Arrowhead Park Development Plan

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Certification Statement

"I, Patrick Skalecki, hereby certify that I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 500 to 538, Wis. Adm. Code."

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Acronyms / Abbreviations

µmhos/cm	micro-mhos per centimeter
BRRTS	Bureau of Remediation and Redevelopment Tracking System
cm/sec	Centimeters per Second
CN	Canadian National Railroad
COD	Chemical Oxygen Demand
CVOC	chlorinated volatile organic compound
CY	Cubic Yards
ECS	Environmental Consulting Services, LLC
EPDM	Ethylene Propylene Diene Monomer
ERP	Environmental Repair Program
fbg	Feet Below Grade
FGD	flue gas desulfurization
FID	Flame Ionization Detector
ft	Feet/foot
ft msl	Feet Above Mean Sea Level
IPC	Institute of Paper Chemistry
mg/kg	Milligram per Kilogram
mg/l	Milligram per Liter
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
ppb	Parts per Billion
ppm	Parts per Million
PVC	polyvinyl chloride
RCL	Residual Contaminant Level
RCRA	Resource Conservation Recovery Act
RR	Wisconsin Remediation Redevelopment Program
SDR	Standard Dimension Ratio
SEH	Short Elliott Hendrickson, Inc
SU	Standard Units
TSCA	Toxic Substance Control Act
VOC	Volatile Organic Compounds
WDNR	Wisconsin Department of Natural Resources

1 Introduction and Background

The City of Neenah (City) Parks and Recreation and Community Development Departments have recently evaluated design and development considerations for the revitalization of Arrowhead Park (referred to herein as Park or Landfill) located at 355 Millview Drive, between Main Street and the southern shore of the Fox River, also known in this location as Little Lake Butte des Morts, in the SE 1/4 of Section 21 and the SW 1/4 of Section 22, T 20 N, R 17 E in the City of Neenah, Winnebago County, Wisconsin as depicted on **Figure 1**. The Park is a former landfill composed of fill and papermill derived waste sludge from the former adjacent P. H. Glatfelter Paper Mill (the Mill).

The City engaged RDG Planning and Design to develop a Master Plan for the Park site, which was developed between 2023 and 2024 and included five components: 1) Improving vehicular access and parking, 2) Develop and pedestrian overpass at Gateway Park, 3) Provide Nature-Inspired Recreation, 4) Provide Nature-Inspired Landscape, and 5) Provide Nature-Inspired Play and Trailhead. A copy of the Updated Master Plan (Master Plan), with an addendum dated February 5, 2025, is included in **Appendix A**. The improvements proposed in this Development Plan may be undertaken with the specific approval of the Wisconsin Department of Natural Resources (WDNR) as provided in Wisconsin Administrative Code section NR 506.085.

Engineering/design of the new Park features is currently underway, and approval is being requested of the WDNR for undertaking the planned development as detailed below.

The components of the Master Plan that are being requested for **"Installation Approval"** under this Plan Modification Request include:

- Overall site grading and fill per the attached grading design plans
- Millview Drive Railroad Crossing
- All roadways/drives
- All Parking Lots
- All sidewalks and pathways
- Open-Air Shelters
- Site Utility Extension for future building services
- Stormwater Management Best Management Practices and Piping

Detailed design plans for the above components, of which the City of Neenah is requesting for **"Installation Approval,"** are attached in **Appendix C.**

In addition, the City of Neenah is requesting "Use Approval" of select Master Plan components, in order for the City to move forward with detailed design of those components of the Master Plan. The City understands that "Use Approval" does not permit installation of those components. However, WDNR's grant of "Use Approval" of the intended uses of Arrowhead Park for the structures listed below, at their respective locations shown in the Master Plan, allows the City of Neenah to comfortably proceed with expenditures for

detailed design of those structures for future submission to and approval from WDNR. Following the WDNR's grant of "Use Approval" approvals with respect to this request, detailed designs of the structures for which WDNR grants "Use Approval" will be completed and submitted to WDNR in one or more Plan Modification Requests seeking "installation" approval of the "use" approved components. At this time, the City is not requesting a "Use Approval" of the Welcome Center or Community Building depicted in the Master Plan. The City intends to submit independent approval requests for these structures once their use is defined.

The components of the Master Plan that are being requested for "Use Approval" under this Plan Modification Request include:

- Prairie Workshop
- Amphitheater Stage
- Colonnade
- Pedestrian Overpass
- Sculptures with foundations
- Welcome Center (approval deferred to subsequent submittal)
- Community Building (approval deferred to subsequent submittal)

The City understands that any approval or conditional approval from the WDNR may have to be amended as additional design details are developed or changes are made.

This report is intended to provide the data, analysis and engineering sheets necessary for WDNR to provide the approvals requested in this Development Plan. The report includes a summary of existing and potential impacts, including analytical data of various media, an assessment of the known or suspected releases to the environment, existing site conditions, proposed development summary, and summary of actions to be taken and engineering controls that will minimize adverse environmental impacts and potential threats to human health and welfare, including worker safety.

1.1 Landfill/Park History

The Park is part of an area of man-made land established by historical filling of a shallow and marshy near shore portion of the Fox River. In 1950, the City of Neenah obtained a permit from the United States Department of Army Corps of Engineers to fill the area. A dike or retaining wall was initially built along what is now the northern edge of the Park and filling began at the east end of the property and extended westward. Fill, including papermill sludge from the adjacent P. H. Glatfelter Paper Mill, was deposited behind the dike wall on the natural sediments and subsequently capped.

The adjacent Mill was founded in 1874 by the Winnebago Paper Company. The Mill site was purchased by the Bergstrom Paper Company in 1904 and later purchased by P.H. Glatfelter in 1979. Landfill operations were present on the site from 1952 to 1976 when sludge from a wastewater treatment plant operated by the Bergstrom Paper Co. (a de-inking pulp mill) was deposited in the landfill. Bergstrom wastewater sludge

contained polychlorinated biphenyls (PCB's) from 1954 through the final landfilling operations. Below is a more detailed timeline of the history of the landfill.

1950 - 1952: The City obtained bulkhead permit in July 1950. Initial soil filling at the east end of the Arrowhead Park Landfill was for construction of the wastewater treatment plant, which went operational in Nov. 1952.

1953 – 1957: Aerial photos show construction of sludge landfill cells adjacent to the treatment plant. Based on aerials from this period, it appears that at least the south half of the truck parking area was constructed over these landfill cells (portion of Park Site 1).

1957 – 1964: Area-type sludge filling occurred beyond the disposal cells, progressing in a westerly direction. The area on which the truck parking was constructed appears to have been filled by 1964.

1964 – 1970: Area-type sludge filling progressed east to west. A haul road was constructed extending through the central portion of the landfill, with haul roads branching off of the central road.

1970 – 1976: Landfill in later stages of operation. Bergstrom constructed a truck parking and fuel storage area on the 3.29-acre parcel immediately west of the disposal plant (west half of Park Site 1). Sludge disposal ceased completely by the end of 1976. Part of soil cover was placed on landfill in the spring of 1976. A secondary treatment system was under construction in April 1976.

1976 – 1984: The secondary treatment system was operational in 1977. The wastewater treatment facility was constructed on approximately 7.5 acres of the eastern portion of the landfill with a facility footprint of approximately 136,000 square feet. Per the Glatfelter report dated January 1984, the Arrowhead Park Landfill was covered with clay & topsoil. Cover thickness varied from 0.25 to 4.5 feet (ft) with a mean thickness between 1 and 2 ft. The entire site was covered by November 1979 with the soil surface graded at a 2% slope. The high point elevation of 750 ft is near the center of the landfill, sloping radially to the edges at elevation of approximately 744 ft.

1984 – 1998: Per City of Neenah, additional cover soil was placed on the landfill and periodic maintenance was required to fill low areas and assure vegetative growth. Soil borings from ERM's 1999 report found 1.0 – 6.3 ft of cover soil with an average soil thickness of 3.3 ft. Site was completely vegetated in 1998.

1998 – Environmental Resources Management, on behalf of P.H. Glatfelter Company, completed an inspection of the dike on the northside of the Landfill. Based on this inspection, four repairs were completed to the dike which included repair of erosion channels, a sink hole, steep banks, and the dike recession.

1996 - 2016: Construction of the Minergy Plant on the landfill was started in 1996 on approximately 4 acres of the central portion of the landfill. The facility footprint was approximately 47,000 square feet and constructed on 488 steel piles that extended between 15.8 to 49.3 (feet below grade) fbg. A methane ventilation system was installed beneath the building during construction. The Minergy Plant was demolished in 2016.

1998 – 2006: Truck parking continued on the 3.29-acre parcel west of the treatment plant (Park Site 1) until the mill operations ceased in 2006. The City, at considerable expense, removed the truck parking and treatment plant in 2006 with the intent of redeveloping the public park space.

2008 – The eastern portion of Arrowhead Park (Park Site 1) was used for sand storage for sediment capping operations associated with the Fox River Remediation. According to Mr. William Hartman, project manager for the cleanup, 10,000 to 15,000 tons of sand were stored at Park Site 1 at any given time. Mr. Hartman stated the sand was piled to a height of 15 to 20 feet, generally in the area south of monitoring well PS-15RR (Graef 2012).

2012 – Construction of a recreational park space began which included landscaping and construction of a gravel walking path.

2013 – Construction began of a paved parking lot, construction of a screen berm between Minergy and the parking lot, paving of the existing multi-use trail, and installation of lighting along a portion of multi-use trail and parking lot.

2020 – Present – Construction of a gravel road known as Carriage Road and two “touch-the-water” features and a pollinator prairie area along the landfill dike. The “touch-the-water” features were constructed along the landfill dike and consist of stone stadium seats providing outdoor seating and connecting the Adventure Trail to the Fox River. The stone stadium seating is graded along the dike and provides bench like seating as well as stone steppers providing public access to the Fox River. Imported soil was placed in between the stone steppers and ornamental grasses placed throughout the stone stadium seat structures.

1.2 WDNR Case History

Given the historical use of the Park as a landfill, the WDNR subsequently assigned a solid waste license number for the former landfill (#2299) and a facility identification number (#471013840).

The Park is also listed on WDNR's Bureau for Remediation and Redevelopment Tracking System (BRRTS) database under the following Activity Numbers:

- 02-71-270852 Arrowhead Park-Glatfelter LF, Closed Environmental Repair Program (ERP) – Contamination is associated with diesel range organics from a former aboveground storage tank (AST). The case was closed out under NR708.09 and a No Further Action letter was issued by WDNR.
- 09-71-550537 (originally 02-71-550537) P.H. Glatfelter (Former) AST, No Action Required - An AST closure assessment occurred in 2007 first identifying the contamination. In 2012 the site was transferred from the WDNR's Remediation and Redevelopment (RR) program to WDNR's Waste Management program. The RR site was administratively closed and the landfill management was assigned to the Waste Program.

In 2013, the City received a Notice of Noncompliance from the WDNR which detailed significant depressions and ponded water on the landfill’s cap. As part of the notice of non-compliance the WDNR recommended that low areas be filled to eliminate ponding water and restore a positive drainage profile to the existing cap. Subsequently, over the past decade, the landfill has been the depositional location for low-hazard soils and excess fills from nearby downtown redevelopments under WDNR approvals. Sources include commercial redevelopments where soil was managed on the Site as part of individual Low Hazard Exemption Requests subsequently approved by the WDNR. The sites of which low hazard material originated and the associated BRRTS cases are listed below along with the estimated soil volumes that were deposited:

Source Location	Source Address, Neenah, WI	BRRTS#	Volume/Material	Disposal Location
P.H. Glatfelter Paper Mill – Gateway Plaza Park	235 W Wisconsin Ave	02-71-550735	90 cubic yards (CY) of concrete rubble containing lead-based paint	Screen Berm
P.H. Glatfelter Paper Mill – Affinity Healthcare	101 Main Street	02-71-550735	1,488 CY Ash Fill	Screen Berm
P.H. Glatfelter Paper Mill – City Infiltration Pond	215 Main Street	02-71-550735	704 Cubic Yard of Ash Fill	Screen Berm
P.H. Glatfelter Paper Mill – Solaris	215 Main Street	02-71-550735	7,200 CY Ash Fill	Western Portion of Park
P.H. Glatfelter Paper Mill – Gateway Plaza Park	229 W Wisconsin Ave	02-71-550735	2,560 CY of ash fill	Western Portion of Park
P.H. Glatfelter Paper Mill – Tadych Development	201 West Wisconsin Ave	02-71-550735	1,860 CY of soil/ash fill and capping materials	Western Portion of Park
Neenah Site 7	228/232 West Wisconsin Ave	03-71-559006	1,080 CY of low hazard soil/fill	Screen Berm South Central Portion of Park
Neenah Foundry Parking Lot	716 Harris Street	03-71-583002	~14,000 CY low hazard soil/fill	Western Portion of Park
Total Low Hazard Material Deposited on Park			~28,982 CY	

The low hazard fill generally contains resource conservation and recovery act (RCRA) metal and polyaromatic hydrocarbons (PAHs) impacts exceeding NR700 groundwater protection or direct contact residual contaminant levels (RCLs). No volatile organic compounds (VOCs) impacted soils were transported onto Arrowhead Park from the source development sites. Low-hazard soil was placed in one of three areas at the Park: 1) a screen berm on the eastern portion of the property, 2) a screen berm on the south-central portion of the site; or 3) in depressed areas on the western half of the Park to address standing water and promote positive surface drainage from the site. The low-hazard soil was capped by 2 ft of clean clay and topsoil with the exception of the screen berm on the east side of the Park which had an interim cap of 1 foot of clay followed by six inches of topsoil. No petroleum or chlorinated volatile organic compound (CVOC) impacted soils were reused at the Park. Placement of the low-hazard soil is not expected to contribute to contamination already onsite and has helped promote positive drainage per the non-compliance issued by the WDNR. The location of low-hazard fill placed on the Park is depicted on drawing in Appendix B.

1.3 WDNR Approved Landfill Development History

WDNR approvals for development on a closed landfill were reviewed dating back to 1990 as part of this submittal. On August 21st, 1990, the WDNR approved a grant of exemption for P.H. Glatfelter to construct a

sludge combustion unit on the site. Construction of the sludge combustion unit was completed in 1991 and the WDNR approved construction documentation on November 25, 1991. Construction included installation of 294 twelve-inch timber piles ranging in depth from 721 to 732.08 feet above mean seal level (msl)(CR Meyer, 1990).

In September 1991, P.H. Glatfelter proposed to construct wastewater treatment plant upgrades including an aeration basin, sump, and equipment building. The WDNR issued the grant of exemption to construct the wastewater treatment plant upgrades on December 11, 1991. Construction documentation of the completed upgrades was also approved by the WDNR on September 1, 1992. A total of 316 twelve-inch timber piles were driven as part of construction of the Aeration Basin and Equipment buildings extending to an average depth of 25 fbg. Thirty-one additional piles were installed to support an oil dike containment wall (P. H. Glatfelter Company, 1992).

A methane gas venting system and vapor barrier were installed beneath the aeration and combustor buildings during construction. The extraction systems were operated continuously. Ambient air within the buildings and the exhaust gases at the extraction system vents were monitored regularly for methane gas. Low concentrations of methane were observed below the aeration building from October 7, 1992 to July 9, 1993. Less than 0.1 percent of methane was reported after that time. Methane was not detected in the combustor building (STS, 1995).

On April 30, 1996, the WDNR issued a grant of exemption to construct the Minergy Corporation's Fox Valley Glass Aggregate facility at the Landfill. Minergy's facility was proposed to use paper mill sludge as an energy source and to transform it to a useful glass aggregate. The buildings were constructed on 488 steel piles that extended between 15.8 to 49.3 fbg. As part of the excavation for the building foundations and utility installation, 2395 CY of sludge was encountered, temporarily stockpiled on-site and placed under buildings or an impervious surface upon completion of the project. Methane gas collection and venting systems were installed beneath the buildings with methane alarms (Minergy, 1998). Methane data collected from the Minergy plant sampling ports during December 1997 detected 0.5% methane at one sampling port location and no detections at the remaining locations (Minergy 1998). WDNR records indicate that additional sampling was proposed and required by the WDNR, but no additional data was readily available at the time of this report.

Building additions to Minergy's facility were approved by the WDNR on January 31, 2003. The building additions included improvements to the flux receiving building including auxiliary equipment and the installation of a scrubber building and packed tower flue gas desulfurization (FGD) system. Sixty-three steel piles were driven for the project to depths ranging from 47.2 to 57.7 fbg (Minergy, 2003). No sludge was excavated as part of the addition.

In October 2007, the WDNR rescinded the conditional grant of exemptions issued on August 21, 1990, and December 11, 1991 (previously discussed) associated with the wastewater treatment plant. The reason was due to buildings onsite being demolished and no longer requiring methane venting or monitoring.

In 2012, GRAEF, on behalf of the City, submitted a Development at Historic Fill Site or Licensed Landfill Exemption Application and associated report titled Neenah Park Sites #1 and #2 Site Investigation and Development Plan (GRAEF, March 2012). GRAEF's documentation was based on development plans being considered for the Park at that time.

The WDNR issued a letter in April 2012 concurring with the City's development proposal, with the condition that positive drainage be maintained across the site (WDNR, 2012). Phase one of development of recreational park space was completed in 2012 and included landscaping and construction of a multi-use trail.

In May 2013, GRAEF, of behalf of the City, submitted the Neenah Park Site #1 Updated Development Plan for grant of exemption from regulation under s. NR 506.085, Wis. Admin Code (GRAEF, 2013). The updated development plan was considered phase two (construction of a paved parking lot with associated lighting) and phase three (construction of a berm with associated multi-use trails and trees, paving of an existing multi-use trail, installation of lighting along a portion of multi-use trail, and installation of a prefabricated shelter).

In June 2013, the WDNR provided a Conditional Grant of Exemption for Development on the Neenah Park Site #1 (WDNR, 2013). The WDNR's conditional grant of exemption excluded a proposed shelter and required additional design information be submitted for approval prior to shelter construction. Phases two and three (excluding the shelter) were completed in 2014 and 2015.

In 2016 the Minergy facility was demolished and the City retained Short Elliott Hendrickson, Inc. (SEH®) to update the conceptual master plan (the Plan) for the Park. The plan incorporated prior studies and public input gathered throughout a planning period from September 2016 to January 2017. The plan included structures such as a boat works and multi-use community building, decked terrace and paved plaza, fixed and floating piers, playground, natural amphitheater, additional paved parking, trails, and vegetated areas. SEH submitted the Arrowhead Park Development Plan to the WDNR on September 29, 2017.In November 2017, The WDNR issued a response to SEH’s development request indicating Park improvements are likely feasible but required additional information to approve any subsequent request.

An updated development request was completed by SEH on July 2, 2020, for Phase 1a of a multi-phase development of the Park. Phase 1a of the development included a Carriage Road, stormwater control features, two” touch-the-water” features, and a pollinator prairie area. The WDNR issued a Conditional Grant of Exemption for the development on September 9, 2020, and the City ultimately implemented the development items shortly thereafter.

A development request was completed by SEH for Phase 1b of the development on August 12, 2022. The request outlined a plan to construct an arrowhead shaped gravel trail, adventure trails, a bike playground, a boardwalk feature into the Fox River, a dry streambed, establishment of a prairie, landscape plantings, and abandonment of leachate head well PS-9. The original request was updated and resubmitted to the WDNR on October 12, 2022. The WDNR conditionally approved the Phase 1b development request on October 18, 2022, with the exception of the removal of leachate head well PS-9, which the City of Neenah withdrew from the request. The prairie construction on the western portion of the Landfill is expected to begin in the Summer 2025.

In December 2024, a development request to complete geotechnical analysis at Arrowhead Park was submitted to the WDNR. The request outlines procedures to handle and dispose of contaminated wastes and describes appropriate steps to protect working crews. The development request is currently in review by WDNR.

2 Existing Site Conditions

2.1 Topography and Land Use

Arrowhead Park is located on historical fill used to raise the land surface out of a portion of the Fox River. The surface of the Park is slightly domed with its central portion being of highest elevation (approximately 756 feet above mean sea level (ft msl)). Surface water drainage generally flows radially away from the central portion of the landfill with the steepest drainage gradients primarily directed north towards the Fox River. A bulkhead dike along the river was constructed to contain the former Landfill. The surface elevation on the bulkhead dike is approximately 744 ft msl and slopes toward the river surface of approximately 738 ft. msl. A stormwater outfall and riprap bulkhead to the Fox River are also present. See **Appendix B** for the Topographic Survey.

Although zoned “C2 Central Business”, the City of Neenah owns and maintains it as public greenspace with some select paved trail areas and a parking lot. However, the Park, in general, is vastly underutilized and in need of revitalization. In the past decade, the Fox Valley Energy Center (originally known as Minergy), which previously occupied the east/central portion of the Park, was demolished and the City began importing fill material to address low areas where ponding was occurring to promote a positive flow off the Park site.

More recently, in 2022, a Conditional Approval for Development was granted by WDNR (federal identification number (FID#) 471013840) that included a number of site improvements. Some of these improvements have been implemented and some are yet to be incorporated into the park or may be replaced by elements of this Master Plan under this Development Request or future yet to be submitted Development Requests. Elements of the FID 471013840 Conditional Approval for Development that have been installed on the site include: Central Pier, Arrowhead Loop, Stone Stadium Seats, and Native Prairie Enhancements along the shoreline.

Elements of the 2022 Conditional Approval for Development that are not yet installed but will be in the near future according to the previous improved plans or modified as part of this request include: Native Prairie Enhancements, Arrowhead Loop, Connector Path, and Auxiliary Paths A, B, and C; ‘Adventure Trails’; Bike Playground Area; Screening Berm; Stormwater Collection and Conveyance Features.

Arrowhead Park is bound to the north by the Fox River, to the east by commercial business developments, to the south by a rail line followed by commercial, residential, and industrial businesses, and to the west by the Neenah Slough followed by commercial and industrial businesses.

2.2 Existing Site Utilities (Water, Sanitary, & Storm Sewer)

2.2.1 Existing Water Service

Water service is currently supplied by a 10” ductile iron pipe which extends approximately 400 ft into the Park and ends near the location of the old Minergy’s foundation. Per conversations with City staff, this water service was installed in 1996 and was extended from the existing watermain south of the Park which runs

along Main Street. This 10” water service extends to two existing fire hydrants known as “Arrowhead 1” and “Arrowhead 2”. “Arrowhead 2” is active. The existing hydrant “Arrowhead 1” is not active/and is currently valved off. The topographic survey provided in **Appendix B** depicts the locations of the watermain and fire hydrant locations. The depth of the watermain was not included as part of the Topographic Survey, however measurements collected by City of Neenah personnel indicate the watermain supplying the “Arrowhead 2” is approximately 8.5 ft below the existing grade and within the waste layer. See Watermain Plan and Profile included in the Preliminary Plan Set in **Appendix C** for more detail.

2.2.2 Existing Sanitary Sewer

Approximately 8 to 10 sanitary manholes are present on the site. There is a 60-inch diameter sanitary sewer interceptor that extends across much of the southeast quadrant of the site in primarily an east-west orientation. A series of smaller diameter sanitary sewer pipes feed into the 60-inch interceptor. The main 60-inch interceptor enters the site from the south, collecting sewage from a sanitary main along Millview Drive. This interceptor and other sanitary piping are located within the waste layer. The Sanitary Sewer Plan and Profile is included in the Preliminary Plan Set in **Appendix C**.

2.2.3 Existing Storm Sewer

There is a network of approximately 6 to 8 storm manholes and 6 to 8 storm inlets/catch basins located on the Park. There is a 60-inch storm sewer interceptor on the eastern part of the site that runs from the south to north eventually discharging into the Fox River. This larger interceptor is within the waste layer. Several smaller storm sewer pipes that pickup stormwater via catch basins (mainly on the eastern half of the Park) feed into the 60-inch storm sewer interceptor. These smaller piping systems are located both above and below the waste layer. The stormwater on the far northwest part of the site sheet flows directly to the Fox River. Additional details regarding the existing storm sewer system are available in **Appendix C**.

2.3 Buildings, Pavements, & Public Access

The Park is currently vacant with exposed remnants of the former Minergy building remaining in the form of concrete foundations and piles cut off below the existing ground surface. No other structures or structural remnants are present at the Park. The “Loop-the Lake Trail”, an asphalt paved multi-modal public trail, generally parallels the shore. The multi-use trail enters the park from the southeast and exits at a bridge over the Neenah Slough at the western boundary. The eastern extent of the trail exists the site by crossing a Canadian National (CN) railroad track and terminating in the Gateway Plaza offsite. A pier extends into the Fox River on the northeastern portion of the site and connects to the Loop-the-Lake Trail. A small asphalt parking lot is present in the southeast portion of the site and also connects to the Loop-the-Lake Trail. A gravel access road is also present extending west across the site where it dead ends in a loop and provides additional trail and river access on the western portion of the Park. Streetlights are present adjacent to the parking lot and lighted bollards line the paved multi-use trail. Sole vehicular access is provided by Millview Drive after crossing an active CN rail line.

2.4 Groundwater Monitoring Well Network

An existing network of groundwater monitoring wells and piezometers is present onsite. The well network originally consisted of PS-3R, PS-9, PS-15RR, the PS-32 well nest (PS-32, 32A, and 32B), and the PS-33 well nest (PS-33, PS-33A, and PS-33B). In February 2024, Stantec completed a request to reduce sampling frequency at the park which also included eliminating wells from the monitoring network. The *Request for Reduction in Groundwater Sampling Frequency* was approved by the WDNR on May 16, 2024. As a result, the PS-9 and PS-33 well nests were abandoned and the remaining wells approved to be sampled on an annual basis. The location of each well including the abandoned wells are depicted on **Figure 2.**

2.5 Geologic and Hydrogeologic Setting

2.5.1 Soils

Over the past decade, clean fill and approximately 30,000 cubic yards of low-hazard materials have been placed onsite over the existing clay cap to promote a positive drainage of storm water and increase the existing cap surface of the landfill. In areas where low-hazard soils were placed onsite, the material was then capped by a minimum 2 ft of clean clay (see **Appendix B** for low-hazard material locations). the original or supplemented clay cap remains at the surface on portions of the Park where fill material was not placed. The clay cap overlays the paper pulp material which was historically used as fill. Drilling completed by ECS Midwest, LLC (ECS) in 2019 identified papermill wastes in multiple borings up to approximately 16 fbg. The papermill waste overlies peat, identified at the base of the paper mill sludge in some of the borings, followed by a thick native clay lacustrine deposits which we identified to depths of 50 fbg. Native soils are of the Winneconne Series, which typically have a 1 to 4 percent slope, are moderately well drained, and have low permeabilities (USDA, 2024).

A boring completed in the area of the former Minergy building in the center of the Park extended to 95 fbg. The boring encountered a continuous layer of hard to stiff silty clay to 59.5 feet below the waste. Below the silty clay layer, the boring encountered 5 feet of fine sandy silt and 7.5 feet of extremely dense clayey sand with a trace of gravel. Bedrock was encountered at 72 feet below the base of the waste.

Hydraulic conductivity of the basal native soil is very low ($5x10^{-8}$ cm/sec to $1x10^{-9}$ cm/sec) based on previous studies conducted at the Park. The low permeable and low transmissive soil and bedrock underlying the papermill wastes at the Park are common to the Fox Valley and the primary reason the City and other nearby municipalities rely upon surface water from Lake Winnebago for drinking and recreational purposes.

2.5.2 Bedrock

Bedrock was encountered at one boring completed at the Site at 72 fbg below the base of the waste. The uppermost bedrock unit in the Neenah area is comprised of the Sinnipee Group (likely Platteville Formation) (Ostrom, 1981). These are Ordovician aged units consisting of dolomite with some limestone and shale beds associated with the Michigan Basin sedimentary sequence. The beds dip generally to the southeast towards Lake Michigan at approximately 15 to 20 feet per mile. The Sinnipee Group is underlain by

Ordovician aged St. Peter Sandstone and Prairie du Chien dolomite, followed by a thick sequence of Cambrian aged sandstone.

2.5.3 Groundwater

Historic groundwater elevation data from the well network at the Park indicates that groundwater flow generally radiates away from the interior of the landfill. Based on groundwater elevations measured over the past decade, PS-3R is the predominant downgradient well on-site. Groundwater flow gradients are steepest to the north and west and flatter to the east and southeast towards PS-15RR and the former PS-33 well nest. While flow radiates away from the central portion of the Park, south flowing groundwater eventually shifts northward toward the Fox River and levels were assumed to be a similar depth of the river levels or approximately 6 fbg, indicating the bulk of the paper mill sludge is below the water table.

Stantec also reviewed available information on the WDNR's BRRTS database to visualize the regional groundwater flow trend around Arrowhead Park. Groundwater data was available from multiple nearby closed contaminant cases revealing regional groundwater flows predominantly north towards the Fox River in this portion of the City. The regional flow is likely influenced by general topography which and it effect on the major waterways in the area (Fox River & Neenah Slough) which each flow north.

Due to the relatively low yields of unconsolidated materials and unconfined nature of the bedrock aquifers, the City of Neenah produces potable water from Lake Winnebago (Olcott, 1968). Thus, there are no known potable water wells in the immediate vicinity of Arrowhead Park. The Village of Fox Crossing has the nearest high capacity well located more than 0.5 miles to the north.

2.6 Waste Characterization

2.6.1 Paper Mill Derived Wastes

Characterization of the wastewater solids and paper mill sludge placed in the landfill were performed and summarized in GRAEF's 2012 Development at Historic Fill Site or Licensed Landfill Exemption Application previously submitted to the WDNR. The complete application is provided as **Appendix D** and a summary of the waste characterization provided below.

Historic documents indicate that wastewater from the deinking pump mill was discharged to the disposal plant. The disposal plant was constructed with a filtering system that discharged to three thickening basins. Solids were then transferred to a vacuum filter where they were further dewatered to approximately 30% consistency, or dry solids content of ~30%, prior to landfilling. Following construction of the clarifier and water treatment plant in late 1967 to early 1968, solids were dewatered with a belt press to about 40% consistency prior to landfilling. At that time, wastewater was also discharged to the treatment plant from the paper machines, bleach plant, and beater room. Based on National Council for Air and Stream Improvement data, the physical character of the wastewater solids, had a hydraulic conductivity that was expected to be very slow, on the order of 4 by 10^{-6} centimeters per second (cm/sec). The low hydraulic conductivity of the paper mill derived wastewater solids is supported by a 1975 City drainage study, which indicated the lateral movement of liquid in the paper mill derived wastewater solids was very restricted.

The Institute of Paper Chemistry (IPC) completed an analysis of the wastewater solids in 1973. Clarifier solids were analyzed by the University of Arkansas for carbon and nutrients as part of a 2003 land application study. The results indicated that landfilled solids contained 55% mineral ash on a dry weight basis. The mineral ash consisted primarily of silicon, aluminum, and calcium. The remaining 45% of the mass was organic matter consisting mostly of short wood fiber that was lost in the pulping and paper making process. The wastewater solids were strictly from primary clarification and not from a biological system. Therefore, the solids are relatively inert with a low nutrient content. The high pH and carbon content, together with the low nutrient content, suggest the solids are unlikely to readily decompose.

As a deinked pulp mill, the paper mill derived wastewater solids were thought to likely contain PCBs from 1954 until the landfill's final operations. PCB analysis of the landfilled wastewater solids has been determined on several occasions since 1983. The earlier data was analyzed on an "as received" basis and therefore has limited value. PCB data on a dry weight basis was collected from borings completed in 1988, 1991, and 1999. The PCB concentrations in these waste samples ranged from 1.3 to 4,500 milligrams per kilogram (mg/kg) in 53 samples of the papermill waste collected from borings advanced across the landfill. The data is highly skewed and best represented by the geometric mean, which is 60.5 mg/kg. The concentration of PCBs was found to increase from 1954 to 1969, after which time it declined. Most of the solids placed in the eastern portion of the landfill were placed from 1952 to 1964 and the geometric mean concentration of PCBs in the paper mill derived wastewater solids at that time was 38.4 mg/kg, or less.

PCBs have a high affinity to paper mill derived wastewater solids and PCB losses as leachate are small. IPC column leach tests found only 0.1 percent to 0.2 percent of the solids PCB content was lost as leachate. The IPC leachate PCB concentrations ranged from 0.5 to 4 parts per billion (ppb), whereas the solids subjected to the leach tests had PCB concentrations of 20 to 82 mg/kg. WDNR sample results from the former Leachate Head Well PS-9 also suggest PCB losses from the solids are limited. The expected PCB concentration of the paper mill derived wastewater solids around the Leachate Head Well is 21.4 to 29.6 mg/kg. The WDNR leachate sample had a PCB concentration of 1.98 ppb, which is less than 0.1 percent of the solids PCB concentration.

The potential occurrence of other organic contaminants is low, considering the age of the fill and the characteristics of clarifier solids from similar paper mills.

2.7 Waste Limits, Waste Volume, and Confinement

2.7.1 Paper Mill Derived Wastes

The vertical and horizontal limits of paper mill sludge waste are depicted on the cross section in **Appendix E.** The limits of the paper mill derived waste were compiled by Graef through a review and interpretation of design drawings, aerial photographs, survey documentation, and previous environmental/geotechnical data. The northern limit of waste coincides with the clay bulkhead dike. The southern limit of waste is located along the soil embankment of the railroad tracks. Initial estimates assumed 450,000 CYs of waste fill material were deposited on the site but based on data collected from additional borings, Graef estimated 387,000 cubic yards of waste was deposited covering approximately 26 of the 31.5-acres of Arrowhead Park. The paper mill derived waste was found to range in thickness up to 10 ft (Graef, 2012).

2.7.2 Base Soils Underlying the Waste/Fill Material

In general, the base of the historic fill area consists of peat, identified at the base of the paper mill sludge in some of the borings, underlying native lacustrine soils which are clay and silty clay of low permeability. The clay and silty clay extend at least 50 ft below the base of the paper mill derived waste. Refer to Section 2.5.1 for more detail on the soil conditions below the historic fill area (Graef, 2012).

2.7.3 Bulkhead Dike

Construction materials reportedly used for the bulkhead dike construction on the northern edge of the Park included an upper layer of pit run gravel, followed by clay and a basal layer of pit run gravel. The original specifications called for the dike to be approximately 8.5 feet high, 12 feet wide at the top, and 33 feet wide at the base. According to site borings the average dike depth is actually 11 feet, and the remaining dimensions appear according to specifications (Carter, 1984). Stone rip rap was placed on the shoreline to prevent erosion. Historically, WDNR used in-field hydraulic conductivity test results to calculate the seepage rate along the entire bulkhead dike. A seepage rate of approximately 120 gallons per day was estimated for the entire length of the bulkhead Graef, 2012).

2.7.4 Landfill Cap, Overlying Fill, and Low-Hazard Fill Material

The landfill cap was first evaluated in 1983 when cover thickness ranged from 0.25 foot to 4.5 feet with a mean thickness between one and two feet. Subsequent to the 1983 study, the City placed additional clay soil on the cap. Soil borings completed across the landfill in 1999 found the cover thickness to vary from 1.0 to 6.3 feet, with an average thickness of 3.3 feet and consisted of silty clay with inclusions and isolated areas of roadbed material. In 2011, 34 hydraulic probe borings were completed in the central and western portion of the site. The soil cover thickness in this study ranged from 1.0 to 5.8 feet, with an average thickness of 2.9 feet in the 2011 study (Graef, 2012).

An updated topographic survey was completed in 2022. A cross-sectional view of the Landfill was constructed using previous geotechnical borings and historical data compiled by Graef is provided as **Appendix E.** The cross section identifies the expected lateral and vertical extent of the cap over the paper mill derived waste. The general thickness of the of the current cap ranges from approximately 1-7 ft in most areas with the areas of cap below 2-ft in depth very localized near the Millview Drive crossing of the railroad. This higher depth cap above the original 2-ft depth is the result of clean fill placed by the City on the site to facilitate positive drainage in the past approximately 10-years.

Specifically, to address the WDNR's Notice of Noncompliance from 2013, the City began importing clean fill onto the Park to address depressions and ponding water on the landfill's cap. In addition to the clean fill, low-hazard fill from multiple offsite redevelopment projects was deposited on Arrowhead Park under WDNR low-hazardous waste exemption approvals. The low hazard fill generally contains RCRA metals and PAHs impacts exceeding NR700 groundwater protection or direct contact RCLs. Both low-hazard fill and additional clean fill material, were used to fill in low areas and promote positive drainage of storm water across the site. Specifically, low-hazard soil was placed in one of three areas at the Park: 1) a screen berm on the eastern portion of the property, 2) a screen berm on the south central portion of the site; or 3) in depressed areas on the western half of the Park to address standing water and promote positive surface

drainage from the site. In total, approximately 30,000 CY of low-hazard materials were deposited from offsite sources. The WDNR required a minimum of a two-foot clean clay cap followed by six inches of topsoil to be maintained over the low-hazard soil to provide protection via direct contact. The WDNR approved cap was installed and remains in place on the low-hazard soil placed in the south central and western portions of the landfill. An interim 1-foot clay cap with six inches of topsoil was approved by the WDNR and currently exists on the screen berm on the eastern portion of the site. As part of this proposed work, the appropriate cover will be placed on the low-hazard soil in the eastern most screen berm. The locations where low-hazard fill was deposited are depicted on the drawing in **Appendix B**.

3 Evaluation of Existing Impacts

The following is an evaluation of existing impacts for various media, including groundwater, soil, surface water quality, sediment, and explosive gas (methane).

3.1 Groundwater

3.1.1 Monitoring Network

The locations of the groundwater and leachate head monitoring wells are shown in **Figure 2.** Historically, a total of nine monitoring wells or piezometers were monitored on a semi-annual basis (April and October) of each year in accordance with WDNR groundwater monitoring requirements specific to the Park. In 2024, Stantec, on behalf of the City, completed a *Request for Reduction in Groundwater Sampling Frequency (Semi Annual to Annual)* to the WDNR. The plan ultimately sought to reduce sampling frequency of the wells at Arrowhead Park and allow for the abandonment of 4 wells from the monitoring program. The request was approved by the WDNR. **Table 1** describes the current status of each well associated with the Park.

Table 1 Arrowhead Park Landfill Monitoring Network

Construction Summary				
Well	**Depth**	**Screen Location**	**Purpose**	**2023 Status**
PS-3R	9.2	Bulkhead Dike	Water Table Well	Active
PS-9	11.0	Waste	Leachate Head Well	Abandoned
PS-15RR	9.0	Bulkhead dike	Water Table Well	Active
PS-32	38.6	Native Soil	Piezometer	Active
PS-32A	23.1	Native Soil	Piezometer	Active
PS-32B	14.4	Fill and Native Soil	Water Table Well	Active
PS-33	38.1	Native Soil	Piezometer	Abandoned
PS-33A	22.9	Native Soil	Piezometer	Abandoned
PS-33B	14.3	Fill and Native Soil	Water Table Well	Abandoned

3.1.2 Groundwater Quality Evaluation

The groundwater monitoring network includes wells placed in waste, soil fill, and native soils. Because of this unique condition, groundwater quality assessments have been completed utilizing groundwater quality trends and the range of historical parameter concentrations, rather than comparisons to established standards. An initial evaluation of site groundwater conditions assessed groundwater monitoring results from 1986 through April 2006 and was utilized to request a plan modification for the site. The conclusion of the initial groundwater evaluation was that groundwater quality impacts potentially related to the landfill have declined over the years and groundwater quality monitored adjacent to the landfill was often influenced by factors other than the landfill. Based on the findings, the plan modification was implemented,

and the monitoring parameter list was reduced to indicator parameters, with the exception of two wells located in the bulkhead dike, Monitoring Wells PS-3R and PS-15RR. These wells have been monitored for chloride, chemical oxygen demand (COD), and total sulfate, iron, hardness, and alkalinity. A second groundwater evaluation was performed of groundwater results from April 2006 through October 2011. The evaluation included specific conductance (an indicator parameter), chloride, COD, and total sulfate, iron, hardness, and alkalinity. Generally, groundwater monitoring results from 2006 through 2011 compared similarly with historic data. WDNR's approval of Stantec's previously discussed 2024 *Request for Reduction in Groundwater Sampling Frequency (Semi Annual to Annual)* also specified an updated parameter analysis list for each remaining well of the Park network. In short, the updated parameter list includes additional parameters to be analyzed as a result of decreasing sampling frequency. **Table 2** details the recently approved sampling parameter list for the Arrowhead Park wells.

Table 2 Updated Arrowhead Park Landfill Monitoring Parameter List

Arrowhead Park Groundwater Sampling Analysis		
Well Name	Sampling & Reporting Frequency	Parameter List & Reporting Units
Group A Wells		
PS-3R PS-15RR PS-32 PS-32A PS-32B	Annually *(April)*	Water Temp (°C) Specific Conductance, Field (µmho/cm) Field pH (Standard Units) Nitrogen, Ammonia, total milligram per liter (mg/L) Nitrate + Nitrite, Total (mg/L) Sulfate, Total (mg/L) Groundwater Elevation (ft msl) VOCs (EPA Method SW-846-8260) Includes ch. NR507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone, and tetrahydrofuran. Sample Odor, Color, & Turbidity
Group B Wells		
PS-3R PS-15RR	Annually *(April)*	Iron, Total (mg/L) Alkalinity, Total (mg/L) Hardness, Total (mg/L) Chloride or Total or Dissolved (mg/L)

A summary of the groundwater data assessment included as a part of Stantec's 2024 *Request for Reduction in Groundwater Sampling Frequency (Semi Annual to Annual)* and data from the groundwater quality evaluations presented in an earlier Development at Historic Fill Site or Licensed Landfill Exemption Application (GRAEF, 2012) are summarized in the sections below.

3.1.3 Historic Leachate Head Results

Well PS-9 was the only monitoring point at the site screened in waste material and thus considered representative of site leachate. Well PS-9 was historically monitored for laboratory analytical parameters, including chloride, COD, sulfate, iron, hardness, and alkalinity. Field parameters including specific conductance, head level, odor, color, temperature, and turbidity were also recorded. Leachate monitoring in PS-9 was terminated in 2011 and the well was abandoned in 2024 under WDNR approval.

The specific conductivity of leachate, based on results from Leachate Head Well PS-9 once exceeded 90,000 µmhos/cm. The specific conductivity in the leachate at this well declined over the years to a typical range of 2,000 µmhos/cm to 3,000 µmhos/cm when monitoring ended. The leachate chloride concentrations also declined over the years from 854 mg/L in 1986 to a range of 50 mg/L to 300 mg/L prior to 2012 (SEH, 2017).

Historic leachate COD concentrations from Leachate Head Well PS-9 declined significantly until 2011 when COD monitoring at PS-9 was terminated. Initially, the COD was 30,000 mg/L but from 2000 until 2011, the COD concentration in the leachate was less detected at less than 200 mg/L.

Sulfate, iron, hardness, and alkalinity were monitored in Leachate Head Well PS-9 until 2011. Concentrations of sulfate and iron fluctuated over time with no apparent trend. The sulfate concentration historically ranged from no detect to 250 mg/L with iron concentrations ranging from less than 5 mg/L to over 30 mg/L. Hardness and alkalinity historically varied, but both parameters commonly averaged around 1,000 mg/L (SEH, 2017).

3.1.4 Groundwater Flow & Receptor Wells

Historic groundwater elevation data indicates that groundwater flow at Arrowhead Park generally radiates away from PS-9 in the interior of the landfill. Based on groundwater elevations measured over the past decade, PS-3R is the predominant downgradient well on-site. Groundwater flow gradients are steepest to the north and west with flow gradient generally shallowest to the east and southeast towards PS-15RR and the PS-33 well nest. While flow radiates away from PS-9, groundwater flowing south eventually arcs northward toward Little Lake Butte des Morts (Stantec, 2024).

To supplement onsite flow data, Stantec reviewed available information on the WDNR's BRRTS database to visualize the regional groundwater flow trend around Arrowhead Park. Groundwater data was available from multiple closed contaminant cases nearby and provide a snapshot of groundwater flow trends immediately offsite. Sites reviewed included:

- •Neenah Site 7 Dev Project (03-71-559006)
- •PH Glatfelter Paper Co (03-71-001314)
- •PDQ Car Wash (03-71-111516)
- •Holiday Station #138 (03-71-001335)
- •Main Auto (03-71-111521)

Groundwater data reviewed from these cases revealed regional groundwater flows predominantly north in this portion of the City towards Arrowhead Park. The regional flow is likely influenced by the general topography of the area and the fact the major surface waterways (Fox River and Neenah Slough) all flow north into Little Lake Butte des Morts. (Stantec, 2024)

3.1.5 Groundwater Quality Trends

3.1.5.1 Specific Conductivity Trends

Specific conductivity has been historically monitored at all wells onsite except PS-9. PS-9 was last monitored for specific conductivity in 2011 with the specific conductivity of the leachate 2,296 micro-mhos per centimeter (µmhos/cm). Specific conductivity in each well during the most recent three sample events fall within the historic ranges of the well network indicating the results are stable with little variation from average concentrations. Elevated levels of specific conductivity at PS-15RR have been historically attributed to salt-laden surface runoff from an unpaved truck parking lot formerly adjacent the well. At PS-15RR, chloride levels peaked between 2006 and 2012 around 1,000 mg/L and specific conductivity of the well spiked to over 7,000 µmhos/cm. For context, PS-3R located on the northwestern portion of the landfill near the former waste cells but within the same berm maintains chloride levels up to 200 mg/L. As of 2012 following mill closure and vacancy of the site for truck trailer storage, chloride levels at PS-15RR have steadily decreased to current levels around 400-500 mg/L and specific conductivity measurements have stabilized around 3,000-3,500 µmhos/cm.

Specific conductivity at the PS-33 well nest was historically stable up until approximately 2012 when concentrations within the wells began to rise. Measurements collected in 2020 from the wells revealed specific conductivity had risen to approximately four times the historic stable levels prior. This increase was likely related to the construction of a stormwater infiltration basin in approximately 2011 immediately upgradient of the well nest. The basin stores runoff from nearby parking lots situated on the former Glatfelter Mill site and therefore is a temporary repository of surface water laden with dissolved chlorides from winter de-icing operations. The retention pond is designed as an “infiltration” basin and allows surface run-off to infiltrate underlying soil. From 2013 through 2021, a trend of increased specific conductivity is observed during the spring sample collection events. This is followed by significantly decreased specific conductivity in the fall of the year. The seasonal fluctuation is likely associated with the seasonal use of salt for de-icing and infiltration of the alt-laden water to shallow groundwater. The trend can also be seen in the piezometers of the PS-33 well nest. The increase again is likely attributed to the sinking of dense, salt-laden surface water as it infiltrates the ground surface. Specific conductivity trends in the PS-33 well nest further support the conclusion that this location is upgradient of the Arrowhead Park leachate waste cells and receives groundwater influence from offsite.

3.1.5.2 pH Trends

pH is another measure of groundwater quality and has historically been recorded at each well nest. PS-9 located in the mill waste source area was last tested for pH in 2007. Between 2000 and 2007 PS-9 was measured between 6.0 and 6.8 standard units (SU) with the well trending more acidic (lower pH) over time. Remaining wells generally have a neutral pH of 7 SU. pH trends onsite reveal leachate present at PS-9 appears to be acidifying groundwater at this location. Remaining wells on the perimeter of the Site do not appear to be experiencing this same effect which suggests leachate remains contained within the interior of the landfill.

In general, groundwater monitoring results from 2012 through 2017 compare similarly with historic data. Monitoring results for other groundwater parameters generally appear to be stable or trending slightly lower over time.

3.1.5.3 Historical PCB Migration Study

According to STS's Existing Conditions Report dated June 1995, water samples were collected from select wells in 1983 and 1989 for PCB analysis. No PCBs were detected above laboratory detection limits in groundwater samples collected from monitoring wells during the 1983 sampling event. In 1989, the WDNR collected PCB analysis from nine wells as part of the WDNR's PCB mass balance study for Green Bay. Data presented in the report prepared by the WDNR regarding Arrowhead Park indicated that low levels (2 ppb or less) of PCBs were present in the water samples from some of the wells. The WDNR, however, concluded that the contributions of PCBs from the site to the Fox River were determined to be insignificant. It should be noted that STS's report also questioned if the PCB water samples collected in 1989 were filtered prior to sampling. The PCB data from 1989 indicates that the highest concentrations of PCBs were detected in PS-9 that is installed in the middle of the landfill and screened within the waste. PCB concentrations were also observed at MW-3 and MW-15 installed in the bulkhead dike on the north side of the landfill and at MW-33 installed in the native soils southeast of the landfill. It is unknown whether further PCB sampling for groundwater was completed. A summary of the results is listed below.

PCB Concentrations in Groundwater, Dike, and Leachate Wells Arrow Head Park Landfill Site

Well I D	PCB, µg/L [1] 1983	PCB µg/L [2] [4] 1989
Leachate Wells		
PS 9	<0 2 [3]	1 98
PS-21	<0 4 [3]	NA
PS 31	<0 2 [3]	NA
Dike Wells		
PS 3	<0 1 [3]	0 462
PS 15	<0 1 [3]	0 023
Groundwater Wells		
PS-32	<0 1	NA
PS 32A	<0 1	<0 012
PS 32B	<0 2	<0 012
PS 33	<0 1	0 0029
PS 33A	<0 2	<0 012
PS 33B	<0 2	<0 012

Notes.

NA = No results available May not have been sampled

[1] PCBs identified as Aroclor 1242 unless otherwise noted

[2] Specific PCB congeners were identified in the laboratory reports The results presented in this table represent total concentrations of PCB congeners detected

[3] Sample quantitated on the basis of the Aroclor they most closely resemble Interfering peaks however make identification uncertain

[4] Groundwater samples collected by the WDNR as part of the Green Bay Mass Balance Study

3.2 Soil

Soil impacts appear to be limited based on the review of available data. Two potential sources of soil impacts have been identified; papermill derived waste containing PCBs and low-hazard fill material.

3.2.1 PCBs

Significant migration of PCBs from the paper mill derived waste into soils below and adjacent to the Landfill is not to be expected based on the low permeability of native bed materials, low solubility of PCBs, and results previously observed in on-site testing. As documented in Graef's 2012 report, the WDNR has historically concluded monitoring results documented limited migration of PCBs into the bulkhead dike fill soil. Testing completed in 1983 found PCBs were at non-detectable concentrations at two feet below the interface with the base of the waste and native soil, except at one location. The occurrence of detectable

PCBs at this one location was attributed to cross contamination, and no detectable PCBs were identified at four feet below the interface in the same boring (Graef, 2012).

3.2.2 Low-Hazard Fill Material

As previously discussed in Section 2.7.4, low hazard fill material is present in three locations overlying the landfill cap. The soil generally contains RCRA metals and PAHs impacts exceeding NR700 groundwater protection or direct contact RCLs. Specifically, low-hazard soil was placed in one of three areas at the Park: 1) a screen berm on the eastern portion of the property, 2) a screen berm on the south central portion of the site; or 3) in depressed areas on the western half of the Park to address standing water and promote positive surface drainage from the site. In total, approximately 30,000 CY of low-hazard materials were deposited from offsite sources. The WDNR required a minimum of a two-foot clean clay cap followed by six inches of topsoil to be maintained over the low-hazard soil to provide protection via direct contact. An interim 1-foot clay cap with six inches of topsoil was approved and currently exists on the screen berm on the eastern portion of the site. A minimum of two feet of clay followed by six inches of topsoil was place over the other low-hazard material. WDNR approval is needed prior to moving any low-hazard soil to other portions of the landfill. The locations where low-hazard fill was deposited are depicted on drawings in **Appendix B**.

3.3 Surface Water and Sediment

During landfill operation, during 1953 and from 1957 and 1975, there was a documented loss of wastewater solids to the Fox River. There has been no known loss of wastewater solids to surface waters since that time. Lost solids from the landfill were removed or capped during the remediation of the Fox River that occurred from 2004 through 2009.

As stated in Section 3.7.4, WDNR historically calculated the seepage loss through the entire bulkhead dike at 120 gallons per day. Further, they calculated the maximum potential PCB contribution from seepage to the Fox River at 0.035 gram per day and considered that load insignificant (Graef, 2012).

3.4 Methane Monitoring

The former Minergy building and portions of the wastewater treatment plant were constructed on the Park with methane collection and venting systems. Low concentrations of methane were observed below the aeration building from October 7, 1992 to July 9, 1993. Less than 0.1 percent of methane was reported after that time. Methane was not detected in the combustor building (STS, 1995). Methane data collected from the Minergy plant sampling ports during December 1997 detected 0.5% methane at one sampling port location and no detections at the remaining locations (Minergy 1998). WDNR records indicate that additional sampling was proposed and required by the WDNR, but no additional data was readily available at the time of this report.

During December 2018, ECS advanced eleven geotechnical borings and field screened them using a FID and photoionization detector (PID) to record gas concentrations in parts per million (ppm). According to ECS, the FID readings were measured by collecting readings from potential gases escaping the top of the hollow stem augers as borings were advanced. The field data indicated the highest readings were observed

in soil borings advanced near the former Minergy plant with the highest concentrations typically observed between 11 and 25 fbg at the base of the papermill waste and in the underlying native clay, often where a peat layer was observed underneath the papermill sludge. Slightly elevated FID readings were observed in samples collected above the water table (~6 fbg) in select borings with readings ranging from 40 to 16,000 ppm.

Based on historical information, the landfill was constructed in an area of former marshland. It is possible that the decaying peat and vegetation underlying the landfill is producing methane gas (ECS, 2019). Peat and organic sediment are recorded in most of the boring logs of Environmental Resources Management (ERM) in its 1999 report to DNR titled, Supplemental Subsurface Investigation for Arrowhead Park Landfill in the City of Neenah. The paper pulp fill material historically deposited at the Park could also potentially produce methane during decomposition, but the production rate is anticipated to be low because of the waste characteristics and age of the fill material. Methane that is present is likely vented through overlying fill soil and existing clay cover where it dissipates into the atmosphere. The presence of papermill waste below the shallow water table in the vicinity of the landfill further reduces the potential for methane migration.

In January 2025, continuous bubbling indicative of potential methane off-gassing was observed along the northern edge of the landfill in shallow water of the Fox River. In a letter dated February 18, 2025, the WDNR requested the City develop a “Gas Migration Prevention Action Plan” to investigate the degree and extent of potential methane migration. The WDNR letter specifically requests the City take action to monitor potential sensitive receptors and include any methods for addressing methane accumulation concerns onsite. It is understood any future enclosed structures on the landfill will likely require methane mitigation systems in place to protect the public. Methane mitigation for the future enclosed structures will be addressed in separate requests as building designs are finalized. The City is currently in the process of responding to the WDNR investigation request which the City understands is being addressed separately from this “Installation” and “Use” Approval Request.

4 Proposed Development Summary

This section of the report summarizes the proposed development which includes an evaluation of how the development may impact the environment.

4.1 Proposed Development

4.1.1 Arrowhead Park Development

The City of Neenah has prepared an Updated Master Plan, amended in February 2025, (**Appendix A**) which outlines a long-term vision for transforming Arrowhead Park into a community asset with multiple educational and recreational opportunities along with select community focused buildings and other structures for public use. The Master Plan takes into consideration several prior studies and reflects significant public input gathered from 2023 to 2024.

The implementation of this proposed development is the next step in the evolution of Arrowhead Park. With careful consideration of public need and use, the City has embarked on this next phase. Understanding that this sensitive and complex project requires both appropriate Department approvals and necessary funding, the development components will be realized in a phased approach. Select components of the Master Plan have been identified for “installation” in this Phase 1 of development, as listed in Section 1 Introduction and Background of this document as well as Section 4.1.3 Project Implementation. Other major components of the Master Plan have been identified for future phases of this development.

The City is seeking “Installation Approval” of the Phase 1 components, and “Use Approval” on the remaining Master Plan components.

Detailed design drawings of the Phase 1 “installation” components are included in **Appendix C** of this document.

The components for which “Use Approval” is sought are identified for future phases, are listed in Section 4.1.3 and described in Section 4.1.5. Also see **Appendix A** of this document.

4.1.2 Project Goals

The Master Plan preparation was guided by the goals established by an advisory committee. Design of the Phase 1 and future phase components has been and will continue to be completed in alignment with those goals. The identified Goals for the Arrowhead Park Development are:

Goal 1: Recreational Uses and Programming. Recreational opportunities which emphasize non-motorized and non-programmed forms of recreation that are generally "passive" in nature.

Goal 2: Path Access and Connectivity. Pedestrian and bicycle connectivity between parks, public facilities, and local destinations is established through improved access, trail development, and year-round trail maintenance.

Goal 3: Dynamic and Interactive Park Amenities. The parks include "signature" features that are dynamic in their appeal and entice repeat visitation.

Goal 4: Design Standards. The standards of park and recreational facility design achieve a high level of aesthetic and functional quality.

Goal 5: Natural Environment. Ecological values and natural processes are established, enhanced, and protected through environmental restoration efforts.

Goal 6: Sustainability. Park sites are designed and managed as sustainable public venues.

Goal 7: Safe Facilities. Park sites are perceived as safe environments.

Goal 8: Park Maintenance. Maintenance of facilities, natural resources, and trail system that do not require significant long-term costs yet are supported through appropriate levels of staffing and funding.

Goal 9: Funding. Economic sustainability and stability of parks is afforded through efficient use of financial resources.

The park development is intended to capitalize on a prime location within the City to provide a connection between the residents and the waterway. It will provide unique and varied amenities that can suit the desires and uses of all the community and surrounding area. It will be a destination attraction bringing additional visitors to Neenah, which in turn help support local businesses and organizations. The development will be a shining example of adaptive use and innovative ways to protect and restore the environment while creating a focal gathering point that balances urban and natural areas.

4.1.3 Project Implementation

The City is requesting “Installation Approval” of select elements for desired installation in 2025 during Phase 1 with detailed design documents attached via **Appendix C** to this Arrowhead Park Development Plan. Other select elements are noted for request of “Use Approval” for future detailed design, submittal of future Park Development Plans for those elements, and future WDNR formal approval for installation. Those “Use Approval” items are not being requested for installation at this time, but the WDNR’s granting of the requested “Use Approval” at this time will allow the City to move forward with funding for detailed design and ultimate installation, with confidence that WDNR and the City can refine one or more future Development Plan Modifications to incorporate installation of the “Use Approval” elements.

Requested “Installation Approval”’ Elements (Phase 1)

- Overall Site Grading and Fill
- Millview Drive Railroad Crossing
- Interior Roadways/Drives
- Interior Parking Lots
- Interior Sidewalk and Pathways

- Open-Air Shelters
- Site Utility Extension for future building services
- Stormwater Management Best Management Practices and Piping

Requested "Use Approval" Elements (Future Phases)

- Prairie Workshop
- Amphitheater Stage
- Colonnade
- Pedestrian Overpass
- Sculptures with foundations
- Welcome Center (approval deferred to subsequent submittal)
- Community Building (approval deferred to subsequent submittal)

4.1.4 Phase 1 "Installation Approval" Component Descriptions

4.1.4.1 Overall Site Grading and Fill

In order to provide positive site drainage while facilitating the placement of the Updated Master Plan elements including the items requested for under the "Installation Approval" listing, fill will need to be placed on the site and grading completed per the grading plan shown on drawings C400 – C402. In addition to positively draining the site, placement of the fill is necessary to also provide depth to allow placement of several elements in the cap or fill layer above the sludge layer, as identified in the borings. The fill will allow the site utilities to be placed above the sludge layer with adequate depth for frost protection and cover. The utilities include sanitary sewer services, water services, gas and electric utilities, and storm sewer. The depth will permit installation of several stormwater biofilters above the sludge layer, meeting NR151 requirements for stormwater quality treatment. The fill will provide sufficient depth for the open-air shelter footings to be above the sludge layer at all locations. Comparing the existing surveyed surface to the proposed finished surface grades per the grading plan drawings, the approximate total unexpanded fill volume to be placed on the site is 57,000 CY. This volume includes general clean clay fill, topsoil fill, pavement base coarse aggregate, and pavement depths. The only disturbance of the cap would be the removal of residual topsoil on the surface in areas of proposed pavement, then placement of clean clay fill material or aggregate fill to bring the site up to proposed elevations. This will result in a cap depth equal to and in most cases greater than the existing cap.

4.1.4.2 Millview Drive Railroad Crossing

Work on this component will consist of reconstruction of the existing roadway crossing of the CN single line railroad extending from the intersection of Millview Drive to the new intersection with Carriage Road within the Arrowhead Park Development. This existing crossing is narrow and substandard with no physical crossing controls or barriers. The proposed crossing will include asphalt pavement removal, minor excavation to accommodate the pavement section, fine grading and placement of 12-inch aggregate base

course, new 30-inch concrete curb and gutter, new 24-ft wide, 4-inch thick asphalt pavement, new 10-ft wide, 5-inch thick concrete multimodal trail on the east side only, new railroad crossing controls generally consisting of operable barrier arms with signage and warning lights. The cap in this area is approximately 1-ft to 2-ft thick per the limited borings in this area. Excavation for this work will extend a maximum of 1.5-ft below existing grade. It is not expected to penetrate through the cap and upon completion of the work, the cap will be restored to minimum 2-ft thickness. Refer to **Appendix C**, drawing C310 for Millview Drive alignment overview drawing C322 for plan and profile views, drawing C604 for the asphalt pavement section, and drawing C703 for cross-sections.

4.1.4.3 Interior Roadways/Drives

Work on this component will consist of rough grading, fine grading, placement of 12-inch aggregate base course, new 24-ft wide, 4-inch-thick asphalt pavement with 2-ft wide gravel shoulder. The sludge layer surface along the entire Carriage Road alignment ranges from approximately 2-ft to as much as 9-ft below existing ground surface per the historical soil borings. The finished profile of the Carriage Road at the west end of the roadway is at or above existing ground surface in locations where the cap cover over the sludge layer is in the 2-ft range. In many of these areas the finished profile is well above the existing ground surface. In the areas from Sta. 113+50 to Sta 117+00 where the finished profile surface is cutting into the existing cap at most 3-ft in depth, the cap in those areas is significant ranging from 7-ft to 11-ft. With a pavement section of 16-inches, even in the 2-ft cap sections, excavation into the sludge will not be necessary and is not expected; and in all cases, once the base course and pavement is place, the cap will be restored to the minimum of 2-ft and generally significantly more than 2-ft. Refer to **Appendix C**, drawings C300-C302 for overall and detailed layout of the roadway and drives on the development, drawing C310 for Carriage Road alignment overview, drawings C321 for plan and profile views of the Carriage Road, drawing C400 – C402 for overall and detailed grading plans on the development, drawing C604 for the asphalt pavement section, and drawings C700 – C702 for cross-sections.

4.1.4.4 Interior Parking Lots

Work on this component will consist of rough grading, fine grading, placement of 12-inch aggregate base course, select concrete curb and gutter, select areas of thickened edge 5-ft wide concrete sidewalk, and 4-inch-thick asphalt pavement. As illustrated on the overall and detailed grading plans, the finished grade of the parking lot pavements will be roughly matching existing surface grades and, in many areas, well above existing grade as much as 5-ft. As shown on drawing C101, the sludge layer in the interior of the site is at minimum 2-ft below finished grade and in a large portion of the site, well above 2-ft. With a pavement section of 16-inches, even in the 2-ft cap sections, excavation into the sludge will not be necessary and is not expected; and in all cases, once the base course and pavement is place, the cap will be restored to the minimum of 2-ft and generally significantly more than 2-ft. Refer to **Appendix C**, drawings C300-C302, for overall and detailed layout of the parking lots on the development, drawing C400 – C402, for overall and detailed grading plans on the development, and drawing C604, for the asphalt pavement section.

4.1.4.5 Interior Sidewalks and Pathways

Work on this component will consist of rough grading, fine grading, placement of 4-inch to 6-inch aggregate base course, and placement of either 5-inch thick concrete sidewalk or 3-inch-thick asphalt pavement. With a minimal pavement section of 9-inches, a sidewalk/pathway finished surface at or above the existing ground surface, and a minimum cap cover on the site of approximately 2-ft, no excavation beyond the cap thickness is expected and restoration of the cap to current thickness will be completed. Refer to **Appendix C**, drawings C300-C302, for overall and detailed layout of the parking lots on the development, drawing C400 – C402, for overall and detailed grading plans on the development, and drawing C604, for the asphalt pavement section.

4.1.4.6 Open-Air Shelters

There are five (5) proposed open-air shelters at various locations on the development site as identified on the Updated Master Plan in **Appendix A**. Considering all locations, the cap thickness above the sludge ranges from 3-ft up to 12-ft thick. The thickness of the footing is 2-ft and with a floor slab of 10-inches at the footing haunch, thus max depth to bottom of footing is 2-ft 10 inches. Based on the proposed finished floor slab elevations as shown on drawings C401 and C402, excavation for placement of the footing will not extend through the cap and, upon completion, the cap depth will be restored to at least the pre-existing cap thickness and at least 2-ft. Refer to **Appendix C**, drawing C300, for location of open-air shelters and drawing A 1.1, for the shelter architectural and structural design including footings/foundations. A passive vapor mitigation system will be incorporated into the foundations and slab design.

The venting system will include a gas venting layer consisting of 6 to 12 inches of pea gravel with an interconnected system of 4-inch diameter polyvinyl chloride (PVC) or corrugated drainage pipe installed in the top 4 inches of pea gravel. A vapor barrier consisting of a minimum 30-mil thick polyethylene (PE) geomembrane overlapping at the seams will be installed over the pea gravel to provide a continuous barrier between the venting system and the floor slab. The geomembrane will then be overlain with filter fabric or a 6-inch layer of fine sand. Care will be taken during the placement of the concrete foundation so as not to damage the membrane. The roof line of the shelter will be properly vented so no methane gases accumulate in dead spaces. No utilities are expected to run to the shelters with the exception of electricity. A gas barrier, such as, bentonite clay plugs, prefabricated collars made of impermeable material, or equivalent will be installed where any utility lines enter the proposed structure in order to prevent gas migration into the structure at the utility lines.

4.1.4.7 Site Utility Extension for future building services

Work on this component will consist of installation of sanitary sewer and water main along with services to the planned building locations for future phases. Since the Phase 1 work includes site grading along with roadway, parking lot and sidewalk pavement, it is necessary to install the underground utilities in the first Phase of infrastructure work. Existing sanitary sewer and water main municipal utilities exist on site and these new main and building service extensions will connect directly to the existing mains. Proposed grading for the site was designed to accommodate the installation of the sanitary and water main in the existing landfill cap above the sludge layer, while allowing enough cover that, along with appropriate

insulation, will prevent freezing. In select locations, removal of portions of the remaining existing Minergy Plant foundation or foundation walls may be necessary to facilitate installation of the proposed utility services to the buildings. These removals will only be needed for trenching widths (4-ft +/-) during pipe installation and will be backfilled with aggregate material. Final surface condition in these trench areas will be a combination of pavement or turf, depending on location of the piping. As shown on the utility drawings, the elevations of the pipes being installed will be above the sludge layer, per the historical soil borings, with the exception of the immediate water main connections as outlined below and shown on the water main drawings.

The sanitary sewer will be a gravity system meeting SPS 382 requirements. The pipe will be a polyvinyl chloride (PVC) standard dimension ratio (SDR) 35 pipe with push on watertight joints and gaskets. Connections to the existing sanitary sewer main will be made at an existing sanitary sewer manhole. The pipe connection will consist of a cored hole in the concrete manhole riser in the cap layer and utilizing flexible watertight rubberized seal such as a Kor-N-Seal system. The trench will be backfilled with excavated cap material with the top layer of the trenches either pavement or clean imported topsoil depending on location. Clay trench dams will be placed at all manhole connections to prevent groundwater and vapor migration in the trench stone bedding/cover material. See **Appendix C**, detail 04, on drawing C602, for the trench dam detail as well as pipe bedding and insulation details.

The water main and services will also meet SPS 382 requirements. The pipe will be a PVC AWWA C900 pipe with push on watertight joints and nitrile gaskets. Ductile iron mechanical joint fittings with polywrap will be used for bends, tees, and other locations. The existing water main is located in the sludge layer so connections to the existing water main will need to extend into the sludge. The profile of the water main was designed so that the only location where the sludge layer is penetrated will be at the immediate connection locations. The pipe will utilize 45-degree vertical bends immediately prior to connection to get down to existing main depth. The connection will be made in a clean dry condition and then backfilled with clean imported fill. Handling, management, and disposal of the excavated sludge will be completed as outlined in Section 5.1 of this document. The other sections of trenching in the cap area will only be backfilled with excavated cap material with the top layer of the trenches either pavement or clean imported topsoil depending on location. Clay backfill will be placed in the entire depth of the water main trench excavation at the connection points when it passes within 2-ft of the sludge layer to provide a required impermeable cap layer. See drawings C504-C507, for locations where water main will extend into the cap and sludge layer for the connections to the public water main, along with the approximate volume of sludge excavated to complete the work, which will be handled and managed per Section 5.1.

Refer to **Appendix C**, drawing C500, for overall utility plan layout, drawings C501 – C503, for sanitary sewer plan and profiles, drawings C504 – C507, for water main plan and profiles.

4.1.4.8 Stormwater Management Best Management Practices and Piping

Drainage on the development is designed to be primarily by surface drainage and grading to provide a positive slope away from the center portion of the development. NR 151 requirements are in effect for parking lots and roadways. The approach for meeting the NR151 requirement are three (3) strategically place biofilters adjacent to these paved areas. Refer to **Appendix C**, drawings C400 – C402, for proposed grading plans and location of the biofilters with top of engineered soil media elevations. The grading of the

site was designed to allow placement of the biofilter, including the necessary engineering soil and perforated underdrain above the sludge layer. An impermeable ethylene propylene diene monomer (EPDM) liner will be used to provide a barrier to water infiltration into the cap and eliminate the need for additional excavation.

Minimal storm sewer is proposed for the project as site drainage will be primarily surface drainage to the biofilters. Short segments of PVC SDR 35 storm sewer will be necessary at the biofilters to connect the underdrain and precast concrete overflow structures to the existing on-site storm sewer system. The pipes along with the overflow structures will be installed above the sludge layer in the cap material and trenches backfilled with excavated cap material or clean fill. Excavation into the sludge layer is not expected.

Refer to **Appendix C**, drawings C510 – C512, for biofilter plan and profiles, and drawing C602, for biofiltration basin details.

4.1.5 Future Phase "Use Approval" Component Descriptions

Five of the seven components listed below are being submitted now for Department "Use Approval". The other two buildings shown on the Master Plan are listed below for information purposes, but "Use Approval" is not requested for these two buildings at this time. One or more future requests for "Use Approval" will be submitted following completion of additional preliminary building and design planning that will be made possible by the geotechnical data anticipated from the boring request currently in review by the Department. The components listed below are being submitted for Department "Use Approval."

4.1.5.1 Prairie Workshop

The Prairie Workshop is a combination storage facility and community space intended for interaction activities with the restored native prairie passive park areas to the west of this building site. Refer to **Appendix A** or **Appendix C** drawing C300, for location of Prairie Workshop.

4.1.5.2 Amphitheater Stage

The Amphitheater Stage is intended to be an outdoor open-air venue for entertainment acts with a large outdoor lawn area for spectators. Refer to **Appendix A** or **Appendix C** drawing C300, for location of amphitheater stage.

4.1.5.3 Colonnade

This central spine corridor will be the main viewing corridor of the Welcome Center from W. Wisconsin Avenue and is expected to consist of hardscape pavement, seating areas, sculptures and/or columns, and possible planting bed areas. Refer to **Appendix A** or **Appendix C** drawing C300, for location of colonnade.

4.1.5.4 Pedestrian Overpass

The Pedestrian Overpass is expected to be a signature visual feature of the development. It is intended to be an architecturally visually striking structure that will provide a safe grade-separated pedestrian crossing

from downtown Neenah affording views of the Fox River and the overall Arrowhead Park Development. Concepts of this structure can be found in **Appendix C**, drawings S101 – S104. Preliminary alignment of the walkway is shown on drawing C310. Preliminary plan and profile of the structure is shown on drawing C323. Grading for the approaches is shown on drawings C400 and C402.

4.1.5.5 Sculptures with Foundations

The sculpture garden area is intended to be a walking green space area with sculptures and art features placed on various structural foundations. Refer to **Appendix A** or **Appendix C** drawing C300, for location of sculpture garden.

4.1.5.6 Welcome Center ("Use Approval" Deferred to subsequent submittal)

The Welcome Center is a proposed community building intended to be the centerpiece of the park development directly visible from the downtown and Wisconsin Avenue. This proposed building will be submitted for "Use Approval" following availability of additional geotechnical information necessary to complete its preliminary planning and, following "Use Approval", detailed designs will be submitted to the Department for review and issuance of installation approval. Refer to Appendix A or Appendix C drawing C300, for location of the Welcome Center.

4.1.5.7 Community Building ("Use Approval" Deferred to subsequent submittal)

The Community Building is a proposed future building with programming and function to be determined at a later date. Refer to Appendix A or Appendix C drawing C300, for location of Community Building. "Use Approval" request for this building will be submitted at a future date after review of geotechnical data and completion of additional preliminary planning.

4.2 Potential for Impacts

This section of the report provides an evaluation of potential impacts as a result of implementing the Phase 1 "Installation Approval" items associated with this request.

4.2.1 Groundwater

Significant groundwater impacts at the site are not anticipated to occur as a result of performing the proposed site development activities. Groundwater monitoring has consistently been completed since the 1980s from a network of wells installed in and around the landfill. During this time period, several modifications have been made at Arrowhead Park (e.g., building construction, grading, paving, site vegetation, etc.) and minimal identified impacts beyond occasional anomalies in the groundwater results were observed. Since the proposed scope of work is similar in nature, but smaller in scope than pre-existing structures formerly present on the landfill, no negative groundwater impacts from the proposed site activities are not anticipated. The most recent groundwater sampling results are summarized in Stantec's Request for Reduction in Groundwater Sampling Frequency dated February 9, 2024.

4.2.2 Base Soils Underlying the Waste/Fill Material

Implementation of the Phase 1 scope of work is not anticipated to affect native soils underlying or adjacent to the landfill. None of the work is anticipated to extend into the underlying soils beneath the papermill sludge. Furthermore, the proposed work is expected to improve the existing landfill cap and promote better storm water runoff, resulting in further limiting infiltration of surface water into the landfill waste. Some disturbance of the sludge waste layer will occur during the proposed site development activities, but such expected disturbance is very limited in scope as discussed in Section 4.2.7.and precautionary steps will be followed as described in Section 5.1 to manage disturbed sludge, to prevent impacts to surficial soils, to protect the environment, and worker health and safety as part of this proposed work.

4.2.3 Bulkhead Dike

No work is proposed in the area of the bulkhead dike as part of this work. Contractors will be instructed not to stage any equipment, soils, or materials on the bulkhead dike to prevent any damage to the dike.

4.2.4 Surface Water and Sediment

There are no negative impacts anticipated to surface water and sediment. During construction, proper erosion control measures and handling and disposal of impacted materials during site development activities and prompt capping of disturbed areas will prevent impacts to surface water and sediments.

Following completion of the proposed work, storm water best management practices implemented in Section 4.1.4.7 are expected to improve the runoff quality.

4.2.5 Landfill Cap

Nearly all of the proposed work associated with the Phase 1 “Installation Approval” items will have no significant impact on the existing landfill cap but are expected to improve the current site conditions. The general thickness of the of the current cap and overlying fill ranges from approximately 1-7 ft in most areas. In the area near the Millview Drive and railroad crossing, the cap appears to be less than 2 feet thick. Additional fill will be placed in this area of the landfill and paved surfaces placed in the proposed roadways, improving the current cap.

In other areas where the landfill cap will be disturbed, it will be replaced to match the existing cap thickness or increased in thickness depending on location and final proposed grades as indicated on the attached drawings.

4.2.6 Low-Hazard Soil

As previously mentioned, low hazard material has been placed on top of the existing landfill cap and capped in place. The proposed work considered the locations of this material to minimize any disturbance of the low hazard soil and the associated caps. No disturbance to the low hazard material is expected as part of the proposed work. In the south-central portion of the Site, the cap overlying the low-hazard material

will temporarily be disturbed. Specifically, the area will be first filled to achieve the proposed final grade, Once the final grade is achieved in this area, it is anticipated that future excavation for foundational support will extend approximately 3 fbg into the overlying fill and capping material and will not extend into the low hazard soil anticipated to be 3.5 feet below the future grade. The cap overlying the low hazard material will be replaced with a concrete foundation and clean backfill consisting of a minimum of two feet of clean clay in areas where the cap was disturbed. Although not anticipated, if low-hazard material is encountered, the soil would be temporarily stockpiled on-site and WDNR approval obtained to place the material in another portion of the site and cap it in place.

4.2.7 Papermill Waste

The proposed work is expected to have minimal disturbance to the papermill sludge waste within the landfill. The only anticipated infringement on the sludge waste layer is at four points where connection of the existing water main to the water services for the future proposed buildings is necessary. In order to complete the water service connections at these points, it is anticipated that an area of approximately 10-ft long by 4-ft wide by approximately 4-ft depth from top of cap to existing water main elevation will be excavated at each location or a total anticipated volume of approximately 22 cubic yards of paper mill sludge waste will be excavated. There is no other feasible option to make the connection besides excavating to the existing pipe and making the connection at depth. Horizontal drilling a new line was considered, but was not considered cost effective and would still result in the generation of waste during connection as that work needs to be completed in an excavated area. Appropriate environmental protection, worker safety, equipment decontamination, and sludge waste handling, management, and disposal will be completed as outlined in this document per Section 5.1.

4.2.8 Air and Explosive Gas

As described in Section 3.3, The City is currently in the process of responding to the WDNR's February 18, 2025, letter request for a "Gas Migration Prevention Action Plan". The plan will provide details to further investigate the degree and extent of potential methane migration at the landfill to determine what if any actions will be needed to address methane migration and accumulation onsite.

However, based on available information it is understood the former Minergy plant and Wastewater Treatment Plant existed at the site for many years without adversity with respect to explosive gases. The footprints of at least some of those structures were far larger than any of the proposed open air structures or other "use approval" structures and all were served by utilities similar to the structures proposed for "Installation Approval." Methane mitigation systems installed at the Minergy buildings and Waste Water treatment plants effectively addressed methane gases and similar systems will be proposed for future buildings in a separate submittal.

Given that no enclosed structures are planned for the proposed public recreation developments that are being sought for "Installation Approval" in this request, methane is not anticipated to be a concern. However, as a precautionary measure, passive mitigation systems will be installed beneath the open-air structures as detailed in section 4.1.4.6. A gas barrier, such as, bentonite clay plugs, prefabricated collars

made of impermeable material, or equivalent will be installed where any utility lines enter the proposed structure in order to prevent gas migration into the structure at the utility lines.

It is understood and proposed, as a precautionary measure, that any future enclosed structures on the landfill will likely require some form of active methane mitigation or at minimum, monitoring systems in place to protect the public. Monitoring (and if necessary, mitigation measures) will likely be implemented to also ensure methane is not migrating to sensitive receptors south of the landfill. The methane investigation is expected to run parallel to this development request and not expected to delay construction progress for Phase I “Installation Approval” items. Summary of Actions to be Taken and Engineering Controls to Prevent or Minimize Adverse Environmental Impacts and Potential Threats to Human Health and Welfare, Including Worker Safety.

5 Actions to Be Taken to Prevent or Minimize Impacts

Actions to be taken to prevent or minimize adverse environmental impacts and potential threats to human health and welfare including worker safety include the following:

1. Creation and implementation of a cap maintenance plan to prevent unplanned damage to the existing cap, and to repair cap damage promptly and properly during proposed site development.
2. A utility and building foundation inspection, maintenance, and settlement monitoring program for the site will be prepared, submitted for WDNR approval, and implemented.
3. Waste characterization, management and disposal planning and preparation for disposal of waste materials that are likely to be encountered during site development.
4. Preparation of OSHA HAZWOPER site safety plans and OSHA HAZWOPER training for workers likely to encounter site contaminants during construction if required based on waste characterization results.
5. Erosion control and storm water management plans will be prepared, submitted for WDNR approval, and implemented prior to ground surface disturbance during construction.

Engineering controls specific to addressing potential gas migration as a results of site development will be described in future request submittals specific to building construction. The forthcoming “Gas Migration Prevention Action Plan” for the landfill will address potential monitoring of sensitive receptors of methane and likely be able to track changes in gas migration at the landfill during development. Other engineering controls (e.g., silt fences, tracking pads, ditch checks, etc.) would be identified in various project plans and permits, as appropriate.

5.1 Waste Management and Handling Plan

Approximately 22 CY of paper mill waste sludge is anticipated to be excavated associated with trenching to install the water main connections. The waste sludge is assumed to contain total PCBs at a concentration equal to or greater than 50 mg/kg and managed/disposed of as Toxic Substance Control Act (TSCA) regulated waste. The excavated sludge will be immediately transferred to a lined roll-off box and will be characterized and ultimately be transported offsite for disposal at a facility approved for such waste. During excavation, the clean capping material will first be excavated and placed in a separate pile to segregate clean cap material from presumed waste. The roll-off box or boxes will be covered with watertight plastic nightly to minimize direct contact concerns and prevent migration of waste via stormwater runoff. It is anticipated up to two roll off boxes will be needed for the proposed work and will be staged onsite pending characterization and disposal. No papermill sludge waste will be taken offsite without proper disposal facility acceptance and manifesting.

Any equipment used to excavate or transport the waste on-site will be steam cleaned and rinsate water containerized prior to leaving the site or handling of clean soil.

Following completion of the sludge excavation, one or more representative composite samples be collected from volumes of soil/sludge containerized for waste characterization and disposal. The composite sample(s) will be analyzed for PCBs using Method 8082 by Eurofins laboratory. The composite sample(s) will be collected by advancing a series of hand augers into the sludge waste. The representative samples will be contained in one or more Ziploc bags and mixed for homogeneity. Once mixed thoroughly, the laboratory supplied sampling container(s) will be filled and documented on a chain of custody form.

A sample of decontamination water will be collected using a disposal bailer and analyzed for PCBs using Method 8082 by Eurofins. The IDW sample and decontamination water sample will be transported on ice in a cooler to the Eurofins, Chicago, Illinois area laboratory.

Laboratory analytical results from the sludge waste stockpile and decontamination liquid will be used to create a waste profile for review and approval landfill licensed to manage the waste. Stantec will work with landfill personnel to properly characterize the waste materials and ensure no issues arise at time of disposal. Roll-off boxes containing sludge waste will be stored in a designated location onsite which will not hinder construction activities. The roll-off boxes will be placard to warn of the danger of the waste and placed generally in the central portion of the landfill, not near the Loop the-Little-Lake trail or Little Lake Butte des Morts shoreline. The waste will remain at this location until laboratory testing and paperwork are completed prior to transport. It is anticipated that the containers will be stored onsite for approximately 30-60 days.

Upon waste acceptance, the landfill will be responsible to complete all applicable manifesting and organize the transportation of the waste to their licensed facility. Upon completion of disposal, the landfill will provide documents certifying the proper handling and destruction/disposal of the waste.

5.2 Landfill Cap Maintenance and Repair

We understand the importance in managing the integrity of the cap during the completion of the work. Precautionary measures will be taken to reduce the impact to the cap and immediately complete any repairs. Access to the Site will be managed, and equipment and supplies will be staged off-site, to reduce potential impacts to the landfill cap.

Cap repairs and maintenance will be completed as described in the previous sections. If rutting of the landfill cap exceeding 3-inches in areas outside of the proposed work, it will be filled with topsoil and reseeded.

6 Summary and Conclusion

On behalf of the City, Stantec and GRAEF have evaluated the Phase 1 and Future Phases development considerations against the criteria outlined in the WDNR's various Development on Historic Fill Site guidance documents and forms and specific instruction provided in response to request of the City and has considered and summarized the potential impacts above. Where potential impacts may occur, we have identified engineering controls or best management practices to employ to protect the landfill, Park and human health and safety and the environment. Based on our evaluation of media and the proposed installations including construction techniques and precautions, we conclude no negative impacts are anticipated to be sustained as a result of the proposed development.

The City is requesting from the WDNR a conditional approval of the proposed Phase 1 installations and approval of the proposed Phase 2 uses for this development on the former landfill as set forth in Section 4.1.3 and as further defined in the Updated Master Plan for Arrowhead Park. The City is committed to notifying the WDNR if future design changes occur that vary substantially and materially from the current Master Plan and is committed to evaluating the potential impacts that might occur from future changes. If alternate possible impacts may occur due to design changes, WDNR will be notified, and an additional or alternate approval will be sought if necessary.

7 References

C.N. Carter, PhD., P.E., 1984, “The Park Site Landfill in Neenah, Wisconsin, Existing Physical Conditions, Effects on Local Groundwater and Alternatives for the Future Action”.

CR Meyer, 1990, “P.H. Glatfelter Company, Grant of Exemption to Build on the Closed Park site Landfill”.

Environmental Resources Management, 1999, “Supplemental Subsurface Investigation for Arrowhead Park Landfill in the City of Neenah, Wisconsin”.

Graef, 2012, "Development at Historic Fill Site or Licensed Landfill Exemption Application Arrowhead Park Landfill," City of Neenah Park Sites #1 and #2 Development.

Minergy, 1998, “Construction Documentation Report”, Grant of Exemption to Build on the Park Closed Arrowhead Landfill.

Minergy, 2003, “Construction Documentation Report”, Conditional Grant of Exemption Modification, Building Additions on the Closed Arrowhead Park Landfill and Addendum to Conditional Grant of Exemption Modifications, Scrubber Building Addition on the Closed Arrowhead Park Landfill.

Olcott, P. G., 1968, "Water Resources of Wisconsin, Fox-Wolf River Basin," Hydrologic Investigations Atlas HA-321, University Extension, University of Wisconsin Geological and Natural History Survey.

Ostrom, M.E., 1981, "Bedrock Geology of Wisconsin," University of Wisconsin Extension, Geological and Natural History Survey.

P. H. Glatfelter Company, 1992, “Construction Documentation Report”, P.H. Glatfelter, Waste Treatment Expansion Project.

Short Elliott Hendrickson, Inc. (SEH), 2017, “Arrowhead Park Development Plan”, Neenah, Wisconsin.

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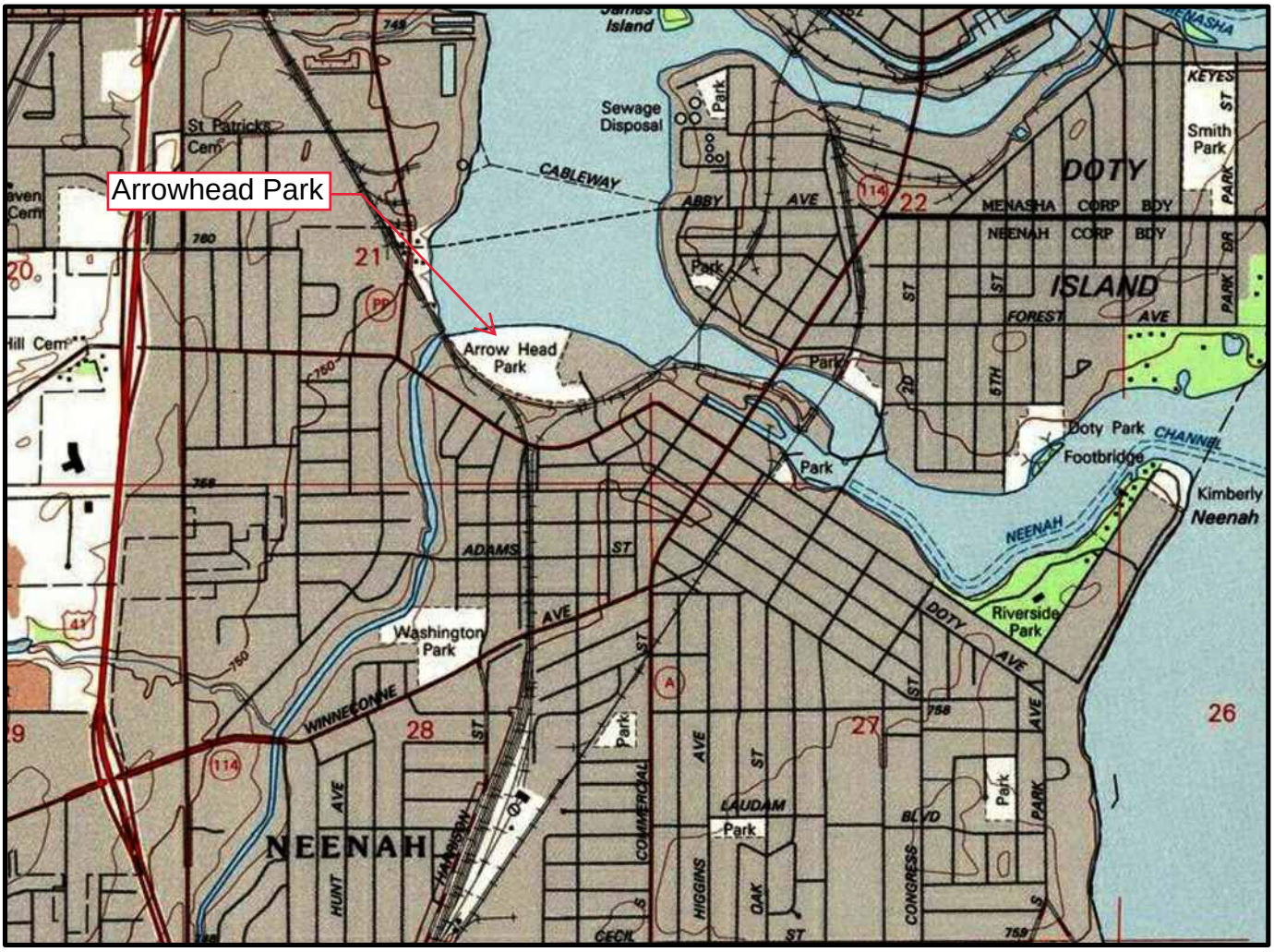
STS Consultants Ltd. Consulting Engineers, 1995, “Summary of Existing Conditions”. Arrow Head Park, Neenah, Wisconsin.

USDA, 1980, "Soil Survey of Winnebago County, Wisconsin," United States Department of Agriculture Soil Conservation Service.

WDNR, "Groundwater and Environmental Monitoring System Database," Landfill License Number 2299, Facility Identification Number 471013840.

Figures



SCALE IN FEET

1" = 2000'

0 1000 2000 3000 4000 5000 6000 7000 8000

N

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

BASE MAP SOURCE: USGS 7.5 MINUTE QUADRANGLE, NEENAH, WISCONSIN, 1992 (NATIONAL GEOGRAPHIC HOLDINGS, INC.)

Stantec

1165 Scheuring Road, De Pere, Wisconsin 54115
Phone: 920-592-8400 Fax: 920-592-84844

This drawing and all information contained thereon is the property of Stantec. Stantec will not be held liable for improper or incorrect usage. Professional seals and signatures do not apply to electronic drawing files. The user assumes all responsibility and risk for the accuracy and verification of all information contained in electronic files.

SITE LOCATION & LOCAL TOPOGRAPHY

ARROWHEAD PARK SITE
355 MILLVIEW DRIVE
NEENAH, WISCONSIN

DATE: 09/01/20	DRAWN BY: JRB	PROJECT MANAGER: LPC	PROJECT NUMBER: 193707958	FIGURE 1

N

SCALE IN FEET

75 0 75 150

Monitoring Well & Piezometer Locations

Stantec

1165 Scheuring Road, De Pere, Wisconsin 54115
Phone: 920-592-8400 Fax: 920-592-8444

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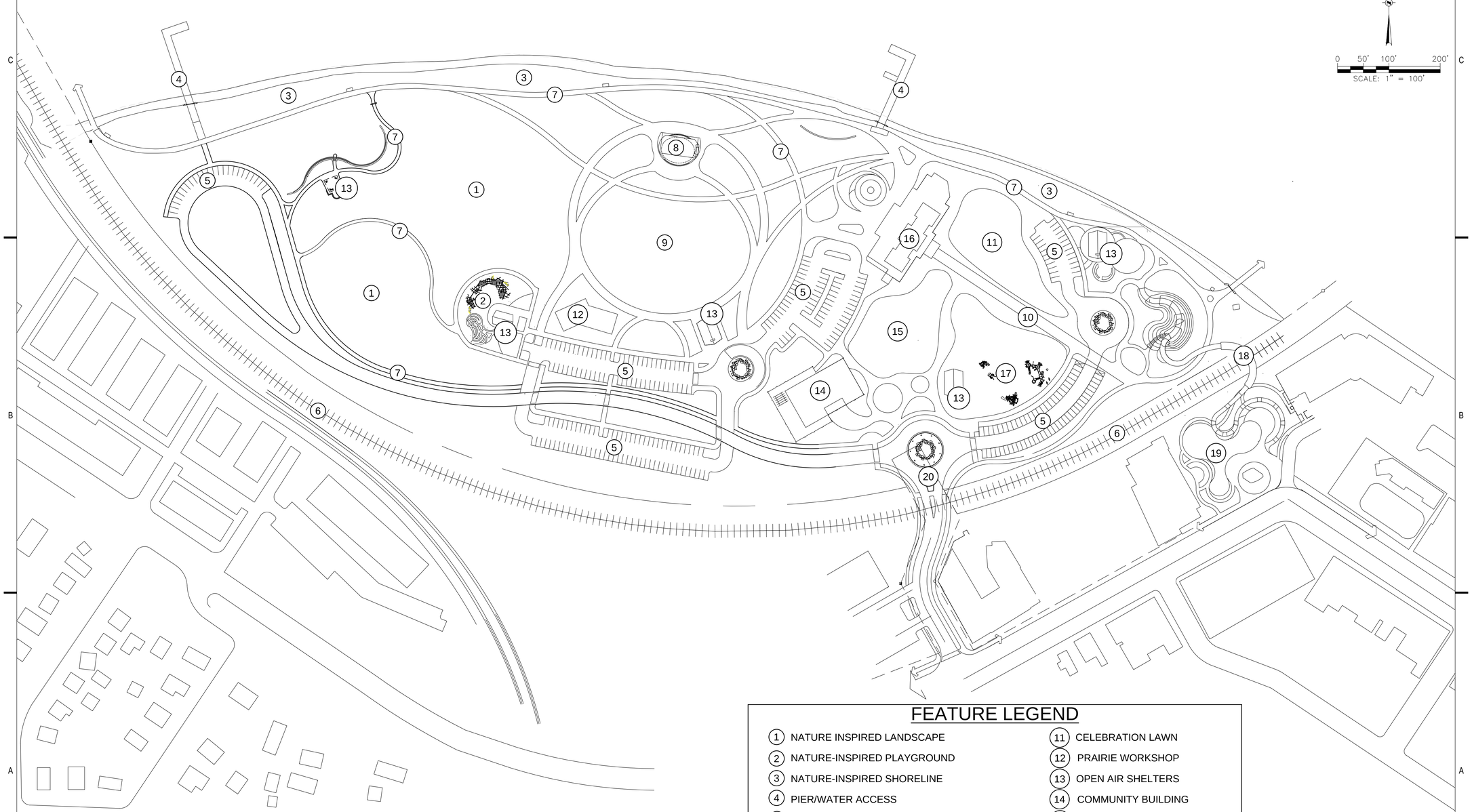
ARROWHEAD PARK MONITORING WELL LOCATIONS

NEENAH FOUNDRY SITE
716 HARRISON STREET, NEENAH, WISCONSIN

DATE: 09/19/23	DRAWN BY: JRB	PROJECT MANAGER: LPC	PROJECT NUMBER: 193706450	Figure 2

Appendices

Appendix A Updated Master Plan



FEATURE LEGEND

1. NATURE INSPIRED LANDSCAPE
2. NATURE-INSPIRED PLAYGROUND
3. NATURE-INSPIRED SHORELINE
4. PIER/WATER ACCESS
5. PARKING
6. RAILROAD
7. TRAILS
8. AMPHITHEATER (SINGLE SIDED)
9. RECREATIONAL LAWN
10. COLLONADE
11. CELEBRATION LAWN
12. PRAIRIE WORKSHOP
13. OPEN AIR SHELTERS
14. COMMUNITY BUILDING
15. SCULPTURE GARDEN
16. WELCOME CENTER
17. DESTINATION PLAYGROUND
18. PEDESTRIAN OVERPASS
19. GATEWAY PARK
20. REALIGNED VEHICULAR ACCESS

NOTICE:
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

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GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	01-24-2024
DRAWN BY:	KS
CHECKED BY:	
APPROVED BY:	
SCALE:	1"=100'

SHEET TITLE:
MASTER PLAN UPDATES

SHEET NUMBER:

EXH2

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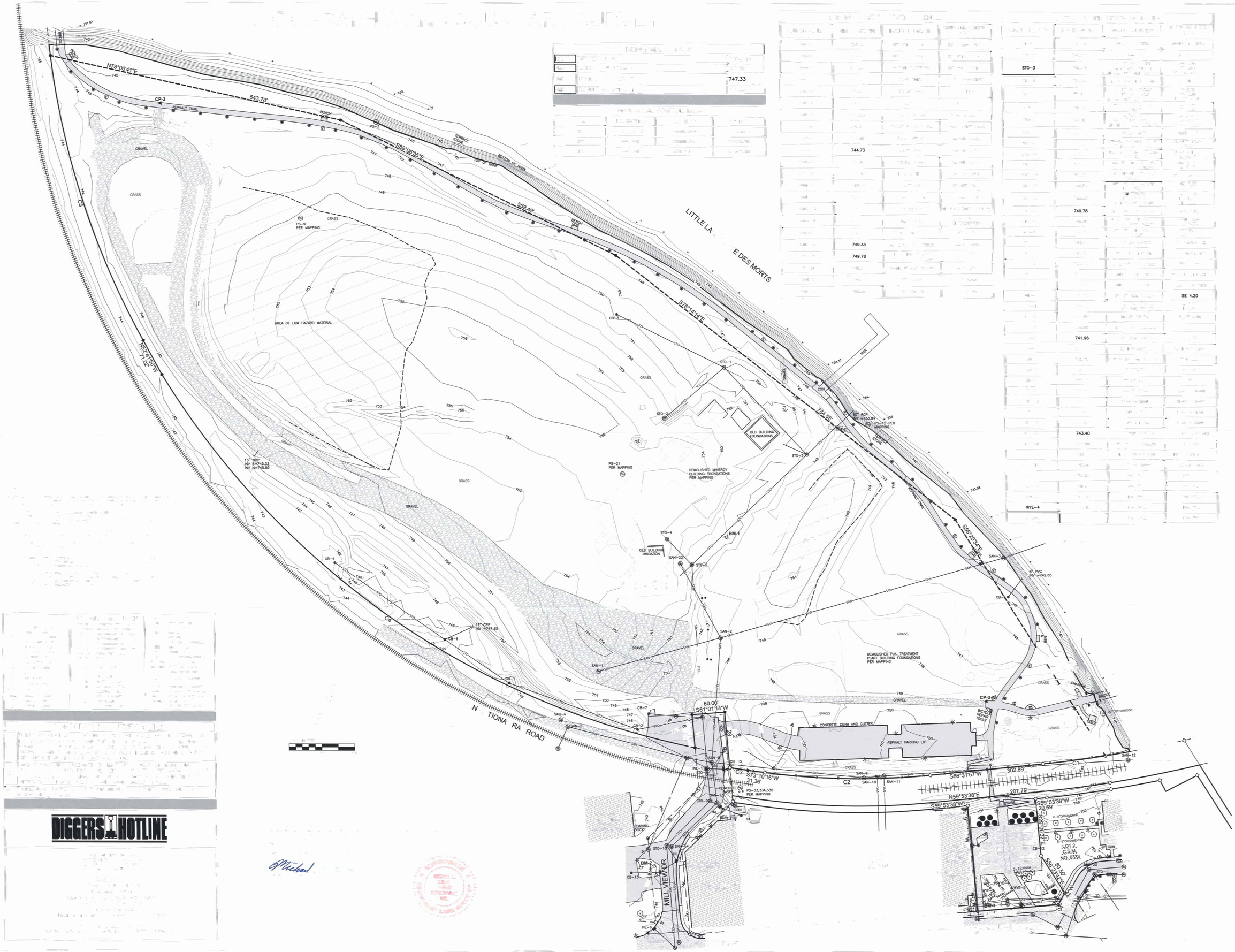
Appendix B Topographic Survey of Arrowhead Park



DIGGERS HOTLINE

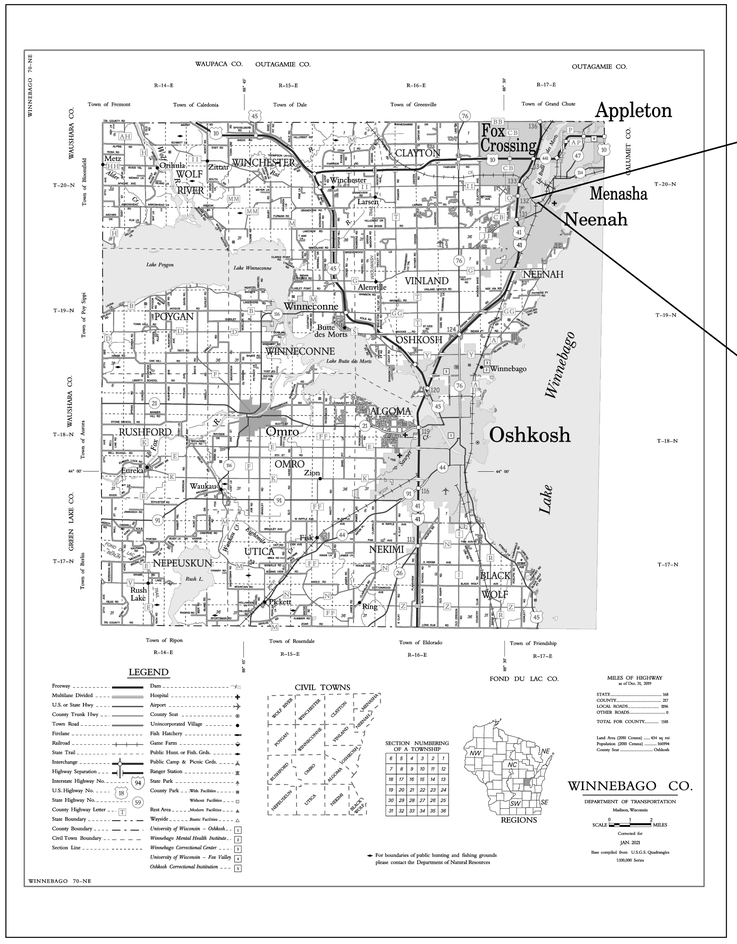
Appendix C Arrowhead Park Development Preliminary Plan Set

ARROWHEAD PARK DEVELOPMENT

CITY OF NEENAH, WISCONSIN

PRELIMINARY PLANS

MARCH 21, 2025

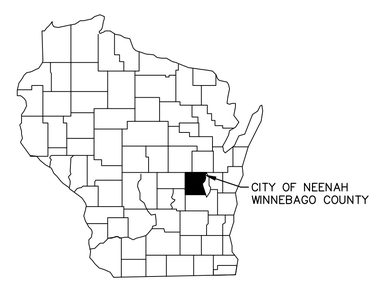


WINNEBAGO COUNTY
VICINITY MAP

PROJECT LOCATION MAP

DRAFT

N.T.S.



