6.7

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			▽
Installation			▼

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

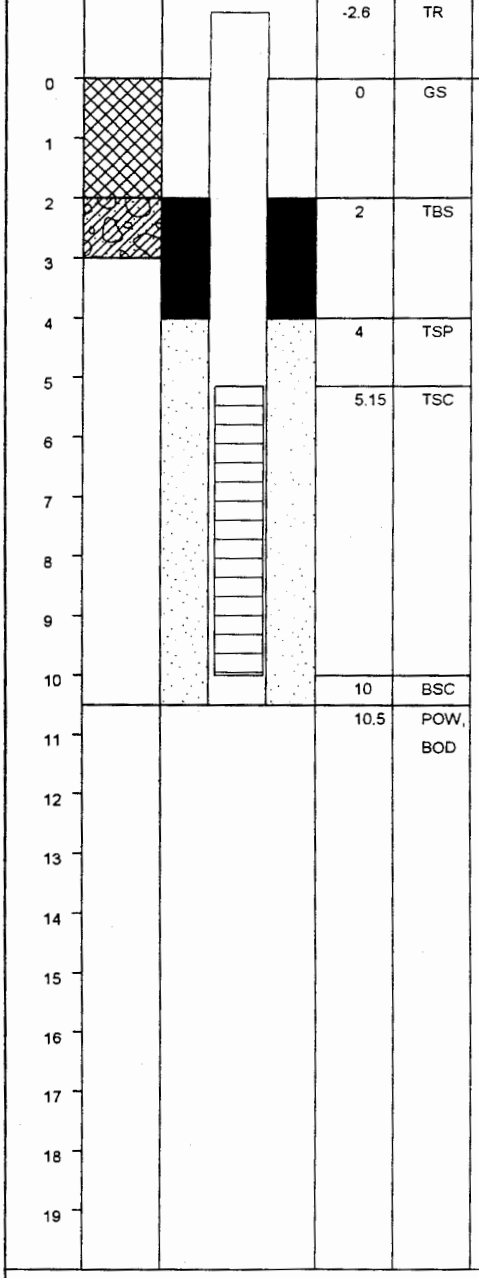
TEMPORARY WELL COMPLETION REPORT: MW12-31

TEMPORARY WELL COMPLETION REPORT: MW12-32

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/26/98
WELL INSTALLATION COMPLETED 10/26/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.5
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.75

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.85
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 6.5

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

TEMPORARY WELL COMPLETION REPORT: MW12-32

BEDROCK MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: Seneca Army Depot | WELL #: MW12-35

PROJECT: Sead-12 RI/FS
LOCATION: North of SC4, immediately downgradient of Washout UST
PROJECT NO: 730047-01001
INSPECTOR: DRG/ITR
CHECKED BY: DRG

DRILLING CONTRACTOR: Maxim Technology
DRILLER: Rodney Bush
DRILLING COMPLETED: 11/3/98
DEPTH TO BEDROCK: 16.8'
BORING DEPTH: 38.8'
DRILLING METHOD(S): HQ core (2.5")
BORING DIAMETER(S): 3 1/2
ASSOCIATED SWMU/AOC: Sead-12
POW DEPTH: 38' (BGS)
OUTER CASING INSTALLATION: 10/30/98
INNER CASING INSTALLATION: 11/3/98
SURFACE COMPLETION DATE: 11/4/98
COMPLETION CONTRACTOR/CREW: maxim
CORE TYPE/SIZE: HQ (2.5")
FOOTAGE CORED: 2'
ESTIMATED GROUND ELEVATION:

PROTECTIVE CASING: DIAMETER: 6" LENGTH: 19'

OUTER CASING: TC: -2.5' TYPE: steel DIAMETER: 6" LENGTH: 19' POC: 16.8'

RISER: TR: -2.5' TYPE: PVC sch 40 DIAMETER: 2" LENGTH: 30.2'

SCREEN: TSC: 27.7' (BGS) TYPE: sch 40 PVC DIAMETER: 2" LENGTH: ~~10~~ DRG 9.8' SLOT SIZE: 0.010"

POINT OF WELL: (SILT SUMP) TYPE: Sump BSC: 37.5 (BGS) POW: 38' (BGS)

GROUT:
OUTER TG: 2' TYPE: Cement / Bentonite LENGTH: 14.8'
INNER TG: 0' TYPE: Cement / Bentonite LENGTH: 14.8

SEAL: TBS: 14.8' TYPE: Bentonite chip LENGTH: 9.9'

SAND PACK: TSP: ~~24.7~~ 25.7 TYPE: ~~mone #00~~ mone #C LENGTH: ~~1.0'~~ 13.1'

SURFACE COLLAR: TYPE: Concrete RADIUS: 2' THICKNESS CENTER: 1' THICKNESS EDGE: 4"

CENTRALIZER DEPTHS: DEPTH 1: 38' - 37.5' DEPTH 2: 27.5' - 27.0' DEPTH 3: DEPTH 4:

COMMENTS: BOD 38.8' Backfill 0.8' with well sand.

• ALL MEASUREMENTS REFERENCED TO GROUND SURFACE

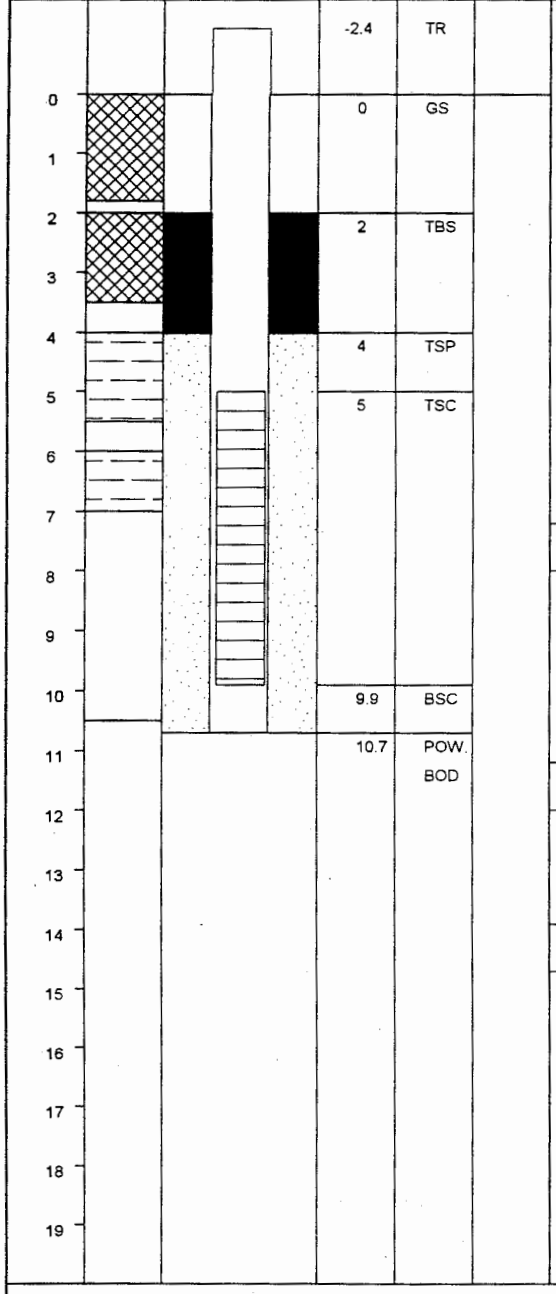
SEE PAGE 2 FOR SCHEMATIC

TEMPORARY WELL COMPLETION REPORT: MW12-37

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 11/1/98
WELL INSTALLATION COMPLETED 11/1/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.7
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 7.4

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.9
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 6.4

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

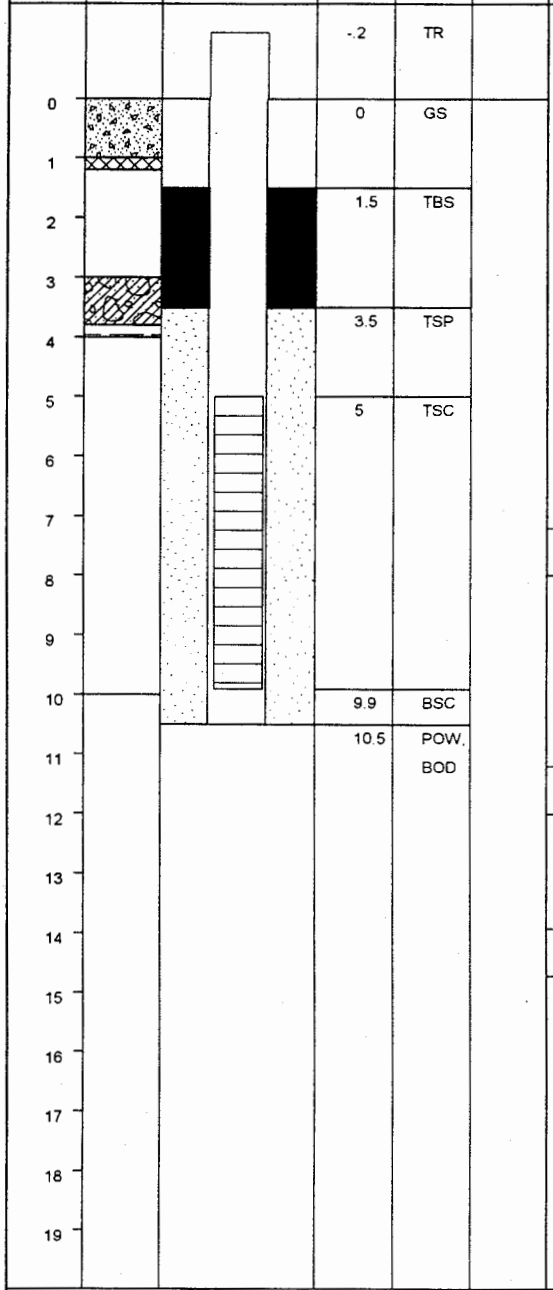
TEMPORARY WELL COMPLETION REPORT: MW12-37

TEMPORARY WELL COMPLETION REPORT: MW12-38

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 11/1/98
WELL INSTALLATION COMPLETED 11/1/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.5
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.8

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.9
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2.5

SANDPACK
Type: #0, #00
Length (ft): 6.3

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK
LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

TEMPORARY WELL COMPLETION REPORT: MW12-38

TEMPORARY WELL COMPLETION REPORT: MW12-39

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 11/1/98
WELL INSTALLATION COMPLETED 11/1/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.5
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: TGH
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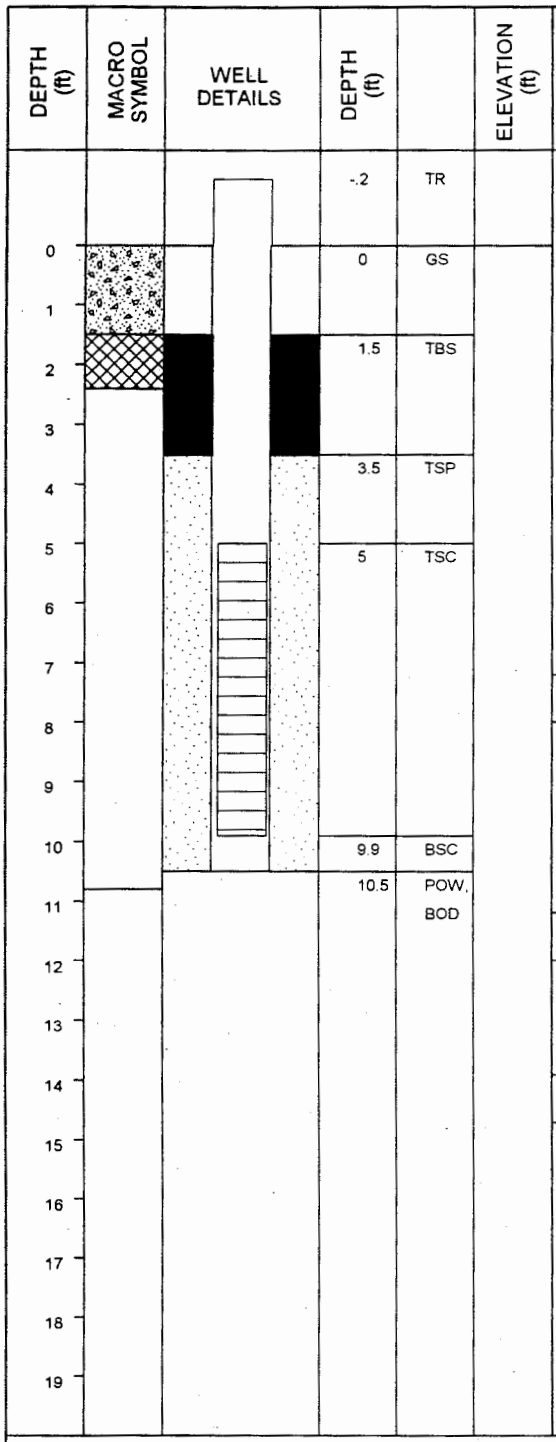


DEPTH (ft)		TR
	-.2	TR
0	0	GS
1.5	1.5	TBS
3.5	3.5	TSP
5	5	TSC
9.9	9.9	BSC
10.5	10.5	POW, BOD

ELEVATION (ft)

WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.8

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.9
Slot Size (in): 10

SEAL
Type: 1.5
Length (ft): 2.5

SANDPACK
Type: #0, #00
Length (ft): 6.3

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

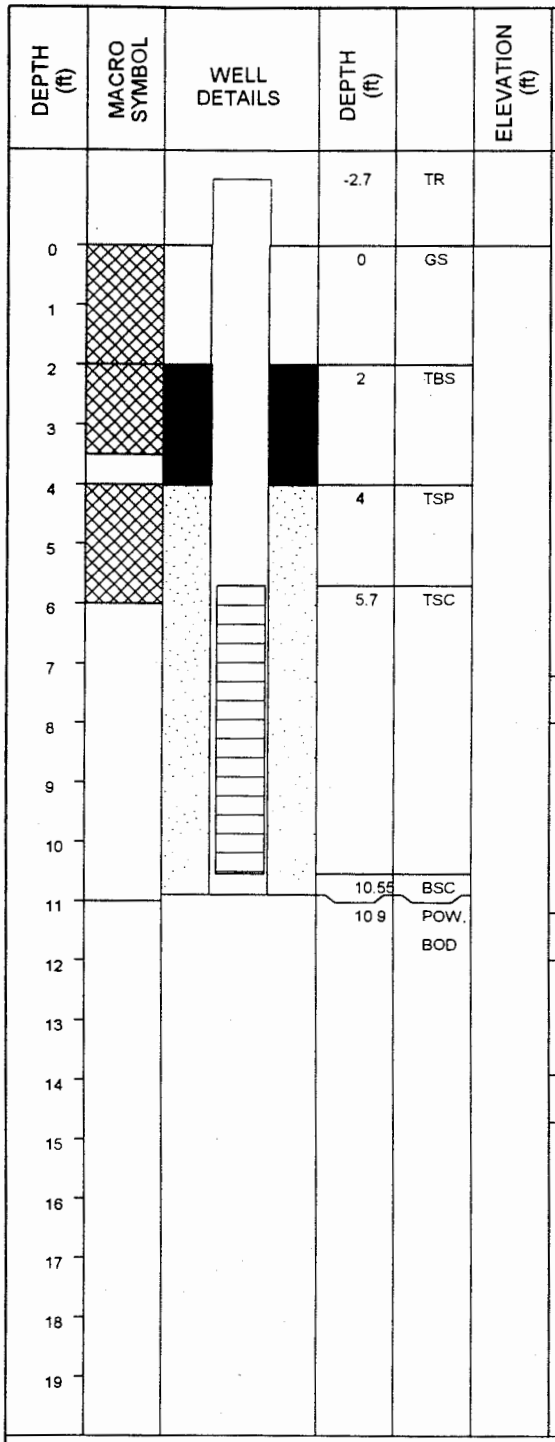
TEMPORARY WELL COMPLETION REPORT: MW12-39

TEMPORARY WELL COMPLETION REPORT: MW12-40

PROJECT: SEDA
PROJECT LOCATION: Seneca Army Depot, Romulus, New York
ASSOCIATED AREA/UNIT: SEAD 12
PROJECT NO.: 730047
WELL INSTALLATION STARTED: 10/15/98
WELL INSTALLATION COMPLETED 10/15/98
DRILLING CONTRACTOR: Maxim
DRILLING METHOD: HSA 8"
SAMPLING METHOD: Split Spoon

TOTAL DEPTH: 10.9
DEPTH TO WATER:
BORING LOCATION:

COORDINATE SYSTEM: NAD83
GROUND SURFACE ELEVATION:
ELEVATION DATUM: NAVD1927
INSPECTOR: ITR
CHECKED BY:



WELL CONSTRUCTION DETAILS

RISER
Diameter (ID) (in): 2
Type: PVC
Length (ft): 8.4

SCREEN
Diameter (ID) (in): 2
Type: PVC
Length (ft): 4.85
Slot Size (in): 10

SEAL
Type: BENTONITE
Length (ft): 2

SANDPACK
Type: #0, #00
Length (ft): 6.9

WELL DEVELOPMENT DATA

Date:
Method:
Duration:
Rate:
Total Volume Removed (gals):

WATER LEVELS

	Date	Time	Depth, TR
Development			
Installation			

LEGEND

TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
POW	POINT OF WELL
BOD	BOTTOM OF DRILL HOLE
in	INCHES
ft	FEET
ID	INSIDE DIAMETER
gals	GALLONS
SCH	SCHEDULE
NA	NOT APPLICABLE

WELL DETAILS: SEAL, SANDPACK

LITHOLOGY: FILL, TILL, SHALE

NOTES:

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

TEMPORARY WELL COMPLETION REPORT: MW12-40

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-1

PROJECT: 10 SWMU. | PROJECT NO:
LOCATION: SEAD 13 | INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire | POW DEPTH: 12'
DRILLER: John | INSTALLATION STARTED: 12-8-93
DRILLING COMPLETED: 12-8-93 | INSTALLATION COMPLETED: 12-8-93
BORING DEPTH: 12' | SURFACE COMPLETION DATE:
DRILLING METHOD(S): HSA | COMPLETION CONTRACTOR/CREW: Empire
BORING DIAMETER(S): 8½" | BEDROCK CONFIRMED (Y/N?)
ASSOCIATED SWMU/AOC: 13 | ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" | LENGTH:

RISER:
TR: | TYPE: PVC 40 | DIAMETER: 2" | LENGTH:

SCREEN:
TSC: 4.3' | TYPE: PVC 40 | DIAMETER: 2" | LENGTH: 2' + 4' | SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point | BSC: 11.1' | POW: 12.0'

GROUT:
TG: Ground | TYPE: Cement-bentonite | LENGTH: 2.0'

SEAL: TBS: 2.0' | TYPE: bentonite pellets | LENGTH: 1'

SAND PACK: TSP: 3.0' #1 2.5' #3 | TYPE: #3 and #1 | LENGTH: 9.0'

SURFACE COLLAR:
TYPE: | RADIUS: 2'x 2' | THICKNESS CENTER: 1' | THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: | DEPTH 2: | DEPTH 3: | DEPTH 4:

COMMENTS:

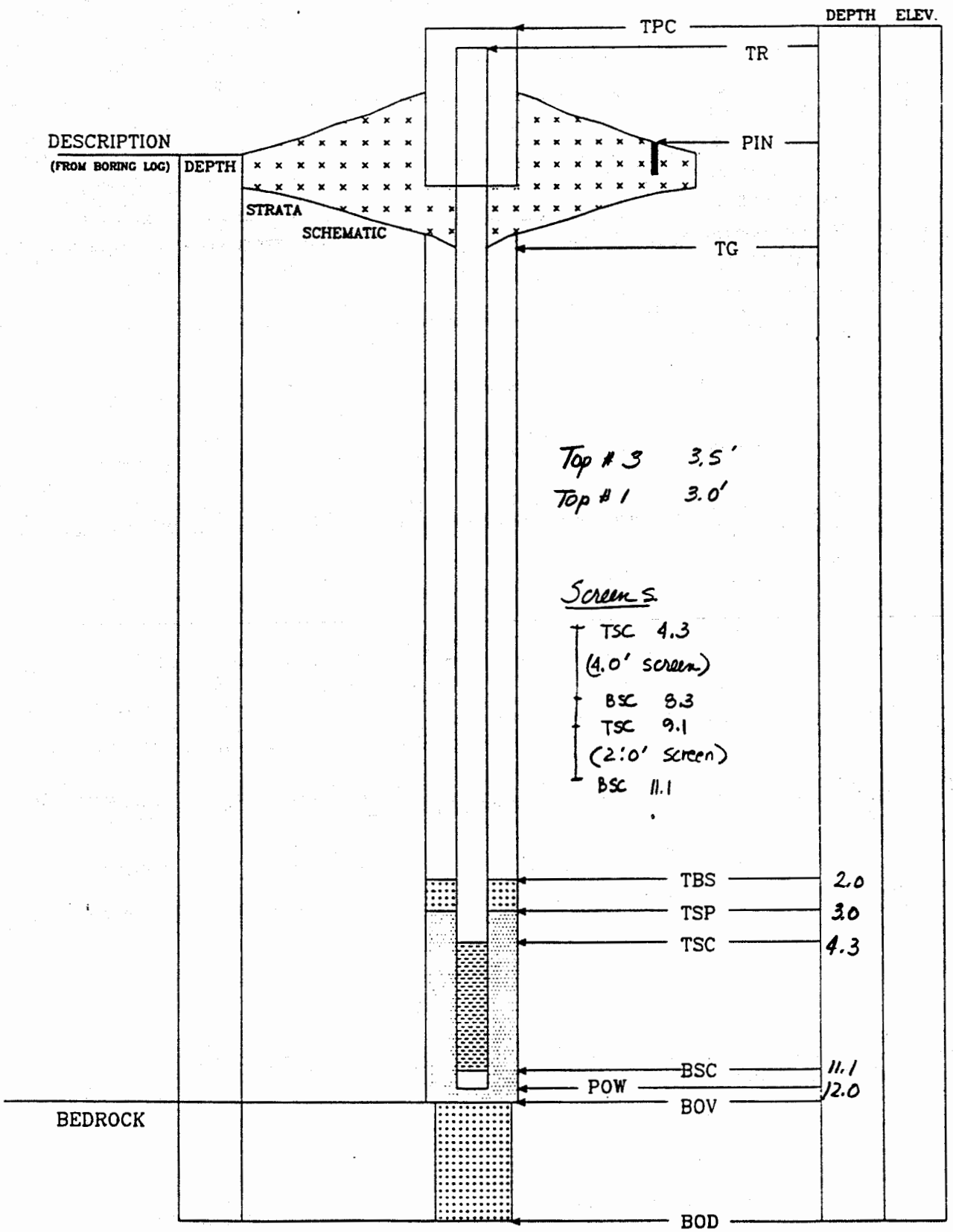
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC.	CLIENT:	WELL #: 13-1

DATE: 12-8-93



Note: depth measured from ground.

• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-2

PROJECT: 10 SWMU
LOCATION: SEAD 13
PROJECT NO:
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Bob
DRILLING COMPLETED: 11/9/93
BORING DEPTH: 160'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 13

POW DEPTH: 160'
INSTALLATION STARTED: 11/9/93
INSTALLATION COMPLETED: 11/9/93
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" Steel LENGTH: 5' total

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 6.3' TYPE: PVC-40 DIAMETER: 2" LENGTH: 9.0' SLOT SIZE: .01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC Cap BSC: 15.3' POW: 16.0

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 3.0'

SEAL: TBS: 3.0' TYPE: Benton-pellets LENGTH: 1.0'

SAND PACK: TSP: #3 - 5.3' #1-4.5' TYPE: #3-#1 Silica LENGTH: 10.2'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

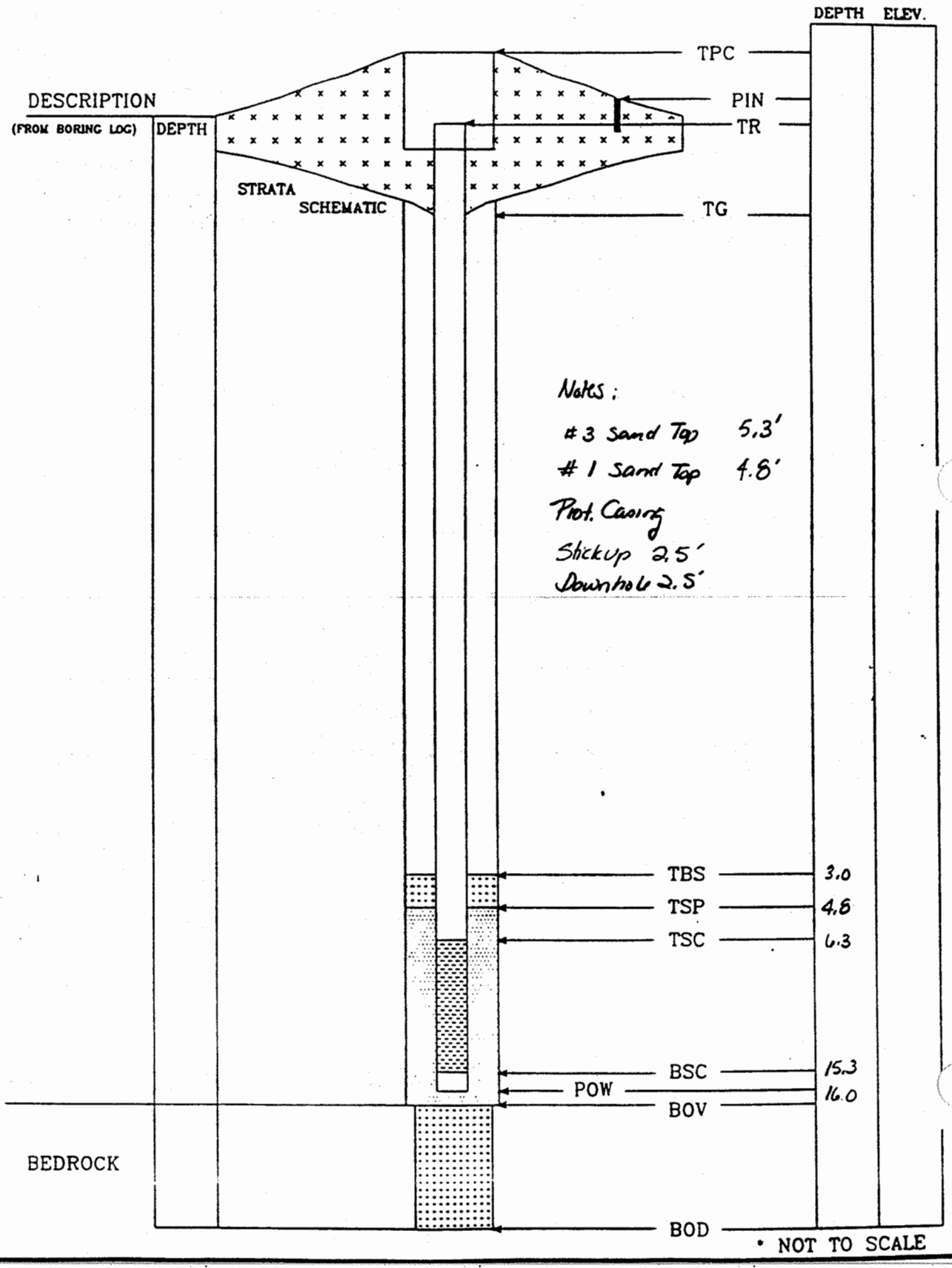
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC.	CLIENT:	WELL #: MW13-2

DATE: 11/9/93



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-3

PROJECT: 10 SWMU
LOCATION: SEAD13
PROJECT NO:
INSPECTOR:
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Bob
DRILLING COMPLETED: 12-13-93
BORING DEPTH: 24.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 13
POW DEPTH: 24.0'
INSTALLATION STARTED: 12-8-93
INSTALLATION COMPLETED: 12-13-93
SURFACE COMPLETION DATE: 12-13-93
COMPLETION CONTRACTOR/CREW:
BEDROCK CONFIRMED (Y/N?) N
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH: 5'

