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December 31, 2020

Mr. James Gruppe, P.E.  
NYSDEC Division of Materials Management, Region 7  
615 Erie Boulevard West  
Syracuse, New York 13204

**Re: Solvay Wastebeds 9-15 Site, Towns of Camillus and Geddes, Onondaga County, NY  
Site No. 73-40-76 (Consent Order Index # D-7-0001-02-03)  
Consent Order Deliverables**

Dear Mr. Gruppe:

In accordance with the referenced Consent Order, Ramboll Americas Engineering Solutions, Inc. (Ramboll) has finalized the Site Closure Plan and Off-Site Surrounding Affected Area (SAA) Restoration Plan on behalf of Honeywell to incorporate the Department's June 25, 2019 comments, in accordance with Honeywell's responses dated October 23, 2019.

These plans incorporate the significant progress made to date towards closure, including multiple phases of enhanced leachate capture and conveyance, completion of priority berm stabilization and erosion control tasks, and the conclusion that no further action is required in the majority of the off-site SAA wetlands and floodplains. The closure plan also incorporates the approximate 90 acres of shrub willow and 5 acres of rare native inland salt marsh which have been planted on Wastebed 14 in conjunction with the SUNY College of Environmental Science and Forestry. Monitoring of this demonstration has shown that establishment of a robust evapotranspiration cover system in the Solvay waste material is both feasible and practical and is similarly effective at reducing percolation as a traditional cover while providing numerous benefits including carbon sequestration, habitat value and a renewable energy source.

The closure plan also incorporates flexibility for future redevelopment of Wastebeds 9-15, which is important considering the community's recent interest in the property for several uses, including solar energy generation, which is proposed in a separate submittal for piloting on a portion of the site.

The Performance Verification Plan and Operation and Maintenance Plan associated with site closure and SAA restoration will be submitted under separate cover, as will three supporting documents regarding the willow and salt marsh demonstrations, and evaluation of the monitoring data collected since 2012.

Please contact Maureen Markert (315 420-7382) at Ramboll or me if you have any questions or comments.

Sincerely,



Stephen J. Miller, P.E.  
Syracuse Remediation Program Manager

Enc.

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# **WASTEBEDS 9-15 OFF-SITE SURROUNDING AFFECTED AREA RESTORATION PLAN** **CAMILLUS AND GEDDES, NY**

# **WASTEBEDS 9-15 OFF-SITE SURROUNDING AFFECTED AREA RESTORATION PLAN CAMILLUS AND GEDDES, NY**

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## LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
CIR	Closure Investigation Report
CIWP	Closure Investigation Work Plan
FCPS	Former County Pump Station
Ft	Feet
IM	Interim Measure
LCCS	Leachate Collection and Conveyance System
Metro	Onondaga County Metropolitan Wastewater Treatment Plant
NMC	Ninemile Creek
NYS	New York State
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OBG	O'Brien & Gere
OU	Operable Unit
SAA	Surrounding Affected Area
SPDES	State Pollution Discharge Elimination System
TDS	Total Dissolved Solids
WB	Wastebed

## EXECUTIVE SUMMARY

The New York State Department of Environmental Conservation (NYSDEC) and Honeywell International Inc. (Honeywell) entered into an Administrative Consent Order (ID# D-7-0001-02-03) dated December 6, 2010 (NYSDEC 2010), as amended in December 2014 (NYSDEC 2014)]. The Consent Order identifies activities required for the successful closure of Wastebeds (WB) 9-15, located on approximately 662 acres in Camillus and Geddes, New York. The Consent Order also required investigation of the off-site Surrounding Affected Area (SAA), comprised of wetlands and potentially impacted sediments, surface water, groundwater, banks, and floodplains of surface water in the site vicinity, and the subsequent development of a Restoration Plan.

Investigation of the off-site SAA was summarized in the *Closure Investigation Report* (OBG 2018a), which was approved by NYSDEC in August 2018. No impacts from Solvay waste were observed in the SAA wetlands. Observations of Solvay waste impacts to floodplains were limited to the swale north of WB 9/10 which is a part of the Site leachate collection system. Based on these closure investigation findings, NYSDEC concurred that no further action is warranted for the SAA wetlands and floodplains under the Consent Order, with certain exceptions (NYSDEC 2017c). Those exceptions, along with the other remaining off-Site SAA components are listed in **Table ES-1**, along with the path forward documented in this *Off-Site SAA Restoration Plan*.

**Table ES-1 Off-Site SAA Restoration Overview**

SAA Component	Path Forward	Rationale
<b>Ninemile Creek (NMC) banks<sup>1</sup></b>	Vegetative restoration	Restoration of vegetation and erosion control in historic seep-impacted areas
<b>Ponded areas north of WB 11</b>	Vegetative restoration	Restoration of seep-impacted substrate and vegetation following WB 11 north seep mitigation
<b>NYS freshwater wetland CAM-26</b>	No further action <sup>2</sup>	Solvay waste impacts not observed
<b>NMC<sup>3</sup></b>	Surface water, physical, and biological monitoring	Continued evaluation of SAA conditions during implementation of site closure plan.
<b>Iron Brook</b>		
<b>Outfall 019 drainage ditch</b>	Surface water monitoring	
<b>Former gravel pit</b>		
<b>Groundwater underlying the floodplains</b>	Groundwater monitoring	

SAA monitoring will continue throughout the phased implementation of the *Site Closure Plan* (OBG 2018b) in order to document the effectiveness of the site closure program in improving off-site SAA conditions over time.

<sup>1</sup> Ninemile Creek banks as defined in 6 NYCRR Part 608.1(a)

<sup>2</sup> Surface water quality in CAM-26 was evaluated with four quarters of surface water sampling in accordance with a 2017 work plan approved by NYSDEC on November 17, 2017 (OBG 2017b)

<sup>3</sup> Ninemile Creek, downstream of the Amboy Dam and upstream of Ninemile Creek/Geddes Brook Remedial Site OU 1

## 1. INTRODUCTION

This document describes the components of the restoration program for the off-site surrounding affected area (SAA) associated with Wastebeds (WB) 9-15, located in Camillus and Geddes, New York., and satisfies the restoration plan submittal requirement in the Administrative Consent Order between the New York State Department of Environmental Conservation (NYSDEC) and Honeywell International Inc. (Honeywell) (ID# D-7-0001-02-03) dated December 6, 2010 (NYSDEC 2010), as amended in December 2014 (NYSDEC 2014)]. NYSDCE has determined that WB 9-15 do not pose a significant threat to the environment or public health. Therefore, closure of WB 9-15 and restoration of the off-site SAA is being administered under the NYSDCE's water and solid waste management programs.

This plan describes the restoration measures for the limited portions of the off-site SAA impacted by WB 9-15. Off-site SAA monitoring is addressed in the *Performance Verification Plan* to be submitted under separate cover. A *Site Closure Plan* for Wastebeds 9-15 has also been developed for concurrent submittal (Ramboll 2020a).

## 2. BACKGROUND

### 2.1 Property Description

WB 9-15 cover approximately 662 acres in the towns of Camillus and Geddes, Onondaga County, New York, in close proximity to Interstate 690, NYS Route 695, State Fair Boulevard, and the New York State Fairgrounds.

This property received Solvay waste between 1944 and 1985 generated by Allied Chemical via the Solvay Process. WB 9-11 are separated from WB 12-15 by Ninemile Creek (NMC), which flows immediately adjacent to WB 9-11, a topographically lower area of land, and railroad tracks. Four public recreational access points to NMC are located in the area of WB 9-15: the Lakeland Canoe and Kayak Launch, adjacent to WB 9/10, the NMC Public Fishing and Recreation Access on Airport Road west of WB 13, the NMC Amboy access on Thompson Road adjacent to WB 13, and the Erie Canalway trail which runs adjacent to WB 15.

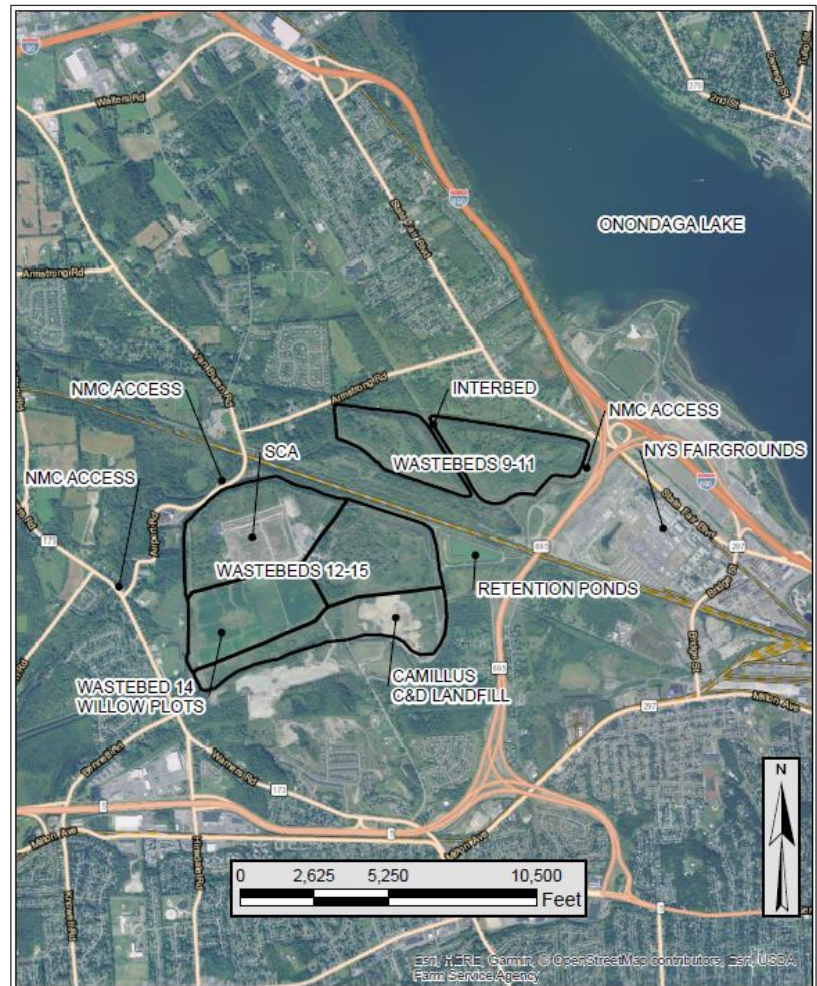


Figure 2-1 WB 9-15 Location

WB 9-11 cover approximately 126 acres and have a height of approximately 70 feet from the base. Presently, WB 9/10 are contiguous and separated from WB 11 by a large swale (the Interbed Area). The Interbed Area receives storm water from WB 9-11. WB 9/10 is adjacent to the NMC/Geddes Brook Remedial Site OU 1, and the associated restored wetlands and floodplains.

WB 12-15 cover an area of approximately 536 acres and have a height of approximately 55 feet from the base. Two leachate retention ponds are located east of WB 12 and consist of a 3-acre settling pond (Pond 1) and an 11-acre holding pond (Pond 2). The eastern portion of WB 15 is leased by the Town of Camillus, which operates a construction and demolition debris (C&D) landfill at this location in accordance with a separate consent order. The Sediment Consolidation Area (SCA) associated with the Onondaga Lake Bottom Site remediation is located on WB 13. In accordance with an Onondaga Lake Natural Resource Damages Consent Decree signed on March 14, 2018, approximately 105 acres of native grassland bird habitat will be incorporated into the SCA cover and the current and future final covers for the C&D landfill.

WB 9-15 (excluding the SCA and the C&D landfill), the retention ponds, and the Interbed area are collectively defined as the Site in the Consent Order. The off-site SAA was also defined in the Consent Order, and refined during negotiation of the off-Site SAA Phase 1 scope of work (Honeywell 2009c) to include (see attached **Figure 1**):

- NMC surface water, channel sediment, and floodplain soil/sediment from Amboy Dam to the upstream boundary of NMC Operable Unit 1 (OU1)
- New York State (NYS) wetlands CAM-21 and CAM-26
- Iron Brook and the Outfall 19 ditch
- Gravel pit, and
- Ponded area north of WB 11.

The Closure Investigation for the SAA and findings are discussed in **Section 2.2**. No impacts from Solvay waste were observed in the SAA NYS freshwater wetlands, and observations of Solvay waste impacts to floodplains were limited to the swale north of WB 9/10 which is a part of the Site leachate collection system. Based on these Closure Investigation findings, NYSDEC concurred that no further action is warranted for the SAA wetlands and floodplains under the Consent Order, with certain exceptions (NYSDEC 2017). Those exceptions are listed in **Table 2-1**, along with the other SAA components evaluated by this Restoration Plan (see attached **Figure 1** for locations).

**Table 2-1 SAA Component**

SAA Component <sup>4</sup>
NMC <sup>5</sup>
NMC banks <sup>6</sup>
Ponded areas north of WB 11
NYS freshwater wetland CAM-26
Iron Brook
Outfall 019 drainage ditch
Former gravel pit
Groundwater underlying the floodplains

<sup>4</sup> Based on SAA investigation findings, NYSDEC concurred that no further action was warranted for the SAA wetland and floodplains under the Consent order, with certain exceptions (NYSDEC, 2017). The exceptions are included as SAA component in this Restoration Plan.

<sup>5</sup> Ninemile Creek, downstream of the Amboy Dam and upstream of Ninemile Creek/Geddes Brook Remedial Site OU 1

<sup>6</sup> Ninemile Creek banks as defined in 6 NYCRR Part 608.1(a)

## 2.2 SAA Investigation

### 2.2.1 Scope

Investigation of the SAA was scoped in the Phase 1 SAA Scope of Work which was an appendix to the CIWP (OBG 2011). The purpose of the Phase 1 SAA was to evaluate potential impacts of Solvay waste within the SAA and to define the areal extent and scope of potential future investigations. The Phase 1 investigation consisted of a qualitative assessment of natural resources in the immediate vicinity of WB 9-15 and a physical characterization of NMC. For the SAA wetlands and floodplains, a qualitative visual assessment of the soil for the presence of Solvay waste was performed. Sediment sampling in NMC was performed during a subsequent Phase 2 investigation. Monitoring of surface water quality in SAA surface water (i.e., NMC, Iron Brook, Outfall 019 drainage ditch, former Gravel Pit, and the ponded areas north of WB 11) has been performed quarterly since July 2012 in accordance with the CIWP, the July 2012 CIWP addendum (OBG 2012c), and the Consent Order.

### 2.2.2 Findings

The results of the Phase 1 SAA investigation and subsequent NMC sediment sampling, as well as initial Closure Investigation surface water and groundwater sampling, are documented in the CIR (OBG 2017a). Surface water and groundwater data collected between 2012 and 2017 are discussed in a *Closure Investigation Data Evaluation Report* which will be submitted under separate cover. Water quality data collected from the ponded areas north of WB 11 is discussed in the December 2017 *Seep Mitigation Annual Report* (OBG 2017c). Wetland CAM-26 surface water data, collected in 2017-2018, is discussed below.

#### 2.2.2.1 Closure Investigation

Site-related constituents of interest (COIs) were detected in the SAA surface water. From WB 9-11, the COIs are transported via shallow groundwater that migrates radially into NMC, intermediate groundwater that migrates vertically upwards into NMC, and surface water runoff. The remaining portions of the SAA likely receive radial shallow groundwater flow and surface water runoff, where NMC does not serve as a physical divide (i.e., portions of CAM-21, Hudson Farm property, etc.). Macroinvertebrate habitat quality in NMC decreases as it progresses towards and passes along WB 9-11 due to stream channelization and calcite deposition.

As discussed in Section 2.1, no impacts from Solvay Waste were observed in the SAA NYS freshwater wetlands, and observations of Solvay waste impacts to floodplains were limited to the swale north of WB 9/10 which is a part of the Site leachate collection system. Although no visible impacts from Solvay Waste were observed in NYS freshwater wetland CAM-26, four quarters of surface water sampling of CAM-26 were performed between the third quarter of 2017 and the 2<sup>nd</sup> quarter of 2018 because of the chloride concentrations observed in nearby well MW-104S. The results of the surface water sampling, summarized in **Appendix A**, indicate that surface water in



CAM-26 has a freshwater signature as discussed in the CIR, and does not have comparable chloride concentrations to well MW-104S.

#### **2.2.2.2 Quarterly Surface Water and Groundwater Monitoring**

As required by the Consent Order, quarterly monitoring of groundwater, surface water, subsurface leachate, and surface leachate has continued since completion of the first four quarters of sampling and summarized in the *Closure Investigation Report*. Monitoring was performed in accordance with the September 2011 *Wastebeds 9-15 Site Closure Investigation Revised Work Plan* (OBG, 2011a), as modified by NYSDEC's letter dated January 14, 2015 approving a reduced list of monitoring parameters (NYSDEC 2015a). Other quarterly tasks performed since 2012 include measurement of groundwater and surface water elevations, and performance of surface leachate/seep reconnaissance.

Evaluation of quarterly monitoring data is presented in the *Wastebeds 9-15 Closure Investigation Data Evaluation Report* under separate cover. Statistical evaluations were performed to evaluate time trends in groundwater, surface water, and subsurface leachate, seasonal trends, and location trends for subsurface leachate. Conclusions were:

- Statistical time trend tests of concentration data indicated there are no trends of concern at individual sample locations or in the different media and hydrogeologic units.
- ANOVA between quarters indicated that:
  - constituent concentrations do not significantly vary seasonally
  - leachate concentrations are generally consistent in the manholes located along individual wastebeds.
- Results of the statistical evaluation of quarterly of groundwater, subsurface leachate, and surface water data collected from 2012 through 2017 support refinements in the site monitoring program as part of the Site Closure Plan and SAA Restoration Plan.<sup>7</sup>
- Field observations provide sufficient information to evaluate active surface seep management in the Site Closure Plan.

#### **2.2.2.3 Ponded Areas Water Quality Evaluation**

Surface water sampling and water quality measurements were performed in the Spring of 2017 to delineate potential leachate-impacted surface water north of WB 11 and delineate flow paths. Findings were summarized in the December 2017 *Seep Mitigation Annual Report* (OBG 2017c) and included:

- Two leachate-impacted ponded areas were present north of Wastebed 11. No surface seepage was observed flowing to the ponded areas. The pathway of leachate migration to the ponded areas was not visible.
- Two surface flow paths were present north of Wastebed 11 and were separated by a berm. The northern flow path is channelized fresh water which ultimately ends up in the Outfall 011 intake. The southern flow path contained dilute leachate, and ultimately

<sup>7</sup> 44% of the parameters analyzed have either never been detected, or have been detected in less than 5% of the samples at concentrations below standards and at concentrations that do not represent a significant increasing trend.

ended up in the marshy area north of the interbed which was potentially connected to the interbed through a culvert. The location and condition of the culvert could not be confirmed during the reconnaissance.

- No direct surface water interactions were apparent between northern freshwater flow path and the southern leachate-impacted flow path.

A seep mitigation system was designed to address seepage impacts north of WB 11 based on pre-design investigation results documented in the June 2018 *Wastebed 11 North Seep Mitigation Preliminary Design Investigation Report* (OBG 2018b); this seep mitigation system is described in Section 2.3.1.

### **2.3 Interim Measures**

Honeywell has designed and implemented several IMs at WB 9-15, including seep mitigation systems, improvements to the leachate collection and conveyance system, and construction of berm stabilization and erosion control measures. Each of these IMs has reduced migration of Solvay waste constituents to the SAA. IMs relevant to the SAA are described in the following subsections.

#### **2.3.1 Seep Mitigation IMs**

A phased program of seep mitigation has been in progress at WB 9-15 since 2007. NYSDEC issued a modification to Honeywell's State Pollution Discharge Elimination System (SPDES) Permit NY 0002275 on July 11, 2006 to include Special Conditions that required attainment of specified effluent limits for pH, chloride, and total dissolved solids (TDS) within a defined time frame. In accordance with these Special Conditions, the first three phases of the seep mitigation program were designed and constructed between 2007 and 2010, and included:

- Phase 1 efforts, completed in 2007, consisted of the installation of 1,700 linear feet (ft) of perforated pipe in a gravel-filled trench on the northern berms of WB 12 which discharges to the Leachate Collection and Conveyance System (LCCS). The collection pipe is installed in an area where active seeps had been observed and has been effective in eliminating those seeps.
- Phase 2 efforts, completed in 2007, consisted of the installation of 1,500 linear ft of perforated pipe in a gravel-filled trench on the western berms of WB 14 which discharges to the LCCS. The collection pipe is installed in an area where active seeps had been observed and has been effective in eliminating those seeps.
- Phase 3 efforts, completed in 2010, consisted of the replacement of a 24-inch force main which conveys non-impacted storm water from areas north of WB 9-11 via the Popes Grove's Pump Station to permitted Outfall 011 on NMC. This new HDPE drain effectively eliminates the infiltration of leachate-impacted groundwater into outfall.

When the December 2010 Consent Order for the site was executed, the schedule for attainment of SPDES permit discharge limitations for pH, total dissolved solids (TDS), and chloride at Outfalls 011, 017, 018, and 019 was linked to the Consent Order, and, in a December 2014 Consent

Order modification, to completion of the site closure program. In accordance with the Consent Order, the following seep mitigation IMs were constructed: Phase 4 in 2012 and 2013, Phase 5 in 2014, and Phase 6 in 2015 which included the following:

- Phase 4 IM efforts, completed in 2013 (Honeywell 2013), consisted of the installation of 2,900 linear ft of perforated pipe in a gravel filled trench on the southern side of WB 9/10 to intercept leachate seeps to NMC, and discharge to a new low lift pump station. Three concrete interceptor walls and six collection wells were also installed along a section of the trench, which also discharge to the low lift pump station that discharges to the retention ponds near the Former County Pump Station (FCPS). The retention ponds are pumped to the Onondaga County Metropolitan Wastewater Treatment Plant (Metro) via the FCPS and the 30-inch/24-inch force main. An extension to this system was constructed in 2019 to mitigate a seepage area west of the original Phase 4 Seep Mitigation System limits. The extension consisted of the addition of approximately 100-lf of sheet pile interceptor wall, 100-LF of perforated HDPE piping, one collection well, and force main upgrades. The Phase 4 system has successfully reduced seepage from WB 9/10.
- Phase 5 IM efforts, completed in 2014 (OBG 2015), consisted of the installation of 1,325 linear ft of perforated pipe in a gravel-filled trench on the southern side of WB 11 to intercept leachate seeps to NMC. Flow from the collection pipe enters one of five collection wells, and discharges to the pump station installed in the Phase 4 project. As discussed for Phase 4, the low lift pump station discharges to the retention ponds, and the retention ponds are pumped to Metro via the FCPS and the 30-inch/24-inch force main. The Phase 5 system has successfully reduced seepage from WB 11.
- Phase 6 IM efforts, completed in 2015 (OBG 2016a), focused on reducing the seepage impacts to Outfall 019 in the vicinity of WB 12. The Phase 6 Seep Mitigation System IM consisted of a drainage ditch liner replacement, installation of 925 linear ft of new seep collection systems, and existing seep collection system modifications. The interim measure also included vegetation of one berm area in the vicinity of the new seep collection system. The Phase 6 system successfully redirects seepage to the LCCS where it drains to the LCCS pump station for pH-adjustment prior to discharge to the leachate retention ponds and subsequent discharge to Metro for treatment via the FCPS.