	SHEET NO.	SHEET TITLE
CIVIL	C000	COVER SHEET
	C100	TOPOGRAPHIC SURVEY
	C101	EXISTING LANDFILL LAYERS WITH PROPOSED SURFACE GRADE
	C200	DEMOLITION
	C201	EROSION CONTROL
	C300	OVERALL SITE LAYOUT
	C301–C302	ENLARGED SITE LAYOUTS
	C310	ALIGNMENT OVERVIEW
	C320–C321	CARRIAGE ROAD PLAN AND PROFILE
	C322	MILLVIEW DRIVE PLAN AND PROFILE
	C323	PEDESTRIAN BRIDGE PLAN AND PROFILE
	C400	OVERALL GRADING
	C401–C402	ENLARGED GRADING
	C500	OVERALL UTILITY
	C501–C503	SANITARY SEWER PLAN AND PROFILE
	C504–C507	WATER MAIN PLAN AND PROFILE
	C510–C512	STORM WATER DETAILS
	C600	GENERAL NOTES
	C601–C604	CONSTRUCTION DETAILS
	C700–C702	CARRIAGE ROAD CROSS SECTIONS
	C703	MILLVIEW DRIVE CROSS SECTIONS
	C704–C706	PEDESTRIAN BRIDGE CROSS SECTIONS
ARCHITECTURAL	A–1.1	PARK SHELTER (GRIES ARCHITECTURAL GROUP, INC.)
STRUCTURAL	S101	PEDESTRIAN BRIDGE PLAN
	S102	ELEVATIONS AND SECTIONS
	S103	ELEVATIONS
	S104	RAILING DETAILS

CIVIL ENGINEER (C–SERIES SHEETS)	STRUCTURAL ENGINEER (S–SERIES SHEETS)

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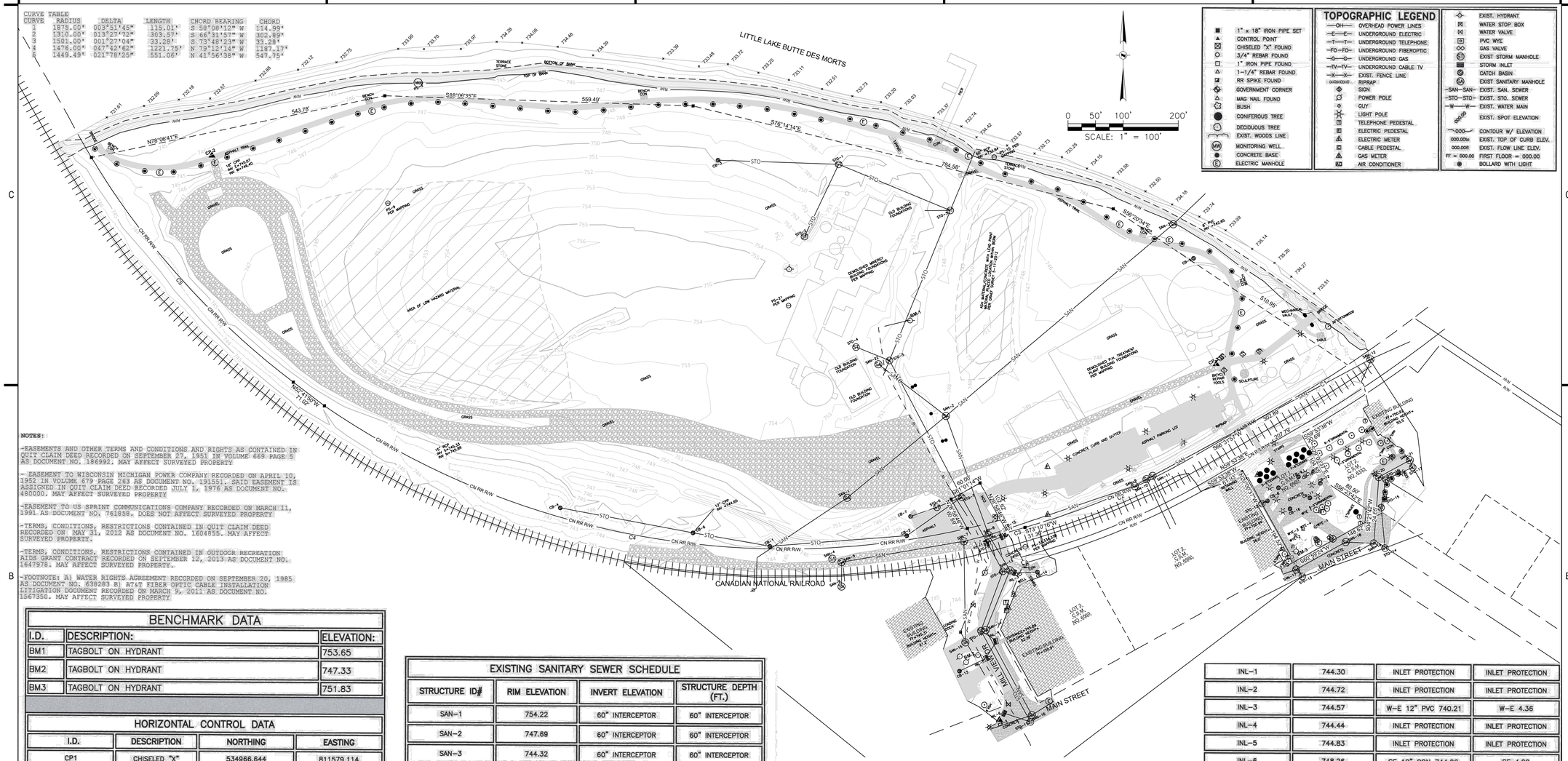
CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
1	1875.00'	003°51'45"	115.01'	S 58°08'12" W	114.99'
2	1310.00'	013°27'22"	303.57'	S 66°31'57" W	302.89'
3	1501.00'	001°27'04"	33.28'	S 73°48'23" W	33.28'
4	1476.00'	047°42'62"	1221.75'	N 79°12'14" W	1187.17'
5	1449.49'	021°78'25"	551.06'	N 41°56'38" W	547.75'



NOTES:

-EASEMENTS AND OTHER TERMS AND CONDITIONS AND RIGHTS AS CONTAINED IN QUIT CLAIM DEED RECORDED ON SEPTEMBER 27, 1951 IN VOLUME 669 PAGE 5 AS DOCUMENT NO. 186992. MAY AFFECT SURVEYED PROPERTY

- EASEMENT TO WISCONSIN MICHIGAN POWER COMPANY RECORDED ON APRIL 10, 1952 IN VOLUME 679 PAGE 263 AS DOCUMENT NO. 191551. SAID EASEMENT IS ASSIGNED IN QUIT CLAIM DEED RECORDED JULY 1, 1976 AS DOCUMENT NO. 480000. MAY AFFECT SURVEYED PROPERTY

-EASEMENT TO US SPRINT COMMUNICATIONS COMPANY RECORDED ON MARCH 11, 1991 AS DOCUMENT NO. 761858. DOES NOT AFFECT SURVEYED PROPERTY

-TERMS, CONDITIONS, RESTRICTIONS CONTAINED IN QUIT CLAIM DEED RECORDED ON MAY 31, 2012 AS DOCUMENT NO. 1604855. MAY AFFECT SURVEYED PROPERTY.

-TERMS, CONDITIONS, RESTRICTIONS CONTAINED IN OUTDOOR RECREATION AIDS GRANT CONTRACT RECORDED ON SEPTEMBER 12, 2013 AS DOCUMENT NO. 1647978. MAY AFFECT SURVEYED PROPERTY.

-FOOTNOTE: A) WATER RIGHTS AGREEMENT RECORDED ON SEPTEMBER 20, 1985 AS DOCUMENT NO. 638283 B) AT&T FIBER OPTIC CABLE INSTALLATION LITIGATION DOCUMENT RECORDED ON MARCH 9, 2011 AS DOCUMENT NO. 1567350. MAY AFFECT SURVEYED PROPERTY

BENCHMARK DATA		
I.D.	DESCRIPTION:	ELEVATION:
BM1	TAGBOLT ON HYDRANT	753.65
BM2	TAGBOLT ON HYDRANT	747.33
BM3	TAGBOLT ON HYDRANT	751.83

HORIZONTAL CONTROL DATA			
I.D.	DESCRIPTION	NORTHING	EASTING
CP1	CHISELED "X"	534966.644	811579.114
CP2	MAG NAIL	535990.275	810150.799
CP3	MAG NAIL	535612.063	811972.360

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

SURVEY NOTES

1. THE BASE SURVEY WAS PREPARED BY MARTENSON & EISELE, INC. IN JUNE 2023. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO.
2. HORIZONTAL DATUM IS BASED ON WINNEBAGO COUNTY, WISCONSIN COUNTY COORDINATE SYSTEM.
3. UTILITY AND LATERAL LOCATIONS SHOWN ARE BASED ON FIELD MARKINGS BY LOCATING COMPANIES AND THE CITY OF NEENAH, AND/OR MAPPING FROM THE RESPECTIVE UTILITY. THEREFORE THE LOCATIONS SHOWN ON THIS DRAWING CANNOT BE GUARANTEED. CONTACT DIGGERS HOTLINE AND THE CITY OF NEENAH PRIOR TO CONSTRUCTION.

NOTICE:
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

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EXISTING SANITARY SEWER SCHEDULE			
STRUCTURE ID#	RIM ELEVATION	INVERT ELEVATION	STRUCTURE DEPTH (FT.)
SAN-1	754.22	60" INTERCEPTOR	60" INTERCEPTOR
SAN-2	747.69	60" INTERCEPTOR	60" INTERCEPTOR
SAN-3	744.32	60" INTERCEPTOR	60" INTERCEPTOR
SAN-4	745.63	ABANDONED	13.30 ABANDONED
SAN-5	745.74	731.84 S-E	S-E 13.90
SAN-6	745.44	732.30 N	N 13.14
SAN-7	744.90	731.64 S-E-W	S-E-W 13.26
SAN-8	745.17	731.25 W-E-SE-NW	W-E-SE-NW 13.92
SAN-9	744.69	731.37 SW-NE	SW-NE 13.32
SAN-10	744.73	730.76 SW-NE	SW-NE 13.97
SAN-11	744.94	730.92 SE-NE	SW-NE 14.02
SAN-12	744.43	BOLTED SHUT	BOLTED SHUT
SAN-13	744.82	SE-NW 731.41	SW-NW 13.41
SAN-14	745.00	SE-NE 731.81	SE-NE 13.19
SAN-15	744.70	N 732.06	N 12.64 (INTERCEPTOR)
SAN-16	747.54	NW 731.03	NW 16.51 (INTERCEPTOR)
SAN-17	749.06	NE 12" PVC 738.35	NE 10.71
SAN-18	749.33	SW-E 12" PVC 738.50	SW-E 10.83
SAN-19	749.78	N 8" PVC 741.44 W 12" PVC 738.59	N 8.34 W 11.19
SAN-20	749.21	S-NE 8" PVC 741.97	S-NE 7.24
SAN-21	749.17	SW 742.28	SW 6.89
SAN-22	750.68	SE 739.18	SE 11.50

EXISTING STORM SEWER SCHEDULE			
STRUCTURE ID#	RIM ELEVATION	INVERT ELEVATION	STRUCTURE DEPTH (FT.)
STO-1	749.40	UNABLE TO OPEN	UNABLE TO OPEN
STO-2	742.27	NE 8" PVC 738.77	NE 3.50
STO-3	749.81	NW 15" PVC 744.96 W 8" PVC 745.21 NE-SW 60" RCP 733.23	NW 4.85 W 4.60 NE-SW 16.58
STO-4	752.00	E 15" PVC PER PLAN	PIPE BURIED
STO-5	751.06	W 15" PVC 745.27 SW 8" PVC 745.07 NE-SE 60" RCP 733.64	W 5.79 SW 5.99 NE-SE 17.42
STO-6	748.32	W 12" CON 735.73 E 735.73	W 12.59 E 12.59
STO-7	747.10	W 734.24 SW 12" PVC 734.24 SE-NW 60" RCP 734.24	W 12.86 SW 12.86 SE-NW 12.86
STO-8	744.40	PAVED OVER	PAVED OVER
STO-9	744.85	SW-NW 60" RCP 734.61 E 12" PVC 734.61	SW-NW 10.24 E 10.24
STO-10	745.04	NE-SE 60" RCP 734.89 E 734.89	NE-SE 10.15 E 10.15
STO-11	747.96	NW 60" RCP 731.46 W 12" CON 736.50	NW 16.50 W 11.46
STO-12	750.73	NW-SE-NE 12" PVC 746.24	NW-SE-NE 4.49
STO-13	749.51	NW 12" PVC 744.26 NE 736.07	NW 5.25 NE 13.44
STO-14	749.93	SW 735.25 NE 738.93 N 18" CON 741.68	SW 14.68 NE 11.00 N 8.25
STO-15	749.78	S-N 18" CON 742.15	S-N 7.63
STO-16	749.00	S-NE 18" CON 742.54 SE 12" CON 743.27	S-NE 6.46 SE 5.73
STO-17	749.31	SW 18" CON 742.87 SE 742.87	SW 6.44 SE 6.44

INL-1	744.30	INLET PROTECTION	INLET PROTECTION
INL-2	744.72	INLET PROTECTION	INLET PROTECTION
INL-3	744.57	W-E 12" PVC 740.21	W-E 4.36
INL-4	744.44	INLET PROTECTION	INLET PROTECTION
INL-5	744.83	INLET PROTECTION	INLET PROTECTION
INL-6	748.26	SE 12" CON 744.06	SE 4.20
CB-1	742.37	W 12" PVC 738.77 E 15" PVC 738.77	W 3.60 E 3.60
CB-2	744.68	NE-W 738.72	NE-W 5.96
CB-3	749.66	E 15" CON 745.93	E 3.73
CB-4	741.96	E 12" PVC 739.34	E 2.62
CB-5	744.74	NO INFORMATION	NO INFORMATION
CB-6	742.79	W-E 12" PVC 739.27	W-E 3.52
CB-7	748.66	E 738.72	E 5.70
CB-8	750.63	W 12" PVC	W
CB-9	750.55	SEALED DRAIN	SEALED DRAIN
CB-10	750.56	SEALED DRAIN	SEALED DRAIN
CB-11	750.60	SEALED DRAIN	SEALED DRAIN
CB-12	750.64	SEALED DRAIN	SEALED DRAIN
CB-13	743.40	CAR PARKED OVER	CAR PARKED OVER
CB-14	744.86	W 12" PVC 740.76	W 4.10
CB-15	744.11	INLET PROTECTION	INLET PROTECTION
CB-16	750.66	SEALED DRAIN	SEALED DRAIN
WYE-1	750.52	PVC WYE	PVC WYE
WYE-2	749.82	PVC WYE	PVC WYE
WYE-3	750.10	PVC WYE	PVC WYE
WYE-4	750.16	PVC WYE	PVC WYE
WYE-5	750.29	PVC WYE	PVC WYE

GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
TOPOGRAPHIC SURVEY

SHEET NUMBER:
C100

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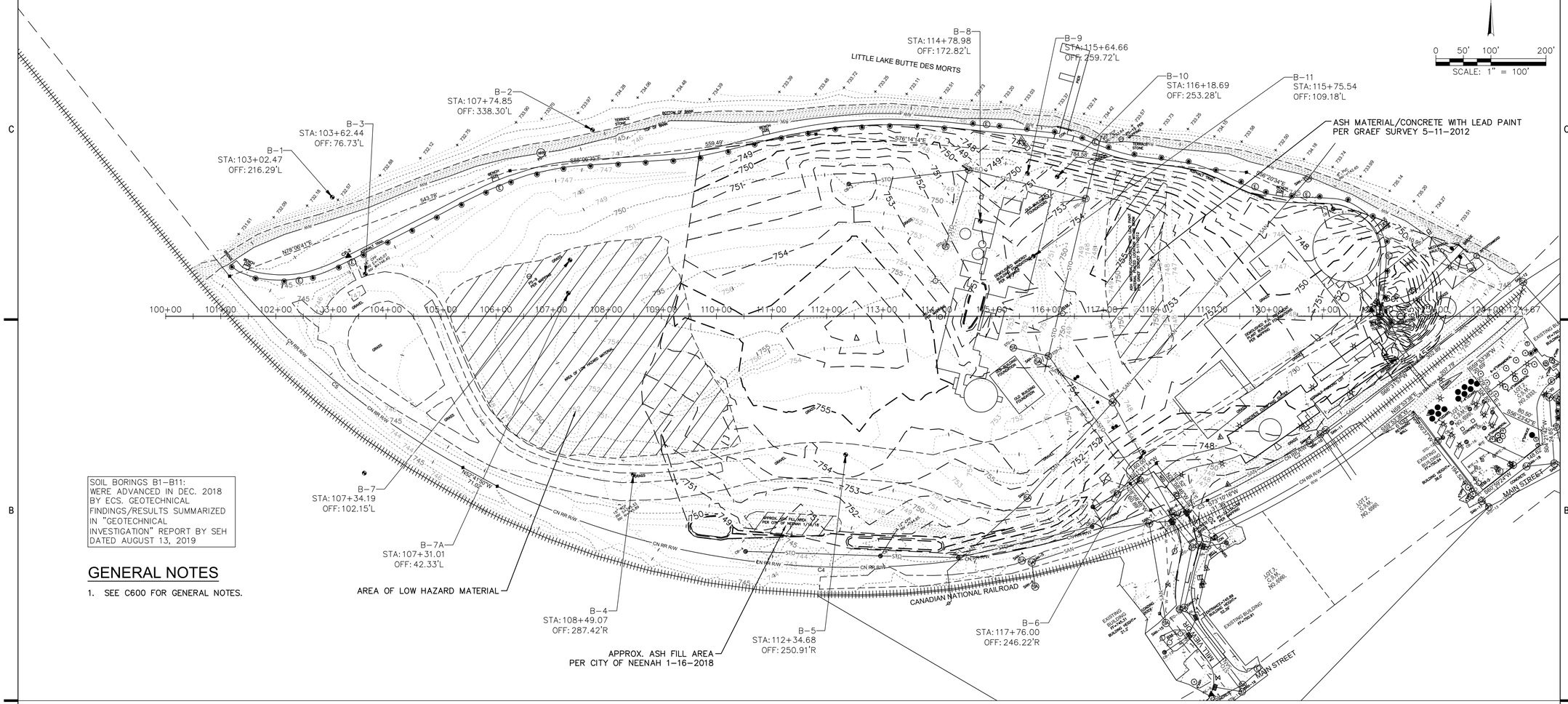
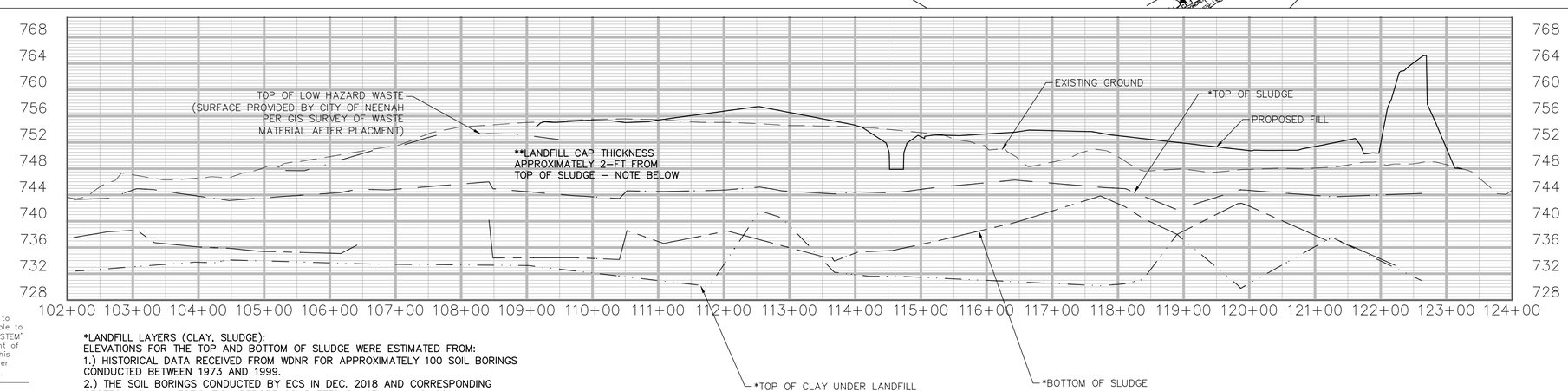


SOIL BORINGS B1–B11:
WERE ADVANCED IN DEC. 2018
BY ECS. GEOTECHNICAL
FINDINGS/RESULTS SUMMARIZED
IN "GEOTECHNICAL
INVESTIGATION" REPORT BY SEH
DATED AUGUST 13, 2019

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.



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*LANDFILL LAYERS (CLAY, SLUDGE):
ELEVATIONS FOR THE TOP AND BOTTOM OF SLUDGE WERE ESTIMATED FROM:
1.) HISTORICAL DATA RECEIVED FROM WDNR FOR APPROXIMATELY 100 SOIL BORINGS CONDUCTED BETWEEN 1973 AND 1999.
2.) THE SOIL BORINGS CONDUCTED BY ECS IN DEC. 2018 AND CORRESPONDING GEOTECHNICAL INVESTIGATION REPORT COMPLETED BY SEH IN AUG. 2019.

**LANDFILL CAP THICKNESS
PER CONVERSATIONS HELD WITH WDNR IN PRELIMINARY DESIGN PHASE (FALL/WINTER 2024), THE THICKNESS OF THE LANDFILL CAP FROM THE TOP OF SLUDGE IS APPROXIMATELY 2-FT.

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Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
EXISTING LANDFILL LAYERS WITH PROPOSED SURFACE GRADE

SHEET NUMBER:
C101

X:\GB\2024\20240286\Design\Civil\00\C_00_C101_ExistingLandfillLayersWithProposedSurfaceGrade
3/20/2025 10:11 AM

LEGEND

- ASPHALT PAVEMENT REMOVAL
- CONCRETE PAVEMENT REMOVAL
- GRAVEL PAVEMENT REMOVAL
- X X X X X X X -SAWCUT
- CURB & GUTTER REMOVAL
- SITE UTILITY REMOVAL
- \ \ \ \ \ \ \ -UTILITY REMOVAL
- A A A A A A A -UTILITY ABANDON IN PLACE

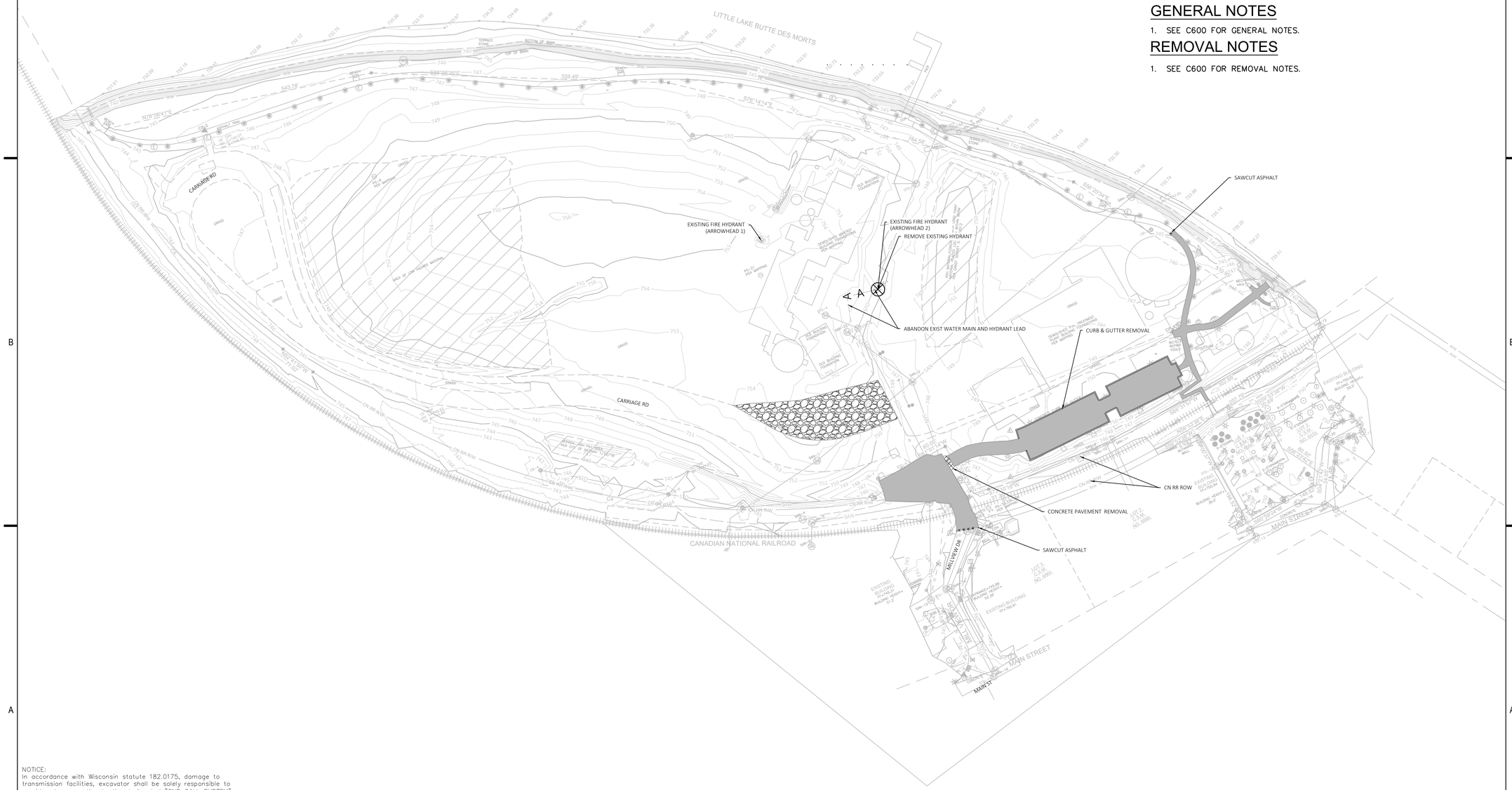
0 50' 100' 200'
SCALE: 1" = 100'

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

REMOVAL NOTES

1. SEE C600 FOR REMOVAL NOTES.



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3/20/2025 10:11 AM

GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

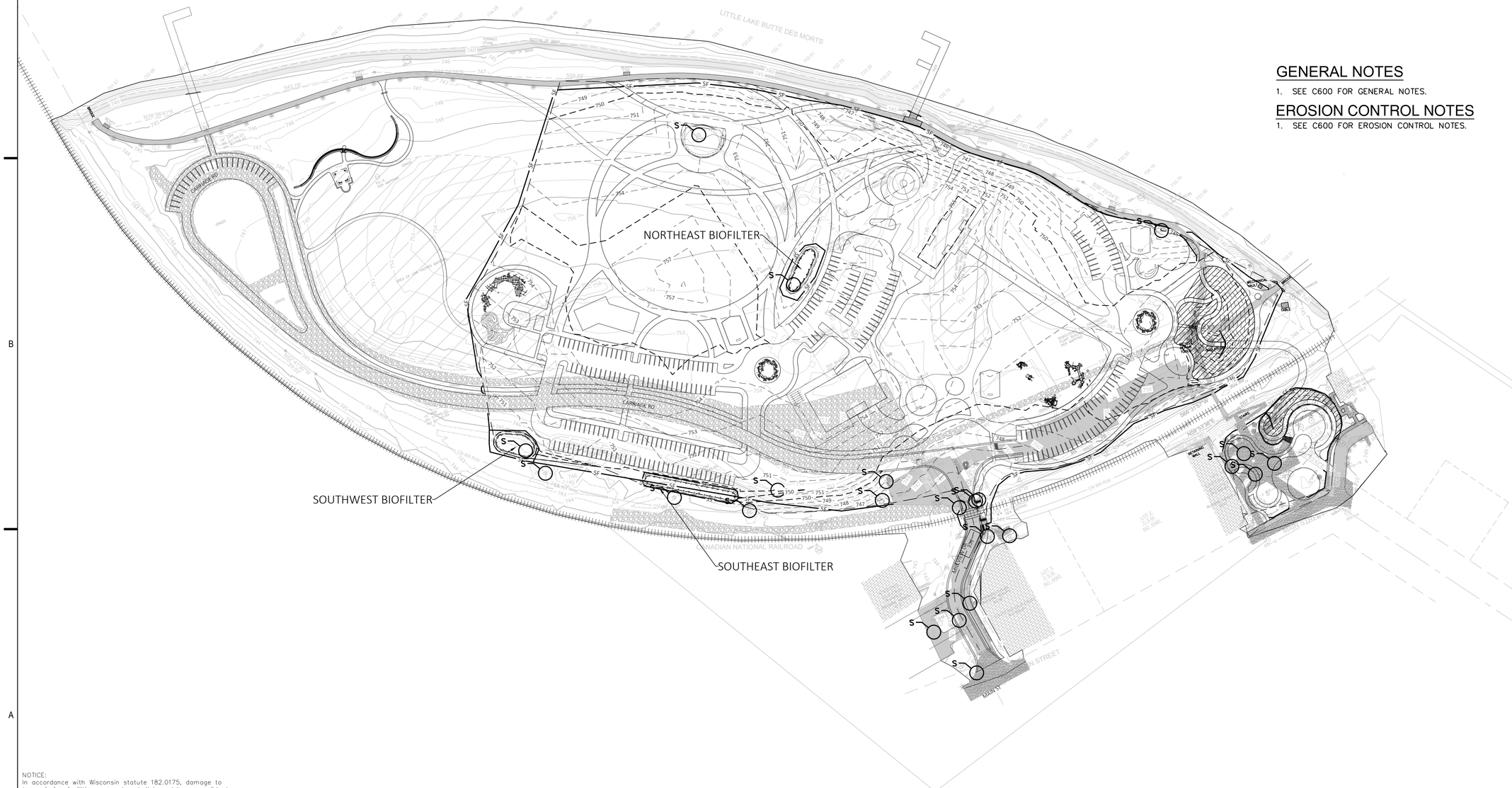
SHEET TITLE:
DEMOLITION

SHEET NUMBER:
C200

LEGEND

SCE	–STONE CONSTRUCTION ENTRANCE (SEE C601/DETAIL 4)
	–EROSION MATTING (SEE C601/DETAIL 2)
SF	–SILT FENCE (SEE C601/DETAIL 1)
S	–INLET PROTECTION (SEE C601/DETAIL 3, 5)
	–EXISTING GRAVEL PAVEMENT
	–EXISTING ASPHALT PAVEMENT
	–EXISTING CONCRETE PAVEMENT
	–EXISTING BUILDING

0 50' 100' 200'
SCALE: 1" = 100'



GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

EROSION CONTROL NOTES

1. SEE C600 FOR EROSION CONTROL NOTES.

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CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
EROSION CONTROL

SHEET NUMBER:
C201

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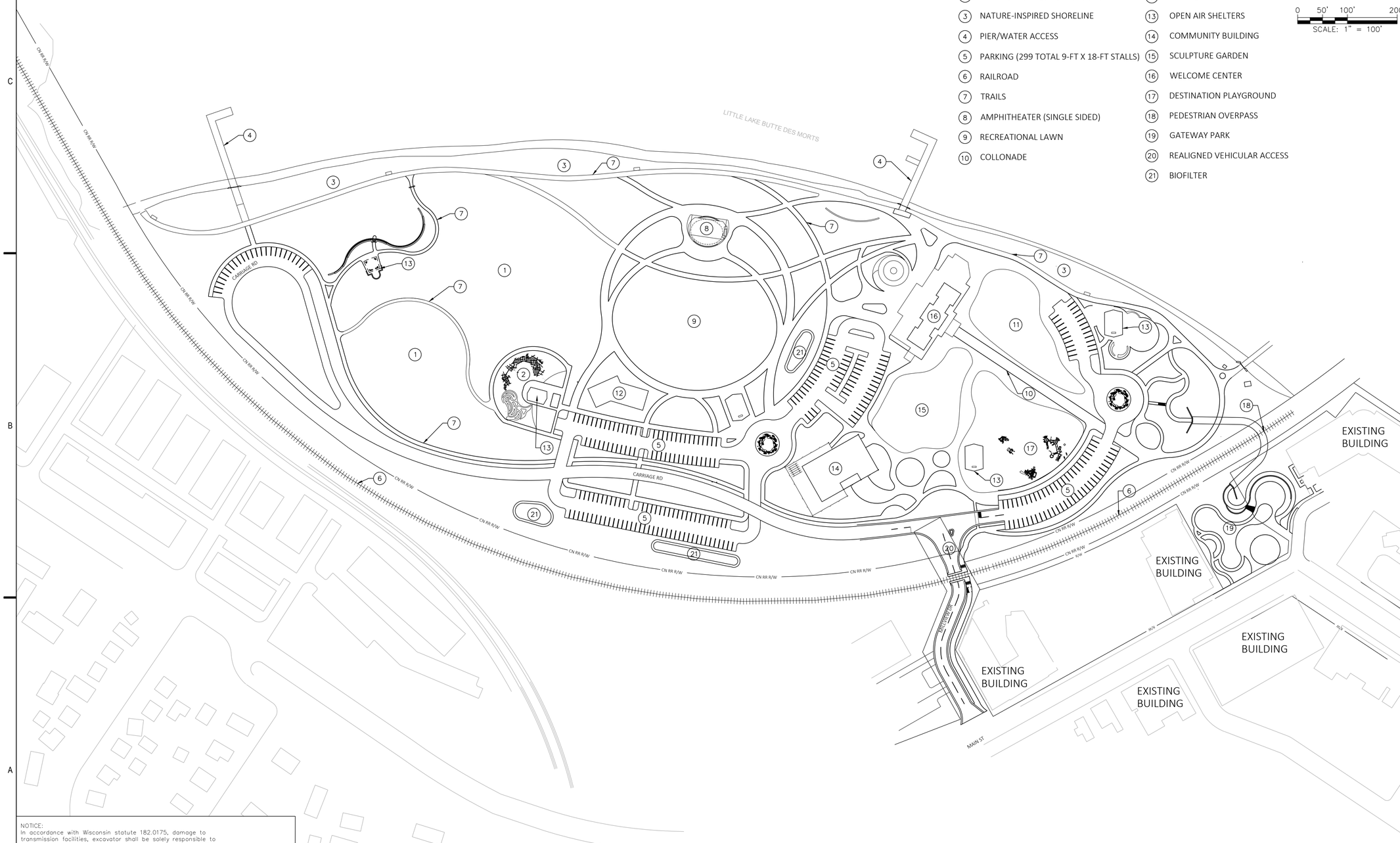
GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

FEATURE LEGEND

1. NATURE-INSPIRED LANDSCAPE
2. NATURE-INSPIRED PLAYGROUND
3. NATURE-INSPIRED SHORELINE
4. PIER/WATER ACCESS
5. PARKING (299 TOTAL 9-FT X 18-FT STALLS)
6. RAILROAD
7. TRAILS
8. AMPHITHEATER (SINGLE SIDED)
9. RECREATIONAL LAWN
10. COLLONADE
11. CELEBRATION LAWN
12. PRAIRIE WORKSHOP
13. OPEN AIR SHELTERS
14. COMMUNITY BUILDING
15. SCULPTURE GARDEN
16. WELCOME CENTER
17. DESTINATION PLAYGROUND
18. PEDESTRIAN OVERPASS
19. GATEWAY PARK
20. REALIGNED VEHICULAR ACCESS
21. BIOFILTER

0 50' 100' 200'
SCALE: 1" = 100'



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DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
OVERALL SITE LAYOUT

SHEET NUMBER:
C300

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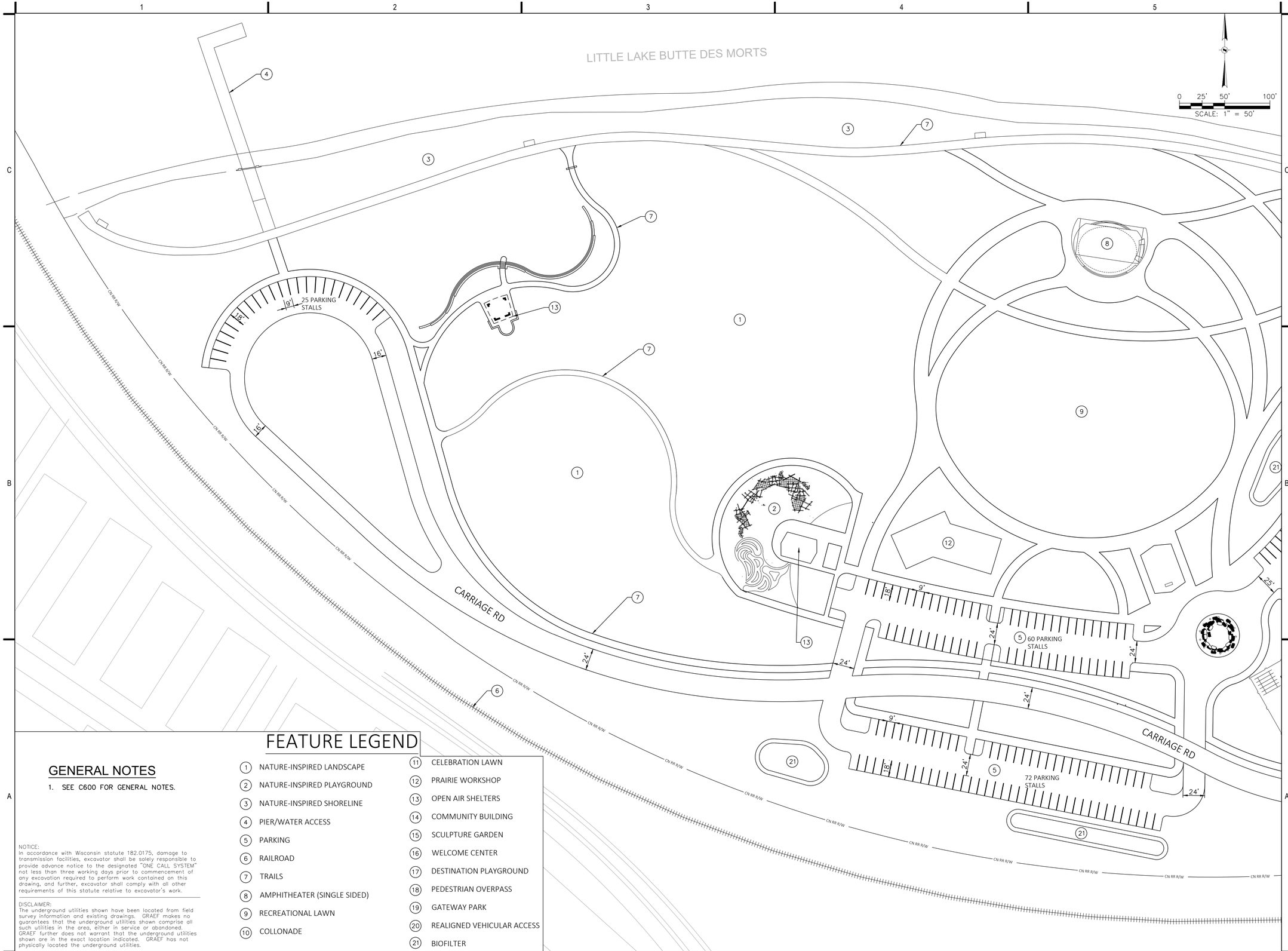
3/20/2025 10:11 AM



FEATURE LEGEND

1. NATURE-INSPIRED LANDSCAPE
2. NATURE-INSPIRED PLAYGROUND
3. NATURE-INSPIRED SHORELINE
4. PIER/WATER ACCESS
5. PARKING
6. RAILROAD
7. TRAILS
8. AMPHITHEATER (SINGLE SIDED)
9. RECREATIONAL LAWN
10. COLLONADE
11. CELEBRATION LAWN
12. PRAIRIE WORKSHOP
13. OPEN AIR SHELTERS
14. COMMUNITY BUILDING
15. SCULPTURE GARDEN
16. WELCOME CENTER
17. DESTINATION PLAYGROUND
18. PEDESTRIAN OVERPASS
19. GATEWAY PARK
20. REALIGNED VEHICULAR ACCESS
21. BIOFILTER

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CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
ENLARGED LAYOUT - WEST

SHEET NUMBER:
C301

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3/20/2025 10:11 AM

FEATURE LEGEND

1. NATURE-INSPIRED LANDSCAPE
2. NATURE-INSPIRED PLAYGROUND
3. NATURE-INSPIRED SHORELINE
4. PIER/WATER ACCESS
5. PARKING
6. RAILROAD
7. TRAILS
8. AMPHITHEATER (SINGLE SIDED)
9. RECREATIONAL LAWN
10. COLLONADE
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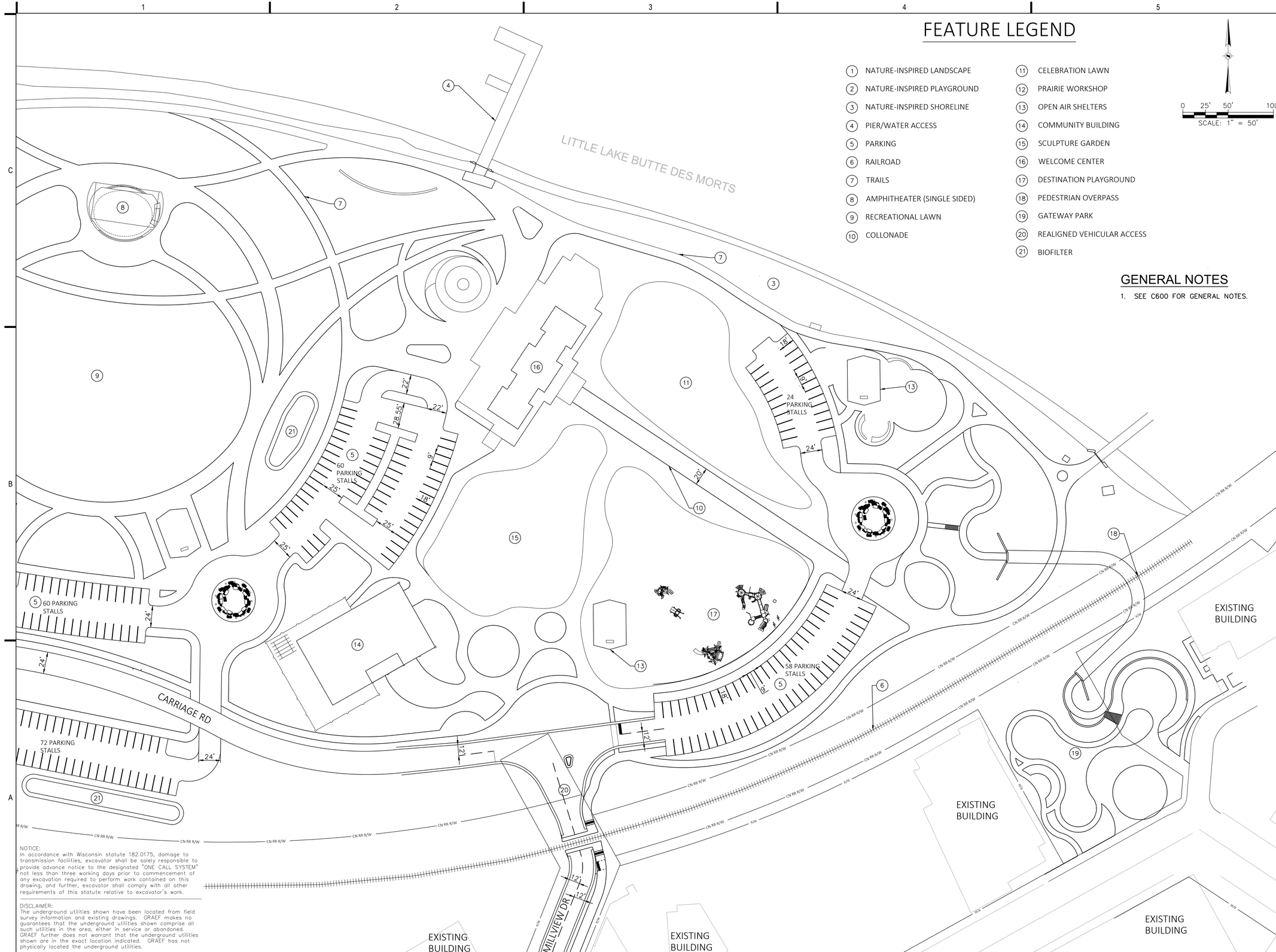
16. WELCOME CENTER
17. DESTINATION PLAYGROUND
18. PEDESTRIAN OVERPASS
19. GATEWAY PARK
20. REALIGNED VEHICULAR ACCESS
21. BIOFILTER

0 25' 50' 100'
SCALE: 1" = 50'

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.



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APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
ENLARGED LAYOUT - EAST

SHEET NUMBER:
C302

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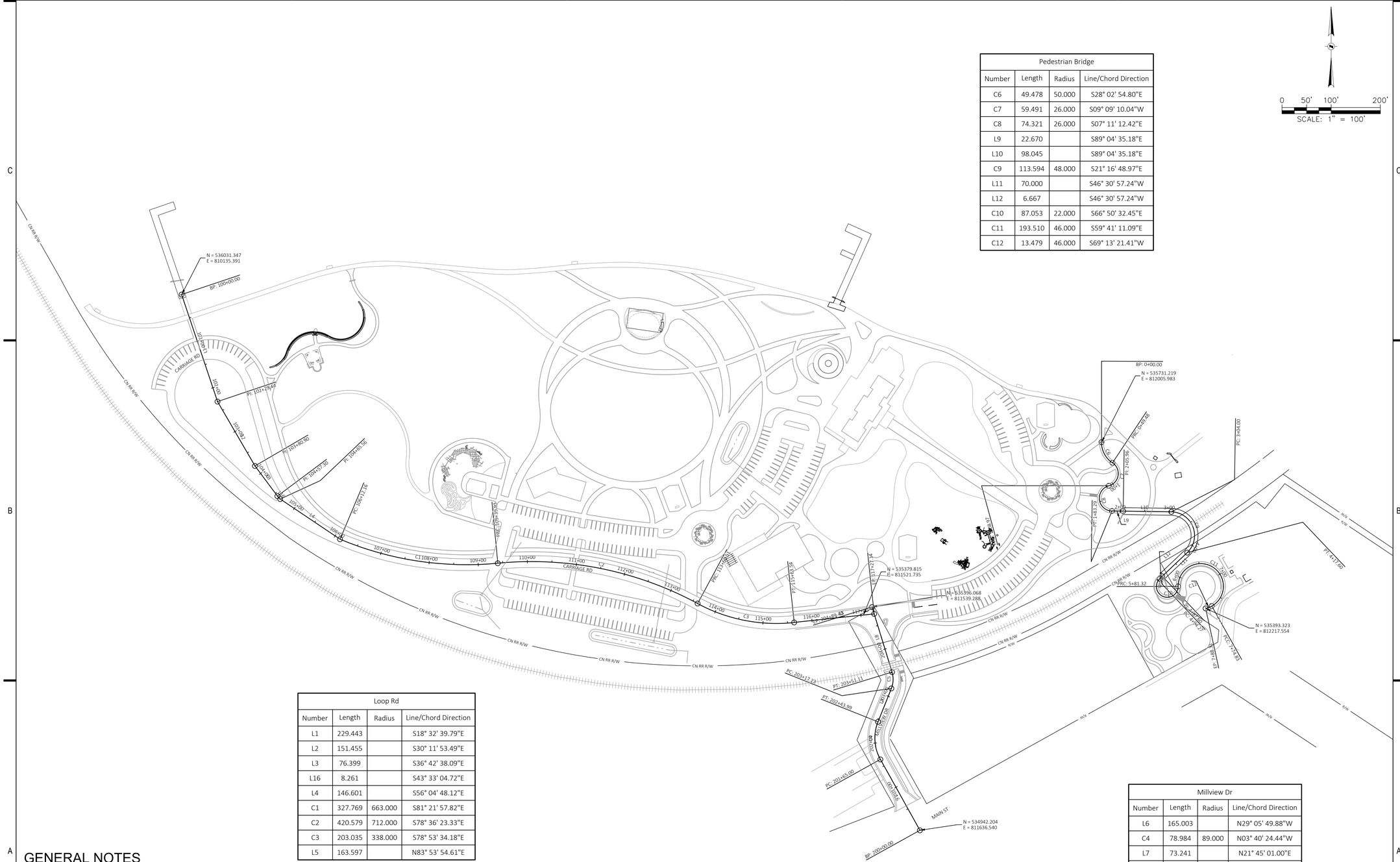
3/20/2025 10:11 AM

Pedestrian Bridge			
Number	Length	Radius	Line/Chord Direction
C6	49.478	50.000	S28° 02' 54.80"E
C7	59.491	26.000	S09° 09' 10.04"W
C8	74.321	26.000	S07° 11' 12.42"E
L9	22.670		S89° 04' 35.18"E
L10	98.045		S89° 04' 35.18"E
C9	113.594	48.000	S21° 16' 48.97"E
L11	70.000		S46° 30' 57.24"W
L12	6.667		S46° 30' 57.24"W
C10	87.053	22.000	S66° 50' 32.45"E
C11	193.510	46.000	S59° 41' 11.09"E
C12	13.479	46.000	S69° 13' 21.41"W



Loop Rd			
Number	Length	Radius	Line/Chord Direction
L1	229.443		S18° 32' 39.79"E
L2	151.455		S30° 11' 53.49"E
L3	76.399		S36° 42' 38.09"E
L16	8.261		S43° 33' 04.72"E
L4	146.601		S56° 04' 48.12"E
C1	327.769	663.000	S81° 21' 57.82"E
C2	420.579	712.000	S78° 36' 23.33"E
C3	203.035	338.000	S78° 53' 34.18"E
L5	163.597		N83° 53' 54.61"E

Millview Dr			
Number	Length	Radius	Line/Chord Direction
L6	165.003		N29° 05' 49.88"W
C4	78.984	89.000	N03° 40' 24.44"W
L7	73.241		N21° 45' 01.00"E
C5	33.884	50.000	N02° 20' 09.76"E
L8	138.284		N17° 04' 41.47"W

GENERAL NOTES

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SCALE:	AS NOTED

SHEET TITLE:
ALIGNMENT OVERVIEW

SHEET NUMBER:
C310

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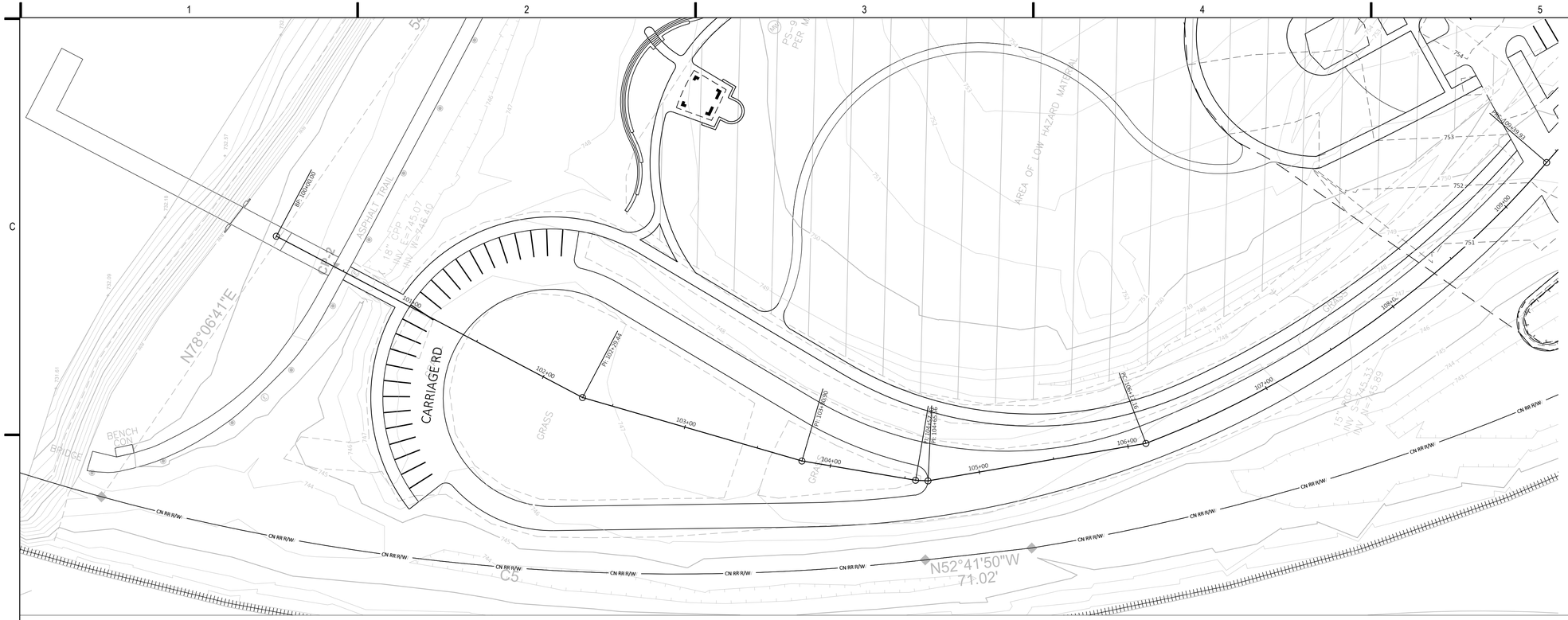
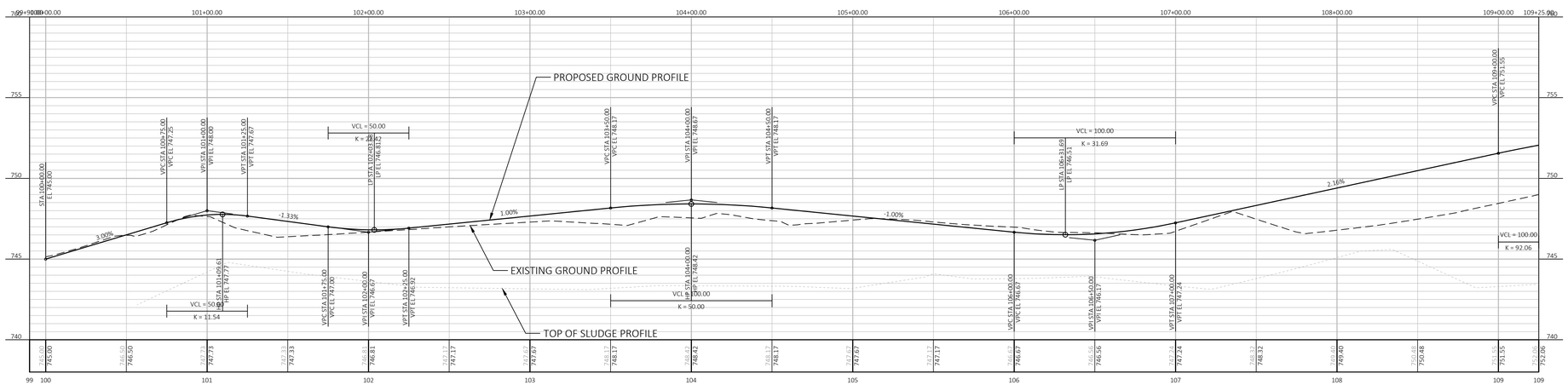
3/20/2025 10:11 AM



Profile View of Carriage Rd
V Scale : 4
H Scale : 40
Exaggeration : 10



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*SLUDGE LAYTER:
ELEVATIONS FOR THE TOP OF SLUDGE WERE ESTIMATED FROM:
1.) HISTORICAL DATA RECEIVED FROM WDNR FOR APPROXIMATELY 100 SOIL BORINGS CONDUCTED BETWEEN 1973 AND 1999.
2.) THE SOIL BORINGS CONDUCTED BY ECS IN DEC. 2018 AND CORRESPONDING GEOTECHNICAL INVESTIGATION REPORT COMPLETED BY SEH IN AUG. 2019.

**LANDFILL CAP THICKNESS
PER CONVERSATIONS HELD WITH WDNR IN PRELIMINARY DESIGN PHASE (FALL/WINTER 2024), THE THICKNESS OF THE LANDFILL CAP FROM THE TOP OF SLUDGE IS APPROXIMATELY 2-FT.

GRAEF
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920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

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DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
CARRIAGE ROAD PLAN & PROFILE
STA 100+00 - 109+00

SHEET NUMBER:
C320

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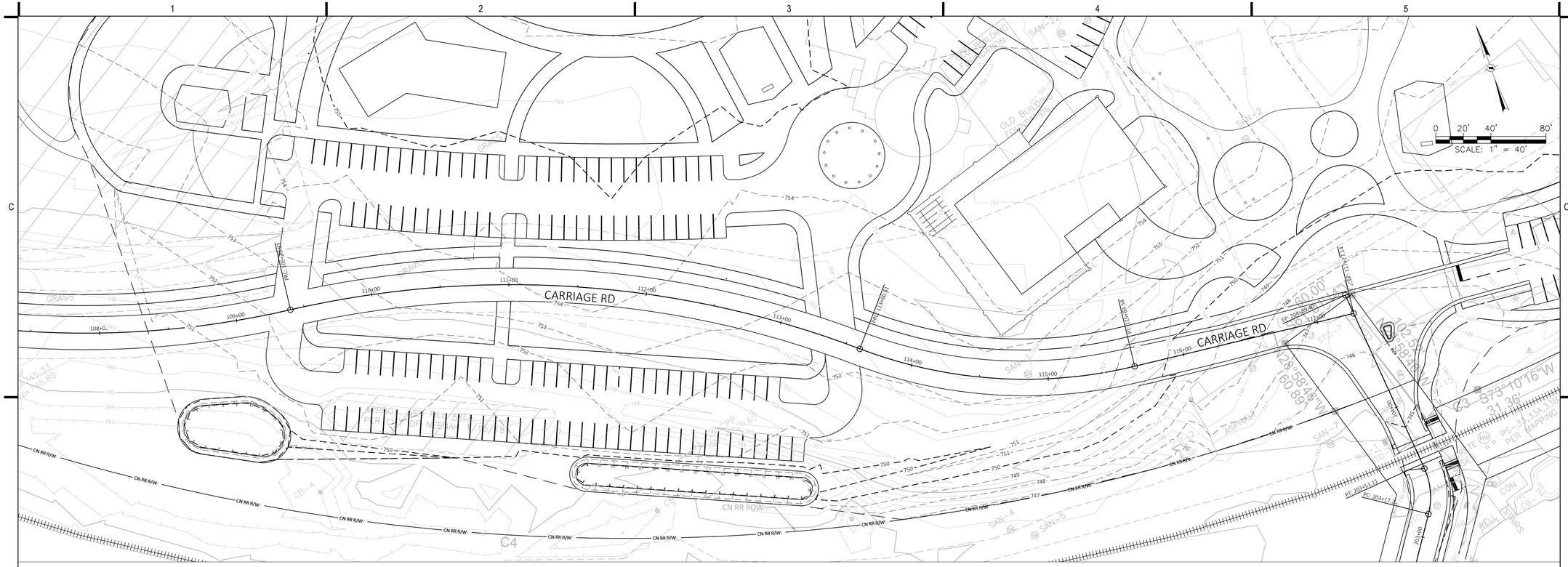
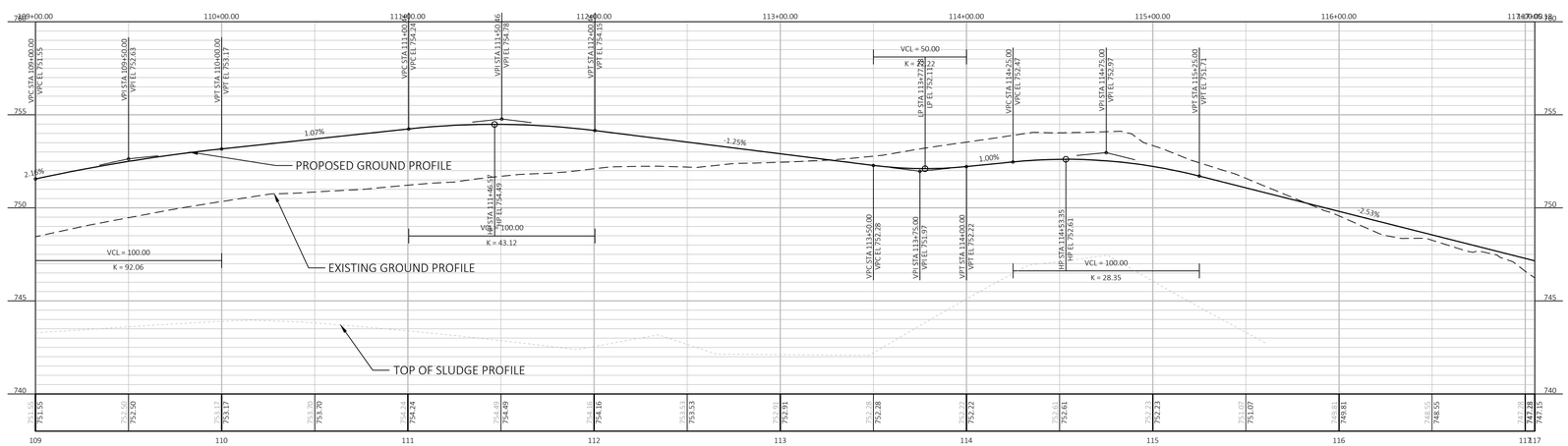
3/20/2025 10:11 AM



Profile View of Carriage Rd
V Scale : 4
H Scale : 40
Exaggeration : 10



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GRAEF
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920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

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CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
CARRIAGE ROAD PLAN & PROFILE
STA 109+00 - 117+05

SHEET NUMBER:
C321

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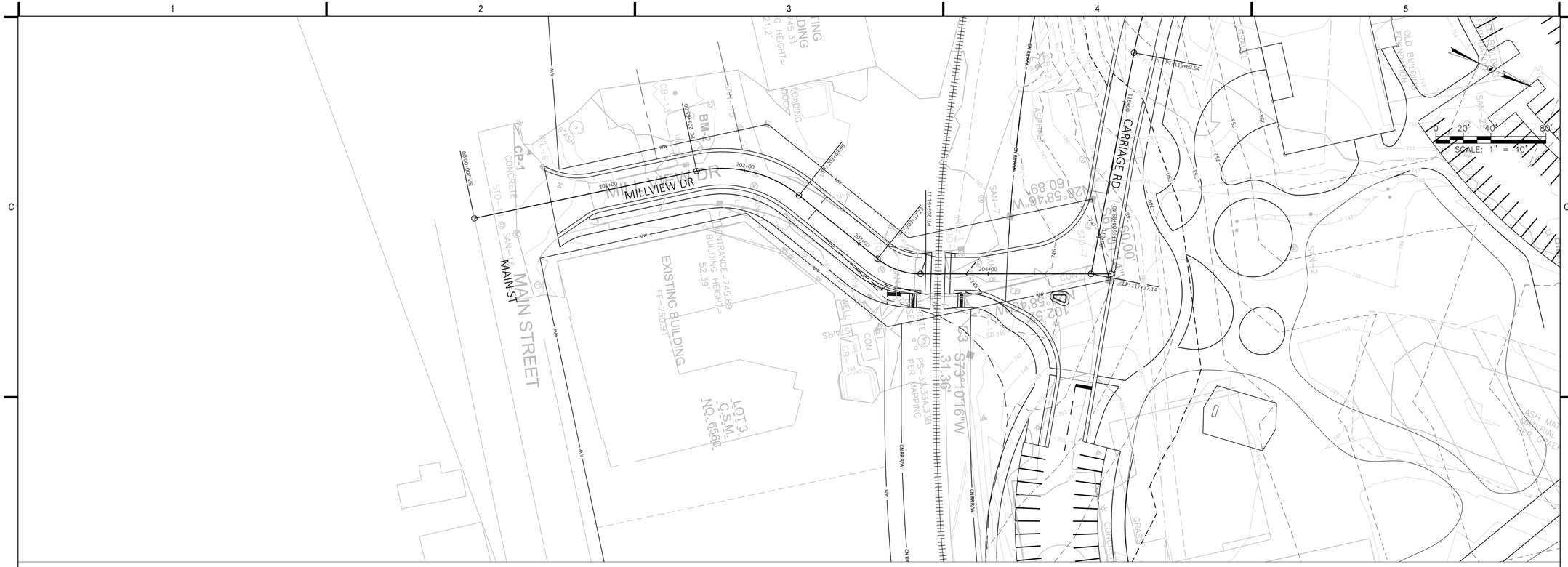
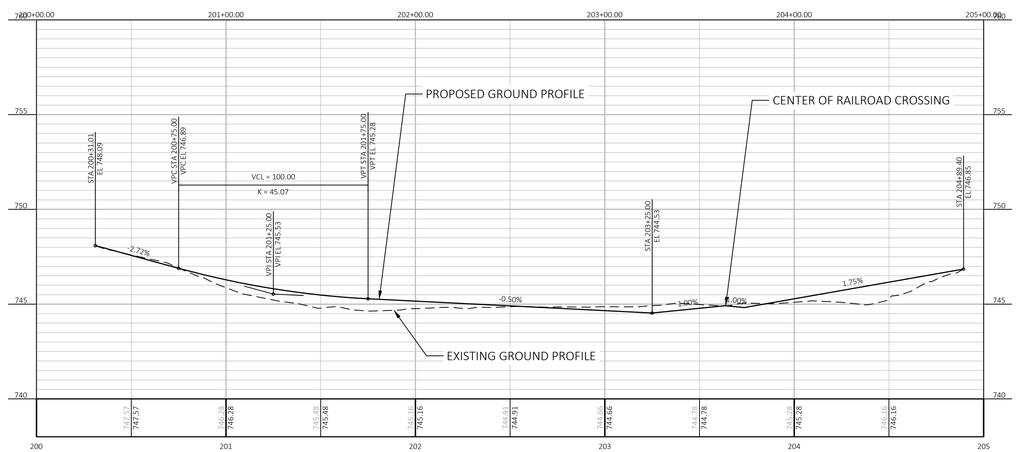


Profile View of Millview Dr
V Scale : 4
H Scale : 40
Exaggeration : 10



NOTE: MILLVIEW PLAN AND PROFILE PRELIMINARY ONLY. TO BE REFINED DURING FINAL DESIGN PHASE.

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3/20/2025 10:12 AM

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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

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PROJECT INFORMATION:

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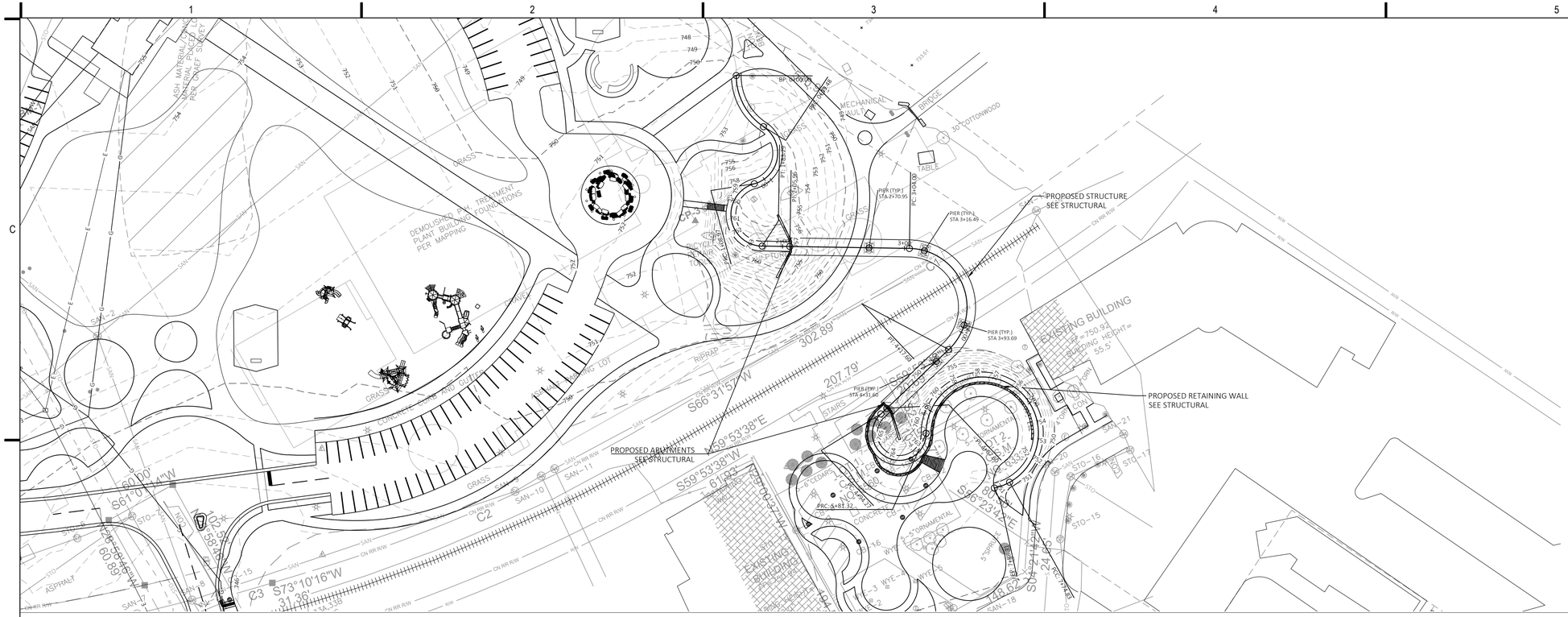
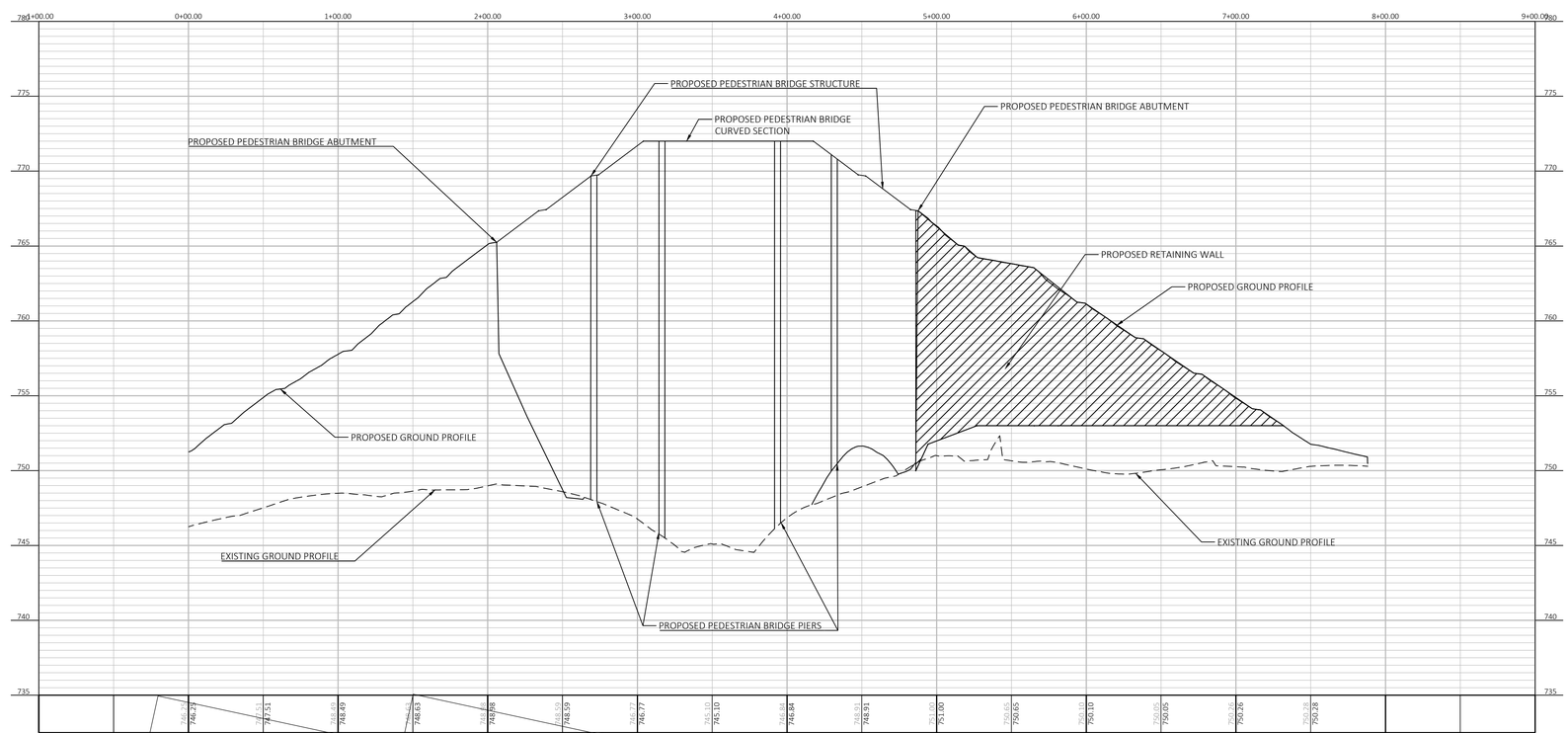
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
MILLVIEW DRIVE PLAN & PROFILE
STA 2+00 - 6+40

SHEET NUMBER:
C322



Profile View of Pedestrian Bridge
V Scale : 4
H Scale : 40
Exaggeration : 10



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DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
PEDESTRIAN BRIDGE PLAN & PROFILE

SHEET NUMBER:
C323

X:\GB\2024\20240286\Design\Civil\00\C_00_C323_Ped BridgePlan&Profile
3/20/2025 10:12 AM

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- LIMITS OF PROPOSED GRADING

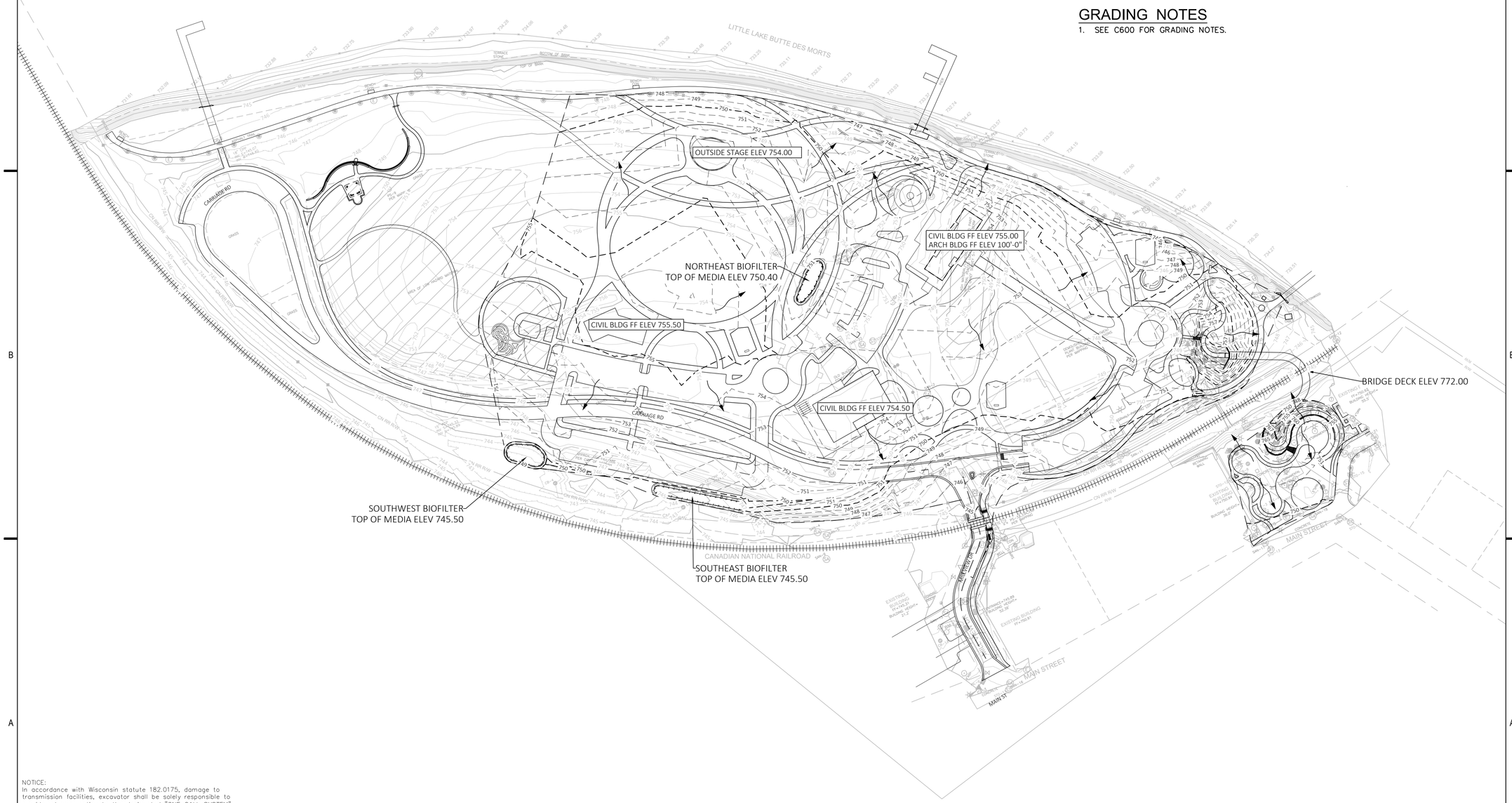
0 50' 100' 200'
SCALE: 1" = 100'

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

GRADING NOTES

1. SEE C600 FOR GRADING NOTES.



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X:\GB\2024\20240286\Design\Civil\00\C_00_C400_OverallGrading
3/20/2025 10:12 AM

GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

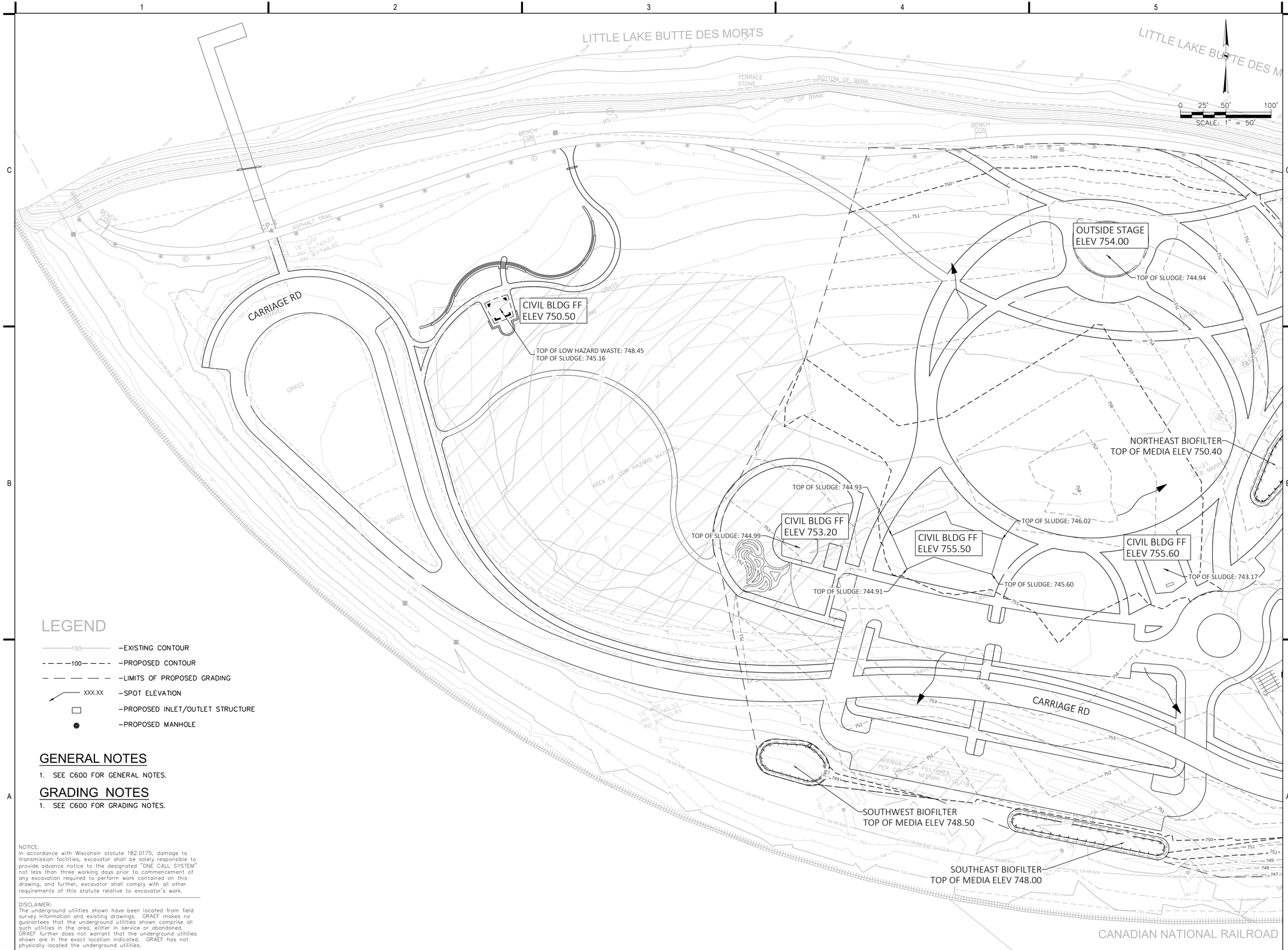
PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
OVERALL GRADING

SHEET NUMBER:
C400



LEGEND

- 100 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- LIMITS OF PROPOSED GRADING
- XXX.XX — SPOT ELEVATION
- PROPOSED INLET/OUTLET STRUCTURE
- PROPOSED MANHOLE

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

GRADING NOTES

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X:\GB\2024\20240286\Design\Civil\00\C_00_C401_EnlargedGrading
3/20/2025 10:12 AM

GRAEF
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Suite 201
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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

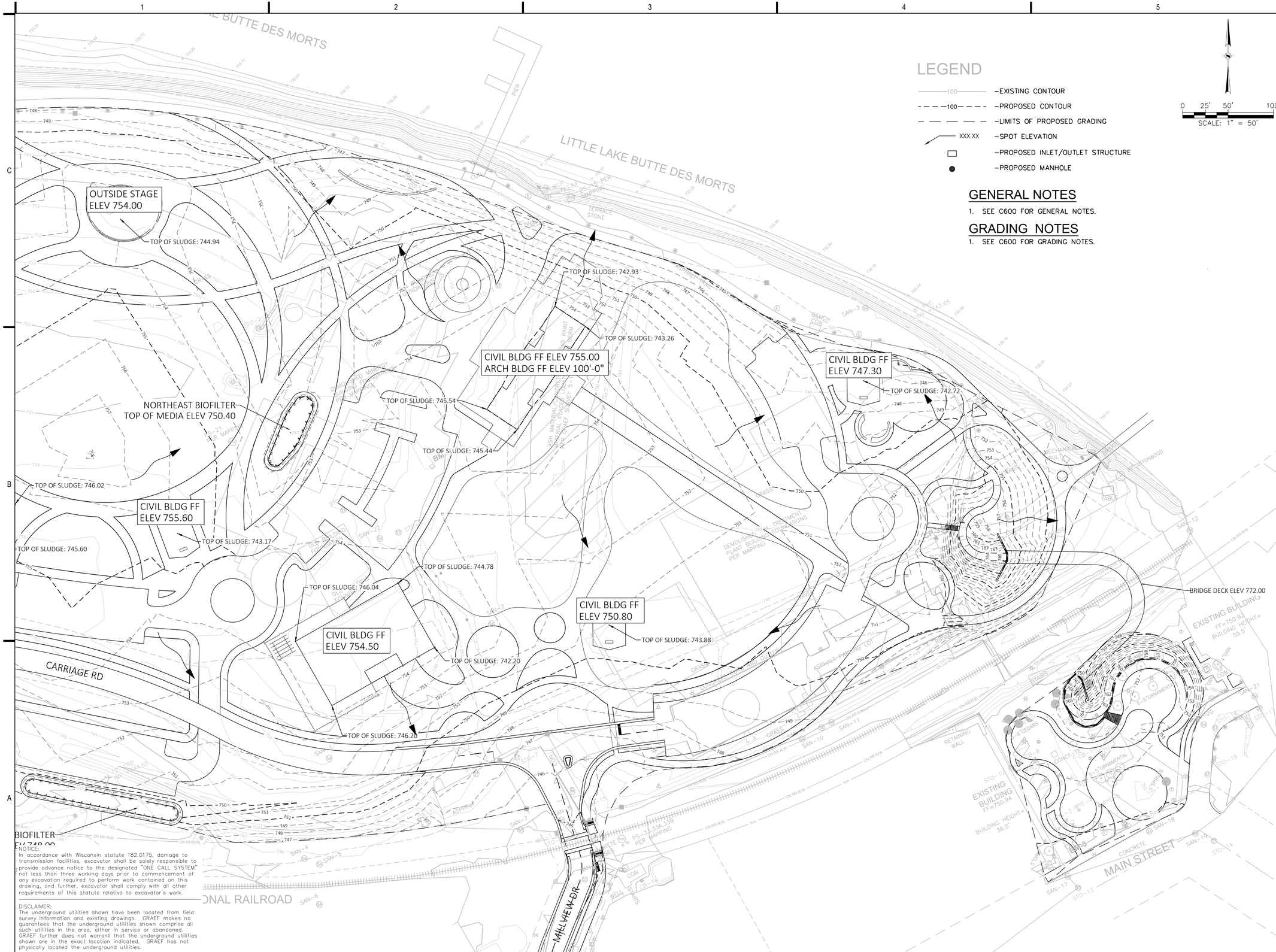
NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
ENLARGED GRADING - WEST

SHEET NUMBER:
C401



LEGEND

100	–EXISTING CONTOUR
100	–PROPOSED CONTOUR
	–LIMITS OF PROPOSED GRADING
XXX.XX	–SPOT ELEVATION
	–PROPOSED INLET/OUTLET STRUCTURE
	–PROPOSED MANHOLE

0 25' 50' 100'
SCALE: 1" = 50'

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

GRADING NOTES

1. SEE C600 FOR GRADING NOTES.

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PRELIMINARY - NOT FOR CONSTRUCTION

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	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

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DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
ENLARGED GRADING - EAST

SHEET NUMBER:
C402

X:\GB\2024\20240286\Design\Civil\00\C_00_C401_EnlargedGrading
3/20/2025 10:12 AM

LEGEND

STM	-PROPOSED STORM SEWER
SAN	-PROPOSED SANITARY SEWER
W	-PROPOSED WATER MAIN
E	-PROPOSED ELECTRICAL
G	-PROPOSED GAS
●	-PROPOSED MANHOLE
■	-PROPOSED CATCH BASIN
•	-PROPOSED CLEANOUT
⊗	-PROPOSED GATE VALVE
	-PROPOSED HYDRANT
	-PROPOSED UTILITY PLUG

0 50' 100' 200'

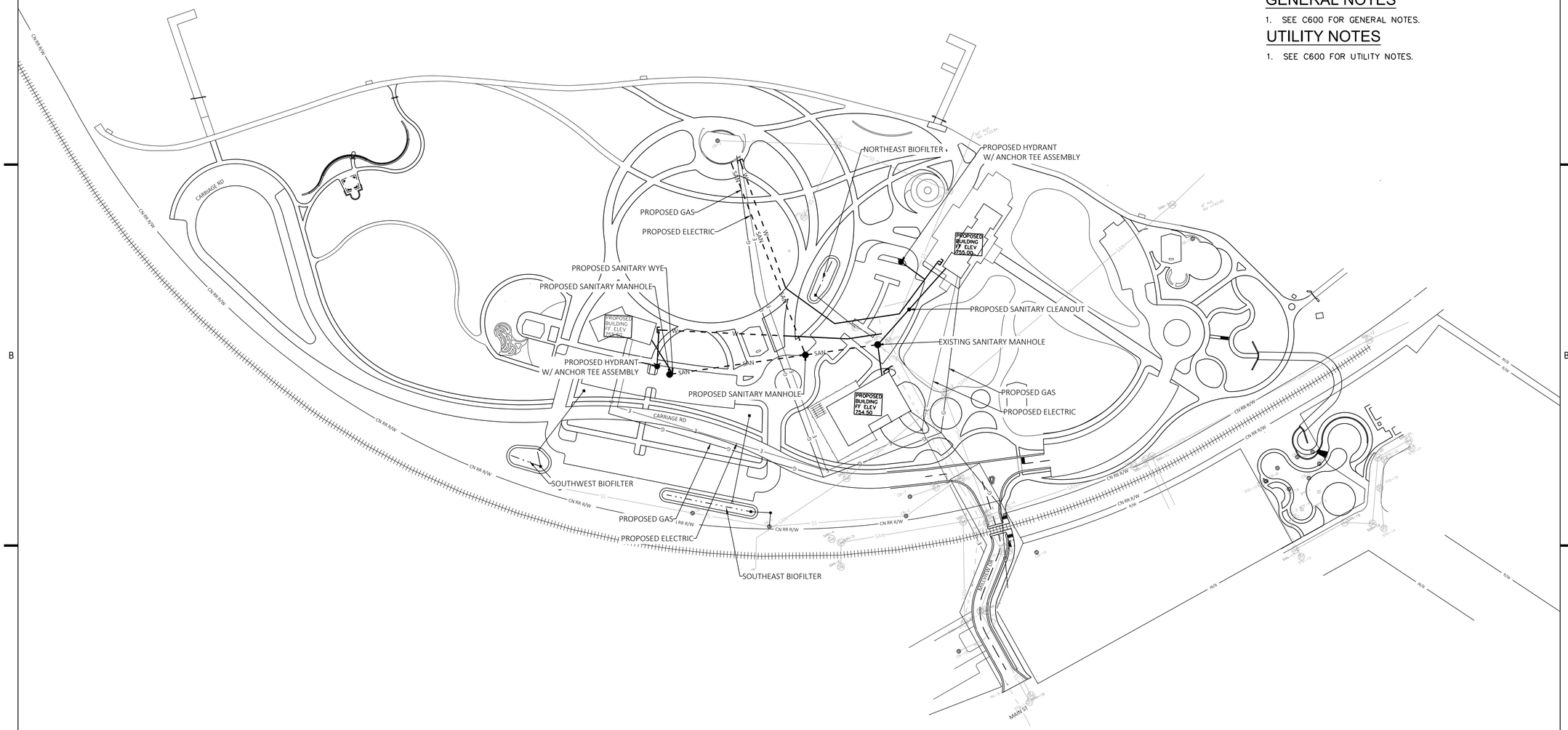
SCALE: 1" = 100'

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.



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X:\GB\2024\20240286\Design\Civil\00\C_00_C500_OverallUtilities
3/20/2025 10:12 AM

GRAEF

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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:

ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:

OVERALL UTILITIES

SHEET NUMBER:

C500

LEGEND

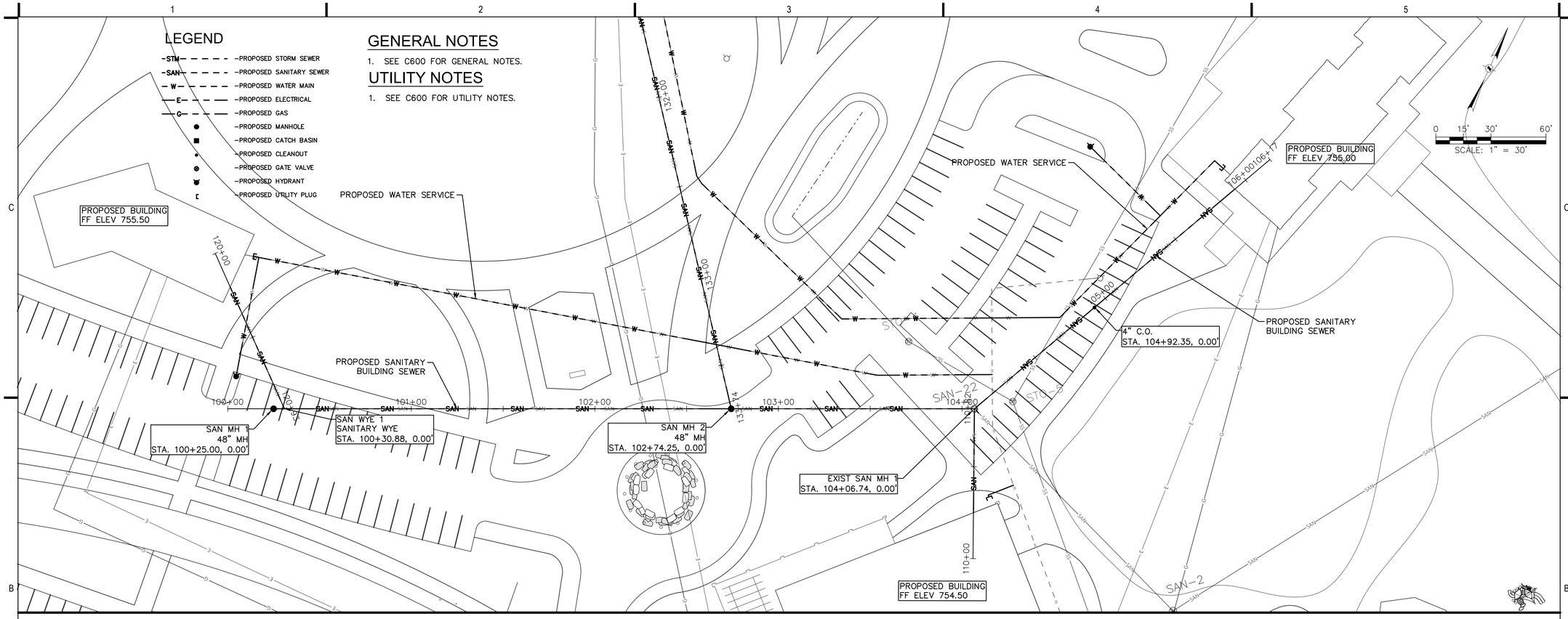
- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
- G — PROPOSED GAS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED CLEANOUT
- PROPOSED GATE VALVE
- PROPOSED HYDRANT
- PROPOSED UTILITY PLUG

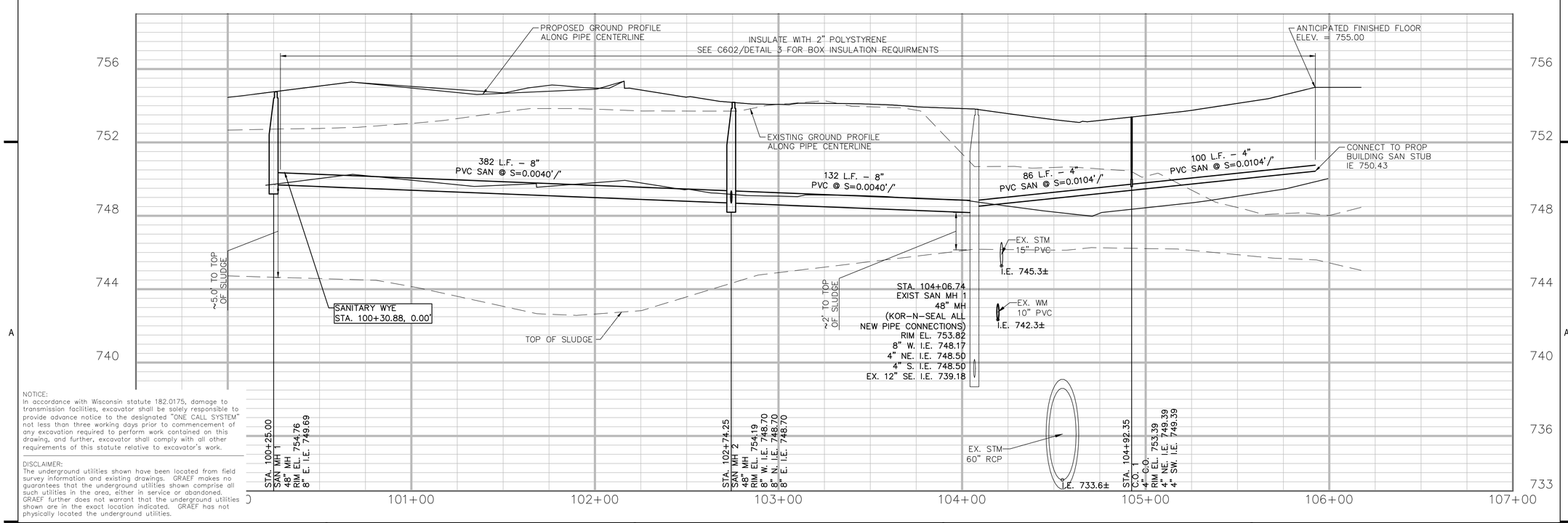
GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.