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN: Two screens - 4' and 9'
TSC: 8.9' TYPE: PVC-40 DIAMETER: 2" LENGTH: 13' SLOT SIZE: .01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC-point BSC: 22.9' POW: 24.0'

GROUT:
TG: Ground TYPE: Cem-bentonite LENGTH: 5.5'

SEAL: TBS: 5.5' TYPE: bentonite pellets LENGTH: 2.0'

SAND PACK: TSP: #3-8' #1-7.5' TYPE: #3 + #1 LENGTH: 16.5'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: Ø DEPTH 3: DEPTH 4:

COMMENTS:

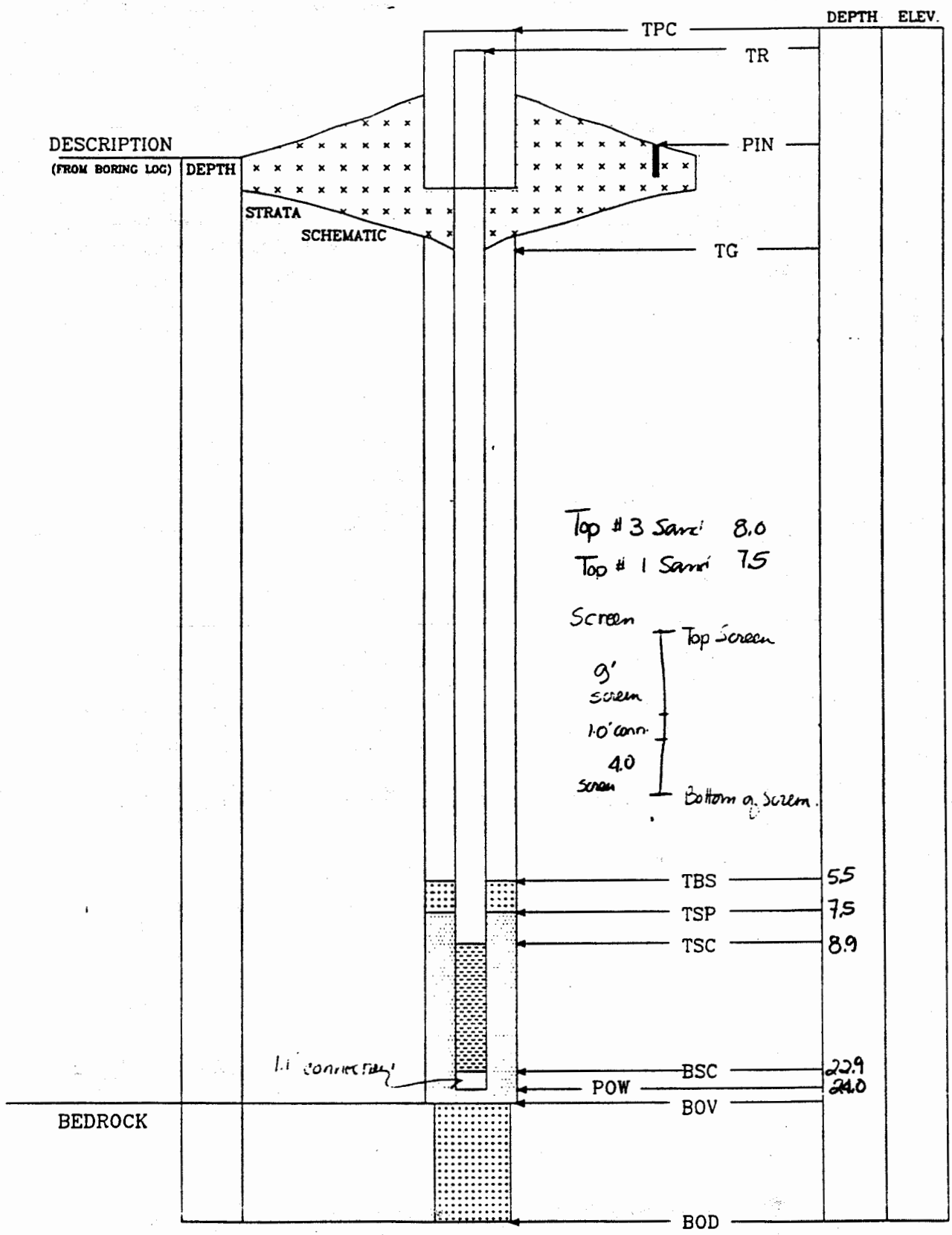
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-3

DATE: 12-13-93



Depth measured to ground surface

• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-4

PROJECT: 10 SWMU | PROJECT NO:
LOCATION: SEAD 13 | INSPECTOR: ES/MB/KK
CHECKED BY:

DRILLING CONTRACTOR: Empire | POW DEPTH: 8.5'
DRILLER: Scott | INSTALLATION STARTED: 12-15-93
DRILLING COMPLETED: | INSTALLATION COMPLETED:
BORING DEPTH: 8.5' | SURFACE COMPLETION DATE:
DRILLING METHOD(S): HSA | COMPLETION CONTRACTOR/CREW: Empire/Scott
BORING DIAMETER(S): 8 1/2" | BEDROCK CONFIRMED (Y/N?)
ASSOCIATED SWMU/AOC: 13 | ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 2.5' TYPE: PVC 40 DIAMETER: 2" LENGTH: 4.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 7.5' POW: 8.5'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 1.5'

SEAL: TBS: 1.5' TYPE: bentonite pellets LENGTH: 1.0'

SAND PACK: TSP: #1-2.5' #3-3.0' TYPE: #3 and #1 LENGTH: 6.0'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

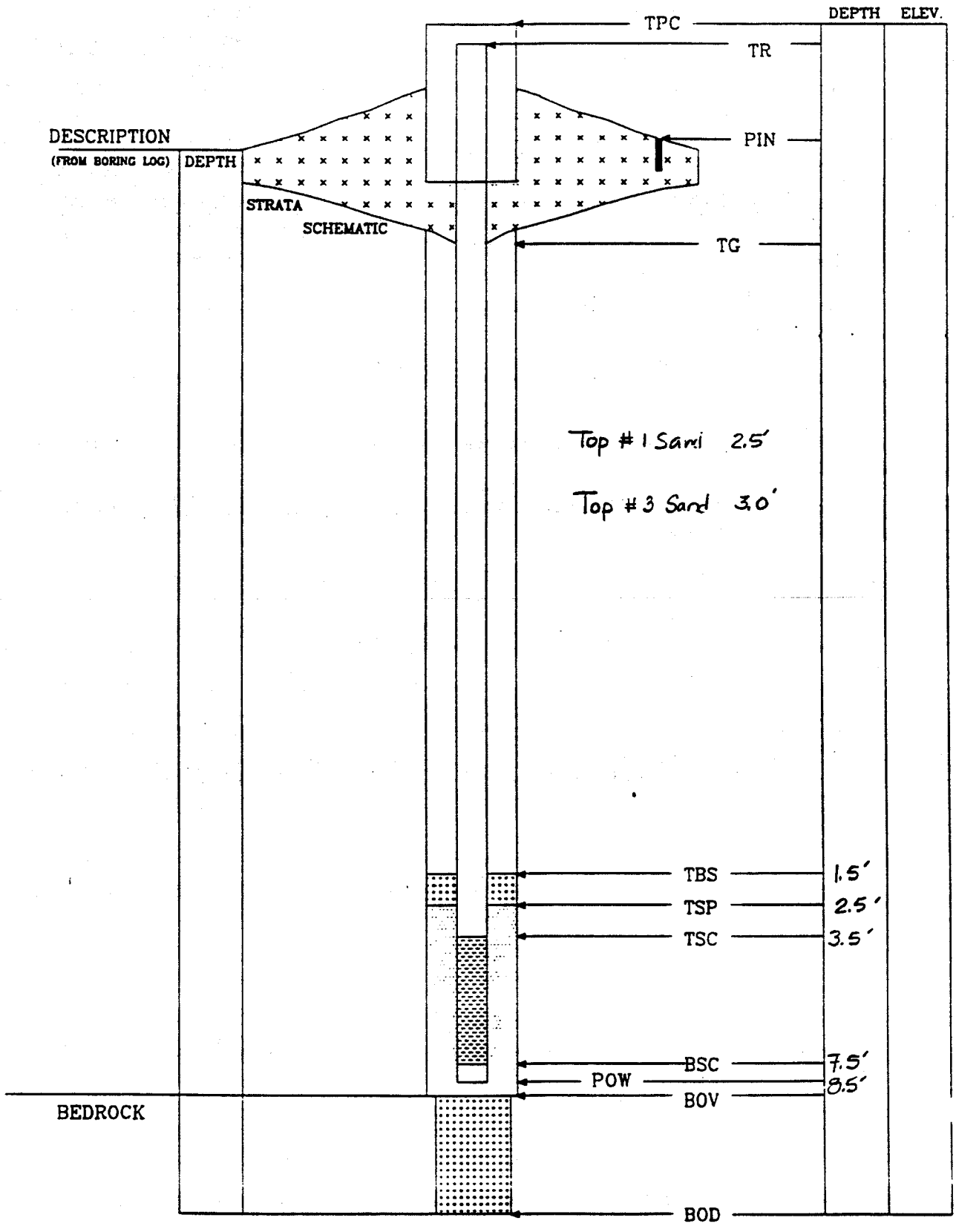
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-4

DATE: 12-15-93



• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACoE | WELL #: MW13-5

PROJECT: 10 SWMU
LOCATION: SEAD 13

PROJECT NO:
INSPECTOR: ES/LB
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Bob
DRILLING COMPLETED: 11/9/93
BORING DEPTH: 16.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 13

POW DEPTH: 16.0'
INSTALLATION STARTED: 11/8/93
INSTALLATION COMPLETED: 11/9/93
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH: 5.0' total

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 6.3' TYPE: PVC-40 DIAMETER: 2" LENGTH: 9.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC cap BSC: 15.3 POW: 16.0'

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 3.0'

SEAL: TBS: 3.0' TYPE: Bentonite pellets LENGTH: 1.8'

SAND PACK: TSP: #3 – 5.3' #1 – 4.8' TYPE: #3 + #1 Silica LENGTH: 10.2'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2' x 2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

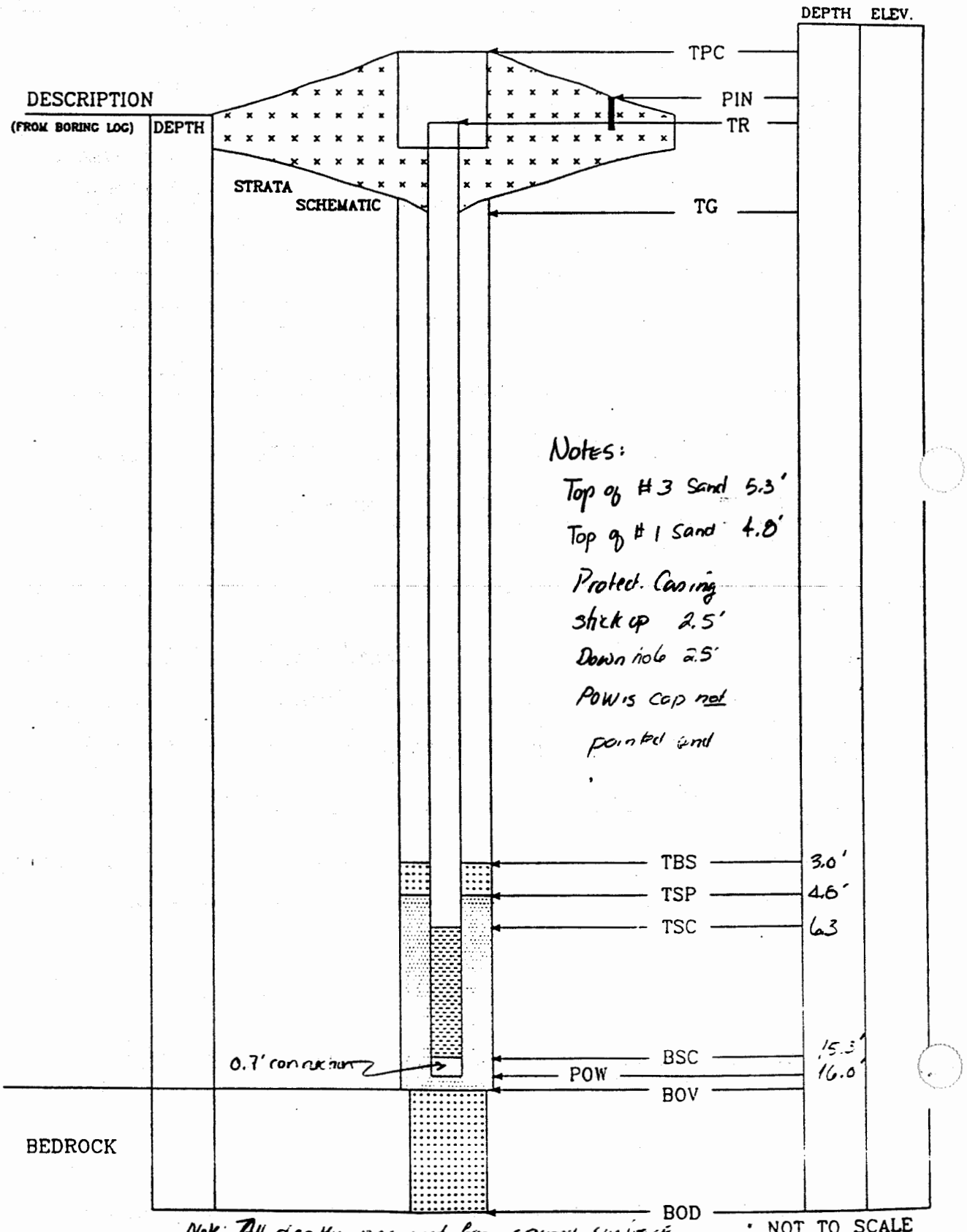
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC.	CLIENT: ACOE	WELL #: MW13-5

DATE 11/9/93



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: 13-6

PROJECT: 10 SWMU | PROJECT NO:
LOCATION: SEAD 13 | INSPECTOR: ES/MB/KK
CHECKED BY:

DRILLING CONTRACTOR: Empire | POW DEPTH: 10.0'
DRILLER: Scott | INSTALLATION STARTED: 12-15-93
DRILLING COMPLETED: 12-15-93 | INSTALLATION COMPLETED: 12-15-93
BORING DEPTH: 10.0' | SURFACE COMPLETION DATE: 12-17-93
DRILLING METHOD(S): HSA | COMPLETION CONTRACTOR/CREW: Empire/Scott
BORING DIAMETER(S): 8"2" | BEDROCK CONFIRMED (Y/N?)
ASSOCIATED SWMU/AOC: 13 | ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 5.0' TYPE: PVC-40 DIAMETER: 2" LENGTH: 4' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 9.0' POW: 10.0

GROUT:
TG: Ground TYPE: Cem-bentonite LENGTH: 2.5'

SEAL: TBS: 2.5' TYPE: bentonite pellets LENGTH: 1.0'

SAND PACK: TSP: 3.5'-#1 9.0-#3 TYPE: #3 + #1 LENGTH: 6.5'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1"

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

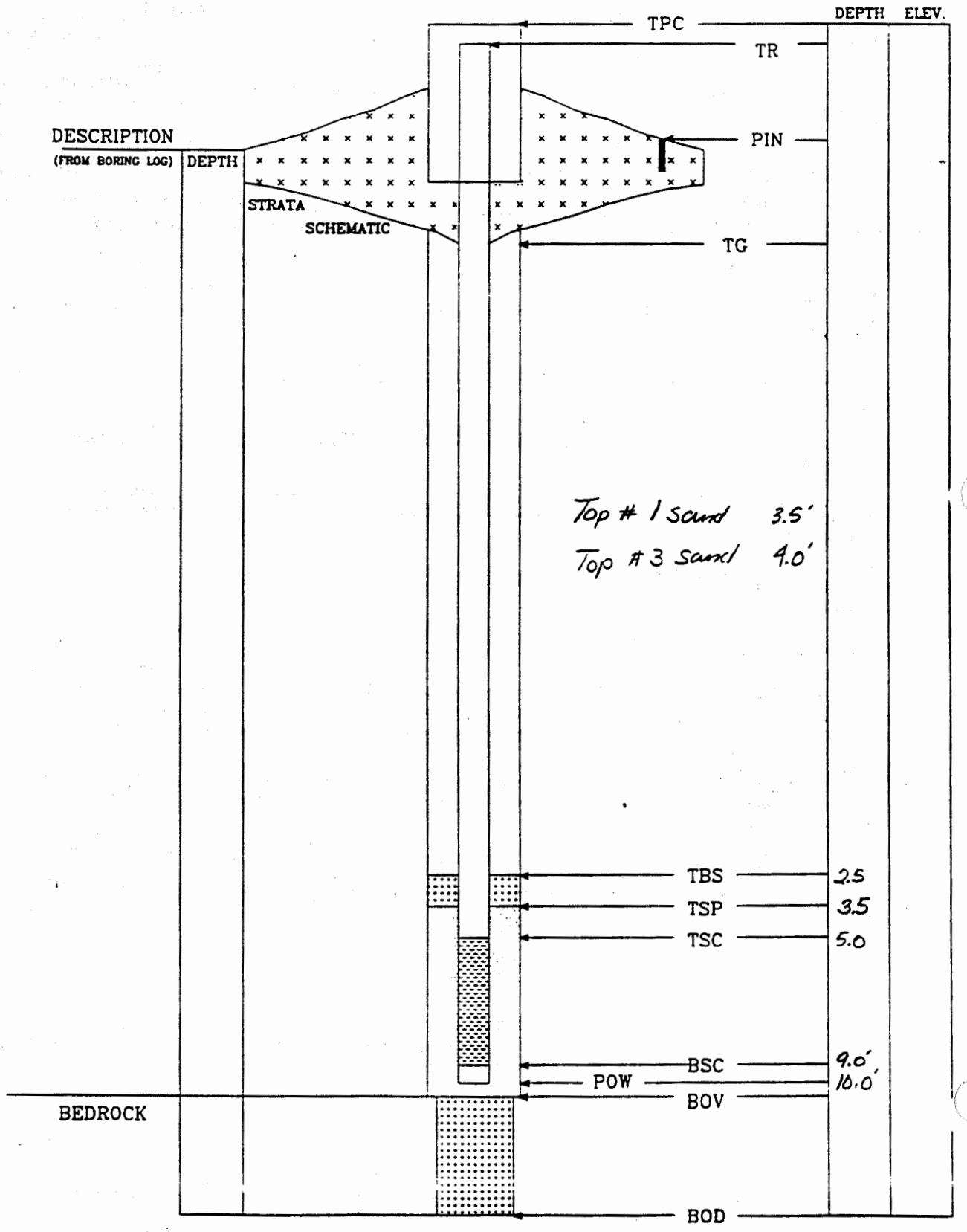
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW13-6

DATE: _____



• NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: | WELL #: MW 13-7

PROJECT: 10 SWMU ESI
LOCATION: Seneca Army Depot, Romulus, NY
PROJECT NO: 720478-01001
INSPECTOR: KF BH
CHECKED BY:

DRILLING CONTRACTOR: EMPIRE SOILS
DRILLER: JOHN/ED
DRILLING COMPLETED: 1-24-94
BORING DEPTH: 8.0 Ft
DRILLING METHOD(S): Hollow Stem Auger
BORING DIAMETER(S): 8.5 in
ASSOCIATED SWMU/AOC: SEAD 13

POW DEPTH: 8.0 ft
INSTALLATION STARTED: 1-24-94
INSTALLATION COMPLETED: 1-24-94
SURFACE COMPLETION DATE: 1-25 94
COMPLETION CONTRACTOR/CREW: NA
BEDROCK CONFIRMED (Y/N)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 2 in LENGTH:

RISER:
TR: + 2.5 ft. TYPE: PVC DIAMETER: 2 in LENGTH:

SCREEN:
TSC: 5.0 ft. TYPE: PVC DIAMETER: 2 in LENGTH: 2 ft SLOT SIZE: 1/100 in

POINT OF WELL: (SILT SUMP)
TYPE: PVC BSC: 7.0 ft POW: 8.0

GROUT: NA
TG: TYPE: LENGTH:

SEAL: TIS: 3.0 ft TYPE: bentonite pellets LENGTH: 1.0 ft.

SAND PACK: TSP: 4.0 ft. TYPE: #3 POC - 8.0 to 4.5 ft / #1 POC - 4.5 to 4.0 ft LENGTH:

SURFACE COLLAR:
TYPE: Quikrete RADIUS: 1 ft. THICKNESS CENTER: 3.0 ft THICKNESS EDGE: .5 ft.

CENTRALIZER DEPTHS NA
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

*ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

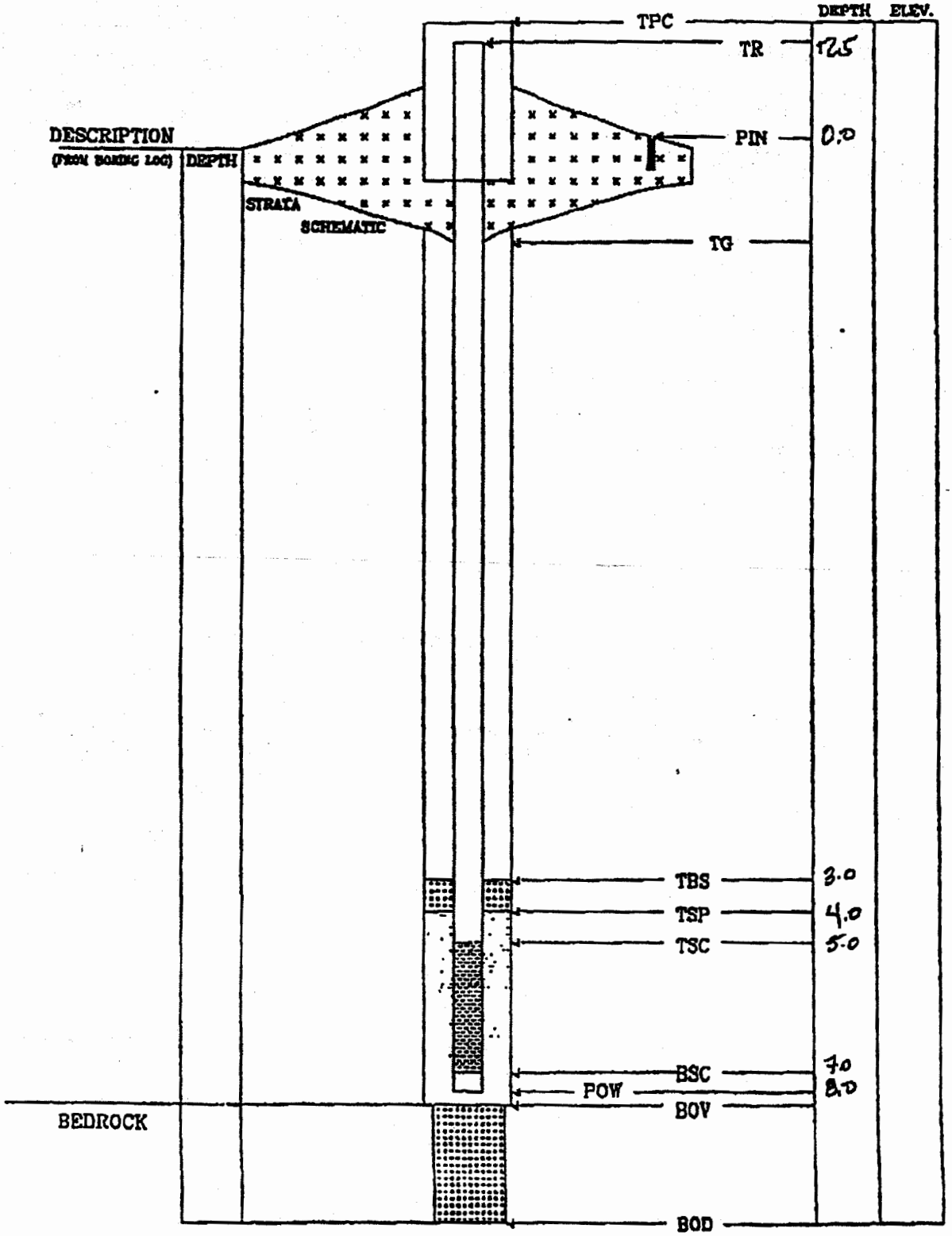
SEE PAGE 2 FOR SCHEMATIC

p2 of 3

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC. | CLIENT: USAWOE | WELL #: MW13-7

DATE: 1-24-94



F-95%

* NOT TO SCALE

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. Sheet # 1 of 1 # — **SB-13-11/MW-13-11**

Contractor: SJB, Inc.
Driller: John Warner
Inspector: E. Ashton
Rig Type: Mobile

PROJECT NAME: Seneca Army Depot-SEAD-13
PROJECT NUMBER: 736994

Location Description: SEE SITE PLAN

Weather: Cloudy-70 ' F
Date/Time Start: 8/16/01-0925
Date/Time Finish: 8/16/01-1310

Location Plan

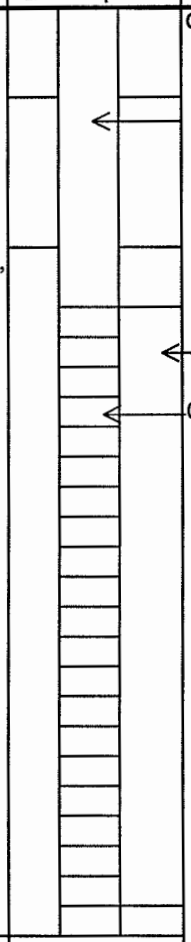
SEE SITE PLAN

GROUNDWATER OBSERVATIONS

Water Level	Dry	Dry	Dry	
Date	8/17/01	8/22/01	9/04/01	
Time	0825	1010	1130	
Meas. From	TOC	TOC	TOC	

Sampl Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0	134016	5/9	50	696	(0'-2') Brown to light Grey, silt with clay, trace of fine sand and fine gravel (weathered shale), roots, dry.-ML/SC
	(0-2)	16/15			
1					
2		14/16	50	175	(2'-4') Light Brown, fine sand with silt, fine to medium gravel (weathered shale), dry.-SM/SC
		21/21			
3					
4		9/16	50	190	(4'-6') Brown, silt with clay, fine to medium gravel (weathered shale), trace of fine sand, dry.-ML/SC
		22/28			
5					
6		53/60	80	91	(6'-8') Same as above.- ML/SC
		67/			
7		100/.4			
8	134017	13/19	80	264	(8'-10') Light Grey, fine to medium sand, fine to course gravel (weathered shale), silt, dry.-SM/SC
	(8-10)	24/37			
9					
10		13/37	80	106	(10'-11.8) Same as above.-SM/SC
		100/.4			Refusal at 11.8' bgs.
11					Note: Drilled to 15' bgs with HSAs.
12					
13					
14					
15					
					Terminated soil boring at 15 feet bgs.

SCHEMATIC (2.5'-stick-up)



COMMENTS:

Collected soil samples 134016 (0'-2') bgs and 134017 (8'-10') bgs for B/N/A SVOCs, TAL Metals, Cyanide, and Nitrate analysis.
Additionally, collected soil samples 134017 (8'-10') bgs MS & MSD for same analysis mention above.
Installed 2-inch monitoring well.