A seep mitigation system north of WB 11 was installed in 2019 and consists of two collection trenches and a gravity transfer pipe. The upper collection trench collects leachate at the toe of WB 11, south of the access road. The upper trench is approximately 800 ft of 6-in perforated collection pipe in a 2.5 ft deep gravel-filled trench. This trench is connected via laterals to a lower collection trench which collects leachate prior to reaching the ponded areas. The lower trench is approximately 850 ft of 8-in perforated pipe in a gravel filled collection trench ranging in depth from 5 ft bgs to 10 ft bgs. The lower 8-inch collection trench transitions to a 1,000-ft long 8-in solid wall gravity fed transfer pipe conveying the collected leachate to the Interbed located between WB 9/10 and WB 11. Water from the Interbed is pumped via the Interbed Pump Station to the WB 12-15 retention ponds and then to Metro (OBG, Part of Ramboll 2019).

### 2.3.2 Leachate Collection and Conveyance System IM

In accordance with a March 2012 *Leachate Collection and Conveyance System – Interim Measure Work Plan* (OBG 2012a), a study was performed to evaluate the capacity, efficiency, and effectiveness of the existing LCCS. This evaluation included review of existing system capacities, flow records, and operational records, and evaluation of optimization alternatives. Findings of the evaluation were summarized in the April 2013 *Leachate Collection and Conveyance System Wastebeds 12-15 Report* (OBG 2013a), along with recommendations for system enhancements to mitigate surcharging conditions at manholes located on the conveyance system during peak run-off conditions.

The LCCS IM construction included the following components (OBG 2016b):

- replacement of existing pumps with higher capacity pumps and new suction piping
- installation of a new 10-inch force main with cleanouts from the pumps to the retention pond #1
- installation of cleanouts in the existing 6-inch force main
- installation of a backup generator

The new LCCS Pump Station equipment was brought into operation the week of December 20, 2015.

### 2.3.3 Berm Stabilization and Erosion Control IM

In accordance with a March 2012 *Berm Stabilization and Erosion Control Work Plan* (OBG 2012b), a site reconnaissance was performed to survey the berms surrounding WB 9-15 to identify areas on the berms that may be undergoing or have potential to undergo erosion in a manner which may affect berm stability or allow berm material to be eroded. Observed conditions during the reconnaissance were compared to historical information to evaluate potential changes. Findings of the reconnaissance were summarized in the July 2013 *Berm Stabilization and Erosion Control Report* (OBG 2013b), along with recommendations for mitigating erosion and stabilizing portions of the berms while increasing habitat quality and potentially promoting future recreational use of the area subsequent to the closure of the site.

The survey extended into the SAA, specifically the northern bank of NMC along WB 9-11. The following was observed for the banks of NMC, as indicated on Figure 2 of the 2013 report (OBG 2013b), included with this plan as **Appendix B**.

- Two sections of the NMC banks (stations ST-20+00 to ST-36+00 and ST-47+00 to ST-49+00; indicated as Areas Q and R respectively on **Figure 2**) were characterized by stressed vegetation and bank erosion attributed to historic seepage.
- A narrow floodplain area along NMC (between stations ST-0+00 and ST-12+00; indicated as Area P on **Figure 2**) was found to have inadequate vegetation to provide stabilization during times of high water in NMC.

- An approximate 20 ft by 10 ft area of sloughing was observed at station ST-20+00, indicated as Sloughing-09 on **Figure 2**
- A depression in the creek bank was observed between stations ST-10+00 and ST-20+00, along with a pipe and large concrete pieces, identified as Misc-09 on **Figure 2**.

Priority tasks identified during the reconnaissance were completed in 2015 as part of the *Berm Stabilization and Erosion Control IM* (OBG 2016c). Specific to the SAA items identified above, vegetative Area R was addressed during this IM. Remaining tasks not addressed during the IM are discussed in Section 3 of this plan.

### 3. RESTORATION APPROACH

The path forward for the SAA components addressed in this Restoration Plan is summarized below. Additional detail is provided in subsequent subsections.

**Table 3-1 Off-Site SAA Path Forward**

SAA Component	Path Forward	Rationale
NMC banks	Vegetative restoration	Restoration of vegetation and erosion control in historic seep-impacted areas
Ponded areas north of WB 11	Vegetative restoration	Restoration of seep-impacted substrate and vegetation following WB 11 north seep mitigation
NYS freshwater wetland CAM-26	No further action. <sup>8</sup>	Solvay waste impacts not observed
NMC	Surface water, physical, and biological monitoring	Continued evaluation of SAA conditions during and following implementation of site closure plan.
Iron Brook		
Outfall 019 drainage ditch	Surface water monitoring	
Former gravel pit		
Groundwater underlying the floodplains	Groundwater monitoring	

#### 3.1 NMC Banks

As discussed in Section 2.3.3, portions of the NMC banks were observed to need vegetation restored to stabilize banks and reduce erosion potential. During July 2019, a site reconnaissance was performed to refine the delineation of areas in need of vegetative restoration. **Table 3-2** summarizes the revised Ninemile Creek bank areas and restoration approaches. Area locations are depicted on **Figure 2**.

**Table 3-2 NMC Bank Restoration Areas**

Location ID	Current Conditions	Remedy
Area P-1	Patches of exposed calcified materials, steep eroding banks	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket
Area P-2	Sloughing area with exposed gravel substrate	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket

<sup>8</sup> Surface water quality in CAM-26 was evaluated with four quarters of surface water sampling in accordance with a 2017 work plan approved by NYSDEC on November 17, 2017 (OBG 2017b)

Location ID	Current Conditions	Remedy
Area Q-1	Sloughing area with exposed gravel substrate	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket
Area Q-2	Exposed bare clay, steep eroding banks, minimal vegetative cover	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket, where 1(V):2(H) slopes are unachievable, stabilize the bank with geocells and 8-inches of topsoil
Area Q-3	Exposed calcified materials mixed with cobble and concentrated substrate, poor vegetative cover, exposed railroad tie	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket
Area Q-4	Calcified material mixed with concreted substrate, poor vegetative cover	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket
Area Q-5	Sloughing area with exposed soil, some calcified materials, steep eroding bank	Regrade slopes to a 1(V): 2(H) maximum slope, place 6-inches of topsoil, successional old field vegetation, live stakes, and erosion control blanket

A remedy-specific species list is presented in the design specification 31 22 19 Topsoil, Seeding, and Planting included in **Appendix B**. During plantings and remedy applications, efforts to improve vegetation survivorship will be undertaken. These efforts could include deer exclusion using temporary 8 ft high protective fences to be removed upon establishment of vegetation. Design drawings and specifications for completion of the NMC bank restoration tasks were approved by NYSDEC via email notification on November 18, 2019 (NYSDEC 2019b, OBG Part of Ramboll 2019b) and are included as **Appendix B** of this report. Record drawings and as-builts for this work, which was performed in 2019, can be found in Appendix 1 and 2 of the *Wastebeds 9-15 Site 2019-2020 Closure and Restoration Construction Completion Report* (Ramboll 2020b) submitted to the NYSDEC on October 12, 2020.

### 3.2 Ponded Areas North of WB 11

As documented in the 2017 Annual Seep Mitigation Report (OBG 2017c), two leachate-impacted ponded areas were present north of WB11 (attached **Figure 2**), which contained calcite precipitate and sparse vegetation. A pre-design investigation was performed in 2018 to evaluate leachate flow to these areas. Following completion of the 2018 pre-design investigation, design and construction of the WB 11 North Seep Mitigation System was completed during 2019 to

collect leachate at the toe of WB 11, south of the access road (OBG Part of Ramboll 2019). Following completion of the WB 11 North Seep Mitigation System, restoration of the ponded areas was completed in 2019 (Ramboll 2020b), and included measures to remove substrate impacted with calcite precipitate, fill voids with clean fill, regrade, and vegetate the final surface with swale seed mix. Design drawings and specifications for restoration of the ponded areas north of WB 11 were approved by NYSDEC via email notification on June 26, 2019 and are included as **Appendix C** of this report. Record drawings and as-builts can be found in Appendix 1 and 2 of the *Wastebeds 9-15 Site 2019-2020 Closure and Restoration Construction Completion Report* (Ramboll 2020b) submitted to the NYSDEC on October 12, 2020.

### 3.3 Surface Water

Continued monitoring of the following surface water features will be performed to evaluate surface water conditions as the phased site closure program is implemented:

- NMC, downstream of the Amboy Dam and upstream of NMC/Geddes Brook Remedial Site OU 1
- Iron Brook
- Outfall 019 drainage ditch
- Former gravel pit
- Ponded areas north of WB 11.

Details of the monitoring efforts will be presented in the *Wastebeds 9-15 Performance Verification Plan*, to be submitted under separate cover.

Further monitoring of CAM-26 surface water is not proposed, based on the results of quarterly monitoring summarized in **Appendix A**. Continued monitoring is not proposed because concentrations of chloride and other geochemistry analytes in CAM-26 surface water are significantly lower than those observed in the adjacent shallow groundwater monitoring well SB915-MW-104S, and comparable to fresh water signatures observed in adjacent monitoring wells SB915-MW-87S and SB915-MW-94S.

### 3.4 Groundwater

Continued monitoring of groundwater will be performed to evaluate groundwater conditions as the phased site closure program and SAA restoration program are implemented. Details of the monitoring efforts will be presented in the *Wastebeds 9-15 Performance Verification Plan* to be submitted under separate cover.



### **3.5 Maintenance and Monitoring**

The following vegetative maintenance and monitoring tasks related to the SAA will be detailed in the WB 9-15 *Performance Verification Plan* to be submitted under separate cover, prepared in conjunction with the *Site Closure Plan* (Ramboll 2020a) and this Restoration Plan.

- Monitoring and maintenance of NMC bank restoration areas
- Monitoring and maintenance of restoration of ponded areas north of WB 11
- NMC monitoring, including surface water, physical and biological monitoring
- Surface water monitoring in Iron Brook, Outfall 019 drainage ditch, former gravel pit, and ponded areas north of WB 11
- Surface seep inspections and monitoring
- Groundwater monitoring.

A maintenance and adaptive management program will be employed throughout the maintenance and monitoring period to provide for the long-term sustainability of the restored areas and to address unforeseen changes in site conditions. Components include:

- Seeding and/or planting of targeted areas or where survival of installed plants is limited
- Control of natural damage (e.g., herbivory).

Adaptive management techniques will be identified and implemented, as needed, to correct potential concerns.

## 4. REPORTING

Consistent with the Consent Order requirements for site closure, implementation of this SAA Restoration Plan will include the following reporting, which is described as follows: construction work plan, construction certification report, monitoring data submittals, and quarterly progress reports.

### 4.1 Construction Certification Report

A Construction Certification Reports (CCRs) will be submitted to NYSDEC which will detail SAA restoration construction activities. The CCR may be combined with the first annual closure CCR, as appropriate.

### 4.2 Monitoring Data Submittals

Tables summarizing analytical sample data collected in accordance with the approved *Performance Verification Plan* (to be submitted under separate cover) will be provided to NYSDEC within 90 days after each sampling event. Evaluation of sample data will be discussed as part of annual reporting discussed in the *Performance Verification Plan* (to be submitted under separate cover).

### 4.3 Quarterly Progress Reports

In accordance with the Consent Order, quarterly progress reports will be submitted to NYSDEC to describe Consent Order activities performed, analytical data received, deliverables completed and submitted, comments received, work plan modifications, schedule considerations, and personnel changes during the preceding three months. Quarterly progress reports will be submitted to NYSDEC by the 10<sup>th</sup> day of March, June, September, and December each year until the Final CCR is submitted. The quarterly progress report may be combined with other construction completion and performance verification reporting as appropriate.

## 5. SCHEDULE

The implementation schedule for SAA restoration activities is summarized as follows:

- Restoration of the ponded areas north of WB 11 was constructed in 2019 in accordance with the design approved by NYSDEC (NYSDEC 2019a), as documented in the *Wastebeds 9-15 Site 2019-2020 Closure and Restoration Construction Completion Report* (Ramboll 2020b).
- Restoration of the Ninemile Creek Banks was completed in 2019 in accordance with the design approved by NYSDEC (NYSDEC 2019b), as documented in the *Wastebeds 9-15 Site 2019-2020 Closure and Restoration Construction Completion Report* (Ramboll 2020b).
- The schedule for performance verification and monitoring is detailed in the *Performance Verification Plan*, to be submitted under separate cover. The schedule for performance verification tasks will be refined, as appropriate, with NYSDEC approval as restoration tasks are completed, vegetation is established, end uses are established, and performance data are collected and evaluated.

## 6. REFERENCES

- Honeywell 2013. Letter from John McAuliffe (Honeywell) to Joseph Zalewski (NYSDEC) re. Phase 4 – Seep Mitigation at WBs 9 and 10 Completion Report. July 18, 2013.
- New York State Department of Environmental Conservation (NYSDEC) 2010. Wastebeds 9-15 Consent Order. Index No. D-7-0001-02-03. Site No. 7-34-076 (Solvay Wastebeds 9-15). December 6, 2010. Syracuse, New York.
- NYSDEC 2014. Letter from Thomas Annal (NYSDEC) to John McAuliffe (Honeywell) dated October 9, 2014.
- NYSDEC 2017. Letter from Nicole Smith (NYSDEC) to John McAuliffe (Honeywell) dated April 3, 2017.
- NYSDEC 2019a. Email from Nicole Smith (NYSDEC) to Maureen Markert (Ramboll) dated June 26, 2019.
- NYSDEC 2019b Email from Nicole Smith (NYSDEC) to Michael Mellen (Ramboll) dated November 18, 2019.
- OBG 2011. *Wastebeds 9-15 Closure Investigation Revised Work Plan*. Geddes and Camillus, New York. O'Brien & Gere. September 2011.
- OBG 2012a. *Leachate Collection and Conveyance System – Interim Measure Work Plan*. March 2012.
- OBG 2012b. *Berm Stabilization and Erosion Control Work Plan*. March 2012.
- OBG 2012c. *Wastebeds 9-15 Ninemile Creek Surface Water and Sediment Sampling Work Plan*. June 2012.
- OBG 2013a. *Leachate Collection and Conveyance System Wastebeds 12-15 Report*. April 2013.
- OBG 2013b. *Berm Stabilization and Erosion Control Report*. July 2013.
- OBG 2015. *Honeywell Phase 5 Seep Mitigation Interim Measure at Wastebed 11 Completion Report*. June 30, 2015.
- OBG 2016a. *Wastebeds 9-15 Phase 6 Seep Mitigation Interim Measure Construction Completion Report*. March 30, 2016.
- OBG 2016b. *Wastebeds 9-15 Leachate Collection and Conveyance System Interim Measure Construction Completion Report*. March 30, 2016.
- OBG 2016c. *Wastebeds 9-15 Berm Stabilization and Erosion Control Interim Measure Construction Completion Report*. March 30, 2016.
- OBG 2016d. *Seep Mitigation Annual Report*. December 2016.
- OBG 2017b. *Wetland CAM-26 Surface Water Investigation Work Plan*. July 12, 2017.

OBG 2017c. *Seep Mitigation Annual Report*. December 2017.

OBG 2018a. *Wastebeds 9-15 Closure Investigation Report*. Geddes and Camillus, New York. August 2018.

OBG 2018b. *Wastebed 11 North Seep Mitigation Preliminary Design Investigation Report*. June 2018.

Ramboll 2020a. *Wastebeds 9-15 Site Closure Plan*. Geddes and Camillus, New York. Ramboll. December 2020.

Ramboll 2020b. *Wastebeds 9-15 Site 2019-2020 Closure and Restoration Construction Completion Report*. Geddes and Camillus, New York. Ramboll. October 2020.

Ramboll 2019b. Email from Michael Mellen (OBG, Part of Ramboll) to Nicole Smith (NYSDEC) dated November 7, 2019.

Ramboll 2019. *Wastebed 11 North Seep Mitigation Construction Completion Report*. Geddes, New York. Ramboll. October 2019.

## FIGURES





**LEGEND**

- ▲ PERMITTED OUTFALLS
- FORMER ERIE CANAL
- PORTION OF NINEMILE CREEK WITHIN SAA, INCLUDING
- POTENTIALLY IMPACTED SEDIMENTS, SURFACE WATER, GROUNDWATER, BANKS, AND FLOODPLAINS
- NYS FRESHWATER WETLAND - NO FURTHER ACTION UNDER ORDER<sup>1</sup>

- 100-YR FEMA FLOOD ZONE - NO FURTHER ACTION UNDER ORDER (WITH THE EXCEPTION OF WASTEBEDS 9-15, THE RETENTION PONDS, THE INTERBED AREA, AND NINEMILE CREEK BANK AS DEFINED IN 6NYCRR PART 608.1a)
- NYS FRESHWATER WETLAND CAM-26
- GRAVEL PIT INCLUDED IN SURROUNDING AFFECTED AREA

**WASTEBEDS 9-15 AND SURROUNDING AFFECTED AREAS**

HONEYWELL INTERNATIONAL INC.  
WASTEBEDS 9-15  
GEDDES AND CAMILLUS, NY

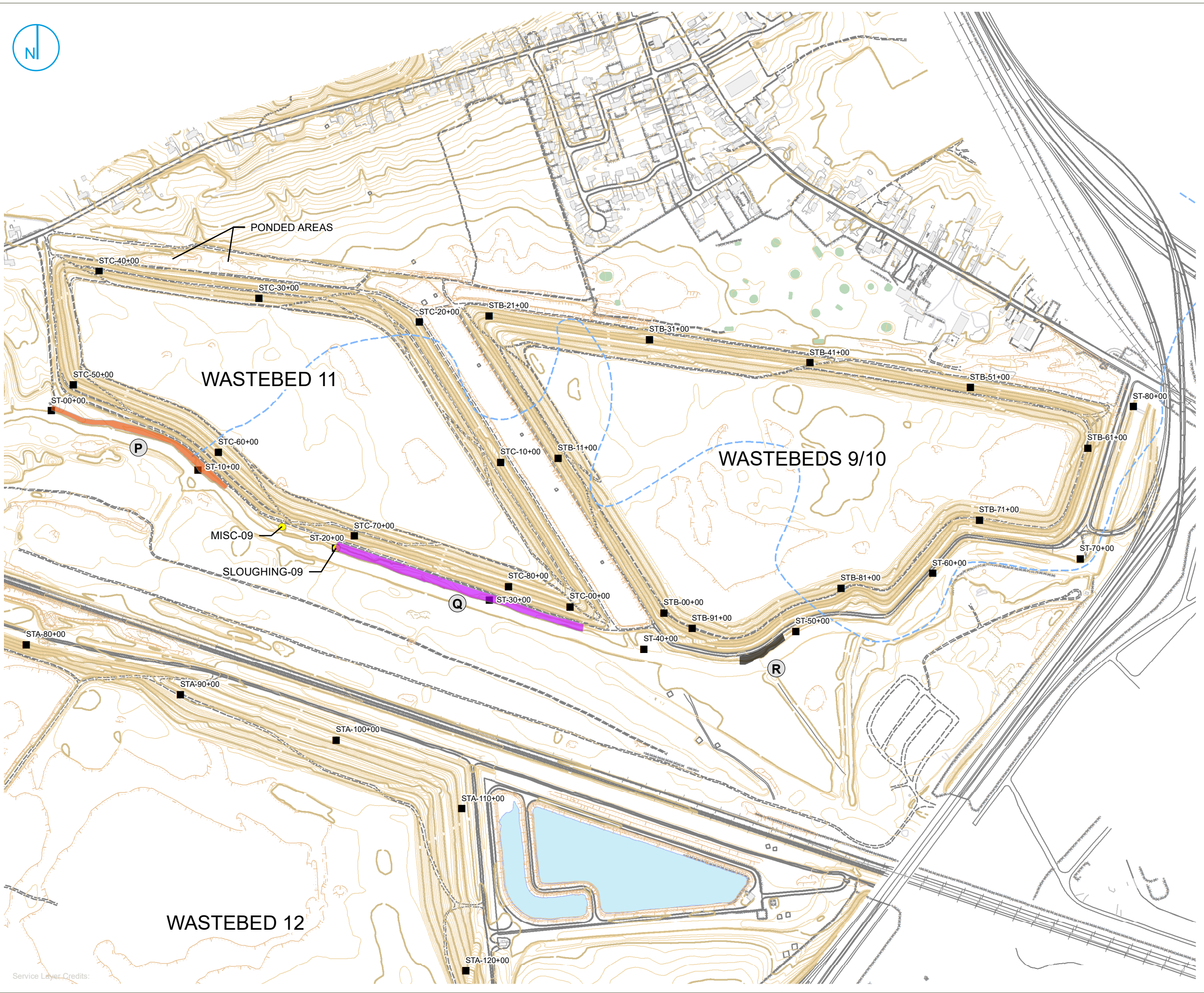
**FIGURE 01**  
DECEMBER 2020

RAMBOLL US CORPORATION  
A RAMBOLL COMPANY





C:\Users\klabenak\OneDrive - Ramboll\Documents\Megan Steward Items\SAA\_Restoration\_Areas\_Ramboll.mxd  
PROJECT: 169000XXXX | DATED: 12/4/2020 | DESIGNER: KLABENAK



**LEGEND**

- REMEDY 2B 100% APPLICATION
- REMEDY 3 100% APPLICATION
- COMPLETED AREA
- CREEK BANK FEATURE
- 10-FT
- 10-FT DEPRESSION
- 2-FT
- 2-FT DEPRESSION

0 750 1,500 Feet

**SAA RESTORATION AREAS**

**HONEYWELL INTERNATIONAL INC.**  
WASTEBEDS 9-15  
SAA RESTORATION PLAN  
GEDDES AND CAMILLUS, NY

**FIGURE 02**  
DECEMBER 2020

RAMBOLL US CORPORATION  
A RAMBOLL COMPANY

**RAMBOLL**



## APPENDICES

## **APPENDIX A**

### **CAM-26 SURFACE WATER DATA EVALUATION**

## APPENDIX A – CAM-26 SURFACE WATER DATA EVALUATION

This appendix to the Wastebeds 9-15 SAA Restoration Plan has been developed to summarize the surface water quality investigation in wetland CAM-26 located west of Settling Basin 14. The investigation was performed in response to Comment 29C of the New York State Department of Environmental Conservation (NYSDEC) September 5, 2017 comments on the 2013 Closure Investigation Report requesting additional focus and discussion on wetland CAM-26 surface water in light of the chloride concentrations observed in nearby well MW-104S. A work plan for the Wetland CAM-26 Surface Water Investigation (OBG 2017a) was provided to the NYSDEC on July 12, 2017, and was approved on November 17, 2017.