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PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
SANITARY SEWER PLAN AND PROFILE

SHEET NUMBER:
C501

X:\GB\2024\20240286\Design\Civil\00\C_00_C501_Sanitary Sewer Plan&Profile
3/20/2025 10:12 AM

LEGEND

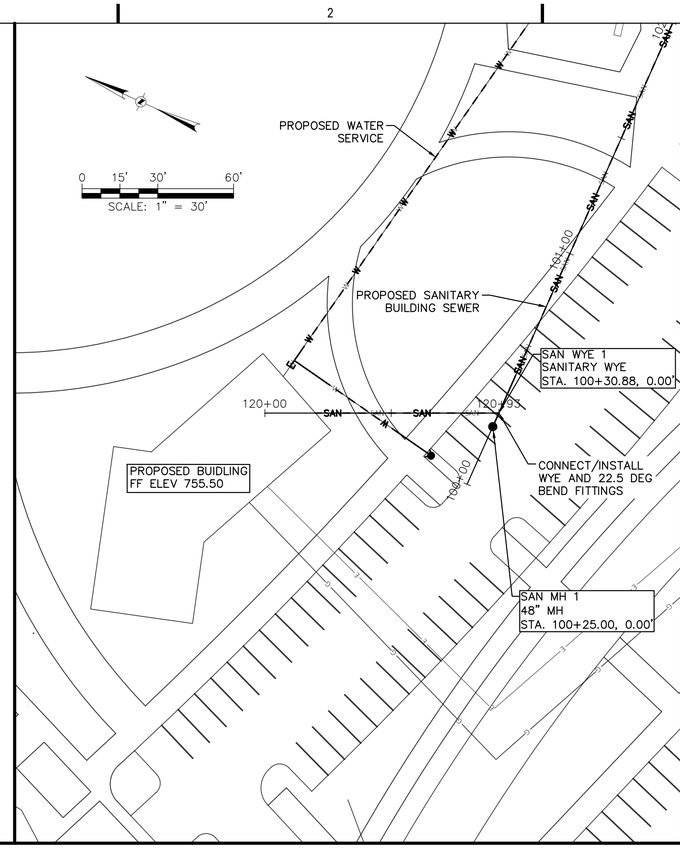
- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
- G — PROPOSED GAS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED CLEANOUT
- PROPOSED GATE VALVE
- PROPOSED HYDRANT
- PROPOSED UTILITY PLUG

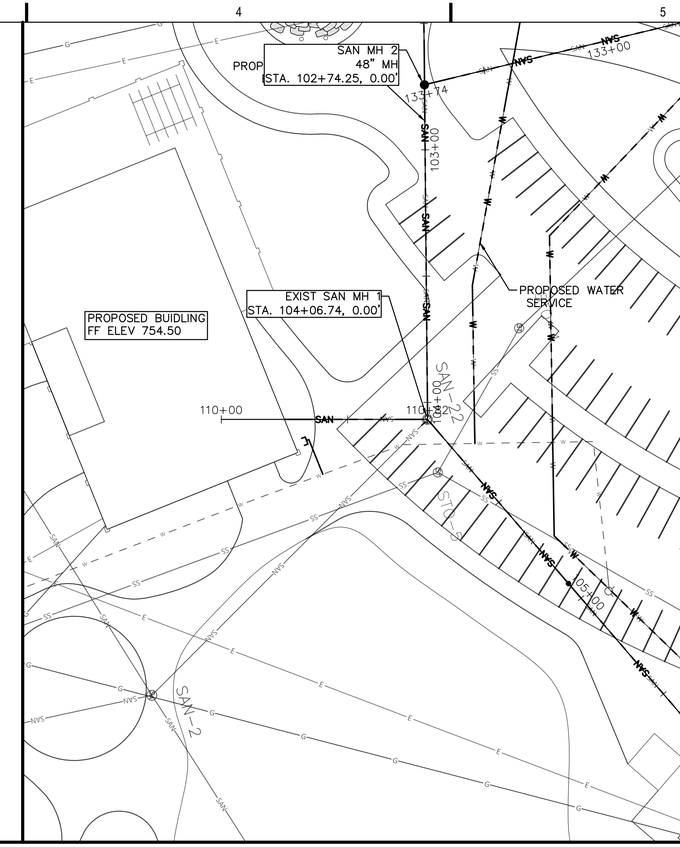
GENERAL NOTES

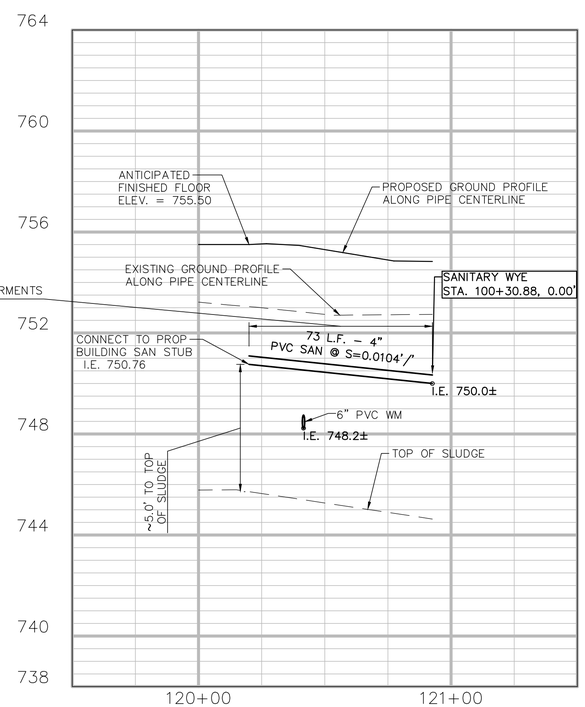
1. SEE C600 FOR GENERAL NOTES.

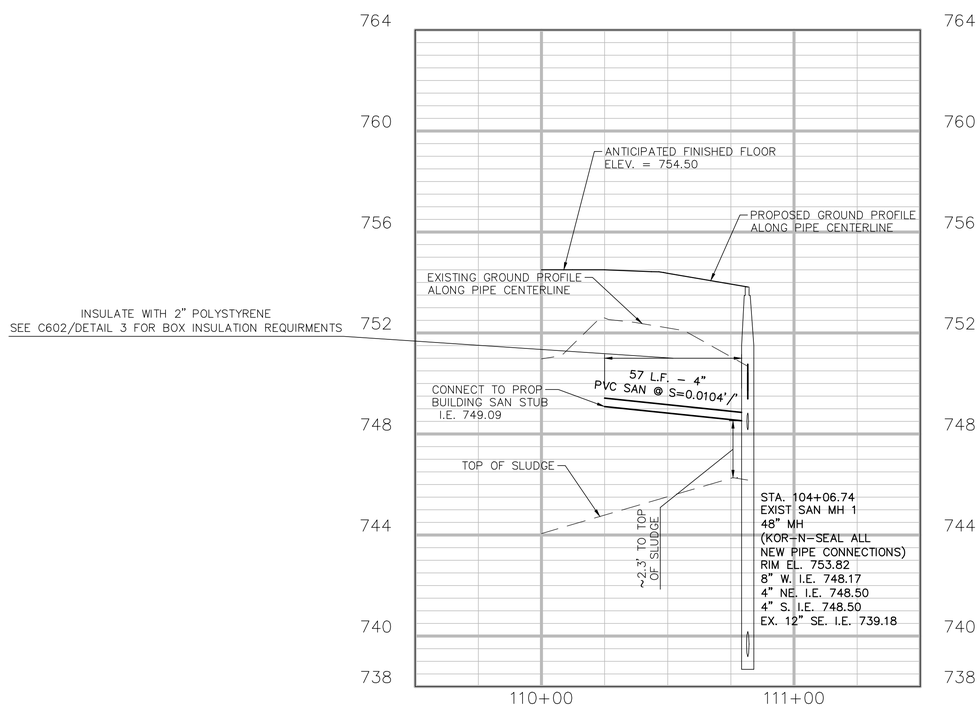
UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.









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920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
SANITARY SEWER PLAN AND PROFILE

SHEET NUMBER:
C502

X:\GB\2024\20240286\Design\Civil\00\C_00_C501_Sanitary Sewer Plan&Profile
3/20/2025 10:12 AM

LEGEND

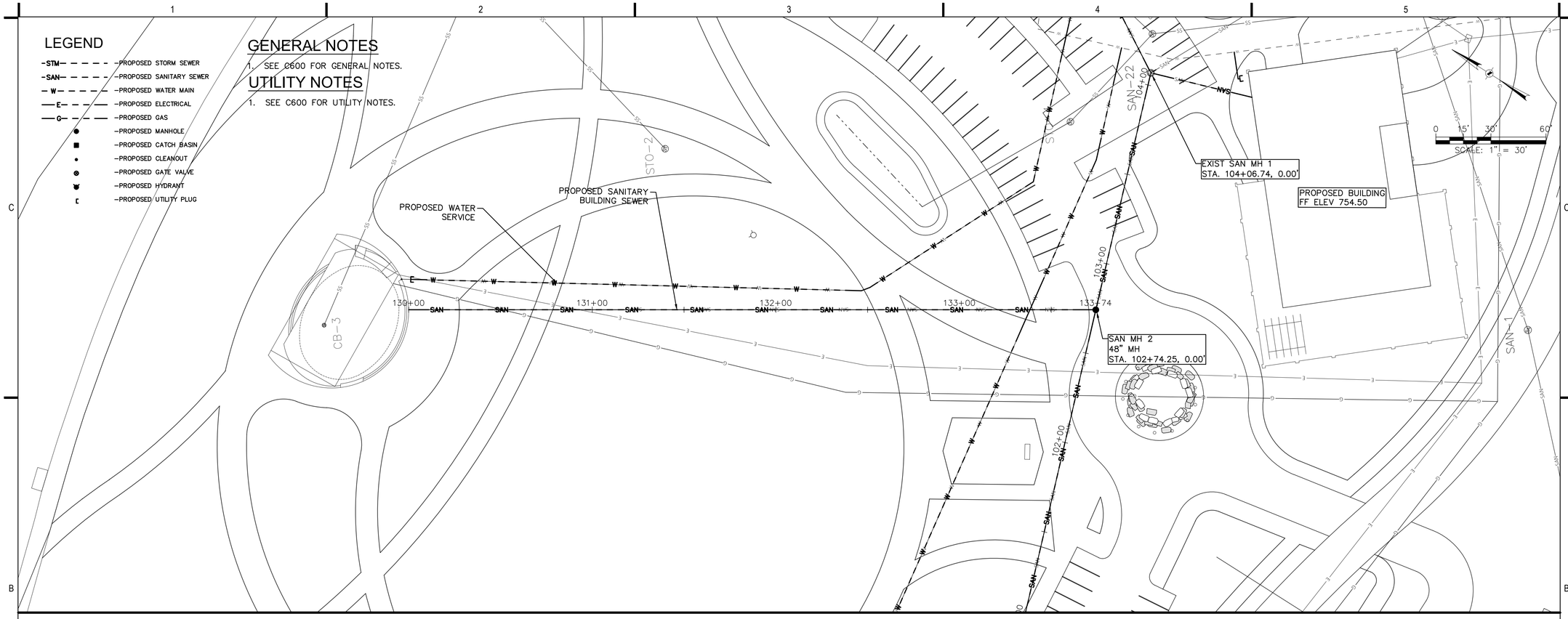
- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
- G — PROPOSED GAS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED CLEANOUT
- PROPOSED GATE VALVE
- PROPOSED HYDRANT
- PROPOSED UTILITY PLUG

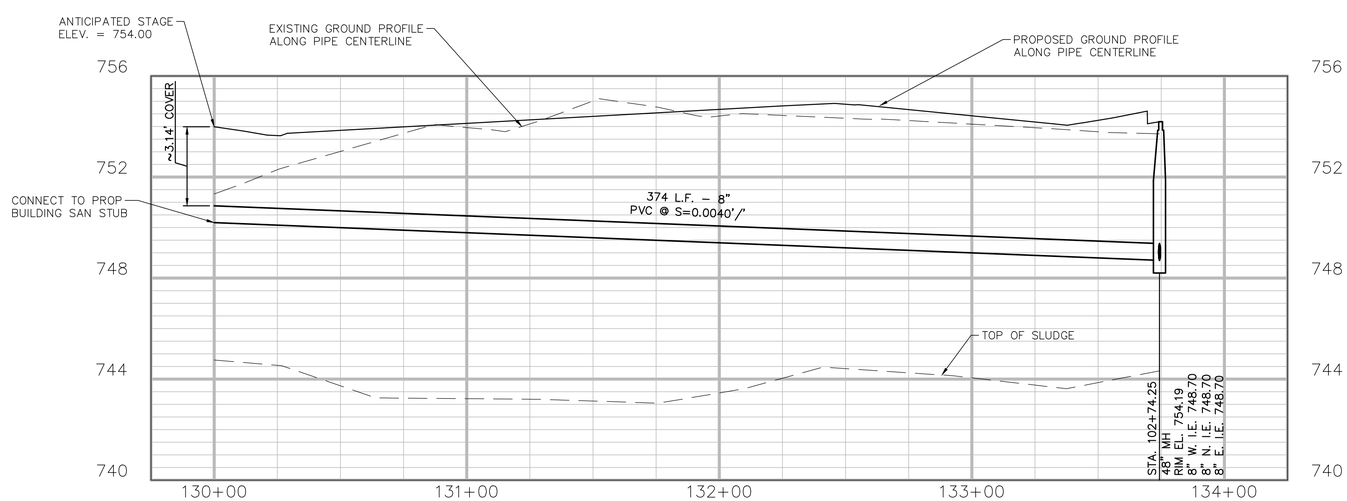
GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.





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	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
SANITARY SEWER PLAN AND PROFILE

SHEET NUMBER:
C503

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3/20/2025 10:12 AM

LEGEND

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- SAN — PROPOSED SANITARY SEWER
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- E — PROPOSED ELECTRICAL
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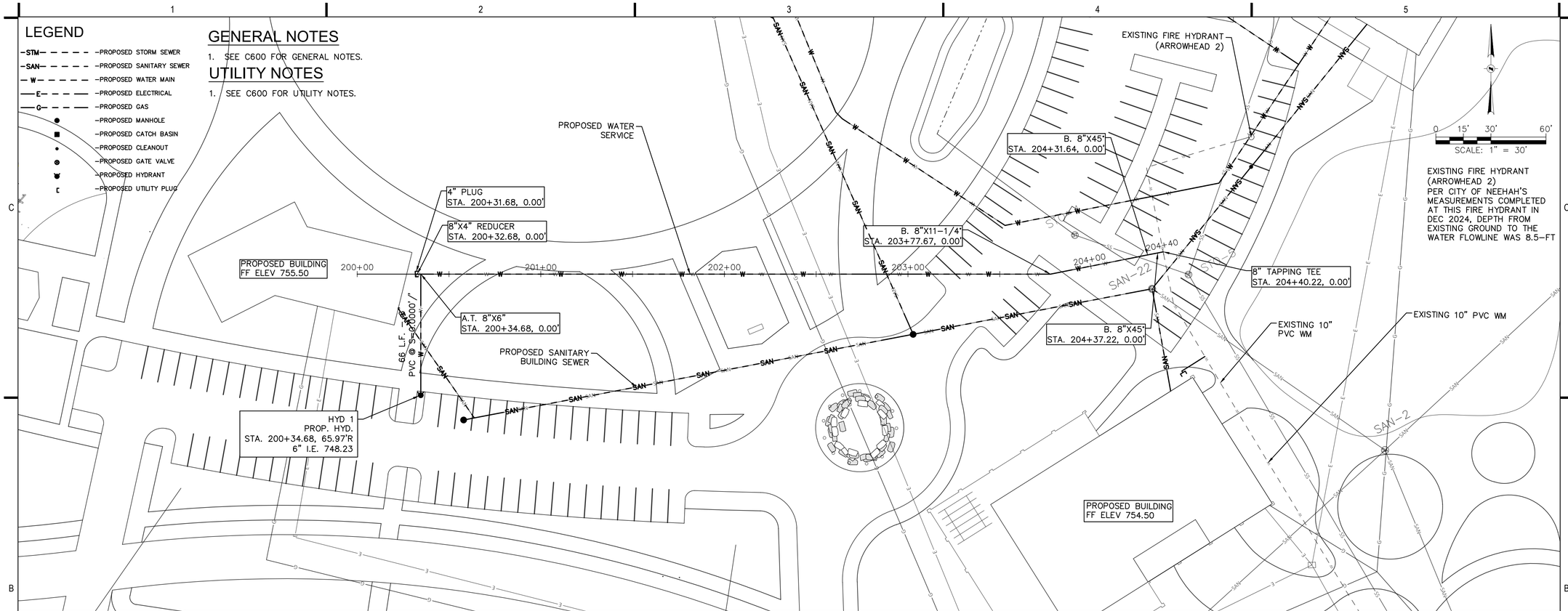
- PROPOSED HYDRANT
- PROPOSED UTILITY PLUG

GENERAL NOTES

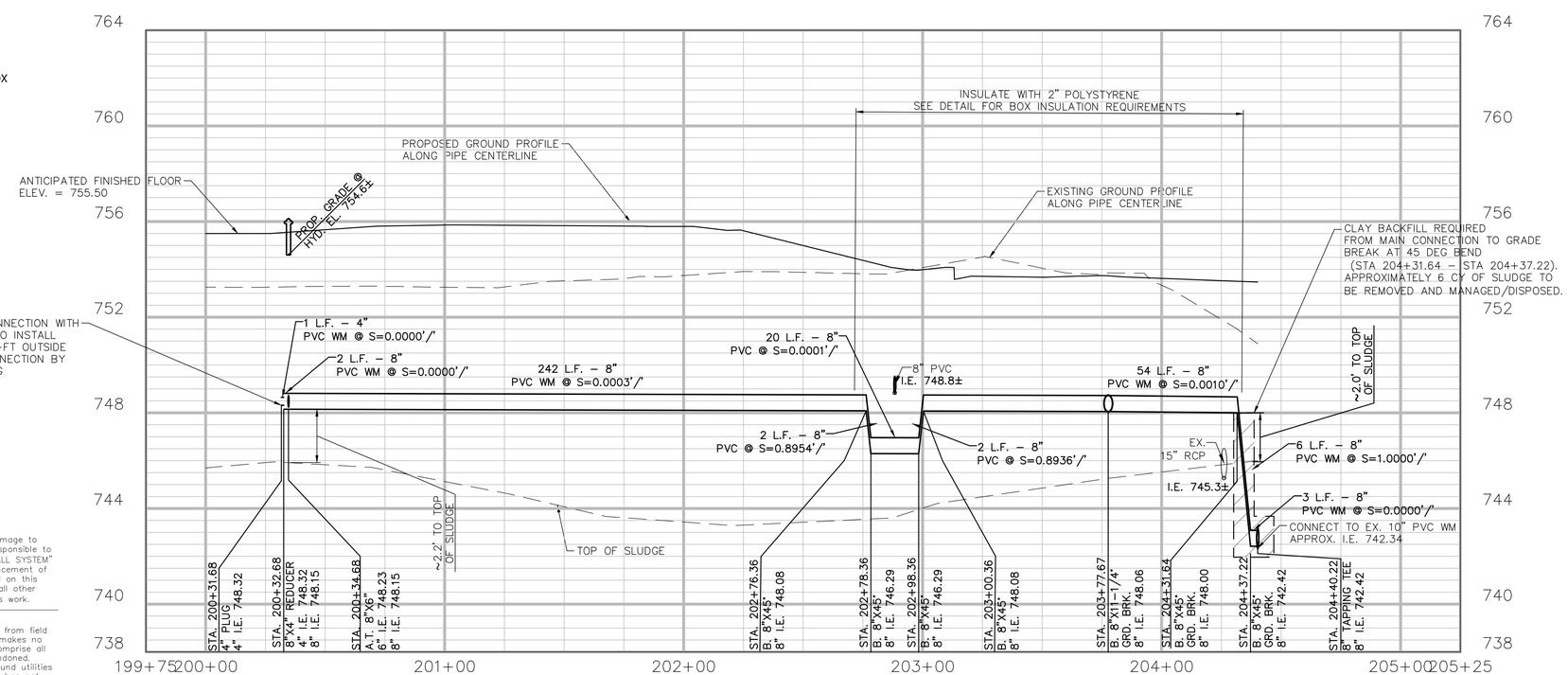
1. SEE C600 FOR GENERAL NOTES.

UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.



ALL PROPOSED WATER MAIN ABOVE THE SLUDGE LAYER IS TO BE INSULATED WITH 2" POLYSTYRENE WHENEVER LESS THAN 5.5-FT OF COVER IS PRESENT UPON FINAL GRADING. SEE C602/DETAIL 3 FOR BOX INSULATION REQUIREMENTS.



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WATER INVERT ELEV. ESTIMATED FROM CITY OF NEEHAH'S DEPTH MEASUREMENTS COMPLETED AT EXISTING FIRE HYDRANT (ARROWHEAD 2) AS NOTED ABOVE.

GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
WATER MAIN PLAN AND PROFILE

SHEET NUMBER:
C504

X:\GB\2024\20240286\Design\Civil\00\C_00_C504_Water Plan&Profile
3/20/2025 10:13 AM

LEGEND

- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
- G — PROPOSED GAS
- PROPOSED MANHOLE
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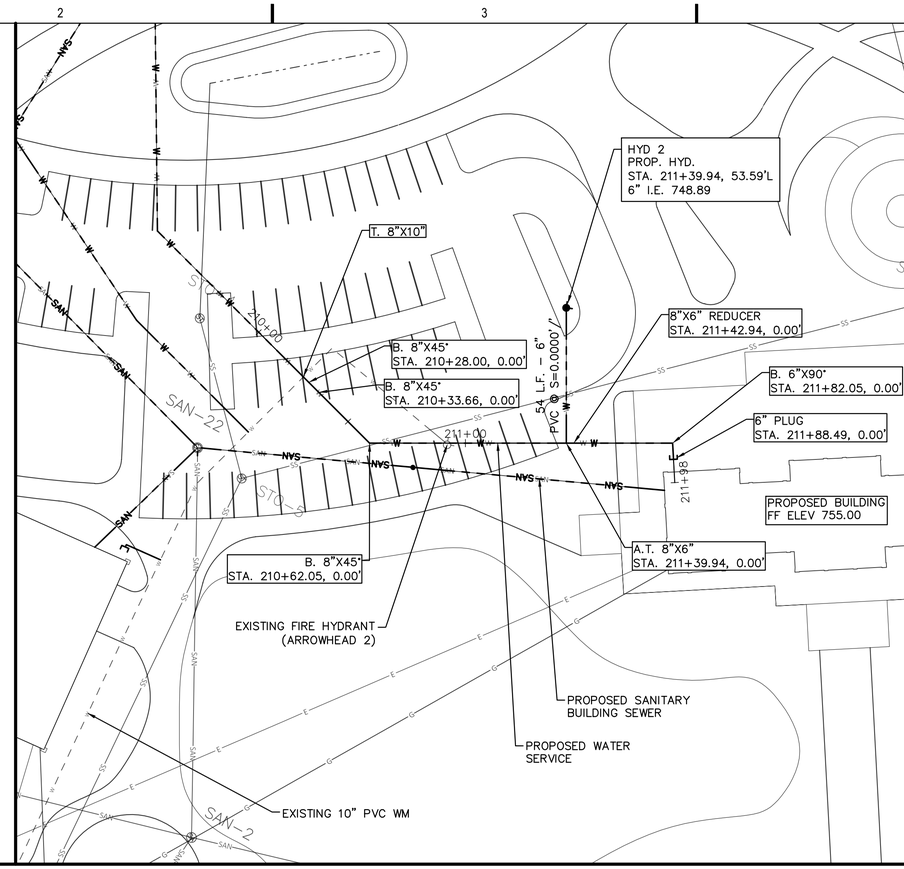
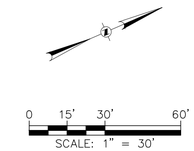
GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

UTILITY NOTES

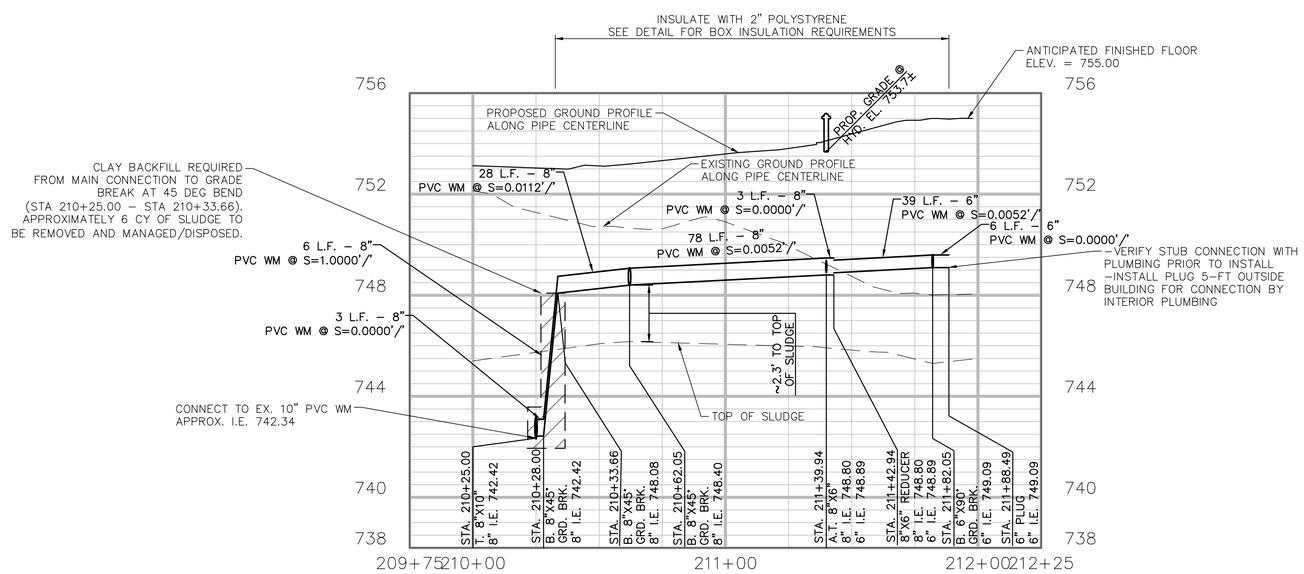
1. SEE C600 FOR UTILITY NOTES.





EXISTING FIRE HYDRANT (ARROWHEAD 2) PER CITY OF NEEHAH'S MEASUREMENTS COMPLETED AT THIS FIRE HYDRANT IN DEC 2024, DEPTH FROM EXISTING GROUND TO THE WATER FLOWLINE WAS 8.5–FT

ALL PROPOSED WATER MAIN ABOVE THE SLUDGE LAYER IS TO BE INSULATED WITH 2" POLYSTYRENE WHENEVER LESS THAN 5.5–FT OF COVER IS PRESENT UPON FINAL GRADING. SEE C602/DETAIL 3 FOR BOX INSULATION REQUIREMENTS.



WATER INVERT ELEV. ESTIMATED FROM CITY OF NEEHAH'S DEPTH MEASUREMENTS COMPLETED AT EXISTING FIRE HYDRANT (ARROWHEAD 2) AS NOTED ABOVE.

NOTICE:
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[redacted]

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

[redacted]

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PRELIMINARY - NOT FOR CONSTRUCTION

[redacted] PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

[redacted] SHEET TITLE:
WATER MAIN PLAN AND PROFILE

[redacted] SHEET NUMBER:

C505

X:\GB\2024\202402286\Design\Civil\00\C_00_C504_Water Plan&Profile
3/20/2025 10:13 AM

LEGEND

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- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
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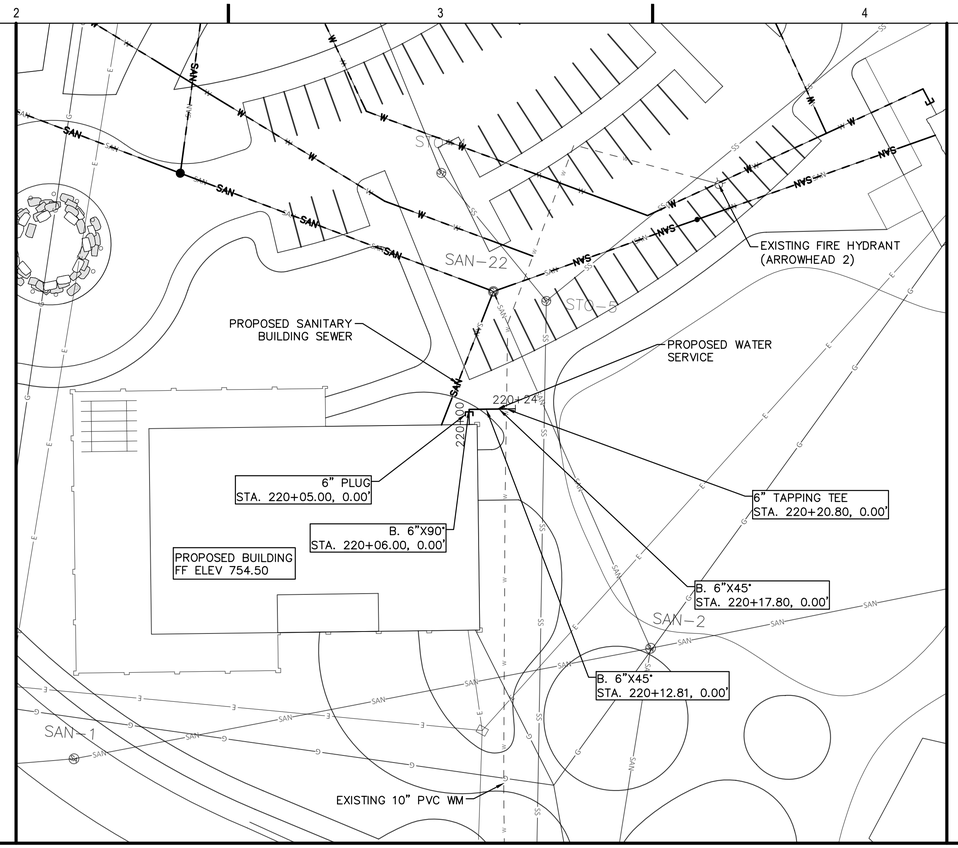
UTILITY NOTES

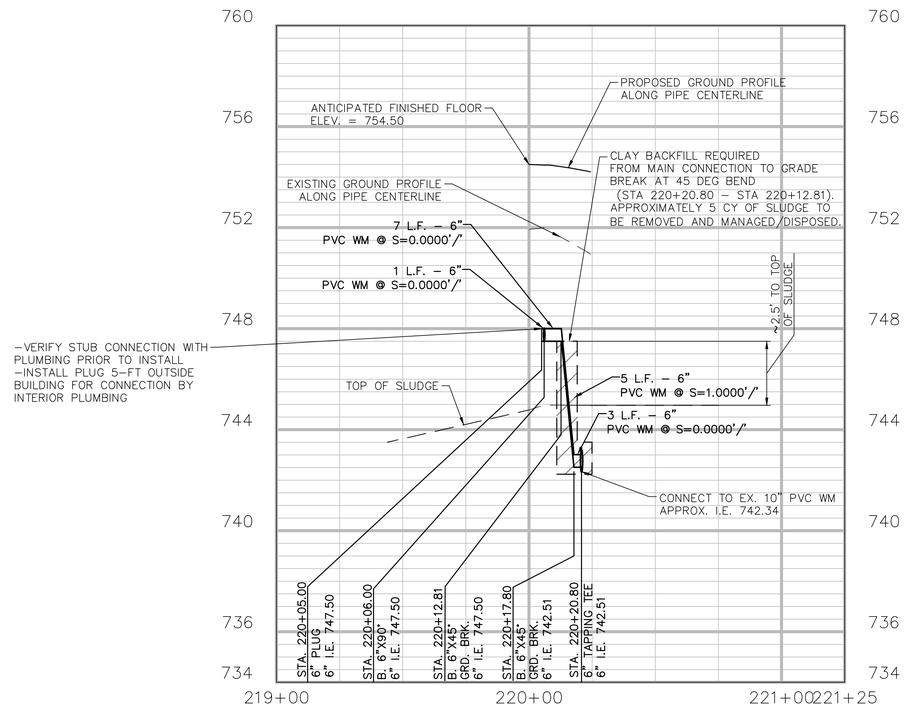
1. SEE C600 FOR UTILITY NOTES.



0 15' 30' 60'
SCALE: 1" = 30'

EXISTING FIRE HYDRANT (ARROWHEAD 2) PER CITY OF NEEHAH'S MEASUREMENTS COMPLETED AT THIS FIRE HYDRANT IN DEC 2024, DEPTH FROM EXISTING GROUND TO THE WATER FLOWLINE WAS 8.5-FT

ALL PROPOSED WATER MAIN ABOVE THE SLUDGE LAYER IS TO BE INSULATED WITH 2" POLYSTYRENE WHENEVER LESS THAN 5.5-FT OF COVER IS PRESENT UPON FINAL GRADING. SEE C602/DETAIL 3 FOR BOX INSULATION REQUIREMENTS.



WATER INVERT ELEV. ESTIMATED FROM CITY OF NEEHAH'S DEPTH MEASUREMENTS COMPLETED AT EXISTING FIRE HYDRANT (ARROWHEAD 2) AS NOTED ABOVE.

NOTICE:
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GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
WATER MAIN PLAN AND PROFILE

SHEET NUMBER:
C506

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LEGEND

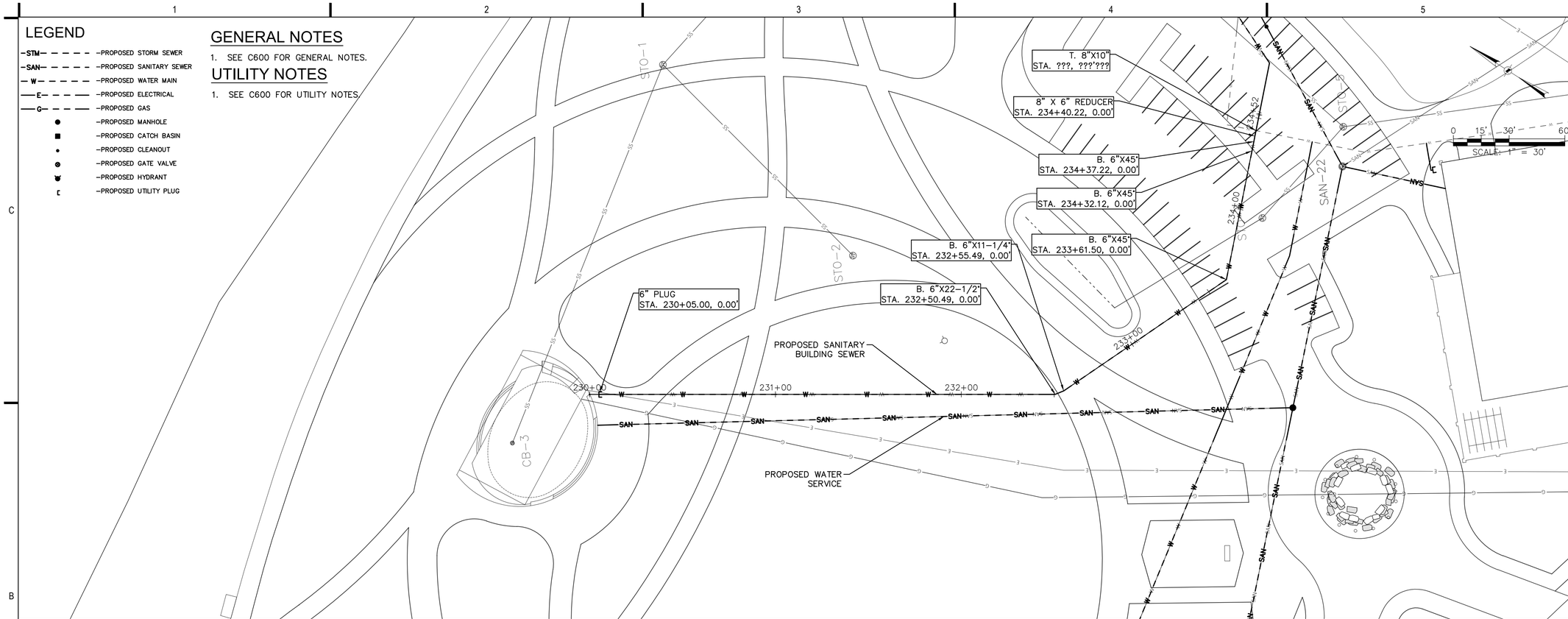
- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- W — PROPOSED WATER MAIN
- E — PROPOSED ELECTRICAL
- G — PROPOSED GAS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED CLEANOUT
- PROPOSED GATE VALVE
- PROPOSED HYDRANT
- PROPOSED UTILITY PLUG

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.

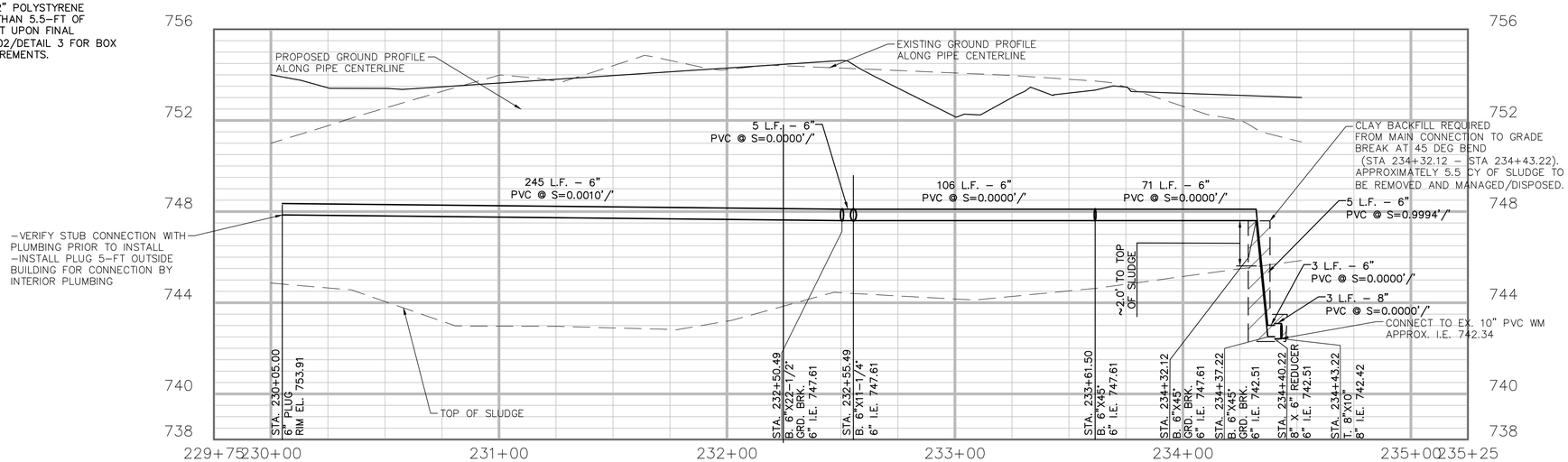
UTILITY NOTES

1. SEE C600 FOR UTILITY NOTES.



ALL PROPOSED WATER MAIN ABOVE THE SLUDGE LAYER IS TO BE INSULATED WITH 2" POLYSTYRENE WHENEVER LESS THAN 5.5-FT OF COVER IS PRESENT UPON FINAL GRADING. SEE C602/DETAIL 3 FOR BOX INSULATION REQUIREMENTS.

EXISTING FIRE HYDRANT (ARROWHEAD 2) PER CITY OF NEEHAH'S MEASUREMENTS COMPLETED AT THIS FIRE HYDRANT IN DEC 2024, DEPTH FROM EXISTING GROUND TO THE WATER FLOWLINE WAS 8.5-FT



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SCALE:	AS NOTED

[redacted]

SHEET TITLE:
WATER MAIN PLAN AND PROFILE

[redacted]

SHEET NUMBER:

C507

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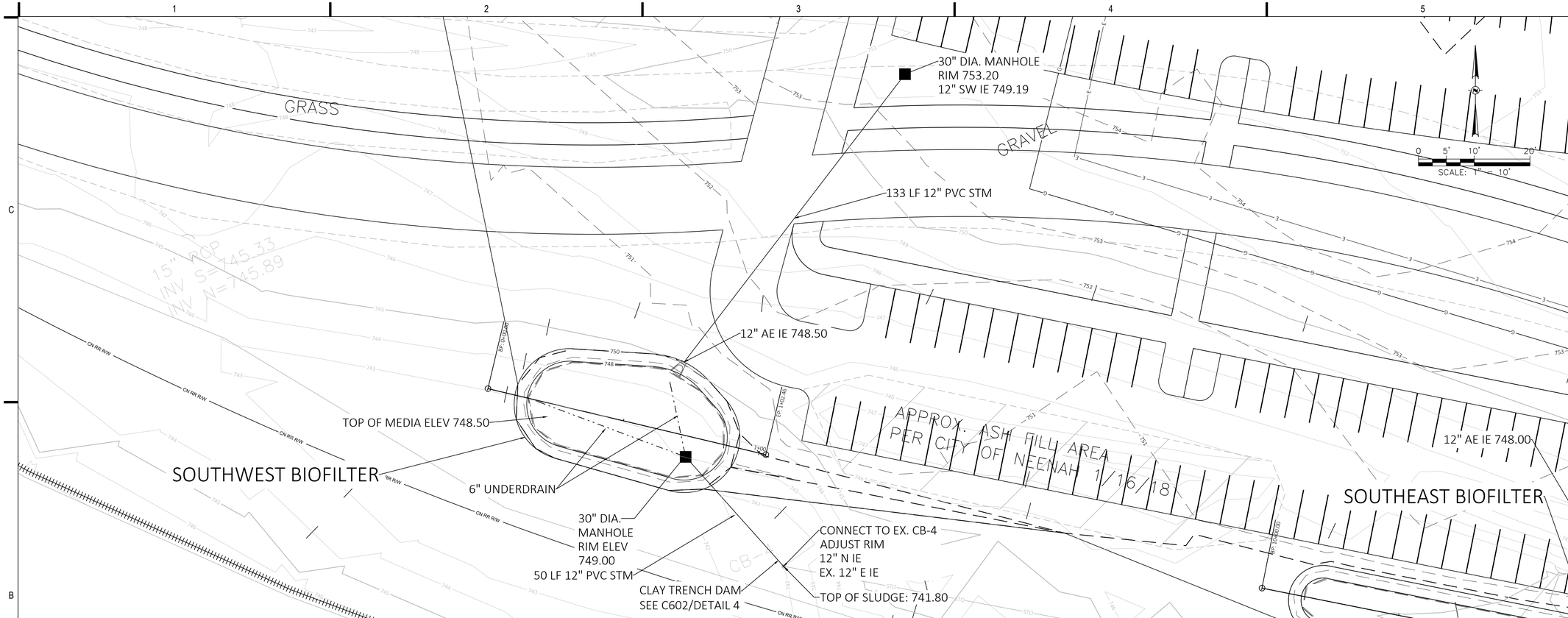
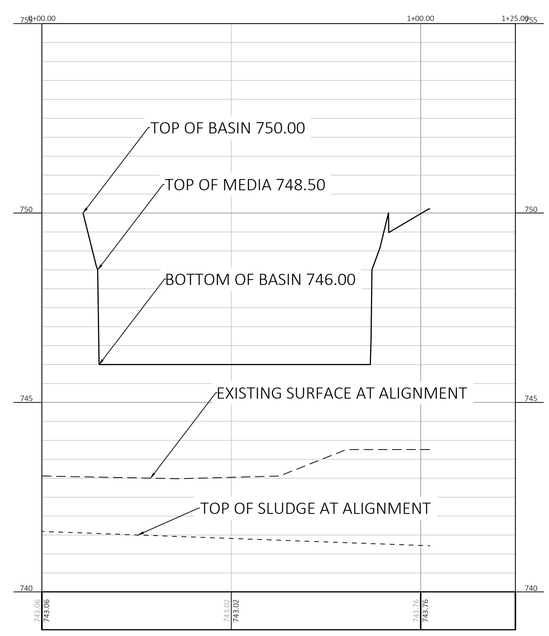


Profile View of southwest
V Scale : 4
H Scale : 40
Exaggeration : 10



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SHEET TITLE:
STORM WATER DETAILS
SOUTHWEST BIOFILTER

SHEET NUMBER:
C510

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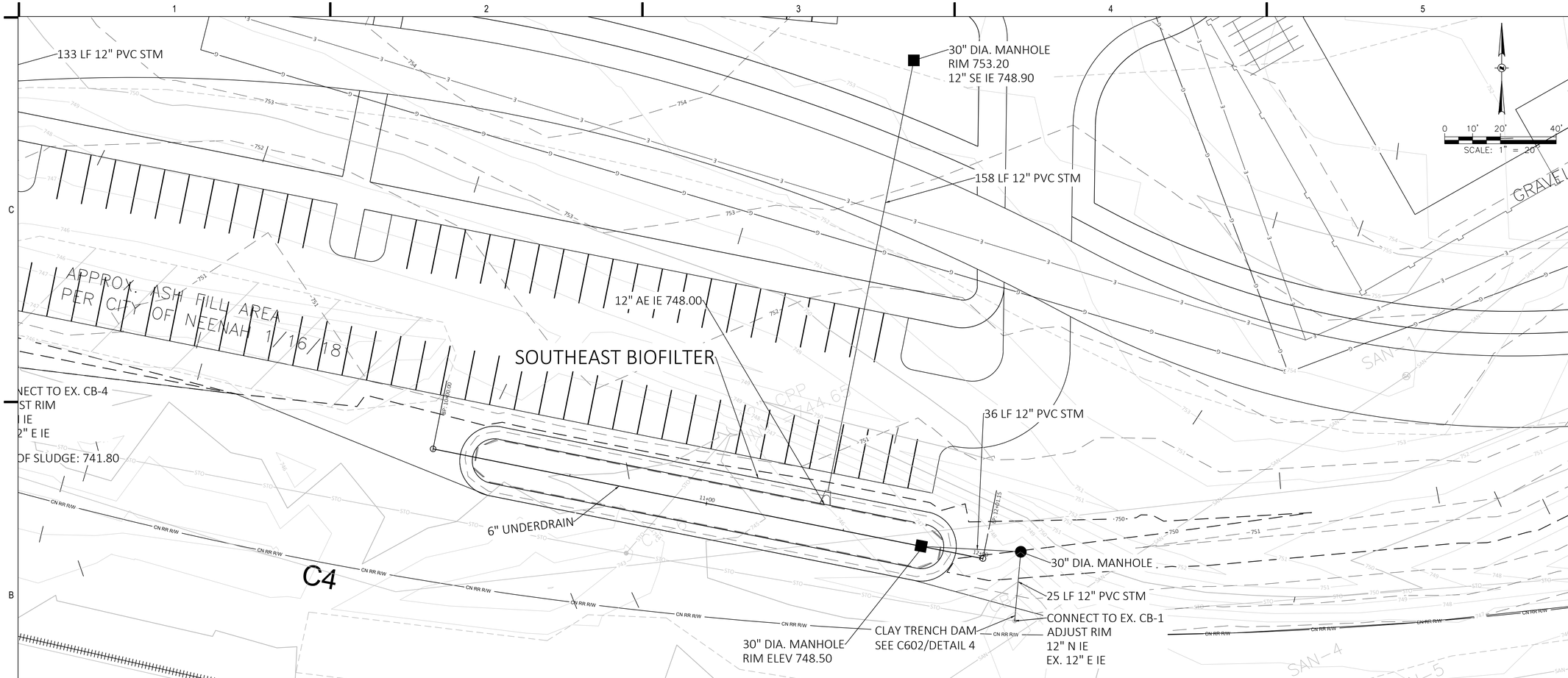
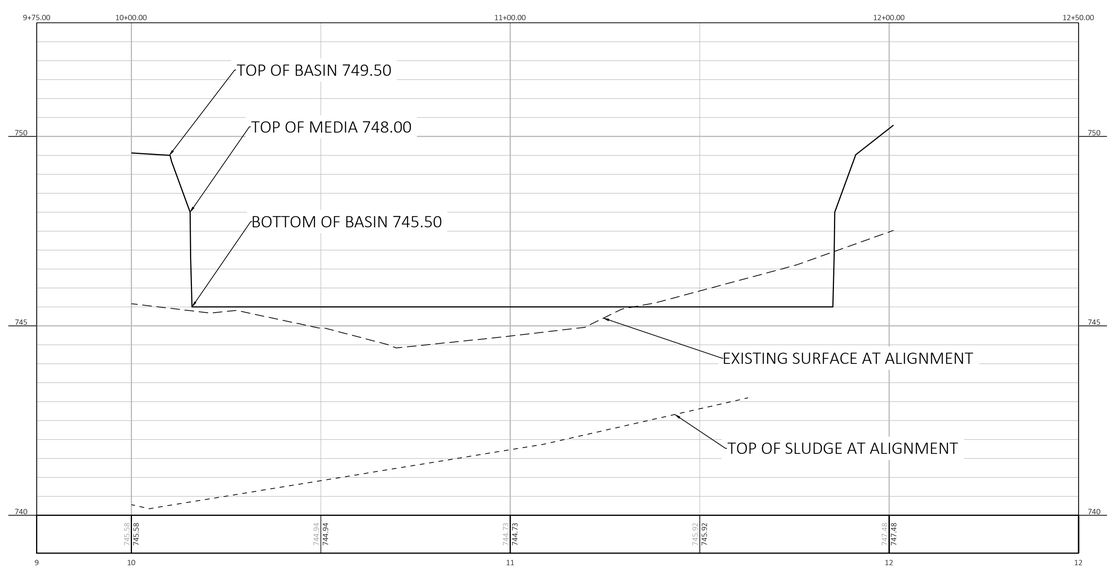


Profile View of southeast
V Scale : 4
H Scale : 40
Exaggeration : 10



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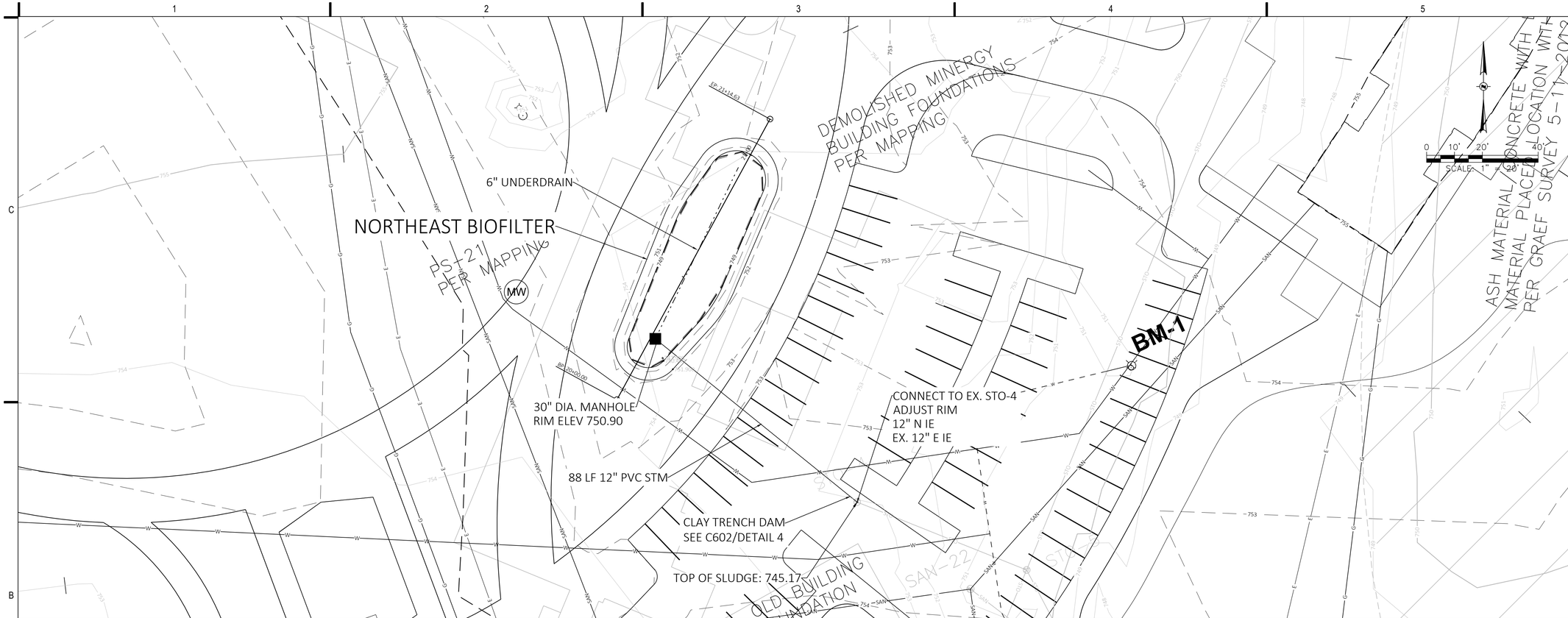
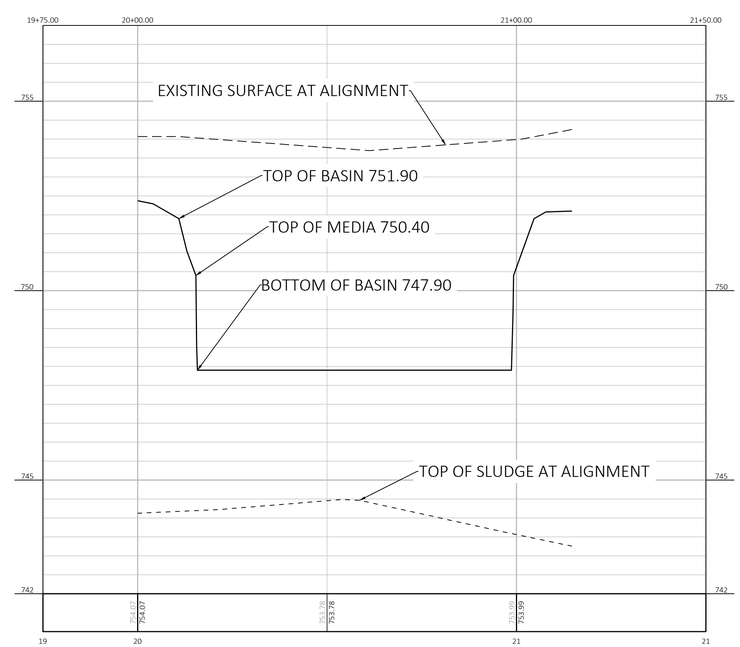
SCALE:	AS NOTED

SHEET TITLE:
STORM WATER DETAILS
SOUTH EAST BIOFILTER

SHEET NUMBER:
C511



Profile View of northeast
V Scale : 4
H Scale : 40
Exaggeration : 10



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SHEET TITLE:
STORM WATER DETAILS
NORTH EAST BIOFILTER

SHEET NUMBER:
C512

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GENERAL NOTES

1. THE BASE SURVEY WAS PREPARED BY MARTENSON & EISELE, INC. IN JUNE 2023. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO.
2. REFER TO SHEET C100 FOR BENCHMARKS, DATUM, AND TOPOGRAPHIC ELEMENTS.
3. CONTRACTOR SHALL VERIFY LOCATION OF WORK AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.

REMOVAL NOTES

1. EXISTING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AND DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORK.
2. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LINES NOTED FOR ABANDONMENT OR REMOVAL. EXISTING UTILITIES THAT ARE TO BE ABANDONED OR REMOVED SHALL BE RESPECTIVELY ABANDONED OR REMOVED TO THE LOCATIONS INDICATED ON THIS PLAN. ALL UTILITY STRUCTURES LOCATED ALONG REMOVED UTILITY LINES SHALL BE REMOVED IN THEIR ENTIRETY.
3. ASPHALT PAVEMENT NOTED FOR REMOVAL SHALL BE SAW CUT TO FULL DEPTH PRIOR TO REMOVAL.
4. CONCRETE CURB AND GUTTER AND SIDEWALK NOTED FOR REMOVAL SHALL BE REMOVED AT THE NEAREST JOINT.
5. ITEMS SCHEDULED FOR REMOVAL AND EXCESS EXCAVATED MATERIALS SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ANY APPLICABLE REGULATIONS.
6. CONTRACTOR IS RESPONSIBLE FOR SECURING THE JOB SITE TO PROTECT THE PUBLIC.
7. CONTRACTOR SHALL COMPLY WITH LOCAL, STATE, AND FEDERAL CODES, RULES AND REGULATIONS APPLICABLE TO DEMOLITION WORK INCLUDING BUT NOT LIMITED TO EROSION CONTROL, AIR POLLUTION, NOISE POLLUTION, AND WASTE DISPOSAL.
8. CONTRACTOR SHALL REPLACE PAVEMENT, CURB AND GUTTER, TREES, LAWN AREA, ANY ABOVE GROUND APPURTENCES, OR ANY OTHER ITEM THAT WAS DAMAGED AS A RESULT OF CONSTRUCTION RELATED ACTIVITIES AS DEEMED BY OWNERS REPRESENTATIVE THAT WAS NOT CALLED OUT FOR REMOVAL OR REPLACEMENT. CONTRACTOR SHALL REPLACE/REPAIR DAMAGED ITEM TO THE SATISFACTION OF OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST TO THE OWNER.
9. TREE PROTECTION FENCING LOCATIONS SHOWN ARE APPROXIMATE. ALL EXISTING TREES OUTSIDE OF GRADING LIMITS ARE INTENDED TO REMAIN. FINAL LOCATIONS OF FENCING SHALL BE DETERMINED IN THE FIELD AND AS IDENTIFIED ON CONSTRUCTION DETAILS. ADDITIONAL FENCING MAY BE REQUIRED. COORDINATE WITH OWNER'S REPRESENTATIVE. TREE PROTECTION FENCE SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION.

LAYOUT NOTES

1. THE BUILDING OUTLINES SHOWN ARE FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED FOR STAKING PURPOSES. THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT AND STRUCTURAL ENGINEER ON THE STAKING OF THE BUILDING.
2. SITE LIGHTS ARE SHOWN FOR REFERENCE PURPOSES ONLY AND THE CONTRACTOR SHALL REFER TO THE ELECTRICAL PLANS FOR DETAIL DESIGN INFORMATION. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL ENGINEER ON STAKING OF THE SITE LIGHTS.
3. ALL DIMENSIONS SHOWN ARE TO THE EDGE OF PAVEMENT OR FACE OF CURB WHERE CONCRETE CURB IS SHOWN.
4. STANDARD CURB RADIUS IS 3' UNLESS INDICATED OTHERWISE.
5. ALL PAVEMENT STRIPING SHALL BE WHITE IN COLOR.
6. REFER TO LANDSCAPING PLANS FOR SITE RESTORATION INFORMATION AND DETAILS.
7. HANDICAP PARKING STALLS SHALL BE FURNISHED WITH A CONCRETE WHEEL STOP WHEN ADJACENT TO FLUSH CONCRETE CURB AND GUTTER.
8. CONTRACTOR SHALL SUBMIT A CONCRETE JOINTING PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING CONSTRUCTION. JOINTING PLAN SHALL INDICATE: POUR SEQUENCE, LOCATION OF CONSTRUCTION, ISOLATION, CONTRACTION JOINTS, AND TYPE OF REINFORCEMENT.

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EROSION CONTROL NOTES

1. CONSTRUCTION SITE EROSION CONTROL AND SEDIMENTATION CONTROL SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF NEENAH, AND SHALL EMPLOY EROSION CONTROL METHODS AS SHOWN AND SPECIFIED IN THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES (WDNR) "CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL TECHNICAL STANDARDS".
2. ALL EROSION CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON THE SITE.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED FOR STABILITY AND OPERATION AFTER A RAINFALL OF 0.5 INCHES OR MORE, BUT NO LESS THAN ONCE EVERY WEEK. MAINTENANCE OF ALL EROSION CONTROL STRUCTURES SHALL BE PROVIDED TO INSURE INTENDED PURPOSE IS ACCOMPLISHED. REPAIRS AND MAINTENANCE SHALL BE COMPLETED WITHIN 24 HOURS OF INSPECTION. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP AND REMOVAL OF ALL SEDIMENT WHEN LEAVING PROPERTY. EROSION CONTROL MEASURES MUST BE IN WORKING CONDITION AT END OF EACH WORK DAY.
4. SILT FENCE SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. SEDIMENT DEPOSITS WILL BE REMOVED FROM BEHIND THE SILT FENCE WHEN DEPOSITS REACH A DEPTH OF 6 INCHES. THE SILT FENCE WILL BE REPAIRED OR REPLACED AS NECESSARY TO MAINTAIN A BARRIER.
5. FILTER FABRIC SHALL BE INSTALLED BENEATH INLET COVERS TO TRAP SEDIMENT AS PER INLET PROTECTION DETAIL IN THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS.
6. CRUSHED STONE ENTRANCE SHALL BE MAINTAINED BY TURNING OVER THE STONE OR BY PLACING NEW STONE ONCE THE SURFACE BECOMES CLOGGED WITH SEDIMENT.
7. EROSION CONTROL MEASURES SHALL BE MAINTAINED ON A CONTINUING BASIS UNTIL SITE IS FULLY STABILIZED.
8. PERIODIC STREET SWEEPING SHALL BE COMPLETED TO MAINTAIN THE PUBLIC STREET FREE OF DUST AND DIRT.
9. SILT FENCE SHALL BE INSTALLED IN HORSESHOE FASHION AROUND ALL TOPSOIL AND FILL STOCKPILES. NOTIFY CITY OF NEENAH OF ANY NEW STOCKPILE LOCATIONS.
10. CONSTRUCTION SEQUENCE FOR EROSION CONTROL INCLUDES:
    1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
    2. INSTALL SILT FENCE AND INLET PROTECTION.
    3. STRIP TOPSOIL IN TEMPORARY SEDIMENT BASIN AREA
    4. INSTALL SEDIMENT BASIN AND OUTLET CONTROL STRUCTURE. STABILIZE IMMEDIATELY AFTER INSTALLATION.
    5. STRIP TOPSOIL AND INSTALL TEMPORARY DIVERSIONS TO DIRECT RUNOFF TO SEDIMENT BASIN.
    6. STRIP TOPSOIL FROM REMAINDER OF SITE.
    7. PERFORM ROUGH GRADING AND BUILDING EXCAVATION. ADJUST DIVERSION DITCHES AS NEEDED TO MAINTAIN DRAINAGE TO SEDIMENT BASIN.
    8. INSTALL UTILITIES. INSTALL INLET PROTECTION ON NEW INLETS. INSTALL RIPRAP AT NEW OUTFALLS.
    9. CONSTRUCT BUILDING.
    10. INSTALL PAVEMENTS.
    11. INSTALL LANDSCAPING ON COMPLETED SITE WITHIN 7 DAYS OF COMPLETING CONSTRUCTION.
    12. REMOVE TEMPORARY SEDIMENTATION BASIN
    13. REMOVE EROSION CONTROL MEASURES ONLY WHEN SITE IS FULLY STABILIZED.
11. SITE DEWATERING. WATER PUMPED FROM THE SITE SHALL BE TREATED BY SEDIMENT BASINS OR OTHER APPROPRIATE BEST MANAGEMENT PRACTICES SPECIFIED IN THE WDNR "CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL TECHNICAL STANDARDS". WATER SHALL NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION OF THE SITE, ADJACENT SITES, OR RECEIVING CHANNELS.
12. WASTE AND MATERIAL DISPOSAL. ALL WASTE AND UNUSED BUILDING MATERIALS (INCLUDING GARBAGE, DEBRIS, CLEANING WASTES, WASTEWATER, TOXIC MATERIALS, OR HAZARDOUS MATERIALS) SHALL BE PROPERLY DISPOSED AND NOT ALLOWED TO BE CARRIED OFF-SITE BY RUNOFF OR WIND.
13. TRACKING. EACH SITE SHALL HAVE GRAVELED ROADS, ACCESS DRIVES AND PARKING AREAS OF SUFFICIENT WIDTH AND LENGTH TO PREVENT SEDIMENT FROM BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS. ANY SEDIMENT REACHING A PUBLIC OR PRIVATE ROAD SHALL BE REMOVED BY STREET CLEANING, TO THE SATISFACTION OF THE CITY, BEFORE THE END OF EACH WORKDAY. FLUSHING MAY NOT BE USED UNLESS SEDIMENT WILL BE CONTROLLED BY A SEDIMENT BASIN OR OTHER APPROPRIATE BEST MANAGEMENT PRACTICE SPECIFIED IN THE WDNR "CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL TECHNICAL STANDARDS". NOTIFY CITY OF NEENAH FOR CHANGES IN STABILIZED CONSTRUCTION ENTRANCE LOCATION.
14. SEDIMENT CLEANUP. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF A STORM EVENT SHALL BE CLEANED UP BY THE END OF THE NEXT WORK DAY. ALL OTHER OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE CLEANED UP BY THE END OF THE WORK DAY.
15. ALL DISTURBED GROUND LEFT INACTIVE FOR SEVEN OR MORE DAYS SHALL BE STABILIZED BY TEMPORARY OR PERMANENT SEEDING, AND MULCHING SODDING, COVERING WITH TARPS, OR EQUIVALENT BEST MANAGEMENT PRACTICES. IF TEMPORARY SEEDING IS USED, A PERMANENT COVER SHALL ALSO BE REQUIRED AS PART OF THE FINAL SITE STABILIZATION. SEEDING OR SODDING SHALL BE REQUIRED AS PART OF THE FINAL SITE STABILIZATION.
16. PERMANENT SEEDING SHALL BE ESTABLISHED NO LATER THAN SEPTEMBER 15TH. IF PERMANENT SEEDING IS NOT ESTABLISHED, TEMPORARY SEEDING SHALL BE ESTABLISHED NO LATER THAN OCTOBER 15TH. ALL SEEDED AREAS MUST BE MULCHED AT A RATE OF 1.5 TO 2 TONS PER ACRE AND ANCHORED BY EITHER CRIMPING OR BY APPLYING A TACKIFIER.
17. PERMANENT SEED MIX SHALL BE WISDOT SEED MIX NO. 40 AT 7 POUNDS PER 1000 SQUARE FEET.
18. USE ANNUAL RYE SEED MIX AT 100 POUNDS PER ACRE AS A TEMPORARY SEED MIX. PERMANENT SEEDING SHALL FOLLOW WITHIN ONE YEAR. IF TEMPORARY SEEDING IS NOT ESTABLISHED BY OCTOBER 15TH, USE CLASS I TYPE B MATTING ON ALL SLOPES 4:1 OR STEEPER.
19. SOIL OR DIRT STORAGE PILES SHALL BE LOCATED A MINIMUM OF TWENTY-FIVE FEET FROM ANY DOWNSLOPE ROAD, LAKE, STREAM, WETLAND, OR DRAINAGE CHANNEL. STRAW BALE OR FILTER FABRIC FENCES SHALL BE PLACED ON THE DOWN SLOPE SIDE OF THE PILE. IF REMAINING FOR MORE THAN THIRTY DAYS. PILES SHALL BE STABILIZED BY MULCHING, VEGETATIVE COVER, TARPS, OR OTHER MEANS.
20. WHEN THE DISTURBED AREA HAS BEEN STABILIZED BY PERMANENT VEGETATION OR OTHER MEANS, TEMPORARY BEST MANAGEMENT PRACTICES SUCH AS FILTER FABRIC FENCES, STRAW BALES, SEDIMENT AND SEDIMENT TRAPS SHALL BE REMOVED.
21. NOTIFY THE CITY WITHIN TWO WORKING DAYS OF COMMENCING ANY LAND DEVELOPMENT OR LAND DISTURBING ACTIVITY.
22. NOTIFY THE CITY OF COMPLETION OF ANY BEST MANAGEMENT PRACTICES WITHIN THE NEXT WORKING DAY AFTER THEIR INSTALLATION.
23. OBTAIN PERMISSION IN WRITING FROM THE CITY OF NEENAH ENGINEERING DEPARTMENT PRIOR TO MODIFYING THE EROSION CONTROL PLAN. NOTIFY WDNR AT LEAST FIVE WORKING DAYS PRIOR TO IMPLEMENTING CHANGES TO THE EROSION CONTROL PLAN.
24. REPAIR ANY SILTATION OR EROSION DAMAGE TO ADJOINING SURFACES AND DRAINAGE WAYS RESULTING FROM LAND DEVELOPMENT OR LAND DISTURBING ACTIVITIES.
25. KEEP A COPY OF THE EROSION CONTROL PLAN ON SITE. INTERSECTING DIRECTIONS.

GRADING NOTES

1. ADA REGULATIONS FOR A NON-RAMP ACCESSIBLE REQUIRE A MAXIMUM SLOPE OF 1:20 (5%) ALONG THE LENGTH OF THE ROUTE AND A MAXIMUM CROSS SLOPE OF 1:48 (2.08%) ACROSS THE WIDTH OF THE ROUTE.
2. ADA REGULATIONS FOR ACCESSIBLE PARKING, ACCESS AISLES, AND PASSENGER LOADING ZONES REQUIRES A MAXIMUM SLOPE OF 1:48 (2.08%) ALONG THE LENGTH OF ACCESSIBLE ZONE AND 1:48 (2.08%) ACROSS THE WIDTH OF THE ACCESSIBLE ZONE.
3. ACCESSIBLE AREAS DESCRIBED ABOVE SHALL BE MEASURED IN ACCORDANCE WITH THE US ACCESS BOARD REPORT "DIMENSIONAL TOLERANCES IN CONSTRUCTION AND FOR SURFACE ACCESSIBILITY" PART II, SECTION 4, 1.1 MEASUREMENT PROTOCOLS.

UTILITY NOTES

1. CONTRACTOR SHALL VERIFY ELEVATION OF EXISTING INVERTS PRIOR TO INSTALLATION OF PROPOSED UTILITIES.
2. BUILDING LATERALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL AND STATE PLUMBING CODES. SITE UTILITY CONTRACTOR SHALL STUB LATERAL TO 5 FEET OUTSIDE BUILDING. SEE INTERIOR PLUMBING PLANS FOR CONTINUATION OF PIPING INTO BUILDING BY BUILDING PLUMBING CONTRACTOR IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN, LATEST EDITION.
3. CONTRACTOR SHALL CENTER ONE FULL LENGTH OF WATER PIPE ON SEWER AT WATER MAIN CROSSINGS, THAT BOTH JOINTS WILL BE AS FAR FROM SEWER AS POSSIBLE.
4. GENERAL CONTRACTOR SHALL COORDINATE WITH LOCAL GAS, TELEPHONE, AND ELECTRICAL UTILITIES FOR EXACT LOCATION, SIZE AND DEPTH OF NEW SERVICE.
5. SANITARY SEWER SHALL BE PVC, ASTM D3034, SDR 35 UNLESS INDICATED OTHERWISE.
6. WATER MAIN SHALL BE AWWA C900, CLASS 150, DR-18 PVC UNLESS INDICATED OTHERWISE.
7. ALL SANITARY PRECAST MANHOLES SHALL CONFORM TO ASTM C-478 AND SHALL BE A MINIMUM OF 48-INCH DIAMETER WITH ECCENTRIC CONE TYPE PRECAST TOPS AND SHALL BE FITTED WITH AN EXTERNAL SEAL. FLAT TOP SLABS SHALL BE USED ONLY WITH APPROVAL OF THE VILLAGE ENGINEER.
8. CONTRACTOR SHALL PROVIDE DRAIN TILE AT ALL PROPOSED CATCH BASINS. SEE PLAN VIEW FOR DETAIL DESIGN INFORMATION.
9. BUILDING ROOF DRAINS SHALL BE SDR-35, ASTM D3034, PVC, UNLESS OTHERWISE NOTED.
10. RIM ELEVATIONS IN CURB AND GUTTER ARE FLANGE GRADES.
11. PIPE LENGTHS AND INVERTS ARE TO CENTER OF STRUCTURES.
12. CRUSHED STONE BACKFILL SHALL BE USED UNDER AND WITHIN 5' OF ALL PAVED AREAS.

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116 S Adams Street,
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Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
Construction Notes

SHEET NUMBER:
C600

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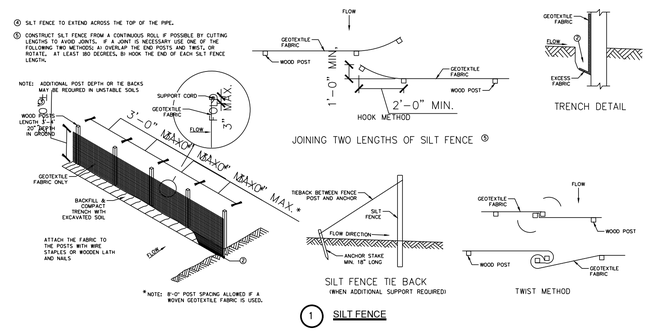
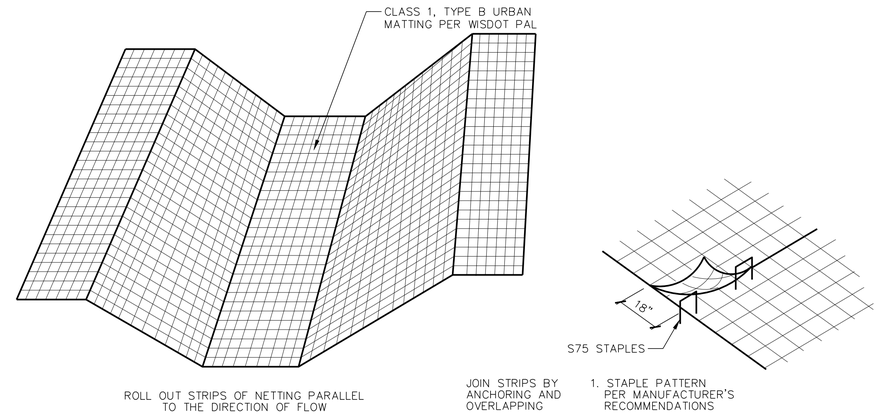


1 SILT FENCE

01 SILT FENCE

SCALE **N.T.S.**



02 EROSION MATTING

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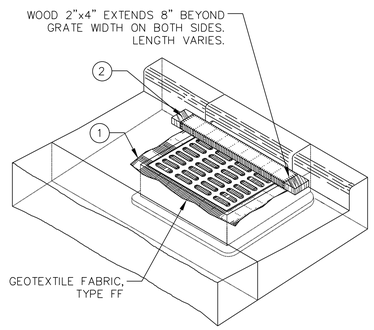
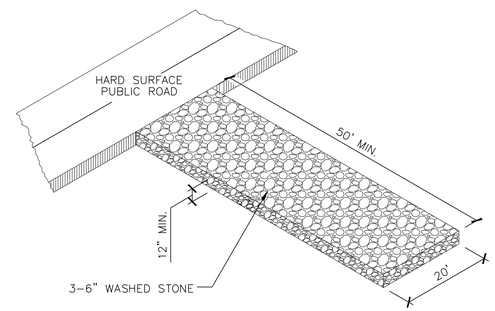


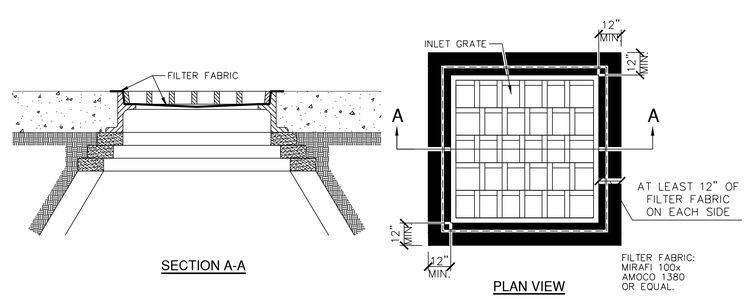
03 INLET PROTECTION, TYPE C (WITH CURB BOX)

SCALE **N.T.S.**



04 STONE CONSTRUCTION ENTRANCE

SCALE **N.T.S.**



05 FABRIC CATCH BASIN PROTECTION

SCALE **N.T.S.**

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SCALE:	AS NOTED

SHEET TITLE:
Construction Details

SHEET NUMBER:
C601

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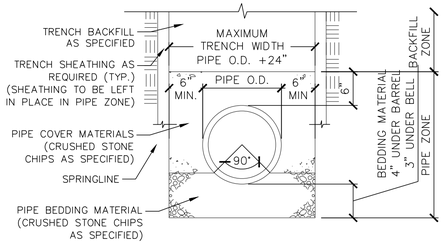
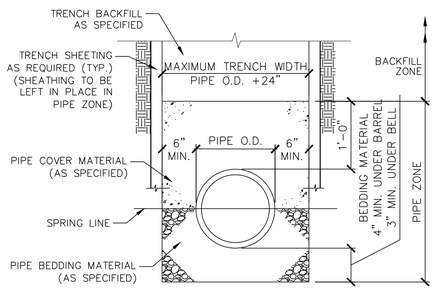


NOTE: 3" OF ADDITIONAL CRUSHED STONE REQUIRED IN WET TRENCH AT NO ADDITIONAL COST.

01 CLASS "C" BEDDING DETAIL FOR STORM SEWER

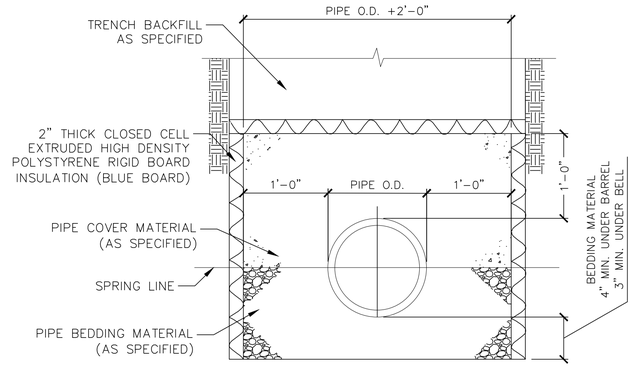
SCALE N.T.S.



NOTE: 3" OF ADDITIONAL BEDDING REQUIRED IN WET TRENCH AT NO ADDITIONAL COST.

02 CLASS "B" BEDDING DETAIL FOR SANITARY SEWER

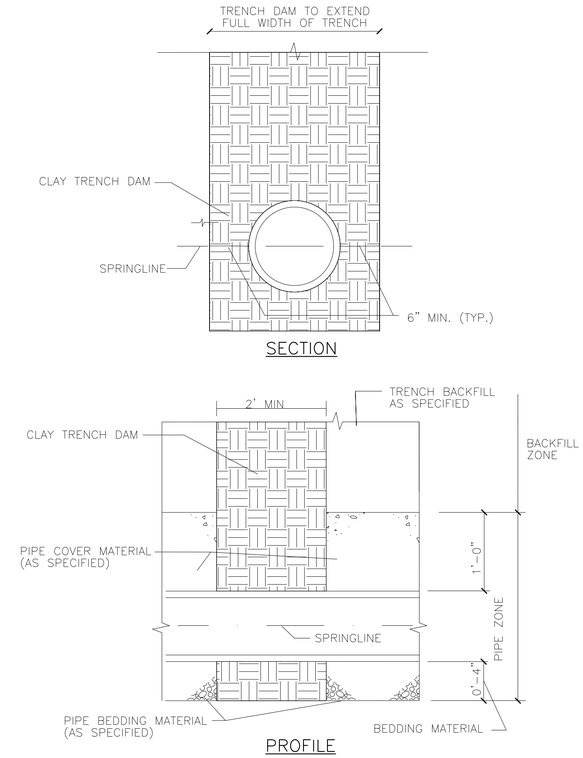
SCALE N.T.S.



NOTE: INSULATION PER DETAIL IS REQUIRED WHEREVER COVER OVER THE TOP OF PIPE IS LESS THAN 5 1/2 FEET OR WHERE SHOWN.

03 INSULATION DETAIL

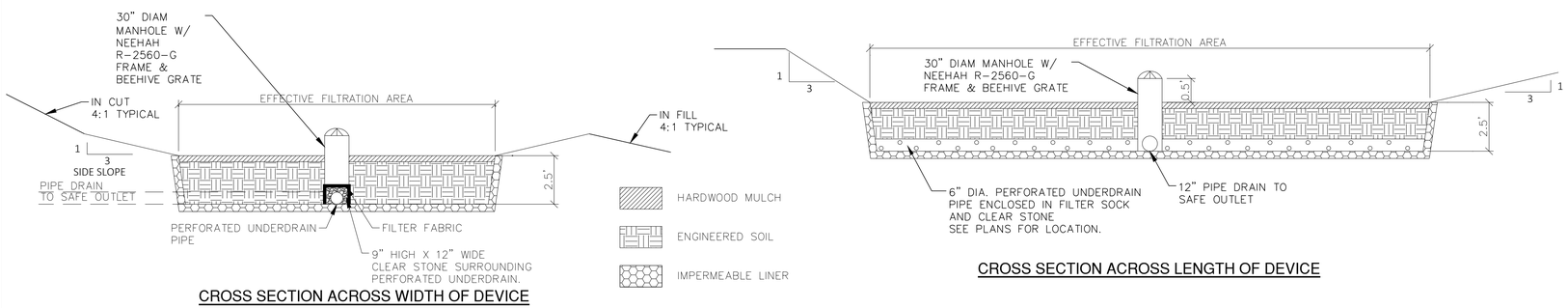
SCALE N.T.S.



NOTE:
MUST BE INTSALLED WHEN UTILILTY TRENCHING CROSSES ROW & PROPERTY LINE.

04 TRENCH DAM DETAIL

SCALE N.T.S.



05 BIOFILTRATION BASIN DETAIL

SCALE N.T.S.

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[redacted]

PRELIMINARY - NOT FOR CONSTRUCTION

[redacted] PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

[redacted]

NO.	DATE	REVISIONS	BY
	03/21/25	WDNR PLAN MODIFICATION REQUEST	

[redacted] PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	03-21-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

[redacted] SHEET TITLE:
Construction Details

[redacted] SHEET NUMBER:

C602

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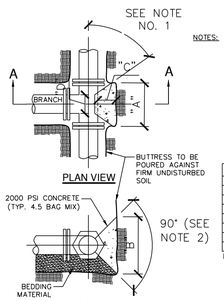
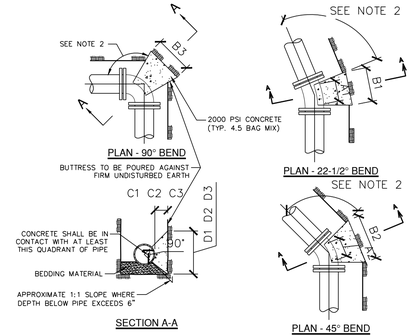


NOTES:
1. DIMENSION "C" SHOULD BE LARGE ENOUGH TO MAKE ANGLE EQUAL TO OR LARGER THAN 45 DEGREES.
2. CONCRETE SHOULD BEAR ON THIS QUADRANT OF PIPE AS A MINIMUM.
3. DIMENSION "D" SHOULD BE AS LARGE AS POSSIBLE BUT CONCRETE SHALL NOT COVER MECHANICAL JOINTS.
4. BUTTRESS DIMENSIONS ARE BASED ON A SOIL RESISTANCE OF TWO TONS PER SQ. FT. AND A WATER PRESSURE OF 150 PSI.
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.

BUTTRESS DIMENSIONS				
B.D.	"A"	"B"	"C"	"D"
6"	1'-3"	1'-0"	1'	3"
8"	1'-6"	1'-4"		
12"	2'-3"	2'-0"		
16"	3'-2"	2'-6"		
20"	4'-0"	3'-0"		
24"	5'-3"	3'-4"	SEE NOTE NO. 1	SEE NOTE NO. 3
30"	6'-3"	4'-3"		

B.D. = BRANCH DIAMETER

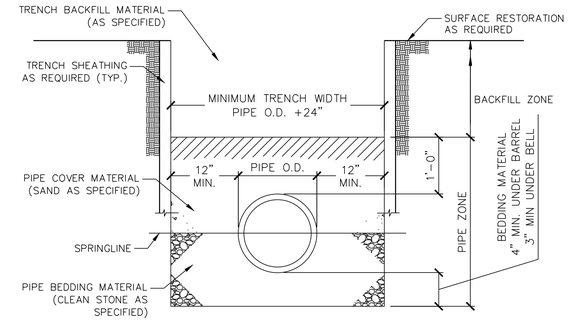
01 CONCRETE BUTTRESS FOR TEES
SCALE N.T.S.



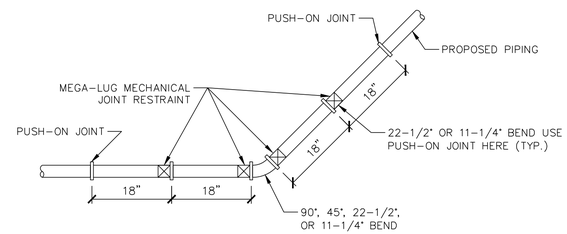
BUTTRESS DIMENSIONS							
PIPE SIZE	22-1/2° BENDS		45° BENDS		90° BENDS		
	B1	D1	B2	D2	B3	D3	
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-3"
8"	1'-0"	1'-0"	1'-4"	1'-3"	1'-10"	1'-4"	1'-6"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	3'-2"
20"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"

NOTES:
1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND ON EARTH RESISTANCE OF 2 TONS PER SQ. FT.
2. DIMENSIONS C1, C2, C3, SHOULD BE LARGE ENOUGH TO MAKE ANGLE EQUAL TO OR LARGER THAN 45 DEGREES.
3. DIMENSIONS A1, A2, A3, SHOULD BE AS LARGE AS POSSIBLE BUT CONCRETE SHALL NOT COVER WITH M.J. BOLTS.
4. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
5. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.

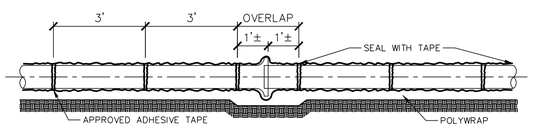
02 CONCRETE BUTTRESS FOR BENDS
SCALE N.T.S.



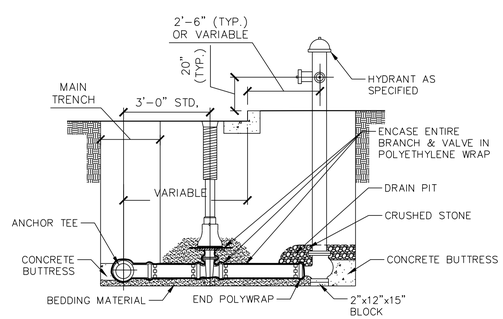
03 WATER MAIN TRENCH DETAIL
SCALE N.T.S.

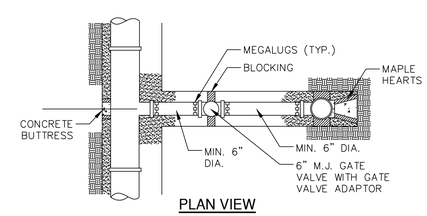


05 RESTRAINED JOINT DETAIL
SCALE N.T.S.



04 POLYETHYLENE WRAP
SCALE N.T.S.





NOTE: INVERT AT HYDRANT 3" ABOVE INVERT OF HYD. LEAD AT MAIN.
VALVE BOXES & HYDRANTS SET PLUMB.
VALVE BOX CENTERED OVER WRENCH NUT.
MEGALUG HYDRANT AND VALVE TO HYDRANT LEAD.
IF MORE THAN A SINGLE PIPE LENGTH, STRAP ENTIRE LENGTH.

06 HYDRANT SETTING
SCALE N.T.S.

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920 / 592 9440

[redacted]

PRELIMINARY - NOT FOR CONSTRUCTION

[redacted] PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

[redacted]

NO.	DATE	REVISIONS	BY
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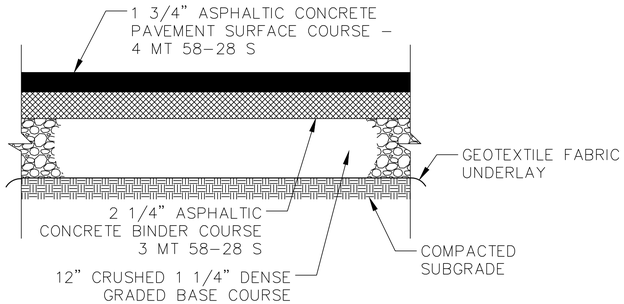
APPROVED BY:	PJS
SCALE:	AS NOTED

[redacted] SHEET TITLE:
Construction Details

[redacted] SHEET NUMBER:

C603



01 TYPICAL ASPHALT PAVEMENT SECTION

SCALE N.T.S.