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

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACOE	WELL #: MW-13-11

PROJECT: 10 SWMU
LOCATION: SEAD 13
PROJECT NO: 736994
INSPECTOR: Ed Ashton
CHECKED BY: Ed Ashton

DRILLING CONTRACTOR: SJB, Inc.
DRILLER: John Warner
DRILLING COMPLETED: 8/16/01
BORING DEPTH: 15'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2-in
ASSOCIATED SWMU/AOC: 13

POW DEPTH: 15'
INSTALLATION STARTED: 8/16/01 @ 0925
INSTALLATION COMPLETED: 8/16/01 @ 1310
SURFACE COMPLETION DATE: 8/17/01
COMPLETION CONTRACTOR/CREW: SJB, Inc.
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH: 3.5' TOR:

RISER:
TOC: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.5' TYPE: PVC 40 DIAMETER: 2" LENGTH: 10' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
YPE: PVC Point BSC: 14.5' POW: 15'

GROUT:
TG: Ground TYPE: Cement-Bent. LENGTH: 1.0'

SEAL: TBS: 1.0' TYPE: Bent. pellets LENGTH: 2.5'

SAND PACK: TSP: 3.5' TYPE: #0 LENGTH: 11.5'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

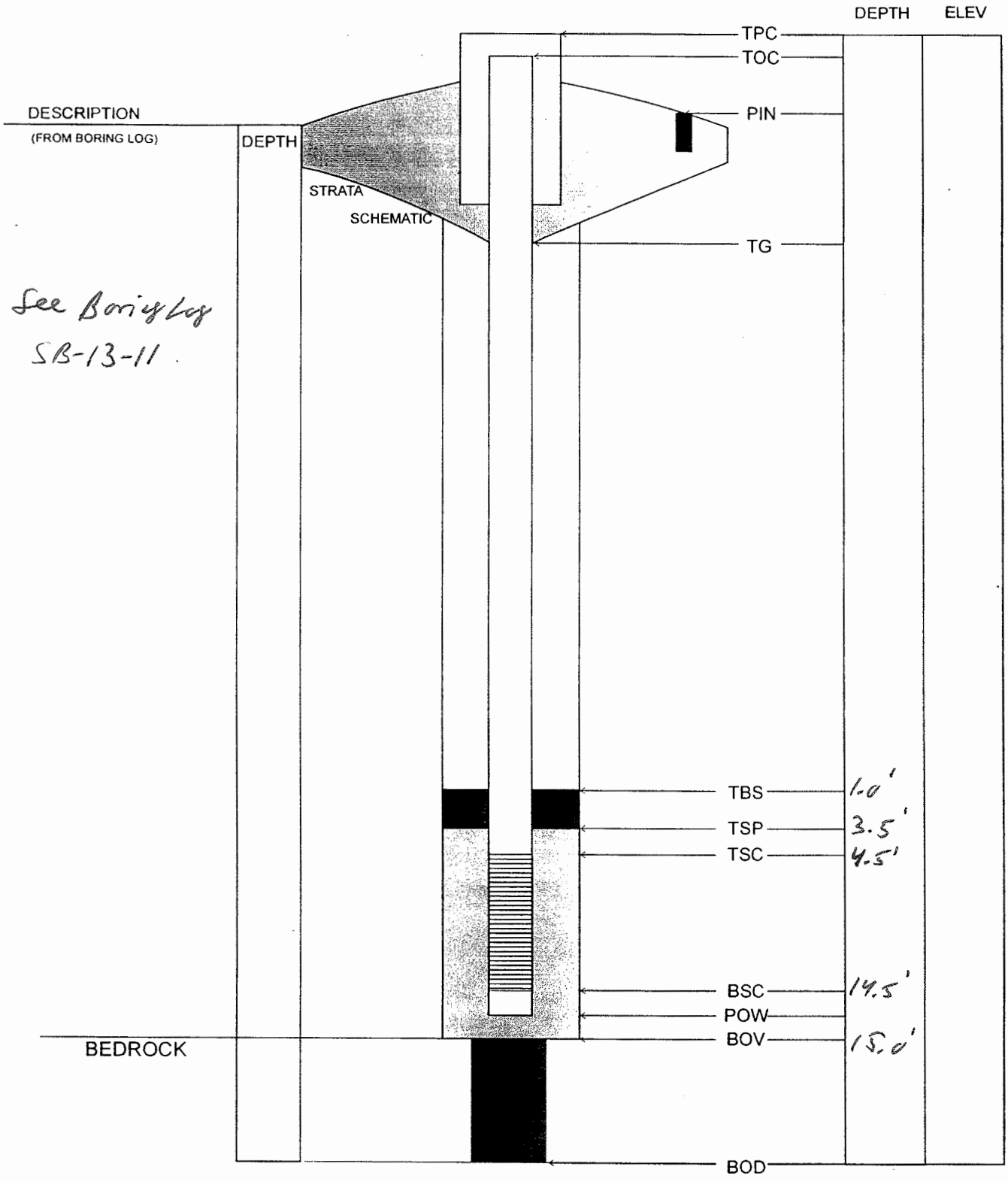
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

PARSONS ENGINEERING SCIENCE, INC. | CLIENT: ACOE | WELL #: MW-13-11

DATE: 8/16/01



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Contractor: SJB, Inc.	**PARSONS ENGINEERING SCIENCE, INC.**	**BORING/**	**Sheet # 1 of 1 #**
Driller: John Warner	**DRILLING RECORD**	**WELL NO.**	**SB-13-12/MW-13-12**
Inspector: E. Ashton		**Location Description:**	
Rig Type: Mobile	**PROJECT NAME:** Seneca Army Depot-SEAD-13	SEE SITE PLAN	
	PROJECT NUMBER: 736994		

GROUNDWATER OBSERVATIONS				
Water Level	Dry	Dry	9.45	
Date	8/17/01	8/22/01	9/4/01	
Time	0830	1020	1233	
Meas. From	TOC	TOC	TOC	

Weather: Sunny-70'F

Date/Time Start: 8/15/01-1000

Date/Time Finish: 8/15/01-1306

Location Plan

SEE SITE PLAN

Sampl Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC 2.5'-stick-up	COMMENTS
0	134018	2/3	80	157	(0'-2') Brown, clay with silt, trace of fine sand, roots, dry to moist.		Grout 0-1'
	(0-2)	5/6			CL/ML		2" PVC Riser
1							1'
							Bentonite Pellets 1-1.75'
2		8/21	50	74	(2'-3.5') Brown to light Brown, clay with silt, trace of fine sand, dry.		1.75'
		18/16			CL/ML		2'
3							Filtered sand (#0)
					(3.5'-4') Light Grey to light Brown, silt with clay, trace of fine sand		pack-1.75-11.3'
4		16/29	50	90.5	and fine to medium gravel (weathered shale), dry.- ML/SC		
		35/37			(4'-6) Grey to Light Grey, silt with clay, trace of fine sand, fine to		
5					medium gravel (weathered shale), dry. - ML/SC		
6	134019	62/76	90	100	(6'-8') Brown to light Grey, silt, trace of clay and fine sand, fine to		
	(6-8)	67/67			medium gravel (weathered shale), dry.- ML/SC		0.010 Slot Sch. 40 PVC
7							Screen-2-9.3'
8		16/32	80	25	(8'-10') Same as above, except for soil Grey in color.		
		46/66					
9							9.3'
							Sump
10		36/58	50	82.2	(10'-11.3') Same as above. Refusal at 11.3' bgs. Weathered shale at		10' (9.3'-10')
		100/.3			tip of spoon.		
11							
							11.3'
12					Terminated soil boring at 11.3 feet bgs.		

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil samples 134018 (0'-2') bgs and 134019 (6'-8') bgs for B/N/A SVOCs, TAL Metals, Cyanide, and Nitrate analysis.

Installed 2-inch monitoring well.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACoE	WELL #: MW-13-12

PROJECT: 10SWMU
LOCATION: SEAD13
PROJECT NO: 736944
INSPECTOR: Ed Ashton
CHECKED BY: Ed Ashton

DRILLING CONTRACTOR: SJB, Inc.
DRILLER: John Warner
DRILLING COMPLETED: 8/15/01
BORING DEPTH: 11.3'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8¼-in
ASSOCIATED SWMU/AOC: 13
POW DEPTH: 11.3'
INSTALLATION STARTED: 8/15/01 @ 1000
INSTALLATION COMPLETED: 8/15/01 @ 1306
SURFACE COMPLETION DATE: 8/17/01
COMPLETION CONTRACTOR/CREW: SJB, Inc
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" Steel LENGTH: 3.5' TOR:

RISER:
TOC: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 2' TYPE: PVC 40 DIAMETER: 2" LENGTH: 7.3' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
YPE: PVC Point BSC: 9.3' POW: 10.0'

GROUT:
TG: Ground TYPE: Cement-bent. LENGTH: 1.0'

SEAL: TBS: 1.0' TYPE: Bent. pellets LENGTH: 0.75'

SAND PACK: TSP: 1.75' TYPE: #0 LENGTH: 9.55'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

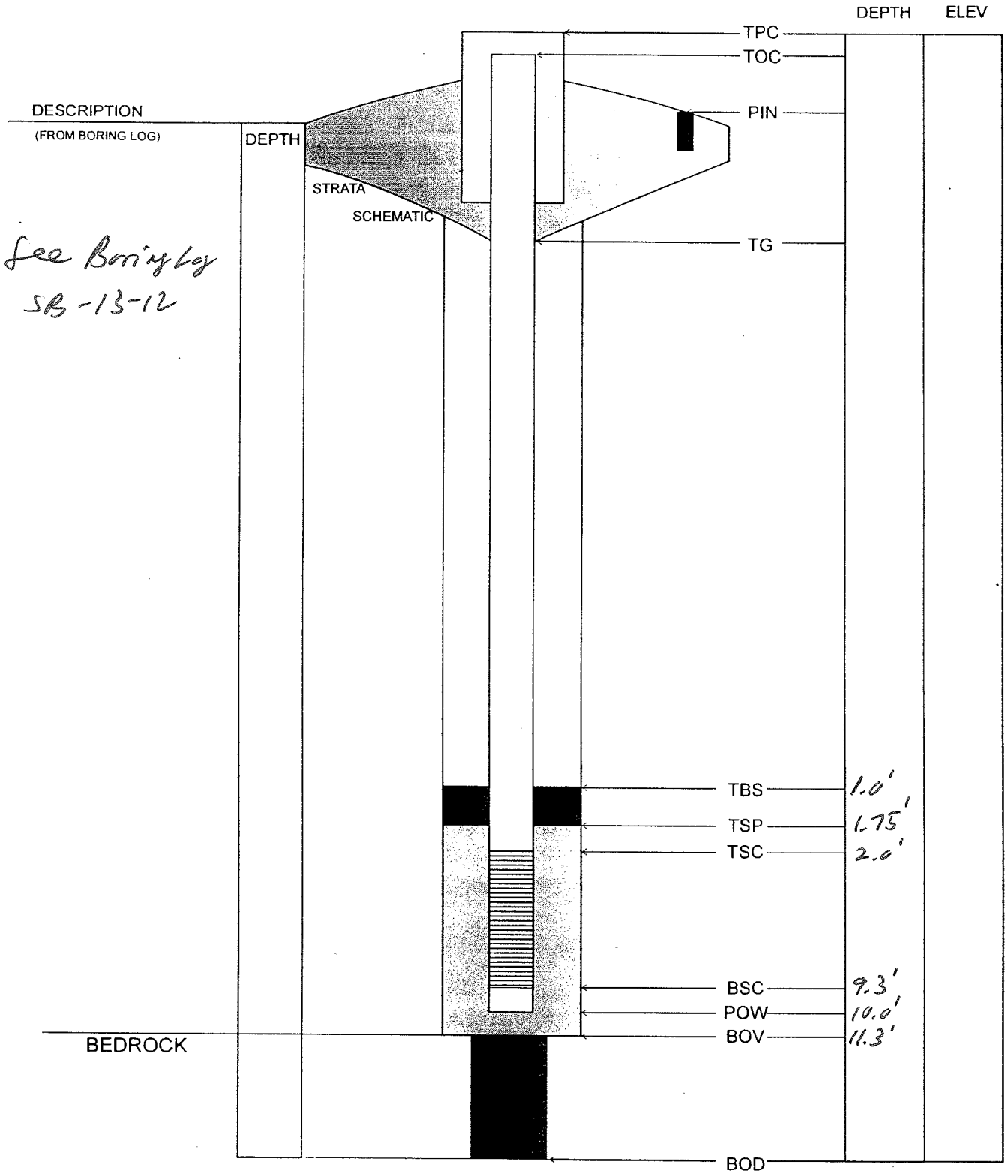
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACoE	WELL #: MW-13-12

DATE: 8/15/01



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Contractor: SJB, Inc. **Driller:** John Warner **Inspector:** E. Ashton **Rig Type:** Mobile	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** Seneca Army Depot-SEAD-13 **PROJECT NUMBER** 736994	**BORING/ WELL NO.** Sheet # 1 of 1 # **SB-13-13/MW-13-13** **Location Description:** SEE SITE PLAN

GROUNDWATER OBSERVATIONS				
Water Level	5.80'	8.10'	9.15	
Date	8/17/01	8/22/01	9/04/01	
Time	0815	0955	1121	
Meas. From	TOC	TOC	TOC	

Weather: Sunny-70'F

Date/Time Start: 8/15/01-1420

Date/Time Finish: 8/15/01-1741

Location Plan

SEE SITE PLAN

Sampl Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC 2.5'-stick-up	COMMENTS
0	134012	5/9	50	403	(0'-2') Brown, silt with clay, trace of fine sand, roots, dry. -ML/SC		Grout 0-1'
	(0-2)	16/15					
1	134020						1'
	(0-2)						2" PVC Riser
2		2/14	80	46	(2'-4') Same as above.- ML/SC		
		16/21					Bentonite Pellets 1-3.5'
3							
							3.5'
4		3/9	90	43.7	(4'-6') Brown, silt, trace of clay and fine sand, dry.- SC/ML		
		16/22					4.5'
5							
							Filtered sand (#0)
6		4/53	90	20	(6'-8') Same as above.- SC/ML		pack-3.5-15'
		60/67					0.010 Slot Sch. 40 PVC
7							Screen-4.5'-14.5'
8	134013	5/13	80	22	(8'-10') Brown to Grey, clay with silt, trace of fine sand and fine,		
	(8-10)	14/24			gravel,dry.-CL/ML		
9							
10		13/37	50	21	(10'-11.5') Grey, clay with silt, fine to course gravel		
		100/.3			(weathered shale), wet.-CL/ML		
11					Refusal at 11.5' bgs.		
					Note: Drilled to 15' bgs with HSAs.		
12							
13							
14							
							14.5'
15							15' Sump (14.5-15')
					Terminated soil boring at 15 feet bgs.		

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil samples 134012 (0'-2') bgs and 134013 (8'-10') bgs for B/N/A SVOCs, TAL Metals, Cyanide, and Nitrate analysis. Also, collected duplicate soil sample 134020 (0'-2') bgs for same parameters mentioned above. Installed 2-inch monitoring well. In field notebook as SB/MW13-9 for work during August and September 2001

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

13

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACOE	WELL #: MW-13-~~X~~

PROJECT: 10 SWMU
LOCATION: SEAD 13

PROJECT NO: 736994
INSPECTOR: Ed Ashton
CHECKED BY: Ed Ashton

DRILLING CONTRACTOR: SJB, Inc.
DRILLER: John Warner.
DRILLING COMPLETED: 8/15/01
BORING DEPTH: 15'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 13

POW DEPTH: 15'
INSTALLATION STARTED: 8/13/01 @ 1420
INSTALLATION COMPLETED: 8/13/01 @ 1741
SURFACE COMPLETION DATE: 8/17/01
COMPLETION CONTRACTOR/CREW: SJB
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x4" steel LENGTH: 3.5' TOR:

RISER:
TOC: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.5' TYPE: PVC 40 DIAMETER: 2" LENGTH: 10' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
YPE: PVC Point BSC: 14.5' POW: 15'

GROUT:
TG: Ground TYPE: Cement-Bent. LENGTH: 1.0'

SEAL: TBS: 1.0' TYPE: Bent. pellets LENGTH: 2.5'

SAND PACK: TSP: 3.5' TYPE: #0 LENGTH: 11.5'

SURFACE COLLAR:
TYPE: RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

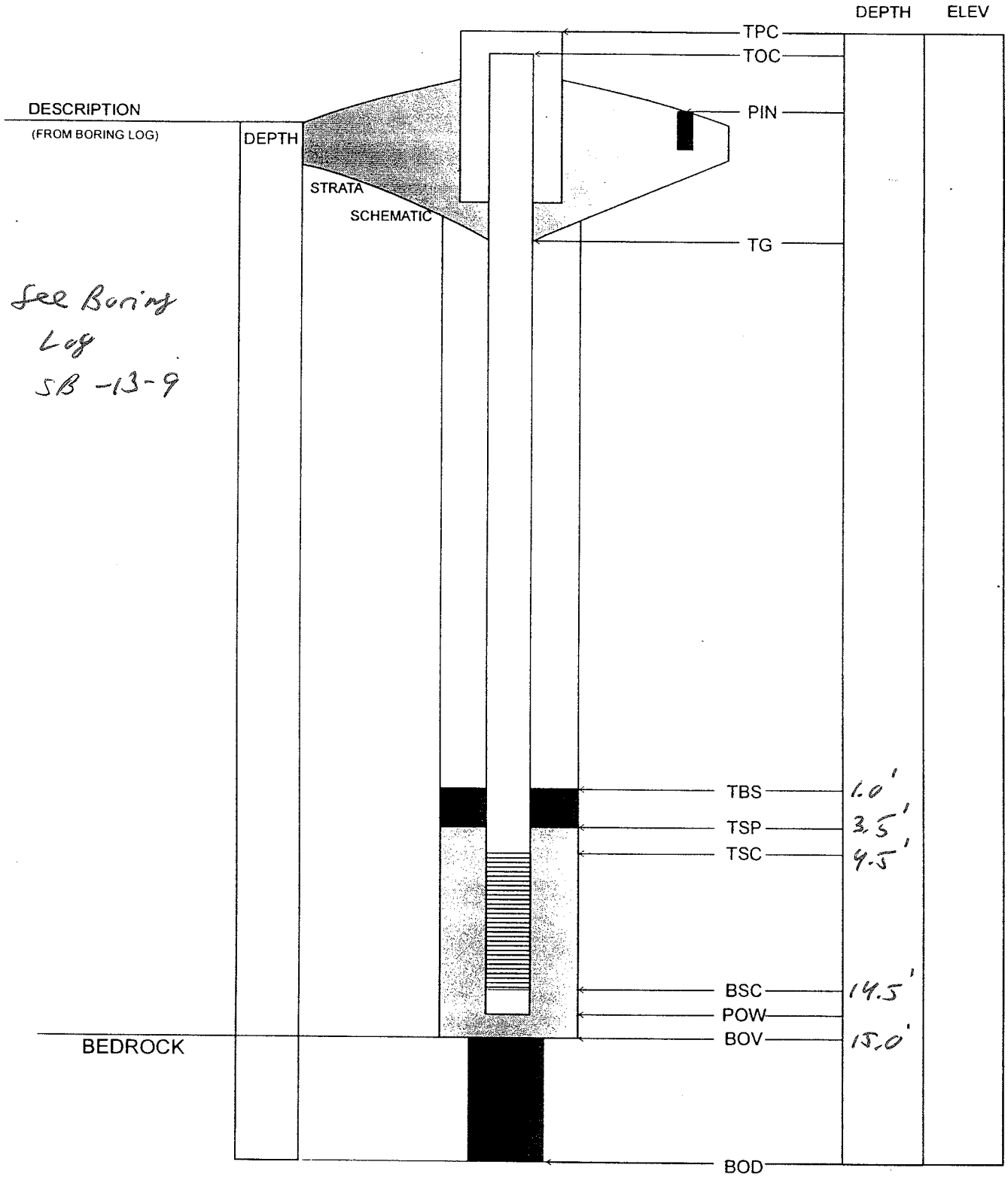
SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

CR

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACOE	WELL #: MW-13-03

DATE: 8/15/01



Contractor: SJB, Inc.					**PARSONS ENGINEERING SCIENCE, INC.**		**BORING/** Sheet # 1 of 1 #	
Driller: John Warner					**DRILLING RECORD**		**WELL NO. SB-13-14/MW-13-14**	
Inspector: E. Ashton					**PROJECT NAME:** Seneca Army Depot-SEAD-13		**Location Description:**	
Rig Type: Mobile					**PROJECT NUMBER** 736994		SEE SITE PLAN	
GROUNDWATER OBSERVATIONS					**Weather:** Cloudy-70'F		**Location Plan**	
Water Level	Dry	Dry	Dry		**Date/Time Start:** 8/16/01-1404		SEE SITE PLAN	
Date	8/17/01	8/22/01	9/04/01		**Date/Time Finish:** 8/16/01-1711			
Time	0820	1000	1136					
Meas. From	TOC	TOC	TOC					

Sampl Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC 2.5'-stick-up	COMMENTS
0	134014	7/17	50	383	(0'-2') Brown, silt, fine sand, trace of clay, roots, dry.-ML/SC		Grout 0-1'
	(0-2)	10/16					
1							1'
							2" PVC Riser
2		100/.4	20	320	(2'-4') Same as above. Encountered refusal at 2.4 ' bgs.		
					Drilled with HSAs to 4' bgs.		Bentonite Pellets 1-3.5'
3							
							3.5'
4		21/41	50	55	(4'-5.4') Brown, silt, fine to medium gravel (weathered shale), fine		
		100/.4			sand, trace of clay, dry.-ML/SC		4.5'
5					Refusal at 5.4' bgs. Drilled with HSAs to 6' bgs.		
							Filtered sand (#0)
6		10/26	80	50.1	(6'-8') Brown to light Grey, silt, fine sand, clay, fine to medium		pack-3.5-15'
		66/82			gravel (weathered shale), dry.-ML/SC		0.010 Slot Sch. 40 PVC
7							Screen-4.5'-14.5'
8		19/	10	80	(8'-9') Same as above.-ML/SC		
		100/.4			Refusal at 9' bgs. Drilled with HSAs to 10' bgs.		
9							
10	134015	27/52	50	90	(10'-11.5') Same as above.-ML/SC		
	(10-11.5)	103			Refusal at 11.5' bgs.		
11					Note: Drilled to 15' bgs with HSAs.		
12							
13							
14							
							14.5'
15							15' Sump (14.5-15')
					Terminated soil boring at 15 feet bgs.		

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil samples 134014 (0'-2') bgs and 134015 (10'-11.5') bgs for B/N/A SVOCs, TAL Metals, Cyanide, and Nitrate analysis. Installed 2-inch monitoring well. In field notebook as SB/MW13-10 for work during August and September 2001.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACOE	WELL #: MW-13-10

PROJECT: 10 SWMU
LOCATION: SEAD 13
PROJECT NO: 736944
INSPECTOR: Ed Ashton
CHECKED BY: Ed Ashton

DRILLING CONTRACTOR: SJB, Inc.
DRILLER: John Warner
DRILLING COMPLETED: 8/16/01
BORING DEPTH: 15'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8 1/2 -in.
ASSOCIATED SWMU/AOC: 13

POW DEPTH: 15'
INSTALLATION STARTED: 8/16/01 @ 1404
INSTALLATION COMPLETED: 8/16/01 @
SURFACE COMPLETION DATE: 8/17/01
COMPLETION CONTRACTOR/CREW: SJB, Inc
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION:

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" steel LENGTH: 3.5' TOR:

RISER:
TOC: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.5' TYPE: PVC 40 DIAMETER: 2" LENGTH: 10' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
YPE: PVC Point BSC: 14.5' POW: 15'

GROUT:
TG: Ground TYPE: Cement-Bent. LENGTH: 1.0'

SEAL: TBS: 1.0' TYPE: Bent. pellets LENGTH: 2.5'

SAND PACK: TSP: 3.5' TYPE: #0 LENGTH: 11.5'

SURFACE COLLAR:
TYPE: RADIUS: 2' x 2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

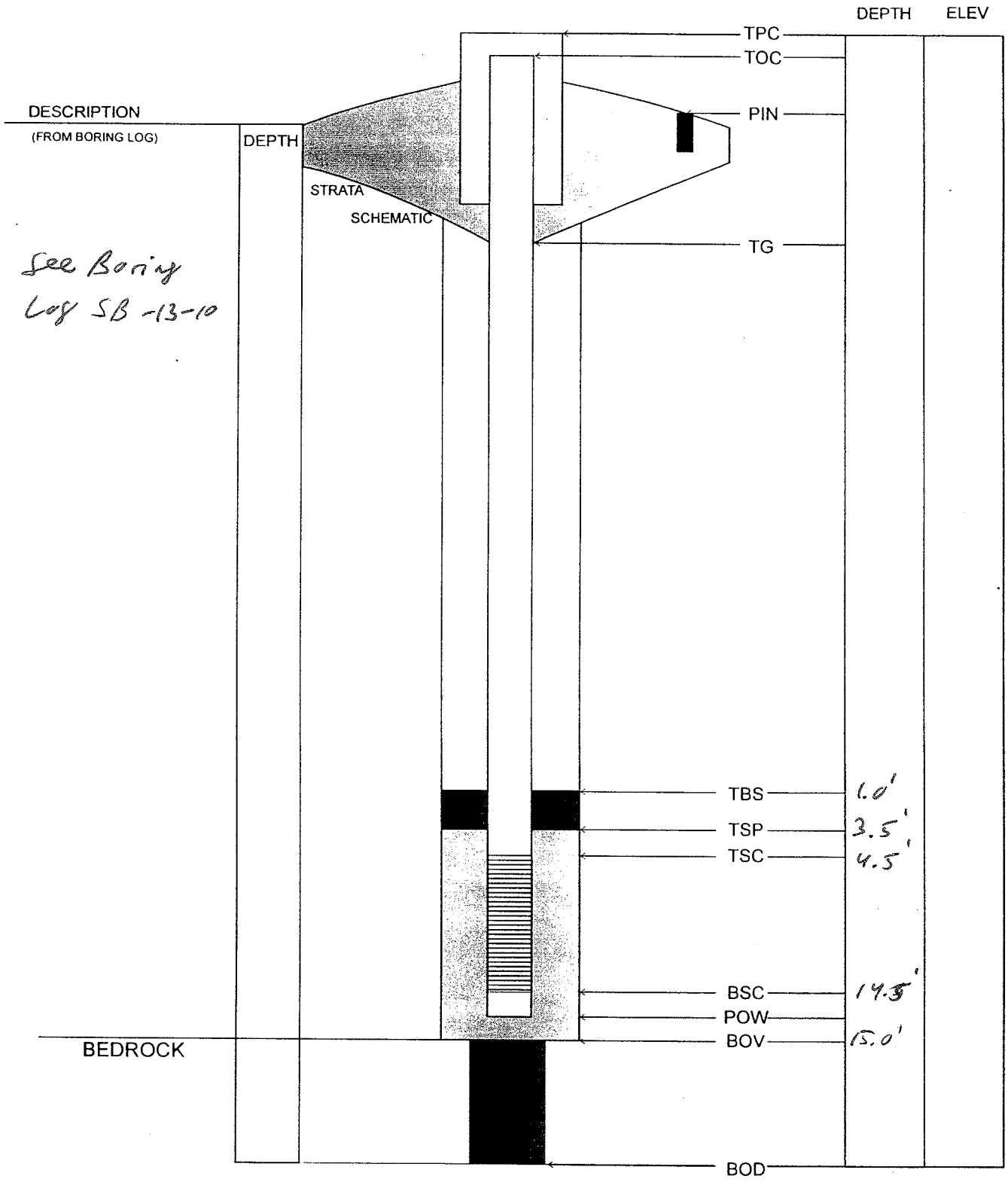
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

PARSONS ENGINEERING SCIENCE, INC.	CLIENT: ACOE	WELL #: MW-13-10

DATE: 8/16/01



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SOIL BORING AND WELL COMPLETION LOGS

SEAD-24

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OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