### Surface Water Sampling

Surface water samples were collected from two locations, WB915-POND AREA W OF WB14-1 and 2, in the open water area of wetland CAM-26. Sample locations are presented on **Figure 1**. Sampling and analyses were performed in accordance with the July 2017 Wetland CAM-26 Surface Water Investigation Work Plan. Samples were collected quarterly, beginning in the second quarter 2017 through second quarter 2018.

Analytic results are provided on **Tables 1 through 6** for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, inorganic compounds, other data, and field water quality measurements respectively.

### Surface Water and Groundwater Comparison

Sample data from the two CAM-26 locations were compared to corresponding sample data from shallow monitoring wells SB915-MW-104S, SB915-MW-87S, and SB915-MW-94S (see locations on **Figure 1**). A summary of key geochemistry classification values for water type determination is presented in **Table 1-1** below. Additionally, Stiff diagrams were compiled for these five locations using the 3<sup>rd</sup> quarter 2017 data, which largely represented the highest concentrations during the CAM-26 sampling event. Stiff diagrams for each location are presented on **Figure 2**.

**Table 1-1 Summary of Key Geochemistry Classification Values**

Location	Sample Date	pH	TDS (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Sodium to Calcium Ratio	Bromide to Chloride Ratio	Calcium to Chloride Ratio
CAM-26-01	5/30/17	7.02	1200	140	180	0.51	720	0.78	0.00071	0.25
CAM-26-01	7/25/17	6.9	1100	170	220	0.15	560	0.77	0.00027	0.39
CAM-26-01	10/11/17	7.01	1200	160	200	ND	600	0.80	NA	0.33
CAM-26-01	3/1/18	7.16	722	90	129	ND	548	0.70	NA	0.24
CAM-26-01	4/26/18	7.48	878	112	160	ND	416	0.70	NA	0.38

**Table 1-1 Summary of Key Geochemistry Classification Values**

Location	Sample Date	pH	TDS (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Sodium to Calcium Ratio	Bromide to Chloride Ratio	Calcium to Chloride Ratio
CAM-26-02	5/30/17	7.12	1200	140	180	0.54	400	0.78	0.00135	0.45
CAM-26-02	7/25/17	6.96	1100	180	220	0.16	420	0.82	0.00038	0.52
CAM-26-02	10/11/17	6.92	1200	170	210	ND	550	0.81	NA	0.38
CAM-26-02	3/1/18	7.72	750	91.2	129	ND	291	0.71	NA	0.44
CAM-26-02	4/26/18	7.57	885	112	161	ND	316	0.70	NA	0.51
SB915-MW-104S	5/30/17	6.12	120000	13000	18000	170	53000	0.72	0.00321	0.34
SB915-MW-104S	7/25/17	5.85	9100	17000	22000	16	56000	0.77	0.00029	0.39
SB915-MW-104S	10/11/17	6.31	110000	13000	17000	89	57000	0.76	0.00156	0.30
SB915-MW-104S	2/22/18	6.02	88600	13700	18500	20.6	54000	0.74	0.00038	0.34
SB915-MW-104S	4/26/18	5.81	84800	13600	20000	19.1	52800	0.68	0.00036	0.38
SB915-MW-87S	6/2/17	7.12	570	56	100	ND	130	0.56	NA	0.77
SB915-MW-87S	8/9/17	7.43	560	51	120	ND	100	0.43	NA	1.20
SB915-MW-87S	10/31/17	7.26	760	74	160	ND	170	0.46	NA	0.94
SB915-MW-87S	2/23/18	7.33	579	59.8	116	ND	193	0.52	NA	0.60
SB915-MW-87S	5/21/18	7.36	976	58.1	102	ND	162	0.57	NA	0.63
SB915-MW-94S	6/1/17	6.66	4200	620	600	0.54	1600	1.03	0.00034	0.38
SB915-MW-94S	8/10/17	6.93	3200	490	480	0.42	1500	1.02	0.00028	0.32
SB915-MW-94S	11/1/17	6.77	3100	430	420	ND	1400	1.02	NA	0.30
SB915-MW-94S	2/26/18	7.03	2360	420	446	ND	1480	0.94	NA	0.30
SB915-MW-94S	5/9/18	6.87	2580	420	549	ND	1260	0.77	NA	0.44
<b>Notes:</b> CAM-26-01 is location WB915-Pond Area W of WB14-1 CAM-26-02 is location WB915-Pond Area W of WB14-2										

**Table 1-1 Summary of Key Geochemistry Classification Values**

Location	Sample Date	pH	TDS (mg/L)	Sodium (mg/L)	Calcium (mg/L)	Bromide (mg/L)	Chloride (mg/L)	Sodium to Calcium Ratio	Bromide to Chloride Ratio	Calcium to Chloride Ratio
ND – not detected										
NA – not available										

Concentrations of total dissolved solids (TDS), chloride, sodium, and calcium in the CAM-26 samples are typically two orders of magnitude lower than those observed in SB915-MW-104S. The notable difference in chloride concentrations indicates that shallow groundwater the vicinity of SB915-MW-104S is not a significant contributor to surface water CAM-26.

The stiff diagrams further depict the concentration disparity between the CAM-26 locations and SB915-MW-104S, with scaling of component milliequivalent ratios being approximately 100 times lower in the CAM-26 locations. Additionally, the Na, K, Mg, SO<sub>4</sub>, and total alkalinity components of the CAM-26 locations are more pronounced than the SB915-MW-104S diagram. Surface water in CAM-26 is comparable to the freshwater signature identified for monitoring wells SB915-MW-87S and SB915-MW-94S in the Closure Investigation Report (OBG 2017b). The chloride and calcium main components of the CAM-26 diagrams indicate that the wastebeds may have historically influenced the water quality of CAM-26.

## Regional Hydrogeology and Hydrology

As discussed in the Closure Investigation Report (OBG 2017b), regional groundwater flow of the Ninemile Creek Valley is from the southwest to the northeast towards Onondaga Lake, mimicking the regional topography. Groundwater flow in the Ninemile Creek Valley occurs in the bedrock and overburden formations. Localized flow within the shallow fill unit is radial and a function of the elevational high created by the wastebeds. Recharge from the wastebeds to the native formations is limited by the leachate collection and conveyance system (LCCS) and the low hydraulic conductivity of the Solvay waste (OBG 2017).

Regional groundwater flow is not in the direction of CAM-26 from the wastebeds. Radial shallow fill groundwater flow from the wastebeds may be in the direction of CAM-26. However, shallow groundwater is intercepted by the LCCS at the base of Wastebeds 12-15. In addition, groundwater elevations in shallow native overburden monitoring wells in the area of wetland CAM-26 (i.e., SB915-MW-104S, SB915-MW-94S, and SB915-MW-87S), indicate the regional shallow native groundwater flow is to the north, showing the limited influence of radial flow from the beds in the area. The surface water elevation in CAM-26 is above the groundwater elevation in SB915-MW-104S, and elevations are summarized in **Table 7**. This creates a downward gradient of surface water in CAM-26 infiltrating into the groundwater, and reduces the likelihood of shallow groundwater upwelling into the wetland. In addition, the downward gradient limits the potential for migration of shallow groundwater in SB915-MW-104S to CAM-26.

## Conclusions

Concentrations of chloride and other geochemistry analytes in CAM-26 surface water are significantly lower than those observed in the adjacent shallow groundwater monitoring well SB915-MW-104S, and comparable to fresh water signatures observed in adjacent monitoring wells SB915-MW-87S and SB915-MW-94S. While concentrations are significantly lower, the presence and ratios of calcium and chloride to other analytes in the surface water indicate that Wastebed 14 may have historically influenced the water quality of CAM-26. However, that influence is minimal and likely no longer occurring due to changes in shallow groundwater flow following the cessation of loading in the beds, and installation of the LCCS.

## References

- OBG 2017a. *Wetland CAM-26 Surface Water Investigation Work Plan*. July 2017.
- OBG 2017b. *Wastebeds 9-15 Closure Investigation Report*. Geddes and Camillus, New York. November 2017.

**Appendix A - Table 1**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8260 Volatile Organic Compound Data**

Parameter Name	Field Sample ID		SB915-0398-01	SB915-0398-02
	Location		WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2
	NYS Class C Standards and Guidance Values	Sample Date Sample Purpose	5/30/2017 Regular Sample	5/30/2017 Regular Sample
		Units		
1,1,1,2-TETRACHLOROETHANE	NC	µg/L	1.0U	1.0U
1,1,1-TRICHLOROETHANE	NC	µg/L	1.0U	1.0U
1,1,2,2-TETRACHLOROETHANE	NC	µg/L	1.0U	1.0U
1,1,2-TRICHLOROETHANE	NC	µg/L	1.0U	1.0U
1,1-DICHLOROETHANE	NC	µg/L	1.0U	1.0U
1,1-DICHLOROETHENE	NC	µg/L	1.0U	1.0U
1,1-DICHLOROPROPENE	NC	µg/L	1.0U	1.0U
1,2,3-TRICHLOROPROPANE	NC	µg/L	1.0U	1.0U
1,2,4-TRICHLOROBENZENE	5.0 (S)	µg/L	1.0U	1.0U
1,2-DIBROMO-3-CHLOROPROPANE	NC	µg/L	1.0U	1.0U
1,2-DIBROMOETHANE	NC	µg/L	1.0U	1.0U
1,2-DICHLOROBENZENE	5.0 (S)	µg/L	1.0U	1.0U
1,2-DICHLOROETHANE	NC	µg/L	1.0U	1.0U
1,2-DICHLOROPROPANE	NC	µg/L	1.0U	1.0U
1,3-DICHLOROBENZENE	5.0 (S)	µg/L	1.0U	1.0U
1,3-DICHLOROPROPANE	NC	µg/L	1.0U	1.0U
1,4-DICHLOROBENZENE	5.0 (S)	µg/L	1.0U	1.0U
2,2-DICHLOROPROPANE	NC	µg/L	1.0UJ	1.0UJ
2-BUTANONE	NC	µg/L	5.0UJ	5.0UJ
2-HEXANONE	NC	µg/L	5.0U	5.0U
2-PROPENENITRILE, 2-METHYL-	NC	µg/L	10U	10U
4-METHYL-2-PENTANONE	NC	µg/L	5.0UJ	5.0UJ
ACETONE	NC	µg/L	5.0UJ	5.0UJ
ACETONITRILE	NC	µg/L	20UJ	20UJ
ACROLEIN	NC	µg/L	20U	20U
ACRYLONITRILE	NC	µg/L	20U	20U
ALLYL CHLORIDE	NC	µg/L	1.0U	1.0U
BENZENE	10.0 (S)	µg/L	1.0U	1.0U
BROMOCHLOROMETHANE	NC	µg/L	1.0U	1.0U
BROMODICHLOROMETHANE	NC	µg/L	1.0U	1.0U
BROMOFORM	NC	µg/L	1.0U	1.0U
BROMOMETHANE	NC	µg/L	1.0U	1.0U
CARBON DISULFIDE	NC	µg/L	1.0UJ	1.0UJ
CARBON TETRACHLORIDE	NC	µg/L	1.0UJ	1.0UJ
CHLOROBENZENE	5.0 (S)	µg/L	1.0U	1.0U

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 1**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8260 Volatile Organic Compound Data**

Parameter Name	NYS Class C Standards and Guidance Values	Field Sample ID	SB915-0398-01	SB915-0398-02
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2
		Sample Date	5/30/2017	5/30/2017
		Sample Purpose	Regular Sample	Regular Sample
		Units		
CHLOROETHANE	NC	µg/L	1.0U	1.0U
CHLOROFORM	NC	µg/L	1.0U	1.0U
CHLOROMETHANE	NC	µg/L	1.0U	1.0U
CHLOROPRENE	NC	µg/L	1.0U	1.0U
CIS-1,2-DICHLOROETHENE	NC	µg/L	1.0U	1.0U
CIS-1,3-DICHLOROPROPENE	NC	µg/L	1.0U	1.0U
DIBROMOCHLOROMETHANE	NC	µg/L	1.0U	1.0U
DIBROMOMETHANE	NC	µg/L	1.0U	1.0U
DICHLORODIFLUOROMETHANE	NC	µg/L	1.0UJ	1.0UJ
ETHYL CYANIDE	NC	µg/L	10U	10U
ETHYL METHACRYLATE	NC	µg/L	1.0UJ	1.0UJ
ETHYLBENZENE	17.0 (G)	µg/L	1.0U	1.0U
IODOMETHANE	NC	µg/L	1.0U	1.0U
ISOBUTANOL	NC	µg/L	40U	40R
METHYL METHACRYLATE	NC	µg/L	2.0UJ	2.0UJ
METHYLENE CHLORIDE	200.0 (S)	µg/L	1.0U	1.0U
STYRENE	NC	µg/L	1.0U	1.0U
TETRACHLOROETHENE	1.0 (G)	µg/L	1.0U	1.0U
TOLUENE	100.0 (G)	µg/L	1.0U	1.0U
TRANS-1,2-DICHLOROETHENE	NC	µg/L	1.0U	1.0U
TRANS-1,3-DICHLOROPROPENE	NC	µg/L	1.0U	1.0U
TRANS-1,4-DICHLORO-2-BUTENE	NC	µg/L	1.0U	1.0U
TRICHLOROETHENE	40.0 (S)	µg/L	1.0U	1.0U
TRICHLOROFLUOROMETHANE	NC	µg/L	1.0U	1.0U
VINYL ACETATE	NC	µg/L	1.0U	1.0U
VINYL CHLORIDE	NC	µg/L	1.0U	1.0U
XYLENES, TOTAL	65.0 (G)	µg/L	2.0U	2.0U

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).



**Appendix A - Table 2**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8270 Semivolatile Organic Compound Data**

Parameter Name	NYS Class C Standards and Guidance Values	Field Sample ID	SB915-0398-01	SB915-0398-02
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2
		Sample Date Sample Purpose	5/30/2017 Regular Sample	5/30/2017 Regular Sample
		Units		
1,2,4,5-TETRACHLOROBENZENE	NC	µg/L	0.94U	0.95U
1,3,5-TRINITROBENZENE	NC	µg/L	0.94U	0.95U
1,3-DINITROBENZENE	NC	µg/L	0.94U	0.95U
1,4-NAPHTHOQUINONE	NC	µg/L	0.94U	0.95U
1-PHENYL-1-(2,4-DIMETHYLPHENYL) ETHANE	NC	µg/L	0.94U	0.95U
1-PHENYL-1-(4-METHYLPHENYL) ETHANE	NC	µg/L	0.94U	0.95U
2,2'-OXYBIS(1-CHLOROPROPANE)	NC	µg/L	0.18U	0.18U
2,3,4,6-TETRACHLOROPHENOL	NC	µg/L	0.94U	0.95U
2,4,5-TRICHLOROPHENOL	1.0 (S)	µg/L	0.94U	0.95U
2,4,6-TRICHLOROPHENOL	1.0 (S)	µg/L	0.94U	0.95U
2,4-DICHLOROPHENOL	1.0 (S)	µg/L	0.18U	0.18U
2,4-DIMETHYLPHENOL	5.0 (S)	µg/L	0.94U	0.95U
2,4-DINITROPHENOL	400.0 (S)	µg/L	9.4UJ	9.5UJ
2,4-DINITROTOLUENE	NC	µg/L	0.94U	0.95U
2,6-DICHLOROPHENOL	NC	µg/L	0.94U	0.95U
2,6-DINITROTOLUENE	NC	µg/L	0.94U	0.95U
2-ACETYLAMINOFLUORENE (TIC)	NC	µg/L	0.94U	0.95U
2-CHLORONAPHTHALENE	NC	µg/L	0.18U	0.18U
2-CHLOROPHENOL	1.0 (S)	µg/L	0.94U	0.95U
2-METHYLNAPHTHALENE	4.7 (G)	µg/L	0.18U	0.18U
2-METHYLPHENOL	NC	µg/L	0.94U	0.95U
2-NAPHTHYLAMINE	NC	µg/L	0.94U	0.95U
2-NITROANILINE	NC	µg/L	4.7U	4.8U
2-NITROPHENOL	NC	µg/L	0.94U	0.95U
3&4-METHYLPHENOL	NC	µg/L	0.94U	0.95U
3,3'-DICHLOROBENZIDINE	NC	µg/L	0.94U	0.95U
3-METHYLCHOLANTHRENE	NC	µg/L	0.94U	0.95U
3-NITROANILINE	NC	µg/L	4.7U	4.8U
4,6-DINITRO-2-METHYLPHENOL	NC	µg/L	4.7U	4.8U
4-AMINOBIIPHENYL	NC	µg/L	0.94U	0.95U
4-BROMOPHENYL PHENYL ETHER	NC	µg/L	0.94U	0.95U
4-CHLORO-3-METHYLPHENOL	NC	µg/L	0.94U	0.95U
4-CHLOROANILINE	NC	µg/L	0.94U	0.95U
4-CHLOROPHENYL PHENYL ETHER	NC	µg/L	0.94U	0.95U
4-NITROANILINE	NC	µg/L	4.7U	4.8U

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 2**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8270 Semivolatile Organic Compound Data**

Parameter Name	NYS Class C Standards and Guidance Values	Field Sample ID	SB915-0398-01	SB915-0398-02
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2
		Sample Date	5/30/2017	5/30/2017
		Sample Purpose	Regular Sample	Regular Sample
		Units		
4-NITROPHENOL	NC	µg/L	4.7UJ	4.8UJ
5-NITRO-O-TOLUIDINE	NC	µg/L	0.94U	0.95U
7,12-DIMETHYLBENZ(A)ANTHRACENE	NC	µg/L	0.94U	0.95U
[1,1-BIPHENYL]-4,4-DIAMINE, 3,3-DIMETHYL-	NC	µg/L	4.7U	4.8U
ACENAPHTHENE	5.3 (G)	µg/L	0.18U	0.18U
ACENAPHTHYLENE	NC	µg/L	0.18U	0.18U
ACETOPHENONE	NC	µg/L	0.94U	0.95U
ALPHA-NAPHTHYLAMINE	NC	µg/L	9.4U	9.5U
ANTHRACENE	3.8 (G)	µg/L	0.18U	0.18U
BENZENAMINE, N,N-DIMETHYL-4-(PEHNYLAZO)-	NC	µg/L	0.94U	0.95U
BENZENEACETIC ACID, 4-CHLORO-ALPHA-(4-CHLOROPHENYL)	NC	µg/L	0.94UJ	0.95UJ
BENZO(A)ANTHRACENE	0.03 (G)	µg/L	0.18U	0.18U
BENZO(A)PYRENE	0.0012 (G)	µg/L	0.18U	0.18U
BENZO(B)FLUORANTHENE	NC	µg/L	0.18U	0.065J
BENZO(G,H,I)PERYLENE	NC	µg/L	0.18U	0.18U
BENZO(K)FLUORANTHENE	NC	µg/L	0.18U	0.18U
BENZYL ALCOHOL	NC	µg/L	0.94U	0.95U
BIS(2-CHLOROETHOXY)METHANE	NC	µg/L	0.94U	0.95U
BIS(2-CHLOROETHYL)ETHER	NC	µg/L	0.18U	0.18U
BIS(2-ETHYLHEXYL)PHTHALATE	0.6 (S)	µg/L	[ 2.1 ]	[ 6.0 ]
BUTYLBENZYL PHTHALATE	NC	µg/L	0.94U	0.95U
CARBAMOTHIOIC ACID, BIS(1-METHYLETHYL)-S-(2,3-DICHLORO-)	NC	µg/L	0.94U	0.95U
CHRYSENE	NC	µg/L	0.18U	0.18U
DI-N-BUTYL PHTHALATE	NC	µg/L	0.14J	0.95U
DI-N-OCTYL PHTHALATE	NC	µg/L	0.94U	0.95U
DIBENZO(A,H)ANTHRACENE	NC	µg/L	0.18U	0.18U
DIBENZOFURAN	NC	µg/L	0.94U	0.95U
DIETHYL PHTHALATE	NC	µg/L	0.94U	0.95U
DIMETHYL PHTHALATE	NC	µg/L	0.94U	0.95U
FLUORANTHENE	NC	µg/L	0.18U	0.18U
FLUORENE	0.54 (G)	µg/L	0.18U	0.18U
HEXACHLOROBUTADIENE	1.0 (S)	µg/L	0.18U	0.18U
HEXACHLOROCYCLOPENTADIENE	0.45 (S)	µg/L	0.94U	0.95U
HEXACHLOROETHANE	0.6 (S)	µg/L	0.94U	0.95U
HEXACHLOROPROPENE	NC	µg/L	0.94R	0.95R

NOTES:

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 2**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8270 Semivolatile Organic Compound Data**