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SHEET TITLE:
Construction Details

SHEET NUMBER:
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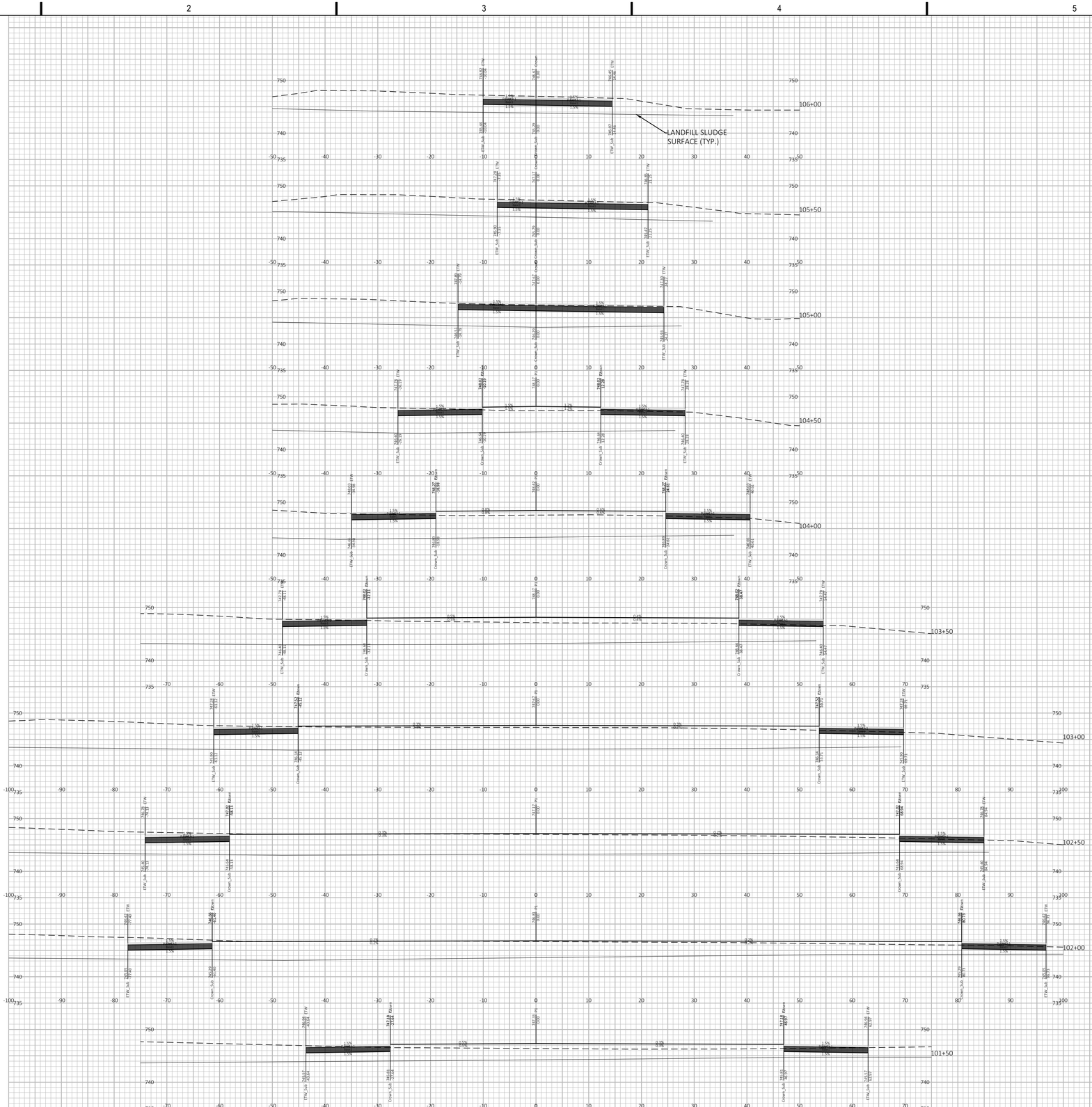

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3/20/2025 10:13 AM

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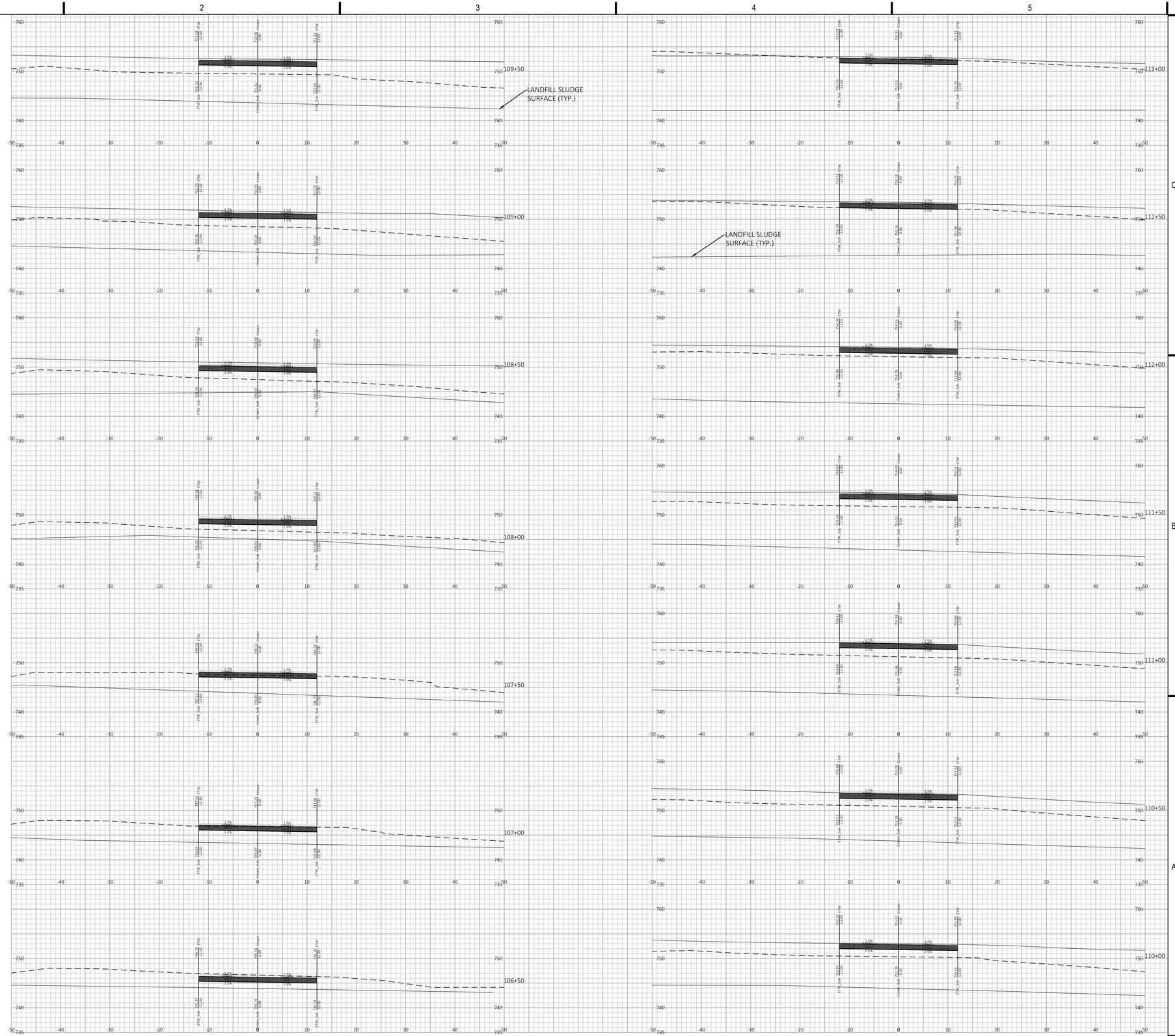
SCALE:	AS NOTED

SHEET TITLE:
CARRIAGE ROAD CROSS SECTIONS
STA 101+50 - 106+00

SHEET NUMBER:
C700



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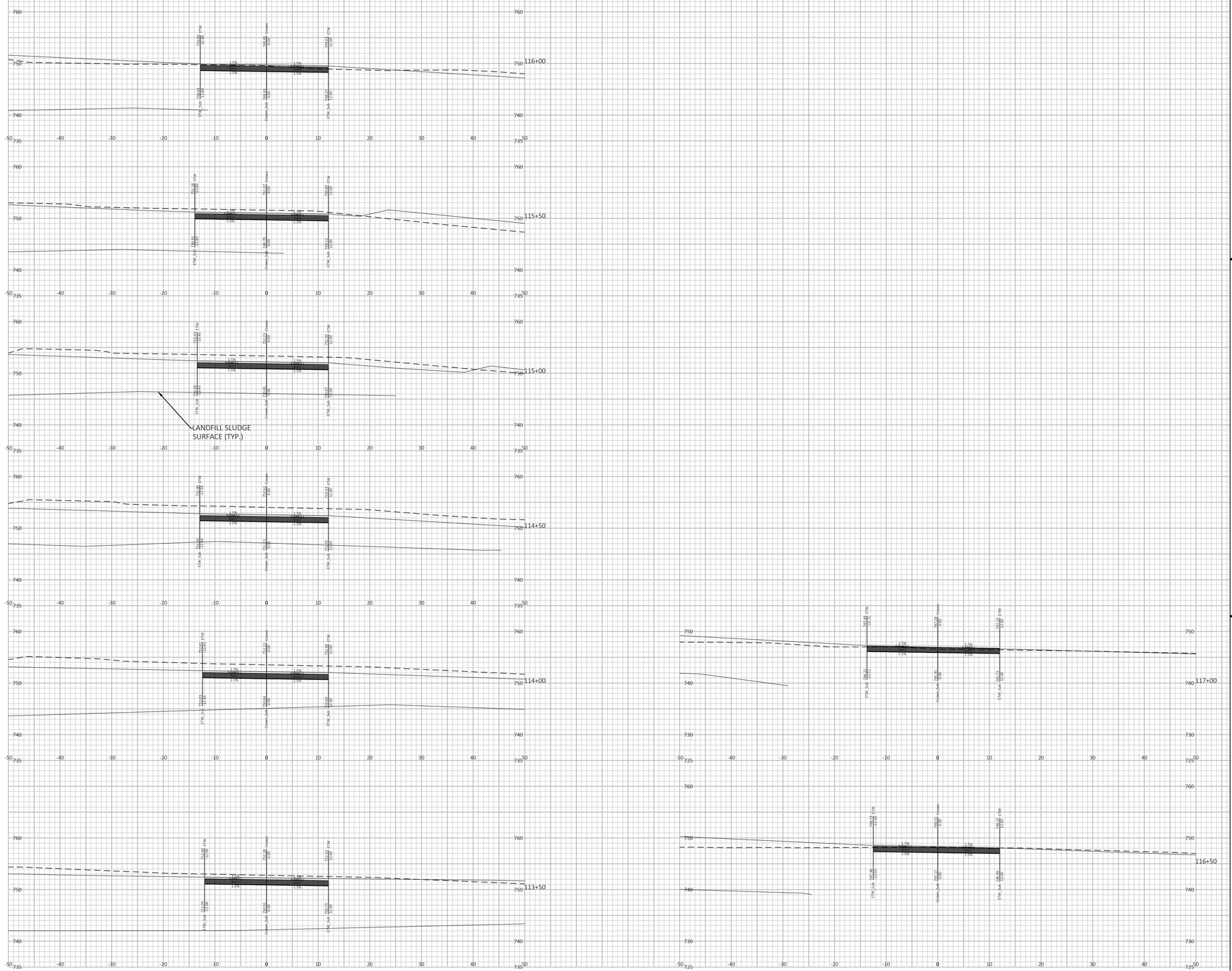
SCALE:	AS NOTED

SHEET TITLE:
CARRIAGE ROAD CROSS SECTIONS
STA 106+50 - 113+00

SHEET NUMBER:
C701



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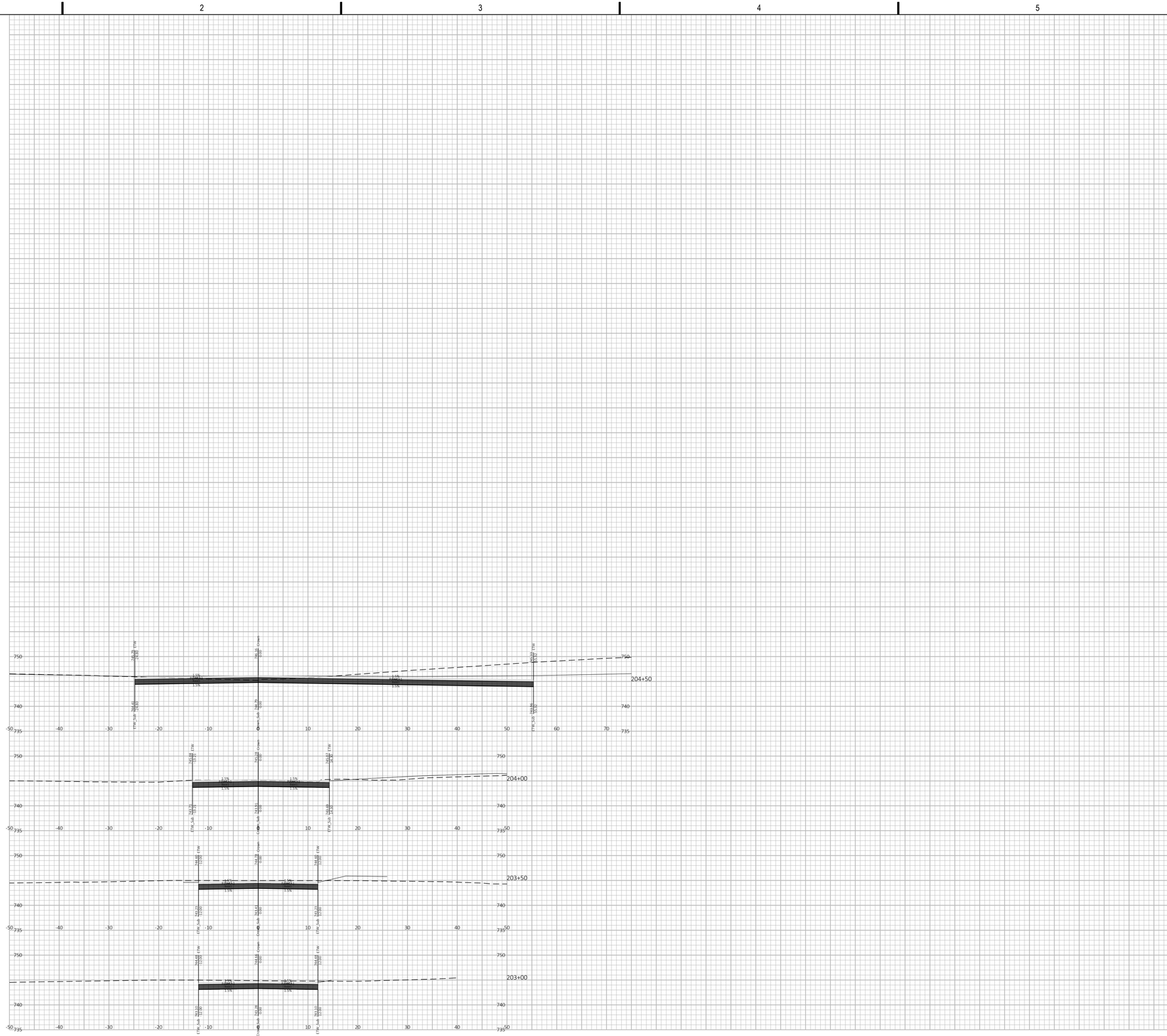
APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
CARRIAGE ROAD CROSS SECTIONS
STA 113+50 - 117+00

SHEET NUMBER:
C702



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APPROVED BY:	PJS
SCALE:	AS NOTED

SHEET TITLE:
MILLVIEW DRIVE CROSS SECTIONS
STA 203+00 - 204+50

SHEET NUMBER:
C703

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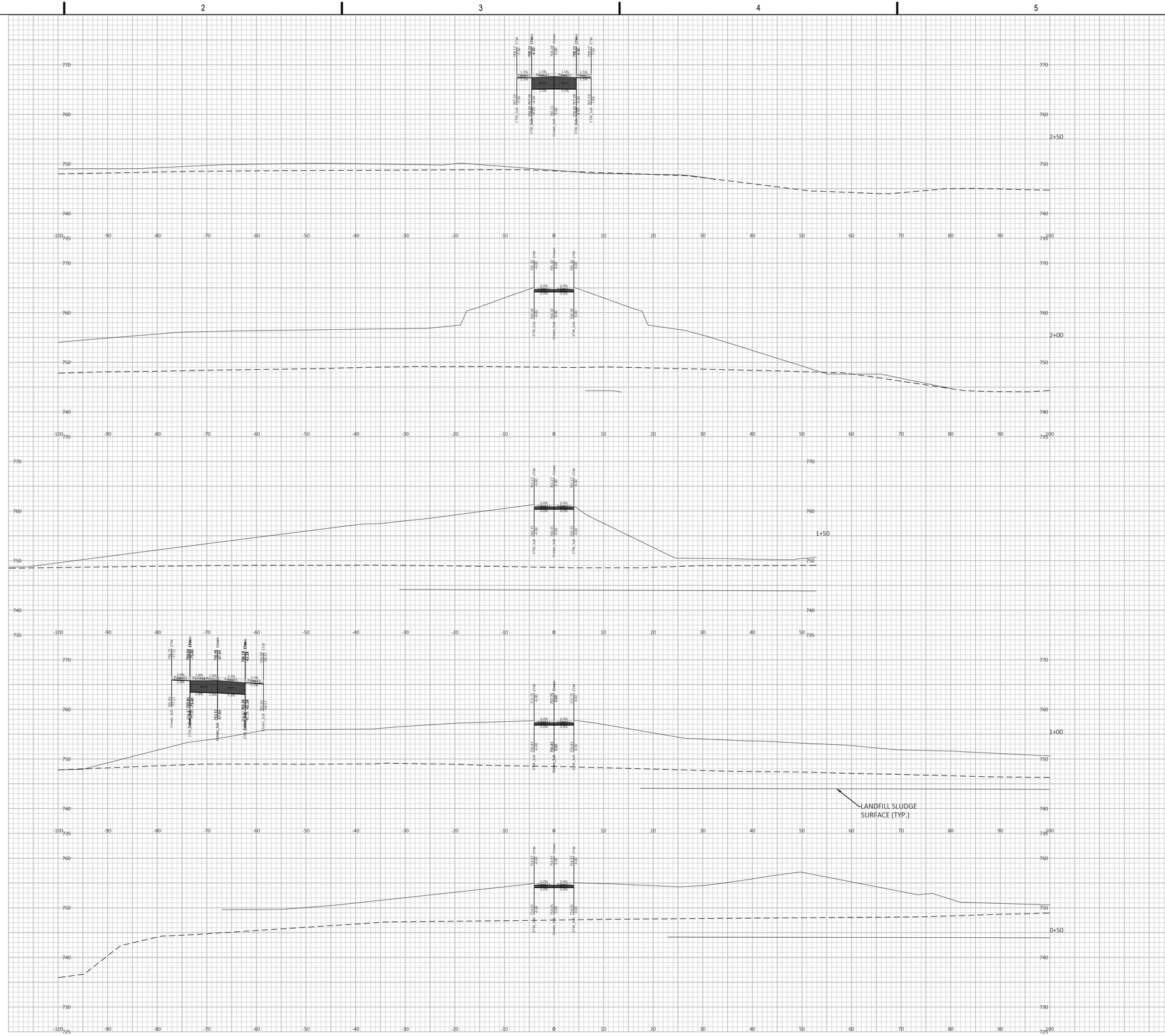

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	03/21/25	WDNR PLAN MODIFICATION REQUEST	

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[redacted] PROJECT INFORMATION:

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APPROVED BY:	PJS
SCALE:	AS NOTED

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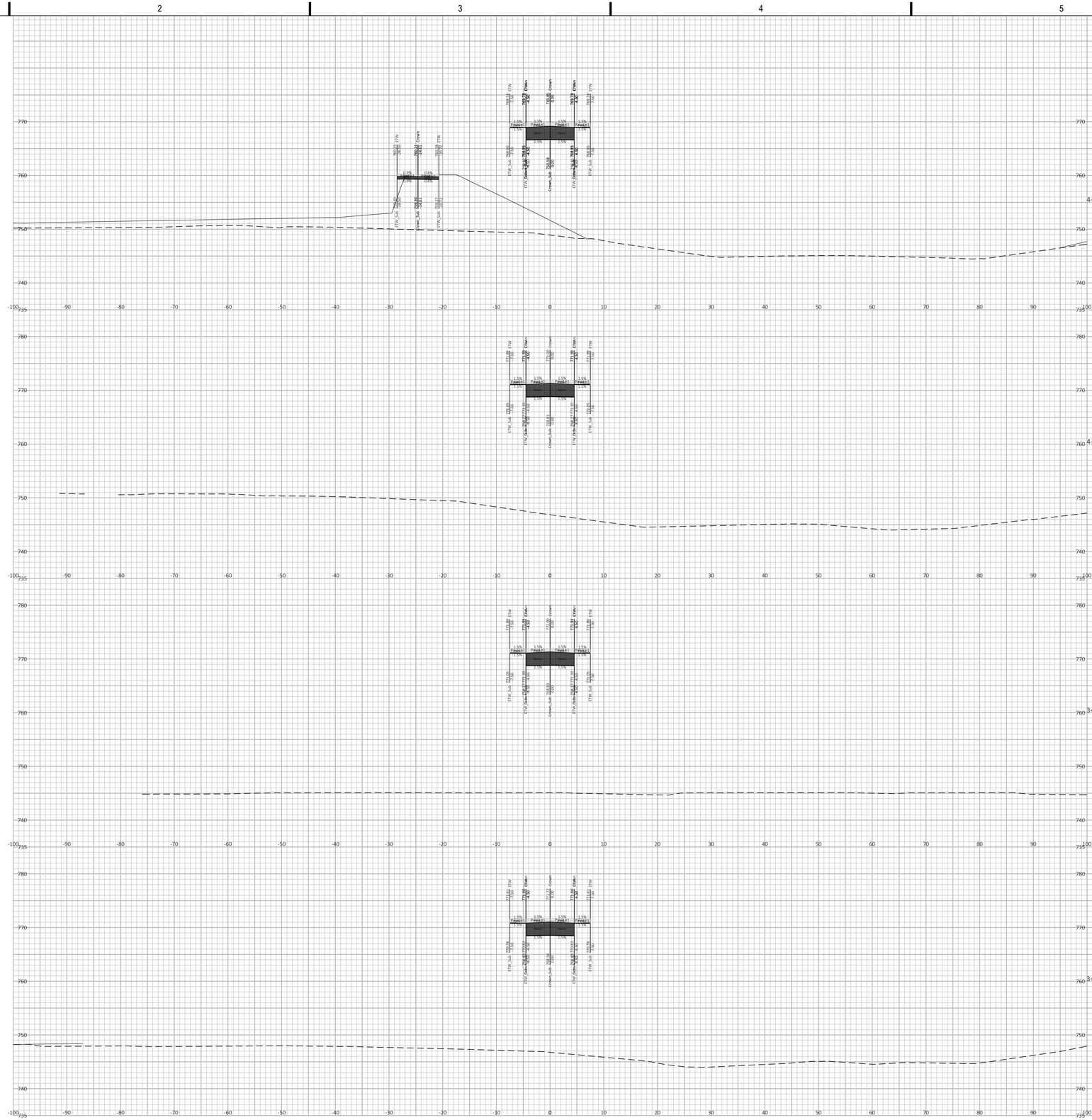
STA 0+50 - 2+50

[redacted] SHEET NUMBER:

C704



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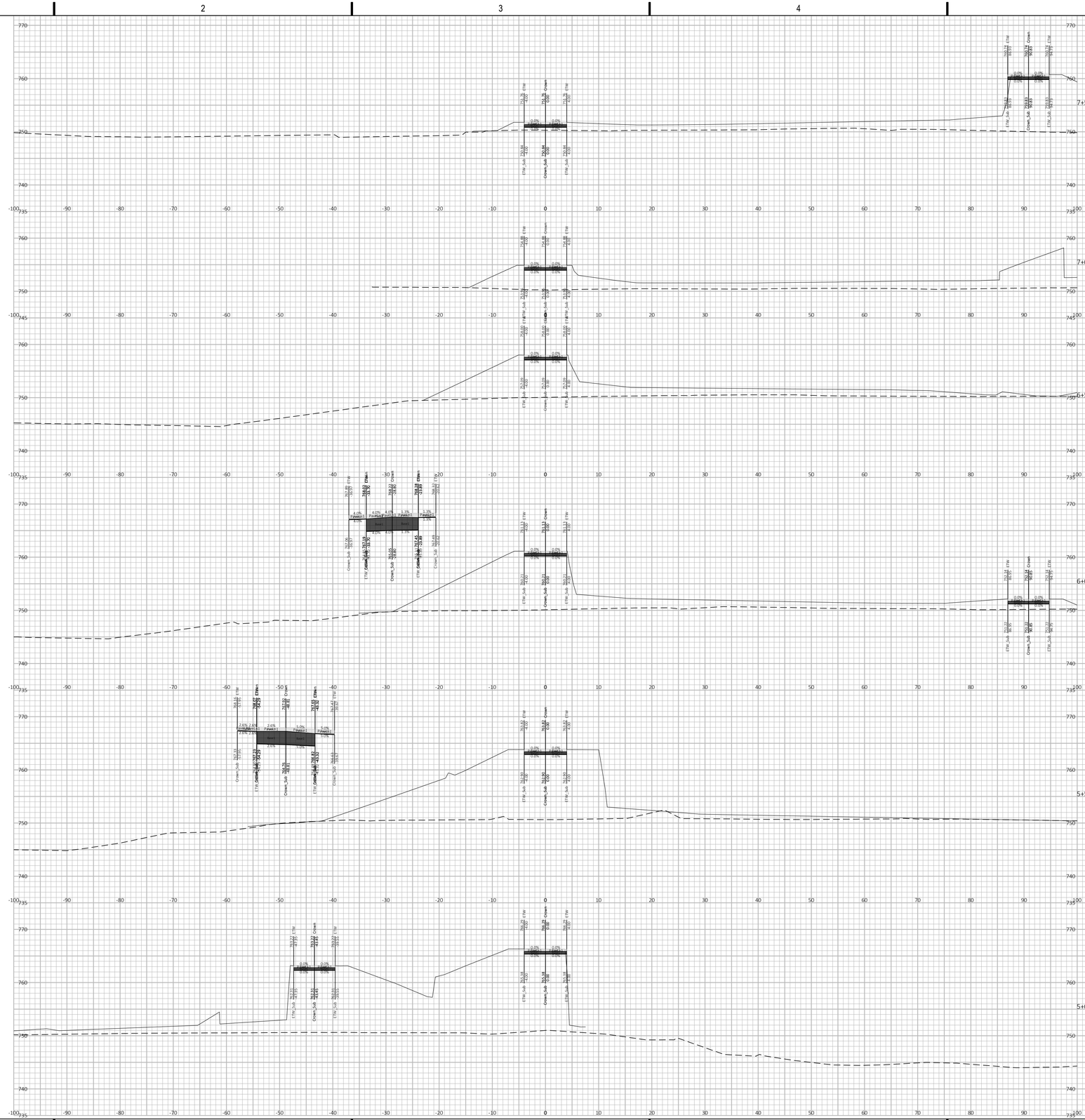

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DATE:	03-21-2025
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APPROVED BY:	PJS
SCALE:	AS NOTED

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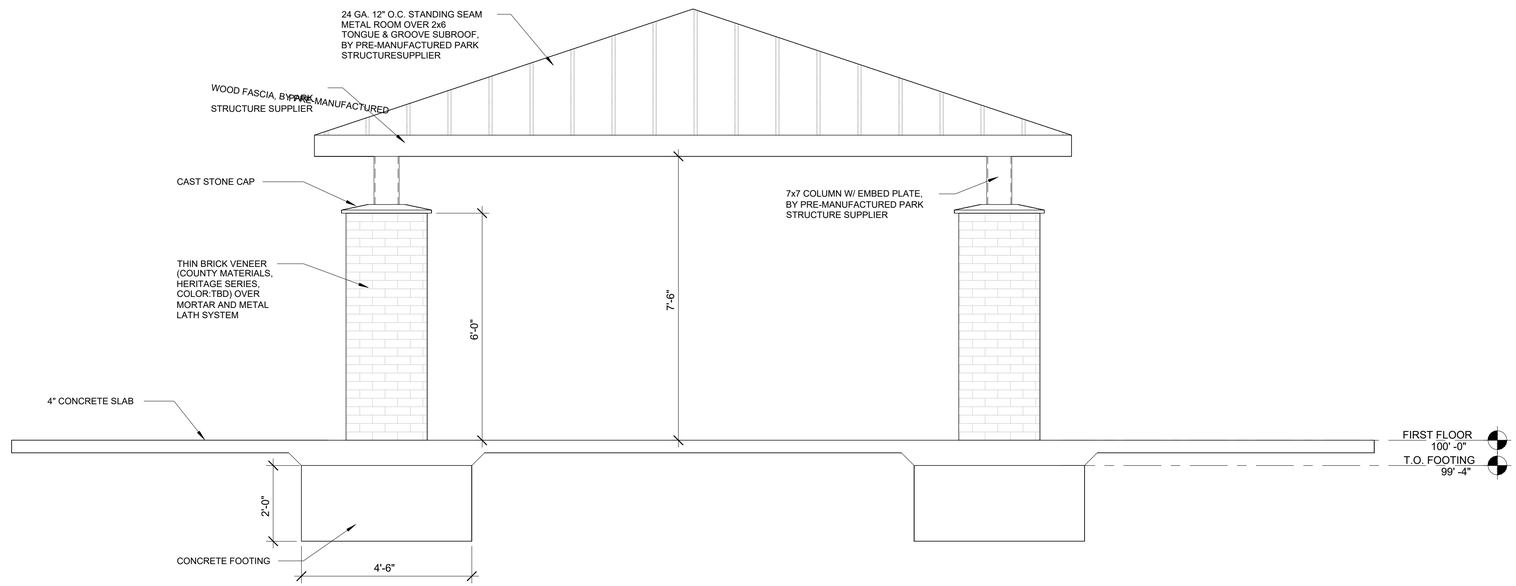

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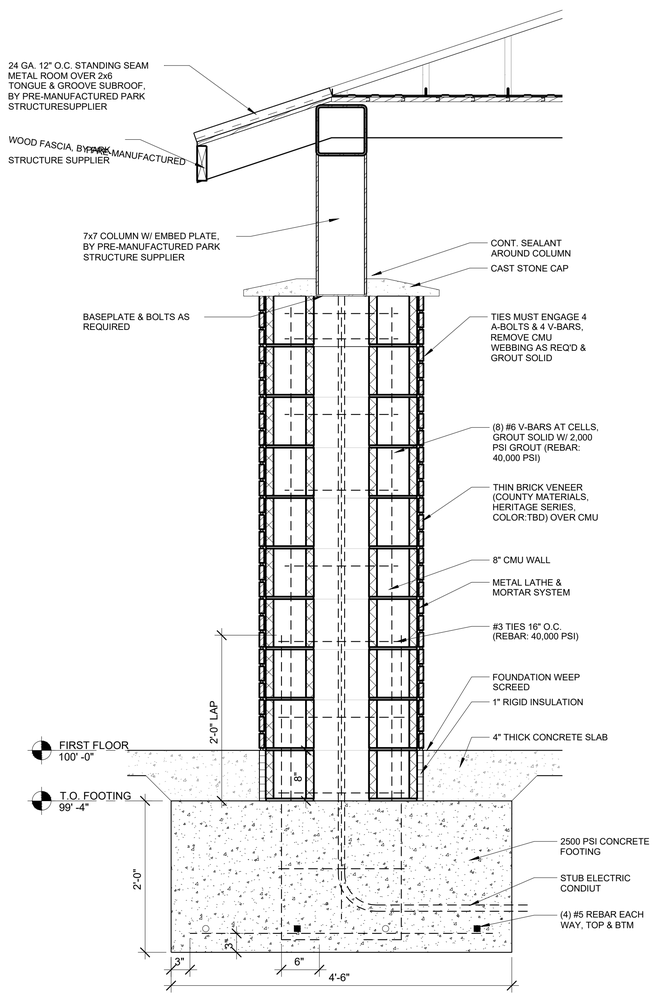

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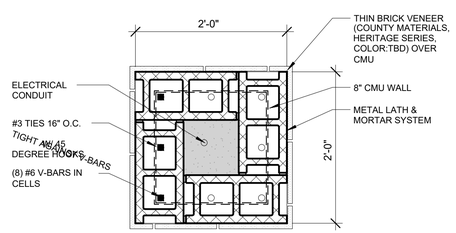

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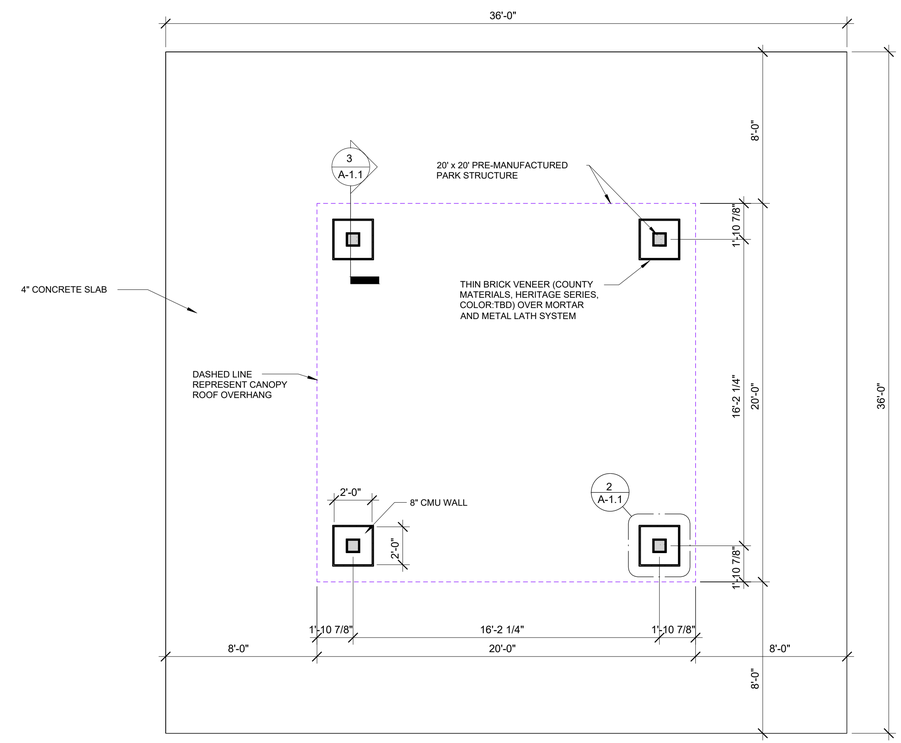
1" = 1'-0"



1 A-1.1 PARK SHELTER FLOOR PLAN
1/4" = 1'-0"

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A NEW PARK SHELTER FOR:
ARROWHEAD PARK
NEENAH, WI

REVISION HISTORY

NO.	DESCRIPTION	DATE

date: 10-24-2024
job: 24-105
d. by: NML

A-1.1

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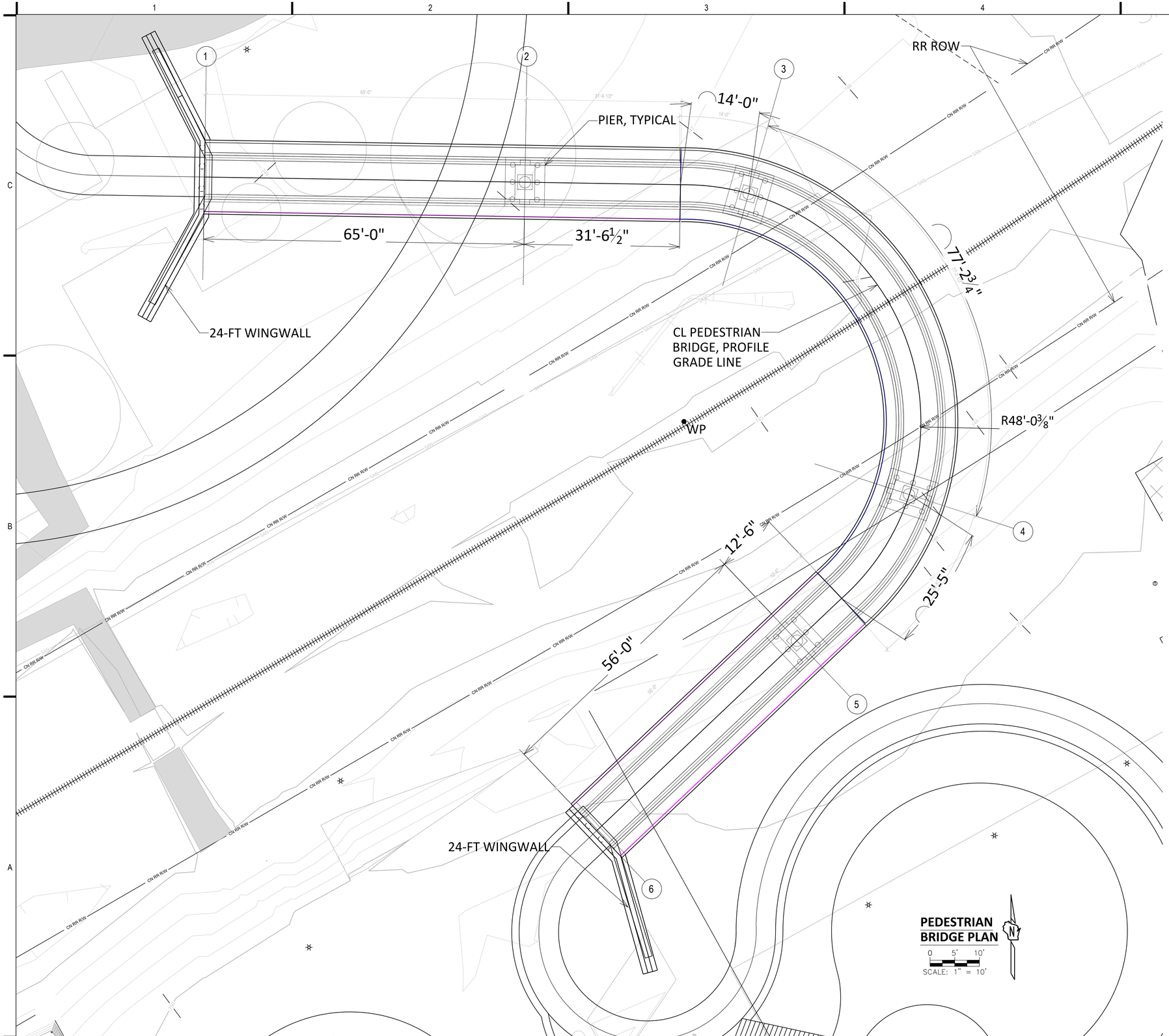

PEDESTRIAN BRIDGE IS A 5 SPAN STEEL TRAPEZOID BOX GIRDER WITH CONCRETE DECK - 3'-0" WEB DEPTH. DESIGN OF BRIDGE, ABUTMENTS, AND PIERS IS PRELIMINARY FOR CONCEPT ONLY.

PIERS AND ABUTMENTS ARE ANTICIPATED TO BE SUPPORTED ON CAST-IN-PLACE (CIP) PIPE PILES. DEPTH OF PILE IS ESTIMATED PER TYPICAL SOIL CONDITIONS. PILE LENGTH TO BE CONFIRMED UPON COMPLETION OF GEOTECHNICAL REPORT.

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SHEET TITLE:

PEDESTRIAN BRIDGE PLAN

SHEET NUMBER:

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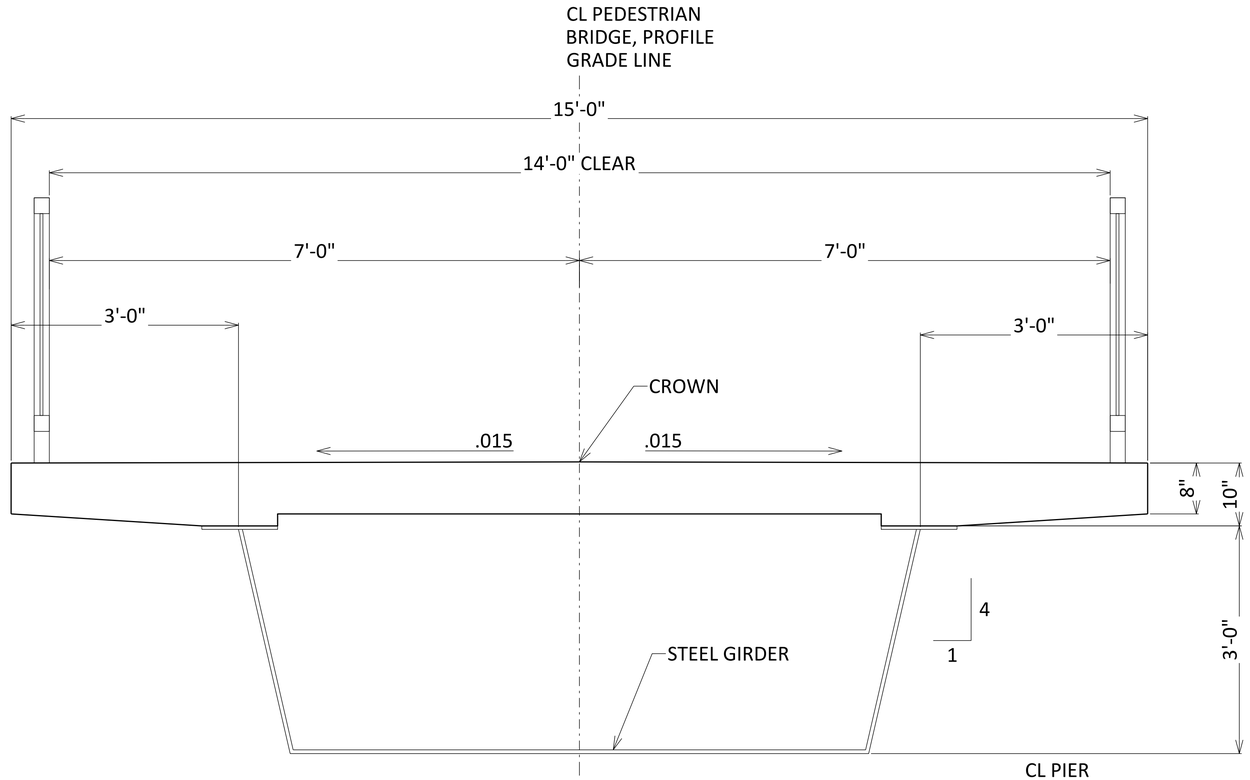

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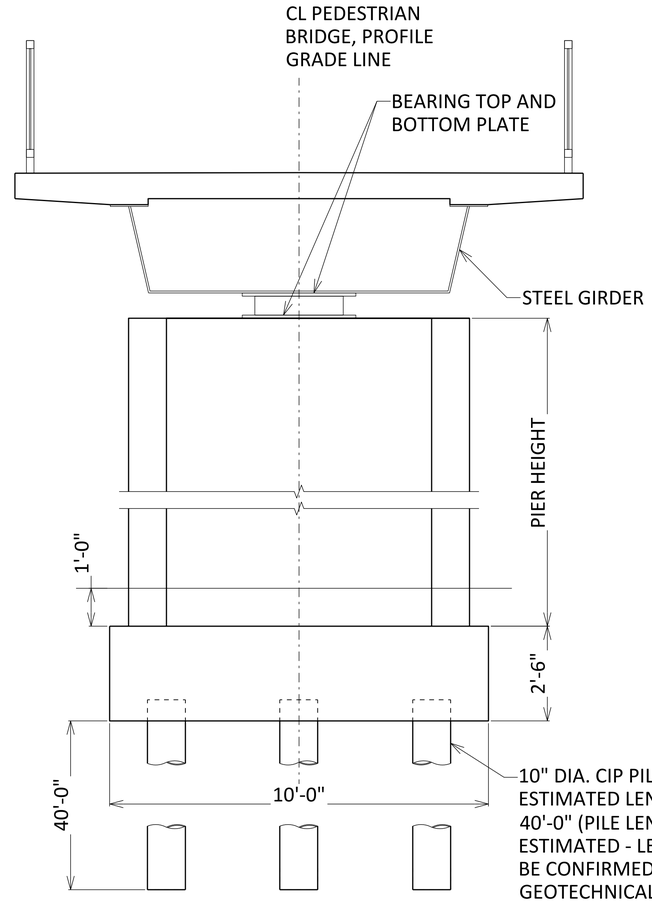

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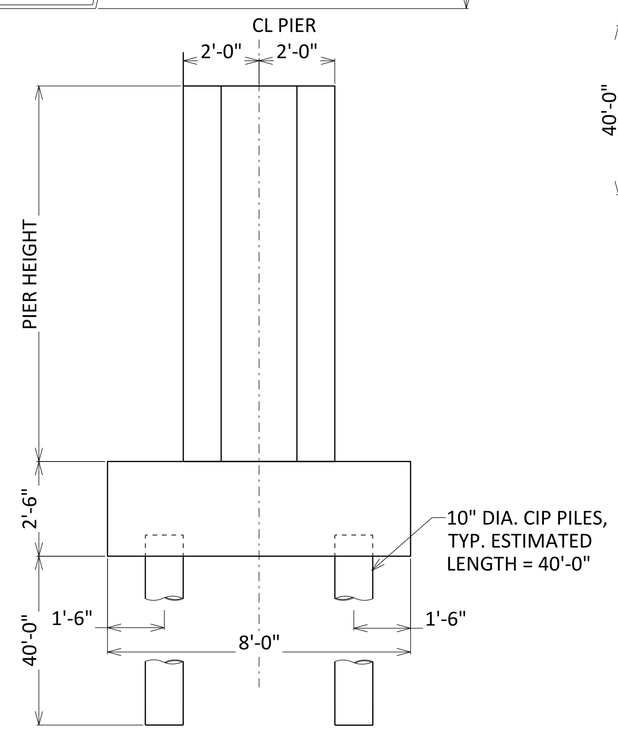

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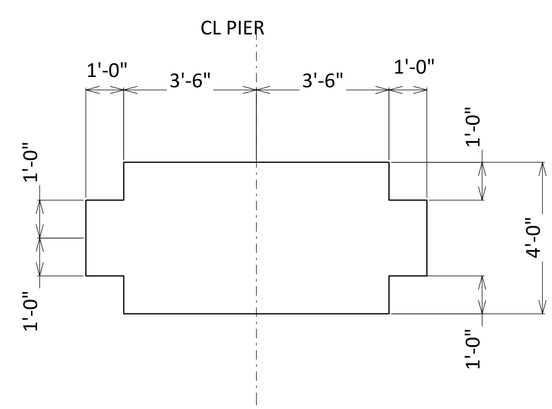

SECTION OF PIER

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SHEET TITLE:
ELEVATIONS AND SECTION

SHEET NUMBER:
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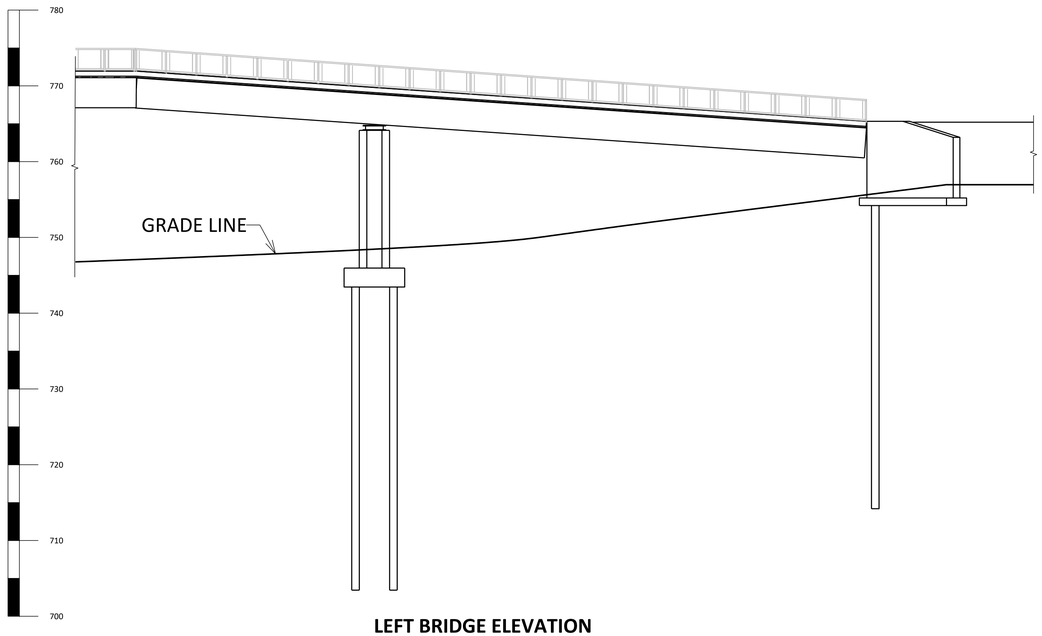

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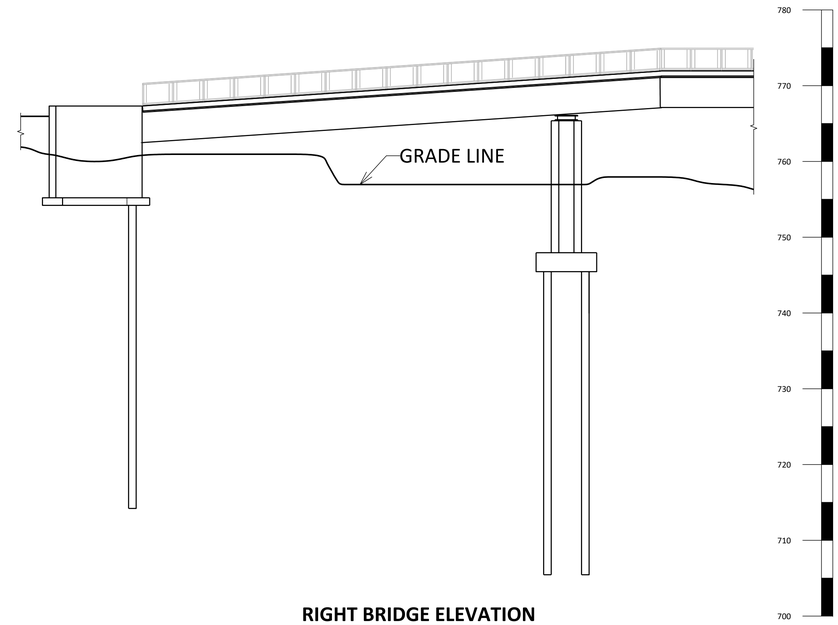

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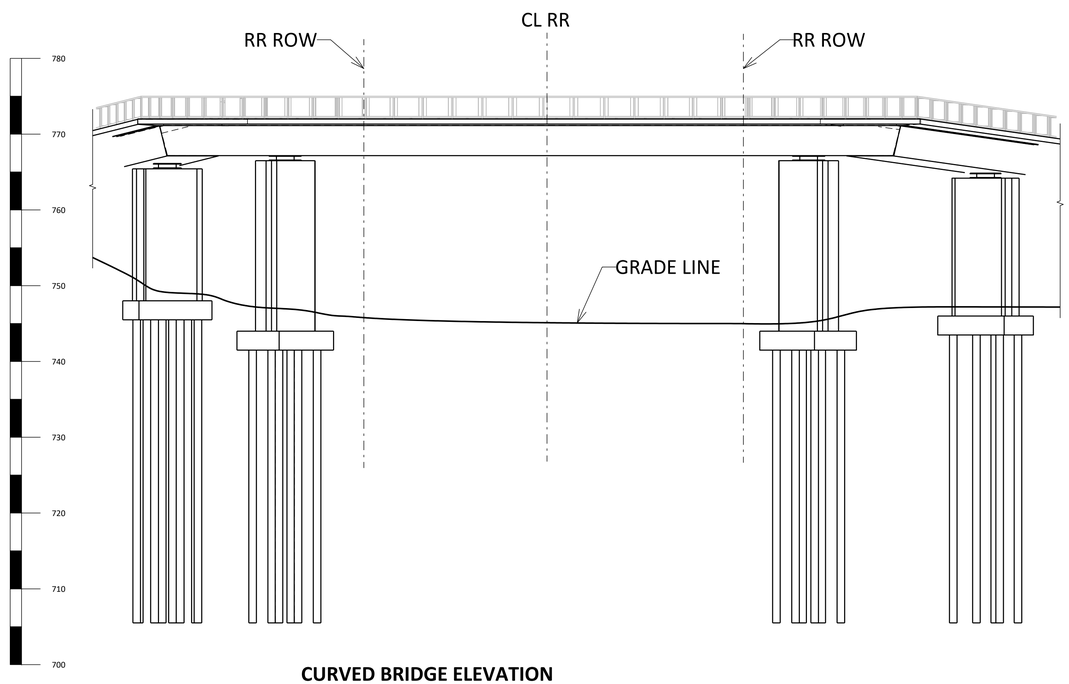

CURVED BRIDGE ELEVATION

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APPROVED BY:	Approved By
SCALE:	AS NOTED

SHEET TITLE:
ELEVATIONS

SHEET NUMBER:

S103

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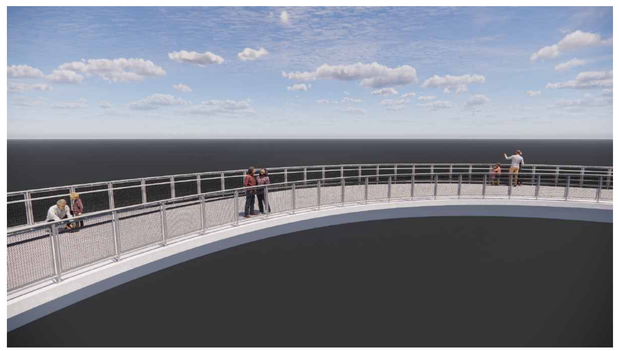
PICKET PANEL RAILING - SIDE VIEW

PICKET PANEL RAILING - DECK SECTION

PICKET PANEL RAILING - DECK VIEW



MESH PANEL RAILING - SIDE VIEW

MESH PANEL RAILING - DECK SECTION

MESH PANEL RAILING - DECK VIEW

CUSTOM RAILING - SIDE VIEW

CUSTOM RAILING - DECK SECTION

CUSTOM RAILING - DECK VIEW - NIGHT

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NEENAH, WI

ISSUE:

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DATE: 03-21-2025
DRAWN BY: JDJ
CHECKED BY:
APPROVED BY:
SCALE: AS NOTED

SHEET TITLE:

PEDESTRIAN BRIDGE RAILINGS

SHEET NUMBER:

S104

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Appendix D 2012 GRAEF Development at Historic Fill Site Application

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NEENAH PARK SITES #1 AND #2

SITE INVESTIGATION AND DEVELOPMENT PLAN

IN SUPPORT OF WDNR APPLICATION 4400-226

Neenah, Wisconsin

355 Millview Drive

Prepared for

City of Neenah
211 Walnut Street
Neenah, WI 54957

MARCH 2012

Prepared by

GRAEF
1150 Springhurst Drive, Suite 201
Green Bay, Wisconsin 54304-5950
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Project No. 2011-2007.00

Wisconsin DNR

2011-2007.00

Prepared for: Mr. Greg Tilkens
Wisconsin WDNR

Site Address: 2984 Shawano Ave.
Green Bay, WI 54313-6727

Prepared By: GRAEF
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Mr. Steve Shimek
Natural Resource Solutions, LLC

Patrick J. Skalecki, P.E.
Principal
GRAEF

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Figure 1 – Master Soil Boring Map and Thin Cover Areas

APPENDICES

Appendix A: Historic Site Data

Appendix B: Waste Characterization

Appendix C: Soil Boring Logs and Waste Limits

Appendix D: Development Plans

Appendix E: Site Visit Photo Log

1. Introduction

The City of Neenah (City) Parks and Recreation Department is proposing to redevelop a landfill previously utilized by the P.H. Glatfelter Company (Glatfelter) for disposal of wastewater treatment solids. The proposed project will create recreational park space on the landfill located north of Main Street on the southern shore of Little Lake Butte des Morts. The landfill is located in the SE 1/4 of Section 21 and the SW 1/4 of Section 22, T 20 N, R 17 E in the city of Neenah, Winnebago County, Wisconsin. The landfill has been referred to as the Arrowhead Park Landfill and also the Park Site Landfill. The Wisconsin Department of Natural Resources (DNR) license number for the landfill is 2299 and the facility identification number is 471013840.

The recreational park space development is divided into two segments, referred to as Park Site #1 and Park Site #2. Park Site #1 is located at the east end of the landfill and Park Site #2 will occupy the central and western portion of the landfill. Construction work associated with Park Site #1 includes: site fill and grading, gravel path construction, and landscape elements. At this time, the recreational park space development for Park Site #2 will be limited to extending a path along the north boundary of the landfill and constructing a landing at the west end of the landfill. No modification or excavation through the existing landfill cover is anticipated.

In order to develop the recreational park space on the landfill, the City is required to obtain an exemption to Wisconsin Administrative Code (WAC) NR 506.085. A completed DNR Form 4400-226 is required for the exemption application to the DNR. This form includes a series of questions to provide the DNR with sufficient information to assess development proposed on the landfill. Sections IV and V of the exemption application require an evaluation of the landfill and an opinion on the potential environmental impacts that will be associated with its development. This report was prepared to provide the landfill evaluation and opinion on development impacts. The evaluation was completed with existing information. The information available for the landfill generally meets the DNR *Guidance for Investigation*[1]. The evaluation of the data considered the DNR guidance, titled *Considerations and Potential Problems*[2].

Pursuant to a telephone conversation with Mr. Gregory Tilkens of the DNR on February 22, 2012, the information that has been submitted to or developed by the DNR needs only to be referenced in this report. However, information that may not have been submitted to the DNR, and is available, should be included. Historical records are included in Appendix A, waste characterization data is

---

[1] *Publication RR-684*, "Development at Historic Fill Sites and Licensed Landfills: Guidance for Investigation" (Madison, WI: Wisconsin Department of Natural Resources, 2006).

[2] *Publication RR-685*, "Development at Historic Fill Sites and Licensed Landfills: Considerations and Potential Problems" (Madison, WI: Wisconsin Department of Natural Resources, 2002).

included in Appendix B, soil boring logs are included in Appendix C, and recreational park space development plans are included in Appendix D. Appendix E includes photo documentation for a site visit.

2. Landfill History and Previous Construction

2.1. Landfill History and Configuration

Winnebago Paper Company was founded in 1874 and was located at the intersection of Main Street and Wisconsin Avenue. In 1904, Bergstrom Paper Company (Bergstrom) purchased Winnebago Paper Company. Based on a 1938 aerial photograph, which is included in Appendix A, the southern limits of Little Lake Butte des Morts extended south of the landfill area to the approximate location of Main Street where it joins Union Street. The railroad tracks that formed the southern boundary of the landfill were constructed on a narrow dike.

In 1950, the City was granted a bulkhead line across the south end Little Lake Butte des Morts. Bergstrom obtained the right from the City to use the area behind the bulkhead dike and they committed to the City that they would fill the area with solids extracted from Bergstrom's wastewater. Once Bergstrom had filled the area behind the bulkhead dike, the City planned to develop the property. A copy of the bulkhead line permit, the Bergstrom and City agreement, and bulkhead design drawings are included in Appendix A.

The original plans for landfill construction included several small cells adjacent to the wastewater disposal plant and then extension of a dike along the bulkhead line. Soil filling in the area to be occupied by the wastewater treatment plant (WWTP) started in late 1950 at the east end of the landfill, as shown in Environmental Resource Management (ERM) Drawing 3, included in Appendix A. The treatment plant was constructed in 1952. Solids from the Bergstrom wastewater treatment system were dewatered by a vacuum filter system and then landfilled.

The bulkhead dike was extended about 2,400 to 2,500 feet from the area of the treatment plant, west to the location of the Neenah Slough. The bulkhead dike was constructed from 1957 to 1970. A March 31, 1970, letter from the City to the US Army Corps of Engineers stated the dike was to be completed in the 1970 construction season. A 1971 aerial photograph shows the completed bulkhead dike. Both the correspondence and aerial photograph are included in Appendix A.

Wisconsin started to regulate landfills in 1969 under WAC RD 51 and subsequent WAC NR 151. In 1974, the DNR granted Bergstrom a conditional landfill license (2299) and exemptions from the water body setbacks required by WAC NR 151[3].

---

[3] John Reinhardt (Madison, WI: Wisconsin Department of Natural Resources) letter to Franklin Moore (Bergstrom), 27 November 1974.

From the late 1960s and into the 1970s, the City planned to develop the landfill into a public park. To this end, the City solicited assistance from the University of Wisconsin, Winnebago County, and local consultants. Vegetated test plots were established and drainage and consolidation studies were completed. Copies of correspondence related to the City park development are included in Appendix A. The City and DNR also negotiated appropriate cover requirements during this time period, as outlined in a DNR order dated September 23, 1976[4]. The landfill stopped receiving wastewater solids in 1976 and cover placement was completed sometime before November 1979[5].

The Bergstrom Neenah mill was purchased by Glatfelter in 1979. Glatfelter maintained roughly 6.5 acres of land leased from the City. The leased land occupied the eastern end of the landfill, generally in the area of Park Site #1.

2.2 Previous Construction Activities on the Landfill

2.1.1. Bergstrom and Glatfelter Construction

There was construction on the landfill in addition to the dikes and original treatment plant. Other Bergstrom-related construction in the proposed Park Site #1 development area included a clarifier and water treatment plant that were built in late 1967 to early 1968. A trailer truck parking area was constructed to the west of the clarifier in 1971. In 1976, the secondary WWTP was constructed and an aboveground fuel oil tank was erected. In 1990 and 1991, a combustor building and stabilization basin were constructed adjacent to the treatment plant. Other than the original treatment plant and parking lot, all construction was supported on pile foundations. The buildings and oil tank were demolished in 2007, after Glatfelter closed its Neenah mill. The construction features while the mill was operating are shown in a City 1979 aerial photograph included in Appendix A.

2.1.2. City of Neenah Construction

The City had constructed storm sewer extension and a sanitary sewer line below the landfill, as shown in ERM Drawing 9 in Appendix A. The sanitary sewer and the storm sewer extension were installed in 1975. Both sewers were designed and installed with an understanding of the anticipated loads associated with the landfill overburden. Their integrity should not be an issue.

---

[4] *Order Number 2A-76-1148* (Madison, WI: Wisconsin Department of Natural Resources, 1976).

[5] D. Misterek (Oshkosh, WI: Wisconsin Department of Natural Resources) letter to J. Wilke (City of Neenah) regarding Site Inspection on 17 October 1979.

The sanitary sewer extends from the south-central portion of the landfill to the northeast. Correspondence on the pipe installation is included in Appendix A. The correspondence was specific to concerns about a large clay stockpile located above the sewer at that time. The correspondence is included because it does provide some insight on how the sewer was installed. The sewer was within natural clay, with exception of a 50-foot long ditch crossing where 1 foot of sludge was over-excavated and replaced with 'fill stone' (gravel bedding). The ditch section referenced is located approximately 200 feet north of the south landfill boundary, along the alignment of the sanitary sewer. The correspondence suggests this is the only segment of the sewer line installed with gravel bedding and the trench was likely backfilled with the excavated clay. Backfilling the pipe trench with clay, versus gravel bedding, reduces the potential for the trench to be a pathway for leachate or gas migration.

The storm sewer traverses the landfill from south to north along the east side of the Fox Valley Energy (FVE) Center. The dike soil is in contact with the concrete outlet structure, based on site observations of the storm sewer outlet made in about 1998 by Mr. Steven Shimek, presently with Natural Resource Solutions LLC. This provides a barrier to interstitial flow from pipe bedding. Construction details at the connection of the sewer extension to pre-existing storm piping are not known.

Following closure of the Glatfelter mill, the City has utilized the area of Park Site #1 for storage, primarily soil and aggregate fill.

2.1.3. Fox Valley Energy Center

The FVE Center (previously Minergy) was constructed in the central portion of the landfill in 1996. The wastewater solids were removed from the footprint of the building prior to construction of the foundation. This facility location is shown in ERM Drawing 9 in Appendix A.

2.1.4. Fox River Remediation

Park Site #1 was used for sand storage during the 2008 sediment capping operations associated with the Fox River remediation. According to Mr. William Hartman, project manager for the Little Lake Butte des Morts clean up, 10,000 to 15,000 tons of sand were stored at Park Site #1 at any one time[6]. Mr. Hartman stated the sand was piled to a height of 15 to 20 feet, generally in the area south of Monitoring Well PS-15RR. Well locations are shown in Appendix C.

[6] William Hartman (Glatfelter), personal communication with Steven Shimek (Natural Resource Solutions, LLC), 2 March 2012.

3. Waste Characterization

Starting in 1952, wastewater from the Bergstrom deinking pulp mill was discharged to the disposal plant. The disposal plant was constructed with a Walker filter system, which discharged to three thickening basins. Solids from the thickening basins were sent to an Oliver vacuum filter where they were further dewatered to approximately a 30% consistency prior to landfilling.

Bergstrom constructed a clarifier and water treatment plant in late 1967 to early 1968. At that time, wastewater from not only the deinking pulp mill but also the paper machines, bleach plant, and beater room discharged to the disposal plant. Solids from the clarifier were dewatered with a belt press to about 40% consistency prior to landfilling.

Based on the physical character of the wastewater solids, it is expected the hydraulic conductivity, even at minimal loads, would likely be very slow, on the order of 4×10^{-6} centimeters per second (cm/sec). This is based on National Council for Air and Stream Improvement data, which is included in Appendix B. The low hydraulic conductivity of the wastewater solids is supported by the previously cited City 1975 drainage study, which indicated the lateral movement of liquid in the wastewater solids was very restricted.

The Institute of Paper Chemistry (IPC) completed an analysis of the wastewater solids in 1973. The results are provided in Table 1. Clarifier solids were analyzed by the University of Arkansas for carbon and nutrients as part of a 2003 land application study. The University of Arkansas results are included in Table 2.

Table 1 - Wastewater Solids Characteristics

Constituent	Concentration
Ash (%)	55.2
Silicon (% of ash)	24.0
Aluminum (% of ash)	28.0
Calcium (% of ash)	20.2
Titanium (% of ash)	4.7
Magnesium (% of ash)	1.7
Iron (% of ash)	0.4
pH (standard unit)	12.0

The solids that were landfilled contained 55% mineral ash on a dry weight basis. The mineral ash consisted primarily of silicon, aluminum, and calcium. The remaining 45% of the mass was organic matter consisting mostly of short wood fiber that was lost in the pulping and paper making process.

Table 2 - Carbon and Nutrients in Wastewater Solids

Constituent	Concentration
Total Carbon (%)	26.8
Organic Nitrogen (%)	0.45
Inorganic Nitrogen (%)	<0.01
Carbon:Nitrogen	60
Phosphorus (%)	0.104
Sulfur (%)	0.288

The wastewater solids disposed in the landfill were strictly from primary clarification and not from a biologic system. Therefore, the solids are relatively inert with a low nutrient content. The high pH and carbon content, together with the low nutrient content, would indicate the solids would not readily decompose.

According to a DNR technical memorandum entitled "Fox River and Green Bay PCB Fate and Transport Evaluation" prepared by the DNR on June 3, 1998, commercial production of carbonless copy paper using polychlorinated biphenyl (PCB) emulsions at Appleton Coated Papers began in the Fox Valley in 1954 and continued until the early 1970s[7]. It is assumed waste carbonless copy paper entered the recycle mills pulping system in 1954 or shortly after. As a deinked pulp mill, Bergstrom wastewater solids likely contained PCBs from 1954 through the final landfilling operations.

The PCB concentration in the landfilled wastewater solids has been determined on several occasions since 1983. Much of the early data was analyzed on an 'as-received' basis and is of limited value. However, there is PCB data on a dry weight basis from borings completed in 1988, 1991, and 1999. The data is summarized in Table B-1 of Appendix B. The PCB concentration ranged from 1.3 to 4,500 milligrams per kilogram (mg/kg) in 53 samples of the wastewater solids. The data is highly skewed and best represented by the geometric mean, which is 60.5 mg/kg. The

[7] R. Stoll and K. Erdman, "Fox River and Green Bay PCB Fate and Transport Evaluation" (Madison, WI: Wisconsin Department of Natural Resources memorandum, 3 June 1998).

concentration of PCBs was found to increase from 1954 to 1969, after which time it declined. Most of the solids placed in the eastern portion of the landfill, below Park Site #1, were placed from 1952 to 1964 and the geometric mean concentration of PCBs in the wastewater solids at that time was 38.4 mg/kg, or less.

PCBs have a high affinity to wastewater solids and PCB losses as leachate are small. IPC column leach tests found only 0.1% to 0.2% of the solids PCB content was lost as leachate. A copy of the results is included in Appendix B. The IPC leachate PCB concentrations ranged from 0.5 to 4 parts per billion (ppb), whereas the solids subjected to the leach tests had PCB concentrations of 20 to 82 mg/kg. DNR sample results from Leachate Head Well PS-9 also suggest PCB losses from the solids are limited[8]. The expected PCB concentration of the wastewater solids in the area of the Leachate Head Well is 21.4 to 29.6 mg/kg, or 21,400 to 29,600 ppb. The DNR leachate sample had a PCB concentration of 1.98 ppb, which is less than 0.1% of the solids PCB concentration.

The potential occurrence of other organic contaminants is low, considering the age of the fill and the characteristics of clarifier solids from similar paper mills.

[8] Ibid., 7.

4. Waste Limits, Volume and Confinement

4.1. Waste Limits

The waste vertical and horizontal limits have been defined through a review and interpretation of landfill design drawings, aerial photographs, survey documentation, and soil borings. These data are summarized in ERM Drawings 10 and 11 in Appendix C. It should be noted that most of the supporting information, including the original Bergstrom design drawings, photographs, and survey documentation was lost when the building in which they were stored flooded. Many of the soil boring logs used to prepare the drawings were included in DNR submittals; soil boring logs that have not been submitted to the DNR are included in Appendix C. Table C-1, in Appendix C, contains a summary of the soil borings completed on and adjacent the landfill through 1999. For ease in identification, the soil borings are consecutively numbered and their locations shown on ERM Drawing 9. It should be noted that ten soil boring logs, Master Soil Boring Nos. 68 through 78, have not been located. More recent soil borings have been included in site assessment submittals completed by Stantec for the City and Glatfelter. Soil boring logs completed for the City are attached in Appendix C. The soil boring logs completed in 2011 for Glatfelter were submitted to the DNR on August 18, 2011[9].

4.2. Waste Volume

The filled area covers approximately 33 acres to typical depth of approximately 8 to 10 feet. The base and top of waste elevations in ERM Drawings 10 and 11, in Appendix C, were used to estimate the waste volume in the landfill. The estimated volume of wastewater solids in the landfill is 387,000 cubic yards. This estimated volume is based on conditions prior to the solids removal for construction of the FVE Center.

4.3. Waste Containment

4.3.1. Base Soils

In general, the base of the landfill is the native soils of the Little Lake Butte des Morts lake bed. The northern limit of waste coincides with the clay bulkhead dike. The southern limit of waste is located along the soil embankment of the railroad tracks.

Soil below the waste consists of slowly permeable clay and silt that extends approximately 59.5 feet below the base of the waste. Refer to Section 5.2 for more detail on the soil conditions below the landfill.

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[9] Stuart Gross, "Summary of Waste Sampling Activities at Park Site Landfill, Neenah, Wisconsin" (Green Bay, WI: Bonestroo, unpublished report, 2011).

4.3.2. Bulkhead Dike

City correspondence discussed in Section 2.1, personal observations, and soil boring data all confirm fine-grained soil was used for bulkhead dike construction. Mr. Shimek had the opportunity to view the exterior dike slope several times before riprap placement in about 1998. The dike surface was primarily a fine-grained soil with varying amounts of gravel. At that time, there were no indications of seepage along the bulkhead dike. Master Soil Boring Nos. 33, 37, 38, and 56 were completed along the bulkhead dike. Master Soil Boring Nos. 33, 37, and 56 were completed as part of a Glatfelter 1983 site evaluation, which included a determination of the bulkhead dike cross-section and the soil fill hydraulic conductivity[10]. Clay borrow soils were found in all bulkhead dike sections. The top and base gravel layers depicted in one of the design drawings included in Appendix A were either poorly defined or absent. DNR utilized the in-field hydraulic conductivity test results to calculate the seepage rate along the entire bulkhead dike, which they estimated at only 120 gallons per day[11].

4.3.3. Soil Fill South of Landfill

Soil fill occurs above the native clay soils at the location of the previous WWTP, bulkhead dike, and adjacent the south boundary of the landfill. Master Soil Boring Nos. 64 and 65 were located approximately 75 to 150 feet south of the waste limit and penetrated the soil fill. The soil fill at these locations was classified as silty to sandy clay with pockets of silty and clayey sand, trace to some gravel, and trace to some concrete and cinders.

The City of Neenah has completed soil borings south of Park Site #1 as part of the Glatfelter mill site redevelopment[12]. A line of soil borings designated SL1 through SL6 were completed along and south of the railroad tracks. The soil description indicates 0.0 to 0.7 foot of sand and gravel surface material over sand and silty clay fill. Native clay soil was encountered from 5.3 feet to 11.5 feet below the ground surface. It should be noted that the exploration completed for the adjacent redevelopment did not identify landfill related impacts[13].

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[10] G. Bureau and C. Carter, "The Park Site Landfill in Neenah, Wisconsin: Existing Physical Conditions, Effect on Local Groundwater and Alternatives for Future Action" Spring Grove, PA: P.H. Glatfelter, 1984.

[11] Richard Schuff (Madison, WI: Wisconsin Department of Natural Resources) letter to Neal Carter (P.H. Glatfelter), 10 September 1984.

[12] Lynelle Caine. "City of Neenah Site Investigation Report" Crivitz, WI: Stantec, February 6, 2012.

[13] Lynelle Caine (Stantec) personal communication with Steve Shimek (Natural Resource Solutions, LLC), 17 March 2012.

4.3.4. Landfill Cover

The landfill cover was first evaluated in the Glatfelter 1983 site evaluation. They completed 26 borings to document the thickness of the cover. They found the cover to range from 0.25 foot to 4.5 feet with a mean thickness between 1 and 2 feet. The thickness of the cover was greatest near the center of the landfill and generally became thinner at the perimeter. The cover soil was primarily dark brown to reddish-brown silty clay with several inclusions of clayey silt, silty sand, gravel, and sand. Isolated areas of gravel and cinder roadbed material were also identified. Grain size analyses completed on the silty clay cover soil found the percent passing the No. 200 sieve to range from 50% to 95% by weight. The liquid limit ranged from 32 to 48 and the plastic index from 13 to 27. These values are indicative of relatively good quality clay liner soil. Hydraulic conductivity was also determined on undisturbed samples of the cover soil. The hydraulic conductivity ranged from $3x10^{-8}$ centimeters per second (cm/sec) to $1x10^{-5}$ cm/sec. The average hydraulic conductivity of the four samples was $3x10^{-6}$ cm/sec. Although faster than required by modern standards, the hydraulic conductivity is relatively low.

Subsequent to the 1983 study, the City placed additional clay soil. Soil borings completed across the landfill in 1999 found the cover thickness to vary from 1.0 to 6.3 feet, with an average thickness of 3.3 feet. Copies of the soil boring logs are included in Appendix C. As noted in the earlier study, the cover generally consisted of silty clay with inclusions and isolated areas of roadbed material. In 2011, Glatfelter completed 34 soil borings in the central and western portion of the landfill[14]. These soil boring logs were reviewed for cover thickness. The soil cover was found to range from 1.0 to 5.8 feet thick, with an average thickness of 2.9 feet. The locations of soil borings completed in both 1999 and 2011 that had less than 2.0 feet of cover in the profile were identified and the areas were plotted on Figure 1. No characterization, other than visual classification, of the cover soil was completed in 1999 or 2011.

[14] Ibid., 9.

5. Landfill Setting

5.1. Topography and Land Use

The landfill is located in an area of nearly level terrain, with a surface elevation that ranges from +748 feet mean sea level (msl) in the central and eastern portion of the landfill and gradually slopes downward in all directions. The surface elevation on the bulkhead dike, adjacent to Little Lake Butte des Morts, is +744 feet msl. The normal pool elevation of Little Lake Butte des Morts is near +738 feet msl. The land surface along the southern boundary of the landfill is at +744 feet msl to the southwest and +748 feet msl to the southeast.

Park Site #1 at the east end of the landfill is relatively level, but contains several large stockpiles. The existing topography is shown on the Graef Drawing C-203 in Appendix D.

The FVE Center occupies the central portion of the landfill. The area west of the FVE Center is relatively level and supports a grass cover with areas of brush and small trees.

The area east beyond the landfill includes new commercial development, primarily office space. A mix of commercial and residential use occurs about 500 feet south of the landfill south of Main Street. To the west of the landfill is a mix of industrial, commercial, and residential uses. Little Lake Butte des Morts occurs to the north.

5.2. Hydrogeologic Setting

5.2.1. Bedrock and Soil

The area is underlain by recent and glacial lake deposits. According to a DNR site review, the recent and glacial deposits are underlain with low permeability Prairie du Chien dolomite[15]. Master Soil Boring No. 78 was the deepest boring completed at the landfill. This boring was completed in the area of the FVE Center and extended to a depth of 95.0 feet. Refer to Figure 1 for the Master Soil Boring map. This boring encountered a continuous layer of hard to stiff silty clay to 59.5 feet below the waste. Below the silty clay layer, the boring encountered 5.0 feet of fine sandy silt and 7.5 feet of extremely dense clayey sand with a trace of gravel. Bedrock (not classified) was encountered 72.0 feet below the base of the waste. The silty clay and fine sandy silt deposits are likely lacustrine and glacial till. The clayey sand is probably a basal glacial till deposit. Other borings across the site document the consistency of the clay deposits. Testing completed in the

[15] Ibid., 7.

1983 Glatfelter study found the base soils to have a very low vertical hydraulic conductivity of $1x10^{-9}$ cm/sec to $5x10^{-8}$ cm/sec[16].

Soil fill occurs above the native clay soils at the location of the previous WWTP, bulkhead dike, and adjacent the south boundary of the landfill. Master Soil Boring Nos. 64 and 65 were located approximately 75 to 150 feet south of the waste limit and penetrated the fill, which was classified as silty to sandy clay with pockets of silty and clayey sand, trace to some gravel, and trace to some concrete and cinders. Recent soil borings completed south of Park Site #1 and east of Master Soil Boring No. 65 identified a thin surface deposit of sand and gravel over sand and silty clay soil fill. The soil fill was underlain by native silty clay soil.

5.2.2. Groundwater

Groundwater levels are monitored in nested wells located south of the landfill, and saturated levels are monitored within the landfill and the bulkhead dike. The locations of the monitoring wells are shown in Appendix C Groundwater in the area of the landfill is rather shallow and typically less than 10 feet below the ground surface. Water levels in the waste mass are generally higher than the normal pool level of Little Lake Butte des Morts and above the water table monitored south of the landfill. Monitoring data indicates water flows away from the landfill in all directions. Based on October 2011 monitoring results, water flowed from Leachate Head Well PS-9 at elevation +745.57 feet msl to the bulkhead dike where the water elevation in Monitoring Wells PS-3R and PS-15RR was at +738.02 feet msl and +735.04 feet msl, respectively. Water also flowed south from Leachate Head Well PS-9 toward the south boundary of the landfill. Monitoring Well PS-32B is located southwest of the landfill and Monitoring Well PS-33B is located to the southeast. The groundwater elevation in Monitoring Wells PS-32B and PS-33B was 746.32 feet and 739.35 feet, respectively. Water levels in nested wells located south of the landfill have indicated varying directions of vertical gradient. In October 2011, the vertical gradient in Well Nest PS-32 was upward and in PS-33 it was downward. This same variation has been noted in previous years.

There are no known potable water wells in the vicinity of the landfill. The City and the nearby City of Menasha do not utilize groundwater for their water supply; rather they treat and utilize water from Lake Winnebago. The closest municipal well is in the Town of Menasha, more than 0.5 mile north of the landfill.

[16] Ibid., 10 (10).

6. Site Visit

On March 1, 2012, Mr. Shimek conducted a site visit. Photo documentation is included in Appendix E. The surface of Park Site #1 is shown in Photos 2 through 7 in Appendix E. The east portion of the landfill, Park Site #1, is relatively level with the exception of several stockpiles. The surface consists of a combination of pavement, building foundations, gravel, sand, and debris (primarily fragments of concrete and brick). There was a stockpile of aggregate in the south part of Park Site #1 that appeared to be about 10 feet high, possibly higher (Photos 2 and 3). A circular depression was observed at the location once occupied by the wastewater clarifier (Photo 3). The spill retention berms that surrounded the decommissioned No. 6 fuel oil AST were observed at the southwest area of Park Site #1 (Photos 2 and 4). Long and narrow berms were noted adjacent to the FVE Center (Photos 3, 5, and 6). The berms appeared to be about 4 to 8 feet high. A concrete storm sewer outlet was observed immediately northeast of the FVE Center (Photo 8). There were no observations of cover clay, except outside developed areas along the periphery of the landfill. There were no observations of wastewater solids or seeps that would indicate the cover was compromised and waste was exposed.

The western portion of the landfill, or Park Site #2, is nearly level with localized shallow depressions. Photos 9 through 20 show the conditions on the western portion of the landfill. The area of Park Site #2 is primarily grass-covered with isolated areas of small trees and shrubs. The bulkhead dike, which extends the length of the landfill, is primarily grass-covered and riprap has been placed on the exterior slope (Photos 9, 18, and 20). There were sporadic small shallow depressions, which were water filled (Photos 11, 12, and 14). The water in the depressions was clear and likely the result of a recent snowmelt. There were no observed leachate seeps or evidence of seeps or gas migration, such as stained soil or sparse vegetation, in the western portion of the landfill. An exception was a small area about 3,000 square feet in size, located approximately 200 feet west of the FVE Center that had sparse vegetation (Photo 12). The surface had very shallow water accumulations, but the water appeared clear and not associated with leachate. It was noted that the surface did contain gravel and asphalt fragments. It is a possibility the sparse vegetation is a result of several factors including wet soil conditions and poor quality surface soil. There were also several areas near the south-central portion of the landfill, south of the FVE Center, where vegetation was sparse or lacking because of equipment tracking, and shallow soil or gravel fill placement or grading (Photo 14, foreground and left side).

7. Previous or Existing Environmental Impacts

Known or potential environmental impacts that have occurred at the landfill have been evaluated for various media, including groundwater, soil, surface water, sediment, air, and explosive gas (methane).

7.1. Groundwater

Groundwater and leachate heads have been routinely monitored at the landfill since 1968. The following describes the groundwater monitoring network and provides an evaluation of recent groundwater quality results.

7.1.1. Groundwater Monitoring Network

The locations of the groundwater and leachate head monitoring wells are shown in Figure 2, and Table 3 provides basic construction information on the wells. The wells are monitored in April and October of each year. Groundwater levels are monitored in nested wells located south of the landfill, and saturated levels are monitored within the landfill and the bulkhead dike. The present groundwater monitoring program requires that all wells are monitored for water (or leachate) elevation, specific conductance, color, odor, turbidity, temperature and pH. Additionally, Monitoring Wells PS-3R and PS-15RR are monitored for chemical oxygen demand (COD), chloride, and, total sulfate, iron, hardness, and alkalinity.

Table 3 - Monitoring Well Summary

Well		Construction Summary			
Common Name	DNR Unique No.	Depth (Feet)	Material Adjacent the Screen Section	Water Table or Leachate Head Well	Piezometer
PS-3R	012	9.2	Bulkhead Dike	X	---
PS-9	002	11.0	Waste	X	---
PS-15RR	003	9.0	Bulkhead Dike	X	---
PS-32	006	38.6	Native Soil	---	X
PS-32A	007	23.1	Native Soil	---	X
PS-32B	008	14.4	Fill and Native Soil	X	---
PS-33R	009	38.1	Native Soil	---	X
PS-33A	010	22.9	Native Soil	---	X
PS-33B	011	14.3	Fill and Native Soil	X	---

7.1.2. Groundwater Quality Evaluation

The groundwater monitoring network includes wells placed in waste, soil fill, and native soils. Because of this unique condition, groundwater quality assessments have been completed utilizing groundwater quality trends and the range of historical parameter concentrations, rather than comparisons to established standards. The most recent groundwater evaluation was completed in 2007 and included groundwater monitoring results from 1986 through April 2006[17]. The conclusion of the report was that groundwater quality impacts potentially related to the landfill have declined over the years and groundwater quality monitored adjacent to the landfill was often influenced by factors other than the landfill. Based on the findings, the required monitoring parameter list was reduced to indicator parameters, with the exception of two wells located in the bulkhead dike, Monitoring Wells PS-3R and PS-15RR. These wells are also monitored for chloride, COD, and total sulfate, iron, hardness, and alkalinity.

This groundwater evaluation includes a comparison of the 2011 monitoring results to those presented in the 2007 report. The evaluation includes specific conductance (an indicator parameter), chloride, COD, and total sulfate, iron, hardness, and alkalinity. The 1989 DNR monitoring results for PCBs are also provided for informational purposes.

Table 4 includes a summary of specific conductivity readings from April 2006 and October 2011. Specific conductivity has been a good indicator of groundwater quality adjacent to the landfill, which is one of the reasons it is monitored in all wells. Table 5 provides a summary of the parameter concentrations that were monitored in Wells PS-3R and PS-15RR.

[17] Steven Shimek, "Groundwater Evaluation and Request for Operating Plan Modification, Glatfelter Park Site Landfill, Winnebago County Wisconsin" (Green Bay, WI: STS Consultants, Ltd., 2007).

Table 4 - Summary of Specific Conductivity Results

Monitoring or Leachate Head Well	Specific Conductivity (µmohs/cm)	
	April 2006	October 2011
PS-3R	3,180	2,920
PS-9	2,860	2,296
PS-15RR	2,620	3,305
PS-32 PS-32A PS-32B	524 1,190 1,210	582 1,046 1,218
PS-33R PS-33A PS-33B	217 530 300	661 608 708

µmohs/cm - micro-mohs per centimeter

Table 5 - Summary of Parameter Concentrations in Monitoring Wells

Parameter	Concentration (mg/L)	
	PS-3R	PS-15RR
Chloride	167	748
COD	105	50.8
Sulfate	49.7	<2.0
Iron	17.7	34.4
Hardness	1,750	1,230
Alkalinity	1,930	737

mg/L - milligram per liter

7.1.3. Specific Conductance and Chloride

The specific conductivity of leachate, based on results from Leachate Head Well PS-9 once exceeded 90,000 µmohs/cm. The specific conductivity in the leachate at this well has declined over the years and is now typically in the range of 2,000 µmohs/cm to 3,000 µmohs/cm. The leachate chloride concentrations have also declined over the years from 854 mg/L in 1986 to a range of 50 mg/L to 300 mg/L in recent years.

The October 2011 specific conductivity measurements and chloride concentrations in all groundwater monitoring wells were within their respective historic range of values. However, the

specific conductivity was somewhat elevated in two monitoring well locations in October 2011 as compared to April 2006. These locations included Monitoring Well PS-15RR and Well Nest PS-33.

The elevated specific conductivity value in Monitoring Well PS-15RR does not correspond with the results of any other parameters analyzed. In reviewing all the specific conductivity results from 2006 through 2011 it was found the values ranged from 2,595 to 3,650, with no trend. Also, in the past, any unusual increases in specific conductivity in Monitoring Well PS-15RR were associated with increases in chlorides. Such an occurrence was monitored in April 2005 that was attributed to salting operations at the previous truck parking area. Based on the review of data it appears the October 2011 specific conductivity value is normal.

Table 6 - Specific Conductivity Results for Monitoring Well PS-15RR

Monitoring Date	Specific Conductance (µmohs/cm)
April 2006	2,620
April 2007	3,650
April 2008	3,590
October 2008	3,550
April 2009	3,120
October 2009	2,890
April 2010	2,690
October 2010	2,300
April 2011	2,595
October 2011	3,305

The October 2011 specific conductivity values in Monitoring Wells PS-33 and PS-33B were elevated above the values recorded in 2006. Well Nest PS-33 was viewed during the March 1, 2012, site visit (Photo 1 in Appendix E Photo Log). An excavation for a stormwater basin had been excavated next to the well nest. The crest of the pond sidewall was within several feet of the wells. One of the protector pipes was found to be loose. The excavation was water-filled with runoff from the adjacent construction site, Millview Drive, and Main Street. According to Lynelle Caine of Stantec, the excavation was completed in autumn 2011[18]. The monitoring event also occurred at approximately the same time. It should be noted that specific conductivity in the shallow Monitoring

[18] Lynelle Cain (Stantec) personal communication with Steven Shimek (Natural Resource Solutions, LLC), Green Bay, WI, 5 March 2012.

Well PS-33B rose from 440 µmohs/cm in April 2011 to 708 µmohs/cm in October 2011. This shallow well is the most likely to be influenced by surface disturbances. It does not appear the somewhat elevated specific conductivity values in well nest PS-33 are related to the landfill.

7.1.4. COD

Leachate COD concentrations from Leachate Head Well PS-9 have declined significantly over the years. Initially, the COD was 30,000 mg/L. After 2000, the COD concentration in the leachate has been less than 200 mg/L.

The recent COD concentrations in Monitoring Wells PS-3R and PS-15RR are within their respective historic range. The COD in Monitoring Well PS-3R in October 2011 was almost identical to its concentration in April 2006 of 102 mg/L. The COD concentration in Monitoring Well PS-15RR in October 2011 was near the mid-point of the long-term range.

7.1.5. Sulfate and Iron

Both sulfate and iron monitored in Leachate Head Well PS-9 fluctuated over the years with no apparent trend. The sulfate concentration has ranged from no detect to 250 mg/L and iron has ranged in concentration from less than 5 mg/L to over 30 mg/L.

The October 2011 sulfate concentration in Monitoring Well PS-3R was similar to results recorded in April 2006 (50 mg/L) and well within the long-term range in concentration. Historically, the sulfate concentration in Monitoring Well PS-3R has ranged from no detect to more than 1,200 mg/L. Sulfate was not detected in the recent analysis of water from Monitoring Well PS-15RR. Historically, the sulfate concentration in this well has been low, less than 50 mg/L.

Iron concentrations from October 2011 in Monitoring Wells PS-3R and 15RR are somewhat lower than detected in 2006 and within their historic range in concentration of 10 mg/L to somewhat greater than 60 mg/L.

7.1.6. Hardness and Alkalinity

Hardness and alkalinity monitored in Leachate Head Well PS-9 have varied, but both parameters are commonly near 1,000 mg/L.

The recent hardness and alkalinity concentrations in Monitoring Wells PS-3R and 15RR were within their historic range. The hardness concentrations in both monitoring wells were lower than monitored in April 2006. The concentration of alkalinity in Monitoring Well PS-15RR has decreased

somewhat from April 2006 when the concentration was 798 mg/L. Conversely, the alkalinity in Monitoring Well PS-3R has increased somewhat from 1,817 mg/L.

7.1.7. PCBs

In November 1989, the DNR sampled for PCBs in Monitoring Wells PS-3R and PS-15RR, and Leachate Head Well PS-9[19]. They found the PCB concentration of leachate in Well PS-9 was 1.981 ppb. This contrasted with the PCB concentration of 0.462 ppb in Monitoring Well PS-3R and 0.023 ppb in Monitoring Well PS-15RR. The DNR concluded that the bulkhead dike was successful in restricting PCB movement off site.

7.1.8. Summary

Generally, groundwater monitoring results from 2011 compare favorably with historic data.

Specific conductance increased somewhat in 2011 in Monitoring Well PS-15RR and Well Nest PS-33. The increases were found to be normal in Monitoring Well PS-15RR and attributed to construction activities in Well Nest PS-33.

7.2. Soil

Soil impacts have been limited, based on a review of available data. Two specific potential sources of soil impacts have been identified; one being PCBs from the wastewater treatment solids and the other being organic compounds associated with the loss of product from a No. 6 fuel oil AST.

7.2.1. PCBs

Significant migration of PCBs into the base soils below and adjacent to the landfill would not be expected based on soil characteristics, low solubility of PCBs, and on-site testing. As indicated in Section 7.1.5, the DNR concluded monitoring results documented limited migration of PCBs into the bulkhead dike fill soil. Testing completed in 1983 found PCBs were at non-detectable concentrations at 2 feet below the interface with the base of the waste and native soil, except at one location[20]. The occurrence of detectable PCBs at this one location was attributed to cross-contamination, and no detectable PCBs were identified at 4 feet below the interface in the same boring.

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[19] Ibid., 7.

[20] Ibid., 10 (10).

7.2.1. AST

A No. 6 fuel oil AST was located in the southwest corner of the eastern portion of the landfill in Park Site #1. The AST was located above the waste and the foundation was supported by piles. Following demolition of the paper mill, diesel range organic compounds and polycyclic aromatic hydrocarbons were discovered in soil near the location of the former AST (WDNR BRRTS No. 0271550537). The impacted soil occurs within the limits of the landfill. As will be discussed in Section 8.1, the proposed development will involve covering the impacted soil with clean soil, thereby removing the direct contact pathway.

7.3. Surface Water and Sediment

During landfill operation there was a loss of wastewater solids to Little Lake Butte des Morts, which likely contributed to sediment in an area identified as Deposit A. It is estimated the loss of solids to Little Lake Butte des Morts occurred in 1953 and from 1957 into 1975. There has been no loss of wastewater solids to surface waters since that time. Lost solids from the landfill were removed or capped during remediation of Little Lake Butte des Morts that occurred from 2004 through 2009[21].

As stated in Section 4.3.2, DNR calculated the seepage loss through the entire bulkhead dike at 120 gallons per day. Further, they calculated the maximum potential PCB contribution from seepage to Little Lake Butte des Morts at 0.035 gram per day and considered that load insignificant[22].

7.4. Air and Explosive Gas

It is unlikely the landfill has contributed to any significant air quality impacts since it was closed in 1976. There is a potential that the waste mass could produce methane, but the production rate is probably low because of the waste characteristics and its age. Glatfelter Buildings 45 and 46 were constructed with gas collection and venting systems. Mr. Hartman indicated that methane was either not detected or near detection limits when monitored[23]. Methane that is produced is likely vented through the cover and adjoining fill soil, where it dissipates into the atmosphere. The shallow water table in the vicinity of the landfill further reduces the potential for methane migration.

7.5. Summary

The landfill has had some impact on the environment in the past. These impacts have been identified and addressed appropriately. The landfill is not currently causing negative impacts to the

[21] http://www.littlelakecleanup.com/cleanupfacts.html

[22] Ibid., 7.

[23] William Hartman (Glatfelter), personal communication with Steven Shimek (Natural Resource Solutions, LLC), 27 February 2012.

environment based on an evaluation of the landfill setting and available information, and from a review of groundwater monitoring data.

8. Proposed Development and Potential Environmental Impacts

This section of the report summarizes development plans and includes an evaluation of how the development may impact the environment.

8.1. Proposed Development

8.1.1. Park Site #1 Development

The Park Site #1 development covers the eastern portion of the landfill, as shown on attached Graef Drawings C-202 and C203 located in Appendix D. In general, the near-term plan includes:

- Removal of the aggregate stockpile that exists in the southern portion of Park Site #1.
- Relocation of fill in the existing berm adjacent the FVE Center.
- Construction of a topsoil-covered screening berm east of the FVE Center to a maximum height of approximately 12 feet above existing grade.
- Placement of approximately 2 feet of clean soil and topsoil in areas beyond the screening berm.
- Seeding.
- Placement of an aggregate-surfaced path that will extend from the southeast corner of Park Site #1 to the northwest and connect to the western portion of the landfill, Park Site #2.

No excavation into the landfill cap is proposed.

Long-term plans are to improve the surface of the proposed path and new pathways with an asphaltic surface. Limited parking may also be provided in the south-central portion of Park Site #1.

8.1.1. Park Site #2 Development

The western portion of the landfill has been designated Park Site #2. Development at Park Site #2 will be limited to an aggregate-based pathway along the bulkhead dike and a landing near the Neenah Slough. The landing will connect with a boardwalk across the slough and a path system that will extend north into the town of Menasha. The landing will be constructed where the path joins the boardwalk across the Neenah Slough. The landing is planned to be constructed on a floating slab, largely supported on the underlying bulkhead dike. A boring completed at this location in June 2011 found the dike to be 12 to 13 feet high and constructed of silty clay with fine gravel over native silty clay soil. The boring location diagram and boring field log are included in Appendix C. Non-surfaced pathways may also be cut through the grass cover in Park Site #2. These development plans are shown on a PDI drawing in Appendix D.

In the future, the City may provide additional landscaping at Park Site #2, such as low (6-foot) drumlins to provide more topographic relief. The drumlin features are shown on the PDI drawing in Appendix D.

During Park Site #2 development additional soil can be applied to those areas identified as having less than two feet of existing cover.

8.2. Potential Environmental Impacts

The potential for environmental impacts associated with development were evaluated for each of the media discussed in Section 7.0. Following is an assessment of each of those media.

8.2.1. Groundwater

Negative groundwater impacts are not anticipated from the proposed development.

There are no plans to modify the confinement features of the landfill. No excavations into the landfill cover are proposed.

In Park Site #1, the existing surface will be covered with about 2 feet of vegetative growth media and a vegetative cover will be established. The vegetated area will cover the trailer truck parking area that was routinely salted; thereby reducing groundwater impacts from salts. The vegetation will take up and transpire precipitation potentially reducing infiltration in areas that were not underlain with pavements or foundations.

An evaluation has been completed to determine the potential of a proposed screening berm to cause excessive consolidation of the underlying waste, which could result in a release. The screening berm will be constructed to approximately 12 feet above existing grade in the western half of Park Site #1. The screening berm cross-section is included in Appendix D. The berm will consist of an ash core with an internal (temporary) and external (permanent) clay cap. The berm will be covered with topsoil. The estimated load imposed by the screening berm based on the cross-section is provided in Table 7.

The potential load that will be exerted by the screening berm can be compared to past loads which based on a review of monitoring data, has not caused a release. The greatest load known to have been placed on the site was the capping sand in 2008. Sand placement started in April 9, 2008 and was stored into June 2008[24]. As noted earlier, the sand pile height was in a range of 15 to 20 feet.

[24] William Hartman (Glatfelter), personal communication with Steven Shimek (Natural Resource Solutions, LLC), 9 March 2012.

Assuming a particle density of 2.65 grams per cubic centimeter, a porosity of 25% and a moisture content of 0 to 5% by weight, the calculated load near the center of the pile was 1,860 to 2,600 pounds per square foot (psf).

Table 7 - Estimated Load Below Screening Berm

Berm Component	Thickness (feet)	Estimated Wet Density (pcf)	Load (psf)
Topsoil	0.5	90	45
Clay	4.0	125	500
Ash	7.5	100	750
Total			**1,295**

pcf – pounds per cubic foot
psf – pounds per square foot

Monitoring Well PS-15RR was located downgradient of the stockpile storage area. In reviewing the specific conductivity values in Table 6 it can be seen that there were elevated values in late 2007 and early 2008, which predated the sand placement. The sand placement started five days after Monitoring Well PS-15RR was monitoring in April 2008. From April 2008 to October 2010 the specific conductivity in the well decreased and starting in 2010 to late 2011 increased to the same level seen in late 2007. All reading in the time period were within the historic range in concentration and it does not appear the load caused a release.

The load imposed by the screening berm is estimated to be 595 to 1,305 psf less than the capping sand storage piles. The sand storage piles were located in the approximate area of the screening berm. The screening berm construction should not cause a release.

Although contamination associated with the past fuel oil AST would probably not impact groundwater, soil capping further assures there will not be groundwater impacts because it will reduce infiltration.

8.2.2. Soil

No negative impacts to soil are anticipated.

Clean soil fill and topsoil will cover the majority of Park Site #1. The screening berm will have an ash core, but the ash will be capped with compacted clay, which will be covered with topsoil.

Existing impacted soil at the location of the former fuel oil AST will be covered and the potential for contact with the contaminants will be eliminated.

The very limited development at Park Site #2 will not introduce any soil contaminants.

8.2.3. Surface Water and Sediment

There are no anticipated negative impacts to surface water and sediment.

Placement of topsoil and seeding of Park Site #1 will likely improve runoff quality to Little Lake Butte des Morts. There will be an elimination of salts that were contributed by past salting of pavement. The vegetative cover will reduce the sediment load to Little Lake Butte des Morts as compared to the previous developed condition.

There will be continued seepage through the bulkhead dike, but there will be no increase in the seepage rate or decrease in quality.

8.2.4. Air and Explosive Gas

There are no anticipated negative impacts to air or additional risk associated with potential methane generation.

The proposed passive development will not result in air pollutants. There will generally be an improvement in air quality at Park Site #1 in comparison to the previous development. The development plans should not increase methane generation or migration. Methane that may be generated will dissipate through the cover and adjacent soil, as it has in the past. No structures are proposed that could confine the gas. The vegetative growth layer will consist of loose soil that will not confine gas movement.

9. Summary and Conclusion

In 1950, the City was granted a bulkhead line across the south end Little Lake Butte des Morts and Bergstrom obtained the right from the City to use the area behind the bulkhead dike to landfill wastewater treatment solids from their paper mill. The bulkhead dike was constructed in a westerly direction from the mill to the outlet of the Neenah Slough between 1950 and 1970. The bulkhead dike defined the northern limit of the landfill. The southern limit was defined by a dike supporting railroad tracks. The elliptical shaped landfill covers approximately 33 acres.

Wastewater solids were disposed in the landfill from 1952 into 1975. The estimated volume of wastewater solids disposed in the landfill is 387,000 cubic yards. The wastewater solids that were landfilled contained 55% mineral ash. The mineral ash consisted primarily of silicon, aluminum, and calcium. The remaining 45% of the mass was organic matter consisting mostly of short wood fiber that was lost in the pulping and paper making process. Starting in about 1954, the solids contained PCBs, resulting from the pulping of waste paper and broke produced by Appleton Coated Paper.

The landfill closure activities started in 1976 and were substantially complete in 1979. Ongoing cover maintenance is completed by the City.

Waste in the landfill is contained by deep clay base soils, the clay bulkhead dike, clay soil fill along the railroad tracks to the south, and a clay cover.

Soil testing and groundwater monitoring have both documented the landfill has had limited impact on the environment since filling ceased.

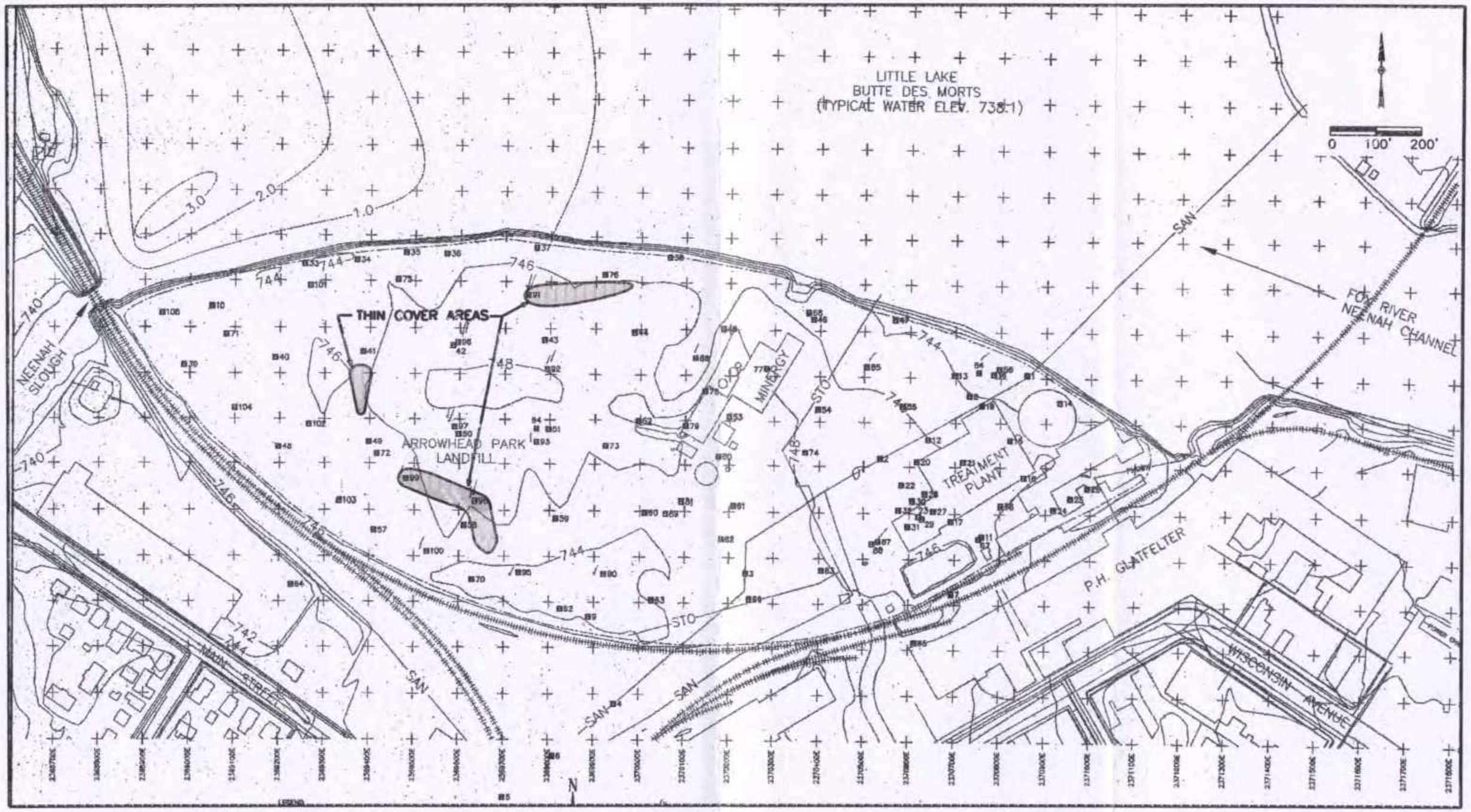
Various media have been evaluated to determine past impacts. Landfill-related groundwater impacts have been limited. Somewhat elevated specific conductivity values monitored in a bulkhead dike well may have been caused by storing large volumes of sand at Park Site #1 in 2009. The sand has been removed and the specific conductivity levels will probably decline. Soil impacts related to landfilling have been limited.

Surface water and sediment had been impacted during landfill operations, but not since the landfill has been closed, other than runoff from developed areas. Air quality has not been significantly impacted by the closed landfill. Methane production has been limited due to the nature of the waste.

The media have also been evaluated in light of proposed recreational park space development at Park Sites #1 and #2. Park Site #1 will be developed by placement and seeding of a vegetative growth layer, installation of gravel-based paths, and construction of a screening berm. Park Site #2 will have limited development including a gravel-based path along the bulkhead dike and a landing near the outlet of the Neenah Slough. There may be non-paved paths cut through the grass across the western portion of the landfill. **Based on the evaluation of media, no negative impacts are anticipated as a result of the proposed development.** It is probable the development of Park Site #1 will result in less impact to groundwater and surface water.

FIGURE 1

MASTER SOIL BORING MAP AND THIN COVER AREAS



GRAEF

PROJ. NUMBER:	2011-2007
DATE:	03-20-2012
PROJECT MGR:	PJS
DRAWN BY:	KH
SCALE:	1"=200'
REVISED:	

MASTER SOIL BORING MAP AND THIN COVER AREAS

PARK SITE #2
CITY OF NEENAH, WI

FIGURE

1

J:\Jobs\2011\2011\2007\CAD\Site\dgn\mxd\Fill Areas Exhibit.dgn

APPENDIX A – HISTORIC SITE DATA

- 1938 Aerial Photo
- 1950 Corp of Engineers Permit
- 1951 Bergstrom Paper Treatment Plant Land Lease
- 1970 Bulkhead Dike Design
- Environmental Resources Management Drawing #3
- 1970 Dike Completion Schedule
- 1971 Aerial Photo
- 1971 City Statement to USACOE on Park Use
- 1973 City Park Plan
- 1975 Park Interim Study
- 1979 Aerial Photo
- 1976 Sanitary Sewer Construction Letter

412 38
AIW-5 408

District Permit File

DEPARTMENT OF THE ARMY

NOTE.—It is to be understood that this instrument does not give any property rights either in real estate or material, or any exclusive privileges: and that it does not authorize any injury to private property or invasion of private rights, or any infringement of Federal, State, or local laws or regulations, nor does it obviate the necessity of obtaining *State assent* to the work authorized. IT MERELY EXPRESSES THE ASSENT OF THE FEDERAL GOVERNMENT SO FAR AS CONCERNS THE PUBLIC RIGHTS OF NAVIGATION. (See *Cummings* v. *Chicago*, 188 U. S., 410.)

16—12160-2

PERMIT

GLKEB

Office, District Engineer
Milwaukee District, Corps of Engineers.
408 Federal Building,
Milwaukee 1, Wisconsin, 12 July 1950.

City of Neenah
Neenah, Wisconsin

Sirs:

Referring to written request dated 29 June 1950,

I have to inform you that, upon the recommendation of the Chief of Engineers, and under the provisions of Section 10 of the Act of Congress approved March 3, 1899, entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," you are hereby authorized by the Secretary of the Army,

to construct a rubble stone retaining wall and to fill shoreward thereof
(Here describe the proposed structure or work.)

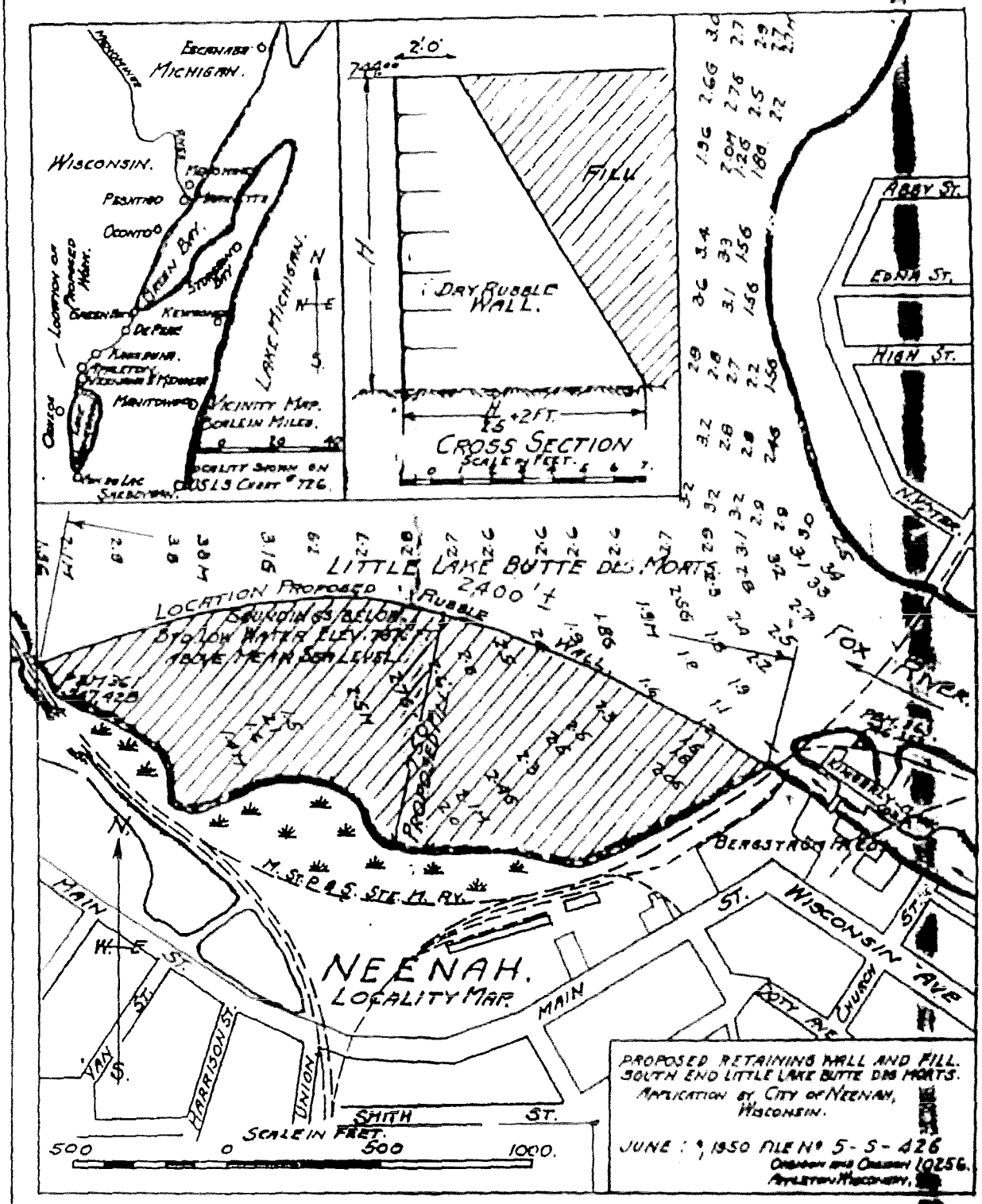
in Little Lake Butte des Morts (south shore)
(Here to be named the river, harbor, or waterway concerned.)

at Neenah, Wisconsin, westerly from outlet of Neenah Channel of Fox River,
(Here to be named the nearest well-known locality—preferably a town or city—and the distance in miles and tenths from some definite point in the same, stating whether above or below or giving direction by points of compass.)

in accordance with the plans shown on the drawing attached hereto marked "Proposed Retaining Wall and Fill, south end Little Lake Butte des Morts, Application by City of Neenah, Wisconsin, June 29, 1950, File No. 5-S-426,"
(Or drawings: give file number or other definite identification marks.)

subject to the following conditions:

5-S-426


MICHIGAN.
WISCONSIN.
LAKE MICHIGAN.
LOCATION OF PROPOSED WALL.
VICINITY MAP.
SCALE IN MILES.
LOCALITY SHOWN ON USLS CHART #776.
2'0"
FILL
DRY RUBBLE WALL.
H
H/5 +2FT.
CROSS SECTION
SCALE IN FEET.
ABBY ST.
EDNA ST.
HIGH ST.
N. WATER.
LITTLE LAKE BUTTE DES MORTS
2400'±
LOCATION PROPOSED
SOUNDINGS BELOW
BY LOW WATER ELEV. 705.5 FT.
ABOVE MEAN SEA LEVEL.
RUBBLE WALL
PROPOSED FILL
FOX RIVER.
BERGSTROM PLOT
M. ST. P. & S. STE. M. RY.
MAIN ST.
WISCONSIN AVE
CHURCH
POTY AVE
NEENAH.
LOCALITY MAP.
MAIN
HARRISON ST.
UNION
SMITH ST.
SCALE IN FEET.
500 0 500 1000.
PROPOSED RETAINING WALL AND FILL.
SOUTH END LITTLE LAKE BUTTE DES MORTS.
APPLICATION BY CITY OF NEENAH, WISCONSIN.
JUNE 9, 1950 FILE No 5-S-426
OMAHA DIST. ORIGINAL 10256.
APPLETON, WISCONSIN.