ENGINEERING–SCIENCE, INC.	CLIENT: ACOE	WELL #: MW24-1

PROJECT: 10 SWMU
LOCATION: SEAD 24
PROJECT NO: SB24-5
INSPECTOR:
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Scott
DRILLING COMPLETED: 12-1-93
BORING DEPTH: 10.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 24
POW DEPTH: 10.0'
INSTALLATION STARTED: 12-1-93
INSTALLATION COMPLETED: 12-1-93
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION: 635.374

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" Steel LENGTH:

RISER:
TR: TYPE: PVC-40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.9' TYPE: PVC - 40 DIAMETER: 2" LENGTH: 4.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 8.9' POW: 10.0

GROUT:
TG: Ground TYPE: Cement-bentonite LENGTH: 1.5'

SEAL: TBS: 1.5' TYPE: bentonite pellets LENGTH: 1.9'

SAND PACK: TSP: 3.4' #1 3.9 #3 TYPE: #3 + #1 LENGTH: 6.6'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x 2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

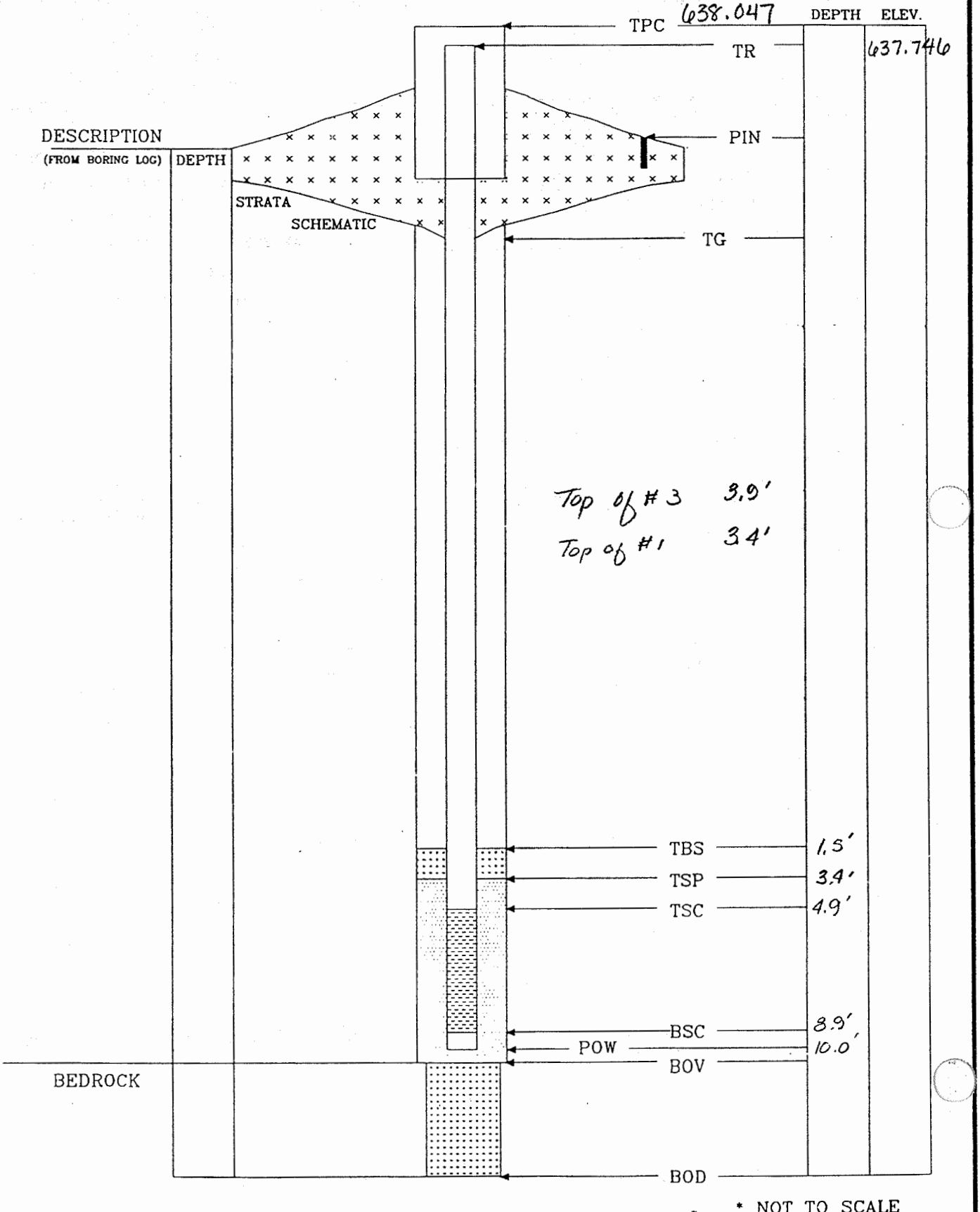
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
PROTECTIVE RISER INSTALLATION DETAIL

ENGINEERING-SCIENCE, INC.	CLIENT:	WELL #: MW24-1

DATE: 12-1-93



* NOT TO SCALE

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING-SCIENCE, INC. | CLIENT: ACOE | WELL #: MW 24-2

PROJECT: 10 SWMU
LOCATION: SEAD 24
PROJECT NO:
INSPECTOR: ES/LB
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: A1
DRILLING COMPLETED: 11/5/93
BORING DEPTH: 16.0'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8"1/2"
ASSOCIATED SWMU/AOC: 24
POW DEPTH: 16.0
INSTALLATION STARTED: 11/5/93
INSTALLATION COMPLETED: 11/6/93
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION: 629.856

PROTECTIVE SURFACE CASING:
DIAMETER: 4" x 4" Steel LENGTH: 5.0' total

RISER:
TR: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 5.9' TYPE: PVC 40 DIAMETER: 2" LENGTH: 9.0' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 14.9' POW: 16.0

GROUT:
TG: Ground TYPE: Cem-bentonite LENGTH: 3.0'

SEAL: TBS: 3.0 TYPE: Bentonite pellets LENGTH: 1.4'

SAND PACK: TSP: 4.4 #1 4.9-#3 TYPE: #3 and #1 LENGTH: 11.6'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

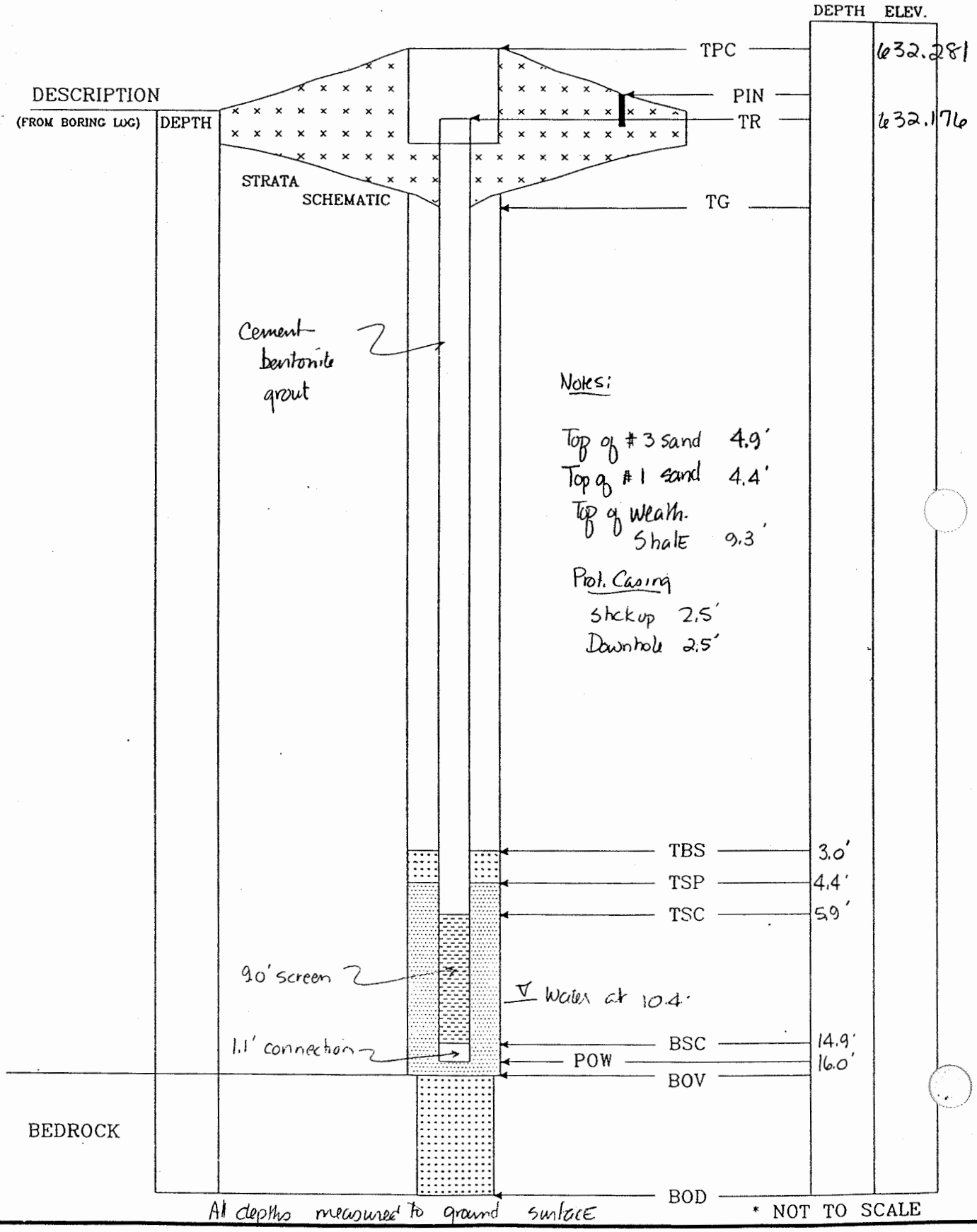
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC.	CLIENT:	WELL #: MW24-2

DATE: _____



OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
ROADWAY BOX – SURFACE COMPLETION

ENGINEERING–SCIENCE, INC. | CLIENT: | WELL #: MW 24-3

PROJECT: 10 SWMU
LOCATION: SEAD 24
PROJECT NO: ~~SB~~
INSPECTOR: ES
CHECKED BY:

DRILLING CONTRACTOR: Empire
DRILLER: Al
DRILLING COMPLETED: 11/6/93
BORING DEPTH: 15.'
DRILLING METHOD(S): HSA
BORING DIAMETER(S): 8½"
ASSOCIATED SWMU/AOC: 24
POW DEPTH: 15.0'
INSTALLATION STARTED: 11/6/93
INSTALLATION COMPLETED: 11/6/93
SURFACE COMPLETION DATE:
COMPLETION CONTRACTOR/CREW: Empire
BEDROCK CONFIRMED (Y/N?)
ESTIMATED GROUND ELEVATION: 629.080

PROTECTIVE SURFACE CASING:
DIAMETER: 4"x 4" Steel LENGTH: 5.0' total

RISER:
TR: TYPE: PVC 40 DIAMETER: 2" LENGTH:

SCREEN:
TSC: 4.9' TYPE: PVC 40 DIAMETER: 2" LENGTH: 9' SLOT SIZE: 0.01"

POINT OF WELL: (SILT SUMP)
TYPE: PVC point BSC: 13.9' POW: 15.0'

GROUT:
TG: Ground TYPE: Cem-bentonite LENGTH: 28'

SEAL: TBS: 2.8' TYPE: Bentonite pellets LENGTH: .6'

SAND PACK: TSP: 3.9' - #1 3.4' - #3 TYPE: #3 & #1 Silica LENGTH: 11.6'

SURFACE COLLAR:
TYPE: Cement RADIUS: 2'x2' THICKNESS CENTER: 1' THICKNESS EDGE: 1'

CENTRALIZER DEPTHS
DEPTH 1: DEPTH 2: DEPTH 3: DEPTH 4:

COMMENTS:

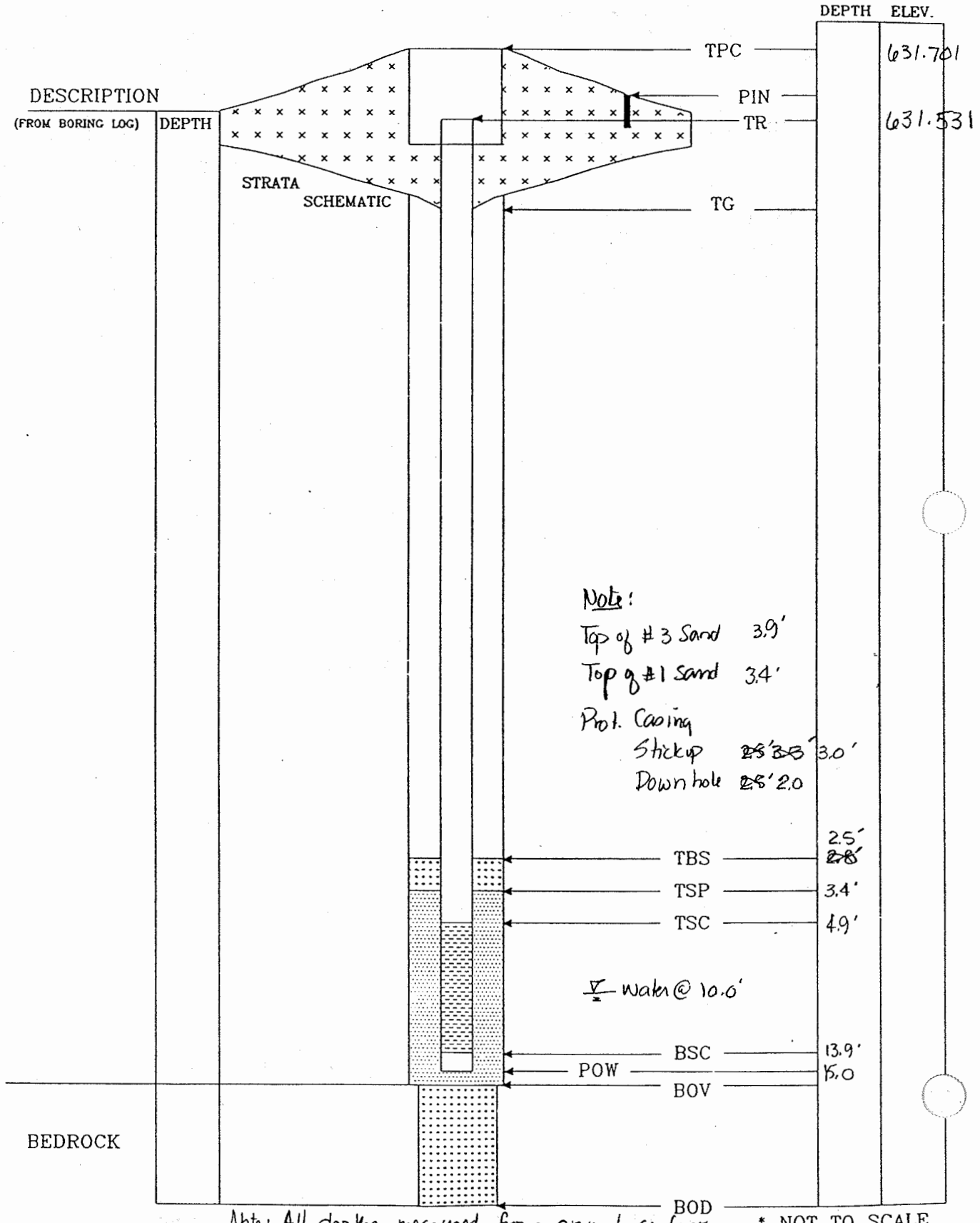
• ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

OVERBURDEN MONITORING WELL
ROADWAY BOX INSTALLATION DETAIL

ENGINEERING–SCIENCE, INC.	CLIENT:	WELL #: MW24-3

DATE: _____



SOIL BORING AND WELL COMPLETION LOGS

SEAD-25

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COMPLETION REPORT OF WELL No. MW25-1

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998032.1 751123.1**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **12/03/93**
WELL INSTALLATION COMPLETED: **12/03/93**

GROUND SURFACE ELEVATION: **740.3**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.7	TPC	737.6
				2.7	TR	737.6
					TC	
				0.0	GS	740.3
FL	0					
				1.3	TBS	739.0
				2.0	TSP	738.3
				3.1	TSC	737.2
				4.1	BSC	736.2
WS						
	5.0			5.0	POW	735.3
CS	5					

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **2.98 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **1 foot**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **1.3 feet**

SEAL
Type: **BENTONITE**
Interval: **0.7 feet**

SANDPACK
Type: **#1 and #3**
Interval: **3.0 feet**

WELL DEVELOPMENT DATA
Date: **1/8/94**
Method: **Bail & Pump**
Duration: **1 Day**
Rate: **1.5 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.00	4	600	4.44

WATER LEVELS

	Date	Time	Depth,TR
▽	1/8/94	1420	5.95 ft
▼	1/8/94	1440	6.20 ft
▼	1/8/94	1500	6.60 ft
▽			
▽			
▼			

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

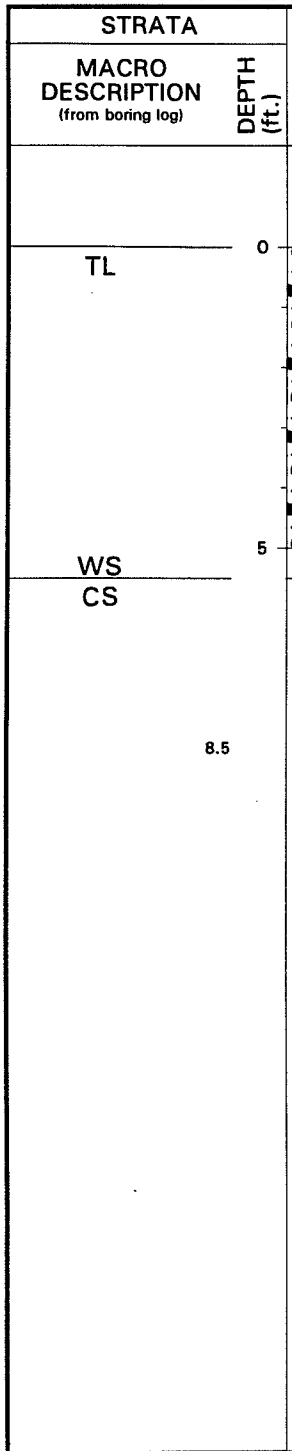
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-1

COMPLETION REPORT OF WELL No. MW25-2

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998023.1 750973.4**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/07/93**
WELL INSTALLATION COMPLETED: **11/07/93**

GROUND SURFACE ELEVATION: **743.8**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:



DEPTH (ft.)		ELEVATION (ft.)
2.6	TPC	741.1
2.6	TR	741.1
	TC	
0.0	GS	743.8
1.2	TBS	742.6
2.0	TSP	741.8
3.4	TSC	740.4
7.4	BSC	736.4
8.5	POW	735.3

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **2.84 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **1.2 feet**

SEAL
Type: **BENTONITE**
Interval: **0.8 feet**

SANDPACK
Type: **#1 and #3**
Interval: **6.5 feet**

WELL DEVELOPMENT DATA
Date: **11/11/93**
Method: **Bail & Pump**
Duration: **11 Days**
Rate: **0.513 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.19	12	700	1.23

WATER LEVELS

Date	Time	Depth,TR
11/11/93	1015	5.12 ft
11/11/93	1430	10.24 ft
11/21/93		4.68 ft
11/22/93	1450	4.74 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-2

COMPLETION REPORT OF WELL No. MW25-3

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998078.3 750926.3**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/07/93**
WELL INSTALLATION COMPLETED: **11/07/93**
GROUND SURFACE ELEVATION: **743.3**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.6	TPC	740.7
				2.5	TR	740.7
					TC	
				0.0	GS	743.3
	0					
TL				1.5	TBS	741.8
				2.5	TSP	740.8
WS				4.0	TSC	739.3
	5					
CS				6.0	BSC	737.3
	6.5			6.5	POW	736.8

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **2.55 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **2 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **1.5 feet**

SEAL
Type: **BENTONITE**
Interval: **1.0 feet**

SANDPACK
Type: **#1 and #3**
Interval: **4.0 feet**

WELL DEVELOPMENT DATA
Date: **11/9/93**
Method: **Bail & Pump**
Duration: **2 Days**
Rate: **1.0 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.42	12.2	500	1.73

WATER LEVELS

Date	Time	Depth,TR
11/9/93	1345	4.80 ft
11/9/93	1405	9.50 ft
11/11/93	0930	4.90 ft
11/11/93	1045	7.90 ft
11/11/93	1410	7.70 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-3

COMPLETION REPORT OF WELL No. MW25-4D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998022.1 750983.2**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **10/31/95**
WELL INSTALLATION COMPLETED: **10/31/95**

GROUND SURFACE ELEVATION: **743.8**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.8	TPC	742.0
				1.6	TR	742.2
					TC	
				0.0	GS	743.8
TL	0					
WS CS	5					
				9.4	TBS	734.4
				11.4	TSP	732.4
				13.7	TSC	730.1
				22.7	BSC	721.1
	23.8			23.8	POW	720.0

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **10.6 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **1.875 in.**
Type: **WIRE & PVC, 0.010"**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **8.4 feet**

SEAL
Type: **BENTONITE**
Interval: **2.0 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12.4 feet**

WELL DEVELOPMENT DATA
Date: **11/2/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.936 L/minute**

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.16	13.8	600	12.1

WATER LEVELS

Date	Time	Depth,TR
11/2/95	1054	7.20 ft

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-4D

COMPLETION REPORT OF WELL No. MW25-5D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998080.2 750937.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **10/30/95**
WELL INSTALLATION COMPLETED: **10/30/95**

GROUND SURFACE ELEVATION: **743.4**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.8	TPC	741.7
				1.6	TR	741.8
					TC	
				0.0	GS	743.4
TL	0					
WS						
CS	5					
				7.7	TBS	735.7
				9.6	TSP	733.8
				11.6	TSC	731.8
				20.6	BSC	722.8
	21.7			21.7	POW	721.7

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **8.7 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **13.22 feet**

SCREEN
Diameter: **1.875 in.**
Type: **WIRE & PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **6.7 feet**

SEAL
Type: **BENTONITE**
Interval: **1.9 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12.1 feet**

WELL DEVELOPMENT DATA
Date: **11/1/95**
Method: **Surge Block**
Duration: **2 Days**
Rate: **0.370 L/minute**

WATER LEVELS

Date	Time	Depth,TR
11/1/95	1505	6.35 ft
11/2/95	0835	6.41 ft

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.96	14.8	700	11.0

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

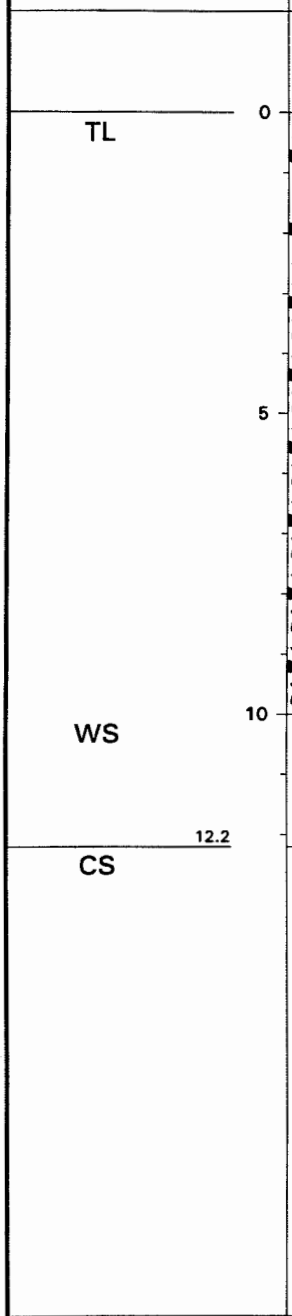
PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-5D

COMPLETION REPORT OF WELL No. MW25-6

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998276.8 751006.2**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/25/95**
WELL INSTALLATION COMPLETED: **09/26/95**
GROUND SURFACE ELEVATION: **742.2**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:



DEPTH (ft.)		ELEVATION (ft.)
2.3	TPC	739.9
2.2	TR	740.1
	TC	
0.0	GS	742.2
2.0	TBS	740.2
3.3	TSP	738.9
4.3	TSC	737.9
11.1	BSC	731.1
12.2	POW	730.0

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **4.0 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.46 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **6.8 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT**
Interval: **1.5 feet**

SEAL
Type: **BENTONITE**
Interval: **1.3 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **8.9 feet**

WELL DEVELOPMENT DATA
Date: **10/30/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.540 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.18	15	790	2.85

WATER LEVELS

Date	Time	Depth,TR
10/30/95	1125	6.06 ft
10/30/95	1251	6.20 ft
10/30/95	1320	8.24 ft
10/30/95	1341	10.24 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

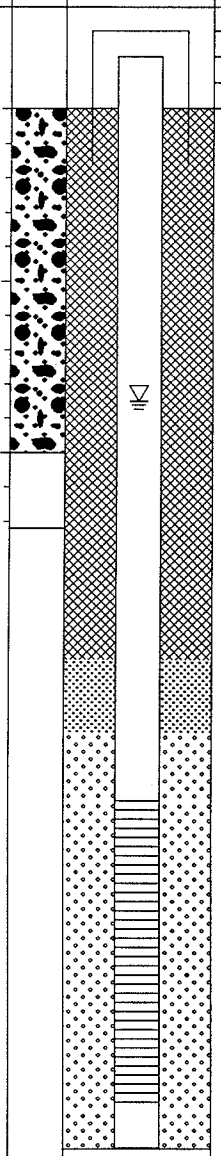
COMPLETION REPORT OF WELL No. MW25-6

COMPLETION REPORT OF WELL No. MW25-7D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998277.7 751015.9**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **10/24/95**
WELL INSTALLATION COMPLETED: **10/24/95**

GROUND SURFACE ELEVATION: **742.2**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)
TL	0
WS	10
CS	
	30.5



DEPTH (ft.)		ELEVATION (ft.)
2.1	TPC	740.2
1.8	TR	740.5
	TC	
0.0	GS	742.2
16.0	TBS	726.2
18.1	TSP	724.1
20.1	TSC	722.1
29.1	BSC	713.1
30.2	POW	712.0

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **17.6 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **21.88 feet**

SCREEN
Diameter: **1.875 in.**
Type: **WIRE & PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1 foot**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **2.1 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12.4 feet**

WELL DEVELOPMENT DATA
Date: **10/31/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.280 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.32	10.0	700	10.6

WATER LEVELS

Date	Time	Depth,TR
10/31/95	0952	5.81 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-7D

COMPLETION REPORT OF WELL No. MW25-8

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998076.8 750856.9**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/26/95**
WELL INSTALLATION COMPLETED: **09/26/95**
GROUND SURFACE ELEVATION: **741.4**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.3	TPC	740.1
				1.1	TR	740.2
					TC	
	0			0.0	GS	741.4
TL				1.4	TBS	740.0
				2.4	TSP	739.0
				3.2	TSC	738.2
WS				4.0	BSC	737.4
CS	4.5			4.5	POW	736.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **2.50 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **4.34 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **0.8 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.0 foot**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **2.1 feet**

WELL DEVELOPMENT DATA
Date: **10/22/95**
Method: **Surge Block**
Duration: **3 Days**
Rate: **0.900 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.35	14.5	350	7.3

WATER LEVELS

Date	Time	Depth,TR
10/20/95	1624	3.32 ft
10/20/95	1700	4.80 ft
10/22/95	1004	1.26 ft
10/22/95	1056	1.32 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-8

COMPLETION REPORT OF WELL No. MW25-9

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998005.3 750898.1**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/26/95**
WELL INSTALLATION COMPLETED: **09/26/95**
GROUND SURFACE ELEVATION: **741.3**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.3	TPC	740.0
				1.1	TR	740.2
					TC	
	0			0.0	GS	741.3
TL				1.4	TBS	739.9
				2.4	TSP	738.9
				3.2	TSC	738.1
WS				4.0	BSC	737.3
	4.8			4.5	POW	736.8
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **2.57 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **4.27 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **0.8 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.0 foot**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **2.1 feet**