Parameter Name	NYS Class C Standards and Guidance Values	Field Sample ID	SB915-0398-01	SB915-0398-02		
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2		
		Sample Date	5/30/2017	5/30/2017		
		Sample Purpose	Regular Sample	Regular Sample		
		Units				
INDENO(1,2,3-CD)PYRENE	NC	µg/L	0.18U	0.18U		
ISODRIN	NC	µg/L	0.94U	0.95U		
ISOPHORONE	NC	µg/L	0.94U	0.95U		
ISOSAFROLE	NC	µg/L	0.94U	0.95U		
KEPONE	NC	µg/L	9.4U	9.5U		
METHANESULFONIC ACID, ETHYL ESTER	NC	µg/L	0.94U	0.95U		
METHAPYRILENE	NC	µg/L	38U	38U		
METHYL METHANESULFONATE	NC	µg/L	0.94U	0.95U		
N-NITROSO-DI-N-PROPYLAMINE	NC	µg/L	0.18U	0.18U		
N-NITROSODI-N-BUTYLAMINE	NC	µg/L	0.94U	0.95U		
N-NITROSODIETHYLAMINE	NC	µg/L	0.94U	0.95U		
N-NITROSODIMETHYLAMINE	NC	µg/L	0.94UJ	0.95UJ		
N-NITROSODIPHENYLAMINE	NC	µg/L	0.94U	0.95U		
N-NITROSOMETHYLETHYLAMINE	NC	µg/L	0.94UJ	0.95UJ		
N-NITROSOPIPERIDINE	NC	µg/L	0.94U	0.95U		
N-NITROSOPYRROLIDINE	NC	µg/L	0.94U	0.95U		
NAPHTHALENE	13.0 (G)	µg/L	0.18U	0.18U		
NITROBENZENE	NC	µg/L	1.9U	1.9U		
O,O,O-TRIETHYL PHOSPHOROTHIOATE	NC	µg/L	0.94U	0.95U		
O,O-DIETHYL-O-(2-PYRAZINYL)PHOSPHOROTHIOATE	NC	µg/L	0.94U	0.95U		
O-TOLUIDINE	NC	µg/L	0.94U	0.95U		
P-PHENYLENEDIAMINE	NC	µg/L	94R	95R		
PENTACHLOROBENZENE	NC	µg/L	0.94U	0.95U		
PENTACHLORONITROBENZENE	NC	µg/L	0.94UJ	0.95UJ		
PENTACHLOROPHENOL	1.0 (S)	µg/L	4.7U	4.8U		
PHENACETIN	NC	µg/L	0.94U	0.95U		
PHENANTHRENE	5.0 (G)	µg/L	0.18U	0.18U		
PHENOL	5.0 (S)	µg/L	0.94U	0.95U		
PRONAMIDE	NC	µg/L	0.94U	0.95U		
PYRENE	4.6 (G)	µg/L	0.18U	0.18U		
SAFROLE	NC	µg/L	0.94U	0.95U		

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 3**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Method 8082 Pesticide Data**

Parameter Name	Field Sample ID		SB915-0398-01	SB915-0398-02
	Location		WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2
	NYS Class C Standards and Guidance Values	Sample Date Sample Purpose Units	5/30/2017 Regular Sample	5/30/2017 Regular Sample
4,4'-DDD	0.000080 (S)	µg/L	0.0012U	0.0012U
4,4'-DDE	0.000070 (S)	µg/L	0.0012U	0.0012U
4,4'-DDT	0.000010 (S)	µg/L	0.0012U	0.0012U
ALDRIN	0.001 (S)	µg/L	0.0012U	0.0012U
ALPHA-BHC	0.002 (S)	µg/L	0.0012U	0.0012U
BETA-BHC	0.007 (S)	µg/L	0.0012U	0.0012U
DELTA-BHC	0.008 (S)	µg/L	0.0012U	0.0012U
DIELDRIN	0.056 (S)	µg/L	0.0012U	0.0012U
ENDOSULFAN I	0.009 (S)	µg/L	0.0012U	0.0012U
ENDOSULFAN II	0.009 (S)	µg/L	0.0012U	0.0012U
ENDOSULFAN SULFATE	NC	µg/L	0.0012U	0.0012U
ENDRIN	0.036 (S)	µg/L	0.0012U	0.0012U
ENDRIN ALDEHYDE	NC	µg/L	0.0012U	0.0012U
GAMMA-BHC (LINDANE)	NC	µg/L	0.0012U	0.0012U
HEPTACHLOR	0.00020 (S)	µg/L	0.0012U	0.0012U
HEPTACHLOR EPOXIDE	0.00030 (S)	µg/L	0.0012U	0.0012U
HEXACHLOROBENZENE	0.000030 (S)	µg/L	0.0012U	0.0012U
METHOXYCHLOR	0.03 (S)	µg/L	0.0012U	0.0012U
TOXAPHENE	0.0000060 (S)	µg/L	0.095U	0.095U

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 4**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Methods 6010/1631/9014 Inorganic Compound Data**

Parameter Name	Field Sample ID			SB915-0398-01	SB915-0399-02	SB915-0409-02	SB915-0438-06
	NYS Class C			WB915-POND AREA W OF	WB915-POND AREA W OF	WB915-POND AREA W OF	WB915-POND AREA W OF
	Location			WB14-1	WB14-1	WB14-1	WB14-1
	NYS Class C	Standards and	Sample Date	5/30/2017	7/25/2017	10/11/2017	4/26/2018
	Standards and	Guidance Values	Sample Purpose	Regular Sample	Regular Sample	Regular Sample	Regular Sample
	Guidance Values	ardness Depende	Units				
ALUMINUM	0.1 (S)	NC	mg/L	0.37U	2U	2U	NA
ANTIMONY	NC	NC	mg/L	0.032U	0.1U	0.1U	NA
ARSENIC	0.15 (S)	NC	mg/L	0.048U	0.1U	0.1U	NA
BARIUM	NC	NC	mg/L	0.073J	0.093J	0.079J	NA
BERYLLIUM	1.1 (S)	NC	mg/L	0.0042U	0.04U	0.04U	NA
BORON	10.0 (S)	NC	mg/L	0.044U	2U	2U	NA
CADMIUM	NC	0.0238	mg/L	0.0025U	0.05U	0.05U	0.005U
CALCIUM	NC	NC	mg/L	180	220J	200J	160
CHROMIUM	NC	0.9362	mg/L	0.0061U	0.05U	0.05U	NA
COBALT	0.005 (S)	NC	mg/L	0.0051U	0.5U	0.5U	NA
COPPER	NC	0.1263	mg/L	0.034U	0.25U	0.25U	NA
CYANIDE	0.0052 (S)	NC	mg/L	0.0033U	NA	NA	NA
IRON	0.3 (S)	NC	mg/L	0.41U	[ 0.42J ]	1U	0.179
LEAD	NC	0.0838	mg/L	0.031U	0.1U	0.1U	0.05U
MAGNESIUM	NC	NC	mg/L	27J	31J	29J	22.6
MANGANESE	NC	NC	mg/L	0.63	1	0.85	0.178
MERCURY	0.0000007 (S)	NC	mg/L	[ 0.000006 ]	NA	NA	NA
NICKEL	NC	0.7142	mg/L	0.032U	0.4U	0.4U	NA
POTASSIUM	NC	NC	mg/L	7.2J	50U	50U	3.82
SELENIUM	0.0046 (S)	NC	mg/L	0.038U	0.1U	0.1U	NA
SILVER	0.00010 (S)	NC	mg/L	0.012U	0.05U	0.05U	NA
SODIUM	NC	NC	mg/L	140	170J	160J	112
THALLIUM	0.008 (S)	NC	mg/L	0.026U	0.2U	0.2U	NA
TIN	NC	NC	mg/L	0.018U	1U	1U	NA
VANADIUM	0.014 (S)	NC	mg/L	0.069U	0.5U	0.5U	NA
ZINC	NC	1.149	mg/L	0.069U	0.2U	0.2U	NA

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

Hardness dependent criteria calculated using all surface water sample average hardness of 2212.6 mg/L.

**Appendix A - Table 4**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Methods 6010/1631/9014 Inorganic Compound Data**

Parameter Name	Field Sample ID			SB915-3304-04	SB915-0398-02	SB915-0399-01	SB915-0409-01
	NYS Class C			WB915-POND AREA W OF	WB915-POND AREA W OF	WB915-POND AREA W OF	WB915-POND AREA W OF
	Location			WB14-1	WB14-2	WB14-2	WB14-2
	NYS Class C	Standards and	Sample Date	3/1/2018	5/30/2017	7/25/2017	10/11/2017
	Standards and	Guidance Values	Sample Purpose	Regular Sample	Regular Sample	Regular Sample	Regular Sample
	Guidance Values	ardness Depende	Units				
ALUMINUM	0.1 (S)	NC	mg/L	NA	0.37U	2U	2U
ANTIMONY	NC	NC	mg/L	NA	0.032U	0.1U	0.1U
ARSENIC	0.15 (S)	NC	mg/L	NA	0.048U	0.1U	0.1U
BARIUM	NC	NC	mg/L	NA	0.071J	0.093J	0.081J
BERYLLIUM	1.1 (S)	NC	mg/L	NA	0.0042U	0.04U	0.04U
BORON	10.0 (S)	NC	mg/L	NA	0.044U	2U	2U
CADMIUM	NC	0.0238	mg/L	0.005U	0.0025U	0.05U	0.05U
CALCIUM	NC	NC	mg/L	129	180	220J	210J
CHROMIUM	NC	0.9362	mg/L	NA	0.0061U	0.05U	0.05U
COBALT	0.005 (S)	NC	mg/L	NA	0.0051U	0.5U	0.5U
COPPER	NC	0.1263	mg/L	NA	0.034U	0.25U	0.25U
CYANIDE	0.0052 (S)	NC	mg/L	NA	0.0033U	NA	NA
IRON	0.3 (S)	NC	mg/L	[ 0.863 ]	0.41U	1U	[ 2.0 ]
LEAD	NC	0.0838	mg/L	0.05U	0.031U	0.1U	0.1U
MAGNESIUM	NC	NC	mg/L	19.1	27J	33J	31J
MANGANESE	NC	NC	mg/L	0.796	0.62	1.1	0.8
MERCURY	0.0000007 (S)	NC	mg/L	NA	[ 0.0000067 ]	NA	NA
NICKEL	NC	0.7142	mg/L	NA	0.032U	0.4U	0.4U
POTASSIUM	NC	NC	mg/L	3.53	6.2U	50U	50U
SELENIUM	0.0046 (S)	NC	mg/L	NA	0.038U	0.1U	0.1U
SILVER	0.00010 (S)	NC	mg/L	NA	0.012U	0.05U	0.05U
SODIUM	NC	NC	mg/L	90	140	180J	170J
THALLIUM	0.008 (S)	NC	mg/L	NA	0.026U	[ 0.031J ]	0.2U
TIN	NC	NC	mg/L	NA	0.018U	1U	1U
VANADIUM	0.014 (S)	NC	mg/L	NA	0.069U	0.5U	0.5U
ZINC	NC	1.149	mg/L	NA	0.069U	0.2U	0.2U

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

Hardness dependent criteria calculated using all surface water sample average hardness of 2212.6 mg/L.

**Appendix A - Table 4**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Methods 6010/1631/9014 Inorganic Compound Data**

Parameter Name	Field Sample ID			SB915-0438-07	SB915-3304-01
	NYS Class C			WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2
	NYS Class C Standards and Guidance Values	Standards and Guidance Values	Sample Date Sample Purpose	4/26/2018 Regular Sample	3/1/2018 Regular Sample
	Units				
ALUMINUM	0.1 (S)	NC	mg/L	NA	NA
ANTIMONY	NC	NC	mg/L	NA	NA
ARSENIC	0.15 (S)	NC	mg/L	NA	NA
BARIUM	NC	NC	mg/L	NA	NA
BERYLLIUM	1.1 (S)	NC	mg/L	NA	NA
BORON	10.0 (S)	NC	mg/L	NA	NA
CADMIUM	NC	0.0238	mg/L	0.005U	0.005U
CALCIUM	NC	NC	mg/L	161	129
CHROMIUM	NC	0.9362	mg/L	NA	NA
COBALT	0.005 (S)	NC	mg/L	NA	NA
COPPER	NC	0.1263	mg/L	NA	NA
CYANIDE	0.0052 (S)	NC	mg/L	NA	NA
IRON	0.3 (S)	NC	mg/L	0.185	[ 0.729 ]
LEAD	NC	0.0838	mg/L	0.05U	0.05U
MAGNESIUM	NC	NC	mg/L	22.8	19.1
MANGANESE	NC	NC	mg/L	0.154	0.852
MERCURY	0.0000007 (S)	NC	mg/L	NA	NA
NICKEL	NC	0.7142	mg/L	NA	NA
POTASSIUM	NC	NC	mg/L	3.85	3.34
SELENIUM	0.0046 (S)	NC	mg/L	NA	NA
SILVER	0.00010 (S)	NC	mg/L	NA	NA
SODIUM	NC	NC	mg/L	112	91.2
THALLIUM	0.008 (S)	NC	mg/L	NA	NA
TIN	NC	NC	mg/L	NA	NA
VANADIUM	0.014 (S)	NC	mg/L	NA	NA
ZINC	NC	1.149	mg/L	NA	NA

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

Hardness dependent criteria calculated using all surface water sample average hardness of 2212.6 mg/L.

**Appendix A - Table 5**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Other Data**

Parameter Name	Field Sample ID		SB915-0398-01	SB915-0399-02	SB915-0409-02	SB915-0438-06
	Location		WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1
	NYS Class C Standards and Guidance Values	Sample Date Sample Purpose Units	5/30/2017 Regular Sample	7/25/2017 Regular Sample	10/11/2017 Regular Sample	4/26/2018 Regular Sample
ALKALINITY, BICARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	320	260	270	206
ALKALINITY, CARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	5.0U	5.0U	5.0U	2.0U
ALKALINITY, TOTAL	NC	mg/L	320	260	270	206
BIOCHEMICAL OXYGEN DEMAND, FIVE DAY	NC	mg/L	NA	3.2	NA	NA
BROMIDE	NC	mg/L	0.51	0.15J	0.50U	5.0U
CHEMICAL OXYGEN DEMAND	NC	mg/L	34	66	62J-	23.9
CHLORIDE	NC	mg/L	360	410	520	319
HARDNESS (AS CaCO <sub>3</sub> )	NC	mg/L	720	560	600	416
NITROGEN, AMMONIA (AS N)	NC	mg/L	0.45	0.89J	2.9	0.50U
NITROGEN, KJELDAHL, TOTAL	NC	mg/L	1.8J	2.3	4.2J	4.0U
NITROGEN, NITRATE (AS N)	NC	mg/L	0.10U	0.10U	0.10U	5.0U
NITROGEN, NITRITE	NC	mg/L	0.050U	NA	NA	NA
SULFATE	NC	mg/L	51	15	16	54
TOTAL DISSOLVED SOLIDS (RESIDUE, FILTERABLE)	500 (S)	mg/L	[ 1200 ]	[ 1100 ]	[ 1200 ]	[ 878 ]
TOTAL ORGANIC CARBON	NC	mg/L	11J	18J-	17J-	9.3
TOTAL RECOVERABLE PHENOLICS	NC	mg/L	0.010UJ	0.010U	0.0071J	0.25U

NOTES:

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).



**Appendix A - Table 5  
Honeywell  
Wastebeds 9-15 Off-Site SAA Restoration Plan  
CAM-26 Evaluation  
Other Data**

		Field Sample ID	SB915-3304-04	SB915-0398-02	SB915-0399-01	SB915-0409-01
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2
	NYS Class C Standards and Guidance Values	Sample Date Sample Purpose Units	3/1/2018 Regular Sample	5/30/2017 Regular Sample	7/25/2017 Regular Sample	10/11/2017 Regular Sample
Parameter Name						
ALKALINITY, BICARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	166	300	240	230
ALKALINITY, CARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	2.0U	5.0U	5.0U	5.0U
ALKALINITY, TOTAL	NC	mg/L	166	300	240	230
BIOCHEMICAL OXYGEN DEMAND, FIVE DAY	NC	mg/L	NA	NA	2.2	NA
BROMIDE	NC	mg/L	5.0U	0.54	0.16J	0.50U
CHEMICAL OXYGEN DEMAND	NC	mg/L	26.9	22	56	54J-
CHLORIDE	NC	mg/L	280	400	420	550
HARDNESS (AS CaCO <sub>3</sub> )	NC	mg/L	548	790	520	620
NITROGEN, AMMONIA (AS N)	NC	mg/L	0.50U	0.43	0.18J	0.78
NITROGEN, KJELDAHL, TOTAL	NC	mg/L	4.0U	1.3UJ	3.3	1.8J
NITROGEN, NITRATE (AS N)	NC	mg/L	5.0U	0.10U	0.10U	0.10U
NITROGEN, NITRITE	NC	mg/L	NA	0.050U	NA	NA
SULFATE	NC	mg/L	45	52	16	22
TOTAL DISSOLVED SOLIDS (RESIDUE, FILTERABLE)	500 (S)	mg/L	[ 722 ]	[ 1200 ]	[ 1100 ]	[ 1200 ]
TOTAL ORGANIC CARBON	NC	mg/L	8.6	11J	17J-	17J-
TOTAL RECOVERABLE PHENOLICS	NC	mg/L	0.25U	0.010UJ	0.010U	0.01

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 5**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Other Data**

Parameter Name	NYS Class C Standards and Guidance Values	Field Sample ID	SB915-0438-07	SB915-3304-01		
		Location	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2		
		Sample Date Sample Purpose Units	4/26/2018 Regular Sample	3/1/2018 Regular Sample		
ALKALINITY, BICARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	205	160		
ALKALINITY, CARBONATE (AS CaCO <sub>3</sub> )	NC	mg/L	2.0U	2.0U		
ALKALINITY, TOTAL	NC	mg/L	205	160		
BIOCHEMICAL OXYGEN DEMAND, FIVE DAY	NC	mg/L	NA	NA		
BROMIDE	NC	mg/L	5.0U	5.0U		
CHEMICAL OXYGEN DEMAND	NC	mg/L	76.4	27.2		
CHLORIDE	NC	mg/L	316	291		
HARDNESS (AS CaCO <sub>3</sub> )	NC	mg/L	520	436		
NITROGEN, AMMONIA (AS N)	NC	mg/L	0.50U	0.50U		
NITROGEN, KJELDAHL, TOTAL	NC	mg/L	4.0U	2.0J		
NITROGEN, NITRATE (AS N)	NC	mg/L	5.0U	5.0U		
NITROGEN, NITRITE	NC	mg/L	NA	NA		
SULFATE	NC	mg/L	51	42		
TOTAL DISSOLVED SOLIDS (RESIDUE, FILTERABLE)	500 (S)	mg/L	[ 885 ]	[ 750 ]		
TOTAL ORGANIC CARBON	NC	mg/L	9.0	9.8		
TOTAL RECOVERABLE PHENOLICS	NC	mg/L	0.25U	0.25U		

**NOTES:**

J = Approximate value since the result is less than the RL and greater than or equal to the MDL; +/- = Result may be biased high/low; U = Analyte not detected; R = Rejected value.

NA = Analyte not analyzed for; NC = No applicable criteria.

[ ] = Result exceeds Class C standard (S) or guidance value (G).

**Appendix A - Table 6**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Field Measurements**

		Field Sample ID	SB915-0398-01	SB915-0399-02	SB915-0409-02	SB915-0438-06	SB915-3304-04
		Location	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1	WB915-POND AREA W OF WB14-1
	New York State Class C	Sample Date	5/30/2017	7/25/2017	10/11/2017	4/26/2018	3/1/2018
Parameter Name	Standards	Sample Purpose	Regular Sample	Regular Sample	Regular Sample	Regular Sample	Regular Sample
		Units					
Conductivity	NC	mS/cm	1.67	1.69	1.83	1.76	1.29
Dissolved Oxygen	< 4.0	mg/L	[ 1.9 ]	[ 3.19 ]	[ 2.1 ]	7.85	4.14
ORP	NC	MV	97.5	-58.1	-146.4	53.3	-4.0
pH	6.5 > pH > 8.5	S.U.	7.02	6.90	7.01	7.48	7.16
Temperature	NC	Degrees C	19.2	18.38	16.12	10.3	4.46
Turbidity	NC	NTU	2.53	11.7	1.94	2.98	16.0

NOTES:

Data has not been validated.

NC - No applicable criteria. [ ] - Exceeds New York State Class C SGVs

NYS Class C Surface Water SGVs obtained from NYSDEC Ambient Water Quality Standard and Guidance Values (June 1998, April 2000 Addendum).

**Appendix A - Table 6**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Field Measurements**

		Field Sample ID	SB915-0398-02	SB915-0399-01	SB915-0409-01	SB915-0438-07	SB915-3304-01
		Location	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2	WB915-POND AREA W OF WB14-2
	New York State Class C	Sample Date	5/30/2017	7/25/2017	10/11/2017	4/26/2018	3/1/2018
Parameter Name	Standards	Sample Purpose	Regular Sample	Regular Sample	Regular Sample	Regular Sample	Regular Sample
		Units					
Conductivity	NC	mS/cm	1.66	1.71	1.99	1.75	1.29
Dissolved Oxygen	< 4.0	mg/L	[ 2.18 ]	[ 2.9 ]	[ 1.21 ]	9.21	[ 3.56 ]
ORP	NC	MV	78.1	-37.7	-196.5	54.8	-21.9
pH	6.5 > pH > 8.5	S.U.	7.12	6.96	6.92	7.57	7.72
Temperature	NC	Degrees C	19.22	18.98	15.97	9.79	5.26
Turbidity	NC	NTU	2.24	4.0	11.37	2.71	11.52

NOTES:

Data has not been validated.

NC - No applicable criteria. [ ] - Exceeds New York State Class C SGVs

NYS Class C Surface Water SGVs obtained from NYSDEC Ambient Water Quality Standard and Guidance Values (June 1998, April 2000 Addendum).