(a) That the work shall be subject to the supervision and approval of the District Engineer, Corps of Engineers, in charge of the locality, who may temporarily suspend the work at any time, if in his judgment the interests of navigation so require.

(b) That any material dredged in the prosecution of the work herein authorized shall be removed evenly and no large refuse piles, ridges across the bed of the waterway, or deep holes that may have a tendency to cause injury to navigable channels or to the banks of the waterway shall be left. If any pipe, wire, or cable hereby authorized is laid in a trench, the formation of permanent ridges across the bed of the waterway shall be avoided and the back filling shall be so done as not to increase the cost of future dredging for navigation. Any material to be deposited or dumped under this authorization, either in the waterway or on shore above high-water mark, shall be deposited or dumped at the locality shown on the drawing hereto attached, and, if so prescribed thereon, within or behind a good and substantial bulkhead or bulkheads, such as will prevent escape of the material in the waterway. If the material is to be deposited in the harbor of New York, or in its adjacent or tributary waters, or in Long Island Sound, a permit therefor must be previously obtained from the Supervisor of New York Harbor, Whitehall Building, New York City.

(c) That there shall be no unreasonable interference with navigation by the work herein authorized.

(d) That if inspections or any other operations by the United States are necessary in the interest of navigation, all expenses connected therewith shall be borne by the permittee.

(e) That no attempt shall be made by the permittee or the owner to forbid the full and free use by the public of all navigable waters at or adjacent to the work or structure.

(f) That if future operations by the United States require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army, it shall cause unreasonable obstruction to the free navigation of said water, the owner will be required upon due notice from the Secretary of the Army, to remove or alter the structural work or obstructions caused thereby without expense to the United States, so as to render navigation reasonably free, easy, and unobstructed; and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners shall, without expense to the United States, and to such extent and in such time and manner as the Secretary of the Army may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable capacity of the watercourse. No claim shall be made against the United States on account of any such removal or alteration.

(g) That the United States shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the Government for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

(h) That if the display of lights and signals on any work hereby authorized is not otherwise provided for by law, such lights and signals as may be prescribed by the U. S. Coast Guard, shall be installed and maintained by and at the expense of the owner.

(i) That the permittee shall notify the said district engineer at what time the work will be commenced, and as far in advance of the time of commencement as the said district engineer may specify, and shall also notify him promptly, in writing, of the commencement of work, suspension of work, if for a period of more than one week, resumption of work, and its completion.

(j) That if the structure or work herein authorized is not completed on or before 31st day of December, 1953, this permit, if not previously revoked or specifically extended, shall cease and be null and void.

By authority of the Secretary of the Army:

Plan attached

D. A. MORRIS
Colonel, Corps of Engineers
District Engineer

ENG FORM 1 SEP 48 1721 (Civil) This form supersedes ED Form 96, dated 1 Apr 45, which may be used until exhausted.

U. S. GOVERNMENT PRINTING OFFICE 16-13160-3

VOL 1004 PAGE 0[illegible] EXHIBIT B

THIS INDENTURE made this 2nd day of July, 1951, by and between the City of Neenah, Winnebago County, Wisconsin, Lessor, and Bergstrom Paper Company, a Wisconsin Corporation of Neenah, Winnebago County, Wisconsin, Lessee.

WHEREAS, Lessee requires a parcel of land upon which it must erect a waste treatment plant for the purpose of providing and contributing fill for the area recently acquired by Lessor by Act of the Wisconsin Legislature at the South end of Little Lake Butte des Morts, and WHEREAS, Lessor desires and is in need of material for such fill in said area,

WITNESSETH that the Lessor does hereby, in consideration of the rent hereinafter reserved and all of the covenants and agreements herein expressed, demise and lease unto the Lessee all of the following described premises situated in the City of Neenah, Winnebago County, Wisconsin.

Commencing at the South corner of Lot 8, Block 1, North Neenah, Neenah, Wisconsin, on the Northwest side of Main Street; thence North twenty-eight degrees thirty-five minutes (28°35') West along the line between Lots 8 and 9 a distance of two hundred and eighty-three (283) feet to the Northwest side of the Soo Line right-of-way, the place of beginning; thence North sixty degrees fifteen minutes (60°15') East along the South line of said right-of-way a distance of Five Hundred (500) feet to a point (on the Northerly boundary of the property referred to in the law recently enacted by the State of Wisconsin); thence North sixty degrees twenty-nine minutes (60°29') West three Hundred forty-eight (348) feet to a point; thence North sixty-seven degrees five minutes (67°05') West a distance of two hundred (200) feet to a point; thence South twenty-two degrees fifty-five minutes (22°55') West a distance of two hundred forty-five (245) feet; thence South twenty-eight degrees thirty-five minutes (28°35') East a distance of three hundred five (305) feet, more or less, to the place of beginning; containing three and twenty-nine one hundredths (3.29) acres, more or less.

TO HAVE AND TO HOLD the above described premises, with the rights, privileges, easements and appurtenances thereunto attaching and belonging unto the Lessee for and during the term of ninety-nine (99) years from and after the first day of June, 1951 and until the 31st day of May, 2050, paying rent therefor and yielding thereof as hereinafter provided; said rent in the amount of One ($1.00) Dollar to be paid on or before the first day of June, 1951, and yearly thereafter on or before said month and day until the expiration of the term of this agreement, specifically reserving unto lessor the right to construct, lay, maintain and extend any and all sewer mains that it is now or may be to the advantage of said City to lay, extend or maintain over and across the aforedescribed property agreeing, however, that said sewer or sewers are to be so laid, extended or maintained in such a manner and so located as not to interfere with lessee's right to erect or maintain the aforementioned waste treatment plant.

IT IS FURTHER AGREED that lessee in conformity with the purposes of this lease shall build, construct and erect a waste treatment installation sufficient for treatment of its waste water at Lessee's plant, sewage and to operate such installation in such a manner that the solids derived from this operation may be utilized as fill for the area lying West of and adjacent thereto acquired by Lessor by Act of the Wisconsin Legislature on the South end of Little Lake Butte des Morts.

IT IS FURTHER AGREED that said Lessor is hereby released from any and all liability arising out of the construction or operation of said installation by the said Lessee, and said Lessee agrees hereby to save harmless the said Lessor from any such liability that might arise, and that said installation shall at all times remain the property of Lessee and may be removed at Lessee's will and discretion.

IT IS FURTHER AGREED that Lessee will [illegible] maintain around the above described property hereby leased so it

NCR-FOX-0548684

a suitable rubble wall or dike at its own expense and will save Lessor harmless from any and all liability as to the construction or maintenance of that particular wall, but the Lessor promises and agrees to utilize and deliver to the proper site any and all available materials suitable for the construction of a rubble wall or dike such as broken concrete slabs, etc., for the construction and maintenance of a rubble wall or dike enclosing the remainder of the land acquired by lessor by Act of the Wisconsin Legislature. Lessor specifically agrees that should it ever divert any such available material to another project when such material is needed for the extension of said rubble wall or dike that it will then substitute other satisfactory material, even though it may be necessary for Lessor to purchase such other material.

In the event that sufficient suitable material is not available for the extension of said rubble wall or dike at as rapid a rate as may be desirable, then it is agreed that both Lessor and Lessee will mutually discuss said problem and work out together a proper solution.

IT IS FURTHER AGREED and in consideration of the granting of the aforementioned lease and other good and valuable consideration, the receipt whereof is hereby confessed and acknowledged, Lessee hereby grants and conveys unto said Lessor an easement and right to maintain and keep in repair all existing sewer mains running through Lessee's property and more specifically described as follows:

> A strip of land Ten feet (10') wide the southerly line of which is One Hundred Five (105) feet northerly and parallel to the northerly line of Wisconsin Avenue, extended thru the vacated Sixty-six (66) foot strip of land formerly used as street between Canal Street and Wisconsin Avenue and thru Lot Seven (7), Block Two (2), Palmers Map, Second Ward, City of Neenah, Winnebago County, Wi consin, said strip being the location of an existing 24" storm sewer from Canal Street to Little Lake Butte des Morts.
>
> The westerly Eight (8) feet of Lot Three (3) and the easterly Eight (8) feet of Lot Four (4), Block One (1), Plat of North Neenah, Second Ward, City of Neenah, Winnebago County, Wisconsin, being the location of an existing 12x20 inch storm sewer.

VOL. 604 PAGE 515

The westerly twenty-five (25) feet of Lot Seven (7), Block One (1), Plat of North Neenah, Second Ward, City of Neenah, Winnebago County, Wisconsin, being the location of an existing twenty-one (21) inch sanitary sewer and a forty-two (42) inch storm sewer.

together with the right at all times to extend said sewer mains to the shore of Little Lake Butte des Morts.

And the said Lessee does promise and agree to pay the rent and perform the covenants herein contained and in the manner aforesaid and not to underlease or sublet said premises or any part thereof, or assign this lease without the written consent of the Lessor and to quit and deliver up the same to the Lessor peaceably and quietly at the end of said term.

And the covenants herein contained shall bind the parties mutually and their respective successors and assigns and shall be irrevocable during said term.

IN WITNESS WHEREOF, The parties have hereunto set their hands and seals the day and year first herein written.

In the presence of:

CITY OF NEENAH, WINNEBAGO COUNTY, WIS.

BY: _____ (SEAL)
Mayor

BY: _____ (SEAL)
City Clerk

Lessor

In the Presence of:

BERGSTROM PAPER COMPANY

BY: _____ (SEAL)
President

BY: _____ (SEAL)
Secretary.

Lessee

State of Wisconsin }
Winnebago County } ss.

Personally came before me this _____ day of _____ 1951, _____ and _____ of the above named City of Neenah, to me known to be the persons who executed the foregoing lease, and to me known to be such Mayor and

NCR-FOX-0548686

City Clerk of said City of Neenah, and acknowledged that they executed the foregoing lease as such officers as the lease of said City of Neenah, by its authority.

Elma Reinke
Notary Public, Winnebago County, Wis.
My commission expires
Notary Public, Winnebago County, Wisconsin.
My Commission Expires December 7, 1952

State of Wisconsin)
Winnebago County) ss.

Personally came before me this 2nd day of July 1951, Nathan H. Bergstrom and Beth B. Fisher of the above named corporation, to me known to be the persons who executed the foregoing lease, and to me known to be such President and Secretary of said Corporation, and acknowledged that they executed the foregoing lease as such officers as the lease of said Corporation, by its authority.

Lucille E. Bendschneider
Notary Public, Winnebago County, Wis.
My commission expires My Commission Expires Mar. 15, 1952

NOTARY PUBLIC WINNEBAGO COUNTY

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT CORPS OF ENGINEERS
219 SOUTH DEARBORN STREET
CHICAGO ILLINOIS 60604

NCCOD-S
69-83

14 April 1970

REVISED

PUBLIC NOTICE

Extension of Time

The City of Neenah, Wisconsin 54956 has requested a three year extension of time to a Department of the Army Permit issued 12 July 1950 to "construct a rubble stone retaining wall and to fill shoreward thereof, in Little Lake Butte des Morts at Neenah, Wisconsin." The project is presently 75% complete.

The City of Neenah has revised the plans to show a clay filled retaining wall with broken concrete and stone riparp 12" thick on the lake side and the top of the structure to be at an elevation of 744.0 U.S.G.S. The material to be used for the structure is clay obtained from street construction and trenching operations and completion of the structure is expected this season. The material used in the retaining wall will be impervious and clean. The fill material is approximately 50% inorganic clay and 50% wood fibre from the industrial waste treatment plant of the Bergstrom Paper Company. The work is shown on the reverse side of this notice.

The determination as to whether a permit will be issued will be based on an evaluation of all relevant factors including the effect of the proposed work on navigation, fish and wildlife, conservation, pollution, and the general public interest. Comments on these factros will be accepted and made part of the record and will be considered in determining whether it would be in the best public interest to grant a permit. Any objection to or any statements or information on aspects of the proposed work should be mailed to reach this office on or before 30 April 1970.

FOR THE DISTRICT ENGINEER:

Sketch on reverse side

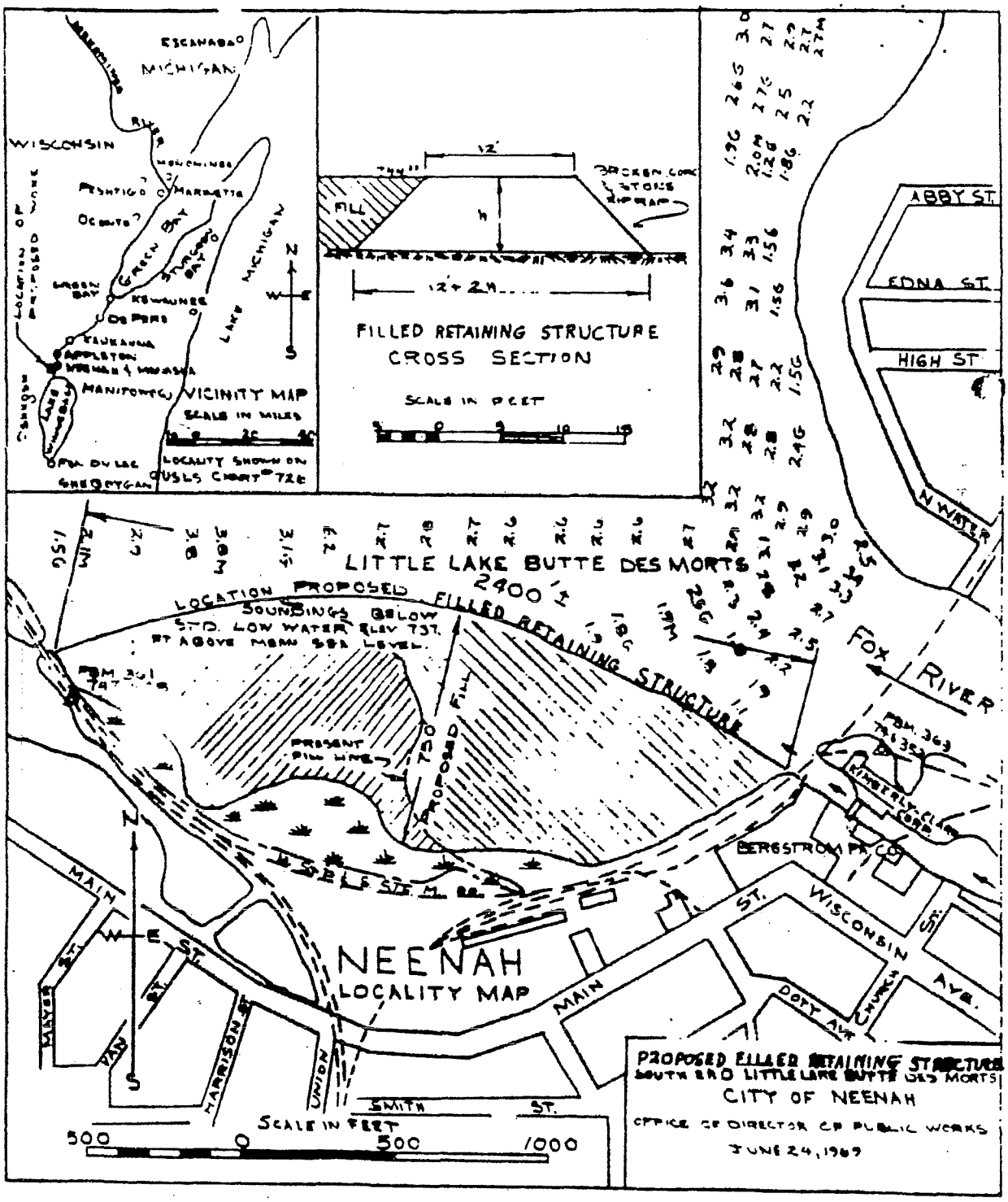
L. S. Kreger
L. S. KREGER
Chief, Operations Division

NO COMMENT
National Park Service
North East Region

Signature

May 14, 1970
Date

107


VICINITY MAP
SCALE IN MILES
LOCALITY SHOWN ON USGS CHART 72E
WISCONSIN
MICHIGAN
ESCANABA
MARINETTE
GREEN BAY
STURGEON BAY
LAKE MICHIGAN
KEWAUNEE
DE PERE
KAUKAUNA
APPLETON
NEENAH & MENASHA
MANITOWOC
FON DU LAC
LOCATION OF PROPOSED WORK
FILLED RETAINING STRUCTURE
CROSS SECTION
SCALE IN FEET
FILL
BROKEN CONC & STONE RIPRAP
LITTLE LAKE BUTTE DES MORTS
LOCATION PROPOSED FILLED RETAINING STRUCTURE
SOUNDINGS BELOW STD. LOW WATER ELEV 737 FT ABOVE MEAN SEA LEVEL
PRESENT FILL LINE
PROPOSED FILL
FOX RIVER
ABBY ST.
EDNA ST.
HIGH ST.
N. WATER
KIMBERLY-CLARK CORP.
BERGSTROM PK. CO.
MAIN ST.
WISCONSIN AVE.
DOTY AVE.
CHURCH ST.
MAYER ST.
HARRISON ST.
UNION ST.
SMITH ST.
NEENAH
LOCALITY MAP
SCALE IN FEET
500 0 500 1000
PROPOSED FILLED RETAINING STRUCTURE
SOUTH END LITTLE LAKE BUTTE DES MORTS
CITY OF NEENAH
OFFICE OF DIRECTOR OF PUBLIC WORKS
JUNE 24, 1969

106

TYPICAL EARTH DIKE SECTION

SCALE : 1" = 5'-0"

Master Copy

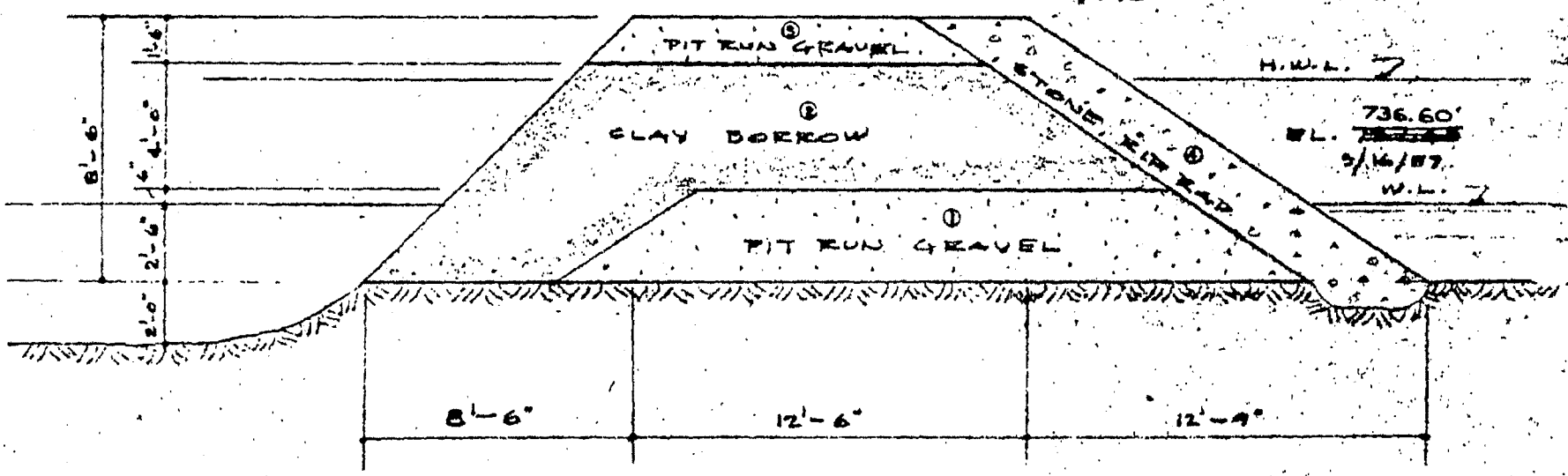


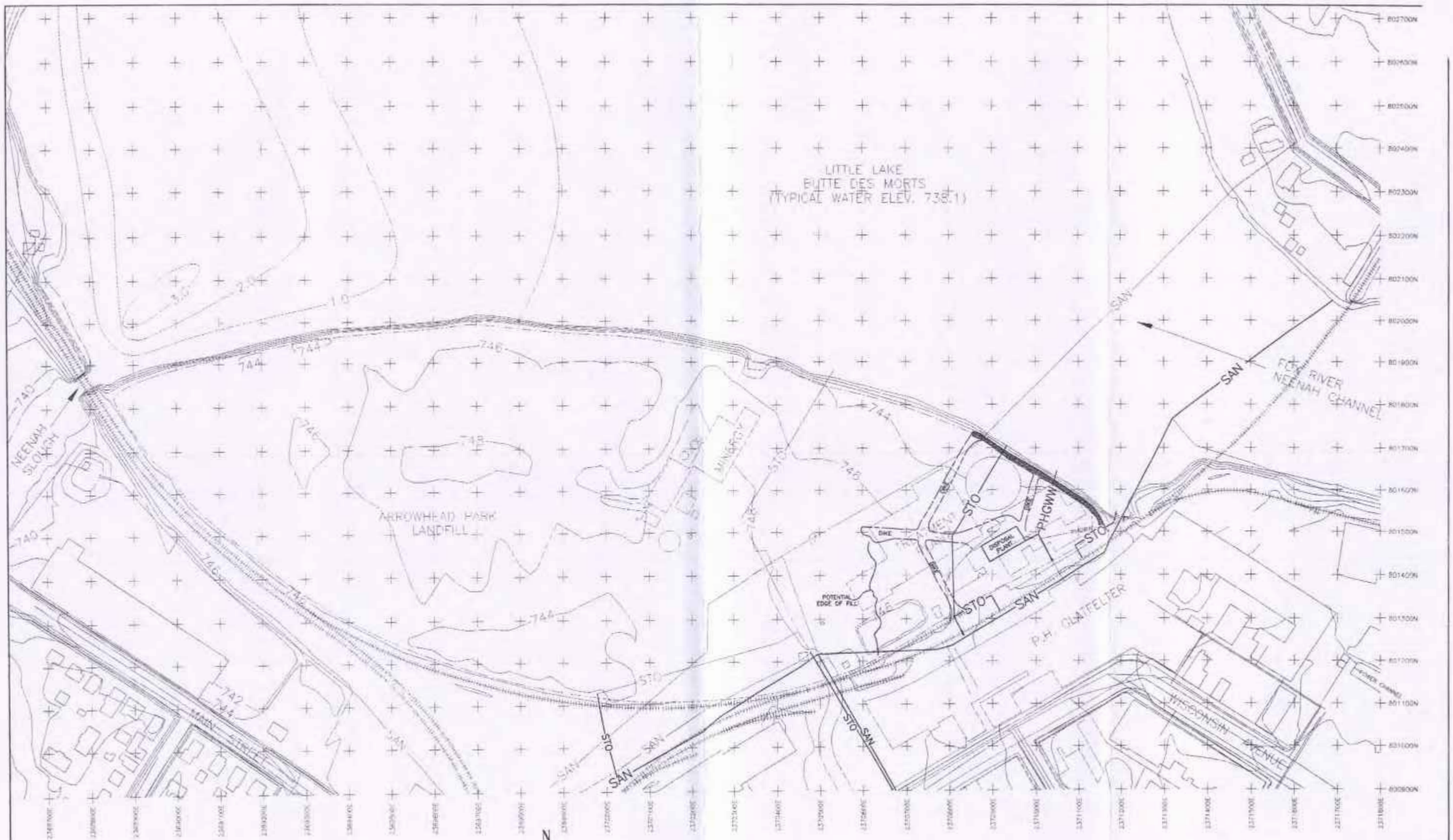
FIGURE 2

EARTH DIKE FOR WASTE DISPOSAL
BERGSTROM PAPER CO.
NEENAH, WIS.

C.R. MEYER & SONS CO.
OSHKOSH, WIS.

ELEVATIONS
BASED ON
USC & GS DATA

X-B-17-E-1145-A



LEGEND

- —740— SURFACE CONTOUR
- —SAN— CITY SANITARY SEWER
- —STO— STORM SEWER
- PHGWW— P.H. GLATFELTER WASTEWATER SEWER
- STRUCTURE
- RAILROAD
- APPROXIMATE LIMITS OF DEPOSIT A
- -2.0- APPROXIMATE SEDIMENT THICKNESS (FEET)
- APPROXIMATE LIMITS OF SLUDGE IN LANDFILL
- TOP OF BULKHEAD DIKE

BASE MAP PROVIDED BY CITY OF NEENAH, GIS DATA BASE. PHOTOGRAPH CONTROL, 1991 WITH CITY UPDATES THROUGH 1998. ERM MODIFICATIONS INCLUDED ADDITION OF CLARIFIER, SOIL STOCKPILE REMOVAL AND PROJECTION OF DEPOSIT A SEDIMENT (PER EMI 1992 FEASIBILITY STUDY).

REV. NO.	DESCRIPTION	DATE	REV. BY	CHK'D.	APP'D.
	REVISIONS				

ENVIRONMENTAL RESOURCES MANAGEMENT
ERM

Arrowhead Park Landfill
Neenah, Wisconsin

DRAWN	CHECKED	May 31, 1993 Landfill Development and Utilities	DRAWING
SCALE 1"=100'	APPROVED		98276-3

WAYNE G. BRYAN, DIRECTOR OF PUBLIC WORKS
PHONE [illegible] AREA CODE [illegible]

March 31, 1970

APR 1

Mr. Ross R. Plainse, Project Engr.
Corps of Engineers
Department of the Army
905 S. Oneida Street
Appleton, Wisconsin 54911

Dear Ross:

You asked for certain information relative to our application for extension of time for the permit covering the retaining structure and fill in Little Lake Butte des Mortes near Bergstrom Paper Company.

It is anticipated that the clay filled retaining structure will be completed this construction season. In the event sufficient material is not available from street construction and trenching operations, the work might be delayed until adequate material is available. The City does not contemplate purchasing fill for this purpose.

Bergstrom estimates the time required to fill the area shoreward of the retaining structure at about ten years but point out that economic conditions controlling the use of waste paper in their operations could change this.

The material being used to fill this area is approximately 50% inorganic clay and 50% wood fibre. The source of the material is the industrial waste treatment plant which removes this material from the discharge of Bergstrom's waste paper deinking process.

Upon completion of the retaining structure and as it progresses, broken concrete riprap approximately 12 inches thick will be, is being and has been placed along the lake side of the retaining structure.

The elevation of the top of the retaining structure will be maintained at about 744.0 USGS. At final grading, the westerly end may be raised to about 745.0. I enclose a copy of a final grading plan worked out in this office.

Upon completion of the fill[illegible] operation and as the material settles to its final density, soil and seed will be [illegible] provide a grass cover as the area is developed for the intended recreational use.

I [illegible] Mr. [illegible] [illegible] March [illegible], 1970, relating to the [illegible] information [illegible] [illegible] this and similar projects.

Very truly yours,

[illegible]
Director of Public Works

[illegible]
Enclosure

9-7-71
A]W 1 MM = 250

City of Wisconsin

54956

WAYNE G. BRYAN, DIRECTOR OF PUBLIC WORKS
PHONE: 722-6427 AREA CODE: 414

December 10, 1971

The District Engineer
U. S. Army Engineer District, Chicago
219 S. Dearborn Street
Chicago, Illinois 60604

Re: NCCCO-P
69-83
Project Office No. 5-5-426

Is this true? Is there an amended permit

Gentlemen:

A further extension of the above referenced permit originally dated 12, July, 1950, and subsequently extended to December 31, 1971, to "construct a rubble stone retaining wall and fill shoreward thereof in Little Lake Butte de Morts (South Shore) of Neenah, Wisconsin, westerly from the outlet of Neenah Channel of Fox River" and as amended 10, November, 1970, is hereby requested.

To date, the project is roughly 80% complete. The impervious earth type bulkhead referred to in your letter of 10, November, 1970, is complete and is pierced by temporary drainage culverts at the westerly end.

As noted in our extension request of 11, July, 1969, the fill material used in this project is clay and paper fiber wasted by the Bergstrom Paper Company in their recycling of newspaper and magazine paper. In 1950, at the start of this project it was estimated the time required to complete the fill would be 30-35 years. In our request of 11, July, 1969, we estimated 7 to 10 years. We now believe the filling will be completed in about 5 years. In 1972, we expect to start development of the most stable areas with trees and grass looking to the ultimate park development.

Since it appears the completion of this project will take about 5 years, we request consideration of extending the permit to 31, December, 1977.

We are enclosing a copy of our drawing submitted in July of 1969, on which we have indicated the progress to date and a copy of an aerial photo of the area taken April, 1971, showing the filling operation.

By direction of the
Public Works Committee
of the Neenah Common Council

Director of Public Works

WGB/cac - Enclosure

130

SHATTUCK, SIEWERT AND ASSOCIATES, INC.
250 N. GREEN BAY ROAD • P.O. BOX 396 • NEENAH, WISCONSIN 54956 • 414-725-6346

ARCHITECTS
ENGINEERS
PLANNERS

MEMORANDUM
10/31/73

Project: Bergstrom Land Fill Park
Client: Bergstrom Paper Company/City of Neenah
Location: Neenah, Wisconsin
Time: 10:00 a.m. Date: 10/31/73
Place: Architects Office

Job No. 424
Partner-in-charge: MFS
Project Manager: HGW

Participants:
- Dr. Art Peterson (University of Wisconsin)
- Vern Peroutky (Winnebago County Agricultural Agent)
- Wayne Bryan (Director of Public Works)
- Bill Miller (Park & Recreation Commission)
- Orv Ross (Bergstrom Paper Company)
- Harley Wagner (Shattuck, Siewert and Associates)

To orient participants, a composite sketch of the site was reviewed. The sketch was a markup of City of Neenah drawing dated 4/2/68 of the Bergstrom Fill Area upon which was superimposed the proposed new sanitary sewer and the proposed park layout of the Park and Recreation Department scheme dated 7/27/73. Dr. Peterson and Vern Peroutky commented that a recent (spring 1973) aerial photograph of the site is available; Vern Peroutky to check his files and inform Harley Wagner of the photo number and where copies may be obtained.

Dr. Peterson presented his report on tests and recommendations on the Bergstrom sludge fill and the Neenah-Menasha treatment plant sludge; copy of his report attached (letter to Vern Peroutky dated October 30, 1973). Discussion about items in the report and ideas about the fill site follows:

The report gives the analysis of the Bergstrom Paper Company sludge based on tests by the State Soil Testing Lab 7/11/73. The analysis of the Neenah-Menasha sewage sludge is presented as percent of solids and parts per million based upon samples taken by Dr. Peterson 9/4/73 and samples taken by Bergstrom Paper Company 9/11/73. Although there are some variances in the test results between the two samplings, the recorded values are within reasonable expected limitations.

The Bergstrom sludge fill has the physical properties of a dense clay. Percolation through this material is essentially non-existent, therefore surface drainage (and perhaps some inlets and drain tiles) is essential. Wayne Bryan will contact George Framberger of the Soil Conservation Service for their direction and assistance in designing the drainage system.

Ideas about positive surface drainage were discussed. An undulating type surface (rises or hills along with slight ravines or swales) appears to be the idea to pursue. Ditching definitely not recommended; see comments hereinafter. Orv Ross commented on how a paper mill waste was

used in Canada to create a ski hill (copies of an article in Chem 26 about the ski hill were given to Vern Peroutky and Dr. Peterson.)

The idea of creating "hills" was discussed. The hills discussed were really mounds or small hills as opposed to a large hill or hills. The hills would function in a manner to create the positive drainage required on the site and could possibly be used to screen the southerly view of the old buildings and railroad trackage area. Bill Miller commented on small hills recently created in the City of Neenah for use as children sliding hills. The idea of creating hills will be seriously considered; in addition to the foregoing esthetic and recreational values, it may be able to provide an answer to Bergstrom's and the City of Neenah continuing problem of disposal of mill sludge and soils from city excavations.

The idea of using a ditch or ditches to carry City storm water or to provide drainage on the site was discussed. Dr. Peterson stated, and it was generally agreed, that ditches would not be good. Reasons: Slope stability of the sludge material; plant growth on relatively steep slopes; intermittent flow from the City storm system; erosion of the ditch area. Orv Ross stated that if a ditch is definitely not to be used that the present existing ditch could be filled with mill sludge after the City storm line is installed. Orv Ross also stated that he had read an article on slope stability and structural strength of paper mill sludge at a disposal site in Ohio; he will obtain reprints of this report if possible and send copies to the participants.

Dr. Peterson discussed his recommendations for conditioning the mill sludge material and the site surface to promote plant growth. He recommended that test plots of planting be made at the site. His recommendations -- as stated in the report -- range from covering the present surface with a mixture of soil and fertilizer to mixing soil with paper mill sludge and Neenah-Menasha sewage sludge. The soil for surfacing or mixing that he recommends is a "sandy loam". Sandy loam is not what we usually consider as "a black dirt top soil". A sandy textured soil is needed. "Black dirt" or clay soils should not be used because physically they would be similar to the existing dense paper mill sludge fill.

Test plots (each plot 15' x 15', two plots of each treatment) should be made at the site. Dr. Peterson recommended that the plots be prepared this fall and then planted in the spring. Dr. Peterson emphasized that the existing site material must be graded for proper drainage; Wayne Bryan stated that the City grader could be used for this; Orv Ross also volunteered the use of their cat at the site. The layout of the plots will be made by Wayne Bryan's department with discussions with Bill Miller. The City will provide the man power to create the plots. Dr. Peterson recommended that Kentucky Bluegrass and/or Bluestem be the type of seed used for the test plots. Both of these types of grass thrive well in sunny areas.

Dr. Peterson expressed concern about the rooting area for trees due to the density of the sludge fill and its alkalinity. He suggested that holes be dug in the existing fill to provide space for the root structure, with this space being backfilled with natural soils. Because of the density of the existing fill material, the holes dug would probably become "cups" holding excess moisture. Dr. Peterson suggested that it may be necessary to run a drain line from the "cupped" root area to ravine areas or to Little Lake Butte Des Morts. French drain type drains may be able to be used instead of tile conduits in some areas.

NEXT STEPS

Vern Peroutky - track down source of "sandy loam"; provide information to Harley Wagner who will in turn inform Wayne Bryan. Determine source of recent aerial photograph; provide this information to Harley Wagner who in turn will inform Wayne Bryan.

Wayne Bryan - request assistance in drainage planning from Soil Conservation Service (George Framberger). Lay out test plots at the Bergstrom site.

Bill Miller - assist Wayne Bryan in layout of test plots.

Orv Ross - obtain information from the tests in Ohio on sludge stability and structural strength.

Harley Wagner - work on preliminary layouts of the park site, indicating existing conditions and proposed changes -- the new sanitary and storm sewers, recreational layout and possible drainage systems.

Shattuck, Siewert and Associates, Inc.

Harley G. Wagner

Harley G. Wagner

HGW/a

UNIVERSITY OF WISCONSIN–MADISON

DEPARTMENT OF SOIL SCIENCE 1525 Observatory Drive
Madison, Wisconsin 53706
608-262-2633

October 30, 1973

V. W. Peroutky, Agriculture Agent
Winnebago County Office
Room 51, Court House
Oshkosh, WI 54901

Re: Bergstrom Paper Company Sludge Demonstration,
Little Lake Butte des Morts, Neenah.

Dear Vern:

The analysis of the Bergstrom Paper Company sludge is as follows:
Tests by State Soil Testing Lab. 7/11/73

pH	Phosphorus	Potassium	Organic Matter	Soluble Salts
9.0	5 #/A	250 #/A	3.4%	50

The analysis of the Neenah-Menasha Sewage sludge cakes are as follows:

Per Cent of Solids

	Sample	N	P	K	Ca	Mg	Na
1	Coil Media	0.376	.637	2.18	2.55	.438	.363
1	Felt ~~Flat~~ Wire	0.376	.668	2.27	3.30	.446	.370
2	Coal Filter	0.784	1.88	1.95	4.16	.327	.273
2	Stand Dryer	0.840	1.98	2.05	2.65	.336	.303

ppm

	Sample	Al	Ba	Fe	Sr	B	Cu	Zn	Mn	Cr
1	Coil Media	36,500	142.	2860.	75.2	56.3	129.	563.	121.	129.
1	Felt ~~Flat~~ Wire	40,700	152.	2980.	82.3	62.3	141.	578.	128.	135.
2	Coal Filter	17,350	121.	25,150	136.	331.	224.	604.	153.	252.
2	Stand Dryer	18,700	197.	25,600	145.	362.	234.	685.	157.	264.

The chemical analysis of the sewage sludge indicates no unusual heavy metal concentration, nor any other chemicals that would be toxic to plant growth when used in the recommended amounts.

1 Samples taken by Art Peterson 9/4/73.
2 " " " Bergstrom Paper Co. 9/11/73.

The physical analysis of the paper mill sludge sample is listed as clay and this is the reason the site is so poorly drained and will require exact surface drainage of the sludge prior to placement of any surface material.

The pH of the paper mill sludge is strongly alkaline and thus no plants common to this part of the country will grow directly in the sludge. This also includes most weeds. Considering the physical and chemical condition of the paper mill sludge, it seems most desirable to level the sludge, and then place soil and/or sewage sludge on top of the paper mill sludge and use this as the media for growing grass. In order that the best ratio of soil/sewage sludge can be demonstrated, the following treatments on a small area are suggested:

1) Five inches of soil (sandy loam or loamy sand texture preferred) plus recommended fertilizer (such as 700#/Acre 10-10-10).

2) Five inches soil mixed with 50 tons/Acre of sewage sludge.

* 3) Five inches of soil mixed with 100 tons/Acre of sewage sludge. * Probable best mixture.

4) Five inches of soil mixed with 200 tons/Acre of sewage sludge.

5) Five inches of soil mixed with 4-5 inches of paper mill sludge and 100 tons/Acre of sewage sludge.

We have used individual plots that are 15 feet by 15 feet and this is a good size for such a study. Large enough to show results but small enough to be workable. The treatments should be duplication (or 2 plots of each treatment).

The surface of the paper mill sludge should have about a 2% grade and care taken to avoid any depressions where water will sit and the alkalinity come out of the paper mill sludge and kill the vegetation.

Kentucky bluegrass and Bluestem could each be seeded on half of each treatment. However, using other grasses may make the treatment area too small to evaluate.

I am concerned about the rooting area for trees but one might try some willow, popple, cedar, and/or tamarack plantings.

I have discussed these suggestions with Leo Walsh and others in the Soil Science Department and we are very interested in observing the results of these demonstrations.

Sincerely,

Arthur E Peterson

Arthur E. Peterson
Professor

AEP:lew

2nd INTERIM REPORT

BERGSTROM LANDFILL

Neenah, Wisconsin

May 1975

by John Wilke
Engineering Department
City of Neenah

NEENAHFOIA0003485

2nd Interim Report - Bergstrom Landfill

Neenah, Wisconsin

May 1975

INTRODUCTION

The 1st interim report was written in November 1974. That report recommended continued observation of the test plots seeded in June 1974, establishment of consolidation test plots, and monitoring the tile test area. The first winter has now passed and the purpose of the second interim report is to evaluate this testing to date and make recommendations concerning seed mixtures and necessary soil cover depth.

DISCUSSION

Seeded Test Plots - All of the plots were observed during May 1975. Plot #11 (White Clover and Creeping Red Fescue) had about 70% cover and #12 (White Clover and Red Top) had about 80% cover. The other plots did not winter well as indicated below:

Test Plot No.	Test Plot Species	Description - May 1975
1	Park Department Mix	Poor
2	White Clover	Poor
3	K 31 Tall Fescue	Very Poor
4	NK - 20 Rye	Dead
5	Creeping Red Fescue	Approx. 30% cover
6	Park K Blue	Approx. 50% cover
7	Reeds Canary	Approx. 50% cover
8	Red Top	Poor
9	Colonial Bent	Poor
10	White Clover, K 31 Tall Fescue	Approx. 40% Clover only cover
11	White Clover, Creeping Red Fescue	Approx. 70% cover
12	White Clover, Red Top	Good-grass & clover, Approx. 75-80% cover
13	White Clover, NK - 20 Rye	Approx. 40% clover only cover
14	White Clover, Colonial Bent	Approx. 20% grass & clover cover
15	Crested Wheatgrass	Old growth dead, new growth (¼") Approx. 20% cover
16	Crested Wheatgrass & Alfalfa	Old growth dead, young alfalfa approx. 30% cover

The above results are in the "soil only" area. All of the crops planted in the "soil and paper sludge" area died. Also, the cottonwood tree and weed which were transplanted last year into paper sludge, died.

Consolidation Test Plots - A 200 x 200 foot square area (approximately one acre) of one foot deep clay sub-soil was established directly over the paper fill during November 1974 just before frost. A second area of equal size and material but two feet deep was established in the same vicinity about one week later. Elevations were taken in a grid before the cover was placed, a few days after it was placed and again in spring after the frost had left and the snow had melted. These elevations are shown in the appendix. The data for each point on the grid is in chronological order with the oldest data on top.

Tile Test Area - No measurable discharge has been observed coming from the outfall of this area during any of the times that it has been checked since it was laid in August 1974. About eight inches of settlement of paper fill has occurred in the tile trenches but no appreciable change has occurred in the adjoining area.

A hole dug about 40 inches deep in the paper fill during summer 1974 stood over winter with nearly vertical walls. Although water was standing during May 1975 approximately 16 to 18 inches from the surface in this hole, only a little standing water was observed in the bottom of the 42 inch deep riser on the tile line which is only approximately 15 feet (horizontally) from the dug hole. Apparently, lateral movement of water in the paper fill at least in this area is very restricted. Incidently, this finding is consistent with all prior observations of these two holes.

CONCLUSIONS AND RECOMMENDATIONS

Dr. Art Peterson with the University of Wisconsin Soils Department, Madison, Mr. George Framberger, Drainage Specialist with the Winnebago County Soil Conservation Service, Mr. Howard Kaerwer with Northrup King's research and product deveopment section, Minneapolis, several other Northrup King officials, City of Neenah Park Department officials, and the writer, have observed all of the foregoing test areas this spring. We have compared and discussed our conclusions and are in agreement as follows:

Seed Mixtures - Experience with the test plots has shown that White Clover, Creeping Red Fescue and Red Top grow well and winter well together in the approximately four inches of sandy loam soil at this site. Establishment of such a mix on the one foot deep consolidation plot over an area about 50 x 100 feet in size is recommended this June to determine its suitability in the clay subsoil cover (a material which could be made available to cover the entire Bergstrom landfill). Since this subsoil is low in organic matter it is further recommended that at least one inch of leaf compost be worked into the upper five inches along with commercial fertilizer. The rate of application of commercial fertilizer should be determined through a soil test of the subsoil.

Mr. Kaerwer with Northrup, suggested the following mix and fertilizer after observing the test plots. It is the writer's feeling that this would be worthwhile to try if money, time, and help are available this summer. A 50 x 100 foot area on the one foot deep consolidation plot should be utilized for this test.

Percent by Weight	Description
30%	Chewings Fescue
25%	Creeping Red Fescue
10%	Kentucky Blue
15%	Red Top
20%	White Clover

Seeding rate: 150 lb per acre

Fertilizer rate: 250 lb per acre of 22-5-9 or equivalent

Soil Cover Depth - From the success of the aforementioned seed varieties in four inches of soil cover, there is now no question that one foot of soil cover is adequate to establish a vegetative cover suitable for recreational use.

Furthermore, a comparison of the one foot and two foot deep consolidation plots shortly after the frost left, after a heavy rain and then after a few days drying time, has revealed that the support ability of one foot of depth should be quite adequate for park maintenance equipment once a vegetative cover has been established. Therefore, one foot of clay subsoil cover material is recommended.

Consolidation of the underlying paper fill is, for all practical purposes, negligible.

Drainage - Benefits from tiling have not been demonstrated. The one foot deep consolidation plot should provide adequate surface drainage to prevent downward movement of water into the paper fill if 1.) clay soil is used as the cover material, 2.) the surface of the paper fill is carefully shaped to conform with the final grading plan less one foot (finished grade includes swales and slopes necessary to provide surface drainage), 3.) the surface of the cover material is carefully shaped to conform to the final grading plan before it is seeded, and 4.) the final graded area is provided with a good cover crop which provides high evapo-transpiration.

SUMMARY

The clay subsoil cover material is available from local construction. Probably four or five years will be necessary to obtain enough to cover the entire landfill. However, it is excellent for the purpose and would be the most desirable cover material to use. Leaves are available from the City each fall and probably enough would be available in composted form within this same time period to use as organic matter in establishing a vegetative cover.

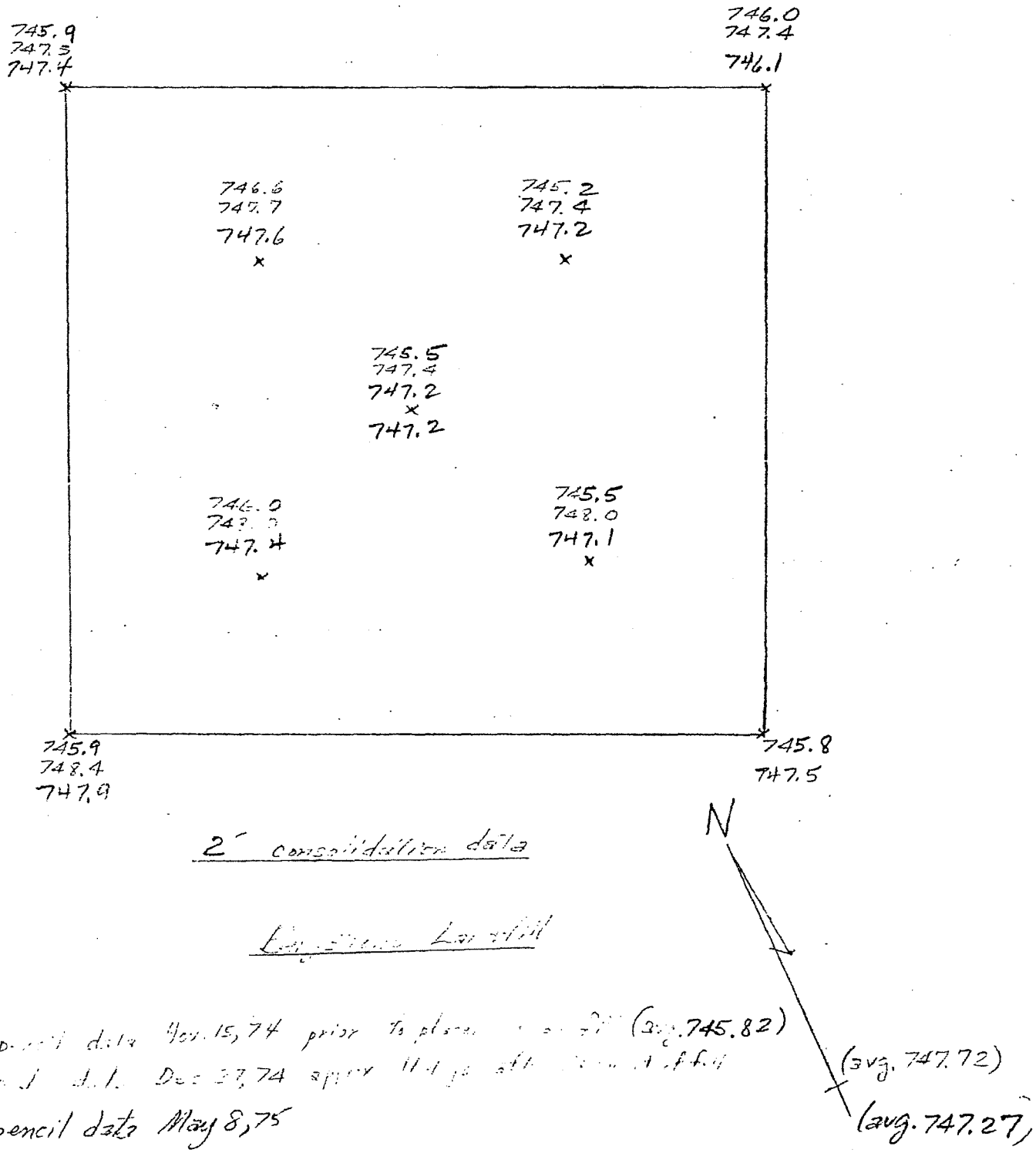
Use of these materials has the following benefits: 1.) locally available, 2.) sufficient quantities, 3.) ideally suited for the purpose, and 4.) low cost. They should be utilizied if at all possible.

Incidentally, use of topsoil is not thought to be necessary.

Respectfully submitted,

John Wilke, P.E.
City of Neenah
Engineering Department

APPENDIX



2' consolidation data

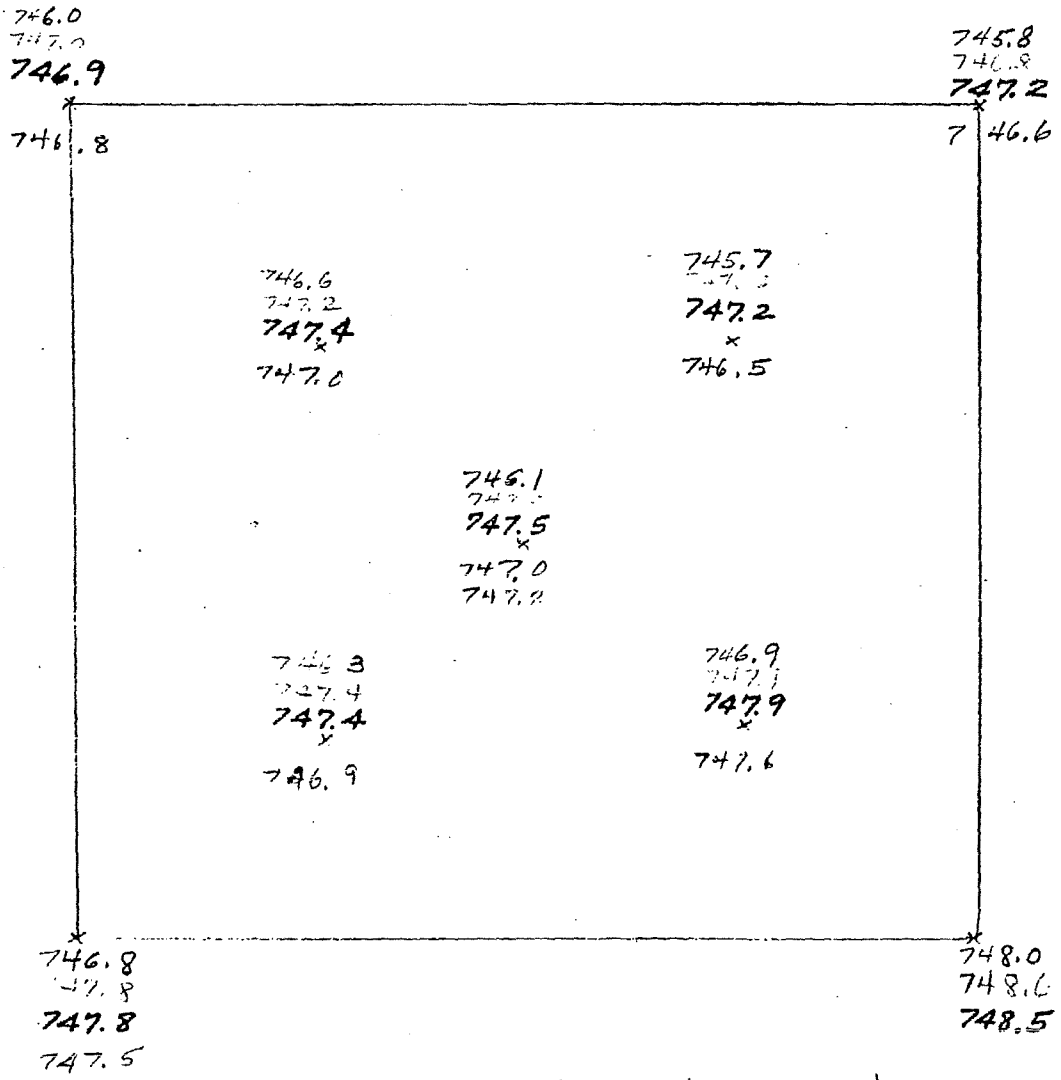
[illegible] Landfill

pencil data Nov. 15, 74 prior to place [illegible] (avg. 745.82)

[illegible] Dec 27, 74 approx [illegible]

pencil data May 8, 75

APPENDIX



1' consolidation area

Bennington Landfill

N

(avg. 746.47)

(avg. 747.49)

(<0.1' snow) green data Dec. 27, 74 21 days after placement of fill (avg. 747.53)

pencil data May 8, 75 (avg. 747.00)

11 18 79
15199
11790
6 4

NEENAH

CHARLES E. MANEY, DIRECTOR OF PUBLIC WORKS
PHONE: 722-6427 AREA CODE: 414

December 6, 1976

Mr. Robert Bues
Neenah-Menasha Sewerage Commission
Garfield Avenue
Menasha, WI 54952

Dear Bob:

This letter will confirm my telephone call to you on December 6, with respect to the proposed hill over your interceptor in the Bergstrom fill.

Mr. Tony Resop, who was backhoe operator for Central Contracting for the stretch of sewer in question and Mr. Elmer Klaman, who was field supervisor for this project (and has had many years experience in sewer construction) were both contacted. They indicated that some fill material was encountered in the upper part of the trench in the proposed hill area. However, they said that, except for approximately a 50 foot length of trench crossing the old drainage ditch from the City of Neenah's bypass pumps, the bottom of the trench was in undisturbed clay. In the approximately 50 foot length crossing the old ditch, it was indicated that the unstable material (approximately 1 foot in thickness) was excavated and replaced with fill stone so that only fill stone remains between the pipe bottom and undisturbed clay.

I explained the proposed hill to Mr. Klaman and our concern regarding stability and he said, "You should have no trouble."

We appreciate your assistance and direction in this matter and if there is any further information you need, please let me know.

Sincerely,

John

John Wilke
Engineer

JW:el

"AN EQUAL OPPORTUNITY EMPLOYER"

APPENDIX B – WASTE CHARACTERIZATION

- NCASI Technical Bulletin No. 257
- Table B-1 – Summary of PCB Data
- IPC Leach Test Report
- Univ. of Arkansas Paper Mill Sludge Evaluation

TD
897
N3732
#257

FOREST RESOURCES LIBRARY

ncasi

technical bulletin

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC., 260 MADISON AVENUE, NEW YORK, N.Y. 10016

CONSOLIDATION BEHAVIOR OF HIGH ASH PULP AND PAPERMILL SLUDGES

Forestry Library

MAY 09 1977

University of Washington

STREAM IMPROVEMENT

TECHNICAL BULLETIN NO. 257

JUNE 1972

TABLE 2. PHYSICAL PROPERTIES OF THE SLUDGE MATERIALS

Sludge[1]	Consistency limits[2] L_w	P_w	S_w	Ash[3] content %	Organic[4] content	Specific gravity	Solids[5] content % by wt.
*H-1	162.3	74.8	47.6	79.9	27.5	2.19	28.3
*H-2							
43 % organic content	175.5	108.0	83.7	61.1	43.6	2.27	25.7
43 % organic + 10 % lime	155.3	127.3	94.8	63.9	40.2	2.34	
43 % organic + 10 % flyash	162.1	113.5	82.1	64.7	39.9	2.20	
H-3							
40 % organic content	174.4	103.3		54.7	40.4	2.14	26.1
31 % organic content	131.2	83.4		63.5	31.3	2.25	
50 % organic content	215.6	147.3		45.7	49.5	2.04	
68 % organic content	382.5	215.2		28.4	67.6	1.84	
C-1*	245.3	169.0	124.8	48.5	51.3	2.30	30.7
C-2	413.0	203.5		27.4	65.2	1.95	23.9
D-1	325.4	141.6		35.7	56.8	2.01	28.5

*Data after Andersland and Laza (1971).

[1]H -- Secondary fiber mill sludge, samples 1, 2, and 3.
C -- Integrated pulp and papermill sludge, samples 1 and 2.
D -- Secondary fiber mill sludge, sample 1.

[2]L_w -- liquid limit. P_w -- plastic limit. S_w -- shrinkage limit

[3]Test method ASTM D 586-63.

[4]Test method given in Agronomy No. 9, Sec. 92-3.3. Tests run by Soil Science Dept. staff, Michigan State University.

[5]Solids content of sludge obtained at mill.

TABLE 6. CONSOLIDATION TEST RESULTS FOR SLUDGES D-1 AND C-2

Test No.	A-17				A-18			
Sludge	D-1				C-2			
Date	9-29-71				10-18-71			
Initial solids content	28.0% by wt.				24.1% by wt.			
Compression index, C_c	1.45				1.95			
Load increment kg/cm^2	c_v $x10^{-3}$ in^2/min	k $x10^{-8}$ cm/sec	r	C_a $x10^{-3}$	c_v $x10^{-3}$ in^2/min	k $x10^{-8}$ cm/sec	r	C_a $x10^{-3}$
0.00-0.25	13.31	57.6	0.79	19.4	98.4	404.6	0.51	15.4
0.25-0.50	16.11	54.3	0.71	22.5	108.6	238.6	0.47	26.6
0.50-1.00	17.44	35.7	0.75	-	62.5	138.2	0.49	19.6
1.00-2.00	26.31	26.9	0.53	18.5	120.7	149.0+	0.36	-
2.00-4.00	17.18	9.8	0.70	12.9	33.5	23.6	0.49	23.4
4.00-8.00	6.55	2.1	0.70	28.2	25.0	10.2	0.45	25.3
8.00-16.0	5.60	1.0	0.58	26.4	16.43	3.8	0.32	25.7

c_v -- coefficient of consolidation

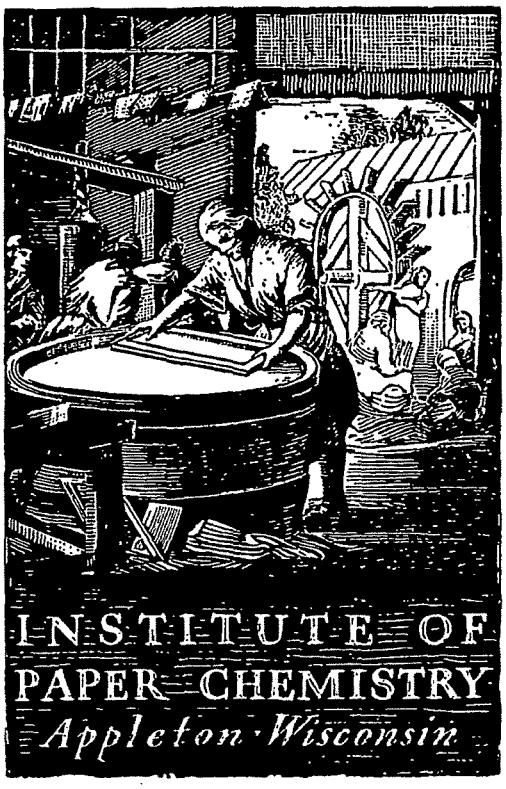
k -- coefficient of permeability

C_a -- coefficient of secondary compression

r -- primary compression ratio

Table B-1 Summary of PCB Data

Master Boring Number	Common Boring Identification and Report Number		Date Drilled	Sample Interval	PCB Concentration in mg/Kg, dry weight basis	Laboratory
66	B-1-88	15396XA	May-88	742.0-740.5	348	Badger Laboratories & Eng.
	B-1-88	15396XA	May-88	738.0-736.5	6.7	Badger Laboratories & Eng.
67	B-2-88	15396XA	May-88	742.0-740.5	231	Badger Laboratories & Eng.
	B-2-88	15396XA	May-88	738.0-736.5	9.7	Badger Laboratories & Eng.
27	BS-1-91	18899	Aug-91	740.0-738.5	235	Enviroscan
	BS-1-91	18899	Aug-91	737.5-736.0	127	Enviroscan
	BS-1-91	18899	Aug-91	735.5-734.0	No detect	Enviroscan
28	BS-2-91	18899	Aug-91	742.7-741.2	4	Enviroscan
	BS-2-91	18899	Aug-91	738.7-737.2	18	Enviroscan
	BS-2-91	18899	Aug-91	735.2-733.7	69	Enviroscan
31	BS-5-91	18899	Aug-91	742.7-741.2	19	Enviroscan
	BS-5-91	18899	Aug-91	739.7-738.2	20	Enviroscan
	BS-5-91	18899	Aug-91	736.2-734.7	73	Enviroscan
84	SB99-1	99052	Mar-99	739.5-737.5	41.5	U.S. Filter
	SB99-1	99052	Mar-99	736.5-734.5	143	U.S. Filter
85	SB99-2	99052	Mar-99	742.7-741.7	84.2	U.S. Filter
	SB99-2	99052	Mar-99	738.7-736.7	122	U.S. Filter
87	SB99-3A	99052	Mar-99	743.8-741.8	154	U.S. Filter
	SB99-3A	99052	Mar-99	737.8-735.8	10.5	U.S. Filter
88	SB99-4	99052	Mar-99	742.4-740.7	94.7	U.S. Filter
	SB99-4	99052	Mar-99	736.7-734.9	214	U.S. Filter
89	SB99-5	99052	Mar-99	741.3-739.3	1.35	U.S. Filter
	SB99-5	99052	Mar-99	738.3-736.3	3.55	U.S. Filter
90	SB99-6	99052	Mar-99	738.9-736.9	30.8	U.S. Filter
	SB99-6	99052	Mar-99	735.9-735.4	147	U.S. Filter
91	SB99-7	99052	Mar-99	745.1-743.1	511	U.S. Filter
	SB99-7	99052	Mar-99	742.1-740.1	847	U.S. Filter
	SB99-7	99052	Mar-99	737.1-735.1	1180	U.S. Filter
92	SB99-8	99052	Mar-99	740.5-738.5	3390	U.S. Filter
	SB99-8	99052	Mar-99	735.5-733.9	251	U.S. Filter
93	SB99-9	99052	Mar-99	741.7-739.7	19.3	U.S. Filter
	SB99-9	99052	Mar-99	737.7-735.7	125	U.S. Filter
95	SB99-10	99052	Mar-99	740.0-738.0	185	U.S. Filter
	SB99-10	99052	Mar-99	736.0-735.6	13.1	U.S. Filter
96	SB99-11	99052	Mar-99	742.9-740.9	32.3	U.S. Filter
	SB99-11	99052	Mar-99	736.9-734.9	4500	U.S. Filter
97	SB99-12	99052	Mar-99	744.8-742.8	67.1	U.S. Filter
	SB99-12	99052	Mar-99	737.8-735.8	1550	U.S. Filter
98	SB99-13	99052	Mar-99	744.2-742.2	2.71	U.S. Filter
	SB99-13	99052	Mar-99	737.2-735.3	1,150	U.S. Filter
99	SB99-14	99052	Mar-99	744.0-742.0	21.8	U.S. Filter
	SB99-14	99052	Mar-99	737.0-735.0	126	U.S. Filter
100	SB99-15	99052	Mar-99	741.7-740.1	140	U.S. Filter
	SB99-15	99052	Mar-99	739.1-737.1	47.6	U.S. Filter
101	SB99-16	99052	Mar-99	742.0-740.0	24.1	U.S. Filter
102	SB99-17	99052	Mar-99	741.9-739.9	6.14	U.S. Filter
	SB99-17	99052	Mar-99	737.9-735.9	12.9	U.S. Filter
103	SB99-18	99052	Mar-99	743.3-741.3	35.6	U.S. Filter
	SB99-18	99052	Mar-99	737.3-735.3	33.4	U.S. Filter
104	SB99-19	99052	Mar-99	743.5-741.7	17.7	U.S. Filter
	SB99-19	99052	Mar-99	737.7-735.7	24.5	U.S. Filter
105	SB99-20	99052	Mar-99	739.0-737.0	20.8	U.S. Filter
	SB99-20	99052	Mar-99	733.0-732.3	10.7	U.S. Filter
Geomtric Mean					60.5	



POLYCHLORINATED BIPHENYLS IN PULP AND PAPER MILLS
PART II. DISTRIBUTION AND REMOVAL

Project 3295

Report Two
A Progress Report
to
MEMBERS OF THE INSTITUTE OF PAPER CHEMISTRY

July 22, 1977

TABLE XIII

LOSS AND CAPTURE OF PCB DURING THE DRYING OF FIBERS AT MILL A[a]

Sample[b]	Trial 1 g/day	Trial 1 %	Trial 2 g/day	Trial 2 %
Paper Machine Loss[c]				
1	347	72	44	29
2	131	51	41	32
3	65	36	49	38
4	84	54	62	46
5	86	44	55	42
6	--	--	64	47
7	--	--	134	35
Average	146	52	64	38
Captured				
Over drier roll	158	56		
On mill roof				
Trap 1			60	
Trap 2			50	

[a]See appendix, Tables XXIV and XXV for details.
[b]Individual samples for couch, starch and paper - traps were composites.
[c]Calculated as difference between PCB (dry basis) in couch and paper roll samples (couch + starch size = 100%).

LEACHING OF POLYCHLORINATED BIPHENYLS FROM SLUDGE

PCBs have been shown to have a marked affinity for pulp fines. The sorbed PCBs are difficult to remove completely by solvent extraction (5). The removal of the fines by clarification has been postulated as one method for reducing the concentration of PCBs in mill effluents. It should be recognized

that the PCBs are not destroyed in the clarification process but are removed with the sludges. Sludges are used as landfill or as soil additives and if the PCBs were leachable, they would pollute the environment.

Therefore four 10 x 120 cm (4 x 48 inch) glass columns were set up in the laboratory to determine the amount of PCB which would be leached from sludges containing high (82 ppm) and low (20 ppm) concentrations of PCB. Two of the columns, used as controls, were filled with sludge and flooded with water but not percolated during the twelve weeks of the test period. The other two were percolated with distilled water at average rates of 125 and 1100 ml per day. To minimize PCB losses during sampling, the column tips went to the bottom of small-mouth sample bottles containing 50 ml of hexane.

The concentration of PCB in the leachate from the two percolated columns ranged from 0.5-4 ppb, with an average concentration of 1.5 and 2.5 ppb for the high and low PCB sludges, respectively (Table XIV and appendix, Table XXVI for details). This amounted to 0.2% (146 micrograms) of the high PCB (82 ppm) containing sludge, which had been leached at an average rate of 1100 ml per day (97 liters total volume). The low PCB (20 ppm) sludge leached at a rate of 125 m/day (10 liters total volume), lost only 0.1% (25 micrograms) of the PCB.

At the end of the test, all four columns were drained and the final drained fluid and sludges were analyzed for PCBs. The PCB losses based on sludge data were 13% (13 milligrams) for the high and 22% (7 milligrams) for the low PCB sludge columns (Table XIV). The control columns for the two sets showed a gain of 3 milligrams for the high PCB column and a loss of 3 milligrams for the low PCB column. These values are negligible and fall within the analytical variance for PCB determinations.

TABLE XIV

LEACHING OF PCB FROM CLARIFIER SLUDGES FROM MILL B[a]

Column	Sludge PCB Initial, mg[c]	Sludge PCB Final, mg[c]	Sludge PCB Change, %	Leachate Volume, liter	Leachate Av. PCB, ppb	Leachate Leached %
1. Control[b]	88	91	+3	--	--	--
2. Leached	97	84	-13	97	1.5	0.2
3. Leached	31	24	-22	10	2.5	0.1
4. Control[b]	27	24	-11	--	--	--

[a]See appendix, Table XXVI for details.
[b]Control — wet sludge flooded with distilled water during test period.
[c]Milligrams based on dry weight of sludge in columns.

More simulated and actual field studies would be required to further answer the PCB-sludge stability question.

PROCESS FOR THE REMOVAL OF PCBs FROM MILL EFFLUENTS

The efficient operation of a waste treatment plant's primary clarifier should markedly reduce the PCB concentration in effluent streams from mills utilizing recycled paper as a source of fiber. The present aqueous discharge limit of 10 ppb can, in many cases, be met with primary treatment processes alone or with a combined primary-secondary treatment system. If, however, the limits were to be reset to lower values (1-5 ppb), other processes might be required to polish the effluents.

In our investigation of adjunctive processes, we deliberately omitted those systems currently under study by equipment manufacturers: carbon adsorption,

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June 5, 2003 (Final)

Paper Mill Sludge Evaluated

Glatfelter Primary Sludge, 10 dry tons/acre

Glatfelter Secondary Sludge, 10 dry tons/acre

Glatfelter Primary/Secondary Mix Sludge, 10 dry tons/acre

Soil Used in Evaluation

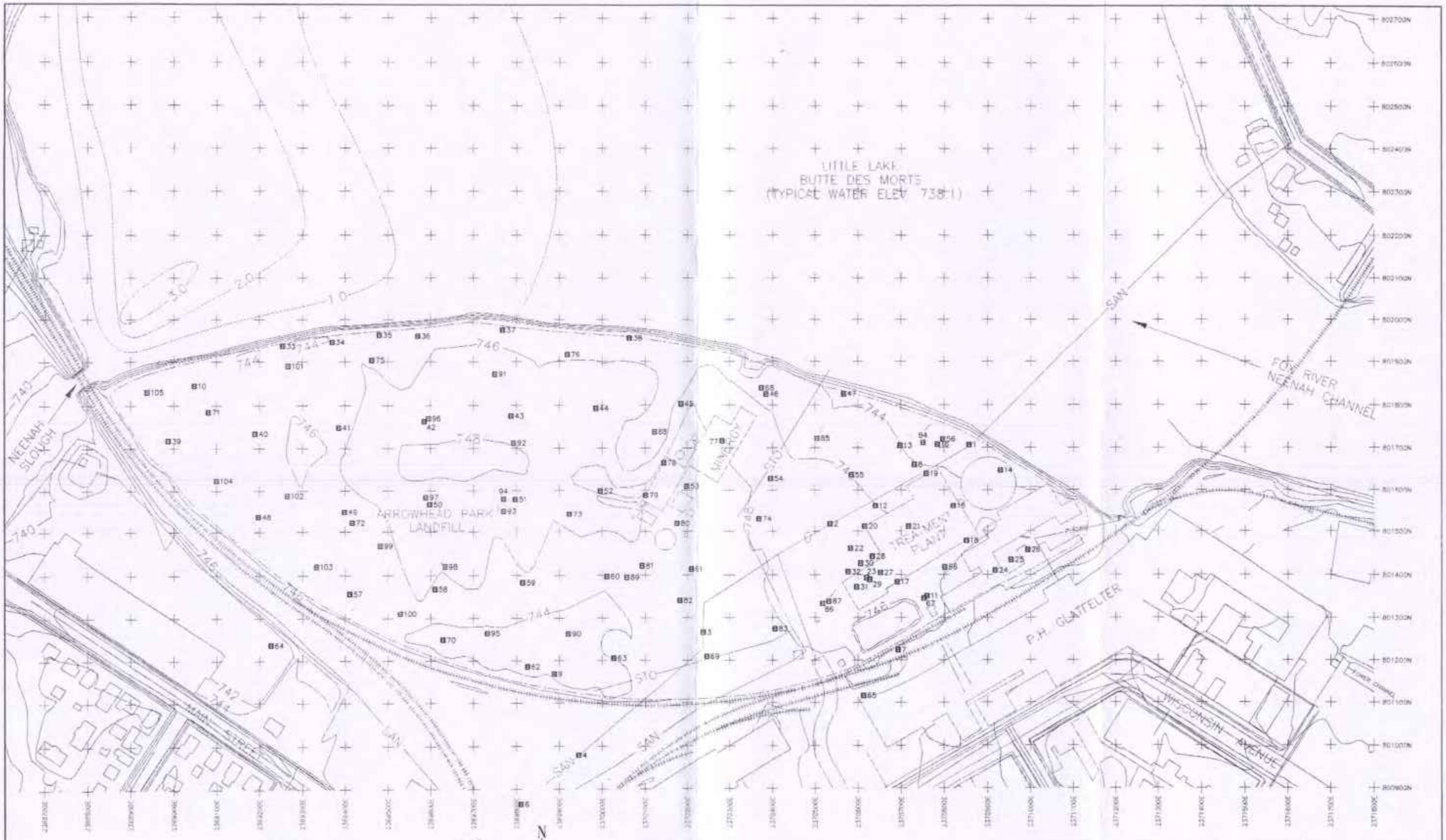
Typic Hapludalf

Analytical Data (University of Arkansas)

Analysis (dry basis)	Primary Sludge	Secondary Sludge	Mix Sludge
% total C	26.8	41.0	29.4
% Organic N	0.45	6.44	1.03
C:N ratio	59.6	6.37	28.5
% Inorganic N	<0.01	0.017	<0.01
% solids	44.7	9.7	34.2
% Total P	0.104	2.10	0.296
mg/kg Soluble P	3.3	39.9	0.4
%Total S	0.288	5.83	0.301

APPENDIX C – SOIL BORING LOGS AND WASTE LIMITS

- Environmental Resources Management Drawing #9
- Master Soil Boring Table C-1 – Soil Boring Summary
- Master Soil Boring Logs
- 2011 Bulkhead Dike Borings
- Monitoring Well Location Map
- Environmental Resources Management Drawing #10
- Environmental Resources Management Drawing #11



BASE MAP PROVIDED BY CITY OF NEENAH, GIS DATA BASE. PHOTOGRAPH CONTROL, 1991 WITH CITY UPDATES THROUGH 1998. ERM MODIFICATIONS INCLUDED ADDITION OF CLARIFIER, SOIL STOCKPILE REMOVAL AND PROJECTION OF DEPOSIT A SEDIMENT (PER EWI 1992 FEASIBILITY STUDY).

REV. NO.	DESCRIPTION	DATE	REV. BY	CHK'D.	APP'D.

REVISIONS

ENVIRONMENTAL RESOURCES MANAGEMENT
ERM

Arrowhead Park Landfill
Neenah, Wisconsin

SCALE 1"=100'

Soil Boring Locations

DRAWING 98276-9

Table C-1 Soil Boring Summary
Refer to end notes concerning location of soil logs

Master Boring No.	Project Boring No.	Project No.	Drilling Date	Boring Location	Surface El.	Top of Sludge El.	Bottom of Sludge El.	Top of Organics El.	Bottom of Organics El.	Top of Clay	Accuracy of Locating
1	B7	5863	12/73	N801705, E2370859	742	742	738.2	--	--	738.2	± 50 ft., hand sketch
2	B8	5863	12/73	801518, 2370537	747	745	744	Mixed fill 744	Mixed fill 730.2	730.2	± 50 ft., hand sketch
3	B9	5863	12/73	801265, 2370238	748	748	739.5	739.5	734.5	734.5	± 50 ft., hand sketch
4	B10	5863	12/73	800980, 2369945	747	Other fill materials				728.5	± 50 ft., hand sketch
5	B-11	5863	12/73	800772, 2369702	748	Other fill materials				734.5	± 50 ft., hand sketch
6	B-13	5863	12/73	800865, 2369813	747	Other fill and silt				733.5	± 50 ft., hand sketch
7	B-12	5863	12/73	801225, 2370693	745	Other fill		736.7	732.5	732.5	± 50 ft., hand sketch
8	B-1, (B-2)	4978B	4/74	801660, 2370733	740.8	740.8	730.5	--	--	730.5	± 50 ft., hand sketch
9	B-3, (B-4- 5)	4978B	4/74	801170, 2369888	739.9	739.9	731.9	731.9	729.4	729.4	± 50 ft., hand sketch
10	B-6, (B-7)	4978B	4/74	801845, 2369049	741.6	741.6	731.1	731.1	730.7	730.7	± 50 ft., hand sketch
11	B-11	1443A	8/66	801351, 2370760	745.5	743.8	735.5	735.5	732.0	732.0	± 10 ft., dim. from #22
12	B-12	1443A	8/66	801560, 2370640	743.1	741.4	733.1	--	--	733.1	± 10 ft., dim. from #22
13	B-13	1443A	8/66	801705, 2370700	744.1	744.1	735.1	--	--	735.1	± 10 ft., dim. from #22
14	B-14	1443A	8/66	801648, 2370930	743.9	743.9	734.1	--	--	734.1	± 10 ft., dim. from #22
15	B-15	1443A	8/66	801560, 2370820	744.4	744.4	733.4	--	--	733.4	± 10 ft., dim. from #22
16	B-16	1443A	8/66	801708, 2370783	NA (743.3)	0 (743.3)	8 (735.3)	--	--	8 (735.3)	± 10 ft., dim. from #22
17	B-1	6626	4/75	801385, 2370690	101.0 (747.0)	95.0 (741.0)	86.0 (732.0)	--	--	86.0 (732.0)	± 5 ft., ref. to equip. bldg.
18	B-2	6626	4/75	801478, 2370851	97.7 (743.7)	97.7 (743.7)	91.7 (737.7)	--	--	91.7 (737.7)	± 5 ft., ref. to equip. bldg.
19	B-4	6626	4/75	801635, 2370759	97.5 (743.5)	97.5 (743.5)	87.5 (733.5)	--	--	87.5 (733.5)	± 5 ft., ref. to equip. bldg.
20	B-5	6626	4/75	801510, 2370615	99.9 (745.9)	95.9 (741.9)	93.9 (739.9)	--	--	93.9 (739.9)	± 5 ft., ref. to equip. bldg.
21	B-6		4/75	801510, 2370718	98.8 (744.8)	98.8 (744.8)	96.8 (742.8)	92.8 (738.8)	83.8 (729.8)	83.8 (729.8)	± 5 ft., ref. to equip. bldg.
22	PS-34	12228-A	11/83	N801460, E2370583	747.1	744.6	≤ 738.1	--	--	--	± 5 ft., ref. to equip. bldg. SW corner
23	PS-35	12228-A	11/83	801395, 2370620	748.2	743.3	≤ 738.7	--	--	--	± 5 ft., ref. to equip. bldg. SW corner
24	B-1-90	18068XH	7/90	801410, 2370918	744.23	741.7	733.2	--	--	733.2	± 5 ft., ref. to Bldg. 26 SW corner
25	B-2-90	18068XH	7/90	801432, 2370955	744.07	739.1	733.1	--	--	733.1	± 5 ft., ref. to Bldg. 26 SW corner
26	B-3-90	18068XH	7/90	801457, 2370993	744.26	744.26* *Mixture of S&G and sludge	730.8*			730.8	± 5 ft., ref. to Bldg. 26 SW corner
27	BS-1-91	18899	8/91	801405, 2370653	747.0	740.5		734.0	1 ft. of buried topsoil?	734.0	± 5 ft., ref. to equip. bldg. SW corner
28	BS-2-91	18899	8/91	801440, 2370633	746.7	742.7	732.7	--	--	732.7	± 5 ft., ref. to equip. bldg.

Table C-1 Soil Boring Summary
Refer to end notes concerning location of soil logs

Master Boring No.	Project Boring No.	Project No.	Drilling Date	Boring Location	Surface El.	Top of Sludge El.	Bottom of Sludge El.	Top of Organics El.	Bottom of Organics El.	Top of Clay	Accuracy of Locating
29	BS-3-91	18899	8/91	801390, 2370627	747.3	742.3	734.3	--	--	734.3	± 5 ft., ref. to equip. bldg. SW corner
30	BS-4-91	18899	8/91	801425, 2370607	746.7	743.7	732.7	--	--	732.7	± 5 ft., ref. to equip. bldg. SW corner
31	BS-5-91	18899	8/91	801372, 2370597	747.2	742.7	734.2	1 ft. of buried topsoil?		734.2	± 5 ft., ref. to equip. bldg. SW corner
32	BS-6-91	18899	8/91	801405, 2370578	746.4	743.4	732.9			732.9	± 5 ft., ref. to equip. bldg. SW corner
33	PS-1A	12228	4/83	N801937, E2369255	NA (745.0)	None	None	Other fill		10.5 (734.5)	Overlaid STS boring figure
	PS-1B	12228	4/83	N801937, E2369255	NA (745.0)	None	None	Other fill		11.0 (734.0)	Overlaid STS boring figure
	PS-1C	12228	4/83	N801937, E2369255	NA (745.0)	None	None	Other fill		10.0 (735.0)	Overlaid STS boring figure
	PS-1D	12228	4/83	N801937, E2369255	NA (745.0)	None	None	Other fill		11.0 (734.0)	Overlaid STS boring figure
34	PS-2	12228	4/83	801947, 2369370	NA (744.3)	1.5 (742.8)	≥ 4 (≤ 740.3)				Overlaid STS boring figure
35	PS-3	12228	4/83	801960, 2369480	744.3	None Other fill		734.3	733.8	733.8	Overlaid STS boring figure
36	PS-4	12228	4/83	801960, 2369569	NA (745.2)	1 (744.2)	≥ 2 (≤ 743.2)				Overlaid STS boring figure
37	PS-5	12228	4/83	801974, 2369767	NA	None	None	Other fill			Overlaid STS boring figure
38	PS-6A	12228	4/83	N801957, 2370061	NA (745.0)	None	None	Other fill		11.0 (734.0)	Overlaid STS boring figure
	PS-6B	12228	4/83	N801957, 2370061	NA (745.0)	None	None	Other fill		13.0 (732.0)	Overlaid STS boring figure
	PS-6C	12228	4/83	N801957, 2370061	NA (745.0)	None	None	Other fill		13.5 (731.5)	Overlaid STS boring figure
	PS-6D	12228	4/83	N801957, 2370061	NA (745.0)	None Other fill		12 (733.0)	≥ 13.5 (< 731.5)		Overlaid STS boring figure
39	PS-7	12228	4/83	801717, 2368988	NA (745.6)	0.8 (744.8)	≥ 2.0 (≤ 743.6)				Overlaid STS boring figure
40	PS-8	12229	4/83	801732, 2369190	NA (746.6)	3.5 (743.1)	11.0 (735.6)	11.0 (735.6)	12.5 (734.1)	12.5 (734.1)	Overlaid STS boring figure
41	PS-9	12228	4/83	801745, 2369385	746.9	744.7	734.9	734.9	≤ 732.9		Overlaid STS boring figure
42	PS-10	12228	4/83	801760, 2369584	NA (748.0)	1.2 (746.8)	≥ 4.0 (≤ 744)				Overlaid STS boring figure
43	PS-11	12228	4/83	801775, 2369787	NA (748.8)	1.6 (747.2)	≥ 2.0 (≤ 746.8)				Overlaid STS boring figure
44	PS-12	12228	4/83	801790, 2369985	NA (748.4)	4.0 (744.4)	13.5 (734.9)	13.5 (734.9)	20.0 (728.4)	20.0 (728.4)	Overlaid STS boring figure

Table C-1 Soil Boring Summary

Refer to end notes concerning location of soil logs

Master Boring No.	Project Boring No.	Project No.	Drilling Date	Boring Location	Surface El.	Top of Sludge El.	Bottom of Sludge El.	Top of Organics El.	Bottom of Organics El.	Top of Clay	Accuracy of Locating
45	PS-13	12228	4/83	801805, 2370184	NA (746.3)	1.5 (744.8)	≥ 2.0 (≤ 744.3)				Overlaid STS boring figure
46	PS-14	12228	4/83	801825, 2370384	NA (745.4)	1.5 (743.9)	≥ 3.0 (≤ 742.4)				Overlaid STS boring figure
47	PS-15	12228	4/83	801825, 2370567	743.5	743.5	742.8	Other fill		733.5	Overlaid STS boring figure
48	PS-16	12228	4/83	801537, 2369197	NA (745.8)	2.0 (743.8)	≥ 4.0 (≤ 741.8)				Overlaid STS boring figure
49	PS-17	12228	4/83	801548, 2369400	NA (747.3)	1.5 (745.8)	≥ 3.5 (≤ 743.8)				Overlaid STS boring figure
50	PS-18	12228	4/83	801567, 2369598	NA (748.5)	3.0 (745.5)	≥ 4.0 (≤ 744.5)				Overlaid STS boring figure
51	PS-19	12228	4/83	801580, 2369795	NA (748.0)	1.7 (746.3)	≥ 4.0 (≤ 744)				Overlaid STS boring figure
52	PS-20	12228	4/83	801598, 2369995	NA (749.3)	4.0* (745.3) *Sludge as seams within other fill	6.0* (743.3)			6.0 (743.3) Fill?	Overlaid STS boring figure
53	PS-21	12228	4/83	N801608, E2370199	748.9	744.4	736.4	736.4	≤ 734.4		Overlaid STS boring figure
54	PS-22	12228	4/83	801627, 2370396	NA (747.3)	1.5 (745.8)	≥ 4.0 (≤ 743.3)				Overlaid STS boring figure
55	PS-23	12228	4/83	801635, 2370585	NA (746.0)	1.3 (744.7)	14.0 (732.0)			14.0 (732.0)	Overlaid STS boring figure
56[A]	PS-24A	12228	4/83	801718, 2370798	NA (743.0)	None	None	Other fill		10.0 (733.0)	Overlaid STS boring figure
	PS-24B	12228	4/83	801718, 2370798	NA (743.0)	Trace within other fill to 9.7 ft. ?				10.4 (732.6)	Overlaid STS boring figure
	PS-24C	12228	4/83	801718, 2370798	NA (743.0)	Trace at 2.0 (741.0)				10.0 (733.0)	Overlaid STS boring figure
	PS-24D	12228	4/83	801718, 2370798	NA (743.0)	0 (743.0)	1.0 (742.0)	Trace organics 4 ft. to 8 ft.		11.0 (732.0)	Overlaid STS boring figure
57	PS-25	12228	4/83	801359, 2369410	NA (745.8)	2.5 (743.3)	≥ 3.0 (≤ 742.8)				Overlaid STS boring figure
58	PS-26	12228	4/83	801370, 2369610	NA (746.8)	0.8 (746.0)	≥ 2.0 (≤ 744.8)				Overlaid STS boring figure
59	PS-27	12228	4/83	801385, 2369813	NA (746.7)	2.2 (744.5)	11.0 (735.7)	11.0 (735.7)	14.0 (732.7)	14.0 (732.7)	Overlaid STS boring figure
60	PS-28	12228	4/83	801398, 2370010	NA (745.7)	2.0 (743.7)	> 2.0 (≤ 743.7)				Overlaid STS boring figure
61	PS-29	12228	4/83	801412, 2370210	NA (746.2)	0.3 (745.9)	≥ 2.0 (≤ 744.2)				Overlaid STS boring figure

[A] 56 location is different in that sludge may be present as a minor constituent in fill to ≈ 10 ft. bgs. Also a nested location with different stratigraphy at the various boring locations. Map values are a combination of the various PS-24 locations.

Table C-1 Soil Boring Summary
Refer to end notes concerning location of soil logs

Master Boring No.	Project Boring No.	Project No.	Drilling Date	Boring Location	Surface El.	Top of Sludge El.	Bottom of Sludge El.	Top of Organics El.	Bottom of Organics El.	Top of Clay	Accuracy of Locating
62	PS-30	12228	4/83	801188, 2369826	NA (743.4)	2.0 (741.4)	≥ 4.0 (≤ 739.4)				Overlaid STS boring figure
63	PS-31	12228	5/83	801205, 2370028	744.2	742.2	734.7	734.7	≤ 732.7		Overlaid STS boring figure
64	PS-32, 32A, 32B	12228	6/83	801237, 2369228	740.9	None	None	Other fill		733.4	Overlaid STS boring figure
65	PS-33, 33A, 33B	12228	6/83	801116, 2370613	744.5	None	None	Other fill		738.5	Overlaid STS boring figure
66	B-1-88	15396XA	5/88	N801418, E2370802	NA (746.0)	3.8 (742.2)	9.7 (736.3)	9.7 (736.3)	12.6 (733.4)	12.6 (733.4)	Overlaid STS boring figure
67	B-2-88	15396XA	5/88	801345, 2370753	NA (746.0	4.0 (742.0)	12.0* (734.0) *Incl. 10-12 ft. interval sludge mixed with OL	12.0 (734.0)	13.5 (732.5)	13.5 (732.5)	Overlaid STS boring figure
68	TT-9	10839	10/80	801840, 2370375	NA (745.2)	1.0 (744.2)	> 9.5 (≤ 735.7)				Proportioned from unscaled diagram
	TT-9A	10839	2/81	801840, 2370375	NA (745.2)	2.0 (743.2)	> 3.5 (≤ 741.7)				Proportioned from unscaled diagram
	TT-9B	10839	2/81	801840, 2370375	NA (745.2)	2.3 (742.9)	>3.5 (≤ 741.7)				Proportioned from unscaled diagram
	TT-9C	10839	2/81	801840, 2370375	NA (745.2)	2.0 (743.2)	> 3.5 (≤ 741.7)				Proportioned from unscaled diagram
69	TT-1	10839	10/80	801210, 2370245	NA (748.0)[1]	1.5 (746.5)	> 9.5 (≤ 738.5)				Proportioned from unscaled diagram
70	TT-2	10839	10/80	801250, 2369630	NA (743.7)	1.0[2] (742.7)	> 9.5 (≤ 734.2)				Proportioned from unscaled diagram
71	TT-3	10839	10/80	801780, 2369080	NA (746.4)	1.0 (745.0)	> 9.5 (≤ 736.9)				Proportioned from unscaled diagram
72	TT-4	10839	10/80	801525, 2369412	NA (747.4)	1.0 (746.4)	> 9.5 (≤ 737.9)				Proportioned from unscaled diagram
73	TT-5	10839	10/80	801548, 2369925	NA (747.8)	1.5 (746.3)	> 7.5 (≤ 740.3)				Proportioned from unscaled diagram
74	TT-6	10839	10/80	801528, 2370368	NA (747.5	1.0 (746.5)	> 9.5 (≤738.0)				Proportioned from unscaled diagram
75	TT-7	10839	10/80	801900, 2369462	NA (747.2)	1.0 (746.2)	> 9.5 (< 737.7)				Proportioned from unscaled diagram
76	TT-8	10839	10/80	801915, 2369918	NA (747.0)	1.53 (745.5)	> 9.5 (< 737.5)				Proportioned from unscaled diagram
77	STS-1	84779	10/95	801715, 2370285	747.0	742.0	730.0			730.0	Location per STS diagram
78	STS-2	84779	10/95	801675, 2370140	748.8	742.3	730.8			730.8	Location per STS diagram

Table C-1 Soil Boring Summary
Refer to end notes concerning location of soil logs

Master Boring No.	Project Boring No.	Project No.	Drilling Date	Boring Location	Surface El.	Top of Sludge El.	Bottom of Sludge El.	Top of Organics El.	Bottom of Organics El.	Top of Clay	Accuracy of Locating
79	STS-3	84779	10/95	801590, 2370100	749.5	744.5	734.5	734.5	732.5	732.5	Location per STS diagram
80	STS-4	84779	10/95	801520, 2370175	748.9	743.9	732.4			732.4	Location per STS diagram
81	STS-5	84779	10/95	801420, 2370090	748.5	742.0	733.5			733.5	Location per STS diagram
82	STS-6	84779	10/95	801340, 2370180	748.5	742.0	731.5			731.5	Location per STS diagram
83	STS-7	84779	10/95	801275, 2370405	745.0	739.0	≤735.5				Location per STS diagram
84	SB99-1	99052	3/99	801712, 2370751	743.5	740.9	733.6			733.6	± 2 ft.
85	SB99-2	99052	3/99	801722, 2370505	745.7	742.7	735.4	735.4			± 2 ft.
86	SB99-3	99052	3/99	801334, 2370518	747.8	744.8	741.0				± 2 ft.
87	SB99-3A	99052	3/99	801339, 2370532	747.8	744.8	734.8	734.8	734.4	734.4	± 3 ft.
88	SB99-4	99052	3/99	801738, 2370122	746.7	742.4	734.9	734.9			± 2 ft.
89	SB99-5	99052	3/99	801395, 2370057	745.3	742.1	735.4	735.4			± 2 ft.
90	SB99-6	99052	3/99	801262, 2369921	742.9	740.4	735.4	735.4			± 2 ft.
91	SB99-7	99052	3/99	801872, 2369750	747.1	745.5	734.3	734.3			± 2 ft.
92	SB99-8	99052	3/99	801712, 2369793	749.5	743.2	733.9	733.9			± 2 ft.
93	SB99-9	99052	3/99	801550, 2369770	746.7	744.9	734.7	734.7			± 2 ft.
94	SB99-9A	99052	3/99	801580, 2369770	746.8	743.8	734.5	734.5			± 2 ft.
95	SB99-10	99052	3/99	801264, 2369732	744.0	741.0	735.6	735.6			± 2 ft.
96	SB99-11	99052	3/99	801770, 2369595	746.9	744.9	733.6	733.6			± 2 ft.
97	SB99-12	99052	3/99	801584, 2369589	746.8	745.0	735.3				± 2 ft.
98	SB99-13	99052	3/99	801420, 2369634	746.2	744.6	735.3	735.3			± 2 ft.
99	SB99-14	99052	3/99	801467, 2369482	746.0	745.0	734.2	734.2			± 2 ft.
100	SB99-15	99052	3/99	801311, 2369529	744.1	741.7	735.8	735.8			± 2 ft.
101	SB99-16	99052	3/99	801890, 2369267	746.0	744.0	740.0				± 2 ft.
	SB99-16A	99052	3/99	801890, 2369267	746.0	744.0	740.0				± 2 ft.
102	SB99-17	99052	3/99	801588, 2369265	745.9	742.9	735.9	735.9			± 2 ft.
103	SB99-18	99052	3/99	801420, 2369333	745.3	743.3	734.0	734.0	733.1	733.1	± 2 ft.
104	SB99-19	99052	3/99	801624, 2369100	745.7	743.5	735.7	735.7			± 2 ft.
105	SB99-20	99052	3/99	801831, 2368938	744.0	742.0	732.3			732.3	± 2 ft.

[1]Estimated value based on proximity to MB #3 (a pre-temporary soil pile boring). [2]Includes zone from 1.0 to 3.5 feet where sludge is mixed with silty clay. [3]Includes zone from 1.5 to 3.5 feet where sludge is mixed with sand.

Boring Log Locations

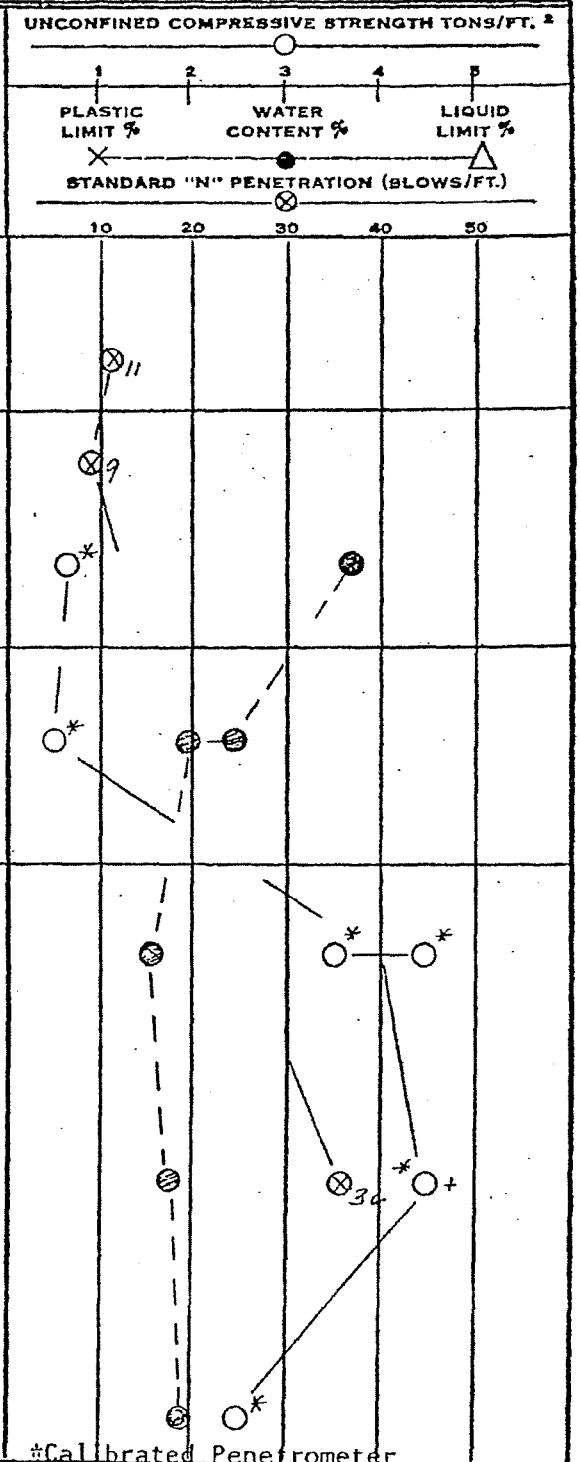
- Master Boring Log Nos. 1 through 21 attached.
- Master Boring Log Nos. 22, 23 and 33 through 65 included in DNR submittal: P.H. Glatfelter, 1984. The Park Site Landfill in Neenah, Wisconsin: Existing Physical Conditions, Effect on Local Groundwater and Alternatives for Future Action. Spring Grove, PA.
- Master Boring Log Nos. 24 through 32 attached.
- Master Boring Log Nos. 66 through 76 could not be located.
- Master Boring Log Nos. 77 through 105 attached.
- 2011 Glatfelter Soil Boring submitted to DNR on August 18, 2011. Refer to letter to Gregory Tilkens (DNR) from Stu Gross (Stantec).
- Boring completed for City of Neenah Site Investigation south of Park Site #1 submitted to DNR on February 6, 2012..