WELL DEVELOPMENT DATA
Date: **10/20/95**
Method: **Surge Block**
Duration: **3 Days**
Rate: **0.320 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.18	14.0	490	4.44

WATER LEVELS

Date	Time	Depth,TR
10/20/95	1610	3.10 ft
10/22/95	0948	1.27 ft
10/22/95	1040	2.87 ft
10/22/95	1150	3.50 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-9

COMPLETION REPORT OF WELL No. MW25-10

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997965.0 751000.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/27/95**
WELL INSTALLATION COMPLETED: **09/27/95**

GROUND SURFACE ELEVATION: **741.8**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.4	TPC	740.4
				1.2	TR	740.6
					TC	
				0.0	GS	741.8
	0					
TL				1.3	TBS	740.5
				2.4	TSP	739.4
				3.2	TSC	738.6
WS	5			5.2	BSC	736.6
	5.6			5.6	POW	736.2
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **2.29 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **4.41 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **2.0 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **0.8 feet**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.1 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **2.8 feet**

WELL DEVELOPMENT DATA
Date: **10/25/95**
Method: **Surge Block**
Duration: **4 Days**
Rate: **0.090 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.30	14.9	425	5.46

WATER LEVELS

Date	Time	Depth,TR
10/22/95	1310	1.67 ft
10/22/95	1759	4.30 ft
10/23/95	1643	2.38 ft
10/24/95	1315	2.86 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-10

COMPLETION REPORT OF WELL No. MW25-11

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997865.7 750956.7**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/11/95**
WELL INSTALLATION COMPLETED: **10/11/95**
GROUND SURFACE ELEVATION: **738.7**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.6	TPC	737.1
				1.5	TR	737.2
					TC	
				0.0	GS	738.7
TL	0			1.4	TBS	737.3
				2.7	TSP	736.0
				3.8	TSC	734.9
WS	5			5.3	BSC	733.4
	5.7			5.7	POW	733.0
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **4.53 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **5.35 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **1.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1.4 feet**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.3 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **3.0 feet**

WELL DEVELOPMENT DATA
Date: **10/23/95**
Method: **Surge Block**
Duration: **3 Days**
Rate: **1.020 L/minute**

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.11	14	920	25.1

WATER LEVELS

Date	Time	Depth,TR
10/23/95	1620	4.18 ft
10/24/95	1335	2.92 ft
10/24/95	1650	3.00 ft
10/25/95	0830	3.29 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-11

COMPLETION REPORT OF WELL No. MW25-12D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997866.1 750967.3**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **11/01/95**
WELL INSTALLATION COMPLETED: **11/01/95**

GROUND SURFACE ELEVATION: **738.9**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.4	TPC	737.5
				1.2	TR	737.7
					TC	
				0.0	GS	738.9
TL	0					
	5					
WS						
CS						
				9.9	TBS	729.0
				11.9	TSP	727.0
				13.9	TSC	725.0
				23.4	BSC	715.5
				24.2	POW	714.7
	24.6					

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **16.18 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **15.08 feet**

SCREEN
Diameter: **1.875 in**
Type: **WIRE & PVC, 0.010" slot**
Interval: **9.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1 foot**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **8.9 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12.3 feet**

WELL DEVELOPMENT DATA
Date: **11/3/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **1.920 L/minute**

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.58	11	400	13.3

WATER LEVELS

Date	Time	Depth, TR
11/3/95	1245	3.72 ft
11/3/95	1431	7.60 ft
11/3/95	1443	7.80 ft
11/3/95	1456	7.90 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-12D

COMPLETION REPORT OF WELL No. MW25-13

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997866.5 750869.7**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/11/95**
WELL INSTALLATION COMPLETED: **10/11/95**
GROUND SURFACE ELEVATION: **737.9**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.8	TPC	736.2
				1.7	TR	736.3
					TC	
	0			0.0	GS	737.9
TL				1.0	TBS	736.9
				2.1	TSP	735.8
				2.7	TSC	735.2
WS				3.5	BSC	734.4
	4.0			4.0	POW	733.9
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **2.76 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **4.38 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **0.8 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1.4 feet**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.1 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **1.9 feet**

WELL DEVELOPMENT DATA
Date: **10/25/95**
Method: **Surge Block**
Duration: **9 Days**
Rate: **0.050 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.10	14.0	1000	9.66

WATER LEVELS

Date	Time	Depth,TR
10/24/95		6.78 ft
10/25/95	1035	4.46 ft
10/25/95	1202	4.69 ft
10/30/95	1040	5.50 ft
10/31/95	1610	5.63 ft
11/2/95	1308	5.73 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-13

COMPLETION REPORT OF WELL No. MW25-14D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997866.5 750876.2**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **10/31/95**
WELL INSTALLATION COMPLETED: **10/31/95**

GROUND SURFACE ELEVATION: **738.2**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.8	TPC	736.4
				1.6	TR	736.6
					TC	
	0			0.0	GS	738.2
TL						
WS						
CS						
				9.2	TBS	729.0
				11.2	TSP	727.0
				13.1	TSC	725.1
				22.1	BSC	716.1
	23.5			23.2	POW	715.0

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **12.39 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **14.69 feet**

SCREEN
Diameter: **1.875 in**
Type: **WIRE & PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1 foot**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **8.2 feet**

SEAL
Type: **BENTONITE**
Interval: **2.0 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12 feet**

WELL DEVELOPMENT DATA
Date: **11/2/95**
Method: **Surge Block**
Duration: **2 Days**
Rate: **0.960 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.66	11	390	16.9

WATER LEVELS

Date	Time	Depth,TR
11/2/95	1530	3.90 ft
11/3/95	1532	6.06 ft

LEGEND
SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

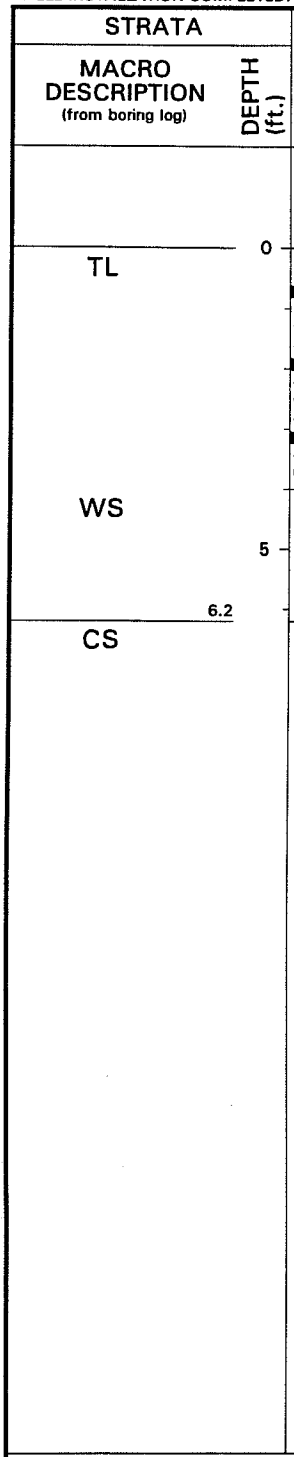
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-14D

COMPLETION REPORT OF WELL No. MW25-15

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997974.2 750764.4**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/10/95**
WELL INSTALLATION COMPLETED: **10/10/95**

GROUND SURFACE ELEVATION: **739.6**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:



DEPTH (ft.)		ELEVATION (ft.)
1.6	TPC	738.0
1.4	TR	738.2
	TC	
0.0	GS	739.6
1.6	TBS	738.0
2.9	TSP	736.7
3.9	TSC	735.7
5.4	BSC	734.2
5.8	POW	733.8

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **3.22 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **5.29 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **1.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1 foot**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.3 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **2.9 feet**

WELL DEVELOPMENT DATA
Date: **10/22/95**
Method: **Surge Block**
Duration: **10 Days**
Rate: **0.050 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.93	15.0	450	8.38

WATER LEVELS

Date	Time	Depth,TR
10/24/95	1520	4.57 ft
10/25/95	1300	3.20 ft
10/30/95	1018	4.36 ft
10/31/95	1520	5.00 ft
11/1/95	1007	4.57 ft
11/2/95	1030	4.66 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-15

COMPLETION REPORT OF WELL No. MW25-16D

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **997975.4 750773.2**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Rock Coring**
WELL INSTALLATION STARTED: **10/25/95**
WELL INSTALLATION COMPLETED: **10/25/95**

GROUND SURFACE ELEVATION: **739.8**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.7	TPC	738.1
				1.3	TR	738.4
					TC	
	0			0.0	GS	739.8
TL						
WS	5					
CS						
				10.9	TBS	728.9
				12.8	TSP	727.0
				14.9	TSC	724.9
				23.9	BSC	715.9
	25.0			25.0	POW	714.8

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **12.67 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **16.25 feet**

SCREEN
Diameter: **1.875 in**
Type: **WIRE & PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **1 foot**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **9.9 feet**

SEAL
Type: **BENTONITE**
Interval: **1.9 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **12.2 feet**

WELL DEVELOPMENT DATA
Date: **10/30/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **1.200 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.98	11.9	480	4.64

WATER LEVELS

Date	Time	Depth,TR
10/30/95	1130	5.84 ft

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

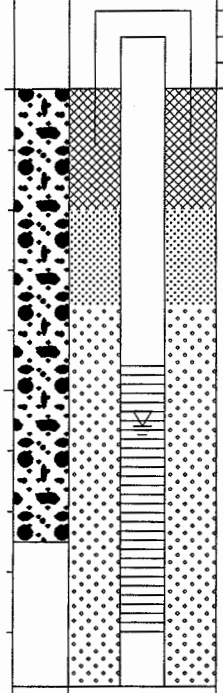
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-16D

COMPLETION REPORT OF WELL No. MW25-17

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998187.6 750963.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/16/95**
WELL INSTALLATION COMPLETED: **10/16/95**
GROUND SURFACE ELEVATION: **742.2**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)
	0
TL	
	5
WS	
	9.9
CS	



SYMBOL	DEPTH (ft.)		ELEVATION (ft.)
	1.7	TPC	740.5
	1.7	TR	740.6
		TC	
	0.0	GS	742.2
	2.0	TBS	740.2
	3.6	TSP	738.6
	4.6	TSC	737.6
	9.1	BSC	733.1
	9.9	POW	732.3

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **5.25 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.28 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.6 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **6.3 feet**

WELL DEVELOPMENT DATA
Date: **10/31/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.780 L/minute**

WATER LEVELS

Date	Time	Depth,TR
10/31/95	1031	5.70 ft
10/31/95	1415	5.07 ft

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.12	13.0	550	4.16

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-17

COMPLETION REPORT OF WELL No. MW25-18

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998116.3 751082.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/16/95**
WELL INSTALLATION COMPLETED: **10/16/95**

GROUND SURFACE ELEVATION: **743.1**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.6	TPC	741.4
				1.3	TR	741.7
					TC	
				0.0	GS	743.1
TL	0					
				1.9	TBS	741.2
				3.4	TSP	739.7
				4.4	TSC	738.7
	5					
WS				8.9	BSC	734.2
				9.7	POW	733.4
	10.0 10					
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **5.02 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **5.74 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.5 feet**

SANDPACK
Type: **Morie 0 and #1Q Rock**
Interval: **6.3 feet**

WELL DEVELOPMENT DATA
Date: **10/30/95**
Method: **Surge Block**
Duration: **4 Days**
Rate: **0.090 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.00	14.5	1480	8.57

WATER LEVELS

Date	Time	Depth,TR
10/30/95	1518	5.93 ft
10/31/95	0921	5.98 ft
11/1/95	0900	6.04 ft
11/2/95	0825	5.95 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-18

COMPLETION REPORT OF WELL No. MW25-19

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **998135.0 750762.5**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/07/95**
WELL INSTALLATION COMPLETED: **10/07/95**

GROUND SURFACE ELEVATION: **740.1**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.9	TPC	738.1
				1.9	TR	738.2
					TC	
				0.0	GS	740.1
	0					
TL				2.0	TBS	738.1
				4.0	TSP	736.1
	5			5.3	TSC	734.8
WS						
				9.8	BSC	730.3
	10.2 10			10.2	POW	729.9
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Round Box Riser**
Interval: **3.95 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **7.15 feet**

SCREEN
Diameter: **1.875 in.**
Type: **WIRE & PVC, 0.010" slot**
Interval: **4.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **2.0 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **6.2 feet**

WELL DEVELOPMENT DATA
Date: **10/22/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.780 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.96	16	550	5.87

WATER LEVELS

Date	Time	Depth,TR
10/22/95	1505	2.94 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW25-19

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-26

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COMPLETION REPORT OF WELL No. MW26-1

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992227.7 751590.6**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/17/93**
WELL INSTALLATION COMPLETED: **11/17/93**
GROUND SURFACE ELEVATION: **751.2**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **F. O'Loughlin**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.7	TPC	748.5
				2.6	TR	748.6
					TC	
				0.0	GS	751.2
	0					
FL						
TL				1.5	TBS	749.7
				2.3	TSP	748.9
				3.3	TSC	747.9
WS						
	5			5.3	BSC	745.9
	6.0			6.0	POW	745.2
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **3.5 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **2 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **0.8 feet**

SANDPACK
Type: **#1 and #3**
Interval: **3.7 feet**

WELL DEVELOPMENT DATA
Date: **1/9/94**
Method: **Bail & Pump**
Duration: **1.5 Months**
Rate: **0.3 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.62	10.5	550	5.23

WATER LEVELS

Date	Time	Depth,TR
11/20/93	1500	4.76 ft
11/23/93	1345	7.15 ft
1/7/94	1130	6.85 ft
1/8/94	1400	7.20 ft
1/9/94	1105	7.32 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-1

COMPLETION REPORT OF WELL No. MW26-2

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992768.1 751107.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/18/93**
WELL INSTALLATION COMPLETED: **11/18/93**

GROUND SURFACE ELEVATION: **753.8**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **F. O'Loughlin**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				3.0	TPC	750.8
				2.8	TR	751.0
					TC	
				0.0	GS	753.8
FL	0					
				1.9	TBS	751.9
				2.9	TSP	750.9
				3.9	TSC	749.9
	5					
	10					
TL						
WS				12.9	BSC	740.9
	14.0			14.0	POW	739.8
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **4.86 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.0 feet**

SANDPACK
Type: **#1 and #3**
Interval: **11.1 feet**

WELL DEVELOPMENT DATA
Date: **1/9/94**
Method: **Bail**
Duration: **3 Days**
Rate: **NA - Well Dry**
Final Measurements:

WATER LEVELS

Date	Time	Depth, TR
11/21/93		15.48 ft
11/22/93		15.64 ft
1/9/94		15.67 ft
1/12/94		Dry well

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
NA	NA	NA	NA

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-2

COMPLETION REPORT OF WELL No. MW26-3

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992216.8 751115.5**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/18/93**
WELL INSTALLATION COMPLETED: **11/18/93**

GROUND SURFACE ELEVATION: **751.5**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **F. O'Loughlin**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.7	TPC	748.8
				2.6	TR	748.9
					TC	
				0.0	GS	751.5
FL	0					
				1.8	TBS	749.7
				2.8	TSP	748.7
				4.3	TSC	747.2
	5					
	10					
TL						
WS						
				13.3	BSC	738.2
	14.0			14.0	POW	737.5
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **4.55 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **1.8 feet**

SEAL
Type: **BENTONITE**
Interval: **1.0 feet**

SANDPACK
Type: **#1 and #3**
Interval: **11.2 feet**

WELL DEVELOPMENT DATA
Date: **11/20/93**
Method: **Bail & Pump**
Duration: **1 Day**
Rate: **1.26 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.64	11	700	5.32

WATER LEVELS

Date	Time	Depth,TR
11/20/93	1610	11.90 ft
11/20/93	1635	11.76 ft
11/20/93	1650	11.68 ft

LEGEND

SURFACE SEAL	GRAVEL	TPC	TOP OF PROTECTIVE CASING
GROUT	SAND	TR	TOP OF WELL RISER
SEAL	SILT	GS	GROUND SURFACE
SANDPACK	CLAY	TBS	TOP BENTONITE SEAL
	NO RECOVERY	TSP	TOP OF SANDPACK
		TSC	TOP OF SCREEN
		BSC	BOTTOM OF SCREEN
		TD	TOTAL DEPTH
		POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-3

COMPLETION REPORT OF WELL No. MW26-4

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **991690.8 751126.3**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **11/19/93**
WELL INSTALLATION COMPLETED: **11/19/93**
GROUND SURFACE ELEVATION: **750.1**
DATUM: **NGVD 88**
GEOLOGIST: **E. Schacht**
CHECKED BY: **F. O'Loughlin**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.6	TPC	747.6
				2.5	TR	747.6
					TC	
				0.0	GS	750.1
FL	0					
				3.0	TBS	747.1
				4.5	TSP	745.6
	5					
TL				6.4	TSC	743.7
WS						
	10			10.4	BSC	739.7
	11.5			11.5	POW	738.6
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **5.53 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **NA**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **CEMENT-BENTONITE**
Interval: **3.0 feet**

SEAL
Type: **BENTONITE**
Interval: **1.5 feet**

SANDPACK
Type: **#1 and #3**
Interval: **7.0 feet**

WELL DEVELOPMENT DATA
Date: **11/21/93**
Method: **Bail & Pump**
Duration: **1 Day**
Rate: **1 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.07	12	850	6.13

WATER LEVELS

Date	Time	Depth,TR
11/21/93	0950	11.4 ft
11/21/93	1030	10.74 ft
11/21/93	1140	11.10 ft
11/21/93	1155	11.10 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

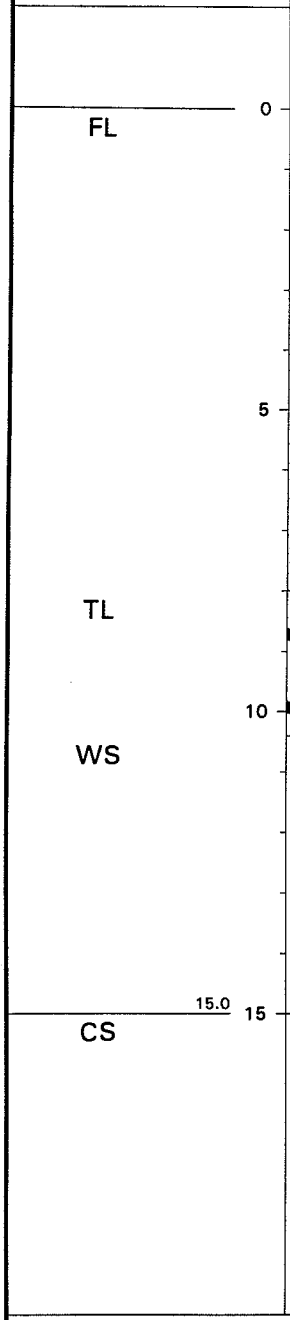
PARSONS
ENGINEERING-SCIENCE, INC.
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-4

COMPLETION REPORT OF WELL No. MW26-5

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992271.2 751169.2**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/24/95**
WELL INSTALLATION COMPLETED: **09/24/95**

GROUND SURFACE ELEVATION: **754.6**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:



DEPTH (ft.)		ELEVATION (ft.)
2.4	TPC	752.3
2.1	TR	752.6
	TC	
0.0	GS	754.6
2.5	TBS	752.1
3.8	TSP	750.8
4.9	TSC	749.7
13.9	BSC	740.8
15.0	POW	739.6

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **4.9 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.8 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **8.95 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.3 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **10.05 feet**

WELL DEVELOPMENT DATA
Date: **10/19/95**
Method: **Surge Block**
Duration: **3 Days**
Rate: **0.24 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.55	15.5	925	8.5

WATER LEVELS

Date	Time	Depth,TR
10/17/95	1514	12.66 ft
10/18/95	1128	12.68 ft
10/18/95	1253	13.57 ft
10/18/95	1712	12.74 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

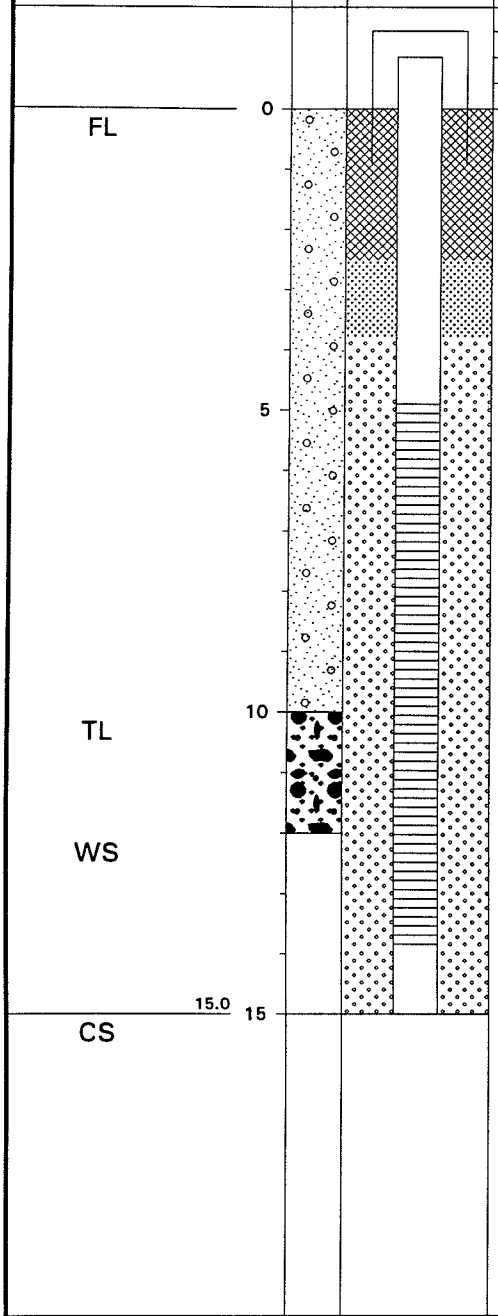
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-5

COMPLETION REPORT OF WELL No. MW26-6

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992233.8 751252.0**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/23/95**
WELL INSTALLATION COMPLETED: **09/23/95**

GROUND SURFACE ELEVATION: **754.7**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:



WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **4.78 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.9 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **2.5 feet**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.3 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **11.2 feet**

WELL DEVELOPMENT DATA
Date: **10/18/95**
Method: **Surge Block**
Duration: **2 Days**
Rate: **0.650 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.55	16.5	490	3.4

WATER LEVELS

	Date	Time	Depth,TR
▽	10/18/95	0950	12.70 ft
▼	10/19/95	0932	12.73 ft

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-6

COMPLETION REPORT OF WELL No. MW26-7

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992178.9 751194.1**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/23/95**
WELL INSTALLATION COMPLETED: **09/23/95**
GROUND SURFACE ELEVATION: **754.4**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.4	TPC	752.0
				2.3	TR	752.1
					TC	
				0.0	GS	754.4
FL	0					
				4.2	TBS	750.2
	5					
				6.0	TSP	748.4
				7.9	TSC	746.5
TL	10					
WS						
	15					
				16.9	BSC	737.5
	18.0			18.0	POW	736.4
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **6.59 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **10.21 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **8.95 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.8 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **12 feet**

WELL DEVELOPMENT DATA
Date: **10/20/95**
Method: **Surge Block**
Duration: **4 Days**
Rate: **2.000 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.60	15	750	13.3

WATER LEVELS

Date	Time	Depth,TR
10/20/95	1358	13.83 ft
10/23/95	1120	11.32 ft

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-7

COMPLETION REPORT OF WELL No. MW26-8

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **991754.6 751203.8**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/21/95**
WELL INSTALLATION COMPLETED: **09/21/95**
GROUND SURFACE ELEVATION: **750.5**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.1	TPC	748.4
				1.9	TR	748.7
					TC	
				0.0	GS	750.5
FL	0					
				3.0	TBS	747.5
				4.7	TSP	745.8
	5					
TL				6.3	TSC	744.2
WS						
	10			10.3	BSC	740.2
	11.5			11.5	POW	739.0
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **5.13 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **8.17 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.7 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **6.8 feet**

WELL DEVELOPMENT DATA
Date: **10/16/95**
Method: **Surge Block**
Duration: **2 Days**
Rate: **0.160 L/minute**

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.71	15.0	700	17.1

WATER LEVELS

Date	Time	Depth,TR
10/16/95	1120	10.50 ft
10/16/95	1650	10.83 ft
10/17/95	0755	10.60 ft
10/17/95	1133	10.73 ft

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-8

COMPLETION REPORT OF WELL No. MW26-9

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **991722.5 751224.7**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/25/95**
WELL INSTALLATION COMPLETED: **09/25/95**
GROUND SURFACE ELEVATION: **750.9**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA: MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.2	TPC	748.6
				2.1	TR	748.8
					TC	
				0.0	GS	750.9
FL	0					
				3.0	TBS	747.9
	5			5.0	TSP	745.9
TL				7.1	TSC	743.8
WS						
	10			11.1	BSC	739.8
	12.2			12.2	POW	738.7
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **5.25 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **9.14 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **4 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **2.0 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **7.2 feet**

WELL DEVELOPMENT DATA
Date: **10/16/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.280 L/minute**

WATER LEVELS

Date	Time	Depth,TR
10/16/95	1338	10.63 ft
10/16/95	1552	10.98 ft

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.90	13.75	625	8.38

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-9

COMPLETION REPORT OF WELL No. MW26-10

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **991652.5 751206.3**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **09/20/95**
WELL INSTALLATION COMPLETED: **09/20/95**

GROUND SURFACE ELEVATION: **751.5**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				2.0	TPC	749.5
				1.8	TR	749.7
					TC	
				0.0	GS	751.5
FL	0					
				2.0	TBS	749.5
				3.2	TSP	748.3
				4.3	TSC	747.2
	5					
TL						
WS						
	10					
				11.2	BSC	740.3
	12.0			12.0	POW	739.5
CS						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **3.95 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.10 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **6.9 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.2 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **8.3 feet**

WELL DEVELOPMENT DATA
Date: **10/16/95**
Method: **Surge Block**
Duration: **9 Days**
Rate: **0.100 L/minute**

WATER LEVELS

Date	Time	Depth,TR
10/16/95	1504	9.83 ft
10/23/95	0830	8.12 ft

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.25	15.6	1250	3.41

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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ENGINEERING-SCIENCE, INC.

Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-10

COMPLETION REPORT OF WELL No. MW26-11

PROJECT: **SEAD-25 & SEAD-26 RI/FS**
PROJECT LOCATION: **Seneca Army Depot Activity, Romulus, NY 14541**
WELL LOCATION (N/E): **992690.3 751235.7**
DRILLING CONTRACTOR: **Empire Soils Investigation, Inc.**
DRILLING METHOD: **Hollow Stem Auger**
WELL INSTALLATION STARTED: **10/19/95**
WELL INSTALLATION COMPLETED: **10/19/95**
GROUND SURFACE ELEVATION: **754.9**
DATUM: **NGVD 88**
GEOLOGIST: **F. O'Loughlin**
CHECKED BY: **P.Feschbach-Meriney**
CONSULTANT:

STRATA MACRO DESCRIPTION (from boring log)	DEPTH (ft.)	SYMBOL	WELL DETAILS	DEPTH (ft.)		ELEVATION (ft.)
				1.5	TPC	753.5
				1.4	TR	753.6
					TC	
				0.0	GS	754.9
FL	0			1.9	TBS	753.0
				3.7	TSP	751.2
	5			4.7	TSC	750.2
	10					
TL						
WS				14.2	BSC	740.7
	15.0			15.0	POW	739.9
CS	15					

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: **4 inches**
Type: **Square Box Riser**
Interval: **3.37 feet**

RISER
Diameter: **2 inches**
Type: **SCHEDULE 40-PVC**
Interval: **6.08 feet**

SCREEN
Diameter: **2 inches**
Type: **SCH 40-PVC, 0.010" slot**
Interval: **9.5 feet**

SURFACE SEAL
Type: **CEMENT**
Interval: **NA**

GROUT
Type: **NA**
Interval: **NA**

SEAL
Type: **BENTONITE**
Interval: **1.8 feet**

SANDPACK
Type: **Morie 0 and Morie 000**
Interval: **11.3 feet**

WELL DEVELOPMENT DATA
Date: **10/22/95**
Method: **Surge Block**
Duration: **1 Day**
Rate: **0.300 L/minute**
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.20	16.1	780	8.25

WATER LEVELS

Date	Time	Depth,TR
10/22/95	0938	12.35 ft

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW26-11

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-27

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NONE FOUND

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-48

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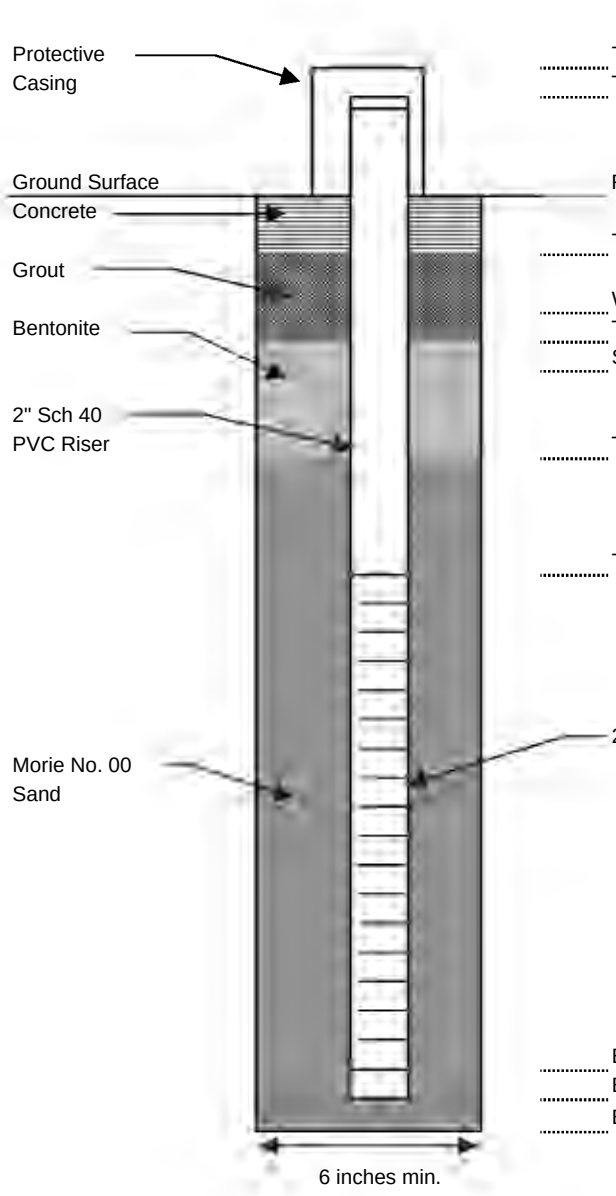
Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-1	**Date Started:**	8/18/2003
Geologist:	E. Ashton	**Date Completed:**	8/18/2003

Surface completion: Road Box



	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout	-	0.0
Weathered Bedrock	-	
Top of Bentonite Chips (Competent)	-	1.5
Steel outer casing	-	
Top of Morie No. 00 Sand	-	2.25
Top of Screen	-	2.50
2" Dia., 10 slot, PVC wire wrap	-	2.50 - 7.50
Bottom of screen	-	7.5
Bottom of Sump	-	see Note 1
Bottom of Borehole	-	8.0

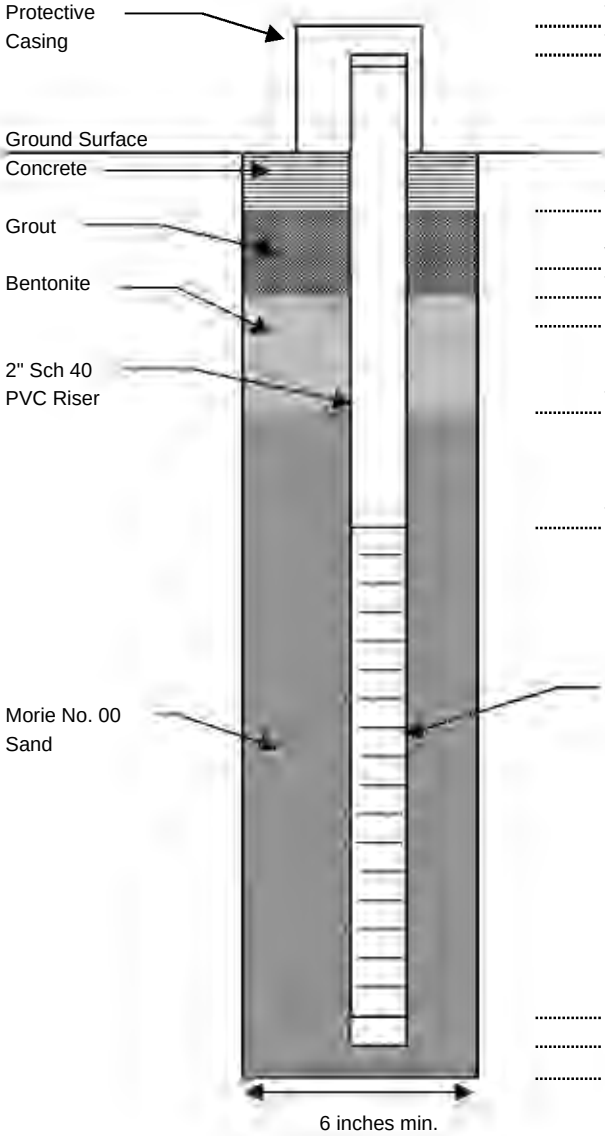
Not to scale

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-2	**Date Started:**	8/19/2003
Geologist:	E. Ashton	**Date Completed:**	

Surface completion: Road Box



Not to scale

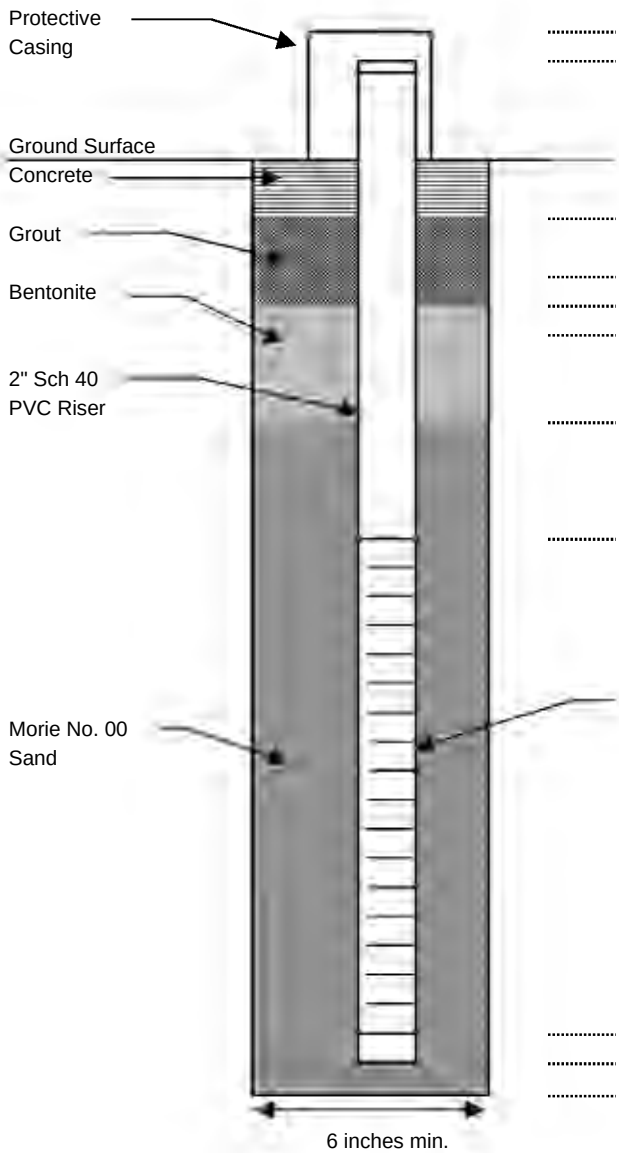
	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout	-	0.0
Weathered Bedrock	-	
Top of Bentonite Chips (Competent)	-	1.5
Steel outer casing	-	
Top of Morie No. 00 Sand	-	2.25
Top of Screen	-	2.50
2" Dia., 10 slot, PVC wire wrap	-	2.50 - 7.00
Bottom of screen	-	7.0
Bottom of Sump	-	see Note 1
Bottom of Borehole	-	7.6

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-3	**Date Started:**	8/13/2003
Geologist:	E. Ashton	**Date Completed:**	8/13/2003

Surface completion: Road Box



Not to scale

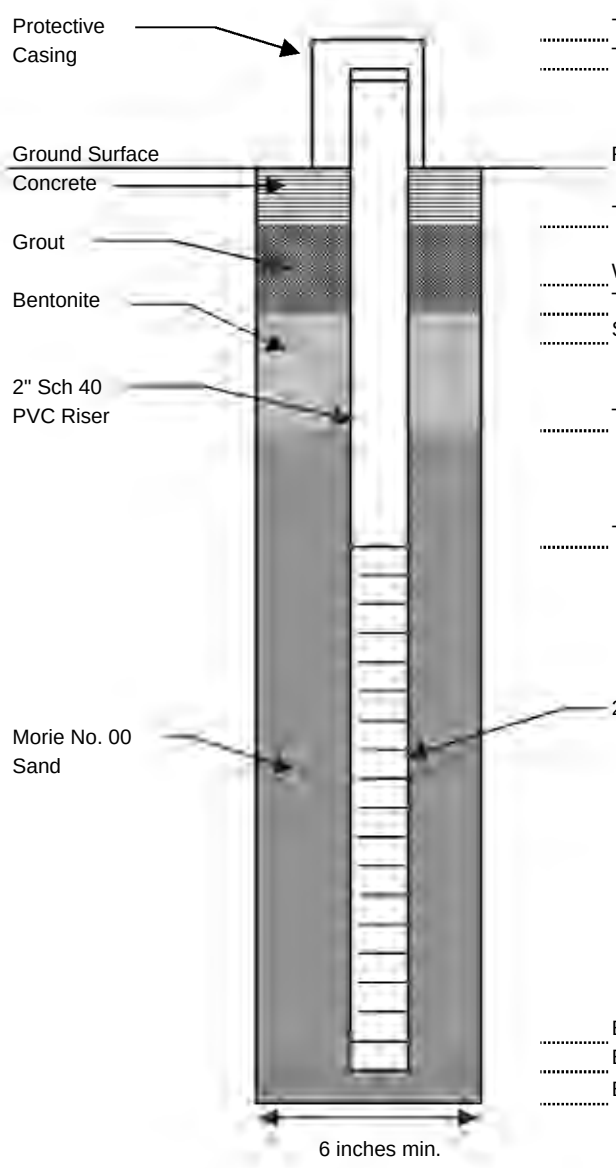
	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 7.50
Bottom of screen		- 7.5
Bottom of Sump		- see Note 1
Bottom of Borehole		- 8.0

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-4	**Date Started:**	8/13/2003
Geologist:	E. Ashton	**Date Completed:**	8/13/2003

Surface completion: Road Box



	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 7.50
Bottom of screen		- 7.5
Bottom of Sump		- see Note 1
Bottom of Borehole		- 8.0

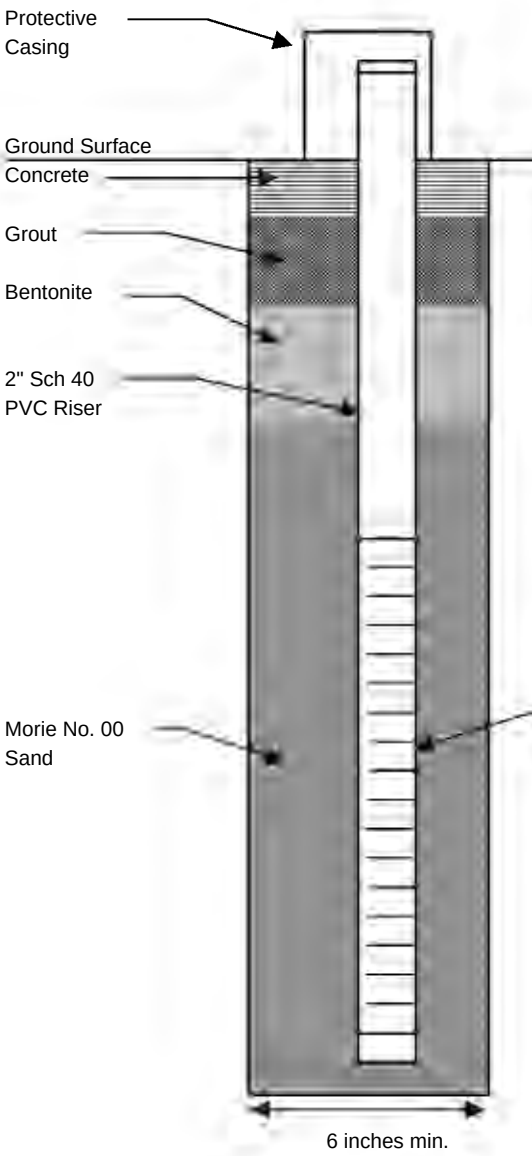
Not to scale

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-5	**Date Started:**	8/18/2003
Geologist:	E. Ashton	**Date Completed:**	8/18/2003

Surface completion: Road Box



Not to scale

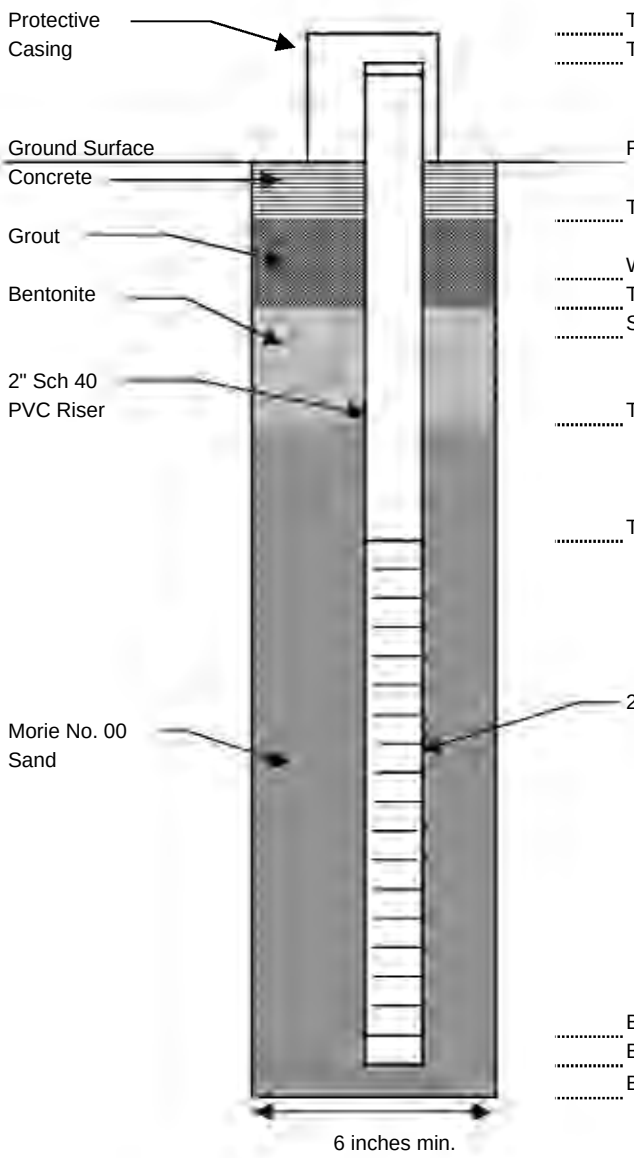
	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 12.50
Bottom of screen		- 12.5
Bottom of Sump		- see Note 1
Bottom of Borehole		- 13.10

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-6	**Date Started:**	8/18/2003
Geologist:	E. Ashton	**Date Completed:**	8/18/2003

Surface completion: Road Box



Not to scale

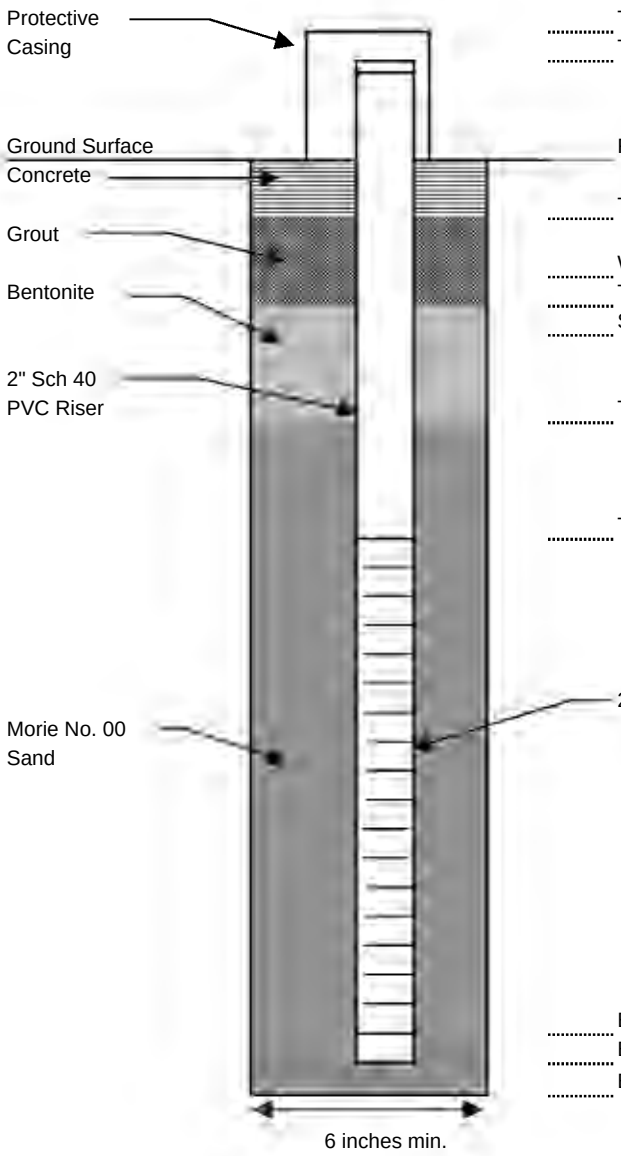
	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 7.50
Bottom of screen		- 7.5
Bottom of Sump		- see Note 1
Bottom of Borehole		- 8.0

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-7	**Date Started:**	8/19/2003
Geologist:	E. Ashton	**Date Completed:**	8/19/2003

Surface completion: Road Box



Not to scale

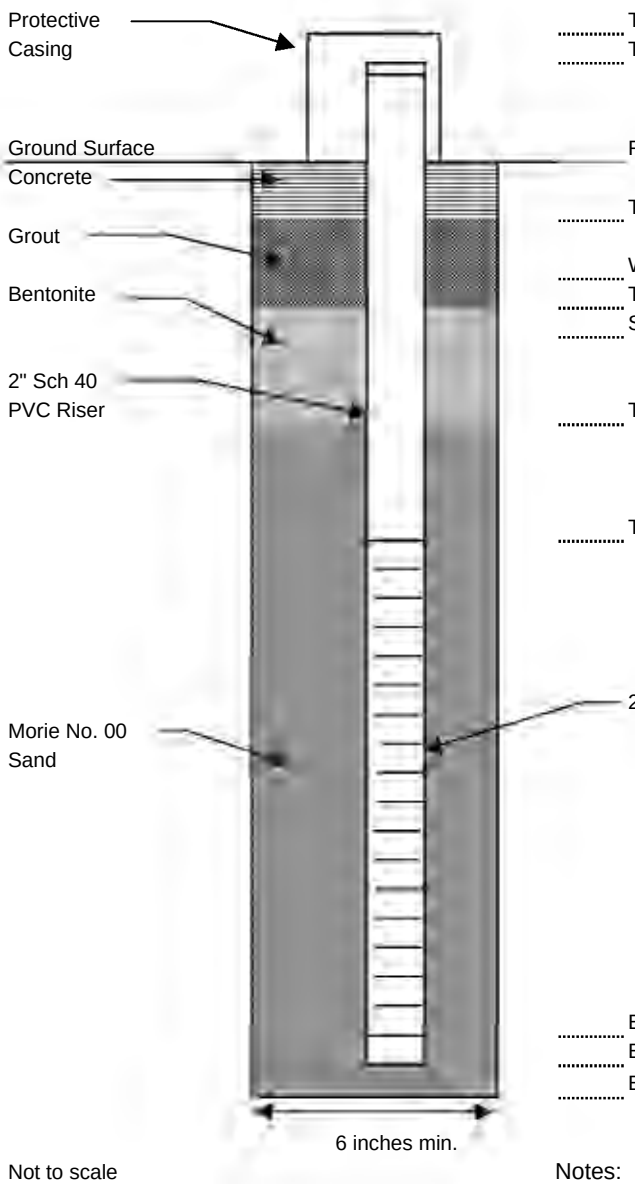
	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 9.00
Bottom of screen		- 9.00
Bottom of Sump		- see Note 1
Bottom of Borehole		- 9.50

Notes:
(1) 3 inch end cap installed at bottom of well screen.

Monitoring Well Construction Detail
SEAD-48
Seneca Army Depot Activity

Project:	SEAD-48	**Drilling Contractor:**	Lyon Drilling, Inc.
Well Number:	MW48-8	**Date Started:**	8/18/2003
Geologist:	E. Ashton	**Date Completed:**	8/18/2003

Surface completion: Road Box



Not to scale

	Elevation (not surveyed)	Depth Below Ground Surface (ft)
Top of Protective Casing	-	
Top of PVC Riser	-	+ 2.5
Road Box/Ground Surface	-	0.0
Top of Grout		- 0.0
Weathered Bedrock		-
Top of Bentonite Chips (Competent)		- 1.5
Steel outer casing		-
Top of Morie No. 00 Sand		- 2.25
Top of Screen		- 2.50
2" Dia., 10 slot, PVC wire wrap		- 2.50 - 6.00
Bottom of screen		- 6.0
Bottom of Sump		- see Note 1
Bottom of Borehole		- 6.0

Notes:
(1) 3 inch end cap installed at bottom of well screen.

SOIL BORING AND WELL COMPLETION LOGS

SEAD-59

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COMPLETION REPORT OF WELL No. MW59-1

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/18/94
WELL INSTALLATION COMPLETED: 03/19/94

WELL LOCATION (N/E): 998909.7 749948.8
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 733.4
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	733.4
ML						
ML						
ML-CL				2.0	TBS	731.4
ML-CL				3.2	TSP	730.2
				4.2	TSC	729.2
GM						
ML-CL	5					
GM GP						
				8.1	BSC	725.3
GM GM ML-CL				9.2	POW	724.2
	10.1					
	10					

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.65

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: 2

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE CHIPS
Interval: 1.2

SANDPACK
Type: #1, #3
Interval: 6

WELL DEVELOPMENT DATA
Date: 3/21/94
Method: BAIL/PUMP
Duration: 80 MIN
Rate: 2.1 L/MIN

WATER LEVELS

Date	Time	Depth,TR
3/21	0930	1.72
3/21	1055	3.08

Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.30	5	700	38.9

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW59-1

COMPLETION REPORT OF WELL No. MW59-2

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/06/94
WELL INSTALLATION COMPLETED: 03/06/94

WELL LOCATION (N/E): 999036.1 749874.0
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 734.3
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	734.3
GM ML				1.5	TBS	732.8
ML-CL				3.5	TSP	730.8
GM ML	5			4.7	TSC	729.6
ML ML ML GM ML SM SM ML						
ML GP ML GP ML ML	10 11.4			10.5 11.4	BSC POW	723.8 722.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 6.2

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4, .9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 2

SANDPACK
Type: #1, #3
Interval: 7.9

WELL DEVELOPMENT DATA
Date: 3/8/94
Method: BAIL/PUMP
Duration: 67 MIN
Rate: 2.1 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.32	6.5	600	2.9

WATER LEVELS

Date	Time	Depth,TR
3/8	1310	3.40
3/8	1407	3.60

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW59-2

COMPLETION REPORT OF WELL No. MW59-3

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/18/94
WELL INSTALLATION COMPLETED: 03/18/94

WELL LOCATION (N/E): 999030.0 750345.9
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 737.7
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: KK

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	737.7
GM GM ML ML PT				0.8	TBS	736.9
CL GP CL ML				2.4	TSP	735.3
CL	5			3.7	TSC	734.0
CL SM				7.7	BSC	730.0
	8.8			8.8	POW	728.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: ROADWAY BOX
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 2.85

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: .8

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE
Interval: 1.6

SANDPACK
Type: #1, #3
Interval:

WELL DEVELOPMENT DATA
Date: 3/20/94
Method: BAIL/PUMP
Duration: 55 MIN
Rate: 2 L/MIN
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
3/20	1140	1.44
3/20	1227	1.70

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.23	5.5	1100	20.3

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TG TOP OF GROUT
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

PARSONS
ENGINEERING-SCIENCE, INC.