**Appendix A - Table 7**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Groundwater and Surface Water Elevations**

Location	Groundwater or Surface Water Elevation October 2012	Groundwater or Surface Water Elevation January 2013	Groundwater or Surface Water Elevation May 2013	Groundwater or Surface Water Elevation July 2013	Groundwater or Surface Water Elevation October 2013	Groundwater or Surface Water Elevation January 2014	Groundwater or Surface Water Elevation April 2014	Groundwater or Surface Water Elevation July 2014	Groundwater or Surface Water Elevation October 2014
SB915-MW-104S	390.77	392.42	395.22	394.33	392.71	394.47	396.76	394.58	392.08
SB915-MW-87S	372.99	374.43	375.85	374.44	374.36	375.20	377.13	373.88	373.83
SB915-MW-94S	380.60	381.28	382.24	382.55	378.77	381.17	383.62	382.06	378.84
SB915-SWSG-09	398.04	399.19	399.34	399.04	398.84	NA	399.64	NA	398.54

NOTES:

NA = Not available

**Appendix A - Table 7**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Groundwater and Surface Water Elevations**

Location	Groundwater or Surface Water Elevation February 2015	Groundwater or Surface Water Elevation April 2015	Groundwater or Surface Water Elevation July 2015	Groundwater or Surface Water Elevation October 2015	Groundwater or Surface Water Elevation February 2016	Groundwater or Surface Water Elevation April 2016	Groundwater or Surface Water Elevation July 2016	Groundwater or Surface Water Elevation October 2016	Groundwater or Surface Water Elevation February 2017
SB915-MW-104S	392.98	395.47	396.53	392.78	393.57	396.63	394.38	392.74	395.91
SB915-MW-87S	374.13	376.90	375.71	373.40	374.54	375.52	373.19	373.04	375.70
SB915-MW-94S	381.09	383.10	382.81	381.55	381.51	383.18	379.97	380.95	381.80
SB915-SWSG-09	399.14	399.74	399.59	399.14	399.69	399.59	NA	398.44	399.59

NOTES:

NA = Not available

**Appendix A - Table 7**  
**Honeywell**  
**Wastebeds 9-15 Off-Site SAA Restoration Plan**  
**CAM-26 Evaluation**  
**Groundwater and Surface Water Elevations**

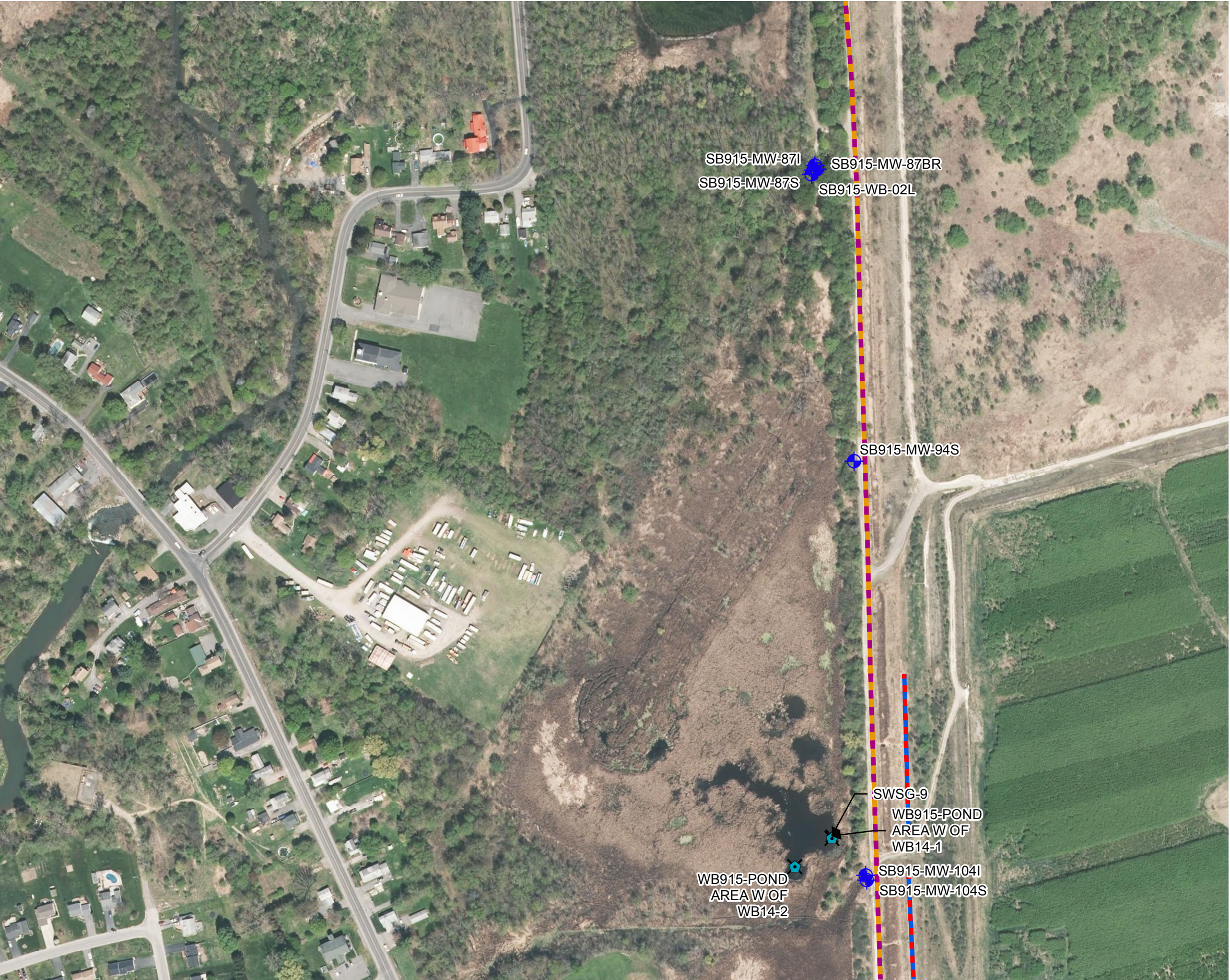
Location	Groundwater or Surface Water Elevation May 2017	Groundwater or Surface Water Elevation July 2017	Groundwater or Surface Water Elevation October 2017	Groundwater or Surface Water Elevation January 2018				
SB915-MW-104S	398.08	397.21	393.65	395.58				
SB915-MW-87S	375.90	375.90	373.27	375.98				
SB915-MW-94S	383.72	383.35	381.20	382.02				
SB915-SWSG-09	399.69	399.54	398.54	399.94				

NOTES:  
 NA = Not available



PLOTDATE: never never millennr

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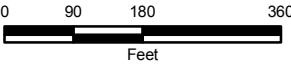
LEGEND

LOCATION TYPE

- MONITORING WELL
- STAFF GAUGE
- SURFACE WATER SAMPLE
- PHASE 2 COLLECTION TRENCH
- LCCS

HONEYWELL  
WASTEBEDS 9-15  
SAA RESTORATION PLAN  
GEDDES AND CAMILLUS, NY

WETLAND CAM-26  
SURFACE WATER  
LOCATIONS

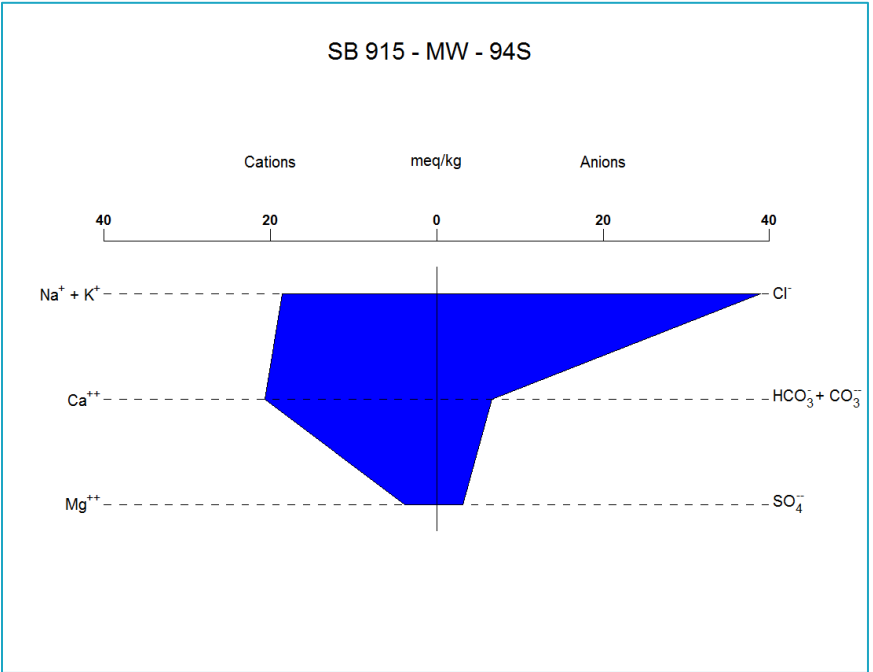
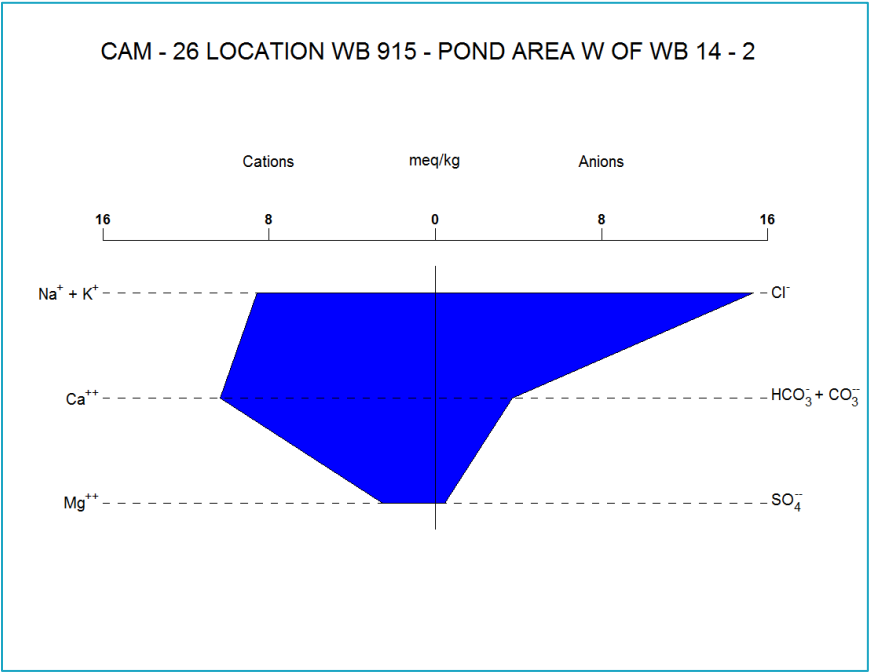
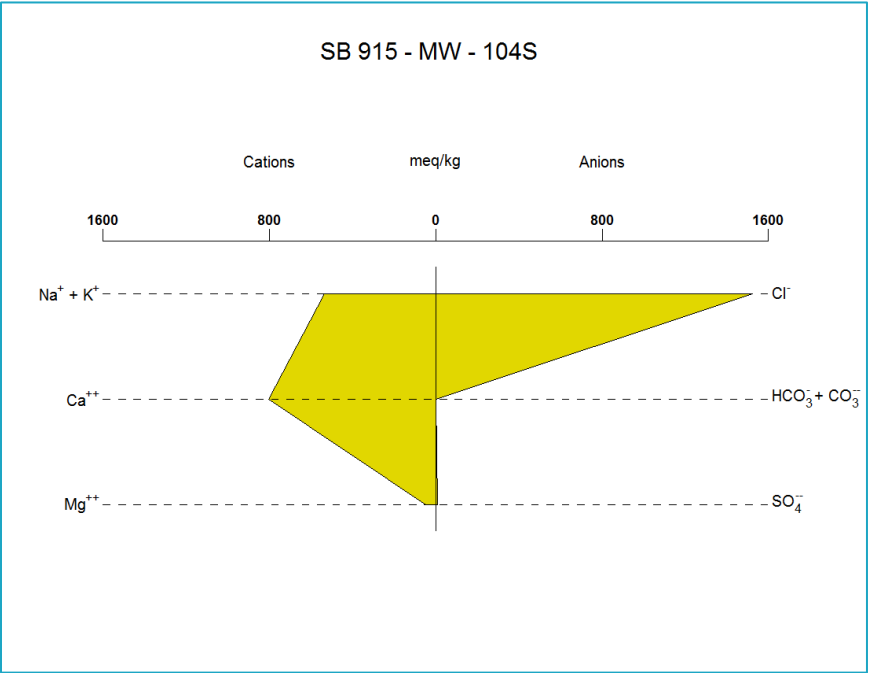
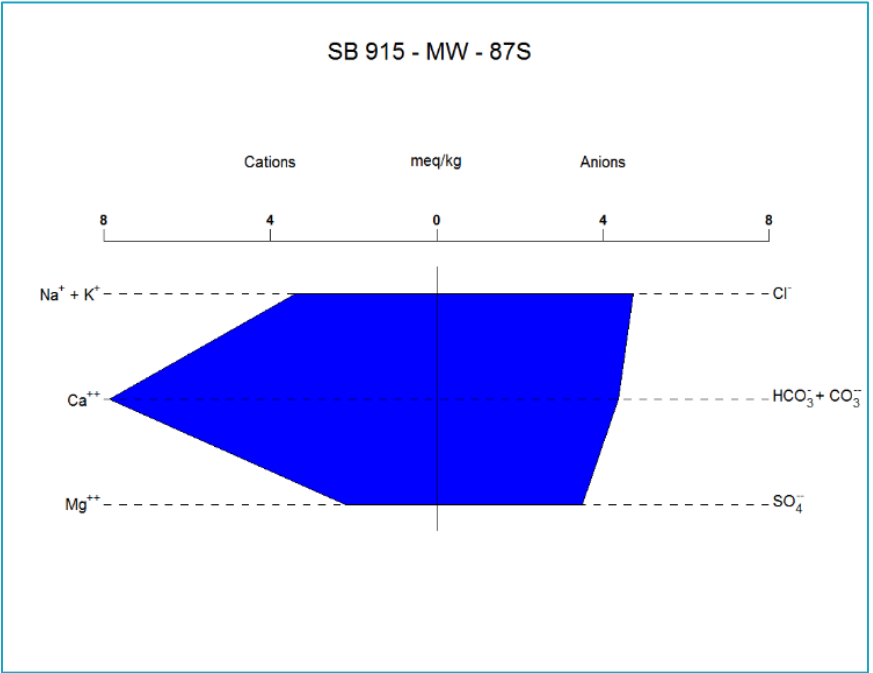
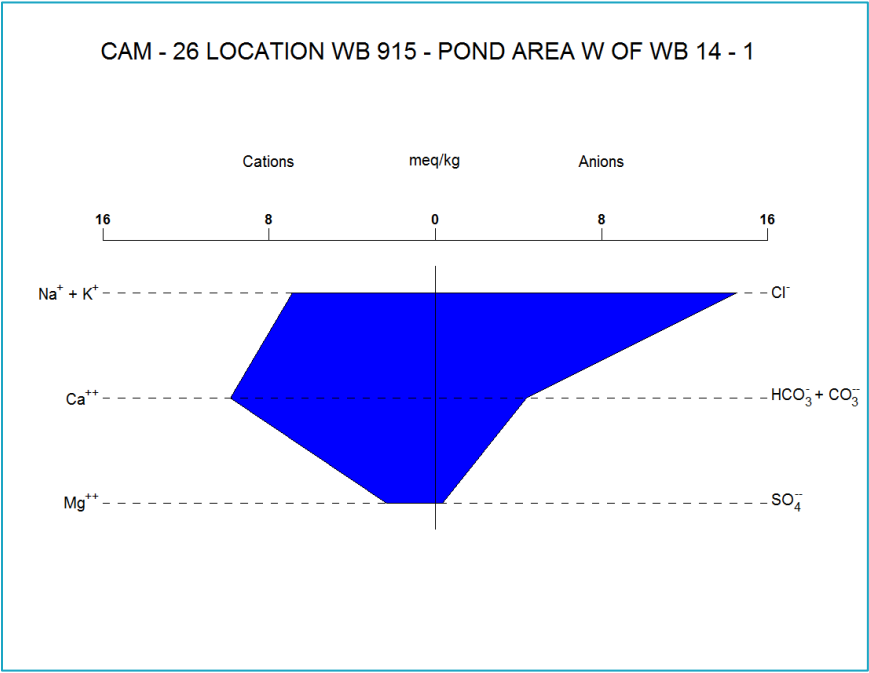


JULY 2018  
1163.63564





STIFF DIAGRAMS



## **APPENDIX B NINEMILE CREEK RESTORATION DESIGN DRAWINGS AND SPECIFICATIONS**



# NINEMILE CREEK BANK RESTORATION - WASTEBED 11

The map is a topographic representation of the Fairmount area in Lakeland, Florida. It shows the following features:

- Project Location:** A pink polygon outlines the project area, which includes two 'Tailings Pond' areas and a 'LAB (ABANDONED)' area.
- Geographical Features:** Ninemile Creek flows through the area. Other features include Edgewood Garden, School No 5, Most Holy Rosary Chh, and various ponds and canals.
- Infrastructure:** The map shows several roads, including Lakeland Road, and a railway line. A green arrow points towards the top left, indicating North.
- Other Landmarks:** The map includes labels for 'Lakeland', 'Fairmount', 'Westerville', 'Westview Manor', 'Gillis Hill', and 'Fairmount Terrace'.



1163.72386-001



GENERAL NOTES

1. EXISTING SITE AND SUBSURFACE INFORMATION PRESENTED SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXACT DIMENSIONS AND LOCATIONS OF ALL STRUCTURES AND KNOWN UTILITIES ARE CONSIDERED APPROXIMATE ONLY AND SHALL BE VERIFIED AS REQUIRED IN THE FIELD. IF DISCREPANCIES ARE FOUND BETWEEN THE PLANS AND PHYSICAL CONDITIONS OF THE SITE, NOTIFY THE ENGINEER OF THE DISCREPANCY PRIOR TO PERFORMING THE WORK.
3. ROADWAY ACCESS SHALL BE PROVIDED FOR ON-SITE VEHICLES DURING CONSTRUCTION ACTIVITIES. THE SHUTDOWN OF ANY EXISTING ROADWAYS SHALL BE COORDINATED WITH THE OWNER PRIOR TO THE START OF CONSTRUCTION.
4. RESTORATION SHALL BE IMPLEMENTED ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.

SURVEY NOTES

1. SURVEY INFORMATION SHOWN (TOPOGRAPHY, STRUCTURES, AND UTILITIES) WAS COMPILED FROM SURVEYS OBTAINED FROM THE FOLLOWING SOURCES;
  - C.T. MALE SITE SURVEY, DATED MAY AND AUGUST 2019
  - THEW ASSOCIATES SITE SURVEY DATED JUNE 2018
  - RICHARD M. RYBINSKI L.S. (APRIL 21, 2005; JUNE 7, 2005; DECEMBER 4, 2007; JUNE 8, 2008; APRIL 7, 2010)
  - THEW ASSOCIATES AS-BUILT STRUCTURE LOCATIONS SURVEY DATED MARCH 9, 2016
  - C.T. MALE SITE SURVEY, AUGUST 7, 2018
2. HORIZONTAL DATUM IS NAD83 NEW YORK CENTRAL U.S. FT. AND THE VERTICAL DATUM IS NAVD88.

UTILITY NOTES

1. THE APPROXIMATE LOCATION OF KNOWN EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS. VERIFY THE ACTUAL LOCATION PRIOR TO COMMENCING WORK.
2. ALL UNDER AND ABOVE GROUND UTILITIES AFFECTED BY CONSTRUCTION SHALL BE PROTECTED.
3. CONTACT DIG SAFELY NEW YORK AND THE OWNER PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES AND PROVIDE AT LEAST 72 HOURS NOTIFICATION.
4. COORDINATION WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY DE-ENERGIZING, OR INTERRUPTION OF SERVICE, REMOVAL, RELOCATION, REPLACEMENT OF ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES AND/OR OVERHEAD WIRES WITHIN THE LIMITS OF WORK OR COULD OTHERWISE INTERFERE WITH THE REMEDIAL ACTIONS SHALL BE PERFORMED.
5. PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES SHALL BE MAINTAINED. OVERHEAD POWER LINES SHALL BE SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. EQUIPMENT SHALL BE GROUNDED AS NECESSARY.

TOPSOIL AND SEEDING NOTES:

1. NO FERTILIZER SHALL BE APPLIED WITHIN THE LIMITS OF WORK SHOWN.
2. SUCCESSIONAL OLD FIELD SEED MIX AND LIVE STAKES SHALL BE APPLIED OVER THE DISTURBED AREAS IN ACCORDANCE WITH SPECIFICATION 31 22 19 - TOPSOIL, SEEDING AND PLANTING.
3. TO PROMOTE VEGETATION ESTABLISHMENT, SEQUENCE SEEDING SO AS TO REDUCE THE LIKELIHOOD THAT SEED WILL BE INUNDATED WITH STORM WATER RUNOFF OR OTHER WATER SOURCES.

LEGEND:

- 380

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EXISTING MAJOR CONTOUR
- 379

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EXISTING MINOR CONTOUR
- 400.75

×

EXISTING SPOT ELEVATION
- 400

○

PROPOSED CONTOUR
- 400.8

×

PROPOSED SPOT ELEVATION
- ORDINARY HIGH WATER MARK
- EXISTING CONDITION LIMITS
- —

—

SILT BARRIER

SCHEDULE 1				
APPROXIMATE RESTORATION AREAS				
LOCATION	EXISTING CONDITIONS	RESTORATION TYPE	AREA (SF)	SHEET LOCATION
P-1	PATCHES OF EXPOSED CALCIFIED MATERIAL, STEEP ERODING BANK.	TYPE 1	120	C-103
P-2	SLOUGHING AREA WITH BARE GRAVEL SUBSTRATE.	TYPE 1	110	C-104
Q-1	SLOUGHING AREA WITH BARE GRAVEL SUBSTRATE.	TYPE 1	1,080	C-105
Q-2	EXPOSED BARE CLAY, STEEP BANK SLOPES, MINIMAL VEGETATIVE COVER.	TYPE 1, TYPE 2	2,430	C-106
Q-3	EXPOSED CALCIFIED MATERIALS MIXED WITH COBBLE AND CONCRETED SUBSTRATE, POOR VEGETATIVE COVER, RAILROAD TIES PRESENT.	TYPE 1	1,120	C-107
Q-4	CALCIFIED MATERIAL MIXED WITH CONCRETED SUBSTRATE, POOR VEGETATIVE COVER.	TYPE 1	525	C-108
Q-5	SLOUGHING AREA WITH EXPOSED SOIL, SOME CALCIFIED MATERIALS, STEEP ERODING BANK.	TYPE 1	4,490	C-109

SCHEDULE 2		
SUMMARY OF RESTORATION TYPES		
REMEDY		RESTORATION TYPES DESCRIPTION
<div></div>	RESTORATION TYPE 1	REGRADE SLOPES (IF NECESSARY) TO 1(V):2(H) MAXIMUM SLOPE, PLACEMENT OF 6-INCHES OF TOPSOIL, SUCCESSIONAL OLD FIELD VEGETATION, LIVE STAKES, AND EROSION CONTROL BLANKET.
<div></div>	RESTORATION TYPE 2	SLOPE RESTORATION PER DETAIL A ON SHEET C-501. REGRADE SLOPES (IF NECESSARY) TO 1(V):1.5(H) MAXIMUM SLOPE, PLACEMENT OF GEOCELL WITH 8-INCHES OF TOPSOIL, SUCCESSIONAL OLD FIELD VEGETATION, LIVE STAKES, AND EROSION CONTROL BLANKET. SLOPE STABILIZATION PER DETAIL B ON SHEET C-501.