LOG OF BORING NO. 7

OWNER Neenah Menasha Sewerage Commission	ARCHITECT-ENGINEER Consoer Townsend & Associates
SITE Neenah-Menasha	PROJECT NAME Interceptor Sewer

SURFACE ELEVATION 742

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	PA			Paper sludge fill with sand and gravel-trace clay-loose to medium dense-fill	
		2	SS				
5		3	SS			Brown clay-trace sand,gravel, topsoil,roots-stiff to tough-fill	
		4	ST				
10		5	ST			Gray-brown silt-trace clay, fine sand thin seam of red brown silty clay-11 - 12'(ML)	111
15		6	ST			Brown silty clay-trace to some sand and gravel-very tough to hard(CL)	
20		7	SS				
25		8	ST				
27						End of Boring	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	9.0	~~W.S.~~ OR W.D.
W.L.	B.C.R.	A.C.R.
W.L.	8.7' AB	
	6.5' 24 hours AB	

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-19-73		
BORING COMPLETED	12-19-73		
RIG	Acker	FOREMAN	EV
DRAWN	KK	APPROVED	KCM
JOB #	5863	SHEET	

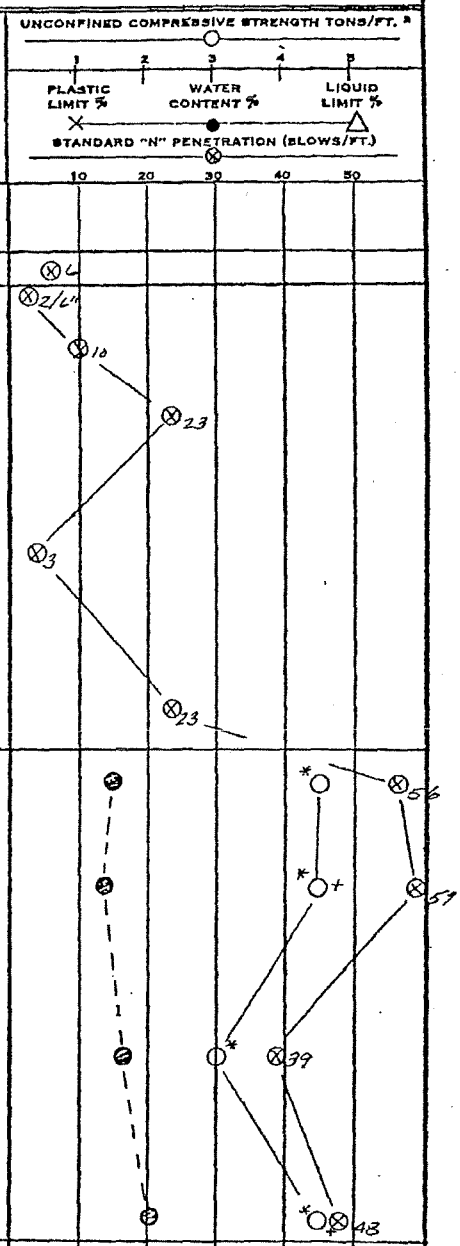
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

DB S-81471

LOG OF BORING NO. 8

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE Neenah-Menasha	**PROJECT NAME** Interceptor Sewer

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
						SURFACE ELEVATION 747	
		1	PA			Silty sand and gravel-fill	
		2	SS			Paper waste sludge-loose-fill	
		2A	SS			Cinders, sand, gravel, brown clay, wood paper waste-loose to medium dense-fill	
2		3	SS				
		4	SS				
10		5	SS				
15		6	SS				
		7	SS			Brown silty clay-trace sand and gravel-very tough to hard (CL)	
20		8	SS				
25		9	SS				
30		10	SS				
31.5						End of Boring	



WATER LEVEL OBSERVATIONS			
W.L.	5.5	W.S. OR W.D.	
W.L.		B.C.R.	A.C.R.
W.L.	4.5' A3		
	4.4' 24 hours A8		

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	12-19-73		
BORING COMPLETED	12-19-73		
RIG	Acker	FOREMAN	EV
DRAWN	KK	APPROVED	KCM
JOB #	5863	SHEET	

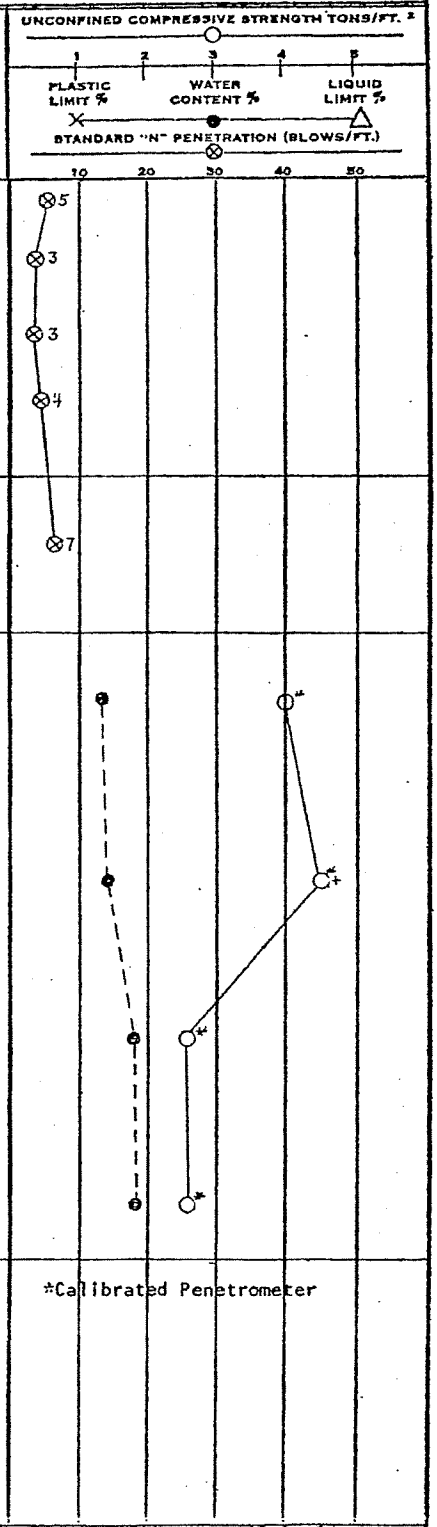
No. 2 The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 9

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE Neenah Menasha, Wisconsin	**PROJECT NAME** Interceptor Sewer

SURFACE ELEVATION 748

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Paper waste trace clay and wood-loose-fill	
	2	SS				
5	3	SS				
	4	SS				
10	5	SS			Gray organic silt-trace sand partially decayed wood-loose(OL)	
15	6	ST			Brown silty clay-trace to some sand and gravel-hard(CL)	
20	7	ST				
25	8	ST				
30	9	ST				
32					End of Boring	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS			
W.L.	11.0'	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.	
W.L.	9.4' AB		
	8.4' 24 hours AB		

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

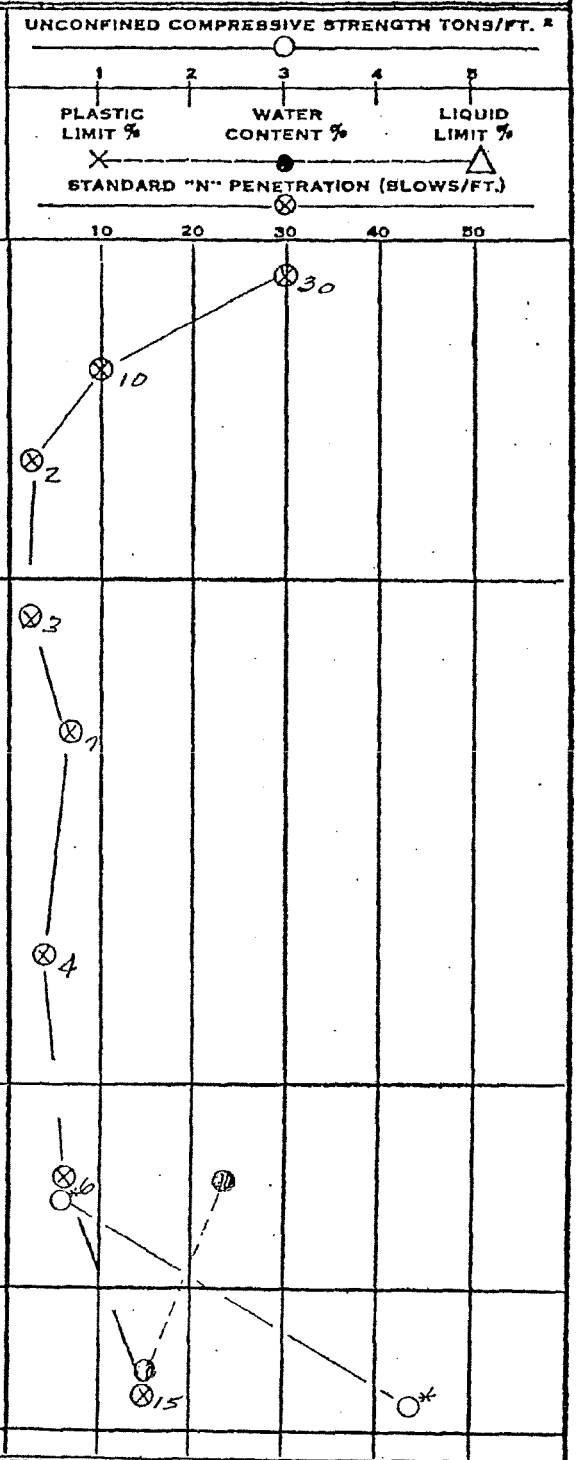
BORING STARTED	12-19-73		
BORING COMPLETED	12-19-73		
RIG	Acker	FOREMAN	EV
DRAWN	KCM	APPROVED	KCM
JOB #	5863	SHEET	

No. 8 The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 10

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE	**PROJECT NAME**
Neenah-Menasha	Interceptor Sewer

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 747	
	1	SS			Miscellaneous fill consisting of paper waste topsoil, sand, gravel, bricks and cinders-loose to dense	
	2	SS				
5	3	SS				
	4	SS			Miscellaneous fill-predominately partially decayed wood with gray silt, sand and gravel-loose	
10						
	5	SS				
15						
	6	SS				
20					Red brown and gray silty clay trace sand and gravel-soft(CL)	
	7	SS				
25					Brown silty clay-trace sand and gravel-hard(CL)	
	8	SS				
26.5					End of Boring	



WATER LEVEL OBSERVATIONS			
W.L.	7.5'	W.S. ~~OPX WXD~~	
W.L.	B.C.R.		A.C.R.
W.L.	7.0 AB		
	7.0	24 hours AB	

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-19-73		
BORING COMPLETED	12-19-73		
RIG	Acker	FOREMAN	EV
DRAWN	HH	APPROVED	KCM
JOB #	5863	SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

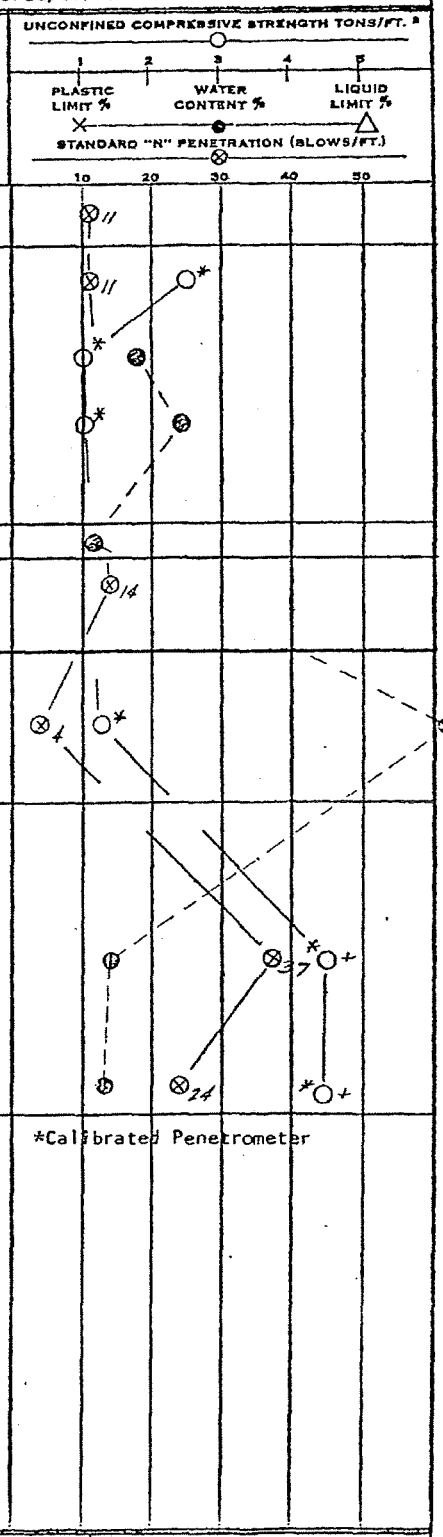
BDS-81471

LOG OF BORING NO. 11

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE: Neenah-Menasha	PROJECT NAME: Interceptor Sewer

SURFACE ELEVATION 748

DEPTH / ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Brown silty sand and gravel-medium dense-fill	
	2	SS			Red brown silty clay-trace sand and gravel-very tough to tough(CL)possible fill	
5	3	ST				
	4	ST				
10						
	5	ST			Brown silty sand and gravel (SP)possible fill	
	6	SS			Black sand and gravel with decayed wood and other organic material-medium dense-possible fill	
15						
	7	SS			Red brown silty clay-trace black partially decayed wood chips and black topsoil-tough(CL)	
20						
	8	ST			Brown silty clay-trace sand and gravel-hard(CL)	
	9	SS			Lost sample at 20 to 22 and 25 to 26	
25						
	10	ST				
27.5	11	SS				
					End of Boring	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	10'	W.S. or W.D.
W.L.	B.C.R.	A.C.R.
W.L.	9.7' AB	
	9.3' 4 hours AB	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	12-20-73		
BORING COMPLETED	12-20-73		
RIG	Acker	FOREMAN	EV
DRAWN	KK	APPROVED	KCM
JOB #	5863	SHEET	

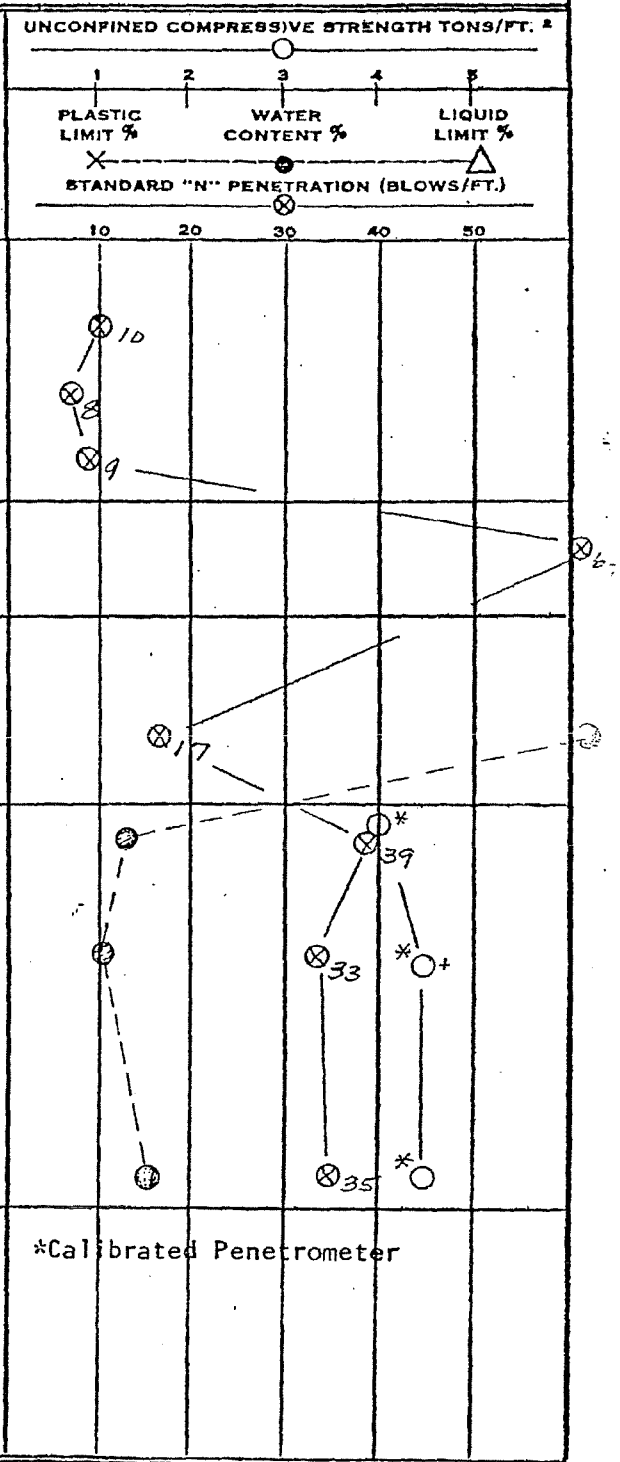
No. 2 The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 12

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE	**PROJECT NAME**
Neenah-Menasha	Interceptor Sewer

SURFACE ELEVATION 745

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Paper waste with brown silty clay-loose to medium dense-fill	
		2	SS				
5		3	SS				
		4	SS			Fine brown silty sand-trace coarse gravel-very dense(SP) possible fill	
10		5	SS			Gray organic silt with partially decayed wood chips-trace shells-medium dense(OL)	
		6	SS				
15		7	SS			Brown silty clay-trace sand and gravel-hard(CL)	
20							
21.5		8	SS				
						End of Boring	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	Dry	W.S. ~~OR W.D.~~
W.L.	B.C.R.	A.C.R.
W.L.	Dry AB	
	19.9 24 hours AB	

SOIL TESTING SERVICES
OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-18-73		
BORING COMPLETED	12-18-73		
RIG	Acker	FOREMAN	EV
DRAWN	KK	APPROVED	KCM
JOB #	5863	SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

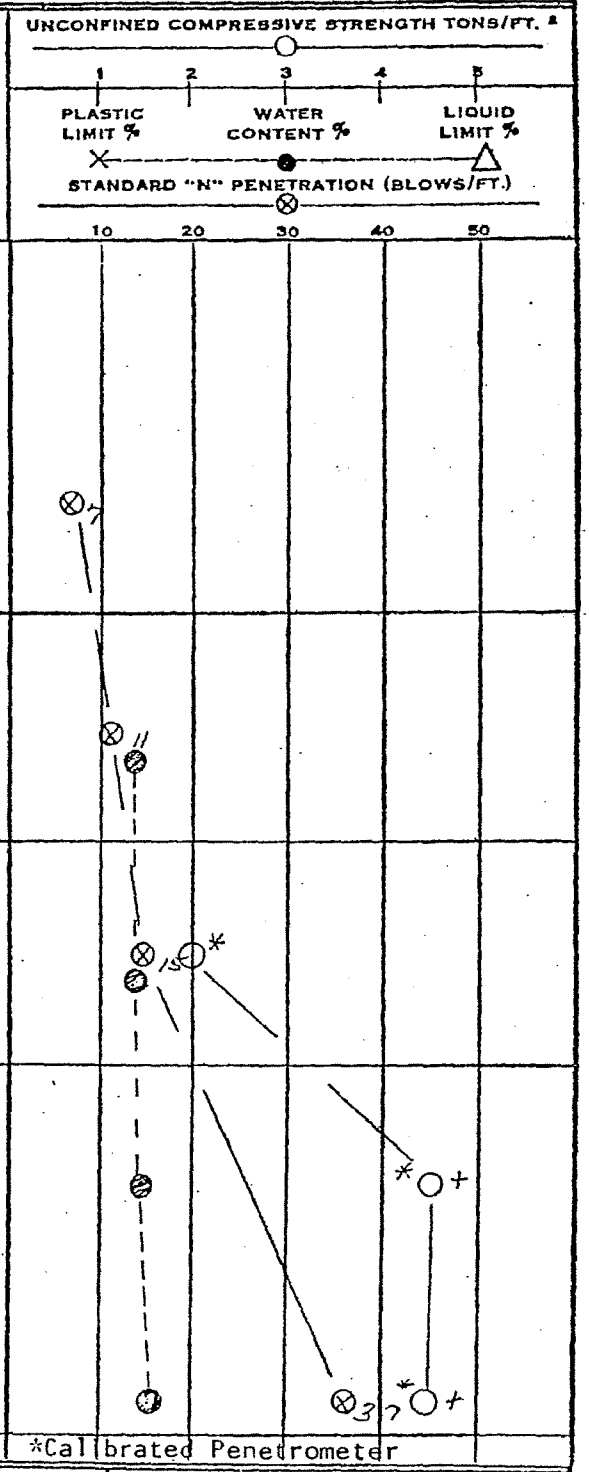
BBS-81471

LOG OF BORING NO. 13

OWNER	ARCHITECT-ENGINEER
Neenah Menasha Sewerage Commission	Consoer Townsend & Associates
SITE Neenah-Menasha	**PROJECT NAME** Interceptor Sewer

SURFACE ELEVATION 747

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	PA			Miscellaneous fill consisting of cinders, wood sand and gravel-loose	
5	2	SS				
10	3	SS			Gray brown silt-trace to some sand-trace gravel-medium dense(ML)	
15	4	SS			Red brown silty clay-very tough(CL)	
20	5	ST			Brown silty clay-trace sand and gravel-hard(CL)	
25	6	SS				
26.5					End of Boring	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	9.5'	~~WAS OR~~ W.D.
W.L.	B.C.R.	A.C.R.
W.L.	9.5 AB	
	9.5' - 2½ hours AB	

SOIL TESTING SERVICES OF WIS., INC.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

BORING STARTED	12-20-73		
BORING COMPLETED	12-20-73		
RIG	Acker	FOREMAN	EV
DRAWN	KK	APPROVED	KCM
JOB #	5863	SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

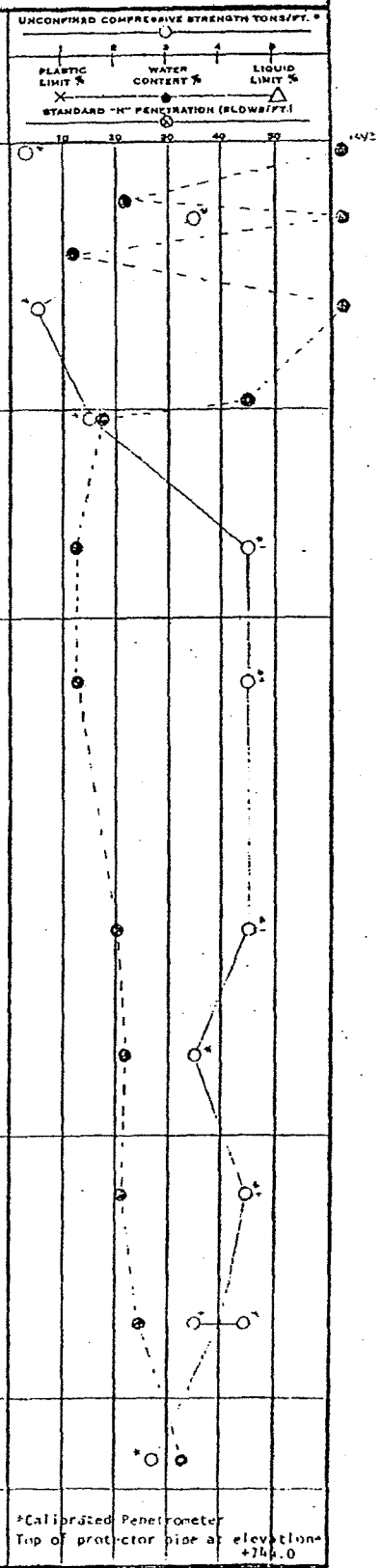
BBS.81471

LOG OF BORING NO. B-1

OWNER: Bergstrom Paper Company	ARCHITECT-ENGINEER:
SITE: Neenah, Wisconsin	PROJECT NAME: Solid Waste Disposal Site

SURFACE ELEVATION: 740.8

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
		1	ST	Light gray paper sludge-Fill
		2, 2A	ST, ST	
5		3	ST	
		4	ST	
10				
		5	ST	Tough to hard gray brown silty sandy clay-trace grave (CL)
15		6	ST	
20		7	ST	Very tough to hard gray brown silty clay-trace sand, gravel (CL)
25		8	ST	
30		9	ST	
35		10	ST	
40		11	ST	Very tough to hard gray brown silty clay-trace sand, gravel (CL-CH) irregular small seams red clay
45		12	ST	
50		13	ST	Very tough gray brown silty clay (CL) thin seams light gray silt
52				End of Boring



1 1/2" Ø well installed to 5' 50 to 46' sand and pea grave 26' to 41' bentonite

*Calibrated Penetrometer
Top of protector pipe at elevation +744.0

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.#	A.C.#
W.L.		

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	7-15-74
BORING COMPLETED	7-16-74
FOREMAN	
DRAWN	APPROVED
JOB #	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

NEENAHFOIA0003462

LOG OF BORING NO. B-3

OWNER: Bergstrom Paper Company	ARCHITECT-ENGINEER:
SITE: Neenah, Wisconsin	PROJECT NAME: Solid Waste Disposal Site

SURFACE ELEVATION: 739.9

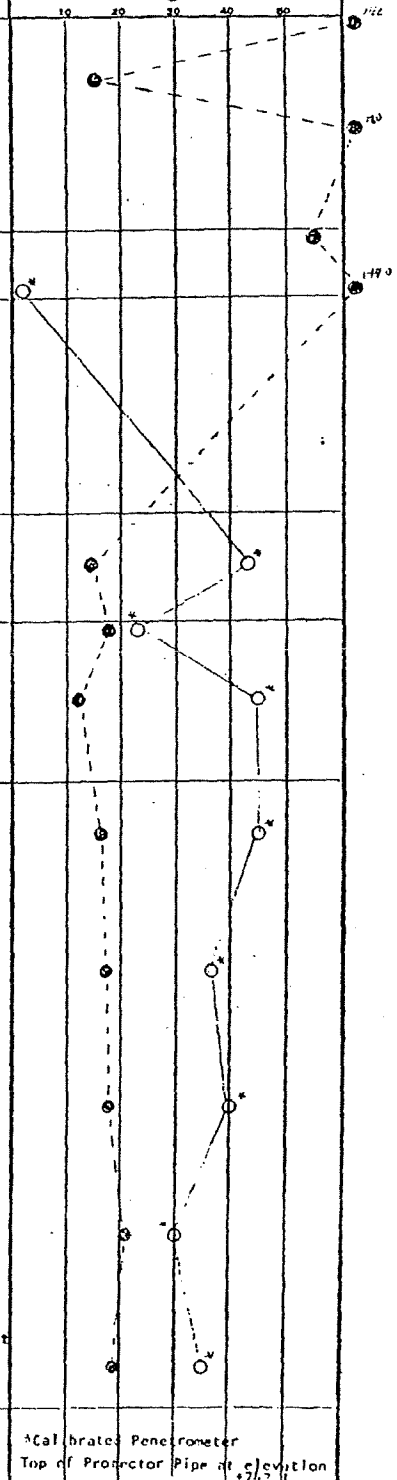
DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
	1	ST	Light gray paper sludge
	2	ST	
5	3	ST	
	4	ST	
	4A	ST	
	5	ST	Dark gray brown silty clayey topsoil-changing to a peaty topsoil
10			
	6	ST	Red brown silty clay-trace sand (CL-CH) irregular gray seams
15			
	7	ST	
20			Hard gray brown silty sandy clay-trace gravel (CL)
	8	ST	
	9	ST	Hard gray brown silty clay-trace sand, gravel (CL)
	9A	ST	
25			
	10	ST	
30			
	11	ST	
35			
	12	ST	Very tough to hard gray brown silty clay-trace sand, gravel (CL-CH)
40			
	13	ST	
45			
	14	ST	
50			1 1/2" Ø well installed to 50 feet 50 to 46 feet sand 46' to 41 feet bentonite
	15	ST	
			End of Boring 15' of 4" Casing

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

UNIT DRY WT. LBS/FT.³



*Calibrated Penetrometer

Top of Protector Pipe at elevation +742.1

WATER LEVEL OBSERVATIONS	
W.L.	W.S. CR W.D.
W.L.	B.C.R. / A.C.R.
W.L.	

SOIL TESTING SERVICES OF WIS., INC.

GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	
BORING COMPLETED	
DATE	FOREMAN
DRAWN	APPROVED
JOB	SHEET

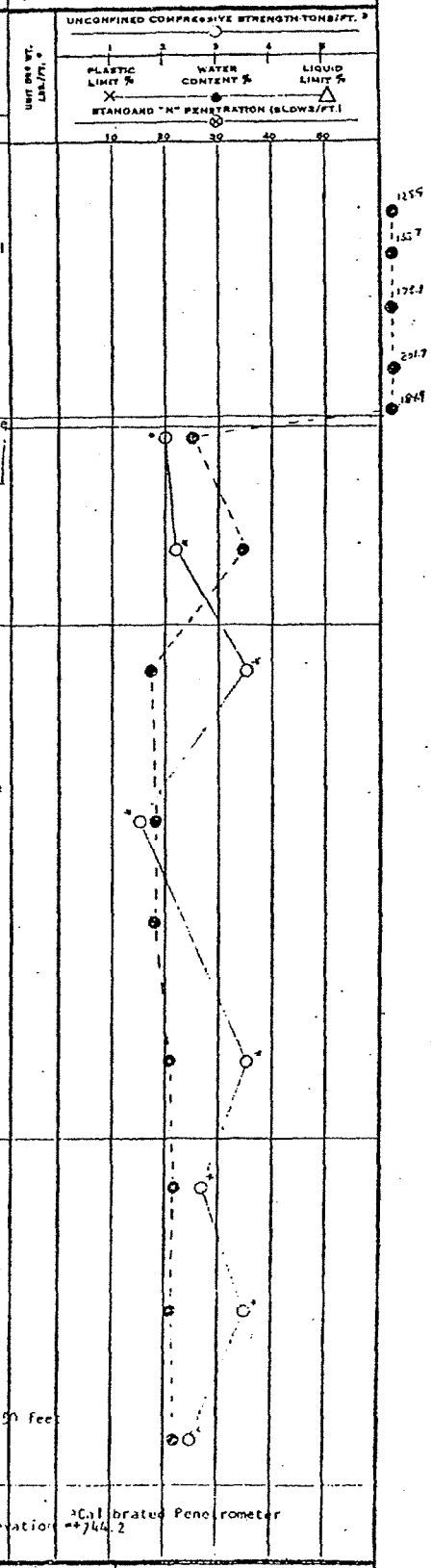
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. B-6

OWNER: Bergstrom Paper Company	ARCHITECT-ENGINEER:
SITE: Neenah, Wisconsin	PROJECT NAME: Solid Waste Disposal Site

SURFACE ELEVATION: 741.6

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
		1	ST LS	Light gray paper sludge-FILL
		2	ST	
5		3	ST	
		4	ST	
		5	ST	
10		6	ST	Dark gray organic silt-trace chunks wood (OL)
15		7	ST	Very tough red brown silty clay (CL) thin seam gray silt
20		8	ST	
25		9	ST	Gray brown silty clay-trace sand and gravel (CL-CH)
30		10	ST	
35		11	ST	
40		12	ST	
45		13	ST	Very tough gray brown silty clay-trace sand, gravel (CL)
50		14	ST	1 1/2" Ø well installed to 50 feet 50' to 44' sand 46' to 41' bentonite
52				End of Boring Top of Protector Pipe at Elevation =+744.2



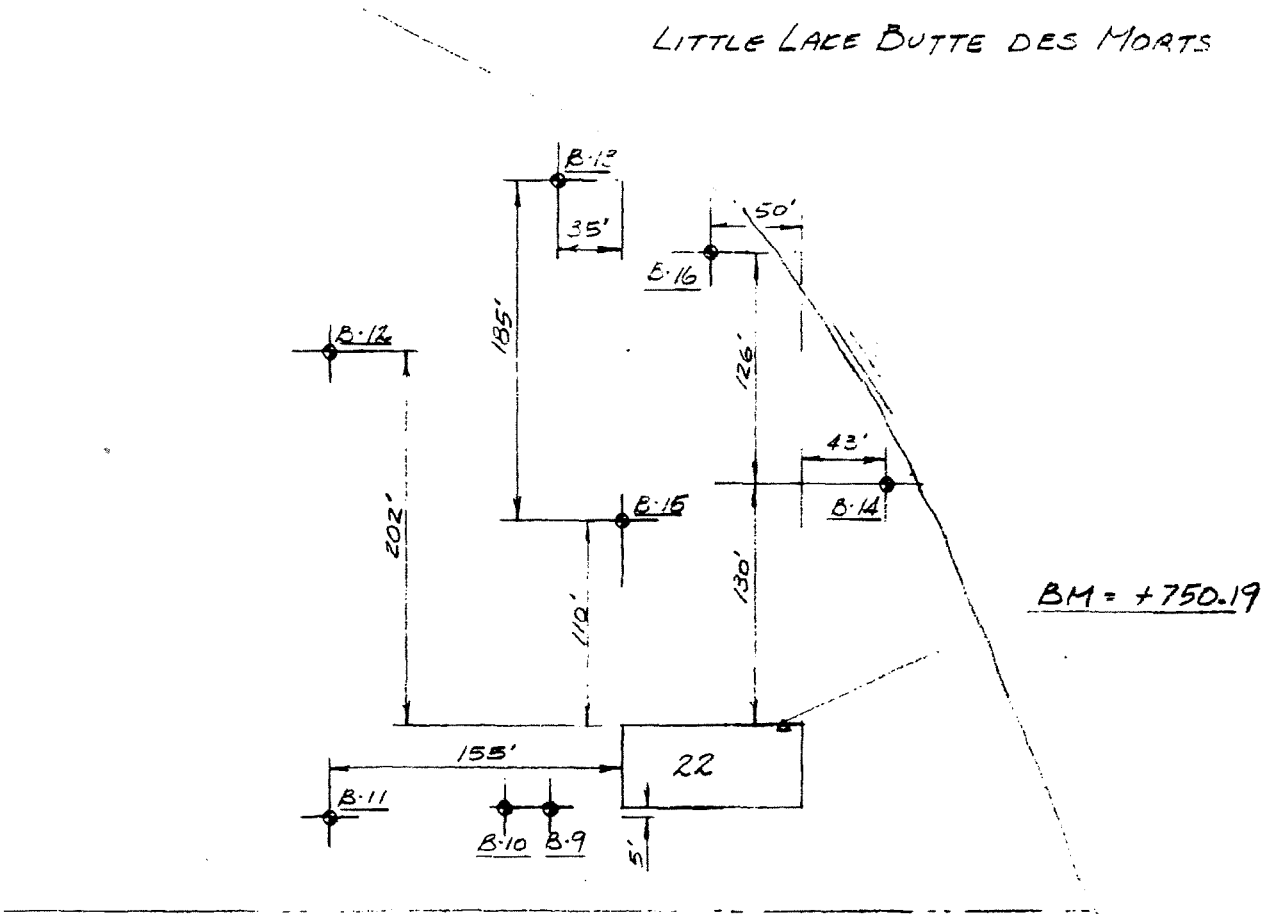
WATER LEVEL OBSERVATIONS	
W.L.	W.S. 04 W.D.
W.L.	D.C.B. / A.C.B.
W.L.	

SOIL TESTING SERVICES OF WIS., INC.
GLEN KAT, WISCONSIN
540 LA BREAU STREET

BORING STARTED	4-11-74
BORING COMPLETED	4-11-74
RIG	FOREMAN
DRAWN	APPROVED
JOB #	SHEET

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

NEENAHFOIA0003464



SOIL BORING LOCATION DIAGRAM
PROPOSED TREATMENT PLANTS
BERGSTROM PAPER CO., NEENAH, WISC.

SOIL TESTING SERVICES OF WIS., INC.
Route 7, Bosten Road
GREEN BAY WISCONSIN

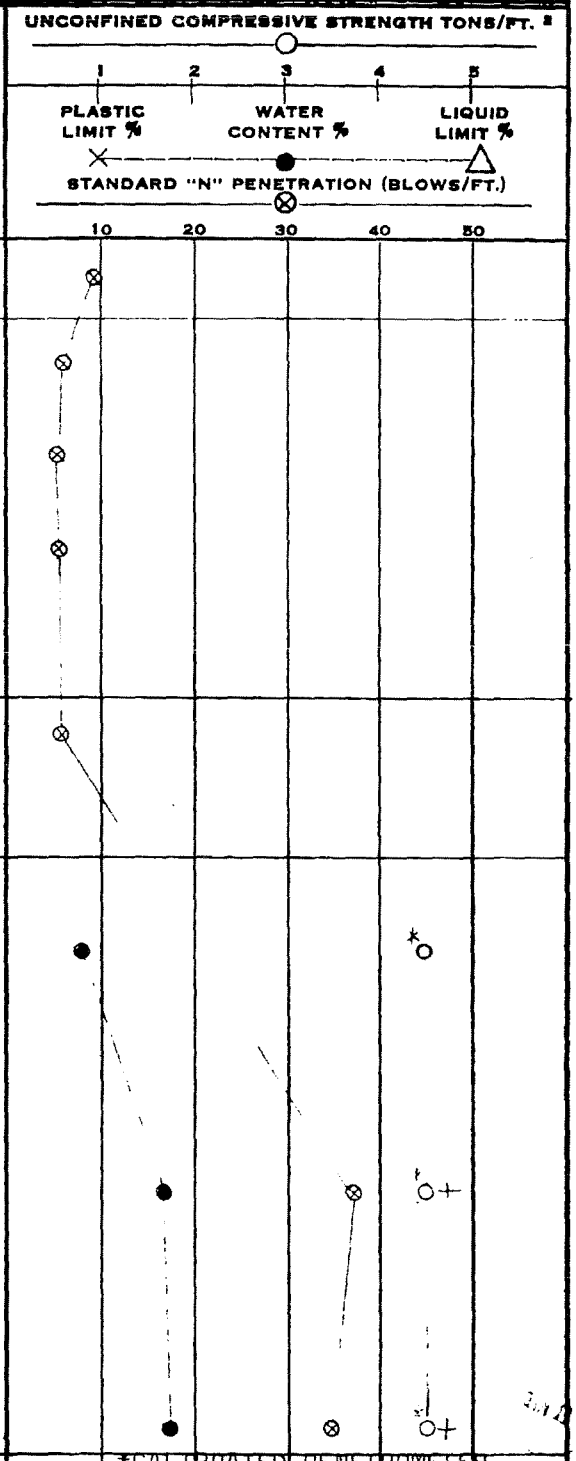
BP	1"=100'	1443A	9-5-60

P.P. No. 6—1M

LOG OF BORING NO. 11

OWNER	ARCHITECT - ENGINEER
Bergstrom Paper Company	S.J. Baisch Associates
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Treatment Plants

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION 745.5	
	1	SS			FINE-MEDIUM SAND-TRACE GRAVEL AND WOOD-BROWN AND GRAY-FILL	
	2	SS				
5	3	SS			GRAY PAPER SLUDGE-FILL	
	4	SS				
10						
	5	SS			ORGANIC SILT-TRACE FIBERS-DARK GRAY-(OL)	
15						
	6	ST				
					SILTY CLAY-TRACE GRAVEL AND SAND-BROWN-HARD-(CL)-COBBLES AT 13.5' TO 15'	
20						
	7	SS				
25						
26.5	8	SS			END OF BORING	
					10' NX CASING	



*CALIBRATED PENETROMETER

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	8.5' B.C.R.	8.5' A.C.R.
W.L.	CT AT SURFACE 24 HOURS AB	

SOIL TESTING SERVICES
OF WIS., INC.
ROUTE NO. 7—BAETEN ROAD
GREEN BAY, WISCONSIN

BORING STARTED	8/19/66		
BORING COMPLETED	8/19/66		
RIG	W-6	FOREMAN	KN
DRAWN		APPROVED	WMP
JOB #	1443A	SHEET	

P.P. No. 8—1M

LOG OF BORING NO. 12

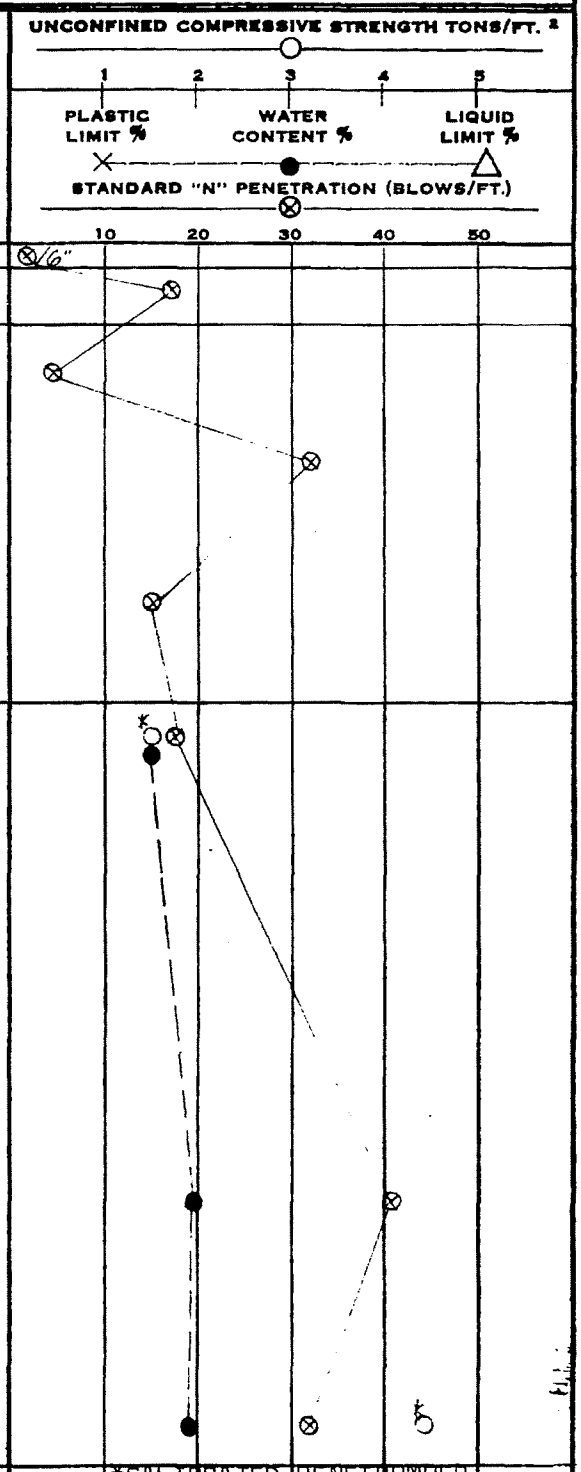
OWNER Bergstrom Paper Company

ARCHITECT-ENGINEER S. J. Baisch Associates

SITE Neenah, Wisconsin

PROJECT NAME Proposed Treatment Plants

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
						SURFACE ELEVATION 743.05	
		1				BROWN SANDY CLAY-TRACE GRAVEL-FILL	
		1A	SS			BLACK CINDERS-FILL	
		2	SS			GRAY PAPER SLUDGE-TRACE COARSE GRAVEL AT 4'-TRACE CINDERS AT 7'-SWAMP GAS NOTED WHILE DRILLING AT 2'	
5		3	SS				
		4	SS				
10							
		5	SS				
15							
		6	ST				
20						SILTY CLAY-TRACE GRAVEL AND SAND-BROWN-TOUGH TO HARD-(CL)	
		7	SS				
25							
26.5		8	SS			END OF BORING	
						10' NX CASING	



WATER LEVEL OBSERVATIONS			
W.L.		W.S. OR W.D.	
W.L.	7' B.C.R.	7' A.C.R.	
W.L.	WCI AT 6' 24 HOURS AB		

SOIL TESTING SERVICES
OF WIS., INC.
ROUTE NO. 7—BAETEN ROAD
GREEN BAY, WISCONSIN

BORING STARTED	8/19/66		
BORING COMPLETED	8/19/66		
RIG	W-6	FOREMAN	KN
DRAWN		APPROVED	WMP
JOB #	1443A	SHEET	

P.P. No. 8—1M

LOG OF BORING NO. 15

OWNER	ARCHITECT-ENGINEER
Bergstrom Paper Company	S. J. Baisch Associates
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Treatment Plants

SURFACE ELEVATION 744.4

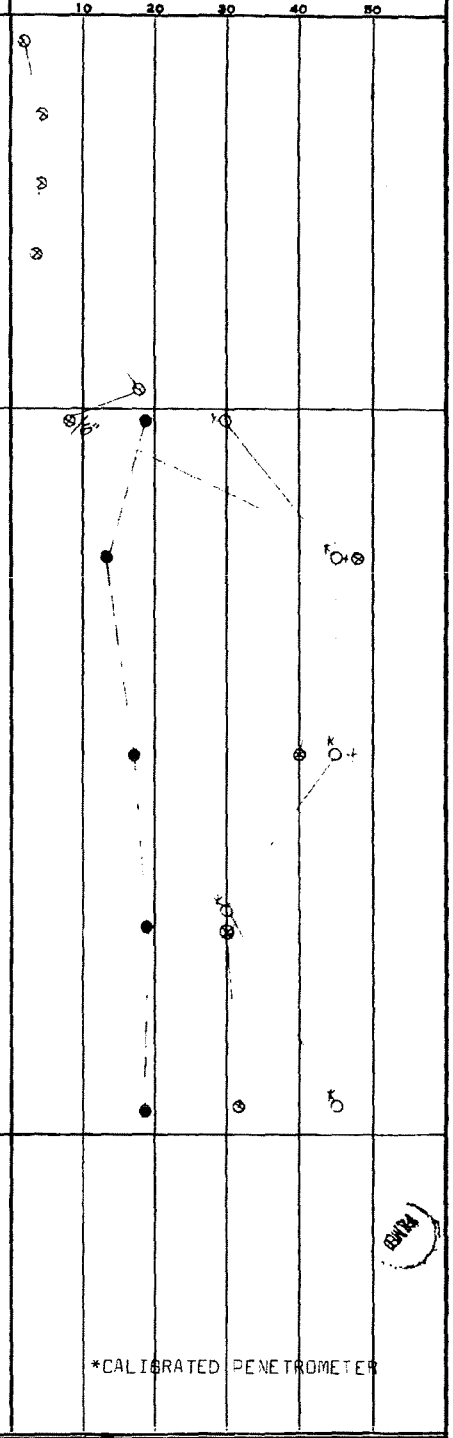
DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL
	1	SS			GRAY PAPER SLUDGE
	2	SS			
5	3	SS			
	4	SS			
10	5	SS			
	5A				SILTY CLAY-TRACE GRAVEL AND SAND-BROWN-HARD TO VERY TOUGH (CL)
15	6	SS			
20	7	SS			
25	8	SS			
30	9	SS			
31.5					END OF BORING

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)



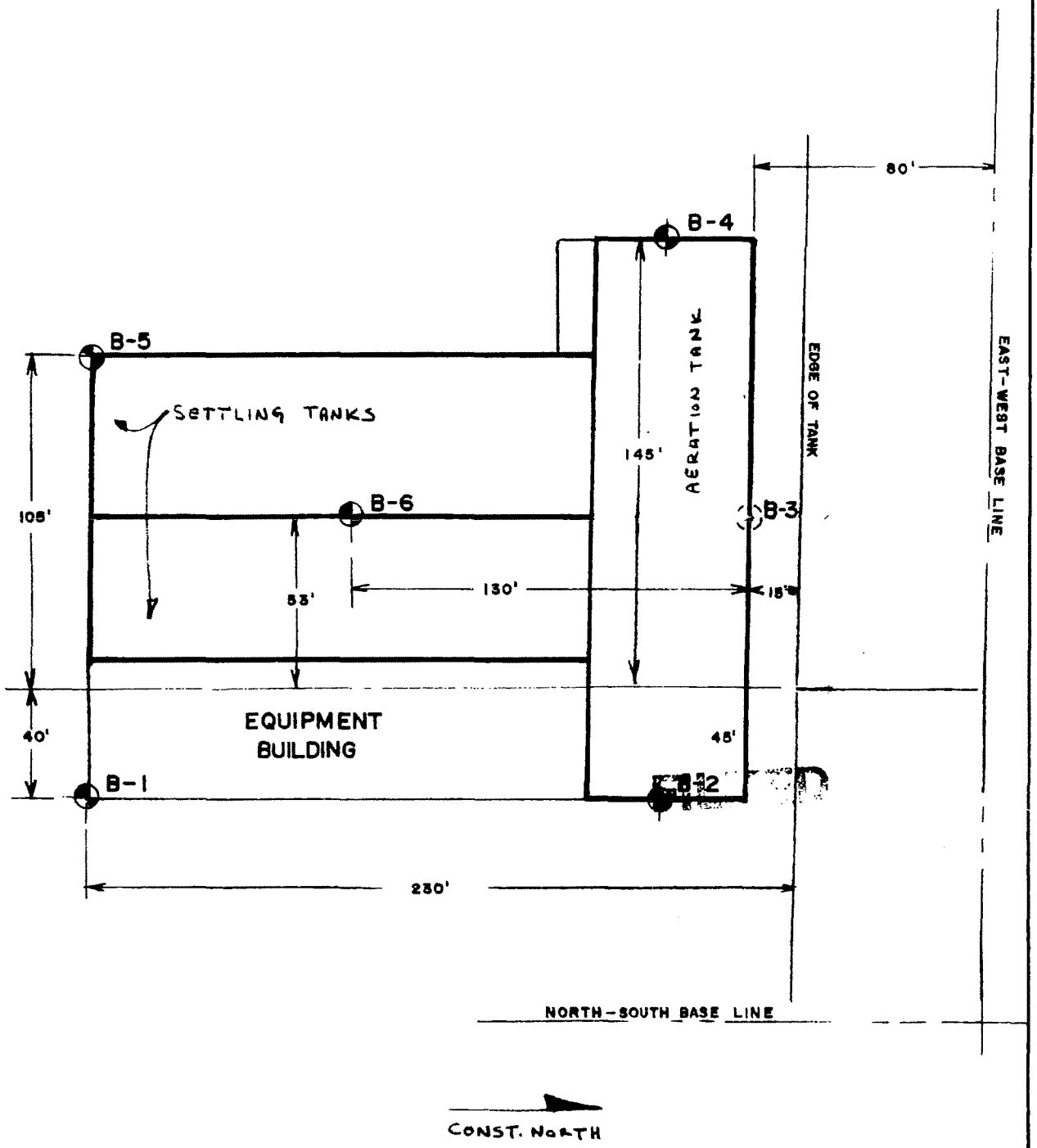
*CALIBRATED PENETROMETER

WATER LEVEL OBSERVATIONS		
W.L.	W.S. OR W.D.	
W.L.	B.C.R.	A.C.R.
W.L.	4' AB	
	7' 24 HOURS AB	

SOIL TESTING SERVICES
OF WIS., INC.
ROUTE NO. 7—BAETEN ROAD
GREEN BAY, WISCONSIN

BORING STARTED	8/19/66		
BORING COMPLETED	8/19/66		
RIG	W-6	FOREMAN	KN
DRAWN		APPROVED	WMP
JOB # 1443A		SHEET	

P.P. No. 8—1M.



SOIL BORING LOCATION DIAGRAM
EFFLUENT TREATMENT PLANT
BERGSTROM PAPER CO.
NEENAH, WISCONSIN

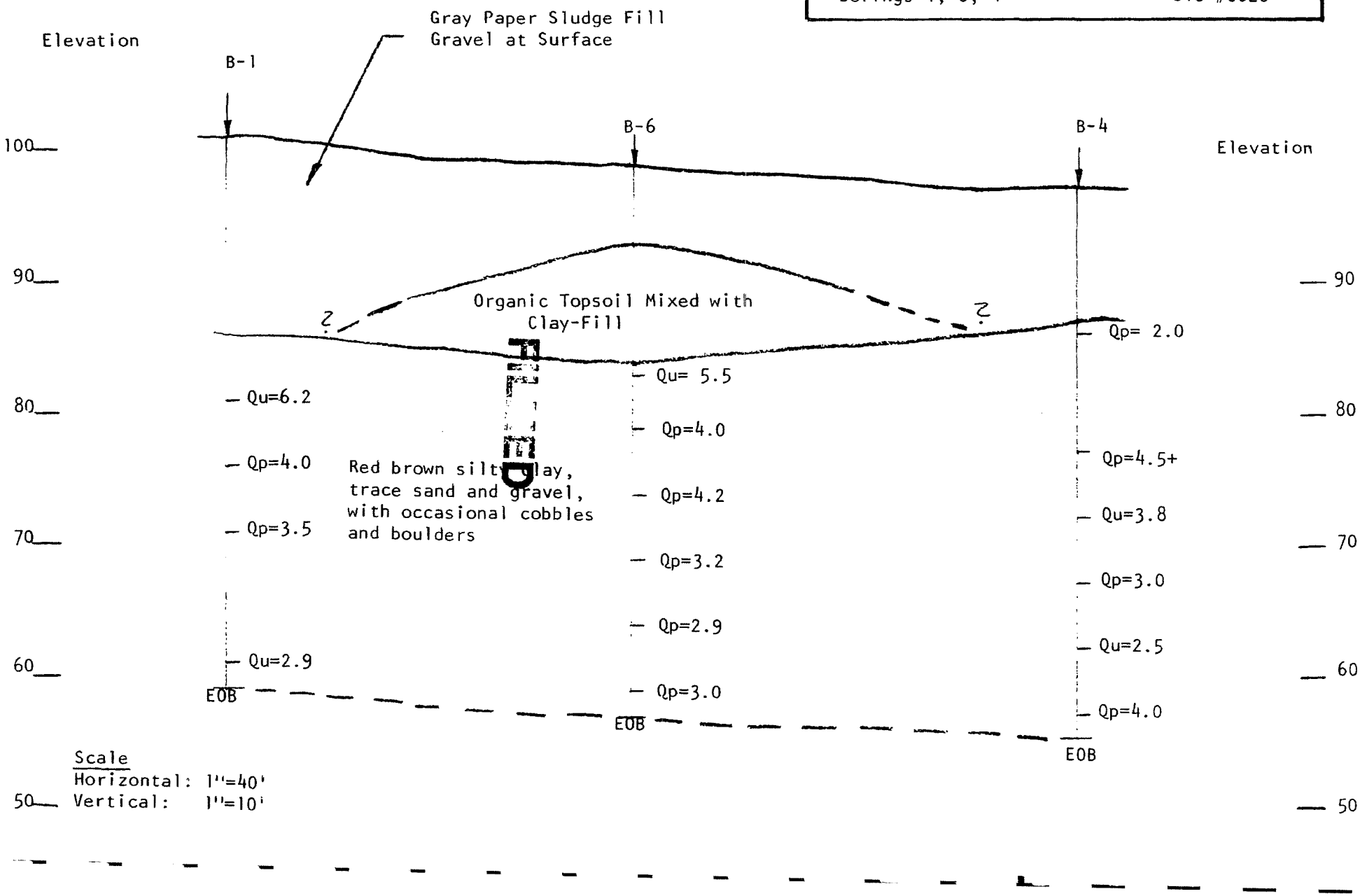
N

SOIL TESTING SERVICES OF WISCONSIN, INC.
540 LAMBEAU ST. GREEN BAY, WISCONSIN 54303

H.H	4-29-75	1" = 50'	6626

GENERALIZED SOIL PROFILE
EFFLUENT TREATMENT PLANT
BERGSTROM PAPER COMPANY

Borings 1, 6, 4 STS #6626



LOG OF BORING NO. 1

OWNER	ARCHITECT-ENGINEER
Bergstrom Paper Company	VanLuven Consultants
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Waste Water Treatment Plant

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % · WATER CONTENT % · LIQUID LIMIT %

STANDARD "N" PENETRATION (BLOWS/FT.) (10, 20, 30, 40, 50)

SURFACE ELEVATION 101.0

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Gray brown fine to coarse sand and gravel-fill	
		2	SS				
5		3	SS				
		4	SS			Gray paper sludge-fill	
10		5	SS				
15		6	SS			Red gray to red brown silty clay, trace to some fine to coarse gravel, with pieces of large gravel at 35 feet-very tough to hard-(CL)	
20		7	ST				117
25		8	ST				
30		9	ST				
35		10	ST				
40		11	ST			Red brown silty clay, trace fine sand-very tough-(CL-CH)	107
42						End of Boring Auger boring to 15 feet. Wash boring below 15 feet. 15 feet of NX casing used.	

*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	3' W.S. CREEK	
W.L.	2.1' B.C.B.	A.C.B.
W.L.	5.9' 24 hrs. AB	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	4-15-75		
BORING COMPLETED	4-15-76		
RIG	8	FOREMAN	EVH
DRAWN	JK	APPROVED	WCK
JOB #	6626	SHEET	

FORM No. 4—1M

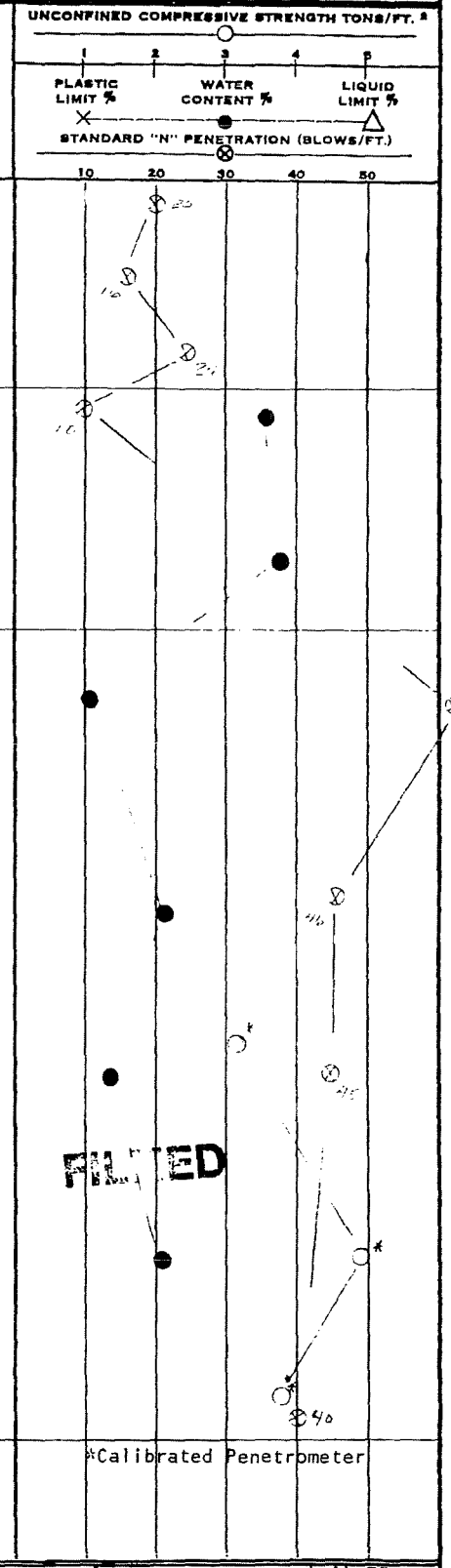
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 2

OWNER	ARCHITECT-ENGINEER
Bergstrom Paper Company	Van Luven Consultants
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Waste Water Treatment Plant

SURFACE ELEVATION 97.7

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	SAMPLE DIST.	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS			Gray paper sludge mixed with gravel from 0 to 1 foot, mixed with peat and topsoil from 4 feet to 6 feet-fill	
		2	SS				
5		3	SS				
		4	SS			Red brown silty clay, mixed with topsoil, cinders, sludge and sand-fill	
10		5	SS				
15		6	SS				
20		7	SS			Red brown silty clay, some fine to coarse sand and fine to coarse gravel-hard-(CL)	
25		8	SS				
30		9	ST				
35		10	SS				
36.5						End of boring Auger boring to 15 feet Wash boring below 15 feet 15 feet of NX casing used	



*Calibrated Penetrometer

WATER LEVEL OBSERVATIONS		
W.L.	3' W.S. OBKW.DX	
W.L.	2.1' B.C.R.	A.C.R.
W.L.	5.9' 24 hrs. AB	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU ST.

BORING STARTED	4-14-75		
BORING COMPLETED	4-14-75		
RIG	8	FOREMAN	EVH
DRAWN	JK	APPROVED	WCK
JOB #	6626	SHEET	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

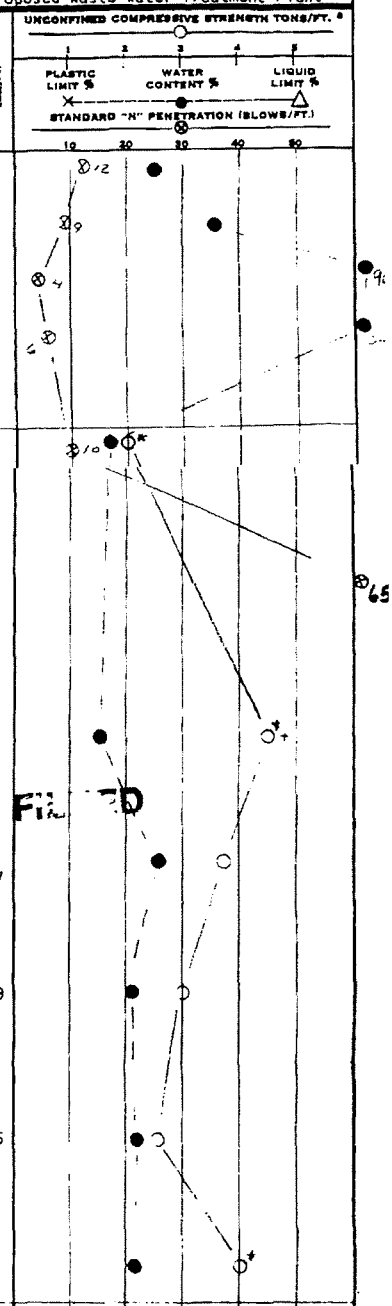
BBS-81671

LOG OF BORING NO. 4

OWNER Bergstrom Paper Company	**ARCHITECT-ENGINEER** Van Luven Consultants
SITE Neenah, Wiscoosin	**PROJECT NAME** Proposed Waste Water Treatment Plant

SURFACE ELEVATION 97.5

DEPTH	ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
		1	SS	Gray paper sludge-fill	
		2	SS		
5		3	SS		
		4	SS		
10		5	SS	Red brown silty clay, trace to some sand and fine to coarse gravel-very tough to hard-(CL) possible cobble or boulder at 15 feet	
15		6	SS		
20		7	ST		
25		8	SS		117
30		9	ST		109
35		10	ST		105
40		11	ST		
42				End of boring Auger boring to 6 feet. Wash boring below 6 feet. 15 feet of NX casing used.	



WATER LEVEL OBSERVATIONS			
W.L.	6.2'	W.S. OR DRY	
W.L.	7.1'	B.C.B.	6.5' B.C.B.
W.L.			

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	4-15-75		
BORING COMPLETED	4-15-75		
RIG	8	FOREMAN	EVH
DRAWN	JK	APPROVED	WCK
JOB #	6626	SHEET	

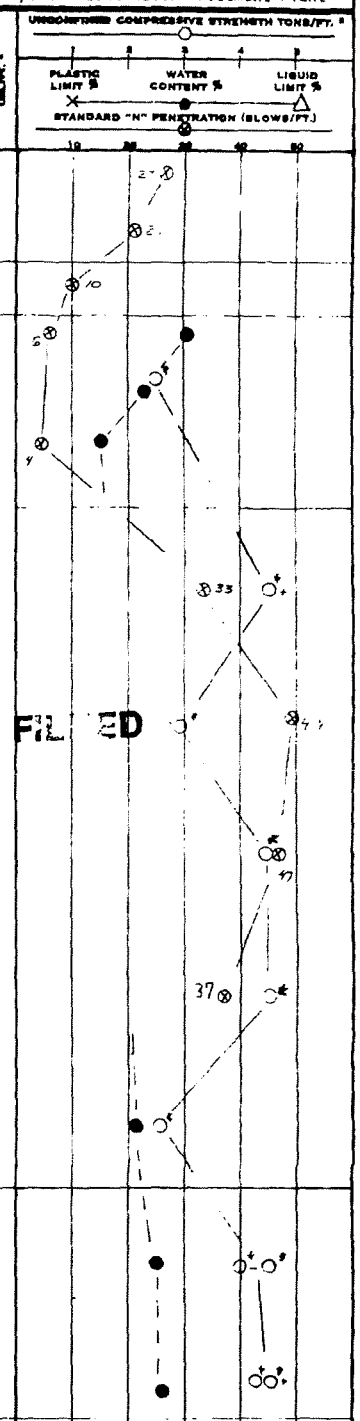
FP No. 4—1M

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 5

OWNER	ARCHITECT-ENGINEER
Bergstrom Paper Company	Van Luven Consultants
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Waste Water Treatment Plant

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL
			SURFACE ELEVATION 99.9
	1	SS	Gray fine to coarse sand and gravel-fill
	2	SS	
5	3	SS	Gray paper sludge-FILL
	4	SS	Red brown, brown, and gray silty clay, mixed with cinders, topsoil, and sand-fill
	5	ST	
10	6	SS	
15	7	SS	Red brown silty clay, trace sand and fine gravel-hard to very tough-(CL)
20	8	SS	
25	9	SS	
30	10	SS	
35	11	ST	
40	12	ST	Red brown silty clay, trace sand, with numerous thin seams and layers of gray silt below 45 feet-hard-(CL-CH)
45	13	ST	
46.5			End of Boring Auger boring to 7.5 feet Wash boring below 7.5 feet 15 feet of NX Casing used



WATER LEVEL OBSERVATIONS		
W.L.	2'	W.S. 69'-10"
W.L.	6.2' B.G.S.	5.7' B.G.S.
W.L.	2' 24 hrs. AB	

SOIL TESTING SERVICES
OF WIS., INC.
GREEN BAY, WISCONSIN
540 LAMBEAU STREET

BORING STARTED	4-16-75		
BORING COMPLETED	4-16-75		
RIG	B	FOREMAN	EVH
DRAWN	JK	APPROVED	WCK
JOB #	6626	SHEET	

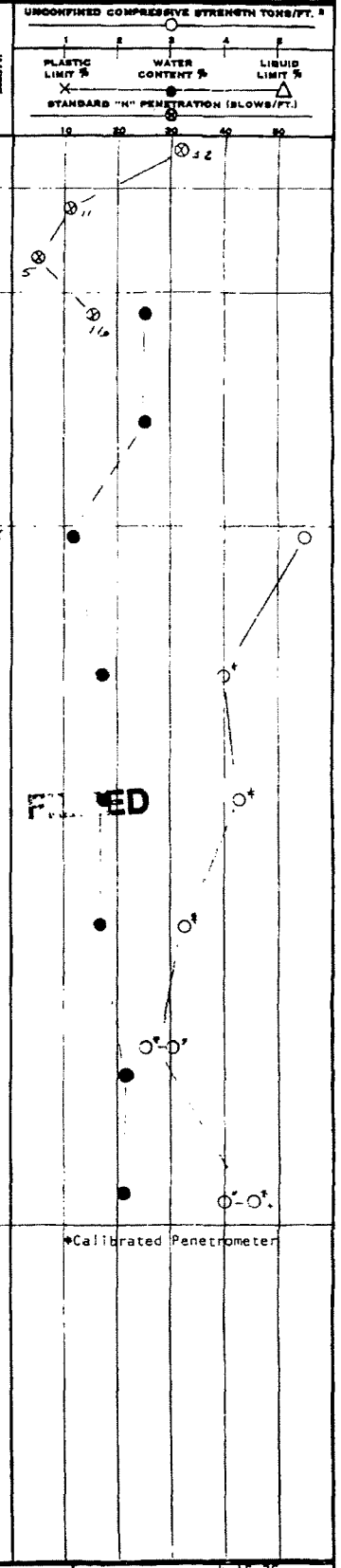
P.P. No. 4—1M

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

LOG OF BORING NO. 6

OWNER	ARCHITECT-ENGINEER
Bergstrom Paper Company	Van Luven Consultants
SITE	**PROJECT NAME**
Neenah, Wisconsin	Proposed Waste Water Treatment Plant

DEPTH ELEVATION	SAMPLE NO.	TYPE SAMPLE	DESCRIPTION OF MATERIAL	DRY WT. LBS./FT.³
			SURFACE ELEVATION 98.8	
	1	SS	Black topsoil, gray paper sludge and gravel-fill	
	2	SS	Black cinders-fill	
5	3	SS		
	4	SS	Dark brown clayey topsoil, mixed with brown silty clay-fill-(OL-OH)	
10	5	ST		
15	6	ST		125
20	7	ST	Red brown silty clay, trace sand and fine to medium gravel-with irregular seams of gray brown clayey silt-(ML-CL)-hard to very tough-(CL)	
25	8	ST		
30	9	ST		
35	10	ST		
40	11	ST		
42			End of boring Auger boring to 6 feet Wash boring below 6 feet 20 Feet of NX Casing used	



WATER LEVEL OBSERVATIONS	
W.L.	3.5' W.E. 6/6/75
W.L.	5.1' A.C.B. / 4.7' A.C.B.
W.L.	

SOIL TESTING SERVICES OF WIS., INC.
GREEN BAY, WISCONSIN
340 LAMBEAU STREET

BORING STARTED	4-15-75		
BORING COMPLETED	4-15-75		
RIG	8	FOREMAN	EVH
DRAWN	JK	APPROVED	WCK
JOB #	6626	SHEET	

P.P. No. 4—1M

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

STS Consultants Ltd.

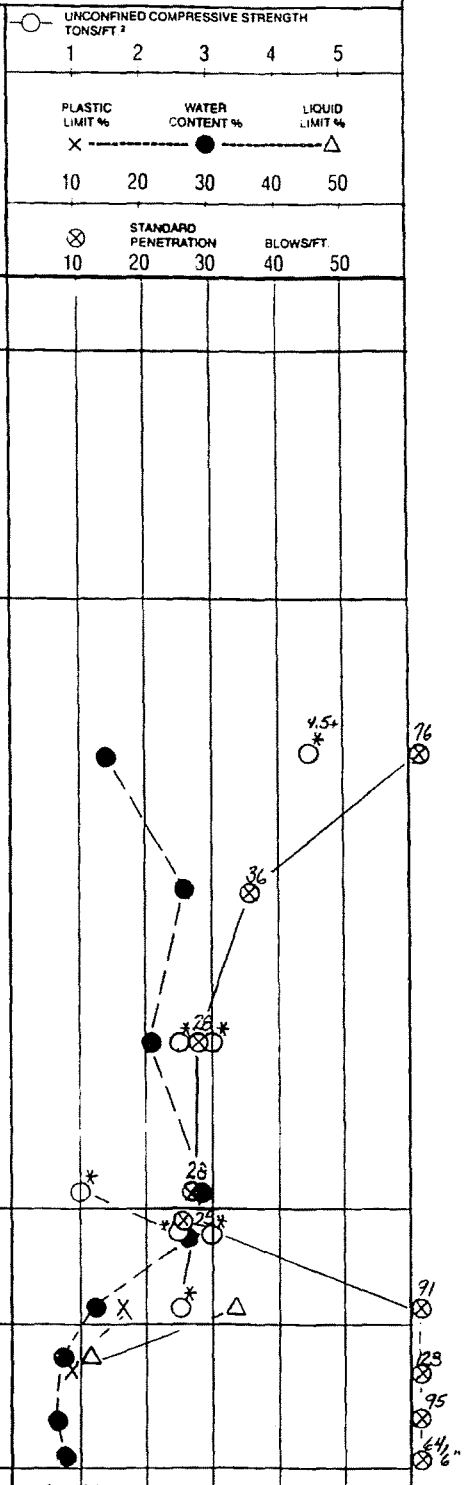
OWNER	LOG OF BORING NUMBER
P. H. Glatfelter Company	B-1-90
PROJECT NAME	**ARCHITECT—ENGINEER**
Proposed Combustor Building	

SITE LOCATION

Neenah, Wisconsin

SURFACE ELEVATION 744.23

DEPTH	ELEVATION	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT³
	2.5					Fill: Black cinders mixed with gravel, clay and sand - driller's observation	
	5					Fill: Gray paper sludge - driller's observation	
	10						
	11						
	15						
		1	SS				
	20						
		2	SS			Brown silty clay (CL-CH) - trace of gravel - moist - stiff to hard	
	25						
		3	SS				
	30						
	32	4	SS				
		5	SS			Varved brown silty clay (CL-CH) and gray clayey silt (ML-CL) - alternating 1/8-inch to 1/2-inch thick seams - trace of sandy silt seams from 34 feet to 36 feet - moist very stiff to hard	
	35						
	36	6	SS				
		7	SS			Gray clayey sandy silt (ML) - trace of gravel - moist to wet - extremely dense	
		8	SS				
	40						
	41	9	SS				
						End of boring - Boring advanced to 15 feet with solid-stem auger and no sampling - Boring advanced from 15 feet to 41 feet with tri-cone roller bit and wash water HW casing driven to 15 feet Grouted borehole with bentonite upon completion	



*Calibrated penetrometer

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN SITU, THE TRANSITION MAY BE GRADUAL.

WL	BORING STARTED 7-31-90	STS OFFICE	540 Lambeau Street Green Bay, WI 54303
WL BCR ACR	BORING COMPLETED 7-31-90	DRAWN BY JJT	SHEET NO. 1 OF 1
WL	RIG Mobile B61 FOREMAN TT	APP'D BY MJW	STS JOB NO18068XH

BL:3-1183

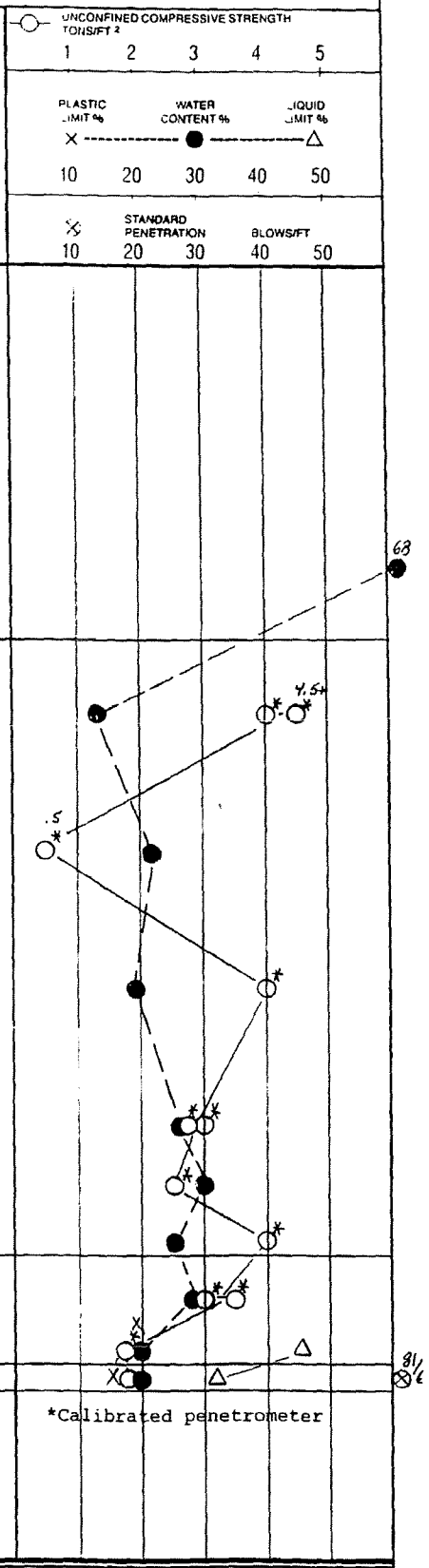
STS Consultants Ltd.

OWNER	LOG OF BORING NUMBER
P. H. Glatfelter Company	B-3-90
PROJECT NAME	**ARCHITECT—ENGINEER**
Proposed Combustor Building	

SITE LOCATION Neenah, Wisconsin

SURFACE ELEVATION 744.26

DEPTH	ELEVATION	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
5						Fill: Brown sand and gravel mixed with topsoil, gravel and paper sludge - driller's observation	
10		1	SS				
13.5							
15		2	SS			Brown silty clay (CL) - trace of gravel - moist - very stiff to hard	
20		3	SS				
25		4	SS				
30		5	SS				
		6	SS				
35		7	SS				
36		8	SS			Varved brown silty clay (CL) and gray clayey silt (ML-CL)- alternating 1/4-inch thick to 1/2-inch thick seams - moist - very stiff to hard	
40		9	SS				
41		10	SS			Brown sandy silty clay (CL) - a little gravel - wet - hard	
						End of boring - Boring advanced to 15 feet with solid-stem auger and no sampling - Boring advanced from 15 feet to 41 feet with tri-cone roller bit and wash water HW casing driven to 15 feet Boring terminated at 41 feet due to extremely dense drilling Grouted borehole with bentonite upon completion	



*Calibrated penetrometer

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN SITU, THE TRANSITION MAY BE GRADUAL.

WL	BORING STARTED 7-30-90	STS OFFICE 540 Lambeau Street Green Bay, WI 54303	
WL BCR ACR	BORING COMPLETED 7-30-90	DRAWN BY JJT	SHEET NO. 1 OF 1
WL	RIG Mobile B61 FOREMAN TT	APP'D BY MJW	STS JOB NO. 18068XH

BL:3-1183

STS Consultants Ltd.

OWNER P.H. Glatfelter Co.	LOG OF BORING NUMBER 1
PROJECT NAME Waste Treatment Expansion	ARCHITECT-ENGINEER Foth & Van Dyke

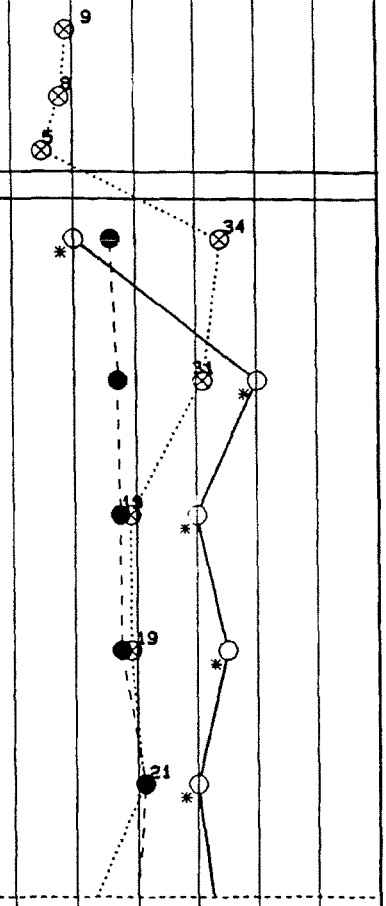
SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.^{3}
						SURFACE ELEVATION 747.0	
						Asphalt (Driller's observation)	
			HSA			Fill: Base course (Driller's observation)	
5.0							
		1	SS			Fill: Paper sludge	
10.0		2	SS				
		3	SS				
						Buried topsoil (Driller's observation)	
15.0		4	SS			Brown silty clay (CL) - with trace to little gravel and sand - moist - stiff to hard	
20.0		5	SS				
25.0		6	SS				
30.0		7	SS				
35.0		8	SS				
40.0							



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 18899

STS Consultants Ltd.	OWNER P.H. Glatfelter Co.	LOG OF BORING NUMBER 1
	PROJECT NAME Waste Treatment Expansion	ARCHITECT-ENGINEER Foth & Van Dyke

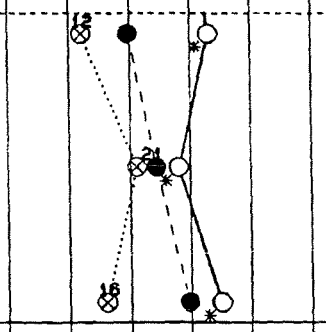
SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1 2 3 4 5)

PLASTIC LIMIT % × - - - - - - ● - - - - - - △ LIQUID LIMIT %
WATER CONTENT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. ⊗ (10 20 30 40 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL SURFACE ELEVATION 747.0	UNIT DRY WT. LBS./FT.^{3}
						Continued from previous page	
40.0		9	SS				
45.0		10	SS			Brown silty clay (CL) - with trace to little gravel and sand - moist - stiff to hard	
50.0		11	SS				
51.5						End of Boring Boring advanced to 14 feet with hollow stem auger Boring advanced from 14 to 52 feet with roller bit and Revert drilling mud HW casing driven to 15 feet Borehole abandoned with bentonite chips	



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL WS OR WD	BORING STARTED 08/19/91	STS OFFICE	1035 Kepler Drive Green Bay, WI 54311
WL BCR ACR	BORING COMPLETED 08/19/91	ENTERED BY MKM	SHEET NO. 2 OF 2
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

OWNER
P.H. Glatfelter Co.

LOG OF BORING NUMBER 2

PROJECT NAME
Waste Treatment Expansion

ARCHITECT-ENGINEER
Foth & Van Dyke

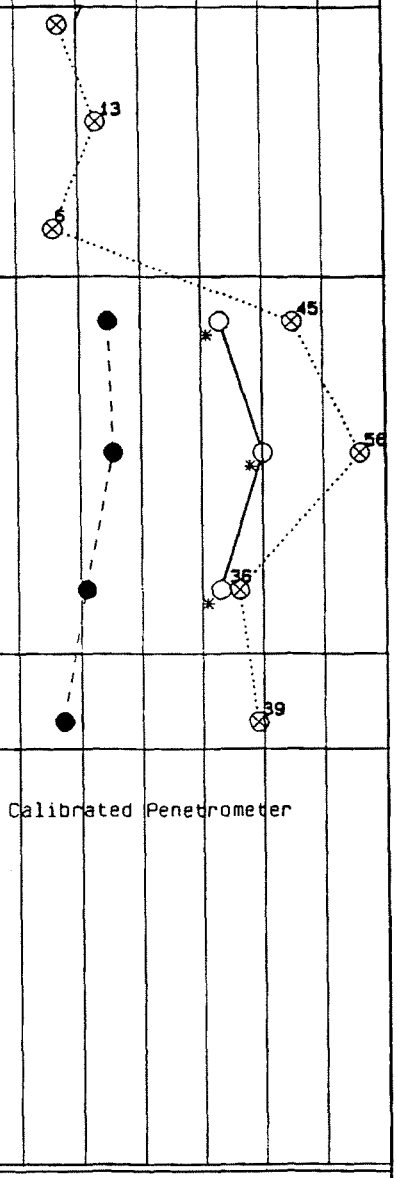
SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.^{3}
						SURFACE ELEVATION 746.7	
						Asphalt (Driller's observation)	
			HSA			Fill: Base course (Driller's observation)	
5.0		1	SS			Fill: Paper sludge	
		2	SS				
10.0							
		3	SS				
15.0		4	SS			Brown silty clay (CL) - with trace to little gravel and sand - moist - hard	
20.0		5	SS				
25.0		6	SS				
30.0						Gray fine to coarse sand (SW) - with trace of gravel - wet - dense	
31.5		7	SS				



Note: Artesian water pressure was encountered at 31.5 feet. Borehole abandoned.

End of Boring
Boring advanced to 15' with hollow stem auger
Boring advanced from 15 to 31.5 feet with roller bit and Revert drilling mud
HW casing driven to 15 feet
Borehole abandoned with bentonite chips

* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 28 ft WS OR WD WD	BORING STARTED 08/15/91	STS OFFICE 1035 Kepler Drive Green Bay, WI 54311	
WL BCR ACR	BORING COMPLETED 08/15/91	ENTERED BY MKM	SHEET NO. 1 OF 1
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

OWNER
P.H. Glatfelter Co.

LOG OF BORING NUMBER 3

PROJECT NAME
Waste Treatment Expansion

ARCHITECT-ENGINEER
Foth & Van Dyke

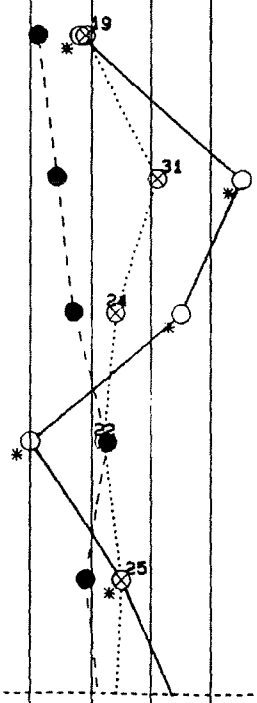
SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % × — WATER CONTENT % ● — LIQUID LIMIT % △ (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. ⊗ (10, 20, 30, 40, 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.^{3}
						SURFACE ELEVATION 747.3	
						Asphalt (Driller's observation)	
						Fill: Base course (Driller's observation)	
5.0							
			HSA			Fill: Paper sludge	
10.0							
15.0		1	SS			Brown silty clay (CL) with trace of gravel and sand - moist - stiff to hard	
20.0		2	SS				
25.0		3	SS				
30.0		4	SS				
35.0		5	SS				
40.0							



* Calibrated Penetrometer

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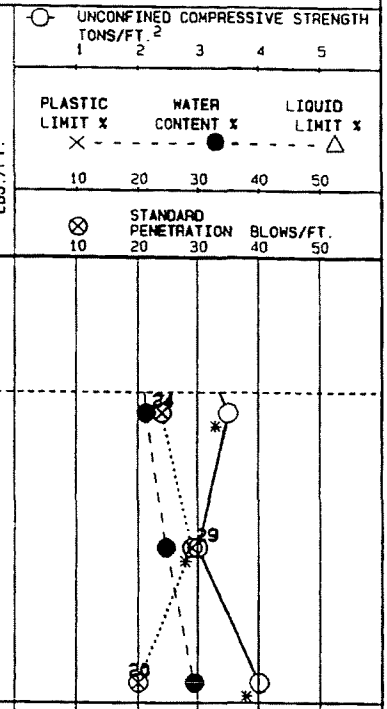
The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 18899

STS Consultants Ltd.	OWNER P.H. Glatfelter Co.	LOG OF BORING NUMBER 3
	PROJECT NAME Waste Treatment Expansion	ARCHITECT-ENGINEER Foth & Van Dyke

SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.3
						SURFACE ELEVATION 747.3	
						Continued from previous page	
40.0		6	SS			Brown silty clay (CL) with trace of gravel and sand - moist - stiff to hard	
45.0		7	SS				
50.0		8	SS				
51.5						End of Boring Boring advanced to 15 feet with hollow stem auger Boring advanced from 15 to 51.5 feet with roller bit and Revert drilling mud HW casing driven to 15 feet Borehole abandoned with bentonite chips	



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 12-15 ft WS OR WD WD	BORING STARTED 08/19/91	STS OFFICE	1035 Kepler Drive Green Bay, WI 54311
WL BCR ACR	BORING COMPLETED 08/19/91	ENTERED BY MKM	SHEET NO. 2 OF 2
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

OWNER: P.H. Glatfelter Co.

LOG OF BORING NUMBER 4

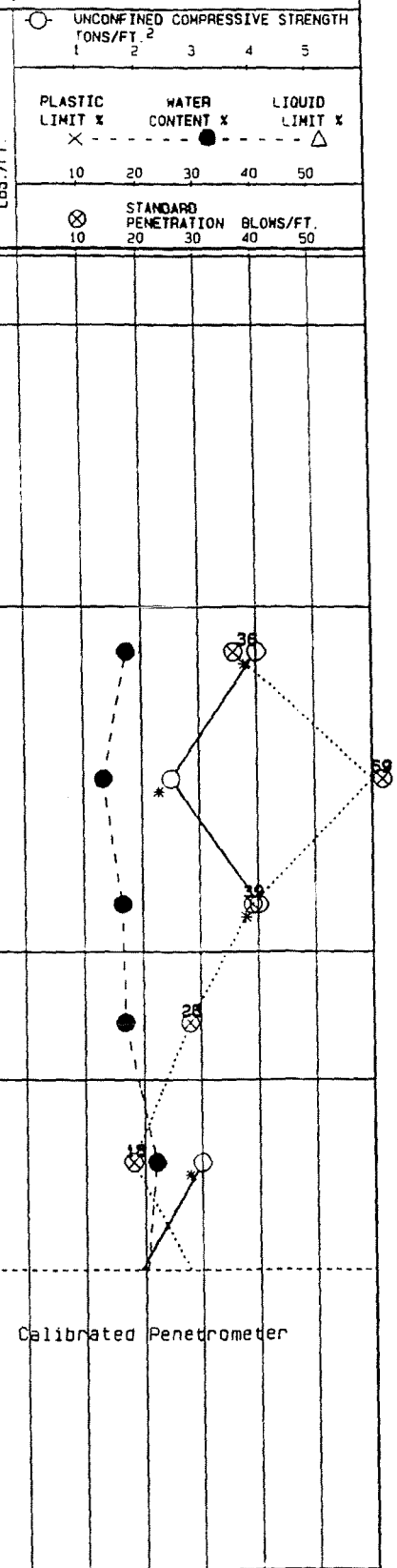
PROJECT NAME: Waste Treatment Expansion

ARCHITECT-ENGINEER: Foth & Van Dyke

SITE LOCATION: 225 W. Wisconsin Avenue, Neenah, Wisconsin

SURFACE ELEVATION 746.7

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.3
						Asphalt (Driller's observation)	
						Fill: Base course (Driller's observation)	
5.0			HSA			Fill: Paper sludge	
10.0							
15.0		1	SS			Brown silty clay (CL) with trace of gravel, sand, and sand seams at 20.0 feet - moist - hard	
20.0		2	SS				
25.0		3	SS				
30.0		4	SS			Brown clayey sand (SC) - with little gravel - wet - medium dense	
35.0		5	SS			Reddish brown silty clay (CL) - with trace of gravel and sand - moist - very stiff to stiff	
40.0							



* Calibrated Penetrometer

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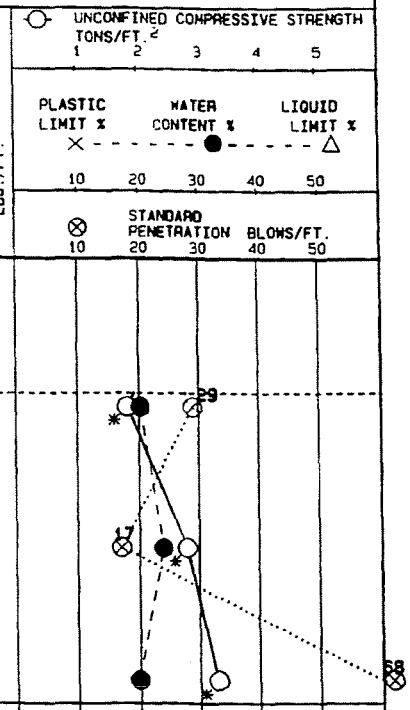
The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 18899

STS Consultants Ltd.	OWNER P.H. Glatfelter Co.	LOG OF BORING NUMBER 4
	PROJECT NAME Waste Treatment Expansion	ARCHITECT-ENGINEER Foth & Van Dyke

SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT LBS./FT.^{3}
						SURFACE ELEVATION 746.7	
						Continued from previous page	
40.0		6	SS				
						Reddish brown silty clay (CL) - with trace of gravel and sand - moist - very stiff to stiff	
45.0		7	SS				
50.0		8	SS				
51.5						End of Boring Boring advanced to 15 feet with hollow stem auger Boring advanced from 15 to 56.5 feet with roller bit and Revert drilling mud HW casing driven to 15 feet Borehole abandoned with bentonite chips	



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL WS OR WD	BORING STARTED 08/14/91	STS OFFICE	1035 Kepler Drive Green Bay, WI 54311
WL BCR ACR	BORING COMPLETED 08/15/91	ENTERED BY MKM	SHEET NO. 2 OF 2
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

OWNER: P.H. Glatfelter Co.

LOG OF BORING NUMBER 5

PROJECT NAME: Waste Treatment Expansion

ARCHITECT-ENGINEER: Foth & Van Dyke

SITE LOCATION: 225 W. Wisconsin Avenue, Neenah, Wisconsin

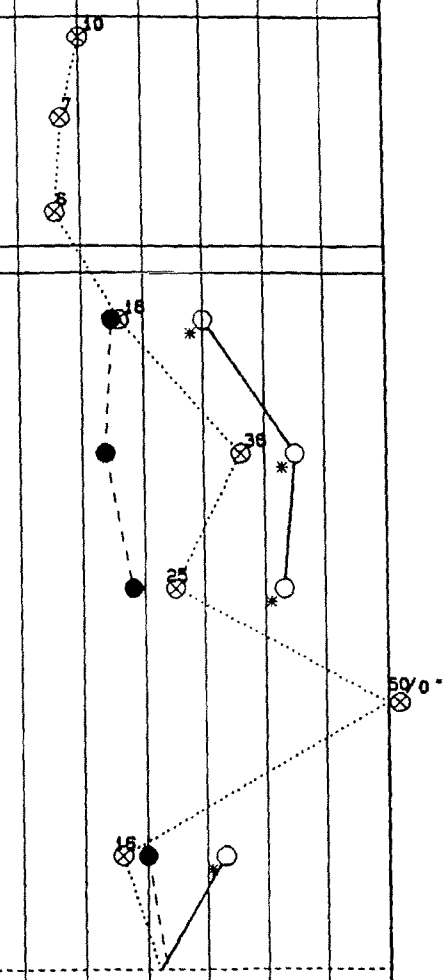
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

SURFACE ELEVATION 747.2

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.^{3}
			HSA			Asphalt (Driller's observation)	
						Fill: Base course (Driller's observation)	
5.0		1	SS				
		2	SS			Fill: Paper sludge	
10.0		3	SS				
						Buried topsoil (Driller's observation)	
15.0		4	SS				
						Brown silty clay (CL) - with trace of gravel and sand - moist - hard to very stiff	
20.0		5	SS				
25.0		6	SS				
30.0		7	SS				
35.0		8	SS				
40.0							



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 18899

STS Consultants Ltd.	OWNER P.H. Glatfelter Co.	LOG OF BORING NUMBER 5
	PROJECT NAME Waste Treatment Expansion	ARCHITECT-ENGINEER Foth & Van Dyke

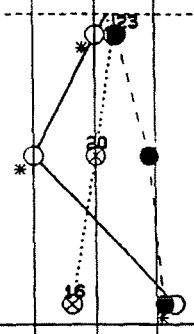
SITE LOCATION
225 W. Wisconsin Avenue, Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1 2 3 4 5)

PLASTIC LIMIT % × — WATER CONTENT % ● — LIQUID LIMIT % △ (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. ⊗ (10 20 30 40 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.^{3}
						SURFACE ELEVATION 747.2	
						Continued from previous page	
40.0		9	SS				
45.0		10	SS			Brown silty clay (CL) - with trace of gravel and sand - moist - hard to very stiff	
50.0		11	SS				
51.5						End of Boring Boring advanced to 15 feet with hollow stem auger Boring advanced from 15 feet to 51.5 feet with roller bit and Revert drilling mud HW casing driven to 15 feet Borehole abandoned with bentonite chips	



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

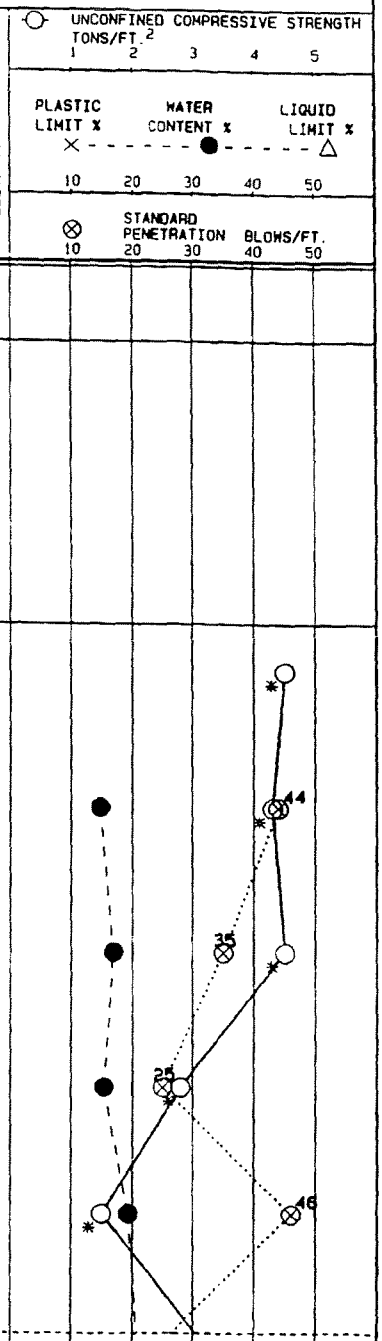
WL WS OR WD	BORING STARTED 08/20/91	STS OFFICE	1035 Kepler Drive Green Bay, WI 54311
WL BCR ACR	BORING COMPLETED 08/20/91	ENTERED BY MKM	SHEET NO. 2 OF 2
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

OWNER: P.H. Glatfelter Co.	LOG OF BORING NUMBER 6
PROJECT NAME: Waste Treatment Expansion	ARCHITECT-ENGINEER: Foth & Van Dyke

SITE LOCATION: 225 W. Wisconsin Avenue, Neenah, Wisconsin

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.3
						SURFACE ELEVATION 746.4	
						Asphalt (Driller's observation)	
						Fill: Base course (Driller's observation)	
5.0			HSA			Fill: Sludge	
10.0							
15.0		1	ST			Brown silty clay (CL) - with trace to little gravel and sand - moist - hard to stiff	
20.0		2	SS				
25.0		3	SS				
30.0		4	SS				
35.0		5	SS				
40.0							



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 18899

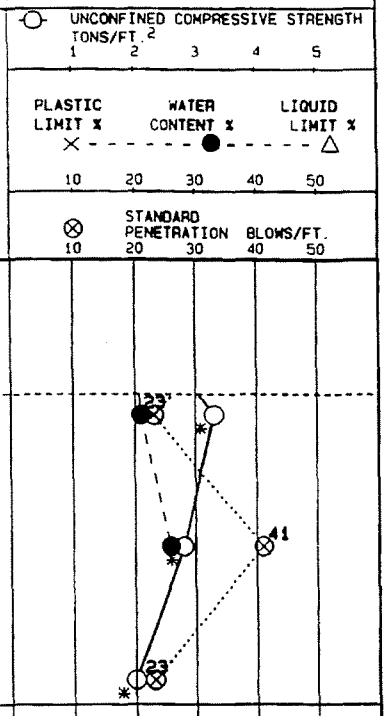
STS Consultants Ltd.

OWNER: P.H. Glatfelter Co.	LOG OF BORING NUMBER 6
PROJECT NAME: Waste Treatment Expansion	ARCHITECT-ENGINEER: Foth & Van Dyke

SITE LOCATION: 225 W. Wisconsin Avenue, Neenah, Wisconsin

SURFACE ELEVATION 746.4

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.3
						Continued from previous page	
40.0		6	SS				
45.0		7	SS			Brown silty clay (CL) - with trace to little gravel and sand - moist - hard to stiff	
50.0		8	SS				
51.5						End of Boring Boring advanced to 15 feet with hollow stem auger Boring advanced from 15 to 51.5 feet with roller bit and Revert drilling mud HW casing driven to 15 feet Borehole abandoned with bentonite chips	



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 10-15 ft WS OR WD WD	BORING STARTED 08/14/91	STS OFFICE 1035 Kepler Drive Green Bay, WI 54311	
WL BCR ACR	BORING COMPLETED 08/14/91	ENTERED BY MKM	SHEET NO. 2 OF 2
WL	RIG/FOREMAN CME 45/TT	APP'D BY WB	STS JOB NO. 18899

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-1
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

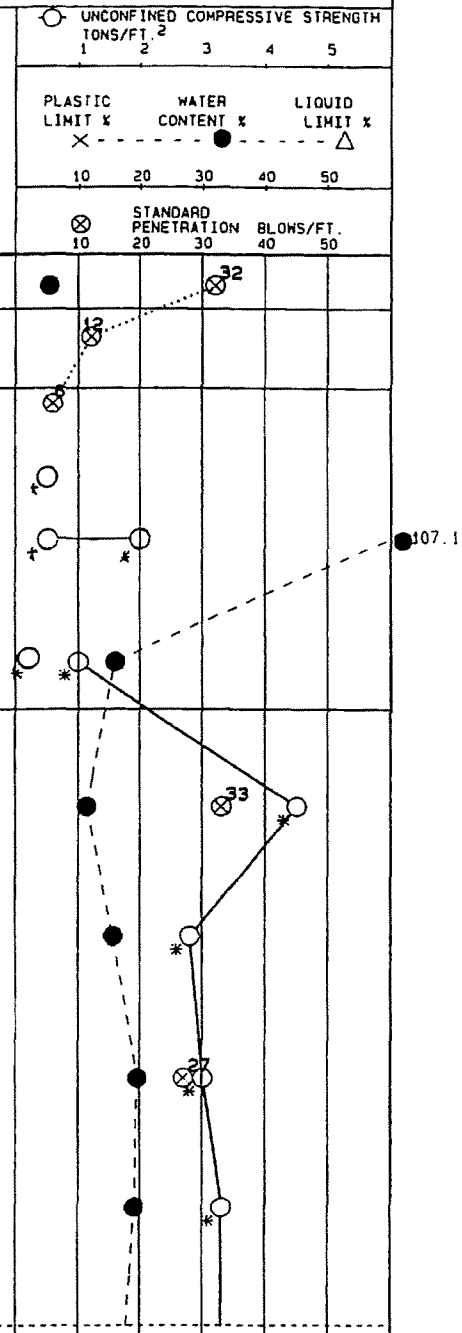
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 747.0 ft
			PA			
		1	SS			Fill: Fine to coarse sand and gravel, trace to little clay-brown-moist-medium dense (Fill: SP and GP)
			PA			
		2	ST			Fill: Silty clay, trace fine to coarse sand and fine gravel-brown-moist (Fill: CL)
			PA			
5.0		3	SS			Fill: Paper sludge-gray-moist-soft to very stiff (Fill: Paper sludge)
			PA			
		4	ST			
10.0			PA			
		5	ST			
			PA			
15.0		6	ST			
			PA			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-firm to hard (CL)
20.0		7	SS			(Driller's observation: Obstructions from 53 to 59.5 feet) (Infrequent thin silt seams at a depth of 75 feet)
			RB			
25.0		8	ST			
			RB			
30.0		9	SS			
			RB			
35.0		10	ST			
			RB			
40.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 84779 | SHEET NO. 1 OF 3

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-1
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

SITE LOCATION
Neenah, Wisconsin

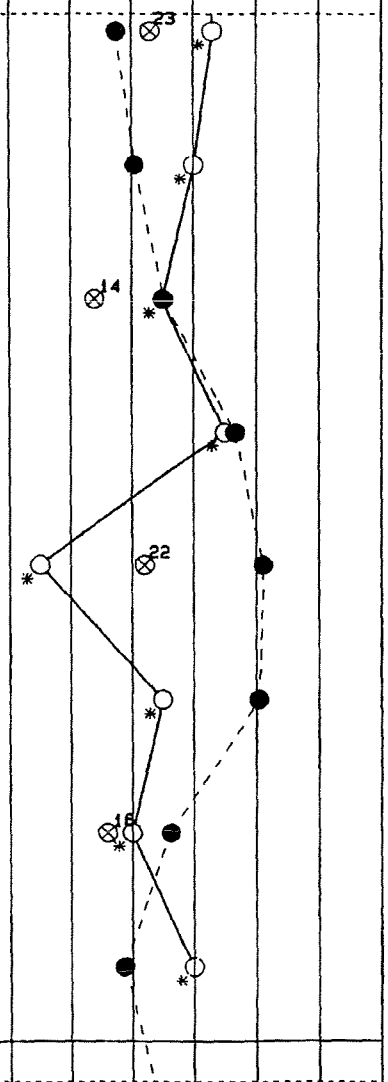
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % × - - - - - - ● - - - - - - △ LIQUID LIMIT %

WATER CONTENT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. ⊗ 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 747.0 ft
						Continued from previous page
40.0						
		11	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-firm to hard (CL)
			RB			(Driller's observation: Obstructions from 53 to 59.5 feet)
45.0						(Infrequent thin silt seams at a depth of 75 feet)
		12	ST			
			RB			
50.0						
		13	SS			
			RB			
55.0						
		14	ST			
			RB			
60.0						
		15	SS			
			RB			
65.0						
		16	ST			
			RB			
70.0						
		17	SS			
			RB			
75.0						
		18	ST			
			RB			
80.0						Silty fine sand-gray-moist-very dense (SM)



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 84779 | SHEET NO. 2 OF 3

STS Consultants Ltd.