UNITED STATES ARMY
CORPS OF ENGINEERS
Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW59-3

COMPLETION REPORT OF WELL No. MW59-3A

PROJECT: EIGHT MODERATELY LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS, NY
DRILLING CONTRACTOR:
DRILLING METHOD:
DRILL INSTALLATION STARTED: 03/17/94
INSTALLATION COMPLETED: 03/17/94

WELL LOCATION (N/E): 999026.3 750264.3
REFERENCE COORDINATE SYSTEM:
GROUND SURFACE ELEVATION (ft): NA
DATUM: NAD 1983
GEOLOGIST:
CHECKED BY:

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)	WELL CONSTRUCTION DETAILS
					TPC		
					TR		PROTECTIVE COVER
					TC		Diameter:
	0			0.0	GS	NA	Type:
							Interval:
							RISER
							Diameter:
							Type:
							Interval:
							SCREEN
							Diameter:
							Type:
							Interval:
	5						SURFACE SEAL
							Type:
							Interval:
							GROUT
							Type:
							Interval:
	8.0						SEAL
							Type:
							Interval:
							SANDPACK
							Type:
							Interval:

WELL DEVELOPMENT DATA
Date:
Method:
Duration:
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth, TR

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)

LEGEND

- SURFACE SEAL
- GROUT
- SEAL
- SANDPACK
- GRAVEL
- SAND
- SILT
- CLAY
- NO RECOVERY

TPC	TOP OF PROTECTIVE CASING
TR	TOP OF WELL RISER
GS	GROUND SURFACE
TG	TOP OF GROUT
TBS	TOP BENTONITE SEAL
TSP	TOP OF SANDPACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
POW	POINT OF WELL

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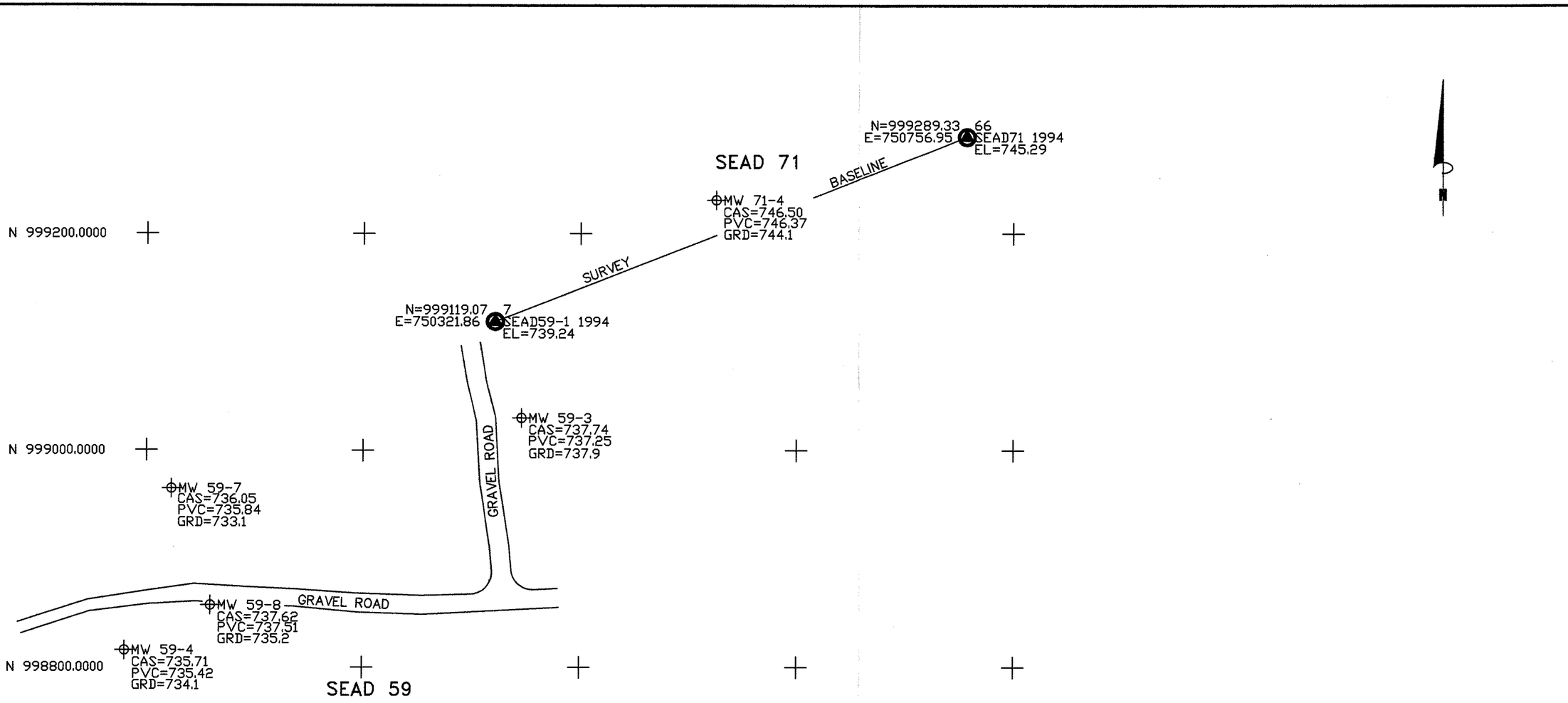
Romulus, New York

COMPLETION REPORT OF WELL No. MW59-3A



SENECA ARMY DEPOT SEADS 59 AND 71
MONITORING WELLS
SENECA COUNTY

ELEVATIONS

MW#	NORTHING	EASTING	GROUND	PVC	CASING
MW59-3	999030.0	750345.9	737.9	737.25	737.74
MW59-4	998815.5	749980.4	734.1	735.42	735.71
MW59-6	998664.3	750366.4	738.7	741.27	741.41
MW59-7	998964.9	750023.5	733.1	735.84	736.05
MW59-8	998857.1	750060.2	735.2	737.51	737.62
MW71-4	999231.2	750525.3	744.1	746.37	746.50

NOTES: FIELD WORK COMPLETED ON JUNE 8, 2004.
HORIZONTAL DATUM IS NAD83 PER SEADS 59-1(1994) AND 71(1994) MONUMENTS.
VERTICAL DATUM IS NAVD88 PER SEADS 59-1(1994) AND 71(1994) MONUMENTS.

RAMIE SURVEYING, P.C.
6437 COLLAMER ROAD
EAST SYRACUSE, NEW YORK 13057
PH 315 458-8980 FAX 315 458-8978

R/S

SENECA ARMY DEPOT
TOWN OF ROMULUS
SENECA COUNTY
STATE OF NEW YORK

MONITORING WELL LOCATION
SEADS 59 AND 71
FOR
PARSONS ENGINEERING SCIENCE

SCALE 1" = 100'
DESIGNED BY
DRAWN BY JFR
FILE NO. 04013-MW1
DATE 6/17/04
SHEET 1 OF 1
JOB NO. JOB#04.13

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-63

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COMPLETION REPORT OF WELL No. MW63-1

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 06/13/94
WELL INSTALLATION COMPLETED: 06/13/94

WELL LOCATION (N/E): 1013124.1 741608.4
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 638.3
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	638.3
ML ML ML ML -				1.5	TBS	636.8
SM ML ML -				2.5	TSP	635.8
				3.6	TSC	634.7
SM ML -	5					
-				7.5	BSC	630.8
	8.7			8.7	POW	629.6

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.65

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3 #1: .5' #3: 5.65'
Interval: 6.15

WELL DEVELOPMENT DATA
Date: 6/27/94
Method: BAIL/PUMP
Duration: 2 DAYS
Rate: .220 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.19	12.6	390	16

WATER LEVELS

Date	Time	Depth, TR
6/26	1615	5.98
6/27	1255	8.40

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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Romulus, New York

COMPLETION REPORT OF WELL No. MW63-1
Sheet 1 of 1

COMPLETION REPORT OF WELL No. MW63-2

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 06/14/94
WELL INSTALLATION COMPLETED: 06/14/94

WELL LOCATION (N/E): 1012979.9 741136.2
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 630.9
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
				0.0	GS	630.9
	0					
ML						
-						
ML						
ML				1.5	TBS	629.4
-						
ML				2.5	TSP	628.4
ML				3.0	TSC	627.9
ML						
ML						
-						
SP						
ML						
ML	5					
-						
SP						
-				7.0	BSC	623.9
-	8.2			8.1	POW	622.8

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.05

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 5.7
#1: .3" #3: 5.4'

WELL DEVELOPMENT DATA
Date: 6/26/94
Method: BAIL/PUMP
Duration: 2 DAYS
Rate: .893 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.02	15.4	600	10

WATER LEVELS

Date	Time	Depth,TR
6/25	1450	2.98
6/26	1410	8.20

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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Romulus, New York

COMPLETION REPORT OF WELL No. MW63-2

COMPLETION REPORT OF WELL No. MW63-3

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 06/14/94
WELL INSTALLATION COMPLETED: 06/14/94

WELL LOCATION (N/E): 1013181.9 741130.1
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 631.8
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	631.8
ML GM ML ML				1.5	TBS	630.3
CL				2.5	TSP	629.3
SP SM				3.0	TSC	628.8
- SP SP	5					
- SM				7.0	BSC	624.8
- - -	8.3			8.1	POW	623.7

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.05

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3 #1: .4' #3: 5.4'
Interval: 5.8

WELL DEVELOPMENT DATA
Date: 6/27/94
Method: BAIL/PUMP
Duration: 2 DAYS
Rate: .526 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.89	16.1	2000	20

WATER LEVELS

Date	Time	Depth, TR
6/26	1330	4.15
6/26	1610	6.40
6/27	0945	3.42

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW63-3

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-67

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COMPLETION REPORT OF WELL No. MW67-1

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/30/94
WELL INSTALLATION COMPLETED: 03/30/94

WELL LOCATION (N/E): 1002498.4 748911.7
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 696.7
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
				0.0	GS	696.7
	0					
ML						
CL				1.5	TBS	695.2
GW				2.8	TSP	693.9
CL				3.7	TSC	693.0
ML						
ML	5					
SM						
SM						
	10					
				10.5	BSC	686.2
11.3				11.3	POW	685.4

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.15

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 2, 4

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE CHIPS
Interval: 1.3

SANDPACK
Type: #1, #3
Interval: 8.5 #1: .5' #3: .8'

WELL DEVELOPMENT DATA
Date: 5/13/94
Method: BAIL/PUMP
Duration: 360 MIN
Rate: .5 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.51	11	440	1.19

WATER LEVELS

Date	Time	Depth, TR
5/13	1130	3.93
5/13	1450	

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW67-1

COMPLETION REPORT OF WELL No. MW67-2

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/30/94
WELL INSTALLATION COMPLETED: 03/30/94

WELL LOCATION (N/E): 1002256.6 748953.1
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 697.7
DATUM: NAD 1983
GEOLOGIST: K.KELLY
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	697.7
ML						
ML						
ML						
				2.2	TBS	695.5
ML						
ML				3.2	TSP	694.5
CL						
ML				4.2	TSC	693.5
ML						
	5					
ML						
ML						
ML						
ML						
	10					
				10.9	BSC	686.8
	11.8			11.8	POW	685.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.8

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4, 1.95

SURFACE SEAL
Type: CEMENT
Interval: .5

GROUT
Type: BENTONITE/CEMENT
Interval: 1.65

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 8.6 #1: .5' #3: 8.1'

WELL DEVELOPMENT DATA
Date: 5/14/94
Method: BAIL/PUMP
Duration: 110 MIN
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
5/14	1025	1.89
5/14	1100	2.21

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.15	9.0	450	28

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW67-2

COMPLETION REPORT OF WELL No. MW67-3

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/29/94
WELL INSTALLATION COMPLETED: 03/29/94

WELL LOCATION (N/E): 1002492.2 748794.6
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 695.0
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
				0.0	GS	695.0
	0					
ML						
ML						
ML				1.5	TBS	693.5
-						
ML				2.8	TSP	692.2
ML				3.4	TSC	691.6
-						
ML						
ML						
-	5					
SM						
-						
ML						
-	10			10.2	BSC	684.8
-						
-						
-	11.5			11.3	POW	683.7
-						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.15

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 2, 4

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE CHIPS
Interval: 1.3

SANDPACK
Type: #1, #3
Interval: 8.5 #1: .5' #3: .8'

WELL DEVELOPMENT DATA
Date: 5/14/94
Method: BAIL/PUMP
Duration: 3 DAYS
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
5/13	1415	3.70
5/14	1330	3.80

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.14	8.5	370	4.92

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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Seneca Army Depot
Romulus, New York

COMPLETION REPORT OF WELL No. MW67-3

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-70

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COMPLETION REPORT OF WELL No. MW70-1

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 05/11/94
WELL INSTALLATION COMPLETED: 05/11/94

WELL LOCATION (N/E): 1007329.9 740889.1
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 636.5
DATUM: NAD 1983
GEOLOGIST: F. O'LOUGHLIN
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	636.5
ML						
ML						
ML				1.5	TBS	635.0
-						
CL				2.5	TSP	634.0
ML						
-				3.7	TSC	632.8
ML						
	5					
-						
ML						
ML						
-						
-						
				9.6	BSC	626.9
	10					
	10.4			10.4	POW	626.1
-						

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5.2

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4, .9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 7.95 #1: .8" #3: 7.15"

WELL DEVELOPMENT DATA
Date: 5/17/94
Method: BAIL/PUMP
Duration: 95 MIN
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
5/17	1020	2.51
5/17	1142	4.42

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.8	7.8	470	15.3

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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Romulus, New York

COMPLETION REPORT OF WELL No. MW70-1

COMPLETION REPORT OF WELL No. MW70-2

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 04/04/94
WELL INSTALLATION COMPLETED: 04/04/94

WELL LOCATION (N/E): 1007329.8 740555.6
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 635.4
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	635.4
GM						
ML						
ML				1.8	TBS	633.6
CL				3.0	TSP	632.4
CL				4.0	TSC	631.4
CL						
ML	5					
ML						
ML						
GM-GC						
	10					
				10.7	BSC	624.7
	11.6			11.6	POW	623.8

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5.15

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95, 1.95

SURFACE SEAL
Type: CEMENT
Interval: 1.8

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.2

SANDPACK
Type: #1, #3
Interval: 8.55 #1: .5' #3: 8.05'

WELL DEVELOPMENT DATA
Date: 5/17/94
Method: BAIL/PUMP
Duration: 105 MIN
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
5/17	1245	2.51
5/17	1412	3.18

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.63	9.4	800	3.14

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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Romulus, New York

COMPLETION REPORT OF WELL No. MW70-2

COMPLETION REPORT OF WELL No. MW70-3

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 04/05/94
WELL INSTALLATION COMPLETED: 04/05/94

WELL LOCATION (N/E): 1007173.3 740552.3
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 636.3
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	636.3
ML						
ML				2.0	TBS	634.3
CL				3.3	TSP	633.0
CL						
CL				4.3	TSC	632.0
CL						
CL	5					
CL						
CL						
CL						
SM						
				8.3	BSC	628.0
	9.4			9.4	POW	626.9

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 5.15

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 3.95

SURFACE SEAL
Type: CEMENT
Interval: 2

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1.3

SANDPACK
Type: #1, #3
Interval: 6.1
#1: .5' #3: 5.6'

WELL DEVELOPMENT DATA
Date: 5/17/94
Method: BAIL/PUMP
Duration: 80 MIN
Rate:
Final Measurements:

WATER LEVELS

Date	Time	Depth,TR
5/17	1510	3.07
5/17	1615	4.65

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.83	8.6	670	15.6

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW70-3
Sheet 1 of 1

COMPLETION REPORT OF WELL No. MW70-4

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 05/11/94
WELL INSTALLATION COMPLETED: 05/11/94

WELL LOCATION (N/E): 1007055.2 740563.3
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 636.3
DATUM: NAD 1983
GEOLOGIST: F. O'LOUHGLIN
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
				0.0	GS	636.3
	0					
ML CL				1.5	TBS	634.8
ML				2.5	TSP	633.8
				3.6	TSC	632.7
SC						
	5					
ML SM						
SM SM SM						
				9.3	BSC	627.0
	10.1			10.1	POW	626.2
	10					

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.25

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4.9

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 7.6
#1: .55' #3: 7.05'

WELL DEVELOPMENT DATA
Date: 5/23/94
Method: BAIL/PUMP
Duration: 6 DAYS
Rate: .230 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.93	10.1	690	3.59

WATER LEVELS

Date	Time	Depth,TR
5/18	0825	2.22
5/23	2.42	2.42

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW70-4

SOIL BORING AND WELL COMPLETION LOGS

SEAD-71

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COMPLETION REPORT OF WELL No. MW71-1

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/14/94
WELL INSTALLATION COMPLETED: 03/14/94

WELL LOCATION (N/E): 999297.5 750894.8
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 747.1
DATUM: NAD 1983
GEOLOGIST: F. O'LOUHGLIN
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	747.1
ML						
ML				1.5	TBS	745.6
CL						
CL				3.0	TSP	744.1
				4.3	TSC	742.8
CL						
	5					
CL						
CL						
CL						
CL				8.3	BSC	738.8
CL						
	9.4			9.4	POW	737.7

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: .7
Type: ROADWAY BOX
Interval: 1

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.5

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 4

SURFACE SEAL
Type: CEMENT
Interval: 1.5

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 6.4 #1: .5' #3: 5.9'

WELL DEVELOPMENT DATA
Date: 3/16/94
Method: BAIL
Duration: 85 MIN
Rate: 1.4 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
6.85	5.5	500	22.4

WATER LEVELS

Date	Time	Depth,TR
3/16	1530	14.48
3/16	1716	6.00

LEGEND

SURFACE SEAL, GROUT, SEAL, SANDPACK, GRAVEL, SAND, SILT, CLAY, NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW71-1

COMPLETION REPORT OF WELL No. MW71-2

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/22/94
WELL INSTALLATION COMPLETED: 03/22/94

WELL LOCATION (N/E): 999309.2 750986.4
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 747.3
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	747.3
GM CL				1.8	TBS	745.5
GM CL CL CL				2.8	TSP	744.5
				3.8	TSC	743.5
CL CL	5					
				5.8	BSC	741.5
ML	6.8			6.6	POW	740.7

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 8
Type: ROADWAY BOX
Interval: 1

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 3.2

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 2

SURFACE SEAL
Type: CEMENT
Interval: 1

GROUT
Type: BENTONITE/CEMENT
Interval: 1.3

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 3.8
#1: .5' #3: 3.3'

WELL DEVELOPMENT DATA
Date: 4/28/94
Method: BAIL/PUMP
Duration: 24 DAYS
Rate: .333 L/MIN
Final Measurements:

pH	Temperature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.19	6.8	435	57.6

WATER LEVELS

Date	Time	Depth,TR
4/5	1000	4.85
4/28	0845	5.59

LEGEND

SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW71-2

COMPLETION REPORT OF WELL No. MW71-3

PROJECT: SEVEN LOW PRIORITY AOCs
PROJECT LOCATION: SENECA ARMY DEPOT, ROMULUS NY
DRILLING CONTRACTOR: EMPIRE SOILS INVESTIGATIONS
DRILLING METHOD: HOLLOW STEM AUGER
WELL INSTALLATION STARTED: 03/22/94
WELL INSTALLATION COMPLETED: 03/22/94

WELL LOCATION (N/E): 999229.9 750868.8
REFERENCE COORDINATE SYSTEM: New York State Plane
GROUND SURFACE ELEVATION (ft): 744.5
DATUM: NAD 1983
GEOLOGIST: K. KELLY
CHECKED BY: FO

STRATA: MICRO DESCRIPTION (from boring log)	DEPTH (ft)	SYMBOL	WELL DETAILS	DEPTH (ft)		ELEVATION (ft)
					TPC	
					TR	
					TC	
	0			0.0	GS	744.5
ML ML - ML -				1.7	TBS	742.8
ML ML ML ML -				2.7	TSP	741.8
ML GM-GC GM-GC -	5			3.6	TSC	741.0
				5.5	BSC	739.0
	6.5			6.4	POW	738.2

WELL CONSTRUCTION DETAILS

PROTECTIVE COVER
Diameter: 4
Type: RISER
Interval: 3.5

RISER
Diameter: 2
Type: SCH. 40-PVC
Interval: 4.75

SCREEN
Diameter: 2
Type: SCH. 40-PVC/0.010
Interval: 1.95

SURFACE SEAL
Type: CEMENT
Interval: 1.7

GROUT
Type: N/A
Interval: N/A

SEAL
Type: BENTONITE PELLETS
Interval: 1

SANDPACK
Type: #1, #3
Interval: 3.65
#1: .5' #3: 3.15'

WELL DEVELOPMENT DATA
Date: 4/28/94
Method: BAIL/PUMP
Duration: 24 DAYS
Rate: .375 L/MIN
Final Measurements:

pH	Temparature (degrees C)	Conductivity (micromhos/cm)	Turbidity (NTU)
7.05	70	475	4.38

WATER LEVELS

Date	Time	Depth,TR
4/5	0830	6.43
4/14	1603	5.46
4/28	0955	6.16

LEGEND
SURFACE SEAL
GROUT
SEAL
SANDPACK
GRAVEL
SAND
SILT
CLAY
NO RECOVERY

TPC TOP OF PROTECTIVE CASING
TR TOP OF WELL RISER
GS GROUND SURFACE
TBS TOP BENTONITE SEAL
TSP TOP OF SANDPACK
TSC TOP OF SCREEN
BSC BOTTOM OF SCREEN
TD TOTAL DEPTH
POW POINT OF WELL

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COMPLETION REPORT OF WELL No. MW71-3

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-119B

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Contractor: SJB
Driller: Walt Ketter
Inspector: Ed Ashton
Rig Type: ATV-CME-850

PARSONS
DRILLING RECORD

BORING/ WELL NO. MW-119-1 Sheet 1 of 2

Location Description: Former Small Arms Range Near Lake Shore Housing

PROJECT NAME: Seneca Army Depot-SEAD 119
PROJECT NUMBER 739855.01002

GROUNDWATER OBSERVATIONS								
Water Level (bgs	17'							
Date	8/8/02							
Time	0953							
Meas. From	TOC							

Weather: Sunny - 70'F

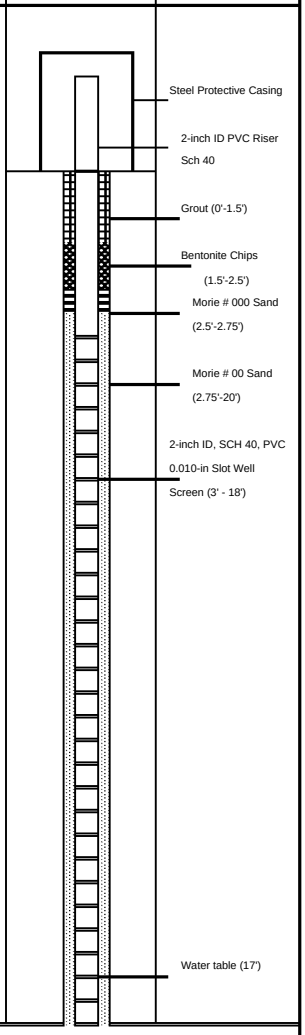
Date/Time Start: August 6, 2002 -1510

Date/Time Finish: August 6, 2002 -1755

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
0					
		4	50	NA	(0'-2):Brown, silt with fine sand, trace fine sand, roots, dry. (SM)
1		6			
		7			
2		9			
		23	100	NA	(2'-4'):Brown, silt with fine sand, fine-medium gravel, dry. (SM)
3		15			
		19			
4		23			
		19	50	NA	(4'-6'):Brown, silt with fine sand, trace fine gravel, black shale fragments, di
5		28			(ML/SM)-Till
		34			
6		36			
		31	10	NA	(6'-8'):Same As Above. (ML/SM)- Til
7		35			
		41			
8		47			
		21	10	NA	(8'-8.9'): Same As Above. (ML/SM)- Til
9		50/.4			Refusal at 8.9 feet. Drilled to 10 feet with HSAs
10					
		50/.4	10	NA	(10'-10.4'): Same As Above. (ML/SM)- Til
11					Refusal at 10.4 feet. Drilled to 12 feet with HSAs
12					
		50/.1	0	NA	(12'-12.1'): No recover
13					Refusal at 12.1 feet. Drilled to 14 feet with HSAs
14					
		50/.1	0	NA	(14'-14.1'): No recover
15					Refusal at 14.1 feet. Drilled to 16 feet with HSAs
16					
		50/.0	0	NA	No recovery
17					Refusal at 16 feet. Drilled to 20 feet with HSAs
18					



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

COMMENTS:
No environmental samples collected.
Drilled to 20 feet bgs from 16 feet bgs due to last three split spoons had no recovery.

Contractor: SJB
Driller: Walt Ketter
Inspector: Ed Ashton
Rig Type: ATV-CME-850

PARSONS
DRILLING RECORD

PROJECT NAME: Seneca Army Depot-SEAD 119
PROJECT NUMBER 739855.01002

BORING/ WELL NO. MW-119-1 Sheet 2 of 2

Location Description:
Former Small Arms Range
Near Lake Shore Housing

GROUNDWATER OBSERVATIONS								
Water Level (bgs)								
Date								
Time								
Meas. From								

Weather: Sunny - 70'F

Date/Time Start: August 6, 2002 -1510

Date/Time Finish: August 6, 2002 -1755

Location Plan

N

See Site Plan

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
19							PVC sump (18'-19')
20							PVC end cap
					Boring terminated at 20 feet bgs.		20'

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

COMMENTS:
See page 1 comments.

Contractor: SJB
Driller: Walt Ketter
Inspector: Ed Ashton
Rig Type: ATV-CME-850

PARSONS
DRILLING RECORD

PROJECT NAME: Seneca Army Depot-SEAD 119
PROJECT NUMBER 739855.01002

BORING/ WELL NO. MW-119-2 Sheet 1 of 2

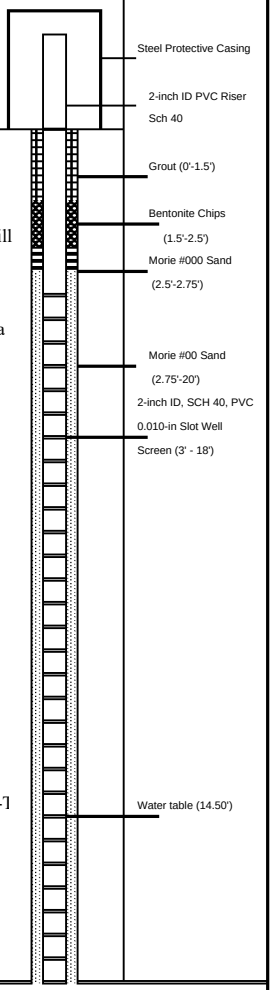
Location Description:
Former Small Arms Range
Near Lake Shore Housing

GROUNDWATER OBSERVATIONS								
Water Level (bgs)	8.20'							
Date	8/8/02							
Time	0830							
Meas. From	TOC							

Weather: Sunny - 70'F
Date/Time Start: August 6, 2002 - 0940
Date/Time Finish: August 6, 2002 - 1417

Location Plan
N
See Site Plan

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
0					
		5	50	NA	(0'-2'):Brown, silt with fine sand, roots, trace fine gravel, dry. (SM)
1		7			
		11			
2		11			
		15	100	NA	(2'-4'):Brown, silt with trace-fine sand, fragments of black shale, dry. (ML/SM)-Till
3		17			
		19			
4		25			
		18	100	NA	(4'-6'):Brown, silt with trace fine sand, fine-medium gravel, fragments of black sha
5		21			dry. (ML/SM)-Till
		18			
6		22			
		50/.4	5	NA	(6'-6.4'):Brown, silt with trace clay, black shale, dry. (ML/SM)- T
7					Refusal at 6.4 feet. Drilled to 8 feet with HSA
8					
		10	80	NA	(8'-10'):Brown, silt with trace clay, black shale, dry to moist. (ML/SM)-T
9		27			
		34			
10		47			
		13	100	NA	(10'-12'): Same As Above. (ML/SM)-Til
11		24			
		44			
12		45			
		50/.3	5	NA	(12'-12.3'): Same As Above. (ML/SM)-Til
13					Refusal at 12.3 feet. Drilled to 14 feet with HSA
14					
		38	50	NA	(14'-15.7'):Brown to grey, silt with trace clay, black shale, dry to moist. (ML/SM)-T
15		35			Refusal at 15.7 feet. Drilled to 20 feet with HSA
		27			
16		50/.2			
17					
18					

SCHEMATIC	COMMENTS
	Steel Protective Casing 2-inch ID PVC Riser Sch 40 Grout (0'-1.5') Bentonite Chips (1.5'-2.5') Morie #000 Sand (2.5'-2.75') Morie #00 Sand (2.75'-20') 2-inch ID, SCH 40, PVC 0.010-in Slot Well Screen (3' - 18') Water table (14.50')

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

COMMENTS:
No environmental samples collected.

Contractor: SJB
Driller: Walt Ketter
Inspector: Ed Ashton
Rig Type: ATV-CME-850

PARSONS
DRILLING RECORD

PROJECT NAME: Seneca Army Depot-SEAD 119
PROJECT NUMBER 739855.01002

BORING/ WELL NO. MW-119-2 Sheet 2 of 2

Location Description:
Former Small Arms Range
Near Lake Shore Housing

GROUNDWATER OBSERVATIONS								
Water Level (bgs)								
Date								
Time								
Meas. From								

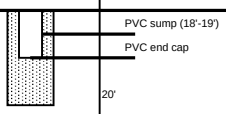
Weather: Sunny - 70'F
Date/Time Start: August 6, 2002 - 0940
Date/Time Finish: August 6, 2002 - 1417

Location Plan

N

See Site Plan

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
19							
20							
					Boring terminated at 20 feet bgs.		



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

COMMENTS:
See page 1 comments.