PRELIMINARY

NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
		NO.	DATE	REVISION	INT.



O'BRIEN & GERE ENGINEERS, INC

HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

GENERAL

GENERAL NOTES

FILE NO.	1163.72386 -002
DATE	NOVEMBER 201

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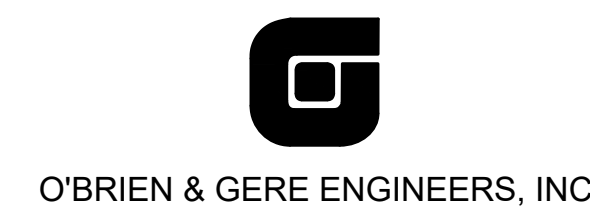
NOVEMBER 2019



**PRELIMINARY**  
NOT FOR CONSTRUCTION



IN CHARGE OF	M. MARKERT						
DESIGNED BY	M. MELLEN						
CHECKED BY	D. CRAWFORD						
DRAWN BY	M. BLEI						
		NO.	DATE	REVISION		INT.	



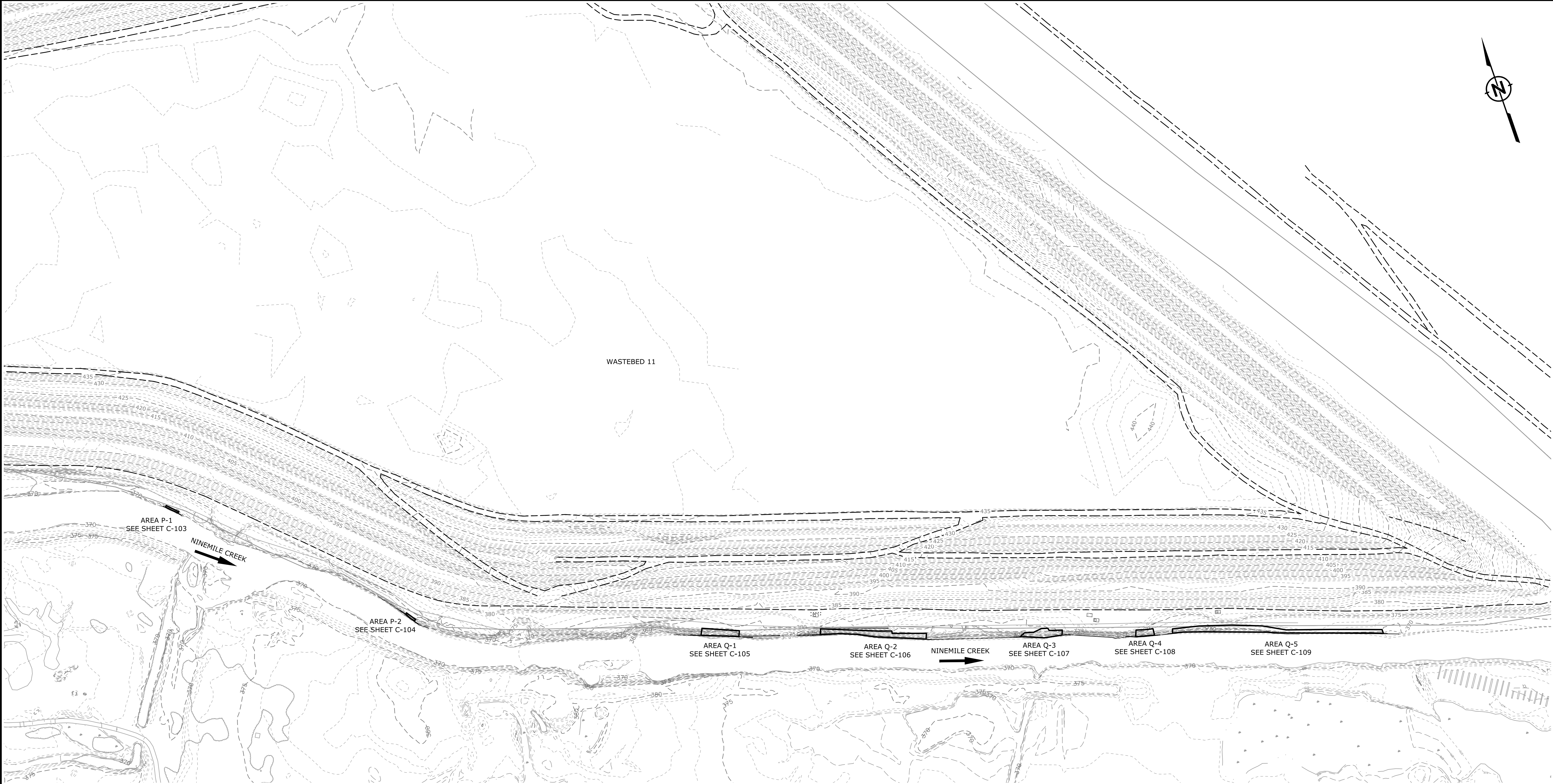
HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL  
  
**WASTEBEDS 9-15 SITE PLAN**

FILE NO.  
1163.72386 -003  
DATE  
NOVEMBER 2019

**C-101**

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**PRELIMINARY**  
NOT FOR CONSTRUCTION



IN CHARGE OF	M. MARKERT					
DESIGNED BY	M. MELLEN					
CHECKED BY	D. CRAWFORD					
DRAWN BY	M. BLEI					
NO.	DATE	REVISION	INT.			



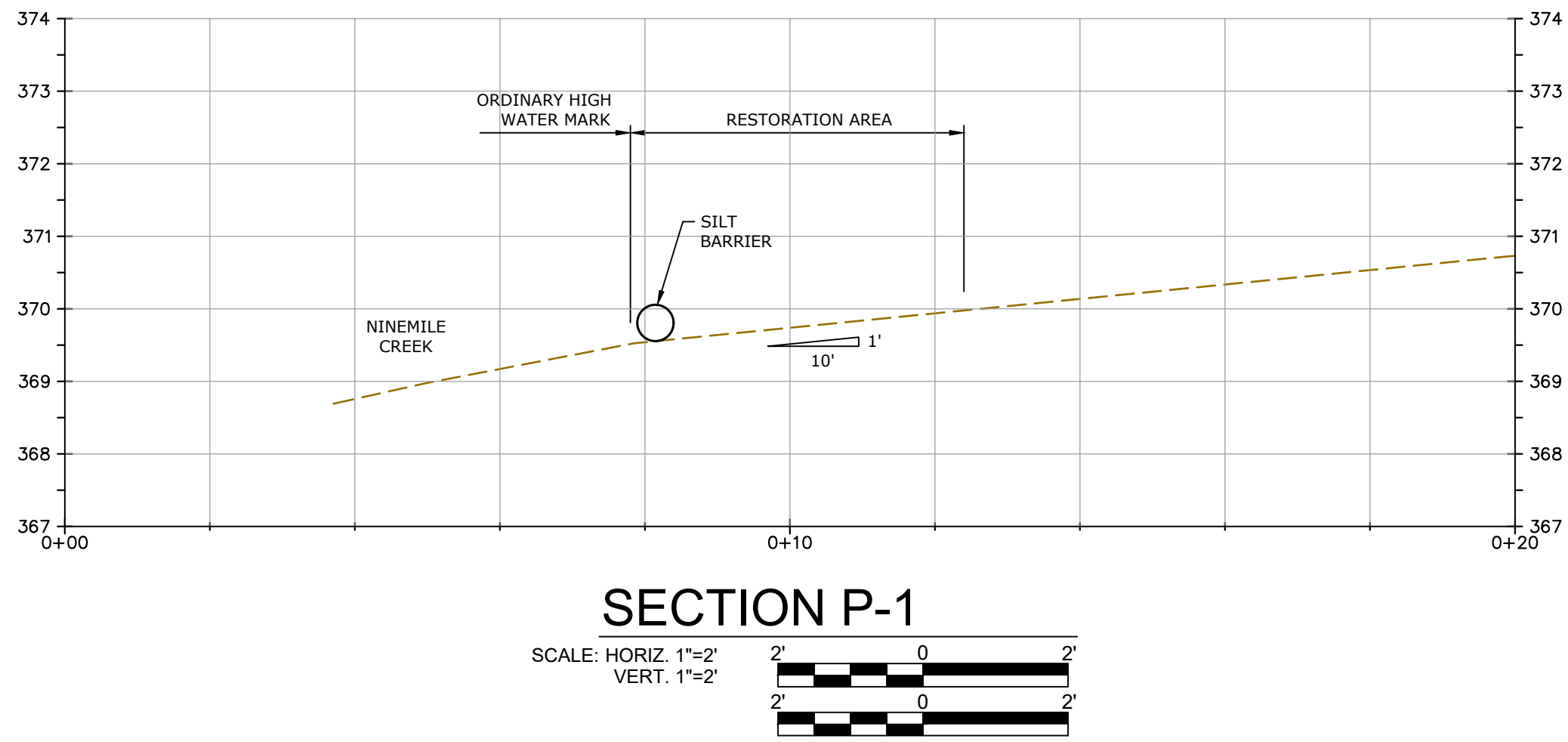
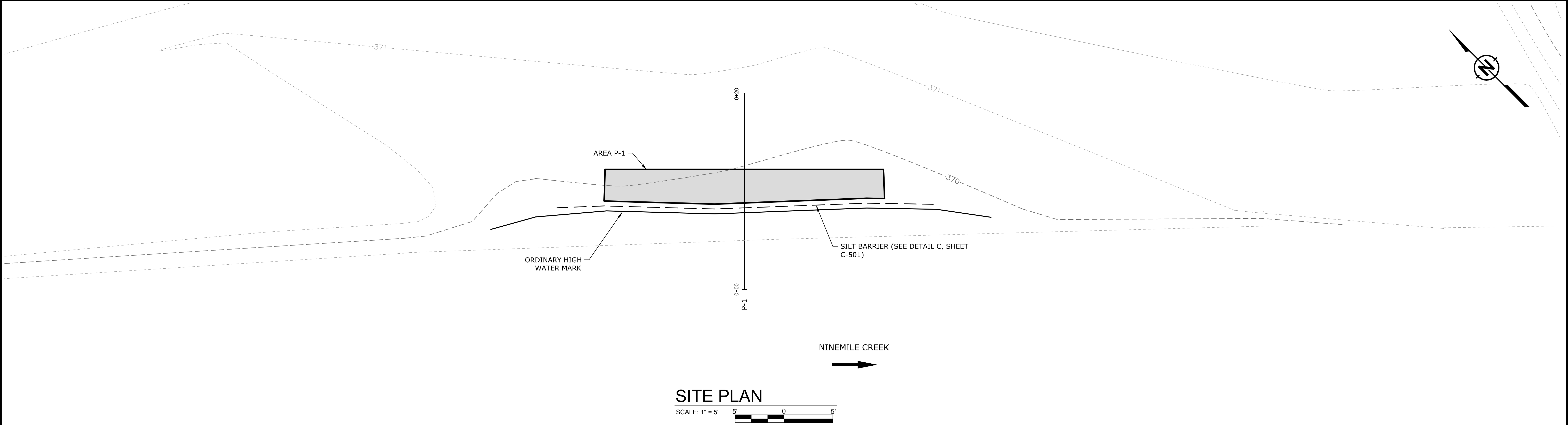
HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL  
**NINEMILE CREEK BANK SITE PLAN**

FILE NO.  
1163.72386 -003  
DATE  
NOVEMBER 2019

**C-102**






- NOTE:**
- SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31.22.19 FOR TOPSOIL, SEEDING, AND PLANTING.
  - AREAS TO BE RESTORED WITHIN AREA P-1 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
  - ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
  - PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
  - PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
  - ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
  - INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
  - ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
  - SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.

**PRELIMINARY**  
NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
		NO.	DATE	REVISION	INT.



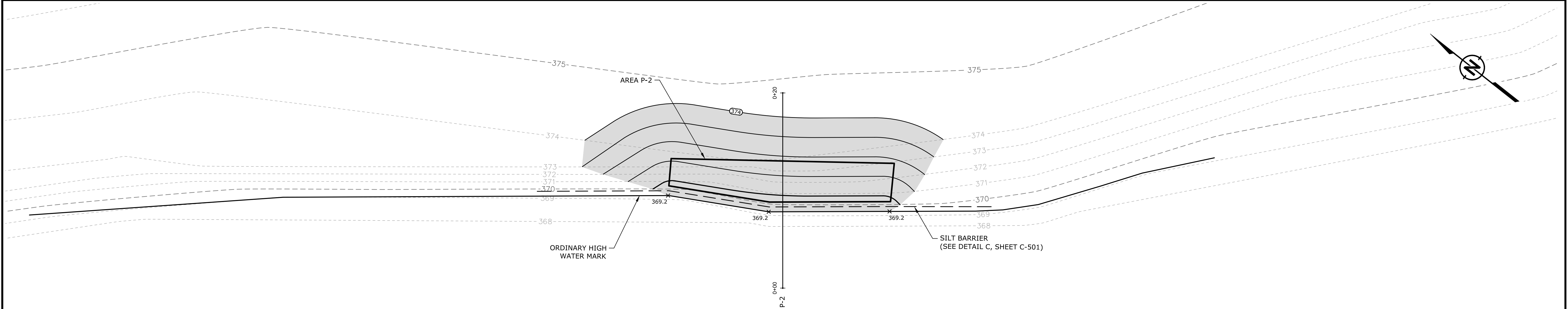
O'BRIEN & GERE ENGINEERS, INC

HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL

AREA P-1 RESTORATION SITE PLAN

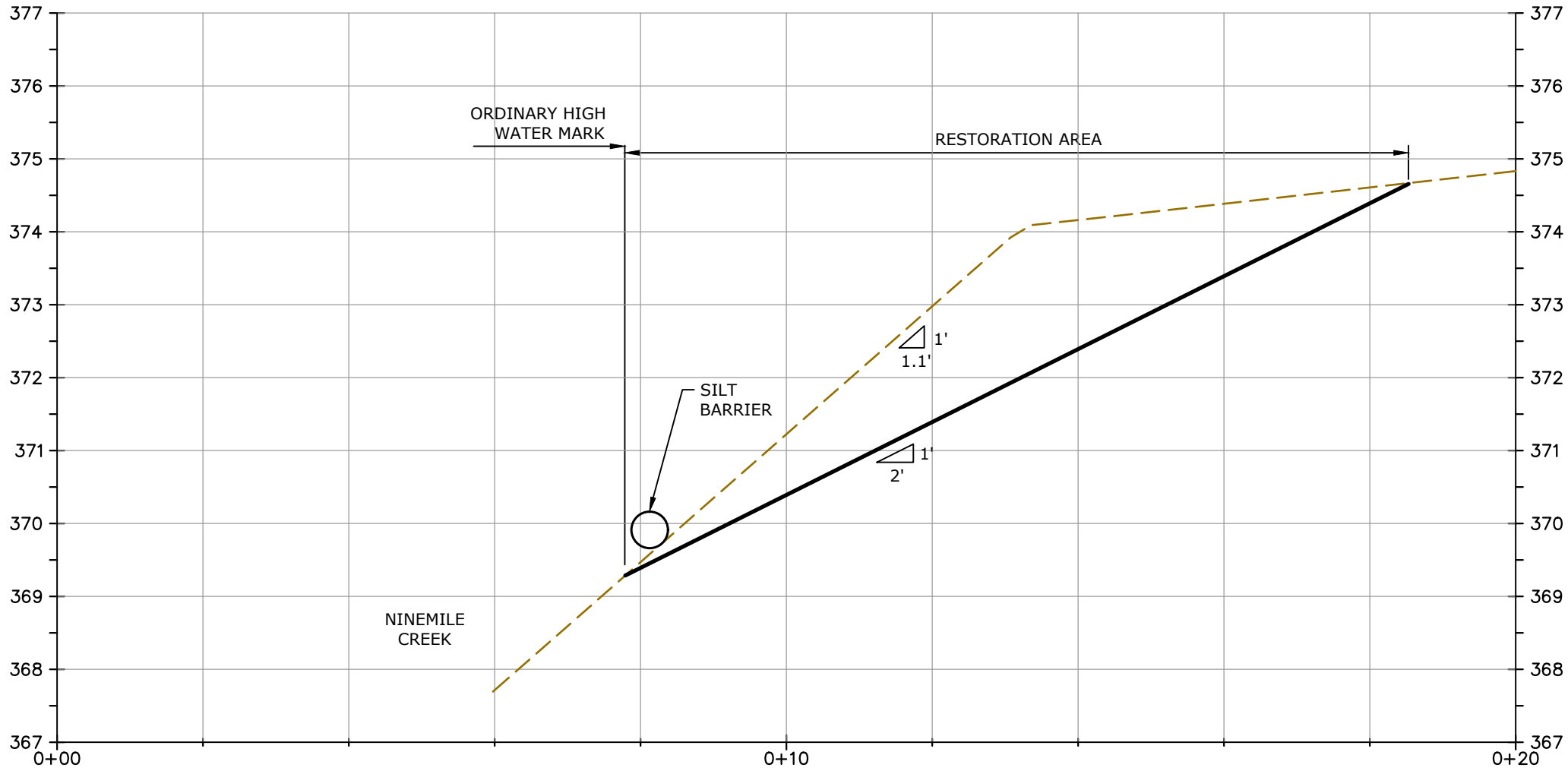
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DATE NOVEMBER 2019	



NINEMILE CREEK

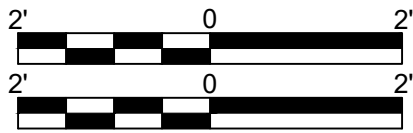
SITE PLAN

SCALE: 1" = 5'



SECTION P-2

SCALE: HORIZ. 1"=2"  
VERT. 1"=2'



- NOTES:
- SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31 22 19 FOR TOPSOIL, SEEDING, AND PLANTING. AREAS TO BE RESTORED WITHIN AREA P-2 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
  - ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
  - PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
  - PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
  - ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
  - INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
  - ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
  - SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.

- LEGEND:
- 400 --- EXISTING MAJOR CONTOUR
  - 399 --- EXISTING MINOR CONTOUR
  - 400.75x EXISTING SPOT ELEVATION

PRELIMINARY  
NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT					
DESIGNED BY	M. MELLEN					
CHECKED BY	D. CRAWFORD					
DRAWN BY	M. BLEI					
		NO.	DATE	REVISION		INT.



HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL  
AREA P-2 RESTORATION SITE PLAN

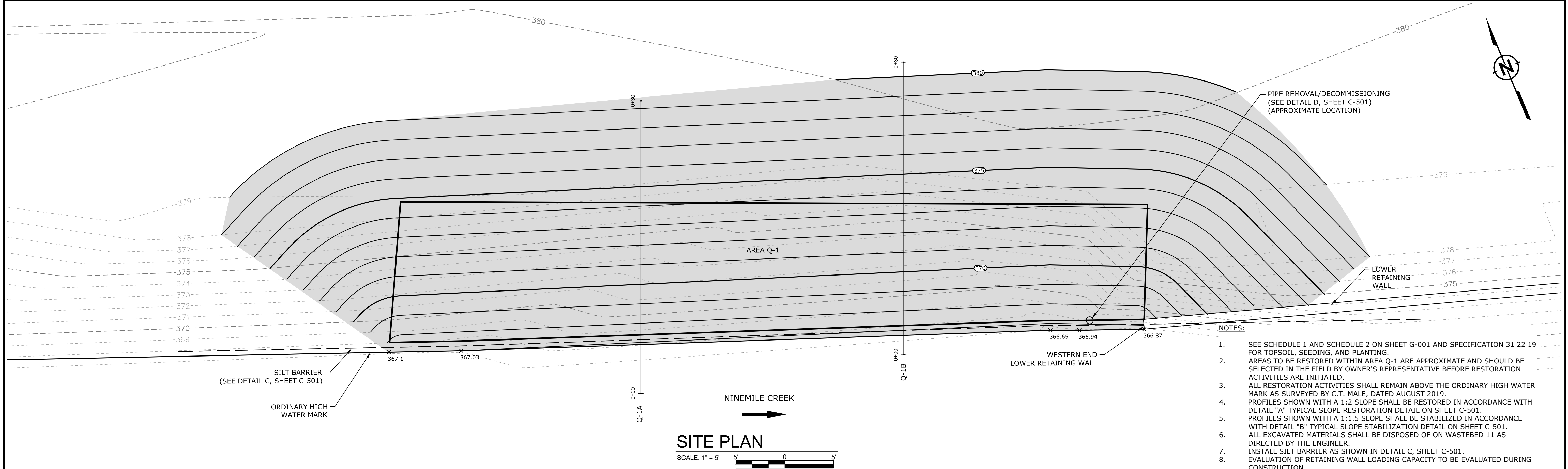
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1163.72386 -006  
DATE  
NOVEMBER 2019