CLIENT: ESI, Inc. of Tennessee	LOG OF BORING NUMBER: STS-1
PROJECT NAME: Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER
SITE LOCATION: Neenah, Wisconsin	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

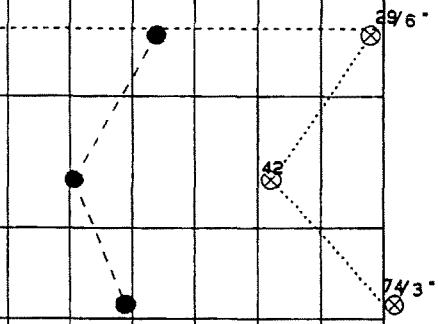
PLASTIC LIMIT % × — WATER CONTENT % ● — LIQUID LIMIT % △ (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. ⊗ (10, 20, 30, 40, 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 747.0 ft
						Continued from previous page
80.0		19	SS			Silty fine sand-gray-moist-very dense (SM)
			RB			Clayey fine to coarse sand-gray-moist-dense (SC)
85.0		20	SS			
			RB			Silty fine sand-gray-moist-extremely dense (SM)
90.0		21	SS			
90.9						END OF BORING

Boring advanced to 20 feet by solid stem auger.
Boring advanced from 20 to 90 feet by rotary bit and drilling fluid.
20 feet of temporary casing installed.
Boring backfilled wtih bentonite slurry.

* Calibrated Penetrometer



The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL / WS OR WD	BORING STARTED 10/04/95	STS OFFICE Milwaukee-05	
WL / BCR / ACR	BORING COMPLETED 10/04/95	ENTERED BY KJP	SHEET NO. 3 OF 3
WL	RIG/FOREMAN 21/GR	APP'D BY SRS	STS JOB NO. 84779

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-2
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

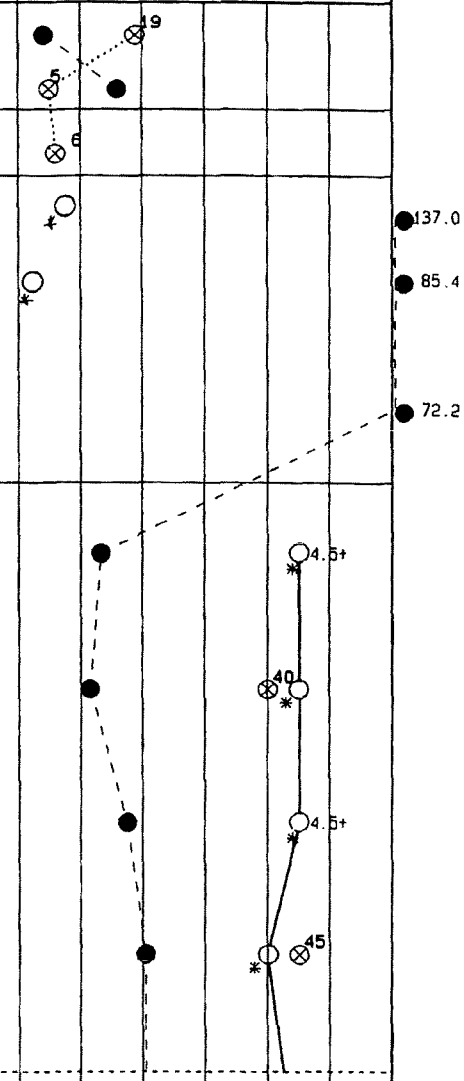
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.8 ft
			PA			
		1	SS			Fill: Fine to coarse sand and gravel, trace silt and clay-gray-moist-medium dense to loose (Fill: SP and GP)
			PA			
		2	SS			
5.0			PA			Fill: Silty clay, trace to little sand and gravel, trace organics and roots-dark brown (Fill: CL)
		3	SS			
			PA			Fill: Cohesive paper sludge-gray-moist to wet-soft to firm (Fill: Paper sludge)
		4	ST			
10.0			PA			
		5	ST			
			PA			
15.0		6	ST			
			PA			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-hard to stiff (CL)
20.0		7	ST			
			RB			
25.0		8	SS			
			RB			
30.0		9	ST			
			RB			
35.0		10	SS			
			PA			
40.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO 84779

STS Consultants Ltd.

CLIENT
ESI, Inc. of Tennessee

LOG OF BORING NUMBER STS-2

PROJECT NAME
Minergy Glass Aggregate Plant

ARCHITECT-ENGINEER

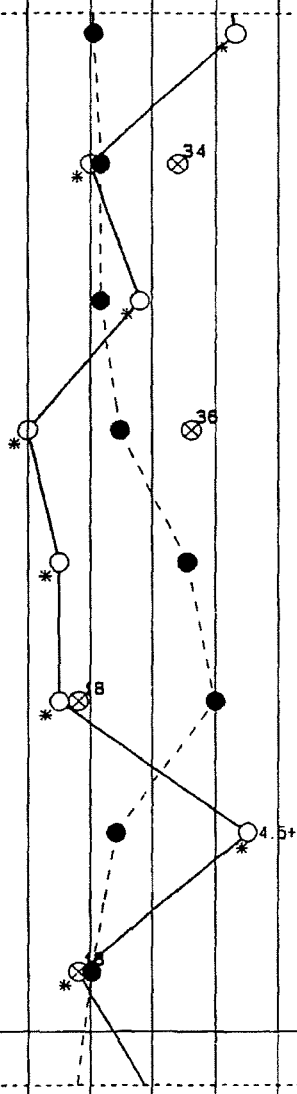
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.8 ft
						Continued from previous page
40.0		11	ST			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-hard to stiff (CL)
			RB			
45.0		12	SS			
			RB			
50.0		13	ST			
			RB			
55.0		14	SS			
			RB			
60.0		15	ST			
			RB			
65.0		16	SS			
			RB			
70.0		17	ST			
			RB			
75.0		18	SS			
			RB			Fine sandy silt-gray-moist (ML)
80.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 84779

STS Consultants Ltd.

CLIENT: ESI, Inc. of Tennessee	LOG OF BORING NUMBER: STS-2
PROJECT NAME: Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER:
SITE LOCATION: Neenah, Wisconsin	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

SURFACE ELEVATION 748.8 ft

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						Continued from previous page
	80.0	19	ST			Fine sandy silt-gray-moist (ML)
			RB			Clayey fine to coarse sand, trace gravel-gray-extremely dense (SC)
	85.0	20	SS			
			RB			
	90.0					Rock core
		21	DB			
	95.0					END OF BORING Boring advanced to 20.0 feet by solid stem auger. Boring advanced from 20 to 90 feet by rotary bit and drilling fluid. 20 feet of temporary casing installed. Boring backfilled with grout.

75/6"

* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL WS OR WD	BORING STARTED 10/02/95	STS OFFICE Milwaukee-05	
WL BCR ACR	BORING COMPLETED 10/03/95	ENTERED BY KJP	SHEET NO. 3 OF 3
WL	RIG/FOREMAN 21/GR	APP'D BY SRS	STS JOB NO. 84779

STS Consultants Ltd.

CLIENT
ESI, Inc. of Tennessee

LOG OF BORING NUMBER STS-3

PROJECT NAME
Minergy Glass Aggregate Plant

ARCHITECT-ENGINEER

SITE LOCATION
Neenah, Wisconsin

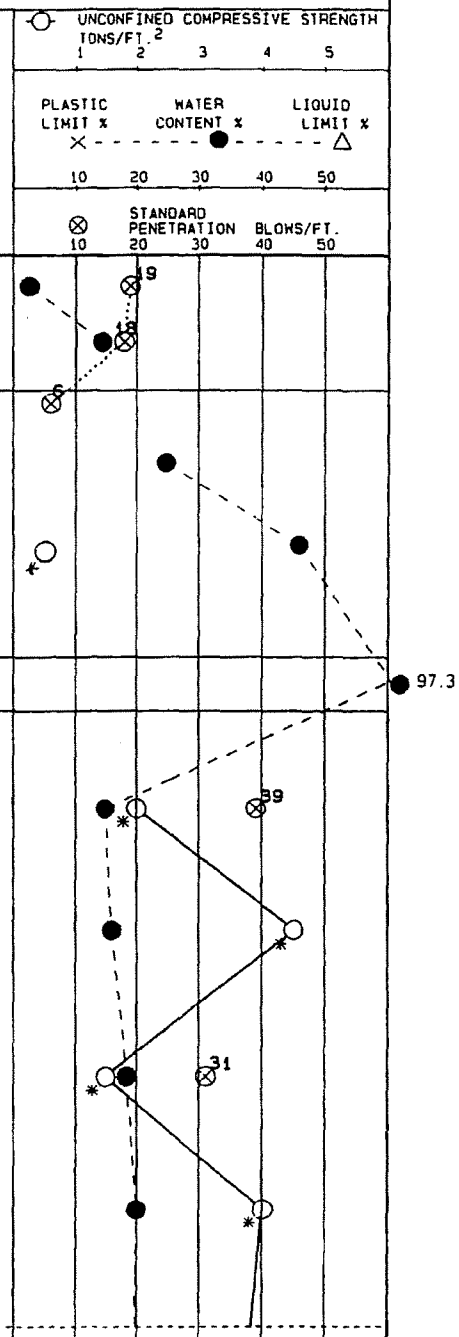
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 749.5 ft
			PA			
		1	SS			Fill: Fine to coarse sand and gravel, trace to little silt and clay, trace cinders or slag-gray to dark brown-moist to wet-medium dense (Fill: SP and GP)
			PA			
		2	SS			
			PA			
5.0						
		3	SS			Fill: Cohesive paper sludge-gray-moist-firm (Fill: Paper sludge)
			PA			
		4	ST			
10.0			PA			
		5	ST			
			PA			
15.0						
		6	ST			Organic silty clay, little fine to coarse sand, trace shells, wood and roots-black-moist (OC)
			PA			Silty clay, trace fine to coarse sand and fine gravel-red brown-moist to wet-stiff to hard (CL)
20.0						
		7	SS			
			RB			
25.0						
		8	ST			
			RB			
30.0						
		9	SS			
			RB			
35.0						
		10	ST			
			RB			
40.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 84779

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-3
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

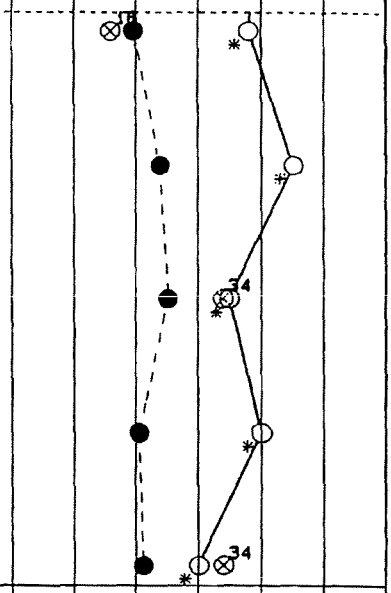
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % × - - - - WATER CONTENT % ● - - - - LIQUID LIMIT % △ 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. ⊗ 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 749.5 ft
						Continued from previous page
40.0						
		11	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown-moist to wet-stiff to hard (CL)
			RB			
45.0						
		12	ST			
			RB			
50.0						
		13	SS			
			RB			
55.0						
		14	ST			
			RB			
60.0						
61.5		15	SS			
						END OF BORING Boring advanced to 20 feet by solid stem auger. Boirng advanced from 20 to 60 feet by rotary bit and drilling fluid. 20 feet of temporary casing installed. Boring backfilled with slurry.



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 3.0 ft WS OR WD WD	BORING STARTED 10/10/95	STS OFFICE Milwaukee-05	
WL BCR ACR	BORING COMPLETED 10/10/95	ENTERED BY KJP	SHEET NO. 2 OF 2
WL	RIG/FOREMAN 21/JD	APP'D BY SRS	STS JOB NO. 84779

STS Consultants Ltd.

CLIENT
ESI, Inc. of Tennessee

LOG OF BORING NUMBER STS-4

PROJECT NAME
Minergy Glass Aggregate Plant

ARCHITECT-ENGINEER

SITE LOCATION
Neenah, Wisconsin

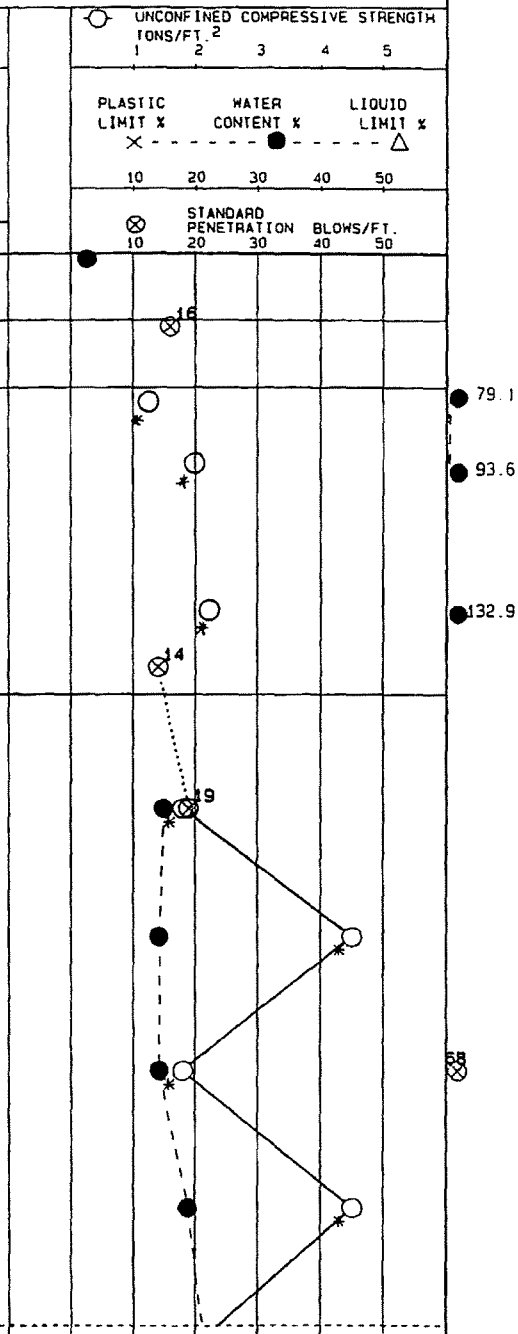
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

SURFACE ELEVATION 748.9 ft

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
		1	SS			Fill: Fine to coarse sand and gravel, little silt-gray-dry (Fill: SP and GP)
			PA			
		2	SS			Fill: Silty clay, trace fine to coarse sand and fine gravel-moist-brown (Fill: CL)
5.0			PA			
		3	ST			Fill: Cohesive paper sludge-gray-moist-stiff to very stiff (Fill: Paper sludge)
			PA			
		4	ST			(No recovery from Sample No. 5)
10.0			PA			
		5	ST			
		6	AS			
		7	ST			
15.0			PA			
		8	SS			
			HW			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-stiff to hard (CL)
20.0						
		9	SS			
			RB			
25.0						
		10	ST			
			RB			
30.0						
		11	SS			
			RB			
35.0						
		12	SS			
			RB			
40.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 84779

STS Consultants Ltd.

CLIENT
ESI, Inc. of Tennessee

LOG OF BORING NUMBER STS-4

PROJECT NAME
Minergy Glass Aggregate Plant

ARCHITECT-ENGINEER

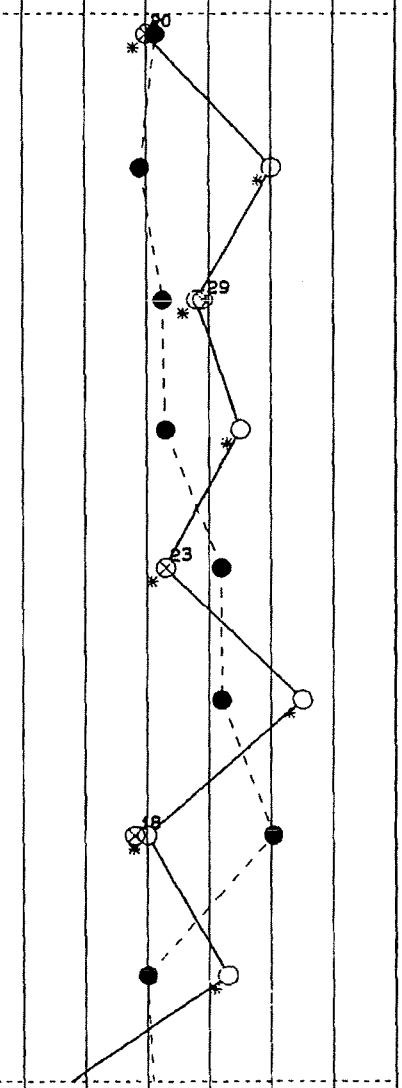
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % × - - - - - - WATER CONTENT % ● - - - - - - LIQUID LIMIT % △
10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. ⊗ 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.9 ft
						Continued from previous page
40.0						
		13	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-stiff to hard (CL)
			RB			
45.0						
		14	ST			
			RB			
50.0						
		15	SS			
			RB			
55.0						
		16	ST			
			RB			
60.0						
		17	SS			
			RB			
65.0						
		18	SS			
			RB			
70.0						
		19	SS			
			RB			
75.0						
		20	ST			
			RB			
80.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 84779

STS Consultants Ltd.	CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-4
	PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

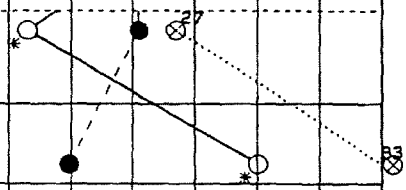
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL SURFACE ELEVATION 748.9 ft
						Continued from previous page
80.0		21	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist to wet-stiff to hard (CL)
			RB			
85.0						Clayey fine to coarse sand, trace fine gravel-gray-moist-extremely dense (SC)
86.5		22	SS			
						END OF BORING Boring advanced to 15 feet by solid stem auger. Boring advanced from 15 to 20 feet by hollow stem auger. Boring advanced from 20 to 85 feet by rotary bit and drilling fluid. 20 feet of temporary casing installed. Boring backfilled with bentonite slurry.



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 3 ft WS OR WD WD	BORING STARTED 10/10/95	STS OFFICE Milwaukee-05	
WL BCR ACR	BORING COMPLETED 10/10/95	ENTERED BY KJP	SHEET NO. 3 OF 3
WL	RIG/FOREMAN 21/JD	APP'D BY SRS	STS JOB NO 84779

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-5
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

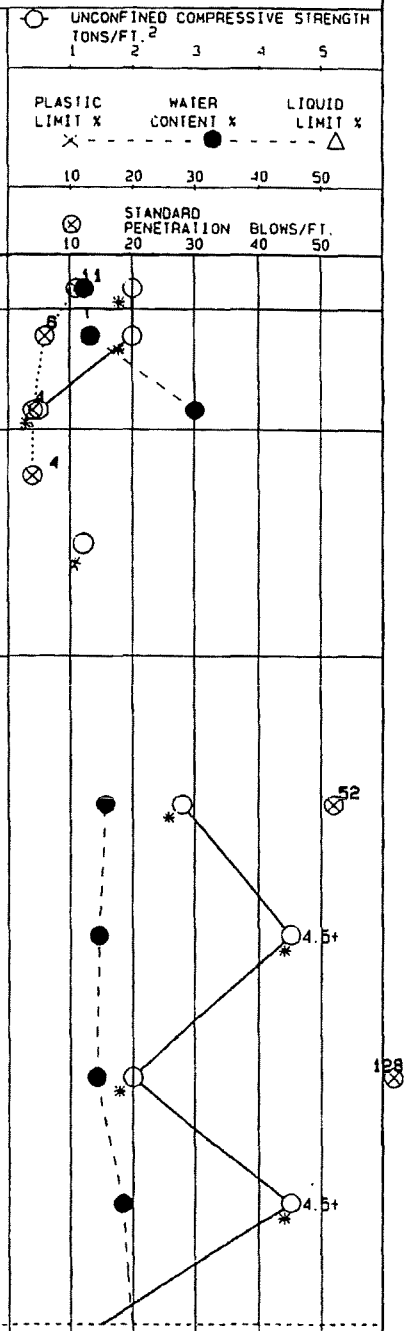
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.5 ft
			PA			
		1	SS			Fill: Fine to coarse sand and gravel, trace silt and clay-gray-moist-medium dense (Fill: SP and GP)
			PA			
		2	SS			Fill: Silty clay, trace sand and gravel-brown to red brown-moist-very stiff to firm (Fill: CL)
5.0			PA			
		3	SS			
			PA			Fill: Cohesive paper sludge-gray-moist-stiff (Fill: Paper sludge)
		4	SS			
10.0			PA			
		5	ST			
			PA			
15.0						
		6	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist-wet-stiff to hard (CL)
			RB			(Driller's observation: Obstructions at depths of 31.5 and 55 feet)
20.0						
		7	SS			
			RB			
25.0						
		8	ST			
			RB			
30.0						
		9	SS			
			RB			
35.0						
		10	ST			
			RB			
40.0						



* Calibrated Penetrometer

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The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO 84779 | SHEET NO. 1 OF 3

STS Consultants Ltd.

CLIENT
ESI, Inc. of Tennessee

LOG OF BORING NUMBER STS-5

PROJECT NAME
Minergy Glass Aggregate Plant

ARCHITECT-ENGINEER

SITE LOCATION
Neenah, Wisconsin

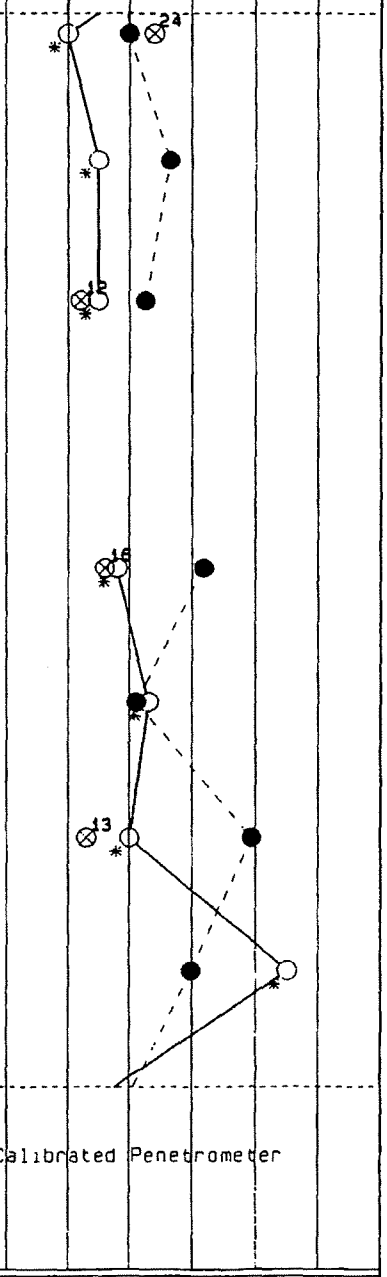
UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % × - - - - - - ● - - - - - - △ LIQUID LIMIT %

WATER CONTENT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. ⊗ 10 20 30 40 50

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION 748.5 ft
					Continued from previous page
40.0					
	11	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist-wet-stiff to hard (CL)
		RB			(Driller's observation: Obstructions at depths of 31.5 and 55 feet)
45.0					
	12	ST			
		RB			
50.0					
	13	SS			
		RB			
55.0					
	14	ST			
		RB			
60.0					
	15	SS			
		RB			
65.0					
	16	ST			
		RB			
70.0					
	17	SS			
		RB			
75.0					
	18	ST			
		RB			
80.0					
					... continued



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types; in-situ, the transition may be gradual.

STS JOB NO. 84779

STS Consultants Ltd.

CLIENT	LOG OF BORING NUMBER
ESI, Inc. of Tennessee	STS-5
PROJECT NAME	ARCHITECT-ENGINEER
Minergy Glass Aggregate Plant	

SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.5 ft
						Continued from previous page
80.0						
81.5		19	SS			Silty clay, trace fine to coarse sand and fine gravel-red brown to gray-moist-wet-stiff to hard (CL)
						(Driller's observation: Obstructions at depths of 31.5 and 55 feet)
						END OF BORING
						Boring advanced to 15 feet by solid stem auger. Boring advanced from 15 to 80 feet by rotary bit and drilling fluid. 20 feet of temporary casing installed. Boring backfilled with bentonite slurry.

* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 9 ft	WS OR WD WD	BORING STARTED 10/11/95	STS OFFICE Milwaukee-05
WL BCR	ACR	BORING COMPLETED 10/11/95	ENTERED BY KJP / SHEET NO. 3 OF 3
WL		RIG/FOREMAN 21/JD	APP'D BY SRS / STS JOB NO. 84779

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-6
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

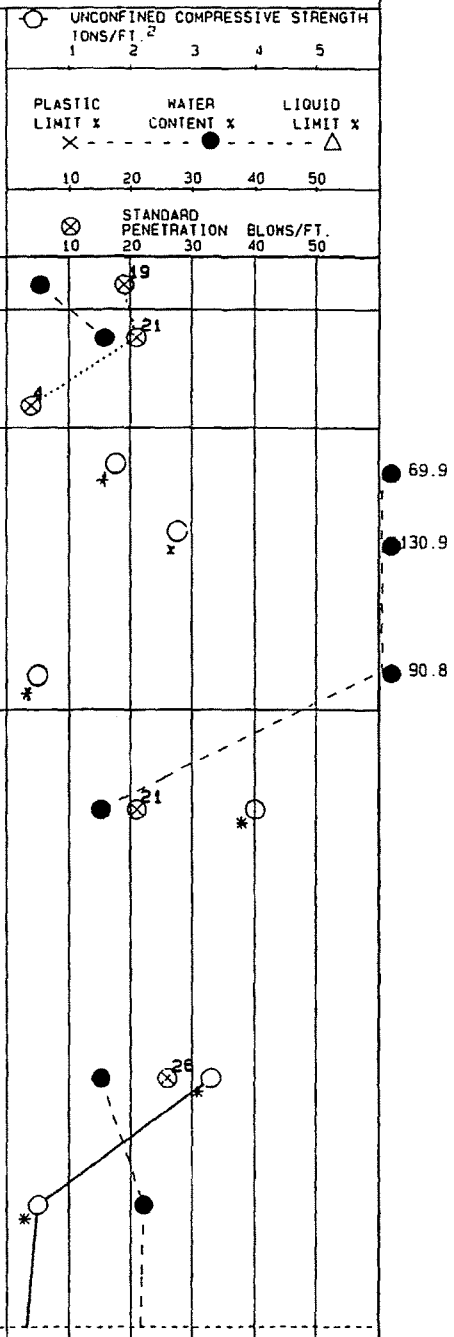
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION 748.5 ft
		PA			
	1	SS			Fill: Silty fine to coarse sand, trace fine gravel and clay-gray-dry-medium dense (Fill: SP)
		PA			
	2	SS			Fill: Silty clay, trace fine to coarse sand and fine gravel-red brown-moist (Fill: CL)
5.0		PA			
	3	SS			
		PA			Fill: Cohesive paper sludge-gray-moist-firm to very stiff (Fill: Paper sludge)
	4	ST			
10.0		PA			
	5	ST			
		PA			
15.0					
	6	ST			
		RB			Silty clay, trace fine to coarse sand-red brown-moist to wet-soft to very stiff (CL
20.0					
	7	SS			(Driller's observation: Obstruction at a depth of 25 feet) (No recovery form Sample No. 8)
		RB			
25.0					
	8	ST			
		RB			
30.0					
	9	SS			
		RB			
35.0					
	10	ST			
		RB			
40.0					



* Calibrated Penetrometer

... continued

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

STS JOB NO. 84779 | SHEET NO. 1 OF 2

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-6
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

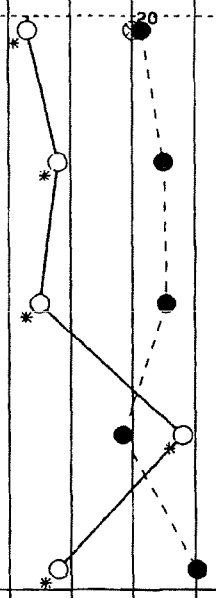
SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 748.5 ft
						Continued from previous page
40.0						
		11	SS			Silty clay, trace fine to coarse sand-red brown-moist to wet-soft to very stiff (CL
			RB			(Driller's observation: Obstruction at a depth of 25 feet) (No recovery form Sample No. 8)
45.0						
		12	ST			
			RB			
50.0						
		13	SS			
			RB			
55.0						
		14	ST			
			RB			
60.0						
61.5		15	SS			
						END OF BORING Boring advanced to 15 feet by solid stem auger. Boring advanced from 15 to 60 feet by rotary bit and drilling fluid. 20 feet of temporary casing installed. Boring backfilled wtih bentonite slurry.



* Calibrated Penetrometer

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL 9 ft WS OR WD WD	BORING STARTED 10/12/95	STS OFFICE Milwaukee-05	
WL BCR ACR	BORING COMPLETED 10/12/95	ENTERED BY KJP	SHEET NO. 2 OF 2
WL	RIG/FOREMAN 21/GR	APP'D BY SRS	STS JOB NO. 84779

STS Consultants Ltd.

CLIENT ESI, Inc. of Tennessee	LOG OF BORING NUMBER STS-7
PROJECT NAME Minergy Glass Aggregate Plant	ARCHITECT-ENGINEER

SITE LOCATION
Neenah, Wisconsin

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH (FT)	ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION 745.0 ft
			PA			
		1	SS			Asphalt concrete pavement
		1A	SS			Fill: Fine to coarse sand and gravel-gray-dry-medium dense (Fill: SP and GP)
			PA			
		2	SS			Fill: Silty clay, trace to little fine to coarse sand and gravel-red brown-moist (Fill: CL)
			PA			
5.0		3	ST			
		3A	ST			Fill: Cohesive paper sludge-gray-moist-stiff (Fill: Paper sludge)
			PA			
		4	ST			
9.5						END OF BORING Boring advanced to 7.5 feet by solid stem auger. Boring backfilled with bentonite chips.

116.8

The stratification lines represent the approximate boundary lines between soil types: in-situ, the transition may be gradual.

WL Dry WS OR WD WD	BORING STARTED 10/09/95	STS OFFICE Milwaukee-05	
WL BCR ACR	BORING COMPLETED 10/09/95	ENTERED BY KJP	SHEET NO. 1 OF 1
WL	RIG/FOREMAN 21/GR	APP'D BY SRS	STS JOB NO. 84779

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-1*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/11/99*	*03/11/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*743.5 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801712 N, 2370751 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat · Long ·	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	24	58/1'		Gravelly parking lot surface Fill, sandy gravel, moist										
			2	Fill, silty clayey gravel over sandy fine gravel, moist										
2/SS	24	5/1'		Gray paper sludge, dense, black fine to medium sand layer at 2.9 to 3.1 feet										
			4											
3/SS	18	2/1'												Sample 99-1-3 t=0900
			6	Gray paper sludge										
4/ST	7													Shelby tube 99-1-4 t=0908
5/SS	24	2/1'	8											
6/ST	3													Sample 99-1-5 t=0908
			10											
7/SS	18	12/1'		Reddish brown silty clay, moist to wet	CL									Shelby tube 99-1-6 t=0911 (sludge only)
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Brian Rep	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		SB99-15

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS Brian Repinski	03/08/99	03/08/99	Hollow-stem Auger

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	744.1 Feet MSL	6.25 inches

Boring Location		Local Grid Location (if applicable)
State Plane 801311 N, 2369529 E SE 1/4 of Section 21, T 20 N, R 17 E	Lat Long	Feet S Feet W

County	DNR County Code	Civil Town/City/ or Village
Winnebago	71	City of Neenah

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	8	4/1'		Grasses at surface Fill, reddish brown silty clay, moist				1.5						
			2											
2/SS	18	2/1'		Gray paper sludge										Sample 99-15-2 t=1545
			4											
3/ST	7													Shelby tube 99-15-3 t=1552
4/SS	18	0	6											
5/ST	4													Sample 99-15-4 t=1550
			8											
6/SS	22	1/1'		Dark brown to black hemic peat, wet	Pt									Shelby tube 99-15-5 t=1555
			10											
				End of Boring at 10.0 feet Abandoned borehole with bentonite chips										
			12											
			14											
			16											
			18											
			20											
			22											

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-16*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/10/99*	**Date Drilling Completed** *03/10/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.0 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801890 N, 2369267 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** - **Long** -	**Local Grid Location (If applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	12	3/1'		Grasses at surface Fill, reddish brown silty clay, moist				1.75						
			2											
2/SS	8	18/1'		Mix of light gray paper sludge and reddish brown silty clay, black fine gravelly clay layer at 3.7 to 4.0 feet										
			4											
3/SS	13	4/1'		Light gray paper sludge with few to trace reddish brown silty clay, trace gravel										Sample 99-16-3 t=1330
			6											
4/SS	9	12/1'		Fill, dark brown to brown sandy silty clay, trace to few fine gravel, moist										
			8											
5/SS	18	7/1'		Fill, reddish brown and mixed reddish brown and dark brown silty clay, trace fine gravel, moist										
			10											
6/SS	5	6/1'		Fill, dark brown silty clay, trace fine gravel, moist										
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**		**Boring Number** *SB99-16A*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*		**Date Drilling Started** *03/10/99*	**Date Drilling Completed** *03/10/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No.	**WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.0 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801890 N, 2369267 E* *SE 1/4 of Section 21, T 20 N, R 17 E*		**Lat** ° **Long** °	**Local Grid Location (If applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	9	6/1'		Grasses at surface Fill, reddish brown silty clay, moist				1.5						
			2											
2/SS	18	3/1'		Mixed light gray paper sludge and reddish brown silty clay, black fine gravelly clay layer at 3.7 to 4.0 feet										
			4											
3/SS	8	3/1'		Light gray paper sludge										
			6											
4/ST	2			Fill, brown silty clay										Pushed a rock into shelby tube
			8	End of Boring at 7.0 feet Abandoned borehole with bentonite chips Offset 3 feet southeast and drilled SB99-18										
			10											
			12											
			14											
			16											
			18											
			20											
			22											

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-17*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/09/99*	*03/09/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*745.9 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (If applicable)	
State Plane *801588 N, 2369265 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat Long	*Feet S*	*Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	13	5/1'		Grasses at surface Fill, reddish brown silty clay, moist				2.25						
			2											
2/SS	12	2/1'												
			4											
3/SS	14	0/1'		Light gray paper sludge, fibrous										Sample 99-17-3 t=1015
			6											
ST	0													
4/ST	6													Shelby tube 99-17-4 t=1020
			8											
5/SS	24	0/1'												Sample 99-17-5 t=1025
			10											
6/SS	14	0/1'		Dark brown to black hemic peat, moist	Pt									
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-18*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/08/99*	*03/08/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*745.3 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801420 N, 2369333 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat Long	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	18	3/1'		Grasses at surface Fill, reddish brown silty clay, moist										
			2											
2/SS	10	0/1'												Sample 99-18-2 t=1625
			4											
3/ST	9			Light gray paper sludge, fibrous										Shelby tube 99-18-3 t=1630
4/SS	24	0/1'	6											
5/ST	8		8											Shelby tube 99-18-5 t=1840
6/SS	23	0/1'												
			10											
7/ST	9													Sample 99-18-6 t=1845
8/SS	24	2/1'	12	Black organic silt, wet	OL									Shelby tube 99-18-7 t=1847
				Reddish brown silty clay, moist	CL			1.5						
			14	End of Boring at 13.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[signature]	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*	**License/Permit/Monitoring Number**		**Boring Number** *SB99-19*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/09/99*	**Date Drilling Completed** *03/09/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *745.7 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801624 N, 2369100 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** ° **Long** °	**Local Grid Location** (if applicable) *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	8	2/1'		Grasses at surface Fill, reddish brown silty clay, moist										
			2											
2/SS	23	1/1'												Sample 99-19-2 t=0855
			4	Light gray paper sludge, fibrous										
3/ST	8													Shelby tube 99-19-3 t=0900
4/SS	14	1/1'	6											
5/ST	4													Shelby tube 99-19-5 t=0910
			8											
6/SS	24	0/1'												
			10											Sample 99-19-6 t=0915
7/SS	12	1/1'		Brown hemic peat, moist	Pt									
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-20*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/10/99*	**Date Drilling Completed** *03/10/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *744.0 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801831 N, 2368938 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** · **Long** ·	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	10	4/1'		Grasses at surface Fill, brown and reddish brown silty clay, trace of fine gravel, moist										
2/SS	0	0/1'	2	Light gray paper sludge										Top of sludge based on blow counts and drilling cuttings
3/ST	9		4											
4/SS	10	0/1'	6											
5/ST	3		8											Shelby tube 99-20-3 t=1415
6/SS	12	2/1'												Sample 99-20-4 t=1419
7/ST	4		10											
8/SS	22	16/1'	12	Reddish brown clay, moist	CL			3.5						Shelby tube 99-20-5 t=1422
			14	End of Boring at 13.0 feet Abandoned borehole with bentonite chips										Shelby tube 99-20-7 t=1430
			16											Sample 99-20-8 t=1435 (sludge only)
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm ERM-North Central, Inc., Green Bay, WI

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-1

WI Unique Well No.: _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-11-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-11-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) > 10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Remapped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Units Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	10	2 1/2 bags	
In situ Soils (2" Ø split-spoon hole)	10	12		

(8) Comments: Grouted w/ 7 1/2 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work
Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-11-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Imported: District/County:
Reviewed/Imported: ☐ Complete ☐ Incomplete ☐ Non-compliance ☐ Work
Follow-up Needed:

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot ___ Grid Number ___

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-2

WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-11-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-11-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Resupplied? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	10	2 1/2 bags	
In situ Soils (2" ϕ split-spoon hole)	10	12		

(8) Comments: Charged w/ 7 1/2 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-11-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected ___ Date Approved ___
Reviewer/Inspector ___ ☐ Complying Work ☐ Non-complying Work
Follow-up No. ___

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot ___ Grid Number ___

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-3

WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-11-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-11-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 9 (From groundsurface)

Casing Diameter (in.) 6¼
Casing Depth (ft.) 7

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >7

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	7	2 bags	
In situ Soils (2" ø split-spoon hole)	7	9		

(8) Comments: Charged w/ 5 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-11-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Imprinted ___ District/County ___
Reviewer ___ ☐ Complying Well ☐ Noncomplying Well
Township/No. ___ Range/No. ___

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility/Well No. and/or Name (If Applicable): SB99-3A

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-11-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-11-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 15 (From groundsurface)

Casing Diameter (in.) 6 1/4

Casing Depth (ft.) 13

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown

If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >13

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable

Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable

Screen Removed? ☐ Yes ☐ No ☒ Not Applicable

Casing Left in Place? ☐ Yes ☒ No

If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No

Did Sealing Material Rise to Surface? ☒ Yes ☐ No

Did Material Settle After 24 Hours? ☐ Yes ☒ No

If Yes, Was Hole Remopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Units, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	13	3 1/2 bags	
In situ Soils (2" ø split-spoon hole)	13	15		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc

Signature of Person Doing Work: [signature] Date Signed: 3-11-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewed by | ☐ Complete ☐ Incomplete

Follow-up Needed

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot ___ Grid Number ___

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-4

WI Unique Well No.: ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reamped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	10	2½ bags	
In situ Soils (2"ø split-spoon hole)	10	12		

(8) Comments: Chased w/ 7½ gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Imaged | District/County
Reviewed/Imaged | ☐ Complying ☐ Noncomplying Work
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-5

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reamped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	10	2½ bags	
In situ Soils (2" ø split-spoon hole)	10	12		

(8) Comments: Charged w/ 7½ gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work
Environmental Drilling Services, Inc

Signature of Person Doing Work: [signature]
Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd
Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
Date Entered
Reviewed/Approved
☐ Complete
☐ Incomplete/Rejected
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N/S R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-6

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-8-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-8-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 9 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 7

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >7

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Borings Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reamped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Openhole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	7	2 bags	
Insitu Soils (2" Ø split-spoon hole)	7	9		

(8) Comments: Changed w/ 5 gals water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-8-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer | ☐ Complete ☐ Incomplete

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-7 — WI Unique Well No.

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 13 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 12

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >12

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Borings Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reapped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials — For monitoring wells and monitoring well boreholes only
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Cont. Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	12	3 1/4 bags	
In situ Soils (2" ø shelby tube hole)	12	13		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] — Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd — Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Reviewed — Date to County

Reviewed by — ☐ Complying Work ☐ Noncomplying Work

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-8

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 16 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 14

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) > 14

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Remopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	14	3½ bags	
Insitu Soils (2" ϕ split-spoon hole)	14	16		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
District/County
Reviewed/Inspected
☐ Complying
☐ Noncomplying — See Work
Follow-up Needed

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-9

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 13 (From groundsurface)

Casing Diameter (in.) 6 1/4

Casing Depth (ft.) 11

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown

If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >11

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable

Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable

Screen Removed? ☐ Yes ☐ No ☒ Not Applicable

Casing Left in Place? ☐ Yes ☒ No

If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No

Did Sealing Material Rise to Surface? ☒ Yes ☐ No

Did Material Settle After 24 Hours? ☐ Yes ☒ No

If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	11	3 bags	
In situ Soils (2"ϕ split-spoon hole)	11	13		

(8) Comments: Charged w/ 10 gals water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewed/Inspected | ☐ Complying ☐ Noncomplying Work

Follow-up Needed

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot ___ Grid Number ___

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-9A

WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 14 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 12

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) 7.12

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reapped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	12	3 1/4 bags	
In situ Soils (2" ϕ split-spoon hole)	12	14		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received (Inspected) | District/County

Reviewed by ☐ Complete ☐ Incomplete

Follow-up Needed

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-10

WI Unique Well No. ___

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-8-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-8-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 10 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 8

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >8

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials — For monitoring wells and monitoring well boreholes only
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Lbs. Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	8	2¼ bags	
In situ Soils (2"ø split-spoon hole)	8	10		

(8) Comments: Charged w/5 gals water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-8-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received (mm-dd-yyyy) | District/County

Reviewer Approved ☐ Complete ☐ Incomplete
☐ Non-compliance — See Comments

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-11 | WI Unique Well No. _____

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 14 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 12

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) >12

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reapped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	12	3 1/4 bags	
In situ Soils (2" ø split-spoon hole)	12	14		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Processed | Date Verified

Reviewer | ☐ Complete ☐ Incomplete

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-12

WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ___

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 15 (From groundsurface) Casing Diameter (in.) 6¼ Casing Depth (ft.) 13

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >13

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reopened? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	13	3¼ bags	
In situ Soils (2" ø split-spoon hole)	13	15		

(8) Comments: Cleaned w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received (Internal) ___ Date Entered ___
Keyowner Inspection ___ ☐ Acceptable Work ☐ Unacceptable Work
Follow-up Notes ___

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original ~~Well~~ Owner (If Known)

~~Present Well~~ Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-13

WI Unique Well No.: ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total ~~Well~~ Depth (ft.) 11 (From groundsurface)

Casing Diameter (in.) 6 1/4

Casing Depth (ft.) 9

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown

If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) 79

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable

Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable

Screen Removed? ☐ Yes ☐ No ☒ Not Applicable

Casing Left in Place? ☐ Yes ☒ No

If No, Explain: Soil Borings Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No

Did Sealing Material Rise to Surface? ☒ Yes ☐ No

Did Material Settle After 24 Hours? ☐ Yes ☒ No

If Yes, Was Hole Reopened? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	9	2 1/2 bags	
In situ Soils (2"ø split-spoon hole)	9	11		

(8) Comments: Charged w/ 7 1/2 gallons of water after pouring bentonite into borehole

(9) Name of Person or ~~Firm~~ Doing Sealing Work: Environmental Drilling Services, Inc

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected: ___ District/County: ___

Reviewed/Inspected: ___ ☐ Complying ☐ Noncomplying Work

Follow-up No. ___

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-14

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface) Casing Diameter (in.) 6 1/4 Casing Depth (ft.) 11

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) > 11

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Reopened?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	11	3 bags	
In situ Soils (2" ø shelby tube hole)	11	12		

(8) Comments: Charged w/ 10 gals of Water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewed/Inspected | ☐ Complying ☐ Noncomplying
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-15

WI Unique Well No.: _____

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-8-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-8-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 10 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 8

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) > 8

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Barrier Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials — For monitoring wells and monitoring well boreholes only
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Cubic Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	8	2¼ bags	
In situ Soils (2" ø split-spoon hole)	8	10		

(8) Comments: Charged w/ 5 gals water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc

Signature of Person Doing Work: [signature] Date Signed: 3-8-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | Date Entered/Coded
Reviewed/Inspected | ☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-16 | WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ___

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface) Casing Diameter (in.) 6¼ Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Borings Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reamped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	10	2½ bags	
In situ Soils (2" ø split-spoon hole)	10	12		

(8) Comments: Cleared w/ 7½ gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Renewed/Inspected | ☐ Complying Work ☐ Noncomplying Work
Follow-up Required

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-16A

WI Unique Well No. _ _ _ _ _ _

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)
Casing Diameter (in.) 6¼
Casing Depth (ft.) 6

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) >6

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reopened? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	6	1 3/4 bags	
In situ Soils (2" ø shelby tube hole)	6	7		

(8) Comments: Charged w/ 5 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work
Environmental Drilling Services, Inc.

Signature of Person Doing Work: Brian Ryan
Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd
Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
Date Entered
Reviewer/Inspector
☐ Complying Work
☐ Noncomplying Work
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 : T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-17

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)

Casing Diameter (in.) 6¼

Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6¼

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown

If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reamped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Lbs. Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Holeplug® Bentonite Chips (3/8")	Surface	10	2½ bags	
In situ Soils (2" ø split-spoon hole)	10	12		

(8) Comments: Charged w/ 7½ gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewed/Inspected | ☐ Complying ☐ Noncomplying

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S. ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-18

WI Unique Well No. ___

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-8-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 3-8-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 13 (From groundsurface) Casing Diameter (in.) 6 1/4 Casing Depth (ft.) 11

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >11

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Reamped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Openhole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	11	3 bags	
Insitu Soils (2"ø split-spoon hole)	11	13		

(8) Comments: Charged w/10 gals water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: Duane Kiyanek Date Signed: 3-8-99

Street or Route: 3671 Monroe Rd Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewed/Inspected | ☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park LandFill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-19

WI Unique Well No.: _____

Reason For Abandonment: Investigative Only

Date of Abandonment: 3-9-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-9-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 12 (From groundsurface)
Casing Diameter (in.) 6 1/4
Casing Depth (ft.) 10

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) >10

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☐ Yes ☒ No
If No, Explain: Soil Boring Only

Was Casing Cut Off Below Surface? ☐ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Reapped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	10	2 3/4 bags	
In situ Soils (2"ø split-spoon hole)	10	12		

(8) Comments: Charged w/ 7 1/2 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work
Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-9-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY
Date Received (Important) | District/County
Review Type: ☐ Complete ☐ Incomplete
Follow-up Required

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 3-94

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Winnebago

___ 1/4 of SE 1/4 of Sec. 21 ; T. 20 N; R. 17 ☒ E ☐ W

(If applicable) ___ Gov't Lot ___ Grid Number

Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: Arrowhead Park Landfill

City, Village: Neenah, Wisconsin

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: City of Neenah

Street or Route: 211 Walnut

City, State, Zip Code: Neenah, WI 54956

Facility Well No. and/or Name (If Applicable): SB99-20

WI Unique Well No.: _ _ _ _ _ _

Reason for Abandonment: Investigative Only

Date of Abandonment: 3-10-99

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 3-10-99

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 13 (From groundsurface)

Casing Diameter (in.) 6 1/4

Casing Depth (ft.) 11

Lower Drillhole Diameter (in.) 6 1/4

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown

If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) >11

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☒ No	

If No, Explain: Soil Barrier Only

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Reopened?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☒ Other (Explain) Open Hole Pour

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Hole plug® Bentonite Chips (3/8")	Surface	11	2 3/4 bags	
In situ Soils (2" ø split-spoon hole)	11	13		

(8) Comments: Charged w/ 10 gals of water after pouring bentonite into borehole

(9) Name of Person or Firm Doing Sealing Work: Environmental Drilling Services, Inc.

Signature of Person Doing Work: [signature] Date Signed: 3-10-99

Street or Route: 3671 Monroe Rd

Telephone Number: (920) 337-9600

City, State, Zip Code: De Pere, WI 54115

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | Date Entered/Coded

Reviewer/Inspector | ☐ Compliance ☐ Noncompliance — Work

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-2*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/11/99*	*03/11/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*745.7 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801722 N, 2370505 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat ° Long °	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	18	124/1'		Gravelly parking lot surface Fill, gray sandy fine gravel, moist										
			2	Fill, reddish brown silty clay, moist										
2/SS	14	17/1'												Sample 99-2-2 t=0945 (sludge only)
			4	Gray paper sludge, fibrous										
3/SS	4	8/1'												
			6											
4/ST	7													Shelby tube 99-2-4 t=0952
5/SS	14	4/1'	8											
6/ST	9													Sample 99-2-5 t=0955
			10											
7/SS	24	4/1'		Dark brown hemic peat changing to dark brown organic silt, moist	Pt OL									Shelby tube 99-2-6 t=1000
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[signature]	ERM-North Central, Inc., Green Bay, WI

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-3*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/11/99*	*03/11/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*747.8 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (If applicable)
State Plane *801334 N, 2370518 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat ° Long °	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	8	26/6"		Asphalt at surface Fill, light brown fine to medium sandy gravel, moist										
2/SS	2	8/1'	2											Top of sludge based on blow counts and sludge in tip of spoon
3/SS	2	2/1'	4	Gray paper sludge, dense										
4/ST	7		6											
5/SS	24	9/1'	8	Fill, dark brown to black sandy silty clay, trace to few gravel, moist										
			10	End of Boring at 9.0 feet Abandoned borehole with bentonite chips Concrete cap at surface										
			12											
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[signature]	ERM-North Central, Inc., Green Bay, WI

This form is authorized by Chapters 144.147 and 182, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 182.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-3A*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/11/99*	**Date Drilling Completed** *03/11/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *747.8 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location State Plane *801339 N, 2370532 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** · **Long** ·	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				Asphalt at surface with gravelly base course										
1/SS	6	11/6"	2	Fill, light brown sandy gravel, moist										
2/SS	2	11/1'												
			4											
3/SS	2	2/1'		Gray paper sludge, dense										Sample 99-3A-3 t=1118 (sample is spoon and cuttings)
4/ST	9		6											
5/SS	20	7/1'	8	Gray paper sludge, fibrous										Shelby tube 99-3A-4 t=1122
6/ST	1		10											
7/SS	24	5/1'												Sample 99-3A-7 t=1130
			12											
8/ST	9													Shelby tube 99-3A-8 t=1135
9/SS	24	12/1'	14	Dark brown to black organic silt, moist, over 1 inch thick wet sand and gravel layer	OL									
				Reddish brown silty clay, moist	CL			2.0-4.0						
			16	End of Boring at 15.0 feet Abandoned borehole with bentonite chips										
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-4*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/10/99*	*03/10/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*746.7 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801738 N, 2370122 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat Long	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	18	2/1'		Grasses at surface Fill, brown and reddish brown fine sandy silty clay and silty clay, frozen to 1 foot, moist										
			2											
2/SS	14	4/1'						2.25						
			4											
3/SS	15	2/1'												Sample 99-4-3 t=1016
			6	Light gray paper sludge										
4/ST	9													Shelby tube 99-4-4 t=1020
5/SS	24	2/1'	8											
6/ST	3													Shelby tube 99-4-6 t=1026
			10											
7/SS	24	4/1'												Sample 99-4-7 t=1030 (sludge only)
			12	Black hemic peat, moist	Pt									
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[signature]	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-5*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/10/99*	*03/10/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*745.3 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801395 N, 2370057 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat ° Long °	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	24	31/1'		Grass at surface Fill, reddish brown clayey fine gravel, moist										
			2	Fill, reddish brown silty clay, moist										
2/SS	18	23/1'												
			4	Gray paper sludge, dense										
3/SS	14	4/1'												Sample 99-5-3 t=0940
			6	Light gray paper sludge, fibrous										
4/ST	9													Shelby tube 99-5-4 t=0945
5/SS	24	1/1'	8											
6/ST	9													Sample 99-5-5 t=0950
			10											
7/SS	24	2/1'		Black sapric peat changing to black and very dark brown organic silt, moist	Pt OL									Shelby tube 99-5-6 t=0955
			12											
				End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Robert Pierce	ERM-North Central, Inc., Green Bay, WI

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.08, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*	**License/Permit/Monitoring Number**	**Boring Number** *SB99-6*	
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/08/99*	**Date Drilling Completed** *03/08/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *742.9 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801262 N, 2369921 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** ° **Long** °	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	12	7/1'		Grasses at surface Fill, reddish brown silty clay, moist				2.25						
			2											
2/SS	0	1/1'												Paper sludge on outside of spoon at 2.5 ft.
			4	Gray paper sludge										
3/SS	24	0/1'												
			6											
4/ST	10													Sample 99-6-3 t=1220
5/SS	24	2/1'	8	Brown hemic peat, moist	Pt									Shelby tube 99-6-4 t=1415
			10	End of Boring at 9.0 feet Abandoned borehole with bentonite chips										Sample 99-6-5 t=1425 (paper sludge only)
			12											
			14											
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-7*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/10/99*	*03/10/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*747.1 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801872 N, 2369750 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat ° Long °	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	12	2/1'		Grasses at surface Fill, reddish brown silty clay, moist										
2/SS	14	2/1'	2	Light gray paper sludge, fibrous										Sample 99-7-2 t=1138
3/ST	9		4											Shelby tube 99-7-3 t=1140
4/SS	16	2/1'	6											Sample 99-7-4 t=1143
5/SS	24	2/1'	8											
6/ST	1		10											Sample 99-7-7 t=1155
7/SS	24	2/1'	12											Shelby tube 99-7-8 t=1158 (sludge only)
8/ST	9			Very dark brown organic silt, moist	OL									
			14	End of Boring at 13.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-8*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/10/99*	**Date Drilling Completed** *03/10/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *749.5 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801712 N, 2369793 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** ' **Long** '	**Local Grid Location (If applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	14	8/1'		Grasses at surface Fill, reddish brown silty clay, moist				1.75						
			2											
2/SS	12	12/1'		Fill, brown to dark reddish brown fine gravelly silty clay, fine gravel wet layer at 3.0 to 3.3 feet				1.5						
			4											
3/SS	12	10/1'		Fill, reddish brown silty clay, trace of fine gravel, moist				1.5						
			6											
4/SS	18	1/1'												
			8											
5/ST	8			Light gray paper sludge, fibrous										Shelby tube 99-8-5 t=1102
6/SS	13	2/1'	10											
7/ST	9													Sample 99-8-6 t=1105
			12											
8/SS	12	2/1'												Shelby tube 99-8-7 t=1108
			14											
9/SS	24	2/1'												Sample 99-8-9 t=1115
			16	Very dark brown organic silt, moist	OL									
			18	End of Boring at 16.0 feet Abandoned borehole with bentonite chips										
			20											
			22											

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Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*	**License/Permit/Monitoring Number**	**Boring Number** *SB99-9*	
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*	**Date Drilling Started** *03/09/99*	**Date Drilling Completed** *03/09/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No. / **WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.7 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location State Plane *801550 N, 2369770 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	**Lat** ' **Long** '	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	15	4/1'		Grasses at surface Fill, reddish brown silty clay, moist				2.5						
			2											
2/SS	0	1/1'												
			4											
3/ST	9			Light gray paper sludge, fibrous										Shelby tube 99-9-3 t=1313
4/SS	23	1/1'	6											
5/SS	12	1/6"												Sample 99-9-4 t=1320
			8											
6/ST	9													Shelby tube 99-9-6 t=1328
7/SS	20	1/1'	10											
8/SS	12	1/1'	12											Sample 99-9-7 t=1335
				Black sapric peat over dark brown hemic peat, moist	Pt									
			14	End of Boring at 13.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

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Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-9A (30 ft. N of SB99-9)*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*		**Date Drilling Started** *03/10/99*	**Date Drilling Completed** *03/10/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No.	**WI Unique Well No.**	**Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.8 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801580 N, 2369770 E* *SE 1/4 of Section 21, T 20 N, R 17 E*		**Lat** ° **Long** °	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*		**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	6	4/1'		Grasses at surface Fill, reddish brown and brown silty clay, few fine gravel, frozen										
			2											
2/SS	8	2/1'												
			4	Light gray paper sludge, dense										
3/SS	22	1/1'												
			6	Light gray paper sludge, fibrous										
4/SS	18	1/1'												
			8											
5/SS	24	1/1'												
			10											
6/SS	10	1/1'												
			12											
7/SS	16	3/1'		Black changing to dark brown organic silt, moist	OL									
			14											
				End of Boring at 14.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-10*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/08/99*	*03/08/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*744.0 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)
State Plane *801264 N, 2369732 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat Long	*Feet S* *Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	14	4/1'		Grasses at surface Fill, reddish brown silty clay (upper 4 inches) over mottled orangish brown and brown silty sand and sandy silt, moist to wet										
2/SS	0	3/1'	2											Paper sludge on outside of spoon
3/SS	9	1/1'	4	Dark gray to gray paper sludge										
ST	0		6											Sample 99-10-3 t=1505
4/ST	9													
5/SS	24	1/1'	8	Dark brown to black hemic peat, wet	Pt									Shelby tube 99-10-4 t=1512
			10	End of Boring at 10.0 feet Abandoned borehole with bentonite chips										Sample 99-10-5 t=1520 (paper sludge only)
			12											
			14											
			16											
			18											
			20											
			22											

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Signature	Firm
[signature]	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Arrowhead Park Landfill (ERM 99052)		*SB99-11*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
EDS *Brian Repinski*	*03/10/99*	*03/10/99*	*Hollow-stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	*746.9 Feet MSL*	*6.25 inches*

Boring Location		Local Grid Location (if applicable)	
State Plane *801770 N, 2369595 E* *SE 1/4 of Section 21, T 20 N, R 17 E*	Lat ° Long °	*Feet S*	*Feet W*

County	DNR County Code	Civil Town/City/ or Village
Winnebago	*71*	*City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	14	8/1"		Grasses at surface Fill, reddish brown brown silty clay, trace of fine gravel, moist										Sludge in tip of spoon
			2											
2/SS	0	3/1"												
			4											
3/SS	24	1/1"												Sample 99-11-3 t=1220
			6											
4/ST	7			Light gray paper sludge, fibrous										Shelby tube 99-11-4 t=1223
5/SS	24	0	8											
6/ST	4													Shelby tube 99-11-6 t=1230
			10											
7/SS	24	1/1"												Sample 99-11-7 t=1235
			12											
8/SS	24	0												
			14	Dark brown organic silt, moist	OL									
				End of Boring at 14.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

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	ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION
Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**		**Boring Number** *SB99-12*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*		**Date Drilling Started** *03/09/99*	**Date Drilling Completed** *03/09/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No.	**WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.8 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801584 N, 2369589 E* *SE 1/4 of Section 21, T 20 N, R 17 E*		**Lat** ° **Long** °	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*		**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	12	5/1'		Grasses at surface Fill, reddish brown silty clay, moist										
			2	Gray to dark gray paper sludge										
2/SS	23	2/1'												Sample 99-12-2 t=1145
			4											
3/ST	9			Light gray paper sludge, fibrous										Shelby tube 99-12-3 t=1147
4/SS	18	0/1'	6											
5/SS	12	1/6"												
			8											
6/ST	7													Shelby tube 99-12-6 t=1153
7/SS	24	1/1'	10											
														Sample 99-12-7 t=1155
8/SS	0	5/1'	12	Blow counts indicate a material denser than paper sludge										Bottom of sludge based on blow count change
9/SS	0	9/1'	14											
			16	End of Boring at 15.0 feet Abandoned borehole with bentonite chips										
			18											
			20											
			22											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-13*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*		**Date Drilling Started** *03/09/99*	**Date Drilling Completed** *03/09/99* / **Drilling Method** *Hollow-stem Auger*
DNR Facility Well No.	**WI Unique Well No.** / **Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.2 Feet MSL* / **Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801420 N, 2369634 E* *SE 1/4 of Section 21, T 20 N, R 17 E*		**Lat** ° **Long** °	**Local Grid Location (if applicable)** *Feet S* *Feet W*
County *Winnebago*		**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	13	7/1'		Grasses at surface Fill, reddish brown silty clay, moist										
			2	Dark gray paper sludge, dense										
2/SS	14	2/1'												Sample 99-13-2 t=1235
			4	Light gray paper sludge, fibrous										
3/ST	9													Shelby tube 99-13-3 t=1237
4/SS	23	0	6											
5/SS	12	1/6"												
			8											
6/ST	9													Shelby tube 99-13-6 t=1245
7/SS	24	2/1'	10											
				Brown hemic peat, moist	Pt									Sample 99-13-7 t=1250
			12	End of Boring at 11.0 feet Abandoned borehole with bentonite chips										
			14											
			16											
			18											
			20											
			22											

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Signature [signature] Firm ERM-North Central, Inc., Green Bay, WI

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State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Superfund
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 5-92

Facility/Project Name *Arrowhead Park Landfill (ERM 99052)*		**License/Permit/Monitoring Number**	**Boring Number** *SB99-14*
Boring Drilled By (Firm name and name of crew chief) *EDS Brian Repinski*		**Date Drilling Started** *03/09/99*	**Date Drilling Completed** *03/09/99*	**Drilling Method** *Hollow-stem Auger*
DNR Facility Well No.	**WI Unique Well No.**	**Common Well Name**	**Final Static Water Level** *Feet MSL*	**Surface Elevation** *746.0 Feet MSL*	**Borehole Diameter** *6.25 inches*
Boring Location **State Plane** *801467 N, 2369482 E* *SE 1/4 of Section 21, T 20 N, R 17 E*		**Lat** ° **Long** °	**Local Grid Location (if applicable)** *Feet S* *Feet W*	
County *Winnebago*	**DNR County Code** *71*	**Civil Town/City/ or Village** *City of Neenah*		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1/SS	18	5/1'		Grasses at surface Fill, reddish brown silty clay, moist										
			2	Gray paper sludge										
2/SS	24.	2/1'												Sample 99-14-2 t=1005
			4	Light gray paper sludge, fibrous										
3/ST	8													Shelby tube 99-14-3 t=1100
4/SS	24	1/1'	6											
5/SS	12	1/6"												
			8											
6/ST	6													Shelby tube 99-14-6 t=1110
7/SS	24	2/1'	10											
8/ST	6													Sample 99-14-7 t=1115
			12	Brown hemic peat, moist	Pt									Shelby tube 99-14-8 t=1120
			14	End of Boring at 12.0 feet Abandoned borehole with bentonite chips										
			16											
			18											
			20											
			22											

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Signature	Firm ERM-North Central, Inc., Green Bay, WI

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B1
B2
B3
B4
B5

Field Boring Log

SES Subsurface Exploration Services, LLC
2900 Lowell Drive
Green Bay WI 54311
920 554 4228

Engineer _____ Surface Elevation _____ Water Level Observations

Technician _____ Boring Started 6 21- WL _____ WS or WD

Driller JC Boring Completed 6- -11 WL 47 BCR 5 ACR

Helper NP Station _____ WL _____ AB _____ HR AB

Rig/MFT/Model D 120 Offset OL WL _____ 24 hr AB

pg 1 of 2

Job No 110611 Boring No B-5 Client RVT Glen rp rk c Weather 63 R

Sample No	Depth or Elevation From	To	Sample Method	Penetrat o Record Split Spoon Blows 6	6	6	6	R Length Recovered (feet)	QP Penetrometer Test (tsf)	PID PID Detection	Strata Change	140 lb Hammer Type ☐ Safety ☐ Automatic / Sample Description
												WL @ 6 6 B
1	0	15	SS	4	9	8		1 3	3.25			BR/TR GR S CL W/TR F GR (F ll)
	0	25	PA									
2	25	4	SS	6	4	2		1 0	0.75			BR S CL W/FE GR (mo st) (F ll)
	25	5	PA									
3	5	6.5	SS	1	2	3		1.2	0.75			BR S CL W/TR FE GR (mo st) (F)
	5	7.5	PA									
4	7.5	9	SS	2	1	3		1.1	0.75			SAME (mo) (F)
	7.5	10	PA									
5	10	11.5	SS	1	2	1		1 c	2.0			BR S CL W/TR F GR (wet)
	0	17.5	AU									install cas
	0	15	RB								wet	12 - 13 not cal color change
6	15	17	SS	W	O	A	-	2	0			BR S CL
	15	20	RB									
7	20	21.5	SS	6	6	7		0.7	-			SAME W/ TR FE GR - unable QP
	20	25	RB									
8	25	26.5	SS	14	16	22		0.9	0.75	?		BR S CL W/ TR FE GR (dist bel sample push ex)
	25	30	RB									GR wet @ 28.6
9	30	31.5	SS	14	15	21		1 c	4.5			BR S - / F -

Abbreviations
MC Macro Core
LB Large Bore
ST Shelby Tube
DB Diamond Bit
PA Power Auge
HSA Hollow Stem Auge
RB Rock Bit
HA Hand Auge
WS While Sampling
WD While Drilling
BCR Before Casing Removal
ACR After Casing Removal
AB After Boring
AWO After Wash Out

Drill Crew Checklist
Topsoil Thickness _____
Fill Thickness 12'-13' All

Cave-in Level
While Drilling & Sampling _____
After Boring Completion _____

Water Loss
At _____ to _____
Percent Loss _____
At _____ to _____
Percent Loss _____

Boulders or Obstructions
At _____ to _____
At _____ to _____

Artesian Pressure
Depth _____
Height of Soil Rise in Casing _____
Piezometer PVC or SS
Diameter _____
Screen Depth _____ ft to _____
Riser Pipe _____ ft to _____

Field Boring Log

Engineer ____ Surface Elevation ____ Water Level Observations

Technician ____ Boring Started 6-21 WL ____ WS or WD

Driller JC Boring Completed 6-21 WL 47 BCR 5 ACR

Helper NP Station ____ WL ____ AB ____ HR AB

Rig/MFT/Model U-120 Offset 2' WL ____ 24 hr AB

SES Subsurface Exploration Services, LLC
2900 Lowell Drive
Green Bay WI 54311
920 554 4228

pg #2 of 2

Job No 11261 | Boring No B-5 | Client Rj1/61 ... | Weather 62 Rain

Sample No	Depth or Elevation From	To	Sample Method	Penetration Record Split Spoon Blows 6	6	6	6	R Length Recovered (feet)	QP Penetrometer Test (tsf)	PID PID Detection	Strata Change	140 lb Hammer Type ☐ Safety ☐ Automatic — Sample Description
	30	35	RB									ER w/D 32.5-33'
10	35	36.5	SS	10	11	14		15	3.25			PR ... ICS ok (pushed to recover)
												— EOB —

Abbreviations
MC Macro Core
LB Large Bore
ST Shelby Tube
DB Diamond Bit
PA Power Auge
HSA Hollow Stem A ge
RB Rock B t
HA Hand Auger
WS Wh le Sampling
WD While Dril ng
BCR Before Casing Removal
ACR After Cas ng Removal
AB After Boring
AWO After Wash Out

Drill Crew Checklist
Topsoil Th ckness ____
F ll Thickness 12'-13 Approx

Cave in Level
While D illing & Sampling ____
After Boring Complet on ____

Water Loss
At ____ to ____
Percent Loss ____
At ____ to ____
Percent Loss ____

Boulders or Obstructions
At ____ to ____
At ____ to ____

Artesian Pressure
Depth ____
Height of Soil Rise h Cas ng ____
Piezometer PVC or SS Diameter ____ in
Screen Depth ____ ft to ____
Riser Pipe ____ ft to ____

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5 2/2000

Notice: Please complete Form 3300-5 and return it to the appropriate DNR office and bureau. Completion of this report is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See the instructions for more information.

Route to ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other 110611

(1) GENERAL INFORMATION

WI Unique Well No. | DNR Well ID No. | County

Common Well Name _____ Gov't Lot (if applicable)

Grid Location ___ 1/4 of ___ 1/4 of Sec. ___ ; T. ___ N; R ___ ☐ E ☐ W

___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Local Grid Origin ☐ (estimated ☐) or Well Location ☐

Lat ___ ° ___ ' ___ " Long ___ ° ___ ' ___ " or

State Plane ___ ft. N. ___ ft. E. ☐ S ☐ C ☐ N Zone

Reason For Abandonment: Sample only

WI Unique Well No. of Replacement Well

(2) FACILITY /OWNER INFORMATION

Facility Name: (RVT) Glatfelter Park site

Facility ID: B-5

License/Permit/Monitoring No.

Street Address of Well

City, Village, or Town

Present Well Owner: Same

Original Owner: Same

Street Address or Route of Owner

City, State, Zip Code

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Construction Date: 6-21-11

☐ Monitoring Well
☐ Water Well
☑ Drillhole / Borehole

If a Well Construction Report is available, please attach

Construction Type:
☑ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From ground surface): 36.5'

Casing Diameter (in.): 4"

Casing Depth (ft.): 8'

Lower Drillhole Diameter (in.): 4"

Was Well Annular Space Grouted? ☐ Yes ☑ No ☐ Unknown

If Yes, To What Depth? _____ Feet

Depth to Water (Feet): 6.6'

(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL

Pump & Piping Removed?	☐ Yes	☐ No	☑ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☑ Not Applicable
Screen Removed?	☐ Yes	☐ No	☑ Not Applicable
Casing Left in Place?	☐ Yes	☑ No	
Was Casing Cut Off Below Surface?	☐ Yes	☑ No	
Did Sealing Material Rise to Surface?	☑ Yes	☐ No	
Did Material Settle After 24 Hours?	☐ Yes	☑ No	
If Yes, Was Hole Retopped?	☐ Yes	☑ No	

Required Method of Placing Sealing Material
☐ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☑ Screened & Poured (Bentonite Chips) ☐ Other (Explain)

Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☑ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Chips
☐ Granular Bentonite
☐ Bentonite-Cement Grout
☐ Bentonite - Sand Slurry

(5) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Hole plug	Surface	36.5	4 Bags	3/8 chip

(6) Comments _____

(7) Name of Person or Firm Doing Sealing Work: SES [redacted]

Date of Abandonment: 6-21-11

Signature of Person Doing Work

Date Signed: 6-21-11

Street or Route: [redacted]

Telephone Number: [redacted]

City, State, Zip Code: Green Bay, Wisconsin 54311-8320

FOR DNR OR COUNTY USE ONLY

Date Received | Noted By

Comments

BCG 34930

LEGEND

- WELL LOCATION
- ABANDONED WELL LOCATION

N

0 100 200 400 600 Feet

REVISION NO.	DESCRIPTION	DATE	BY

DESIGNED BY	JWK	DATE 11-02-06
DRAWN BY	JWK	DATE 11-02-06
APPROVED BY	SJS	DATE 11-02-06
ARCGIS FILE	U:_\GLATFELTER 2 PHOTO BASE.MXD	

MONITORING WELL LOCATIONS
GLATFELTER PARKSITE LANDFILL
NEENAH, WISCONSIN

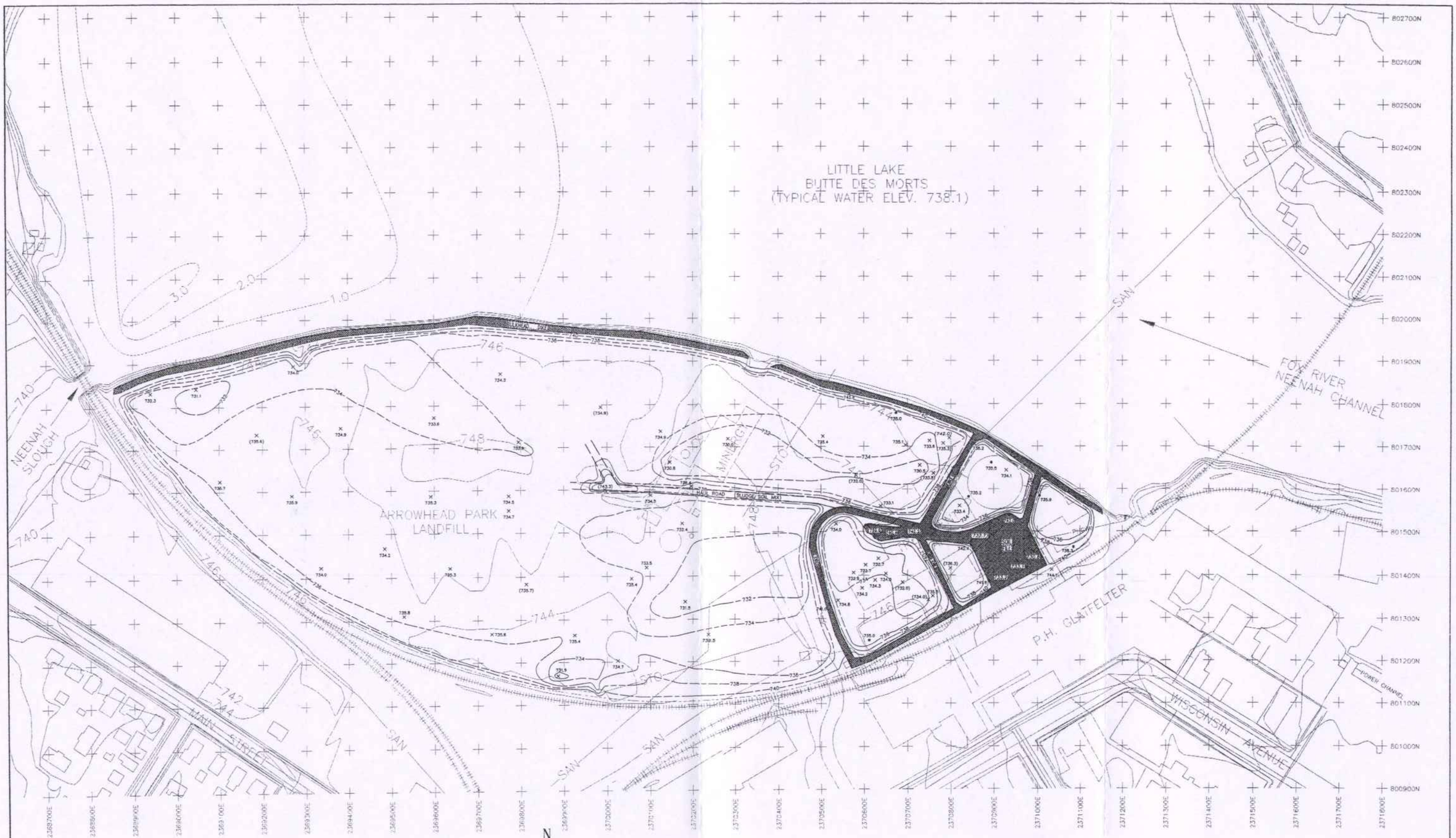
STS Consultants Ltd
Consulting Engineers
1035 Kepler Drive
Green Bay, WI 54311
920 468 1978

STS PROJECT NUMBER
200606604

STS PROJECT FILE

SCALE
1" = 200'

SHEET NUMBER
1



LEGEND

- —740— SURFACE CONTOUR
- —SAN— CITY SANITARY SEWER
- —STO— STORM SEWER
- PHGWW— P.H. GLATFELTER WASTEWATER SEWER
- STRUCTURE
- RAILROAD
- APPROXIMATE LIMITS OF DEPOSIT A
- -2.0- APPROXIMATE SEDIMENT THICKNESS (FEET)
- APPROXIMATE LIMITS OF SLUDGE IN LANDFILL
- 735.0 HISTORIC SURFACE ELEVATION (DRAWING 17-E 1146 F)
- 735.4 ELEVATION AT BORING PER SURVEY
- (734.8) ESTIMATED ELEVATION AT BORING PER SURVEY
- 739.5 QUESTIONABLE DATA POINT

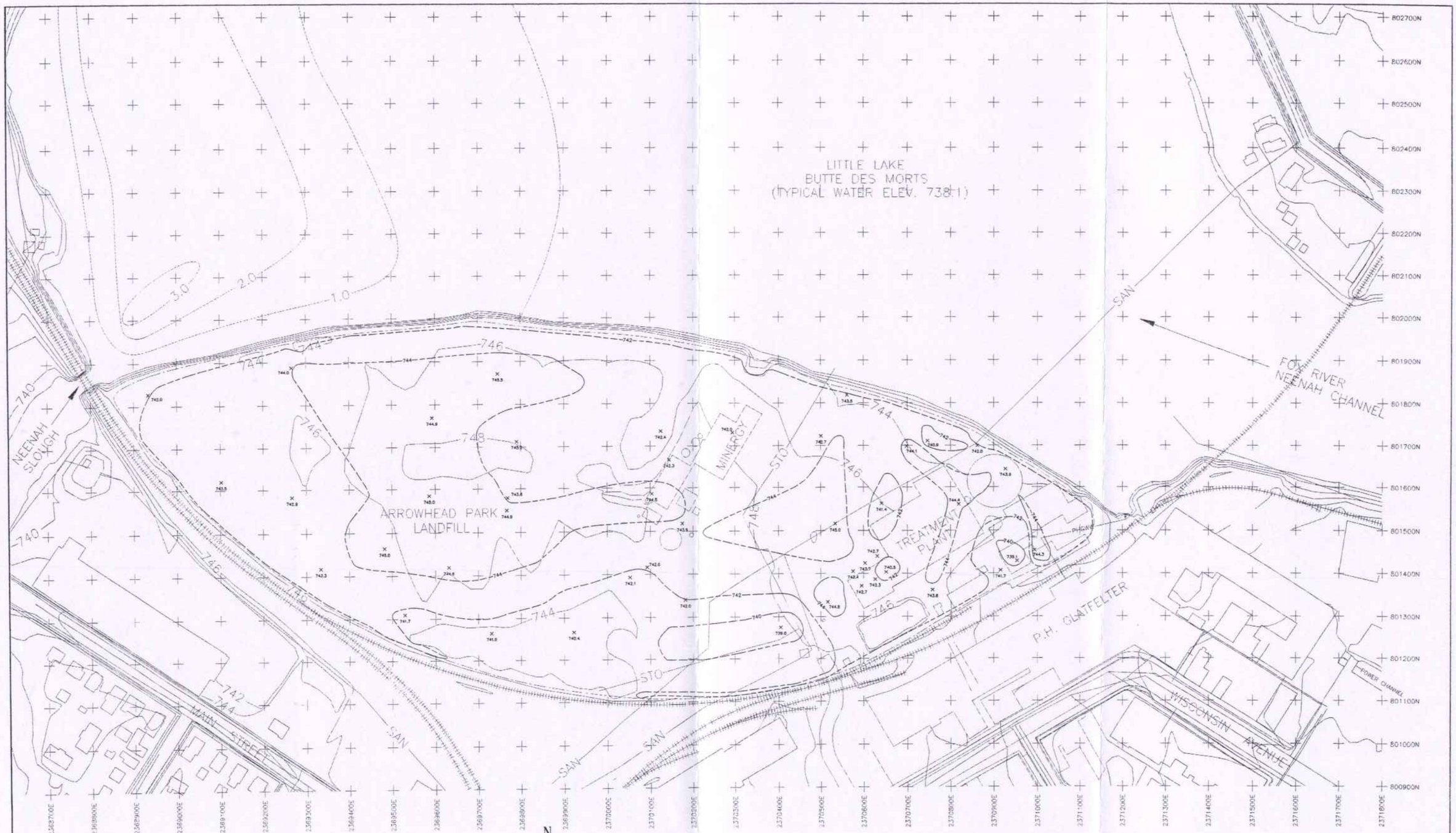
BASE MAP PROVIDED BY CITY OF NEENAH, GIS DATA BASE. PHOTOGRAPH CONTROL, 1991 WITH CITY UPDATES THROUGH 1998. ERM MODIFICATIONS INCLUDED ADDITION OF CLARIFIER, SOIL STOCKPILE REMOVAL AND PROJECTION OF DEPOSIT A SEDIMENT (PER EWI 1992 FEASIBILITY STUDY).

REV. NO.	DESCRIPTION	DATE	REV. BY	CHK'D.	APPD.
	REVISIONS				

ENVIRONMENTAL RESOURCES MANAGEMENT
ERM

Arrowhead Park Landfill
Neenah, Wisconsin

DRAWN:	CHECKED:		DRAWING:
SCALE: 1"=100'	APPROVED:	Base Elevations	98276-10



LEGEND

—740— SURFACE CONTOUR

—SAN— CITY SANITARY SEWER

—STO— STORM SEWER

PHGWW— P.H. GLATFELTER WASTEWATER SEWER

STRUCTURE

RAILROAD

APPROXIMATE LIMITS OF DEPOSIT A

--2.0-- APPROXIMATE SEDIMENT THICKNESS (FEET)

APPROXIMATE LIMITS OF SLUDGE IN LANDFILL

741.0 ELEVATION AT BORING PER SURVEY

N

BASE MAP PROVIDED BY CITY OF NEENAH, GIS DATA BASE. PHOTOGRAPH CONTROL, 1991 WITH CITY UPDATES THROUGH 1998. ERM MODIFICATIONS INCLUDED ADDITION OF CLARIFIER, SOIL STOCKPILE REMOVAL AND PROJECTION OF DEPOSIT A SEDIMENT (PER EWI 1992 FEASIBILITY STUDY).

REV. NO.	DESCRIPTION	DATE	REV. BY	CHK'D.	APPD.
	REVISIONS				

ENVIRONMENTAL RESOURCES MANAGEMENT

ERM

Arrowhead Park Landfill
Neenah, Wisconsin

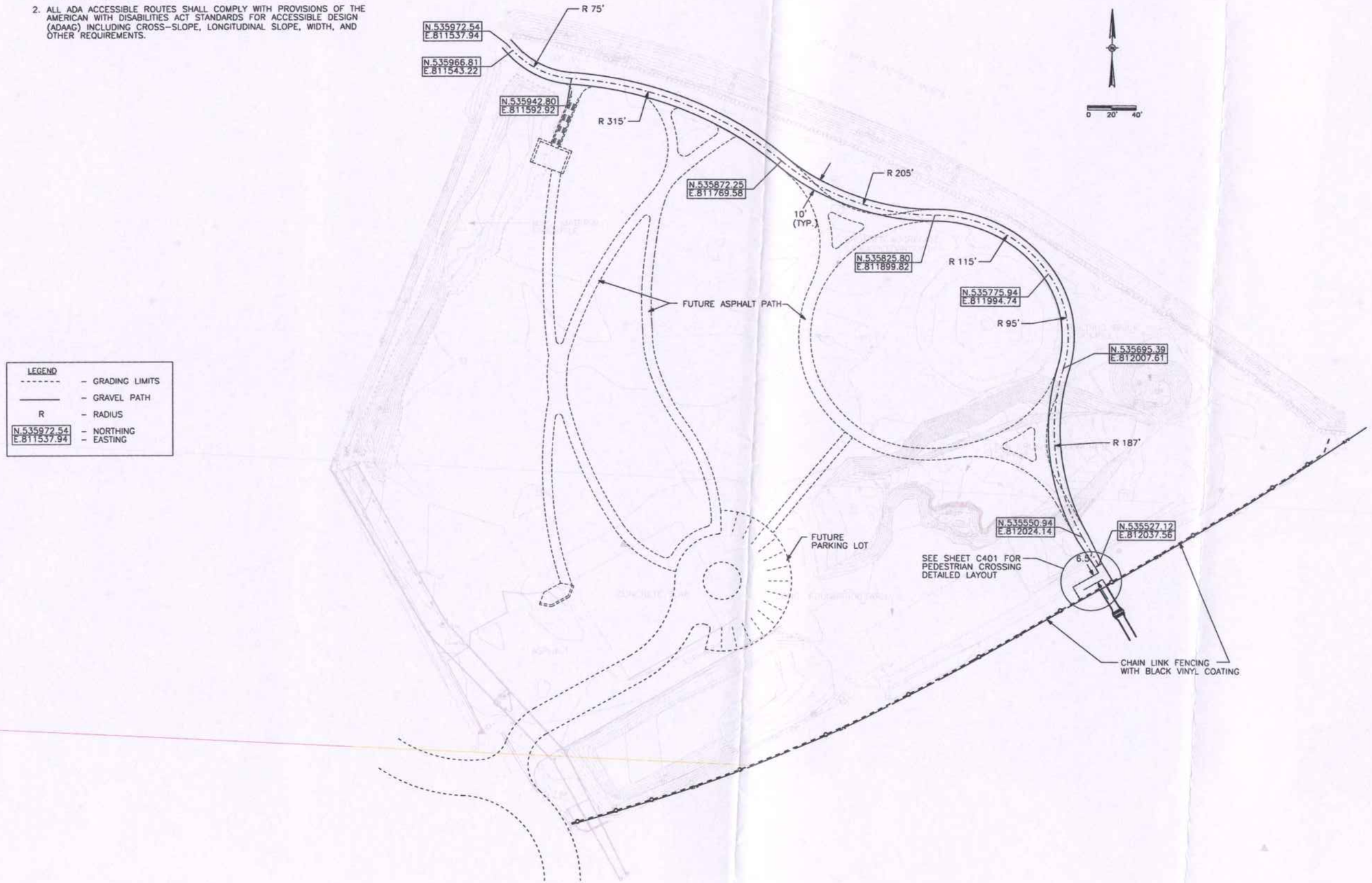
DRAWN:	CHECKED:		DRAWING:
SCALE: 1"=100'	APPROVED:	Top of Sludge Elevations	98276-11

APPENDIX D – DEVELOPMENT PLANS

- 2012 Park Site #1 Development Site Plan – C202
- 2012 Park Site #1 Development Grading Plan – C203
- 2012 Park Site #1 Screen Berm Typical Cross-Section
- 2008 Park Site #2 Master Plan
- Arrowhead Park - Boardwalk Landing Location/Detail

GENERAL NOTES

1. ALL DIMENSIONS SHOWN ARE TO DECIMAL FEET. GRAVEL PATH RADIUS DIMENSIONS ARE TO CENTERLINE, UNLESS SPECIFIED OTHERWISE. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
2. ALL ADA ACCESSIBLE ROUTES SHALL COMPLY WITH PROVISIONS OF THE AMERICAN WITH DISABILITIES ACT STANDARDS FOR ACCESSIBLE DESIGN (ADAAG) INCLUDING CROSS-SLOPE, LONGITUDINAL SLOPE, WIDTH, AND OTHER REQUIREMENTS.



GRÄEF

1150 Springhurst Drive,
Suite 201
Green Bay, WI 54304-5950
920 / 592 9440
920 / 592 9445 fax

www.graef-usa.com

CONSULTANTS:

PROJECT TITLE:

HERB AND DOLLY SMITH
AND PARK SITE #1
PARK DEVELOPMENT

ISSUE:

PROJECT INFORMATION:

PROJECT NUMBER:	2011-2003.01
DATE:	03/16/12
DRAWN BY:	KAH
CHECKED BY:	
APPROVED BY:	PJS
SCALE:	1"=40'

SHEET TITLE:

PARK SITE #1
SITE PLAN

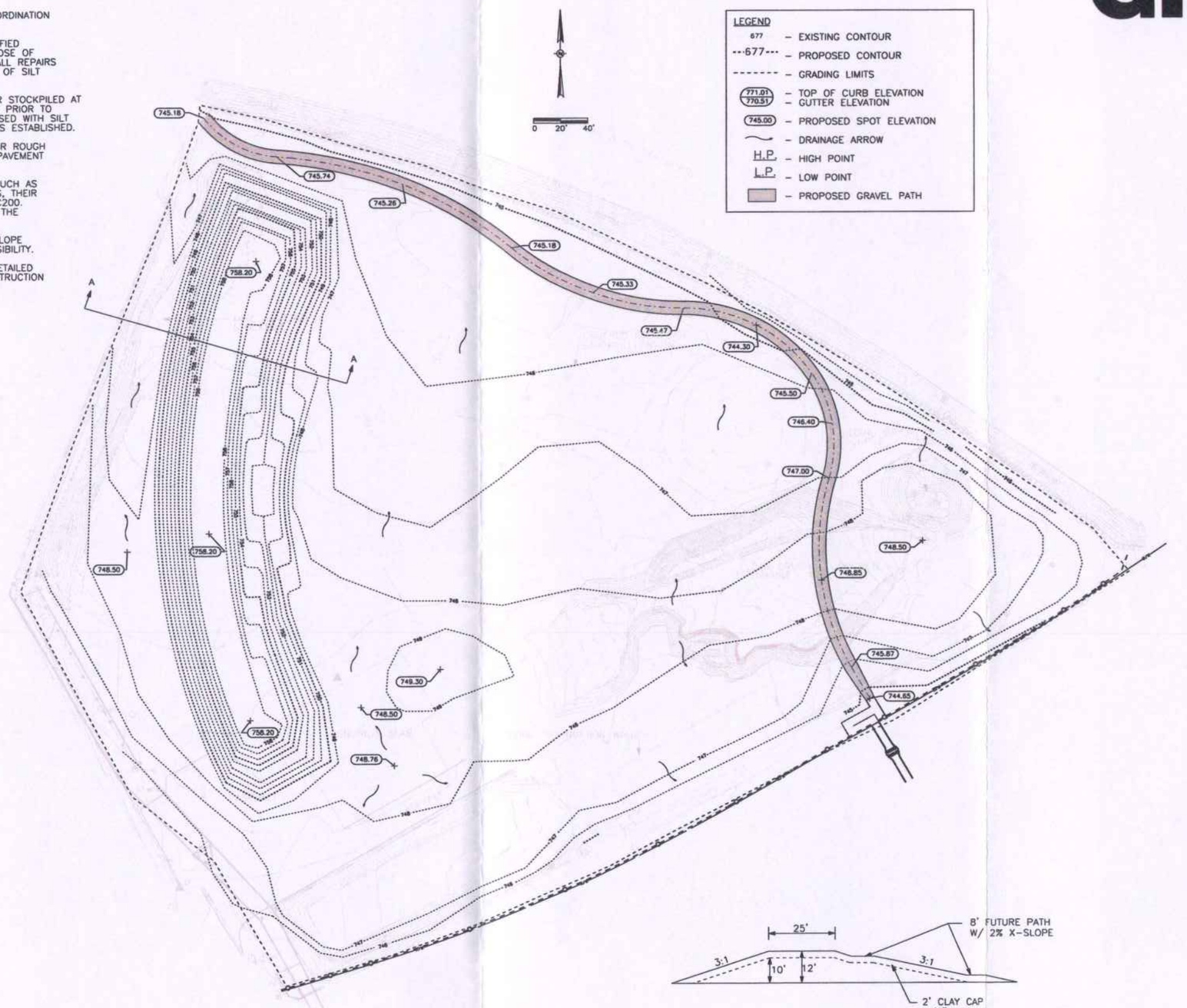
SHEET NUMBER:

C202

:011\20112007\CAD\Site\dgn\00\C202_Site Plan.dgn

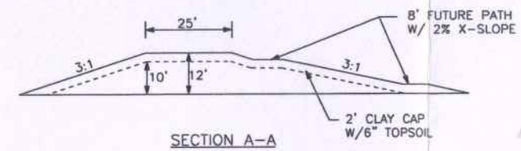
GENERAL NOTES

1. REFERENCE EROSION CONTROL PLAN AND SITE PLAN FOR COORDINATION OF WORK ON THIS SHEET.
2. FOLLOWING CONSTRUCTION AND THE ESTABLISHMENT OF SPECIFIED GROUND COVERS, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SEDIMENT CONTROL DEVICES. THE CONTRACTOR SHALL MAKE ALL REPAIRS OF LAWNS AND LANDSCAPED AREAS FOLLOWING THE REMOVAL OF SILT FENCES AND STAKES.
3. ALL EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE OR STOCKPILED AT LOCATIONS APPROVED BY THE CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF ANY MATERIAL. STOCKPILES SHALL BE ENCLOSED WITH SILT FENCE UNTIL TEMPORARY OR PERMANENT VEGETATIVE COVER IS ESTABLISHED.
4. THIS PLAN SHOWS NEW CONTOURS AND FINISHED GRADES. FOR ROUGH GRADES OF ALL PAVEMENT AREAS, SUBTRACT THICKNESS OF PAVEMENT AND BASE COURSE SPECIFIED.
5. WHEN SPOT ELEVATIONS SHOWN REFER TO CRITICAL POINTS SUCH AS PAVEMENT ANGLE POINTS AND CURVE-TANGENT INTERSECTIONS, THEIR LOCATION WILL CORRESPOND WITH COORDINATES SHOWN ON C200. VERIFY SPOT ELEVATION AND COORDINATE RELATIONSHIP WITH THE CONSTRUCTION REPRESENTATIVE.
6. FOR INTERPRETIVE PATH, MAINTAIN MAXIMUM LONGITUDINAL SLOPE OF 5% AND MAXIMUM CROSS-SLOPE OF 2% PER ADA ACCESSIBILITY.
7. REFER TO SECTION 00 81 00 – SPECIAL CONDITIONS FOR DETAILED INFORMATION ON GRADING ACTIVITIES RELATED TO BERM CONSTRUCTION AND USE OF STOCKPILED AND OTHER MATERIAL.