Contractor: SJB
Driller: Walt Ketter
Inspector: Ed Ashton
Rig Type: ATV-CME-850

PARSONS
DRILLING RECORD

PROJECT NAME: Seneca Army Depot-SEAD 119
PROJECT NUMBER 739855.01002

BORING/ WELL NO. MW-119-3 Sheet 1 of 1
Location Description: Former Small Arms Range Near Lake Shore Housing

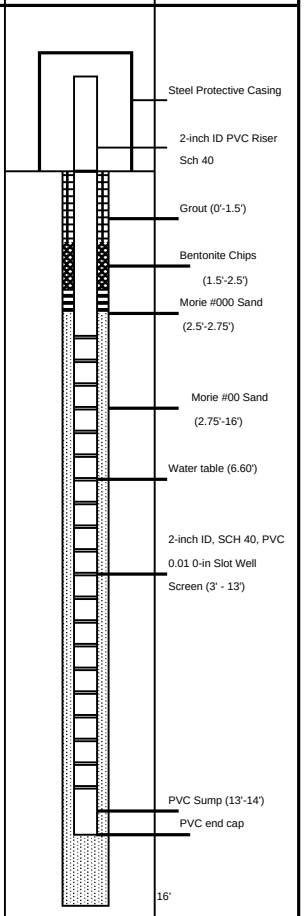
GROUNDWATER OBSERVATIONS								
Water Level (bgs)	8.62'							
Date	8/8/02							
Time	0844							
Meas. From	TOC							

Weather: Cloudy - 80'F
Date/Time Start: August 5, 2002 - 1130
Date/Time Finish: August 5, 2002 - 1630

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+3					
+2					
+1					
0					
		3	50	NA	(0'-2'):Brown, silt with fine sand, roots, trace fine gravel, dry. (SM)
1		8			
		8			
2		10			
		18	50	NA	(2'-4'):Brown, silt with trace-fine sand, fragments of black shale,
3		25			dry. (ML/SM)-Till
		25			
4		37			
		13	80	NA	(4'-6'):Brown, silt with fine sand, trace-fine gravel, trace clay, d
5		16			(ML/SM)-Till
		16			
6		19			
		13	40	NA	(6'-7.5'): Same As Above With the Exception of Fragments (
7		21			Black Shale Present. (ML/SM)- Til
		32			Refusal at 7.5 feet. Drilled to 8 feet with HSAs
8		50/.0			
		14	20	NA	(8'-8.8'): Same As Above. (ML/SM)-Til
9		50/.3			Refusal at 8.8 feet. Drilled to 10 feet with HSAs
10					
		32	10	NA	(10'-10.9'):Brown, silt with black shale, trace fine sand, dry. (ML/SM)-T
11		50/.4			Refusal at 10.9 feet. Drilled to 12 feet with HSAs
12					
		34	10	NA	(12'-12.6'):Grey, silt with clay, black shale, moist to wet at 12.6 fe
13		50/.1			(ML/SM)-Till.
					Refusal at 12.6 feet. Drilled to 14 feet with HSAs
14					
		50/.0	0	NA	Refusal at 14.0 feet; Tip of spoon wet
15					Drilled to 16 feet with HSAs.
16					
					Boring terminated at 16 feet bgs.
17					
18					



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

COMMENTS:
No environmental samples collected.

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-121C

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Table 3-7
SEAD-121C - Monitoring Well Construction Details

SEAD-121C AND SEAD-121I RI REPORT
Seneca Army Depot Activity - Romulus, New York

Well ID	Well Type	Point of Well Relative to Ground Surface (ft)	Point of Well Relative to Top of PVC (ft)	Diameter of Boring (in)	Diameter of Well (in)	Well Screen Length (ft)	Screened Interval Relative to TOC (ft)			Well Screen Slot Size (in)	Ground Surface Elevation	Elevation of Top of PVC Well (MSL)	Elevation of Top of Casing	Height of PVC Well Stickup (ft)	Well Casing Material	Well Screen Material
MW121C-3	T/WS	724.20	725.61	6	2	5	2.80	to	7.80	0.010	732.00	733.41	733.70	1.41	PVC	PVC
MW121C-4	T/WS	720.29	721.63	6	2	5	4.61	to	9.61	0.010	729.90	731.24	731.40	1.34	PVC	PVC
MW121C-5	T/WS	720.84	722.54	6	2	5	4.76	to	9.76	0.010	730.60	732.30	732.50	1.70	PVC	PVC
MW121C-6	T/WS	725.50	726.88	6	2	5	2.20	to	7.20	0.010	732.70	734.08	734.30	1.38	PVC	PVC

Notes:
T/WS = Till Weathered Shale Aquifer

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OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: SBDRMO-24
COMMENTS:		DRILLER: Harry Lyon INSPECTOR: Rossmann / McAllister DATE: 10/25/12

DEPTH (FT)	SAMPLING: BLOWS PER 6 INCHES	SAMPLING: PENETRATION RANGE (FEET)	SAMPLING: RECOVERY RANGE (FEET)	SAMPLE: DEPTH INT (FEET)	SAMPLE: NO.	SAMPLE: VOC	SAMPLE: RAD SCRN	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	USCS CLASS	STRATUM CLASS
	7				SBDRMO-1098	1324		Moist Fill material – Rocky (Angular/Subangular)		
	12									
	20	2'	2'					Perched H2O 10"		
2	15									
	4							wet Grey CLAY w/ silt & Angular rock frg throughout.		
	8				SBDRMO-1099	1331				
	12	2'	1'							
	14									
4	4							Moist Grey CLAY. Brick @ 5ft		
5	4	1.9'	1'			1336		5" weathered Bedrock		
	15									
6	50/5"									
	50/4"	4"	3"			1347		Weathered Shale – Dry		
8	50/1"	1"	–					NO Recovery. Spoon Refusal		
10										
15										
20										

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW Demo-3

PROJECT: PID
SWMU # (AREA): Demo
SOP NO.: 741175

START DATE: 10/29/02
FINISH DATE: ↓
CONTRACTOR: Lyon Drilling
DRILLER: Harry / Rick
INSPECTOR: Jenn / Ben
CHECKED BY:
CHECK DATE:
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA		0 – 8	2"	SS		

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	10/29/02		
SOIL AMOUNT: (fraction of drum)	½ drum		
DRUM #, LOCATION:			

COMMENTS:

SAMPLES TAKEN: None

SAMPLES
DUPLICATES
MS/MSD
MRD

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW DRmo-3

COMMENTS: No Soil Samples Collected

DRILLER: Harry Lyon
INSPECTOR: Rossmann / McAllister
DATE: 10/9/02

DEPTH (FT)	SAMPLING: BLOWS PER 6 INCHES	SAMPLING: PENETRATION RANGE (FEET)	SAMPLING: RECOVERY RANGE (FEET)	SAMPLE: DEPTH INT (FEET)	SAMPLE: NO.	SAMPLE: VOC	SAMPLE: RAD SCRN	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	USCS CLASS	STRATUM CLASS
	8									
	14							Dry Rock Grey		
	17	2'	1'							
	13									
2										
								Slightly moist Brown Silt	ML	
7										
9		2'	1'							
10										
								moist Brown SILT w/ weathered shale at bottom (dry)	ML	
5	20									
	27	2'	1'							
6	41									
	25									
	50/2"	8"	10"					Weathered Shale - Dry.	—	
8										
10										
15										
20										

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW DRMO-4

PROJECT: PID
SWMU # (AREA): DRMO
SOP NO.: 741175

START DATE: 10/29/02
FINISH DATE: ↓
CONTRACTOR: ~~Harry~~ Lyn Drilly
DRILLER: Harry / Rick
INSPECTOR: Jenn / Ben
CHECKED BY:
CHECK DATE:
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	4¼	0-8	2"	SS		

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	10/29/02		
SOIL AMOUNT: (fraction of drum)	½ drum		
DRUM #, LOCATION:			

COMMENTS:

SAMPLES TAKEN: None
SAMPLES
DUPLICATES
MS/MSD
MRD

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USA CoE	BORING NO.: MW Demo -4
COMMENTS:		DRILLER: Harry Lyon / Rick
		INSPECTOR: Russmunn / McAllister
		DATE: 10/24/02

DEPTH (FT)	SAMPLING: BLOWS PER 6 INCHES	SAMPLING: PENETRATION RANGE (FEET)	SAMPLING: RECOVERY RANGE (FEET)	SAMPLE: DEPTH INT (FEET)	SAMPLE: NO.	SAMPLE: VOC	SAMPLE: RAD SCRN	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	USCS CLASS	STRATUM CLASS
	6							moist Brown(dk) SILT last 3" 9" of		
	8							rock (Dry)	ML	
	5	2'	1'							
2	7									
	5							moist Grey SILT w/some dkg weathered Shale		
	7							last 2" trace of clay.	ML	
	10	2'	1'							
4	32									
	24							Dg weathered Shale		
5	50/2"	8"	6"						—	
6										
	50/1"	1"	—					no recovery Refusal Split spoon	—	
8										
10										
15										
20										

OVERBURDEN BORING REPORT

PARSONS | CLIENT: USACOE | BORING NO.: MWDRMO-6

PROJECT: PID
SWMU # (AREA): DRMO
SOP NO.: 741175

START DATE: 10/29/02
FINISH DATE: ↓
CONTRACTOR: Lyon Drilling
DRILLER: Harry / Rick
INSPECTOR: Ben / Dan
CHECKED BY:
CHECK DATE:
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	6"	0-8	2"	SS		

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT-SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	10/29/02		
SOIL AMOUNT: (fraction of drum)	½ drum		
DRUM #, LOCATION:			

COMMENTS:

SAMPLES TAKEN: none

SAMPLES
DUPLICATES
MS/MSD
MRD

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MWDRMO -6
COMMENTS:	DRILLER: Harry Lyon INSPECTOR: Rossmann / McAllister DATE: 10/29/02	

DEPTH (FT)	SAMPLING: BLOWS PER 6 INCHES	SAMPLING: PENETRATION RANGE (FEET)	SAMPLING: RECOVERY RANGE (FEET)	SAMPLE: DEPTH INT (FEET)	SAMPLE: NO.	SAMPLE: VOC	SAMPLE: RAD SCRN	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	USCS CLASS	STRATUM CLASS
	4							Rocky Fill	—	
	10	2'	3/4'							
	11									
2	8							moist wdy Brown silt, stiff	ML	
	4									
	6	2'	1'							
	9									
	14									
4	50/3							Dry weathered shale		
5	50/2"	8"	8"						—	
6								Dry weathered shale		
	50/1"	1"	4"						—	
8										
10										
15										
20										

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MWDRMO-5

PROJECT: PID
SWMU # (AREA): DRMO
SOP NO.: 741175

START DATE: 10/29/02
FINISH DATE: 10/29/02
CONTRACTOR: Lyon Drilling
DRILLER: Harry Reid
INSPECTOR: Ben Jerni
CHECKED BY:
CHECK DATE:
BORING CONVERTED TO MW? (Y) N

DRILLING SUMMARY

DRILLING METHOD	HOLE DIA.(ft)	DEPTH INTERVAL (ft)	SAMPLER SIZE	SAMPLER TYPE	HAMMER TYPE	HAMMER WT/FALL
HSA	6"	0-8	2"	SS		

DRILLING ACRONYMS

HSA	HOLLOW-STEM AUGERS	HMR	HAMMER	SS	SPLIT SPOON
DW	DRIVE-AND-WASH	SHR	SAFETY HAMMER	CS	CONTINUOUS SAMPLING
MRSLC	MUD-ROTARY SOIL-CORING	HHR	HYDRAULIC HAMMER	5I	5 FT INTERVAL SAMPLING
CA	CASING ADVANCER	DHR	DOWN-HOLE HAMMER	NS	NO SAMPLING
SPC	SPIN CASING	WL	WIRE-LINE	ST	SHELBY TUBE
				3S	3 INCH SPLIT SPOON

MONITORING EQUPMENT SUMMARY

INSTRUMENT TYPE	DETECTOR TYPE/ENERGY	RANGE	BACKGROUND READING	BACKGROUND TIME	BACKGROUND DATE	CALIBRATION TIME	CALIBRATION DATE	WEATHER (TEMP., WIND, ETC.)

MONITORING ACRONYMS

PID	PHOTO - IONIZATION DETECTOR	BGD	BACKGROUND	DGRT	DRAEGER TUBES
FID	FLAME - IONIZATION DETECTOR	CPM	COUNTS PER MINUTE	PPB	PARTS PER BILLION
GMD	GEIGER MUELLER DETECTOR	PPM	PARTS PER MILLION	MDL	METHOD DETECTION LIMIT
SCT	SCINTILLATION DETECTOR	RAD	RADIATION METER		

INVESTIGATION DERIVED WASTE

DATE	10/29/02		
SOIL AMOUNT: (fraction of drum)	1/2 drum		
DRUM #, LOCATION:			

COMMENTS:

SAMPLES TAKEN: none

SAMPLES
DUPLICATES
MS/MSD
MRD

OVERBURDEN BORING REPORT

PARSONS	CLIENT: USACOE	BORING NO.: MW Demo-5
COMMENTS:		DRILLER: Harry Lyon
		INSPECTOR: Rossmann / McAllister
		DATE: 10/29/02

DEPTH (FT)	SAMPLING: BLOWS PER 6 INCHES	SAMPLING: PENETRATION RANGE (FEET)	SAMPLING: RECOVERY RANGE (FEET)	SAMPLE: DEPTH INT (FEET)	SAMPLE: NO.	SAMPLE: VOC	SAMPLE: RAD SCRN	SAMPLE DESCRIPTION (As per Burmeister: color, grain size, MAJOR COMPONENT, Minor Components with amount modifiers and grain-size, density, stratification, wetness, etc.)	USCS CLASS	STRATUM CLASS
	7							moist Brown SILT w/ rock fragments	ML	
	12									
	10	2'	1'							
	5									
2	12							moist Brown SILT w/ Rock fragments (4")	ML	
	25							Dry weathered shale		
	28	2'	1'							
	40									
4	35									
5	50/2	8"	8"					Dry weathered shale	—	
6										
	50/4"							Dry weathered shale	—	
		4"	8"							
8										
10										
15										
20										

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SOIL BORING AND WELL COMPLETION LOGS

SEAD-122B

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Contractor: NorthStar Drilling	**PARSONS**	**BORING/**	Sheet # 1 of 1 #
Driller: S. Breeds	**DRILLING RECORD**	**WELL NO.** MW-1	
Inspector: E. Ashton	**PROJECT NAME:** Seneca Army Depot - SEAD 122B	**Location Description:** SEE SITE PLAN	
Rig Type: CME-45	**PROJECT NUMBER:** 741401.031		

GROUNDWATER OBSERVATIONS				
Water Level	6.00	7.02	7.48	
Date	7/11/02	7/22/02	7/24/02	
Time	0830	0830	1035	
Meas. From	TOC	TOC	TOC	

Weather: Sunny - 75' F

Date/Time Start: 7/08/02-1020

Date/Time Finish: 7/08/02-1530

Location Plan

SEE SITE PLAN

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC / COMMENTS stickup casing
0-2		1/3	50	NA	(0'-2') Brown to Grey, roots, silt with clay, trace of fine sand	Grout 0-1.5'
		5/8			and fine gravel, dry. (SM/SC)	
						Bentonite Pellets 1.5'-3.5'
						2" PVC Riser
2-4		17/22	NR	NA	(2'-4') No recovery in split-spoon.	
		21/20				
						Filtered sand (# 00N) pack - 3.5'-4'
4-6		15/17	50	NA	(4'-6') Brown, silt with trace of clay, trace of fine sand, fine to	
		23/30			medium gravel, black shale interbedded, dry. (SM (Till))	Filtered sand (#0) pack - 4'-17'.5
6-8		50/	20	NA	(6'-6.8') Same as above. (SM (Till)).	
		50/.3			Note: Refusal encountered at 6.8' bgs. Course gravel of black shale	
					in tip of spoon. Drilled to 8' bgs with HSAs.	
						0.010 Slot PVC Screen 6'-16'
8-10		50/.3	2	NA	(8'-8.3') Same as above. (SM (Till))	
					Note: Refusal encountered at 8.3' bgs. Black shale predominant	
					in spoon. Drilled to 10' bgs with HSAs.	
10-12		25/31	80	NA	(10'-11.8') Brown, silt with trace clay and interbedded shale, dry.	
		50/			(SM (Till))	
		50/.3			Note: Refusal encountered at 11.8' bgs. Drilled to 12' bgs with HSAs.	
12-14	122B-1040	17/25	100	NA	(12'-14') Same as above. (SM (Till))	
		40/40				
14-16		65/	10	NA	(14'-14.7') Brown to Grey, silt with clay and interbedded shale, wet.	16'
		50/.2			(SM (Till))	Sch. 40 PVC Sump
					Note: Refusal encountered at 14.7' bgs. Attempted to drill to 20' bgs,	16.5' 16'-16.5'
					but encountered auger refusal at 17.5' bgs.	
16-18		NA	NA	NA		17.5'
					Terminated soil boring at 17.5' bgs.	

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil sample 122B-1040 for total lead analysis.

6-inch PVC sump installed at bottom of well screen.

2-inch well installed.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS	CLIENT: ACOE	WELL #: 1
PROJECT: Seneca Army Depot		PROJECT NO: 741401.0310
LOCATION: Romulus, NY		INSPECTOR: EJAshton
		CHECKED BY: EJAshton

DRILLING CONTRACTOR:	North Star Drilling, Inc.	POW DEPTH:	16.5'
DRILLER:	Scott Brooks	INSTALLATION STARTED:	7/08/02
DRILLING COMPLETED:	7/08/02	INSTALLATION COMPLETED:	7/08/02
BORING DEPTH:	17.5'	SURFACE COMPLETION DATE:	7/12/02
DRILLING METHOD(S):	Hollow Stem augers.	COMPLETION CONTRACTOR/CREW:	North Star Drilling
BORING DIAMETER(S):	8.25	BEDROCK CONFIRMED (Y/N?)	Y
ASSOCIATED SWMU/AOC:	SEAD-122B	ESTIMATED GROUND ELEVATION:	635.14'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Steel

RISER:
TOC: 637.16' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 8.02'

SCREEN:
TSC: 629.14' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 10' SLOT SIZE: 10-slot

POINT OF WELL: (SILT SUMP)
YPE: - BSC: 619.14' POW: 618.64'

GROUT:
TG: 635.14' TYPE: Cement/Bent. LENGTH: 1.5'

SEAL: TBS: 633.64 TYPE: Pellets LENGTH: 2'

SAND PACK: TSP: 631.64 TYPE: Morie #00N (3.5-4') " #0 (4-17.5') LENGTH: 14'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2'x2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:
See Boring Log for in depth details

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

Contractor: NorthStar Drilling
Driller: S. Breeds
Inspector: E. Ashton
Rig Type: CME-45

PARSONS
DRILLING RECORD

BORING/ WELL NO. MW-2 **Sheet** 1 **of** 1

PROJECT NAME: Seneca Army Depot - SEAD 122B
PROJECT NUMBER: 741401.031

Location Description: SEE SITE PLAN

Weather: Cloudy - 65'F
Date/Time Start: 7/09/02-0920
Date/Time Finish: 7/09/02-1302

Location Plan

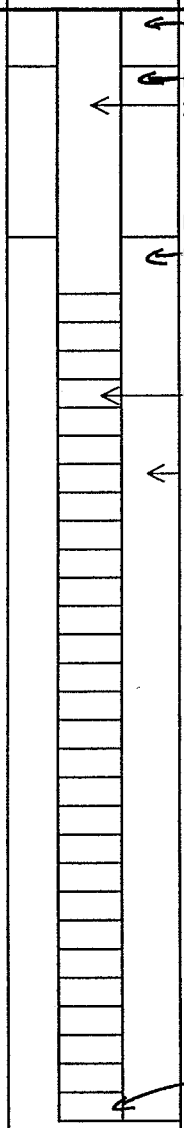
SEE SITE PLAN

GROUNDWATER OBSERVATIONS

Water Level	6.5	7.38	7.54	
Date	7/12/02	7/22/02	7/24/02	
Time	0835	0835	1040	
Meas. From	TOC	TOC	TOC	

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0-2		2/3	50	NA	(0'-2') Brown, silt with clay, trace of fine sand and fine gravel, roots, dry.
		3/4			(SM/SC)
2-4		5/8	40	NA	(2'-4') Same as above, except no roots and color of soil brown to grey.
		10/14			(SM/SC)
4-6		13/23	100	NA	(4'-6') Brown, silt with clay and interbedded shale, dry. (SM/SC (Till))
		35/40			
6-8		50/	NA	NA	(6'-8') No recovery.
		50/.3			Note: Refusal encountered at 6.8' bgs. Drilled to 8' bgs with HSAs.
8-10		50/.3	NA	NA	(8'-10') No recovery.
					Note: Refusal encountered at 8.3' bgs. Drilled to 10' bgs with HSAs.
					Course gravel of black shale present in tip of spoon.
10-12		37/40	50	NA	(10'-11.2') Brown to Grey, silt with clay and interbedded shale, dry.
		50/.2			(SM/SC (Till))
12-14		34/25	100	NA	(12'-14') Grey, silt with clay and interbedded shale, moist. (SM/SC (Till))
		23/24			
14-16	122B-1041	22/24	80	NA	(14'-16') Same as above. (SM/SC (Till))
		33/50/.4			
16-18		50/.3	2	NA	(16'-16.3') Weathered black shale, wet. (Shale)
					Note: Refusal encountered at 16.3' bgs. Attempted to drill to 20' bgs, but encountered auger refusal at 16.5' bgs. Boring Terminated at 16.5' bgs.

SCHEMATIC



COMMENTS
stickup casing

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

COMMENTS:
Collected soil sample 122B-1041 for total lead analysis.
3-inch PVC sump installed at bottom of well screen.
2-inch well installed.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS	CLIENT: ACOE	WELL #: 2

PROJECT: Seneca Army Depot
LOCATION: Romulus, NY
PROJECT NO: 74140L.03100
INSPECTOR: EDAshton
CHECKED BY: EDAshton

DRILLING CONTRACTOR: North Star Drilling, Inc
DRILLER: Scott Breeds
DRILLING COMPLETED: 7/09/02
BORING DEPTH: 16.5'
DRILLING METHOD(S): Hollow Stem auger
BORING DIAMETER(S): 8.25
ASSOCIATED SWMU/AOC: SEAD-122B
POW DEPTH: 16.0'
INSTALLATION STARTED: 7/09/02
INSTALLATION COMPLETED: 7/09/02
SURFACE COMPLETION DATE: 7/12/02
COMPLETION CONTRACTOR/CREW: North Star Drilling
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 624.83'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Steel

RISER:
TOC: 626.82' TYPE: Sch.40, PVC DIAMETER: 2" LENGTH: 7.99'

SCREEN:
TSC: 618.83' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 9.7' SLOT SIZE: 10-Slot

POINT OF WELL: (SILT SUMP)
YPE: - BSC: 609.13' POW: 608.83'

GROUT:
TG: 624.83' TYPE: Grout/Bent. LENGTH: 1.5'

SEAL: TBS: 623.33' TYPE: Pellets LENGTH: 2'

SAND PACK: TSP: 621.33' TYPE: Morie #1 sand (3.5-4') " #0C6-16 (5.7) LENGTH: 13'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2'x2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:
See Boring Log for in-depth details

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC

Contractor: NorthStar Drilling **Driller:** S. Breeds **Inspector:** E. Ashton **Rig Type:** CME-45	**PARSONS** **DRILLING RECORD** **PROJECT NAME:** Seneca Army Depot - SEAD 122B **PROJECT NUMBER:** 741401.031	**BORING/ WELL NO.** MW-3	**Sheet # 1 of 1 #**
		Location Description: SEE SITE PLAN	

GROUNDWATER OBSERVATIONS				
Water Level	5.6	6.44	6.68	
Date	7/12/02	7/22/02	7/24/02	
Time	0840	0840	1045	
Meas. From	TOC	TOC	TOC	

Weather: Sunny - 60'F

Date/Time Start: 7/10/02 - 0840

Date/Time Finish: 7/10/02 - 0930

Location Plan

SEE SITE PLAN

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS stickup casing
0-2		5/6/ 21/22	80	NA	(0'-2') Brown, silt with minor clay, roots, trace of fine sand and fine to medium gravel, dry. (SM)		Grout (0'-1.5')
2-4		22/25 23/28	2	NA	(2'-4') Fine to course gravel. Very little to no recovery in spoon.		2" PVC Riser Bentonite Pellets (1.5'-3') Filtered sand (#00N) pack - 3'-3.5'
4-6		23/21 30/33	80	NA	(4'-6') Grey, silt with trace clay, fine to medium gravel, trace of fine sand, dry. (SM)		Filtered sand (#0) pack (3.5'-15')
6-8		50/.3	NA	NA	(6'-6.3') No recovery. Note: Refusal encountered at 6.3' bgs. Drilled to 8' bgs. with HSAs. Course gravel of black shale in tip of spoon.		0.010 " Slot, Sch 40 PVC Screen (4'-14')
8-10		30/ 50/.3	20	NA	(8'-8.8') Brown to Grey, silt with clay and interbedded shale, dry. (SM/SC (Till)) Note: Refusal encountered at 8.8' bgs. Drilled to 10' bgs. with HSAs.		
10-12		35/ 50/.3	40	NA	(10'-10.8') Same as above. (SM/SC (Till)) Note: Refusal encountered at 10.8' bgs. Drilled to 12' bgs. with HSAs.		
12-14	122B-1042	38/ 50/.3	50	NA	(12'-12.8') Brown to Grey, silt with clay and interbedded shale, dry. (SM/SC (Till)) Note: Refusal encountered at 12.8' bgs. Drilled to 14' bgs. with HSAs.		14'
14-16		50/.1	50	NA	(14'-14.1') No recovery. Note: Refusal encountered at 14.1' bgs. Tip of spoon wet. Attempted to drill to 20' bgs., but encountered auger refusal at 15' bgs.		Sch. 40 PVC Sump 14.5' 14'-14.5'
16-18					Terminated soil boring at 15' bgs.		15'

SAMPLING METHOD

SS = SPLIT SPOON

A = AUGER CUTTINGS

C = CORED

COMMENTS:

Collected soil sample 122B-1042 for total lead analysis.

6-inch PVC sump installed at bottom of well screen.

2-inch well installed.

OVERBURDEN MONITORING WELL
COMPLETION REPORT & INSTALLATION DETAIL
PROTECTIVE RISER COMPLETION

PARSONS	CLIENT: ACOE	WELL #: 3

PROJECT: Seneca Army Depot
LOCATION: Romulus, NY
PROJECT NO: 741401.0300
INSPECTOR: E JAshton
CHECKED BY: EJAshton

DRILLING CONTRACTOR: Northstar Drilling, Inc
DRILLER: Scott Breeds
DRILLING COMPLETED: 7/10/02
BORING DEPTH: 15'
DRILLING METHOD(S): Hollow stem Auger
BORING DIAMETER(S): 8.25
ASSOCIATED SWMU/AOC: SEAD-122B
POW DEPTH: 14.5'
INSTALLATION STARTED: 7/10/02
INSTALLATION COMPLETED: 7/10/02
SURFACE COMPLETION DATE: 7/12/02
COMPLETION CONTRACTOR/CREW: Northstar Drilling
BEDROCK CONFIRMED (Y/N?) Y
ESTIMATED GROUND ELEVATION: 625.82'

PROTECTIVE SURFACE CASING:
DIAMETER: 4" LENGTH: 3.5' TOR: Steel

RISER:
TOC: 627.94' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 6.12'

SCREEN:
TSC: 621.82' TYPE: Sch 40, PVC DIAMETER: 2" LENGTH: 10' SLOT SIZE: 10 slot

POINT OF WELL: (SILT SUMP)
YPE: — BSC: 611.82' POW: 611.32'

GROUT:
TG: 625.82' TYPE: Cement/Bent. LENGTH: 1.5'

SEAL: TBS: 624.32' TYPE: Pellets LENGTH: 1.5'

SAND PACK: TSP: 622.82' TYPE: Morie #1 Sand (3-3.5') #0 (4-15') LENGTH: 12'

SURFACE COLLAR:
TYPE: Concrete RADIUS: 2'x2' THICKNESS CENTER: 6" THICKNESS EDGE: 6"

CENTRALIZER DEPTHS
DEPTH 1: NA DEPTH 2: NA DEPTH 3: NA DEPTH 4: NA

COMMENTS:

See Boring Log for in-depth details.

* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE

SEE PAGE 2 FOR SCHEMATIC