C-104

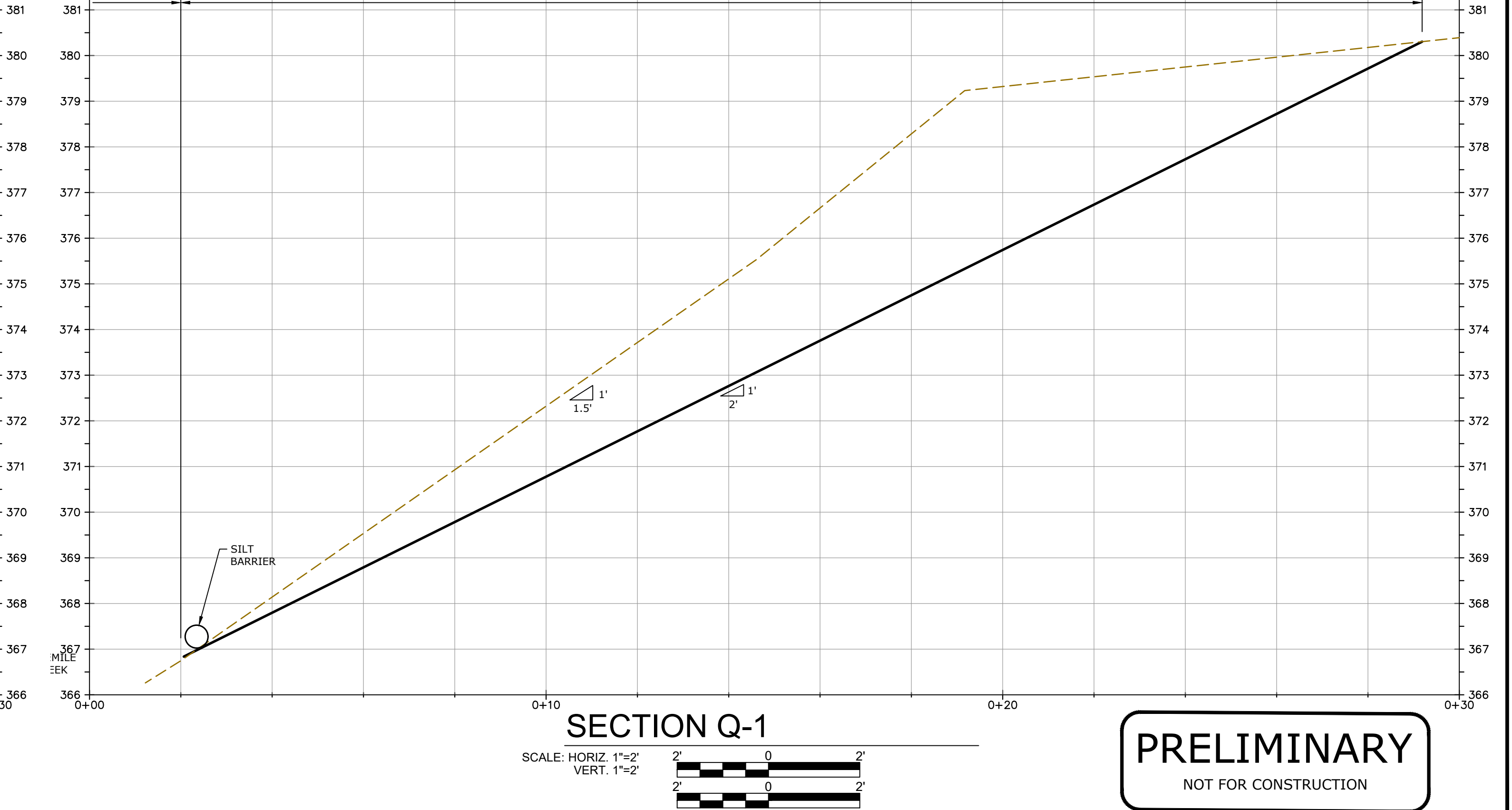
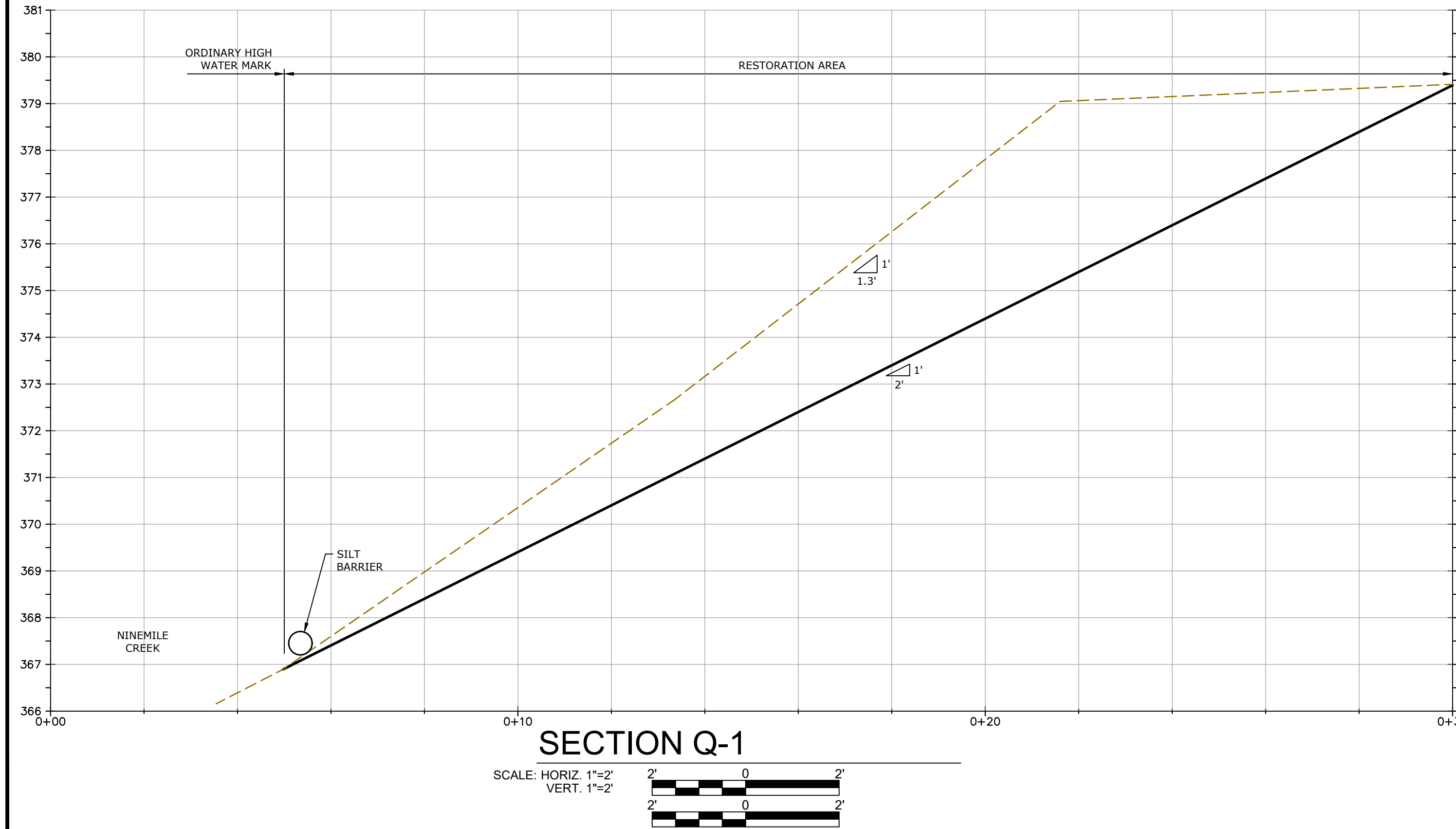


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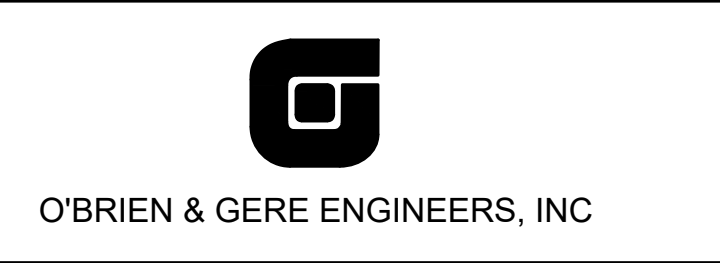


- NOTES:
1. SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31 22 19 FOR TOPSOIL, SEEDING, AND PLANTING.
  2. AREAS TO BE RESTORED WITHIN AREA Q-1 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
  3. ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
  4. PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
  5. PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
  6. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
  7. INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
  8. EVALUATION OF RETAINING WALL LOADING CAPACITY TO BE EVALUATED DURING CONSTRUCTION.
  9. ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
  10. SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.



**PRELIMINARY**  
NOT FOR CONSTRUCTION

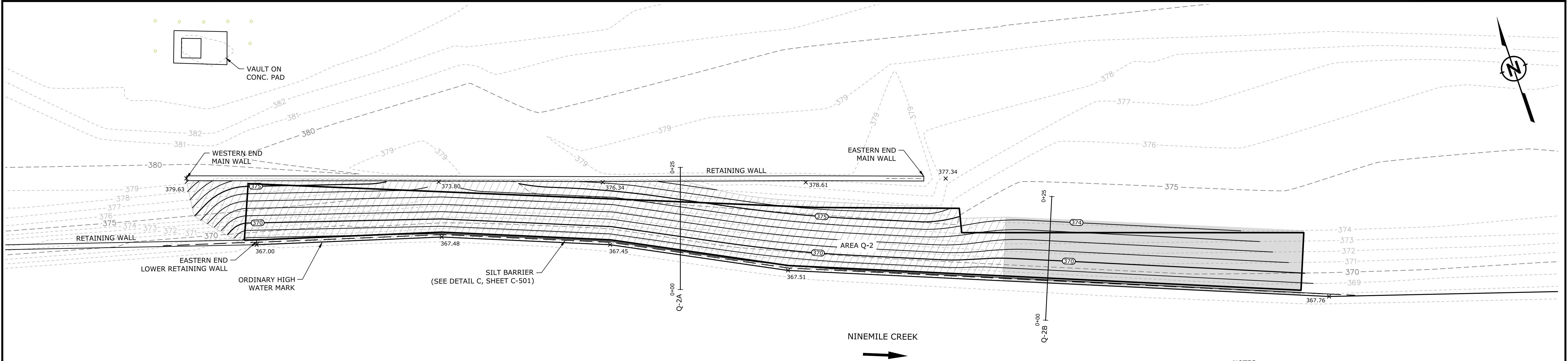
IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
NO.	DATE	REVISION	INT.		



HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL  
**AREA Q-1 RESTORATION SITE PLAN**

FILE NO.	1163.72386 -007	C-105
DATE	NOVEMBER 2019	

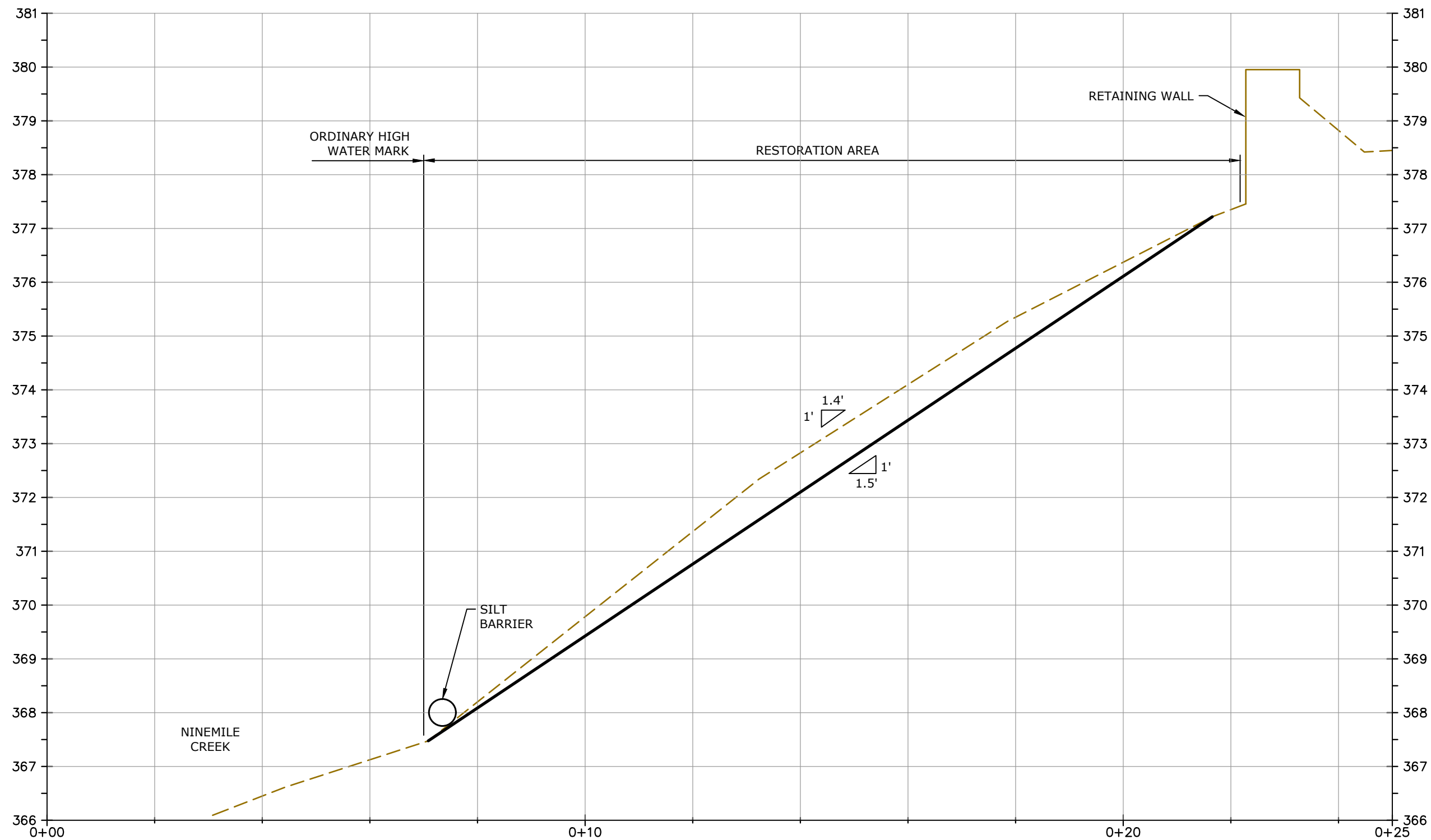


### SITE PLAN

SCALE: 1" = 10' 10' 0 10'

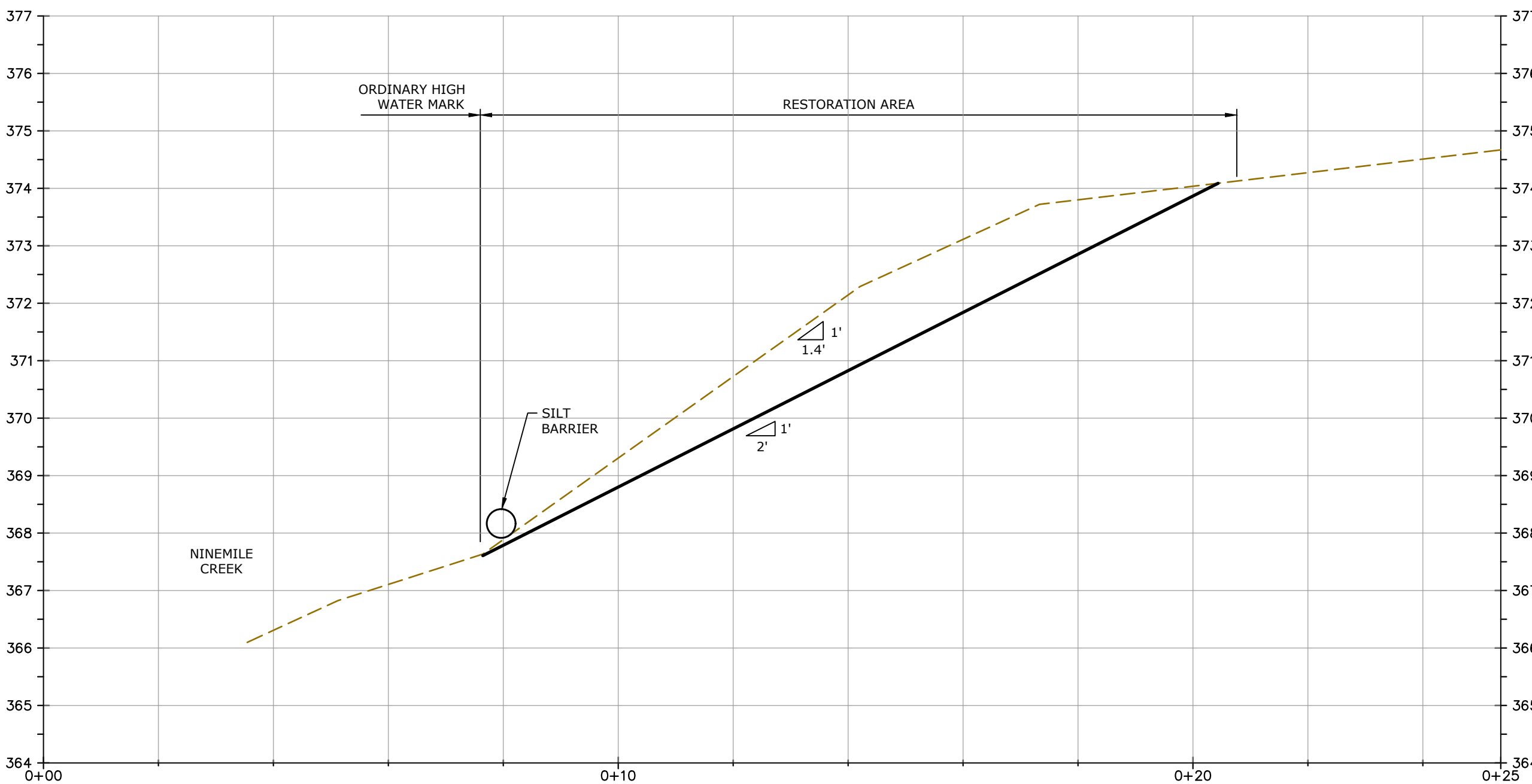
#### NOTES:

1. SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31 22 19 FOR TOPSOIL, SEEDING, AND PLANTING.
2. AREAS TO BE RESTORED WITHIN AREA Q-2 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
3. ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
4. PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
5. PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
6. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
7. INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
8. EVALUATION OF RETAINING WALL LOADING CAPACITY TO BE EVALUATED DURING CONSTRUCTION.
9. EVALUATION OF RETAINING WALL LOADING CAPACITY TO BE EVALUATED DURING CONSTRUCTION.
10. ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
11. SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.



### SECTION Q-2A

SCALE: HORIZ. 1"=2'  
VERT. 1"=2'



### SECTION Q-2B

SCALE: HORIZ. 1"=2'  
VERT. 1"=2'

PRELIMINARY

NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
NO.	DATE	REVISION	INT.		

  
O'BRIEN & GERE ENGINEERS, INC

HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

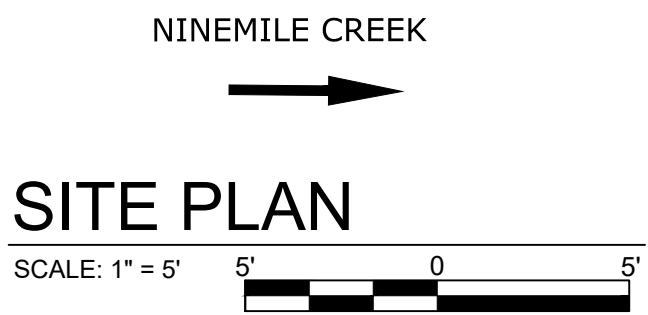
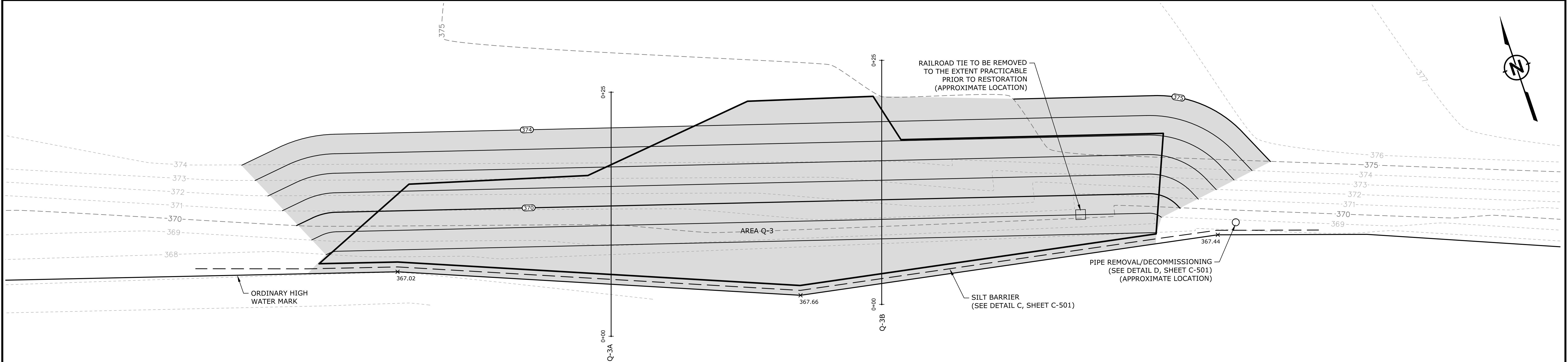
CIVIL

AREA Q-2 RESTORATION SITE PLAN

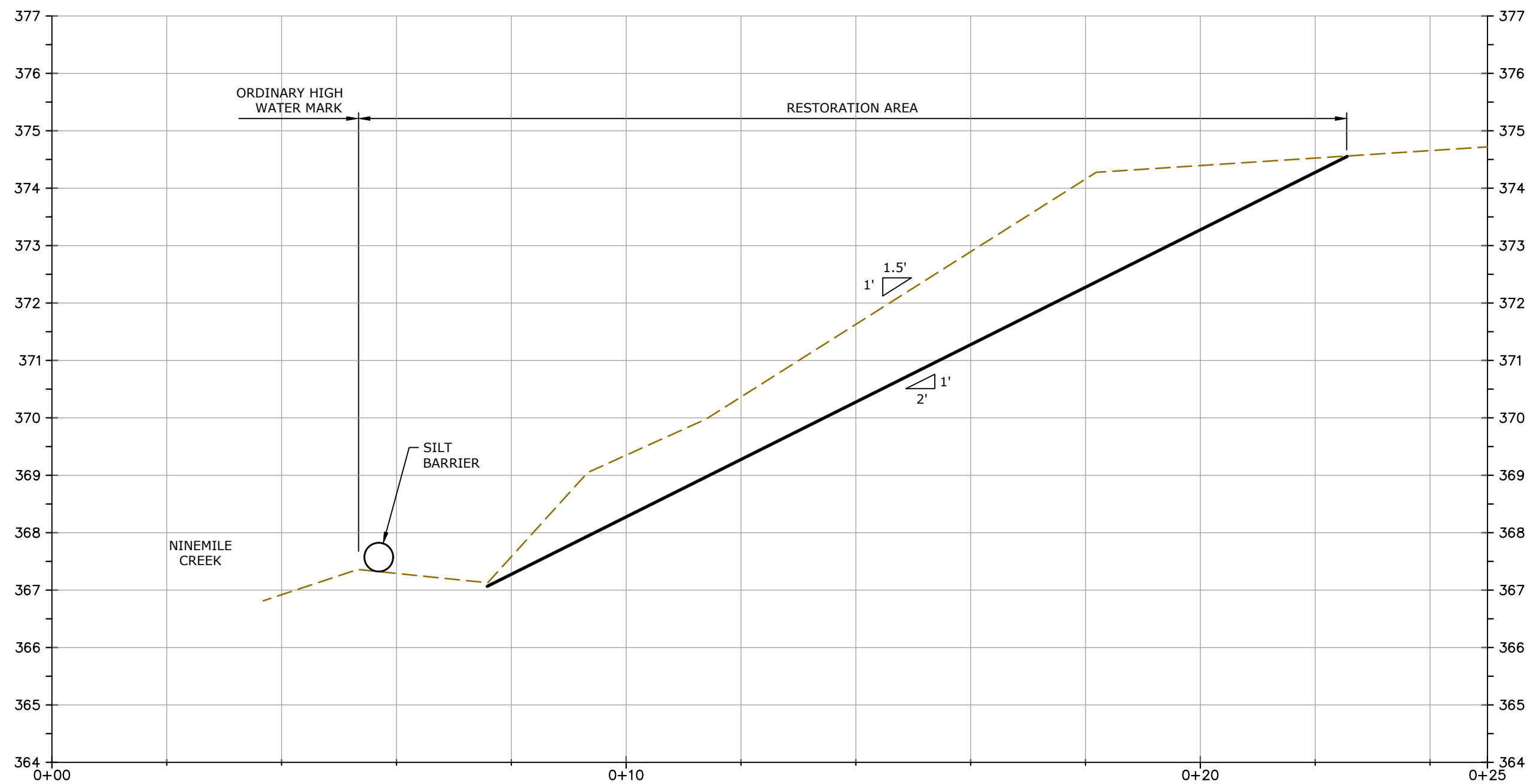
FILE NO.  
1163.72386-008  
DATE  
NOVEMBER 2019