LEGEND

677	– EXISTING CONTOUR
677	– PROPOSED CONTOUR
	– GRADING LIMITS
771.01 / 770.51	– TOP OF CURB ELEVATION – GUTTER ELEVATION
745.00	– PROPOSED SPOT ELEVATION
	– DRAINAGE ARROW
H.P.	– HIGH POINT
L.P.	– LOW POINT
	– PROPOSED GRAVEL PATH



SECTION A–A

BERM TYPICAL SECTION

GRAEF

1150 Springhurst Drive,
Suite 201
Green Bay, WI 54304-5950
920 / 592 9440
920 / 592 9445 fax

www.graef-usa.com

CONSULTANTS:

PROJECT TITLE:

HERB AND DOLLY SMITH
AND PARK SITE #1
PARK DEVELOPMENT

ISSUE:

PROJECT INFORMATION:

PROJECT NUMBER:	2011-2003.01
DATE:	03/16/12
DRAWN BY:	KAH
CHECKED BY:	
APPROVED BY:	PJS
SCALE:	1"=40'

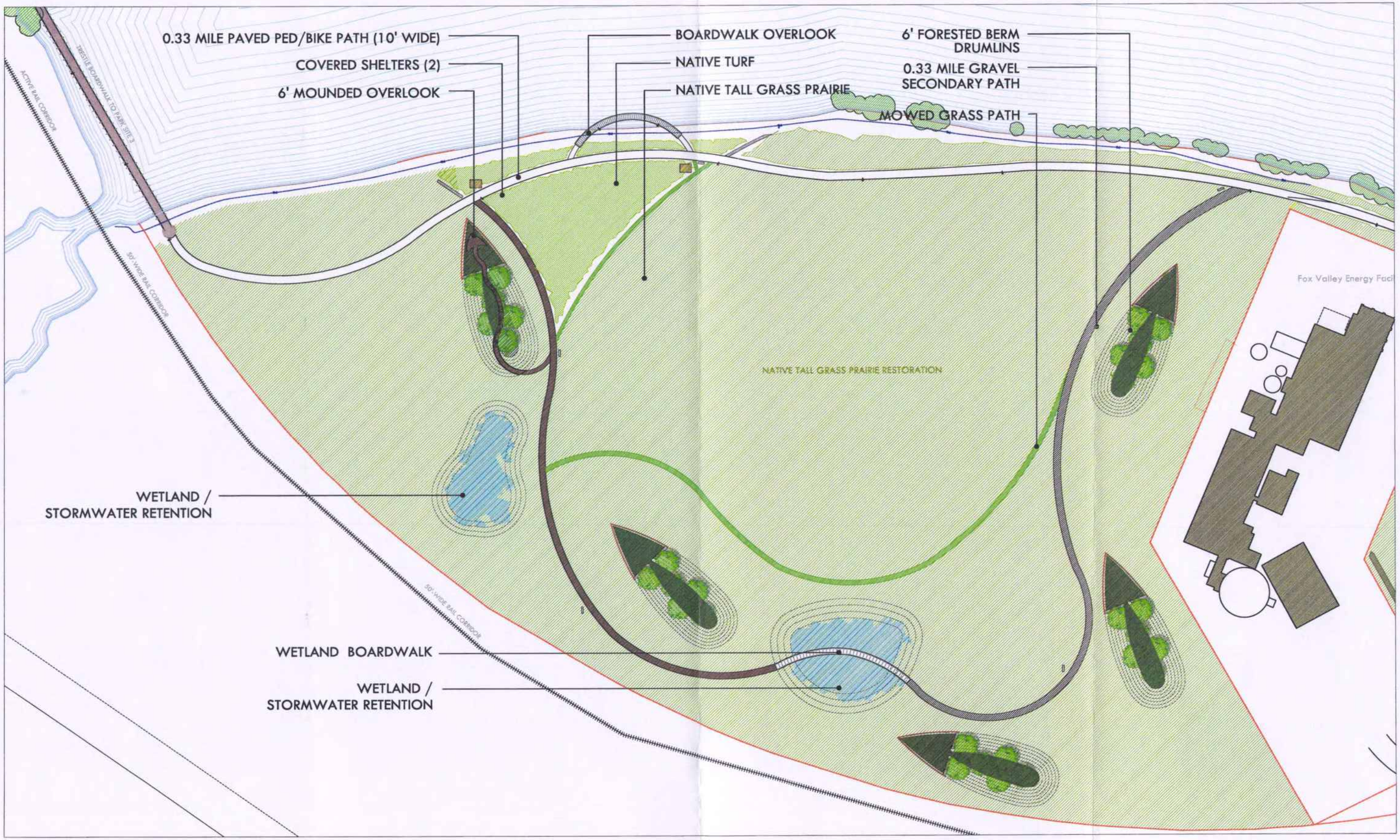
SHEET TITLE:

PARK SITE #1
SITE GRADING AND PAVING PLAN

SHEET NUMBER:

C203

2/23/2012
11:13:21 AM
J:\Jobs2011\20112007\CAD\Site\dgn\00\C203_Site Grading&Paving Plan.dgn



PDI PLANNING AND DESIGN INSTITUTE, INC.
241 N. BROADWAY · MILWAUKEE WI 53202 · 414 271 2545

GRAEF ASHALT SCHLOEMER

PARK SITE 2

• Little Lake Butte des Morts Properties •

0ft. 50 100

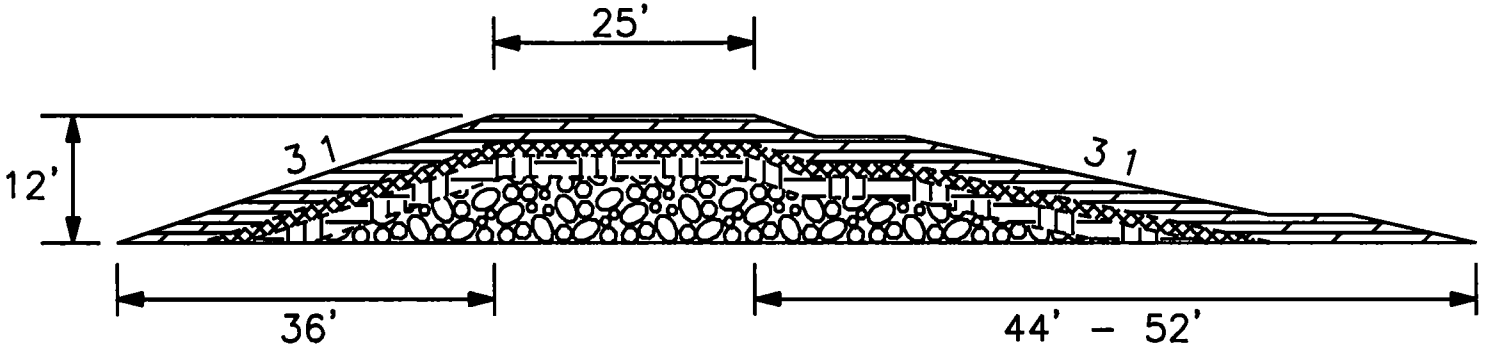
DECEMBER 2008

2' PERMANENT CLAY CAP
W/6" TOPSOIL

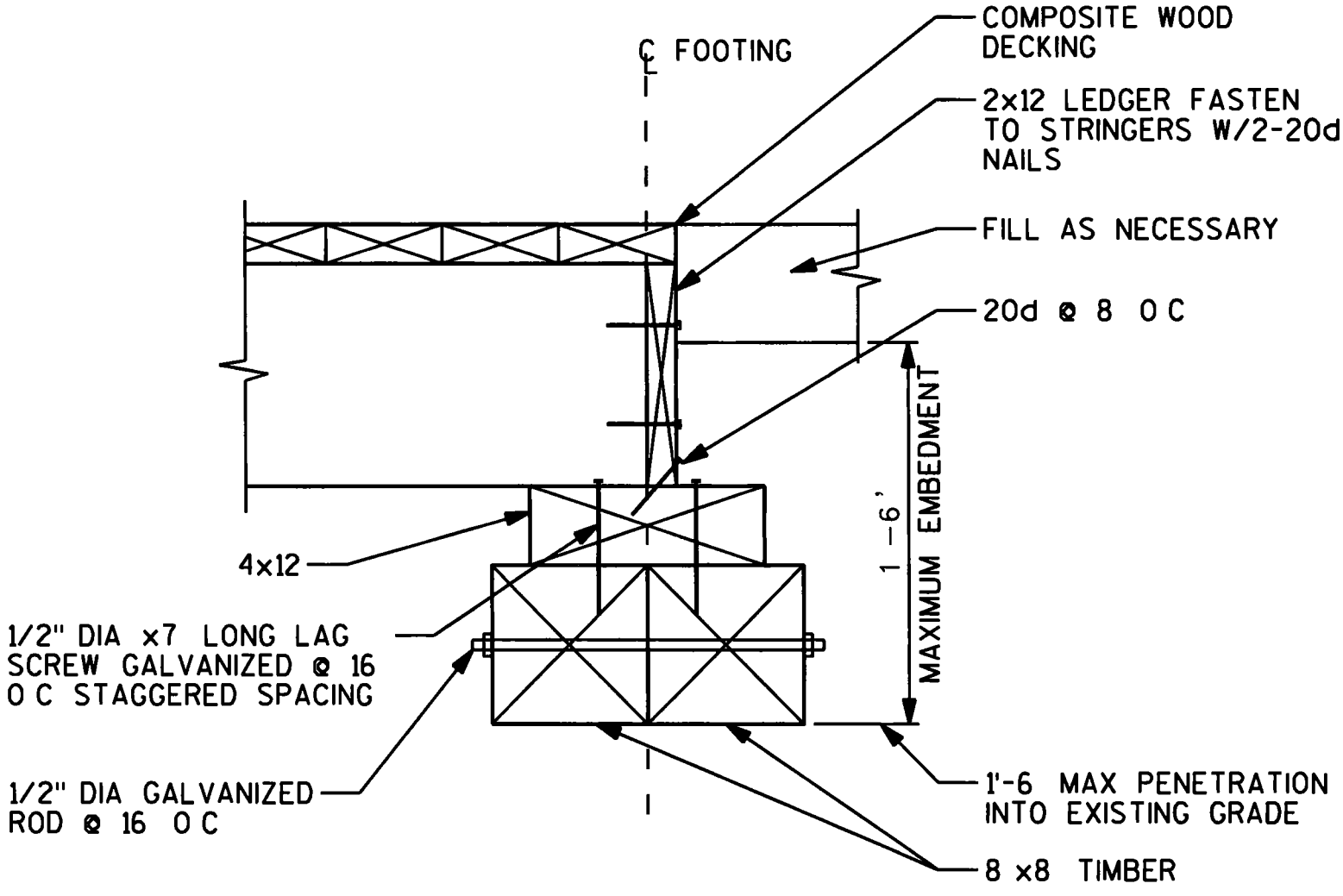
FUTURE PLEXUS DC2 BDLG SPOIL
1 25 FT THICK – ASH MATERIAL

2' INTERIM CLAY CAP
W/6" TOPSOIL (TOPSOIL TO REMOVED PRIOR TO PLACEMENT OF PLEXUS MATERIAL)

ASH MATERIAL CURRENTLY IN BERM FOOTPRINT
FROM AFFINITY PROJECT MINOR AMT OF MASONRY WITH LEAD
BASED PAINT FROM GATEWAY PLAZA PARK PROJECT

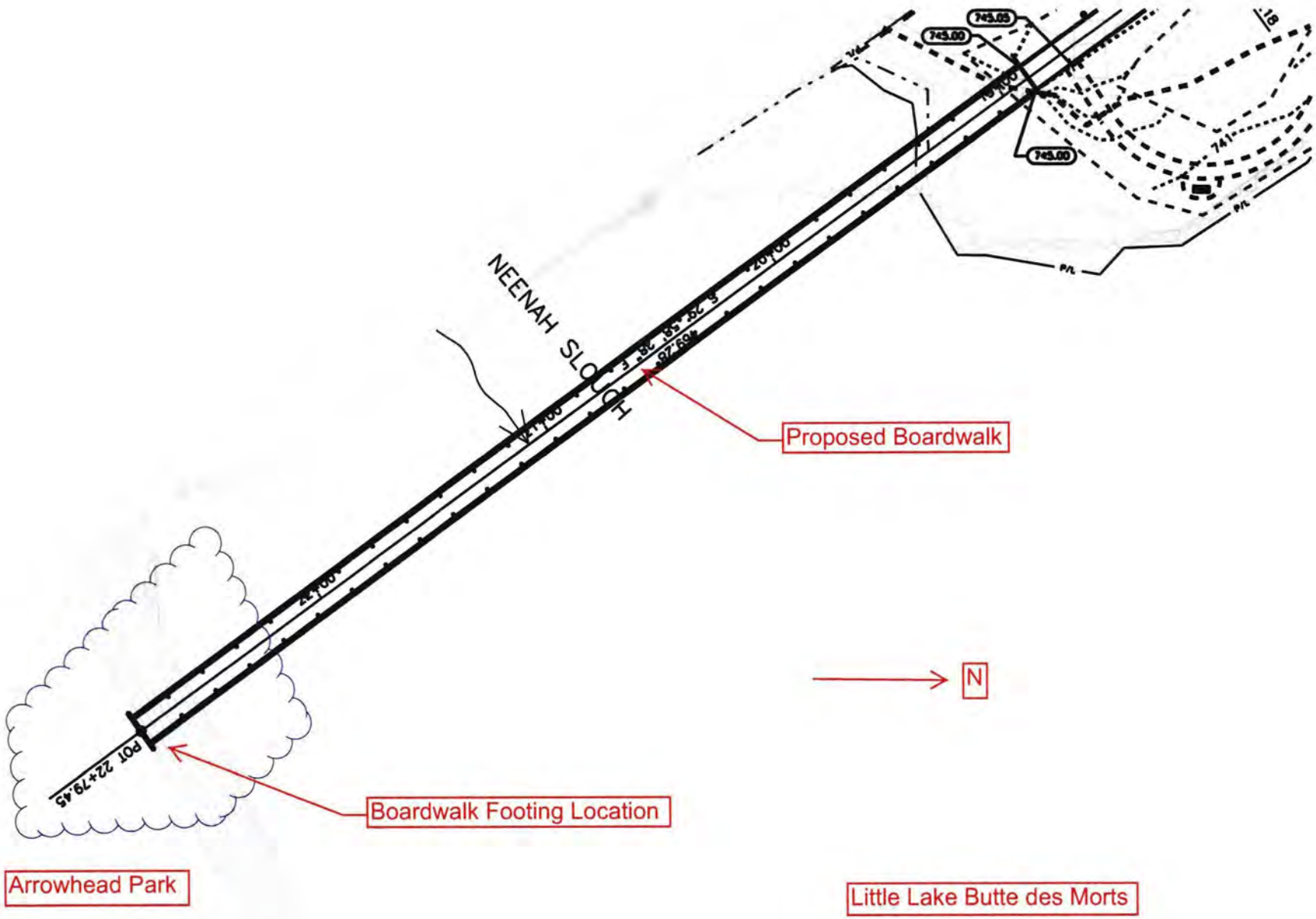


PARK SITE #1 BERM TYPICAL SECTION



FOOTING DETAIL - STA. 22+79.45

ARROWHEAD PARK LANDING


NEENAH SLOUGH
Proposed Boardwalk
Boardwalk Footing Location
Arrowhead Park
Little Lake Butte des Morts
N
745.00
745.05
745.00
745.00
741
PT
PT
PT
PT
POT 22+79.45
S 32° 58' 28" E
109.28'
20'
20'
20

APPENDIX E – SITE VISIT PHOTO LOG

City of Neenah Park Site #1 and Park Site #2 Site Visit Photo Locations

March 1, 2012

→ Photo Orientation

1 Photo Index

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

1: Well Nest PS-33 and excavation for a stormwater pond. Looking east near southwest entrance to Park Site #1.

2: Park Site #1 looking west-southwest from east end of the landfill. Aggregate stockpile is in the foreground.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

3: Park Site #1 looking west-northwest from east end of the landfill. Aggregate stockpile is in the foreground, outline of previous clarifier location and Fox Valley Energy Center in the background.

4: Park Site #1 looking southeast at new development.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

5: Existing berm along east side of Fox Valley Energy Center, looking south.

6: Southwest entrance to Park Site #1 looking north.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

7: Looking north from Park Site #1. Monitoring well PS-15 shown in center of the photo.

8: Submerged storm sewer outlet near the north east corner of the Fox Valley Energy Center parcel.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

9: Top of bulkhead dike looking west from the area north of the Fox Valley Energy Center.

10: Looking south from the bulkhead dike along the west side of the Fox River Valley Energy Center.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

11: Looking northwest from the landfill. The photo shows a small open water area caused by snow melt collected in a shallow depression.

12: Small area of thin vegetation located approximately 200 feet west of the Fox River Energy. Surface included aggregate and gravel.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

13: Looking southwest from south-central area of the landfill.

14: Looking south from south-central area of the landfill.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

15: Looking north from the central area of the landfill.

16: Looking west-northwest from the central portion of the landfill.

City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

17: Looking east from the western portion of the landfill. The Fox Valley Energy Center is in the background.

18: Looking east along the riprap slope of the bulkhead dike.

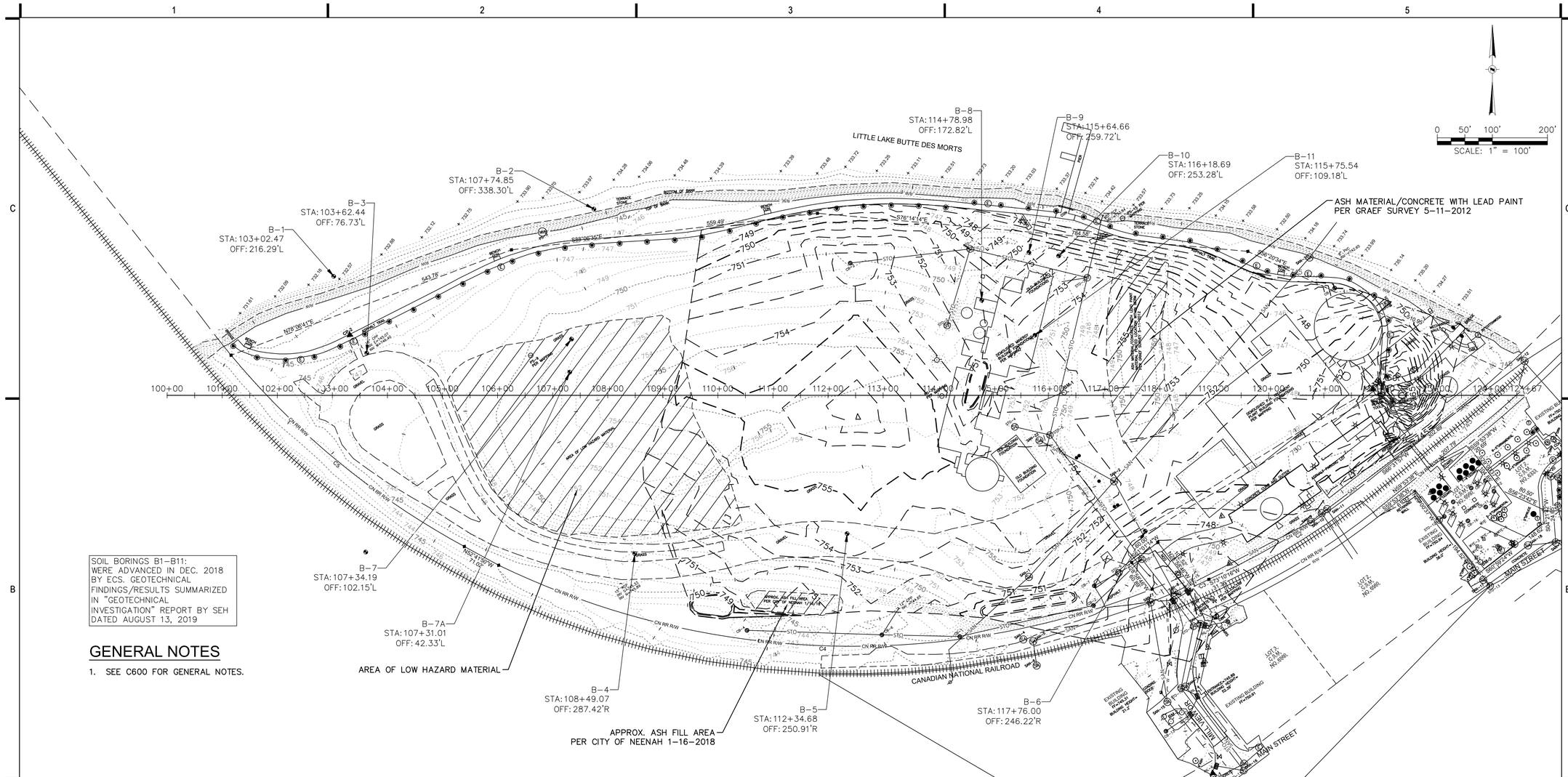
City of Neenah Park Site #1 and Park Site #2 Site Visit Photos

March 1, 2012

19: Looking west at the outlet of the Neenah Slough. The area in the foreground is the proposed location of the Park Site #2 landing.

20: Looking easterly along the railroad embankment at the west end of the landfill.

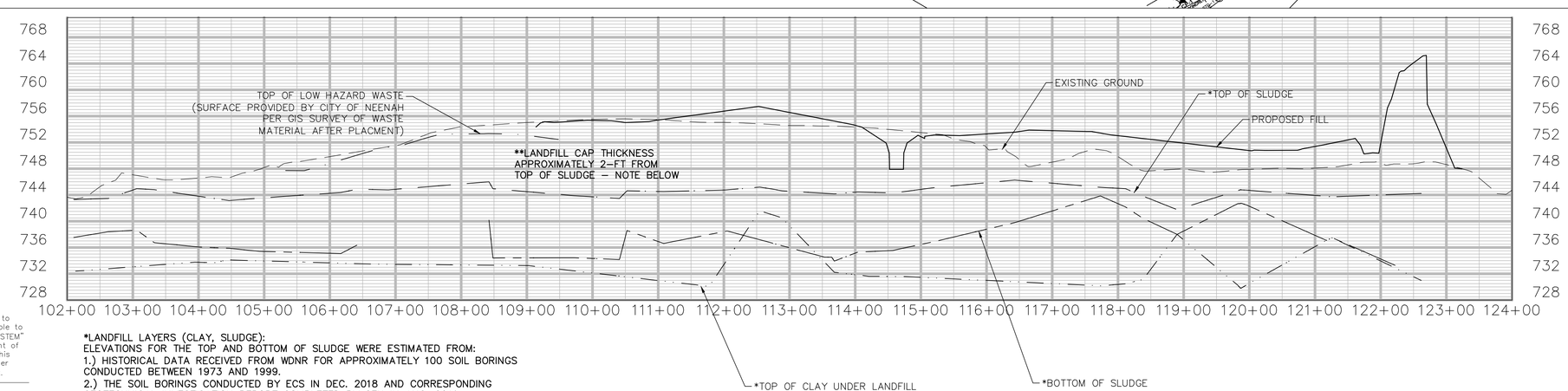
Appendix E Existing Landfill Plan and Profile



SOIL BORINGS B1–B11:
WERE ADVANCED IN DEC. 2018
BY ECS. GEOTECHNICAL
FINDINGS/RESULTS SUMMARIZED
IN "GEOTECHNICAL
INVESTIGATION" REPORT BY SEH
DATED AUGUST 13, 2019

GENERAL NOTES

1. SEE C600 FOR GENERAL NOTES.



NOTICE:
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

DISCLAIMER:
The underground utilities shown have been located from field survey information and existing drawings. GRAEF makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. GRAEF further does not warrant that the underground utilities shown are in the exact location indicated. GRAEF has not physically located the underground utilities.

*LANDFILL LAYERS (CLAY, SLUDGE):
ELEVATIONS FOR THE TOP AND BOTTOM OF SLUDGE WERE ESTIMATED FROM:
1.) HISTORICAL DATA RECEIVED FROM WDNR FOR APPROXIMATELY 100 SOIL BORINGS CONDUCTED BETWEEN 1973 AND 1999.
2.) THE SOIL BORINGS CONDUCTED BY ECS IN DEC. 2018 AND CORRESPONDING GEOTECHNICAL INVESTIGATION REPORT COMPLETED BY SEH IN AUG. 2019.

**LANDFILL CAP THICKNESS
PER CONVERSATIONS HELD WITH WDNR IN PRELIMINARY DESIGN PHASE (FALL/WINTER 2024), THE THICKNESS OF THE LANDFILL CAP FROM THE TOP OF SLUDGE IS APPROXIMATELY 2-FT.

GRAEF
116 S Adams Street,
Suite 201
Green Bay, WI 54301-4543
920 / 592 9440

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY
	02/14/25	WDNR PLAN MODIFICATION REQUEST	

PROJECT TITLE:
ARROWHEAD PARK DEVELOPMENT

PROJECT INFORMATION:

PROJECT NUMBER:	2024-0286.00
DATE:	02-14-2025
DRAWN BY:	CEP
CHECKED BY:	MEG
APPROVED BY:	PJS
SCALE:	AS NOTED

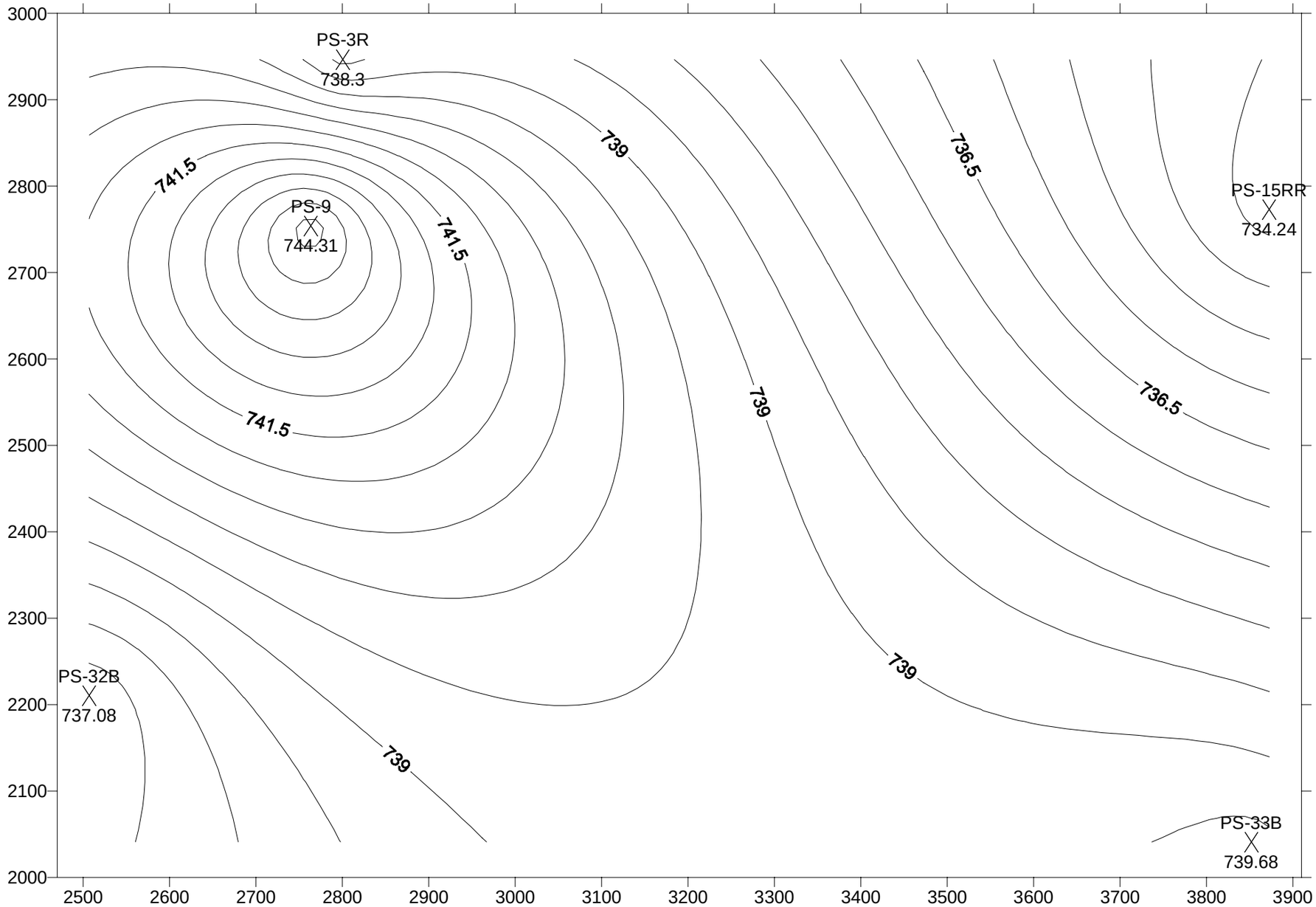
SHEET TITLE:
EXISTING LANDFILL LAYERS WITH PROPOSED SURFACE GRADE

SHEET NUMBER:
C101

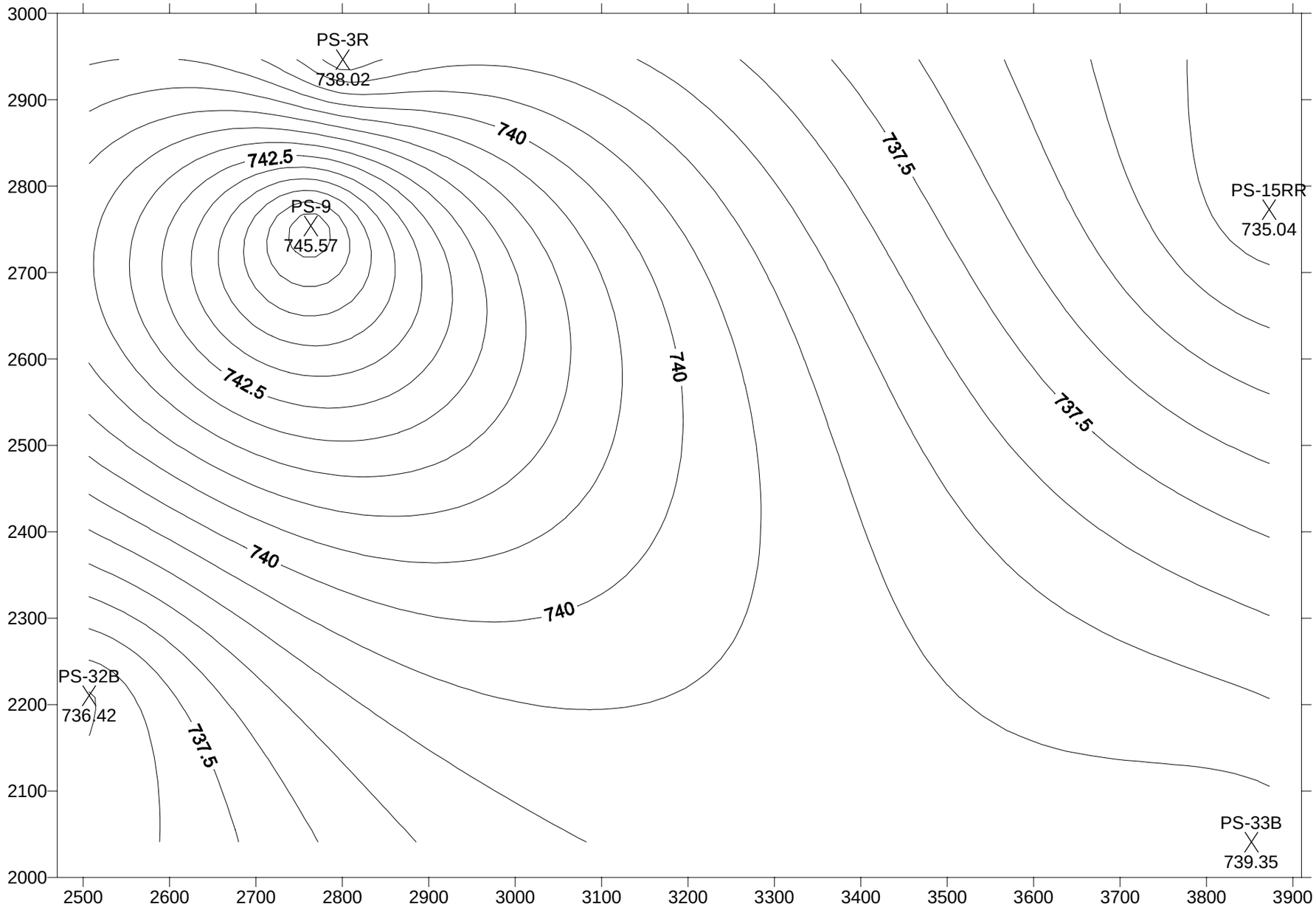
X:\GB\2024\20240286\Design\Civil\00\C_00_C101_ExistingLandfillLayersWithProposedSurfaceGrade
2/14/2025 11:20 AM

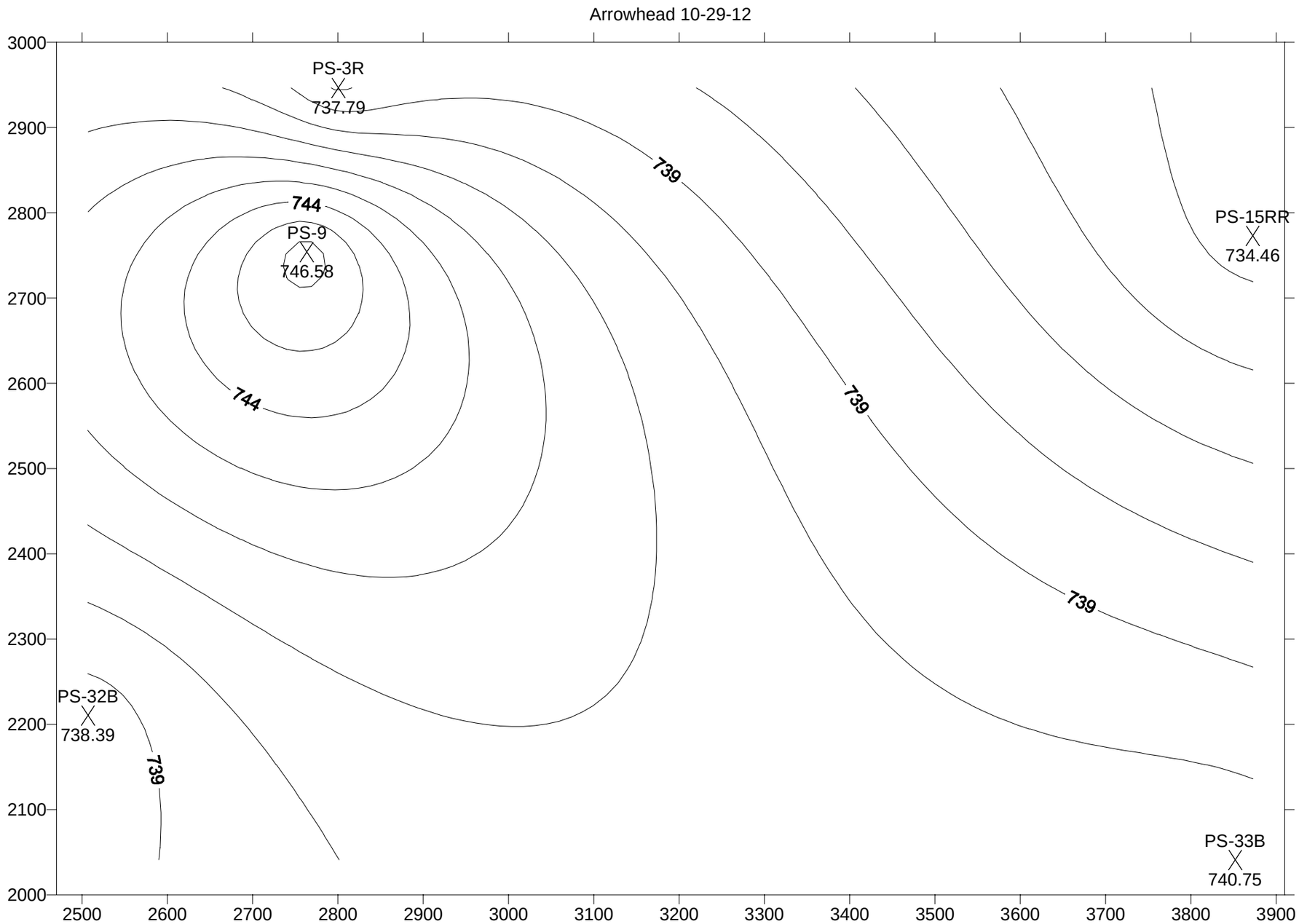
Appendix F Groundwater Flow and Quality Data

Arrowhead 10-7-10



Arrowhead 10-14-11




Arrowhead 10-29-12
PS-3R
737.79
PS-9
746.58
PS-15RR
734.46
PS-32B
738.39
PS-33B
740.75
744
739
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
2500
2600
2700
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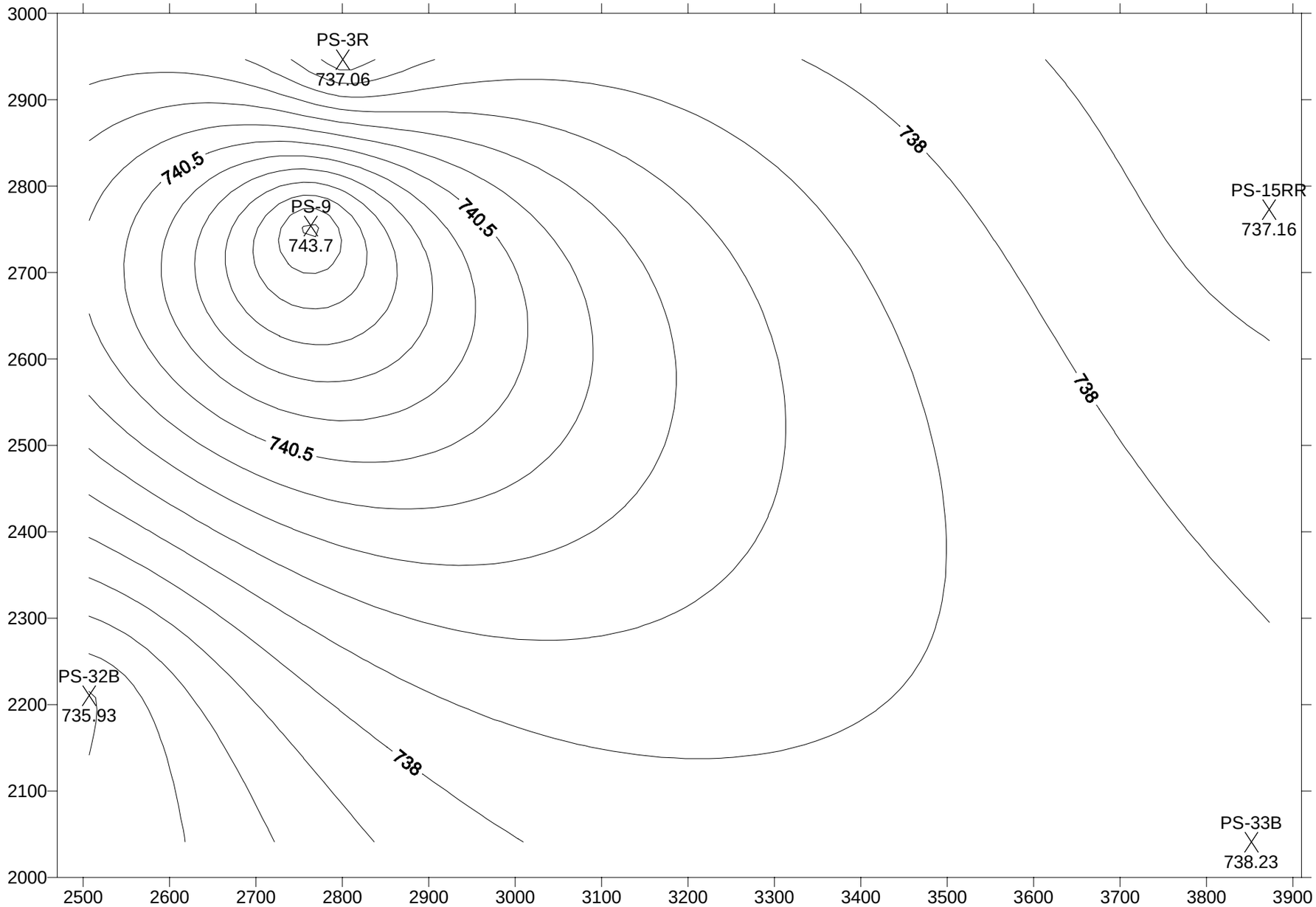
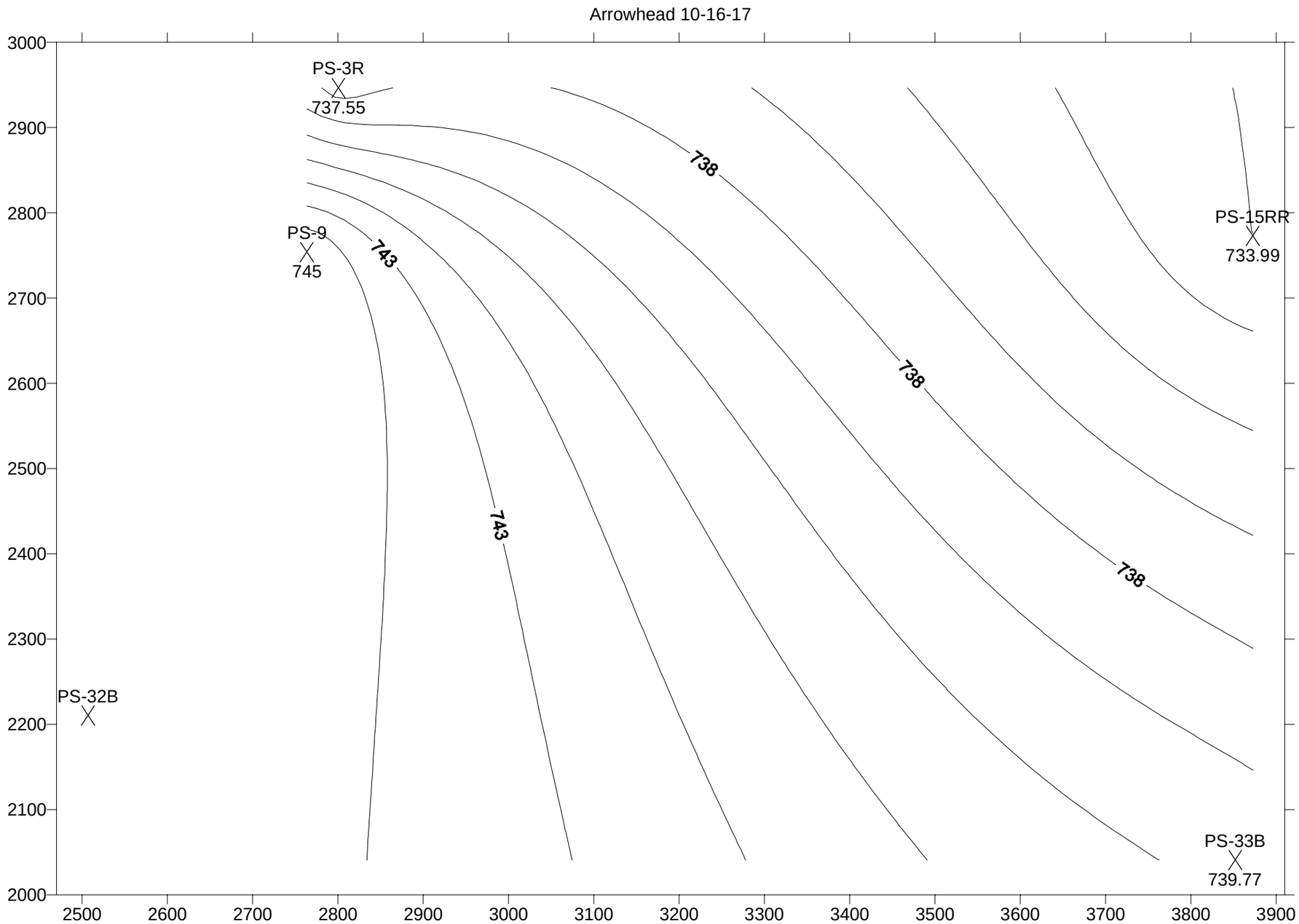
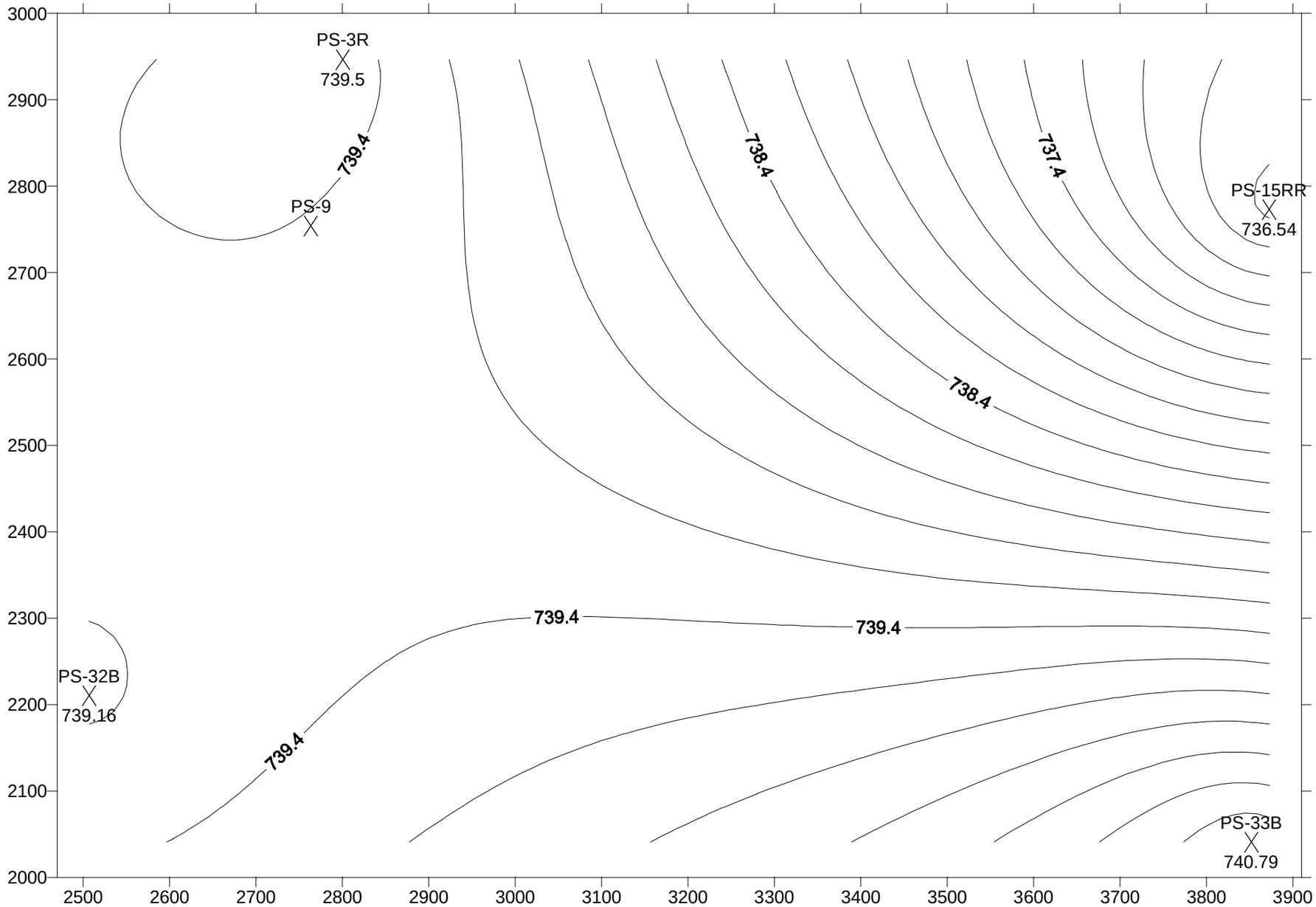
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900

Arrowhead 10-14-13

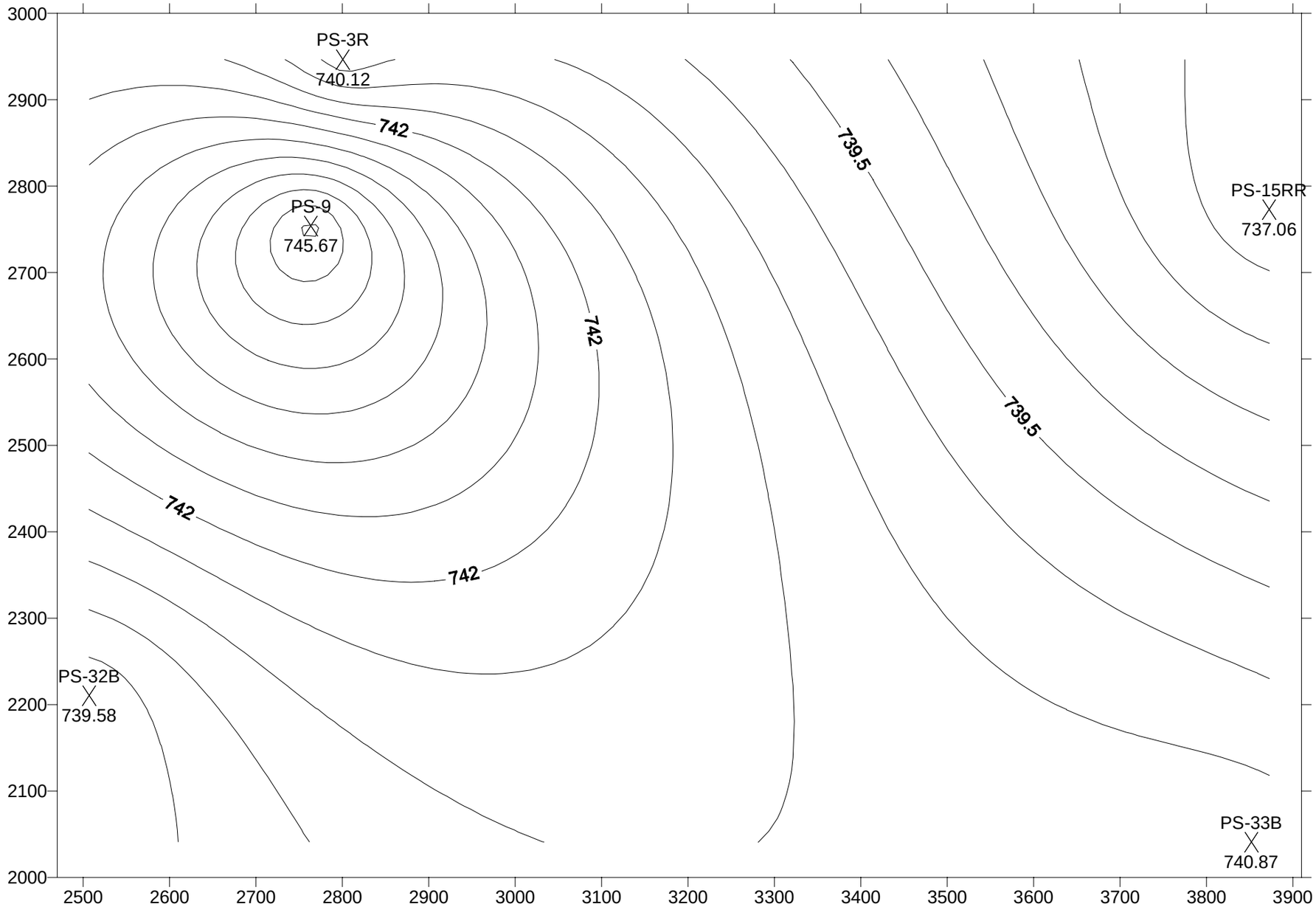



Arrowhead 10-16-17
PS-3R
737.55
PS-9
745
PS-15RR
733.99
PS-32B
PS-33B
739.77
743
743
738
738
738
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900

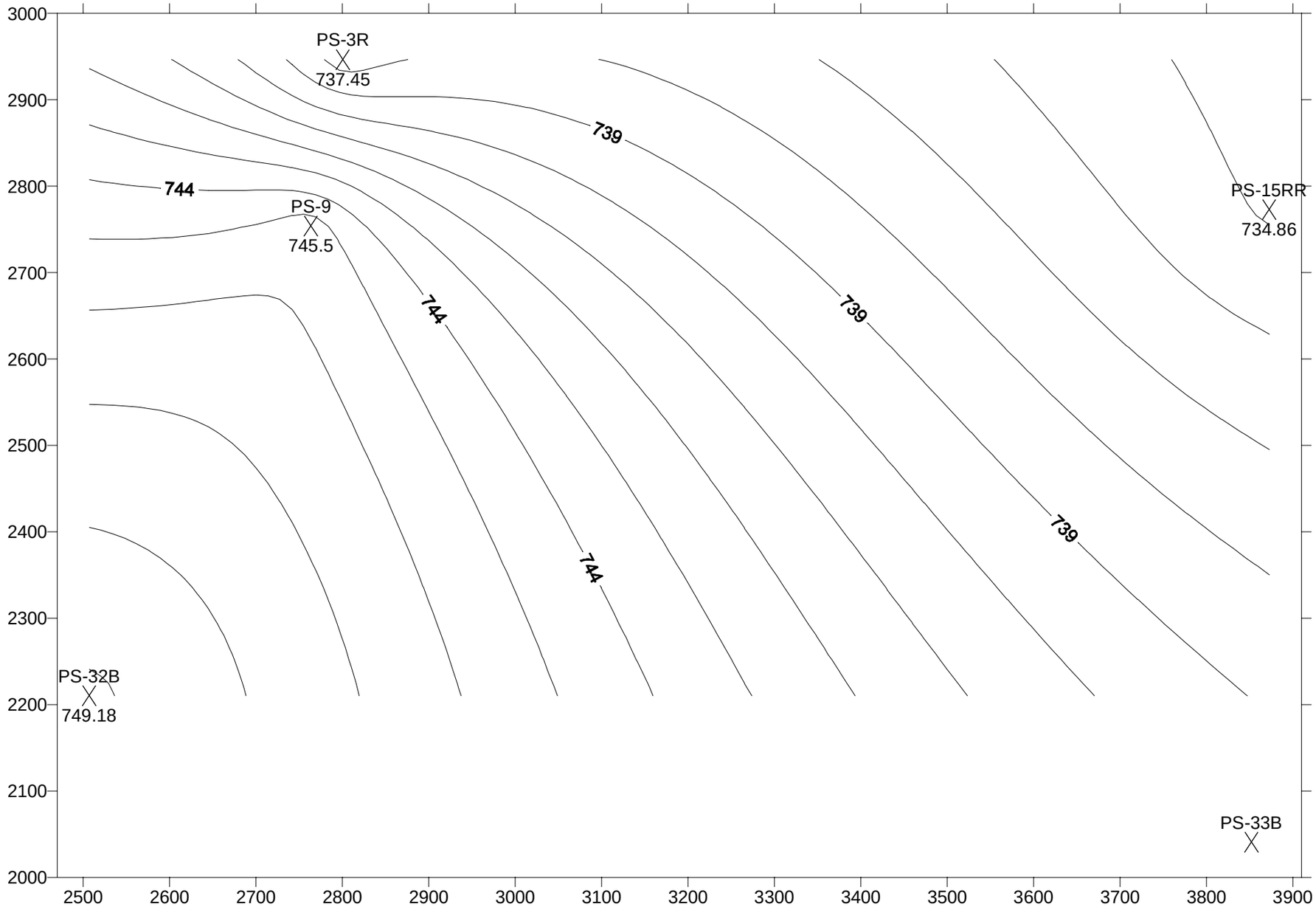
Arrowhead 10-22-18

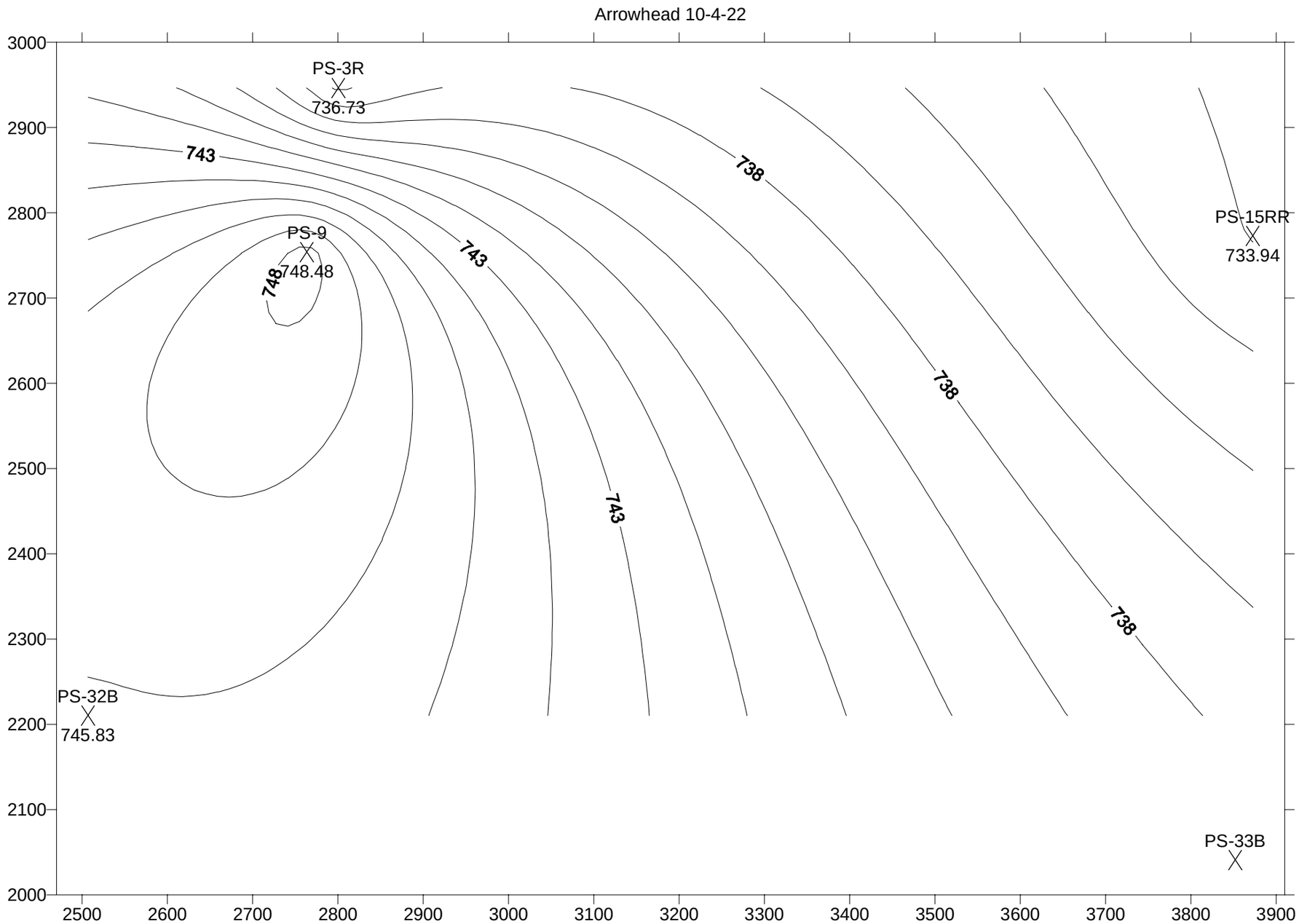


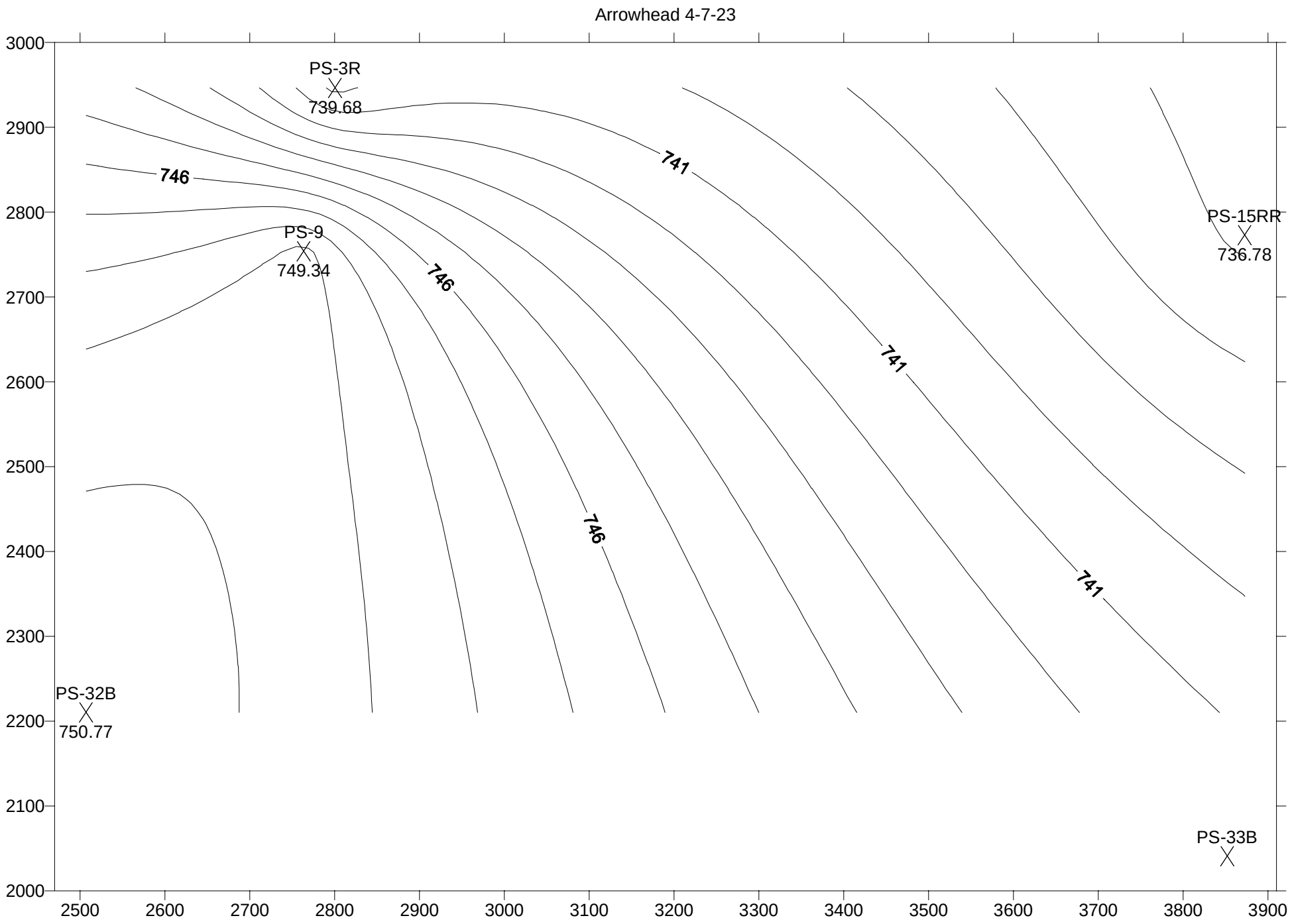
Arrowhead 10-17-19



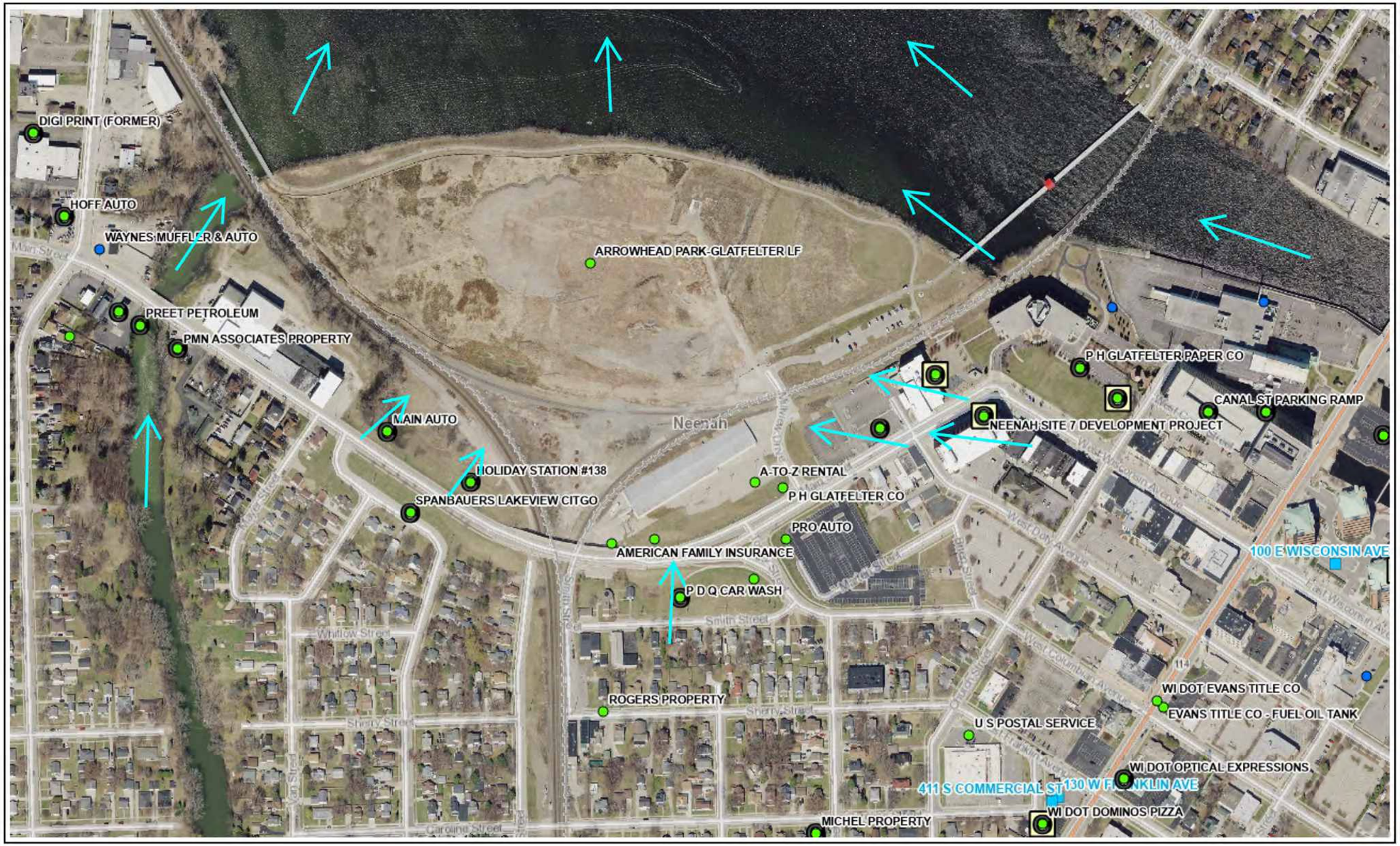
Arrowhead 10--7-21




Arrowhead 10-4-22
PS-3R
736.73
PS-9
748.48
PS-15RR
733.94
PS-32B
745.83
PS-33B
743
748
738
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900


Arrowhead 4-7-23
PS-3R
739.68
PS-9
749.34
PS-15RR
736.78
PS-32B
750.77
PS-33B
746
741
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900

Regional Groundwater/Surface Water Flow Near Arrowhead Park



Legend

- Open Site
- Closed Site
- Continuing Obligations Apply
- Affected Another Property or Right-of-Wa
- Facility-wide Site
- Affected by Contamination from Another Property
- Railroads
- Groundwater/Surface Water Flow directions

0.1 0 0.06 0.1 Miles

NAD_1983_HARN_Wisconsin_TM

1: 3,960

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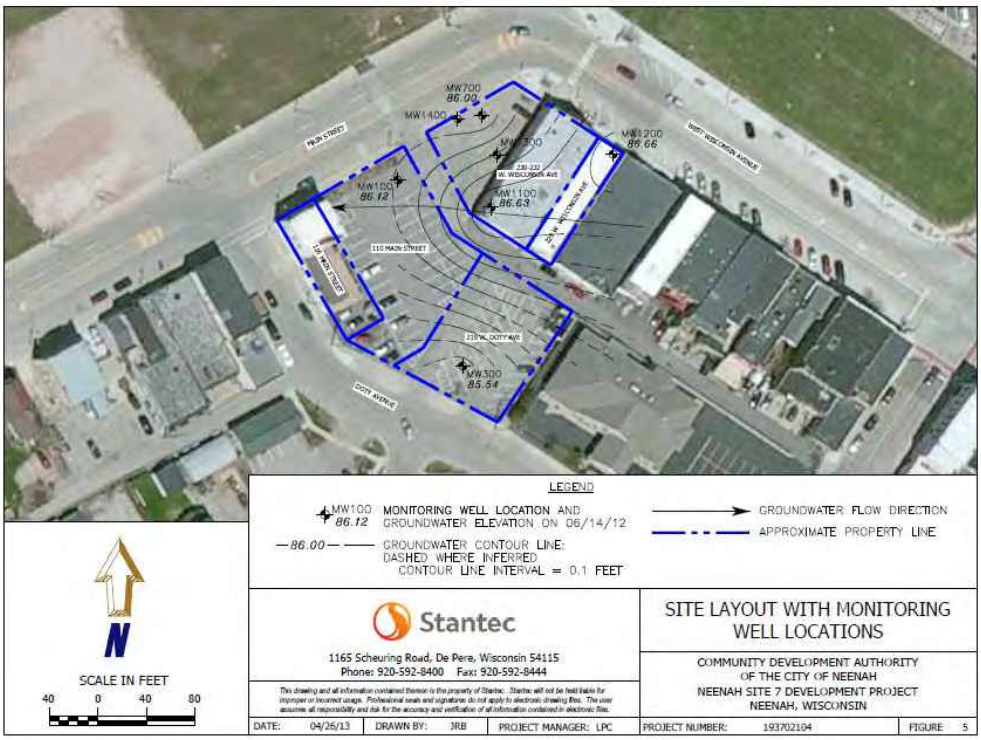
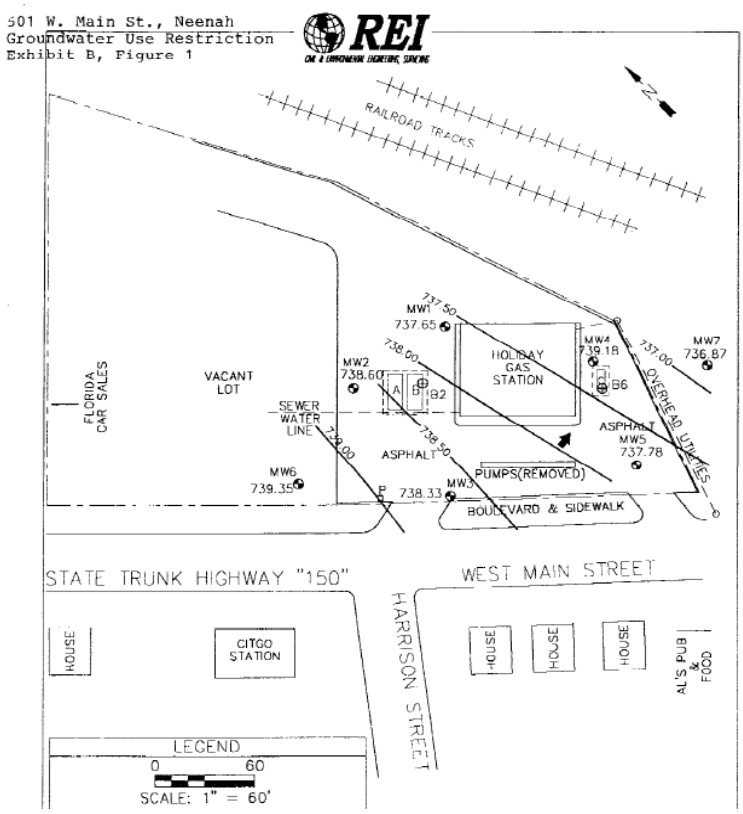
Note: Not all sites are mapped.

Notes

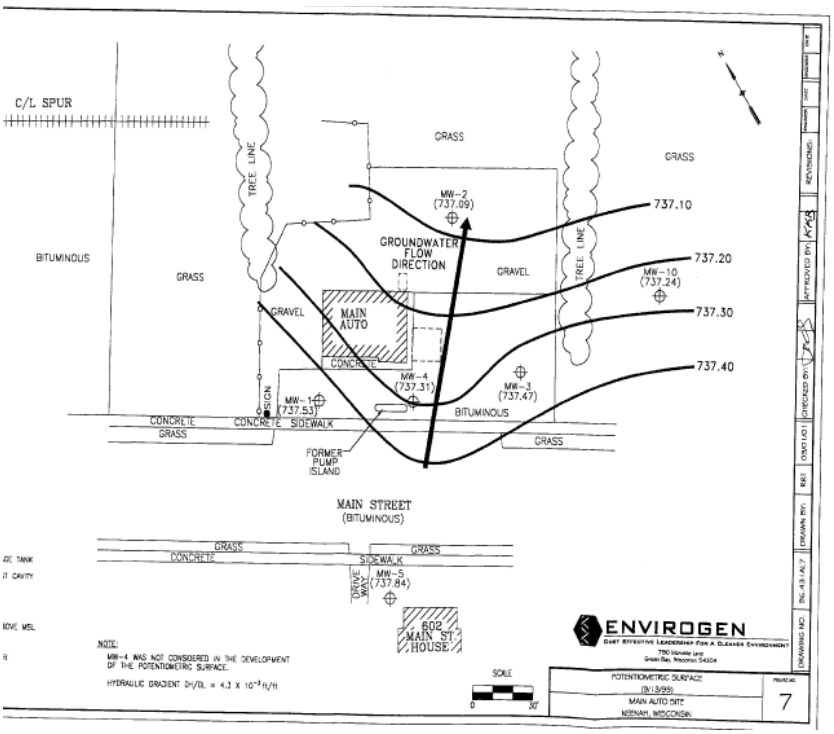
- Neenah Site 7 Dev Project (03-71-559006) Groundwater Flow



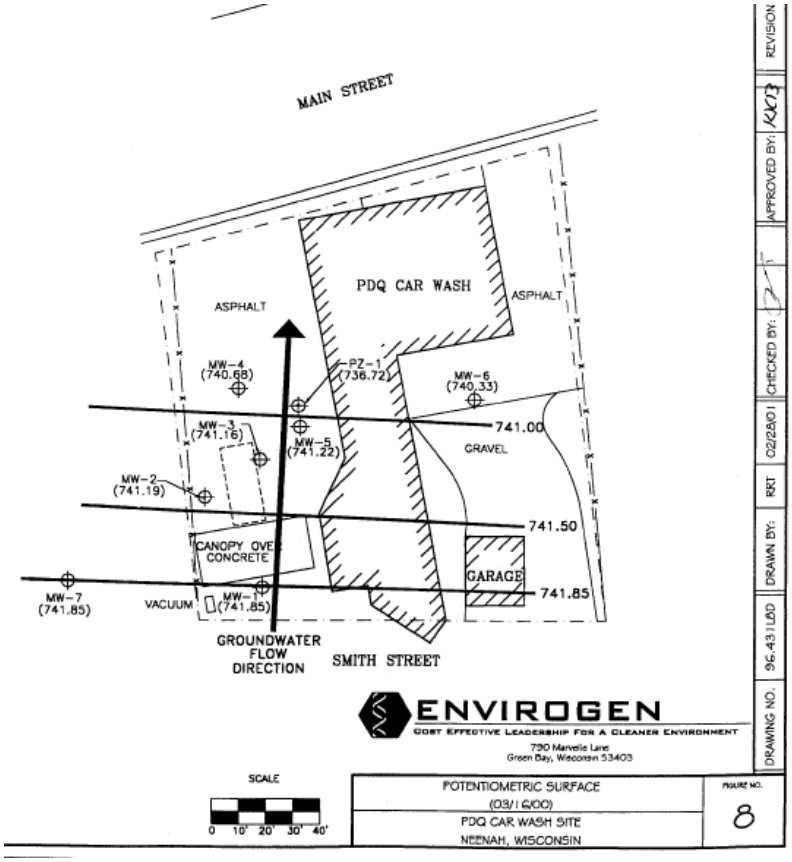
- Holiday Station #138 (03-71-001335) Groundwater Flow



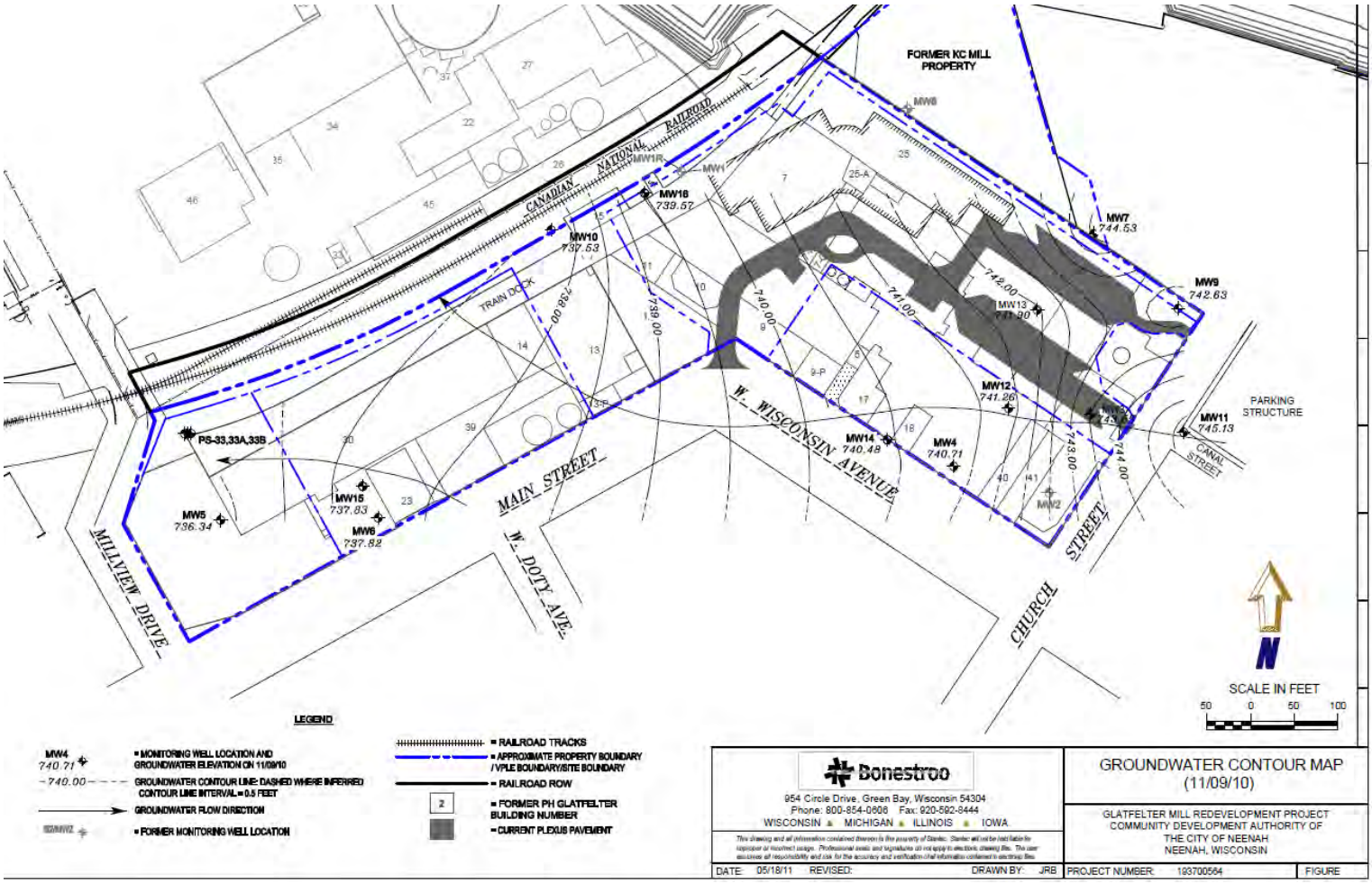
- Main Auto (03-71-111521) Groundwater Flow

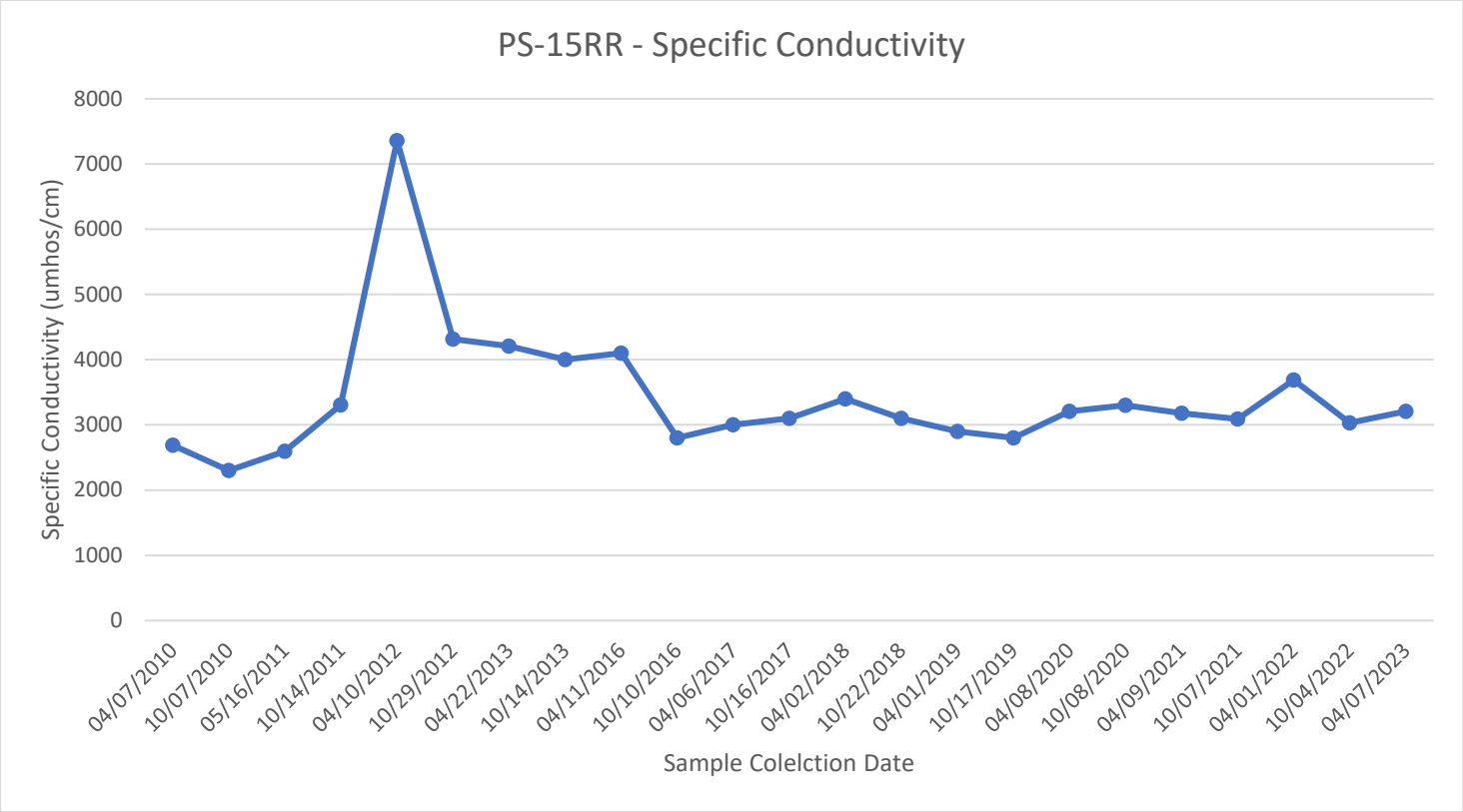


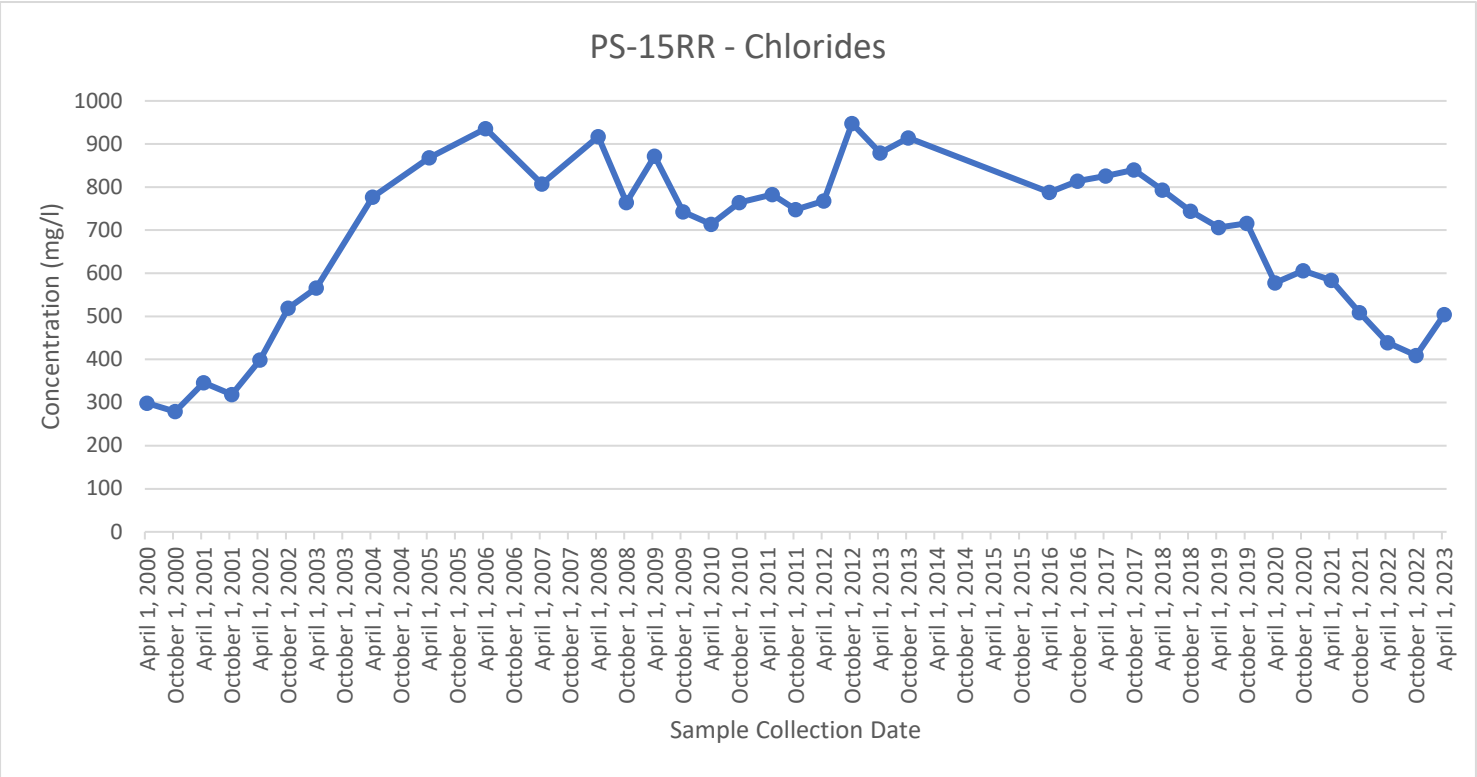
- PDQ Car Wash (03-71-111516) Groundwater Flow



- PH Glatfelter Paper Co (03-71-001314) Groundwater Flow




PS-15RR - Specific Conductivity
Specific Conductivity (umhos/cm)
8000
7000
6000
5000
4000
3000
2000
1000
0
04/07/2010
10/07/2010
05/16/2011
10/14/2011
04/10/2012
10/29/2012
04/22/2013
10/14/2013
04/11/2016
10/10/2016
04/06/2017
10/16/2017
04/02/2018
10/22/2018
04/01/2019
10/17/2019
04/08/2020
10/08/2020
04/09/2021
10/07/2021
04/01/2022
10/04/2022
04/07/2023
Sample Colelction Date


PS-15RR - Chlorides
Concentration (mg/l)
1000
900
800
700
600
500
400
300
200
100
0
April 1, 2000
October 1, 2000
April 1, 2001
October 1, 2001
April 1, 2002
October 1, 2002
April 1, 2003
October 1, 2003
April 1, 2004
October 1, 2004
April 1, 2005
October 1, 2005
April 1, 2006
October 1, 2006
April 1, 2007
October 1, 2007
April 1, 2008
October 1, 2008
April 1, 2009
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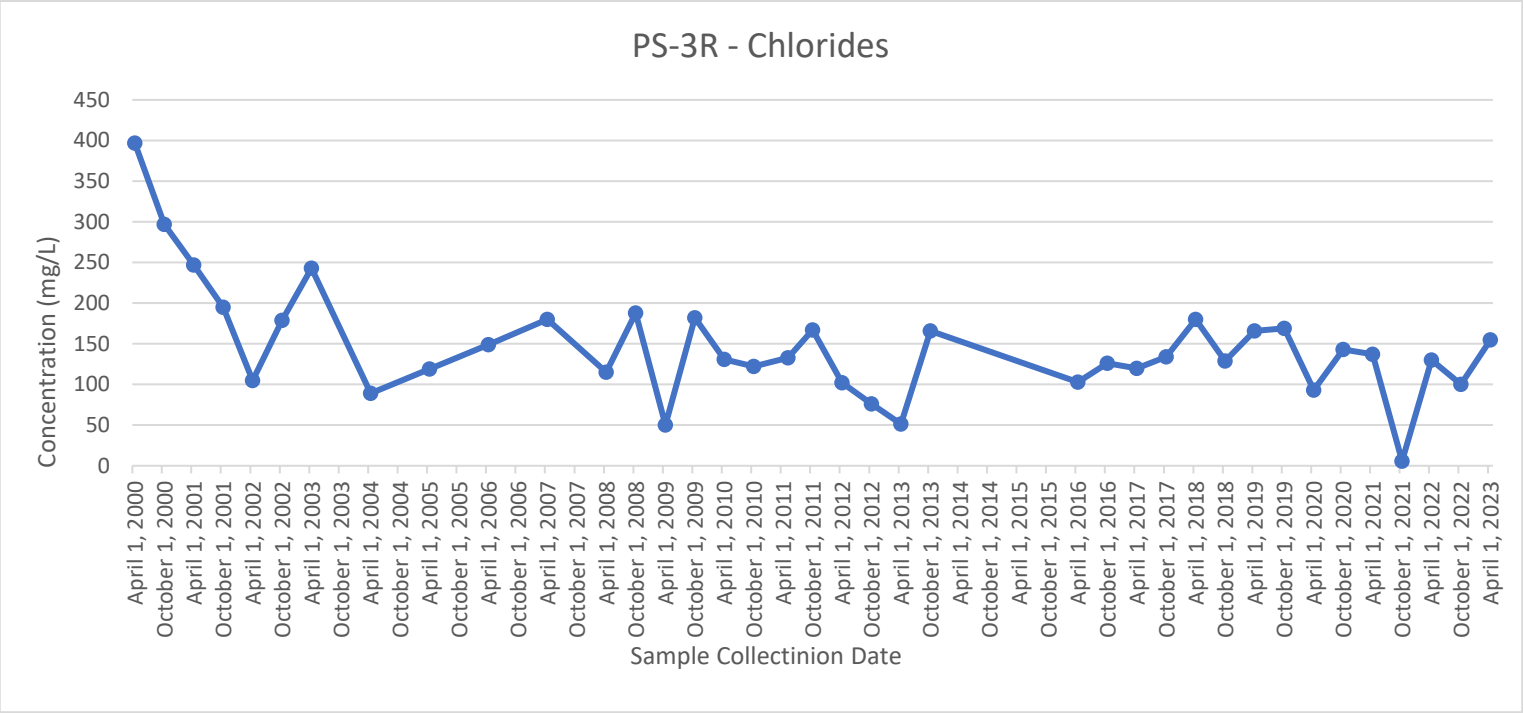
April 1, 2013
October 1, 2013
April 1, 2014
October 1, 2014
April 1, 2015
October 1, 2015
April 1, 2016
October 1, 2016
April 1, 2017
October 1, 2017
April 1, 2018
October 1, 2018
April 1, 2019
October 1, 2019
April 1, 2020
October 1, 2020
April 1, 2021
October 1, 2021
April 1, 2022
October 1, 2022
April 1, 2023
Sample Collection Date


PS-3R - Chlorides
Concentration (mg/L)
450
400
350
300
250
200
150
100
50
0
April 1, 2000
October 1, 2000
April 1, 2001
October 1, 2001
April 1, 2002
October 1, 2002
April 1, 2003
October 1, 2003
April 1, 2004
October 1, 2004
April 1, 2005
October 1, 2005
April 1, 2006
October 1, 2006
April 1, 2007
October 1, 2007
April 1, 2008
October 1, 2008
April 1, 2009
October 1, 2009
April 1, 2010
October 1, 2010
April 1, 2011
October 1, 2011
April 1, 2012
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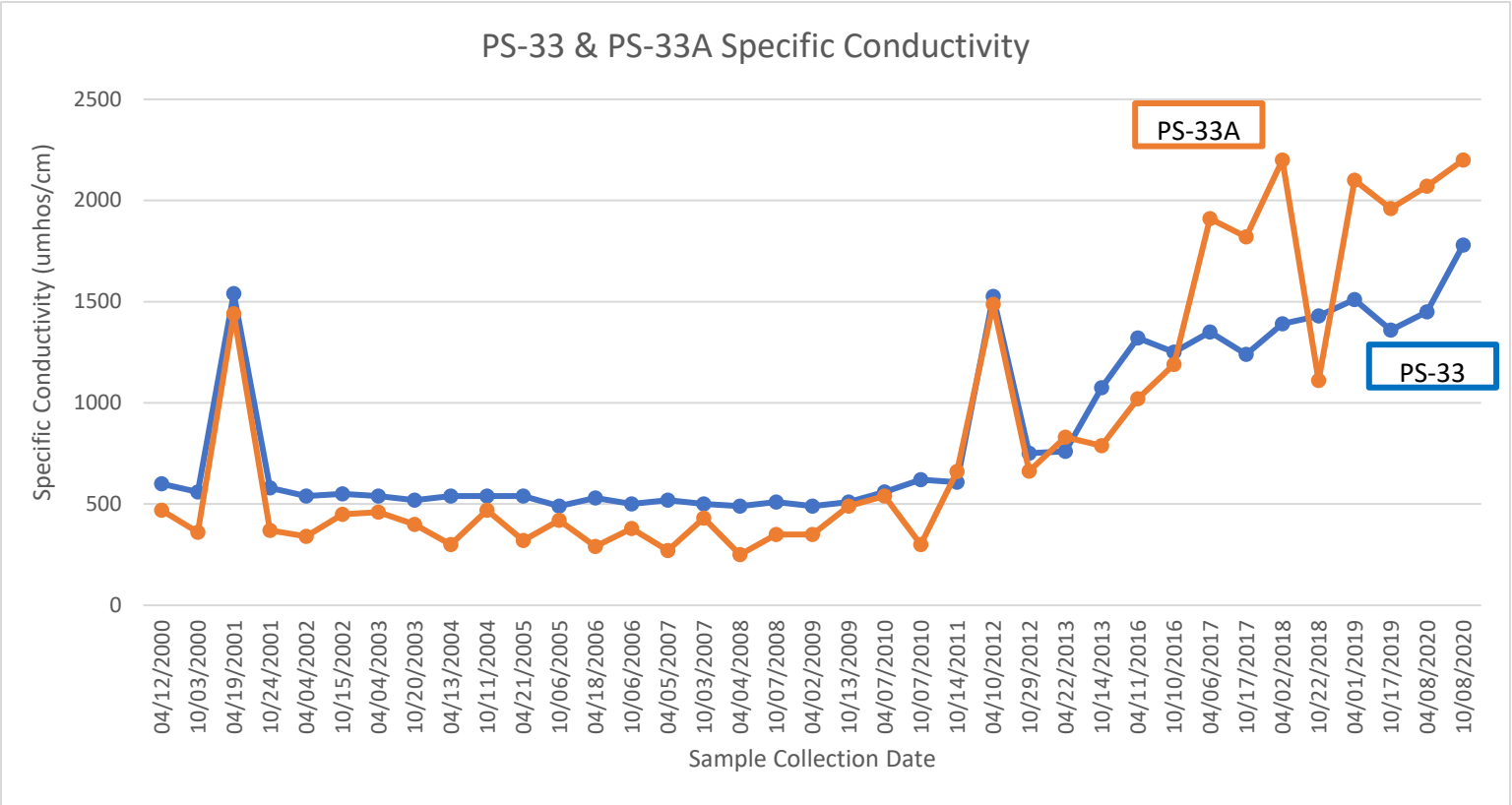
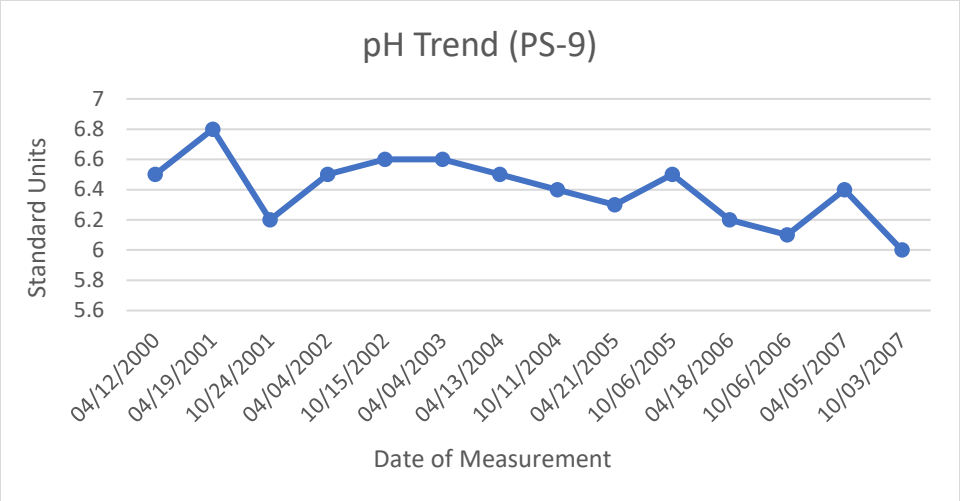
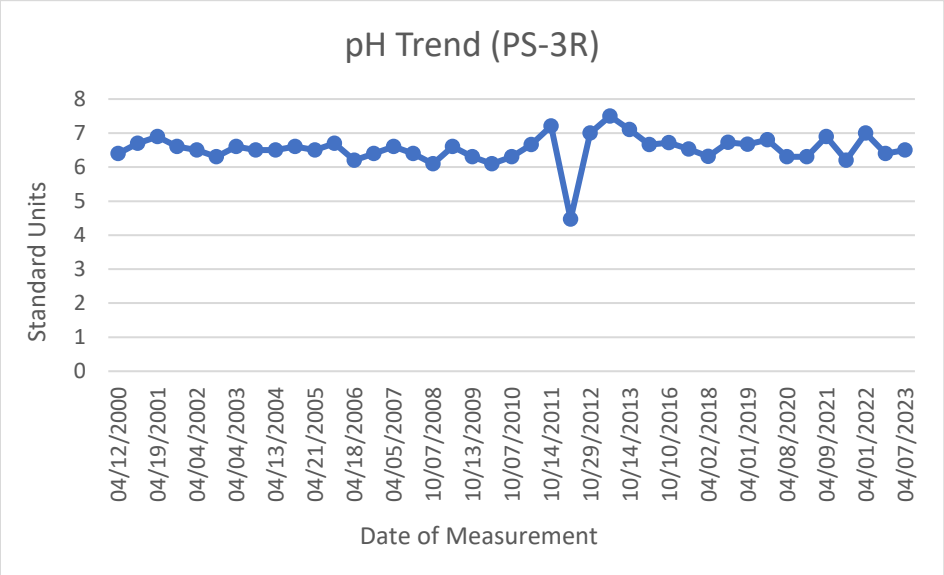
April 1, 2015
October 1, 2015
April 1, 2016
October 1, 2016
April 1, 2017
October 1, 2017
April 1, 2018
October 1, 2018
April 1, 2019
October 1, 2019
April 1, 2020
October 1, 2020
April 1, 2021
October 1, 2021
April 1, 2022
October 1, 2022
April 1, 2023
Sample Collectinion Date


PS-33 & PS-33A Specific Conductivity
Specific Conductivity (umhos/cm)
2500
2000
1500
1000
500
0
PS-33A
PS-33
04/12/2000
10/03/2000
04/19/2001
10/24/2001
04/04/2002
10/15/2002
04/04/2003
10/20/2003
04/13/2004
10/11/2004
04/21/2005
10/06/2005
04/18/2006
10/06/2006
04/05/2007
10/03/2007
04/04/2008
10/07/2008
04/02/2009
10/13/2009
04/07/2010
10/07/2010
10/14/2011
04/10/2012
10/29/2012
04/22/2013
10/14/2013
04/11/2016
10/10/2016
04/06/2017
10/17/2017
04/02/2018
10/22/2018
04/01/2019
10/17/2019
04/08/2020
10/08/2020
Sample Collection Date


pH Trend (PS-9)
Standard Units
7
6.8
6.6
6.4
6.2
6
5.8
5.6
04/12/2000
04/19/2001
10/24/2001
04/04/2002
10/15/2002
04/04/2003
04/13/2004
10/11/2004
04/21/2005
10/06/2005
04/18/2006
10/06/2006
04/05/2007
10/03/2007
Date of Measurement


pH Trend (PS-3R)
Standard Units
8
7
6
5
4
3
2
1
0
04/12/2000
04/19/2001
04/04/2002
04/04/2003
04/13/2004
04/21/2005
04/18/2006
04/05/2007
10/07/2008
10/13/2009
10/07/2010
10/14/2011
10/29/2012
10/14/2013
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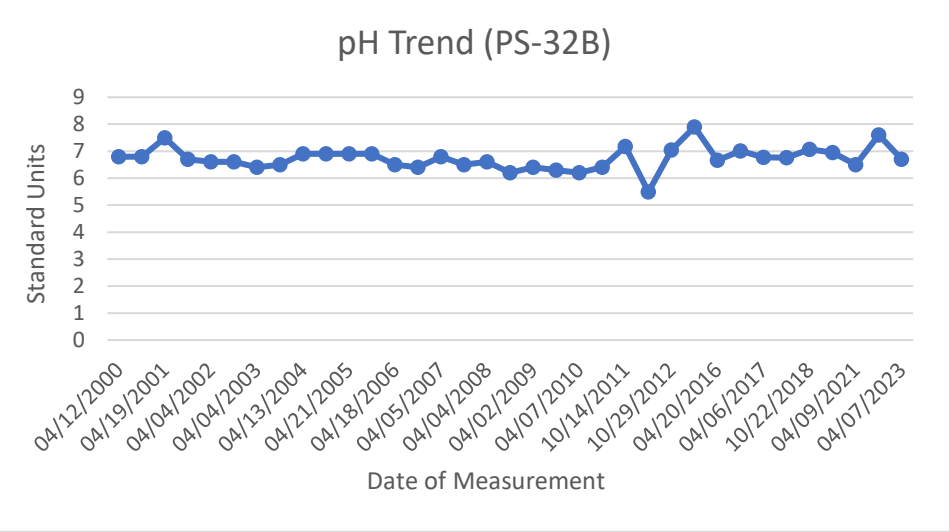
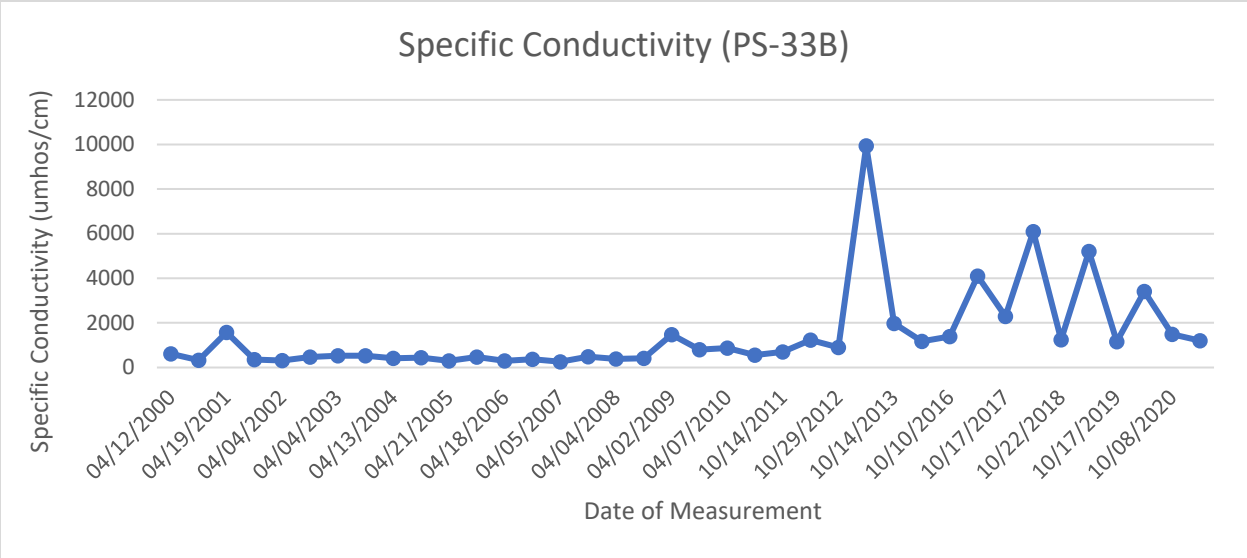
04/01/2022
04/07/2023
Date of Measurement


pH Trend (PS-32B)
Standard Units
9
8
7
6
5
4
3
2
1
0
04/12/2000
04/19/2001
04/04/2002
04/04/2003
04/13/2004
04/21/2005
04/18/2006
04/05/2007
04/04/2008
04/02/2009
04/07/2010
10/14/2011
10/29/2012
04/20/2016
04/06/2017
10/22/2018
04/09/2021
04/07/2023
Date of Measurement


Specific Conductivity (PS-33B)
Specific Conductivity (umhos/cm)
12000
10000
8000
6000
4000
2000
0
04/12/2000
04/19/2001
04/04/2002
04/04/2003
04/13/2004
04/21/2005
04/18/2006
04/05/2007
04/04/2008
04/02/2009
04/07/2010
10/14/2011
10/29/2012
10/14/2013
10/10/2016
10/17/2017
10/22/2018
10/17/2019
10/08/2020
Date of Measurement

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