C-106



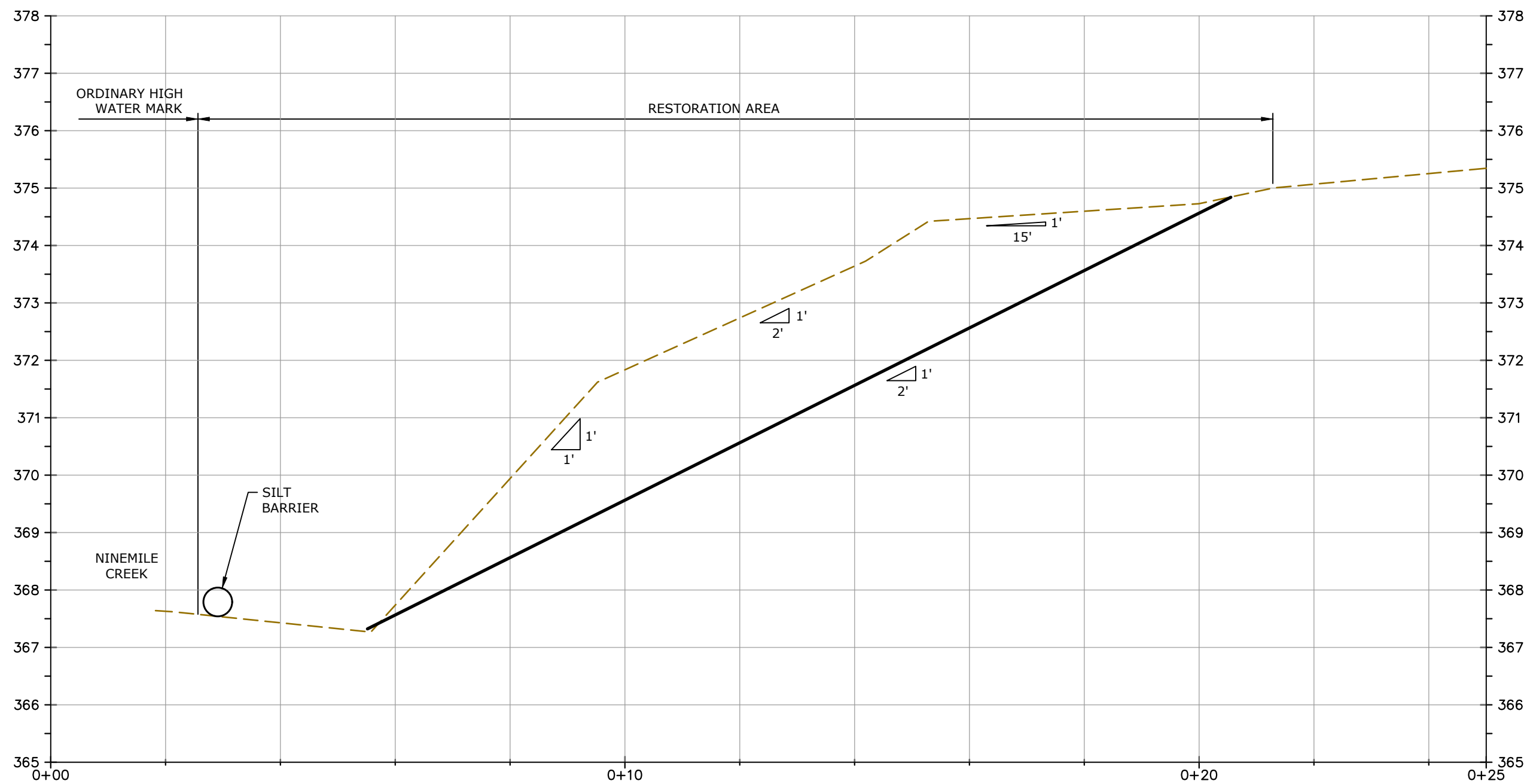


- NOTES:**
- SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31 22 19 FOR TOPSOIL, SEEDING, AND PLANTING.
  - AREAS TO BE RESTORED WITHIN AREA Q-3 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
  - ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
  - PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
  - PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
  - ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
  - INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
  - ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
  - SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.



**SECTION Q-3A**

SCALE: HORIZ. 1"=2'  
VERT. 1"=2'



**SECTION Q-3B**

SCALE: HORIZ. 1"=2'  
VERT. 1"=2'

**PRELIMINARY**

NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
NO.	DATE	REVISION	INT.		



HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL

**AREA Q-3 RESTORATION SITE PLAN**

FILE NO.  
1163.72386 -009

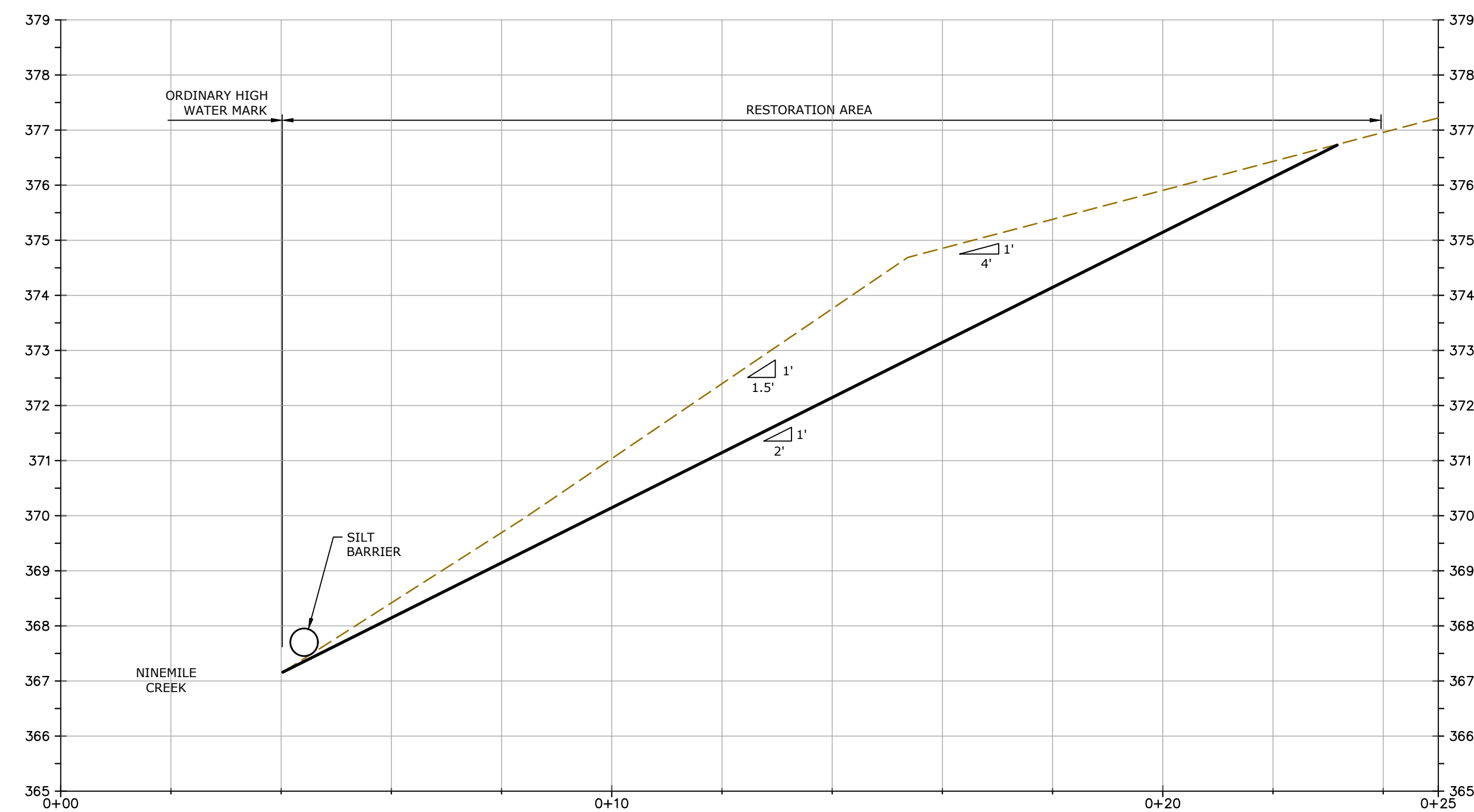
DATE  
NOVEMBER 2019

C-107

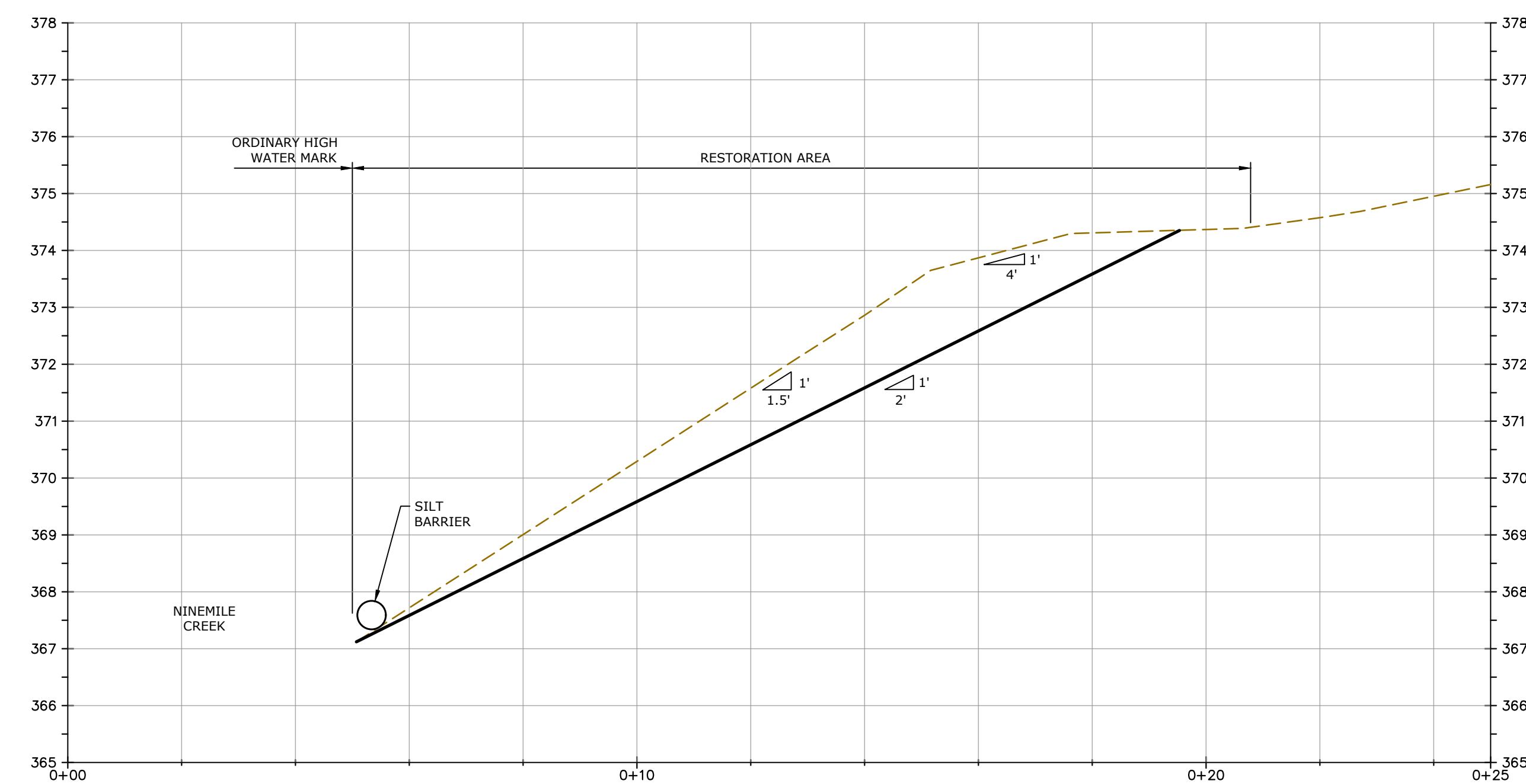


SCALE: 1" = 5'      5'      0      5'

- NOTES:**
1. SEE SCHEDULE 1 AND SCHEDULE 2 ON SHEET G-001 AND SPECIFICATION 31 22 19 FOR TOPSOIL, SEEDING, AND PLANTING.
  2. AREAS TO BE RESTORED WITHIN AREA Q-4 ARE APPROXIMATE AND SHOULD BE SELECTED IN THE FIELD BY OWNER'S REPRESENTATIVE BEFORE RESTORATION ACTIVITIES ARE INITIATED.
  3. ALL RESTORATION ACTIVITIES SHALL REMAIN ABOVE THE ORDINARY HIGH WATER MARK AS SURVEYED BY C.T. MALE, DATED AUGUST 2019.
  4. PROFILES SHOWN WITH A 1:2 SLOPE SHALL BE RESTORED IN ACCORDANCE WITH DETAIL "A" TYPICAL SLOPE RESTORATION DETAIL ON SHEET C-501.
  5. PROFILES SHOWN WITH A 1:1.5 SLOPE SHALL BE STABILIZED IN ACCORDANCE WITH DETAIL "B" TYPICAL SLOPE STABILIZATION DETAIL ON SHEET C-501.
  6. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF ON WASTEBED 11 AS DIRECTED BY THE ENGINEER.
  7. INSTALL SILT BARRIER AS SHOWN IN DETAIL C, SHEET C-501.
  8. ALL EQUIPMENT IN CONTACT WITH INVASIVE SPECIES SHALL BE CLEANED PRIOR TO LEAVING THE SITE.
  9. SILT FENCING SHALL BE INSTALLED ALONG THE BANK PRIOR TO INITIATION OF EXCAVATION.



SCALE: HORIZ. 1"=2'  
VERT. 1"=2'



SCALE: HORIZ. 1"=2'  
VERT. 1"=2'

NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
		NO.	DATE	REVISION	INT.

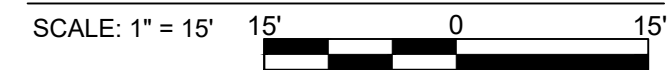


HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

FILE NO. 1163.72386 -010
DATE NOVEMBER 2019

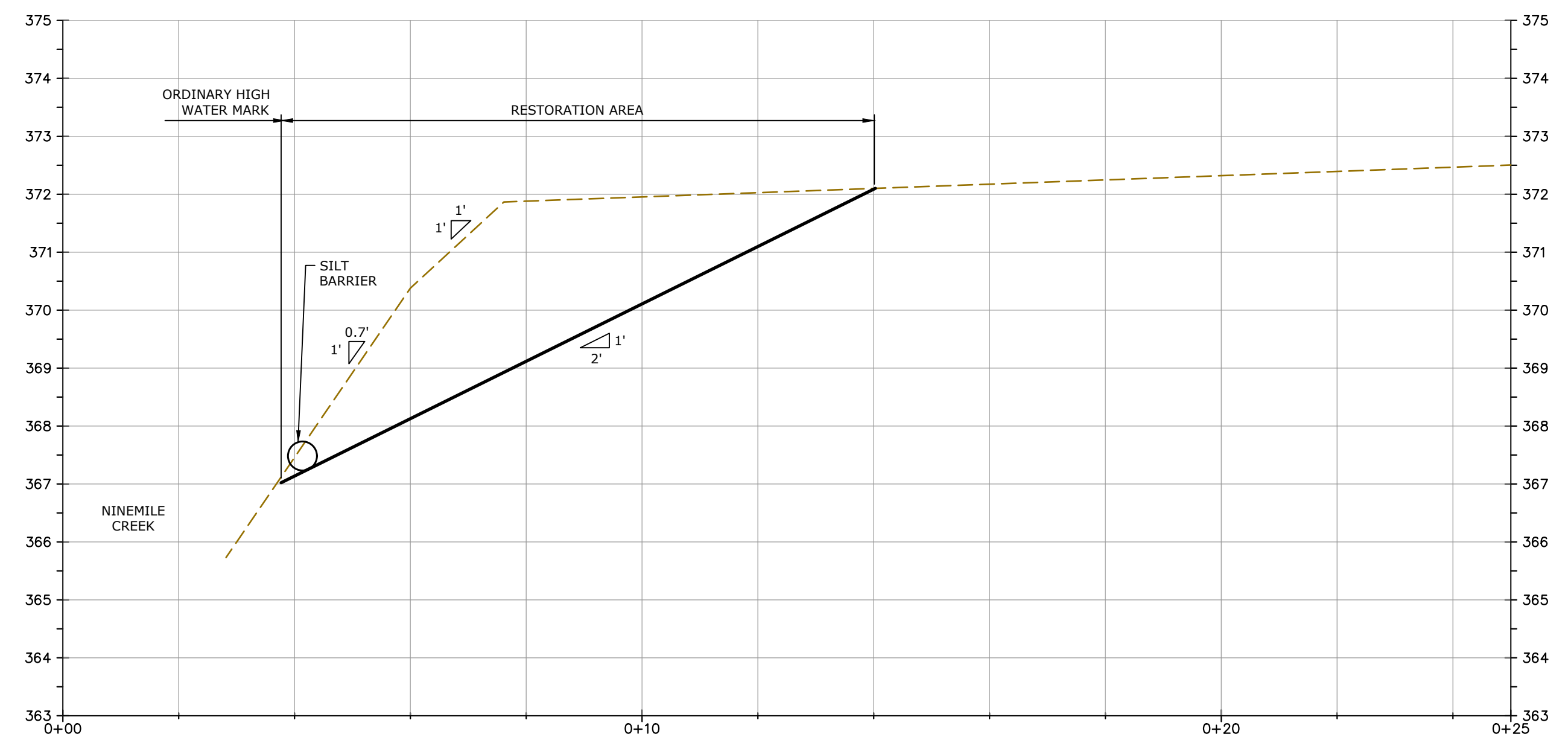
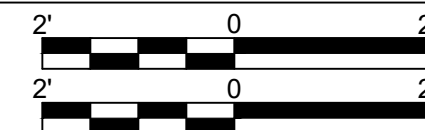
C-108

## AREA Q-4 RESTORATION SITE PLAN

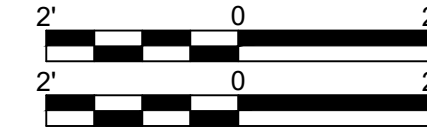


- 
- ORDINARY HIGH WATER MARK
- RESTORATION AREA
- SILT BARRIER
- NINEMILE CREEK
- 1' 1.7'
- 1' 2'
- 0+00 0+10 0+20 0+25
- 363 364 365 366 367 368 369 370 371 372 373 374 375 376

SCALE: HORIZ. 1"=2'  
VERT. 1"=2'



SCALE: HORIZ. 1"=2'  
VERT. 1"=2'



NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLER				
CHECKED BY	D. CRAWFORD				
DRAWN BY	M. BLEI				
		NO.	DATE	REVISION	INT.



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CIVIL

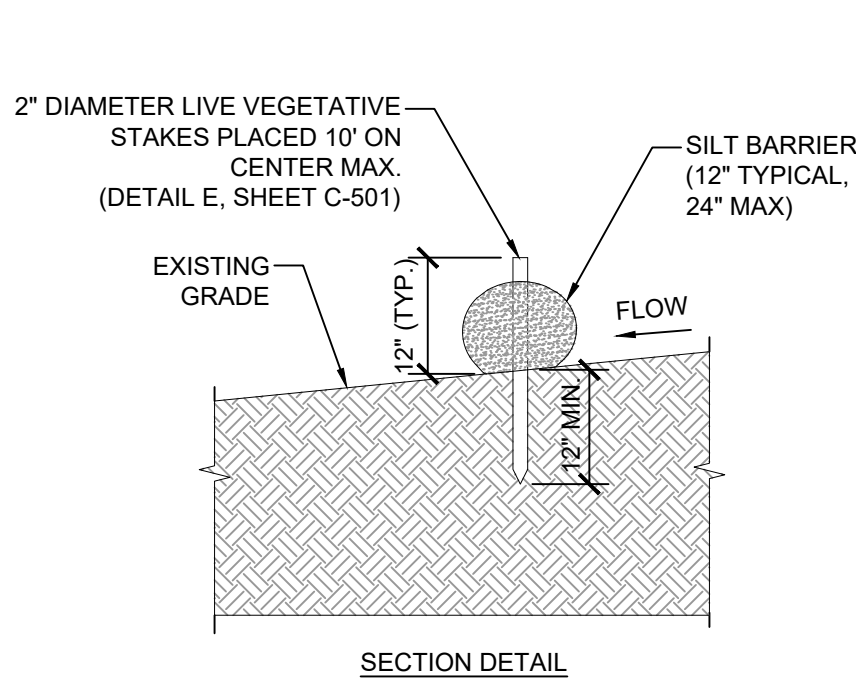
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DATE NOVEMBER 2019

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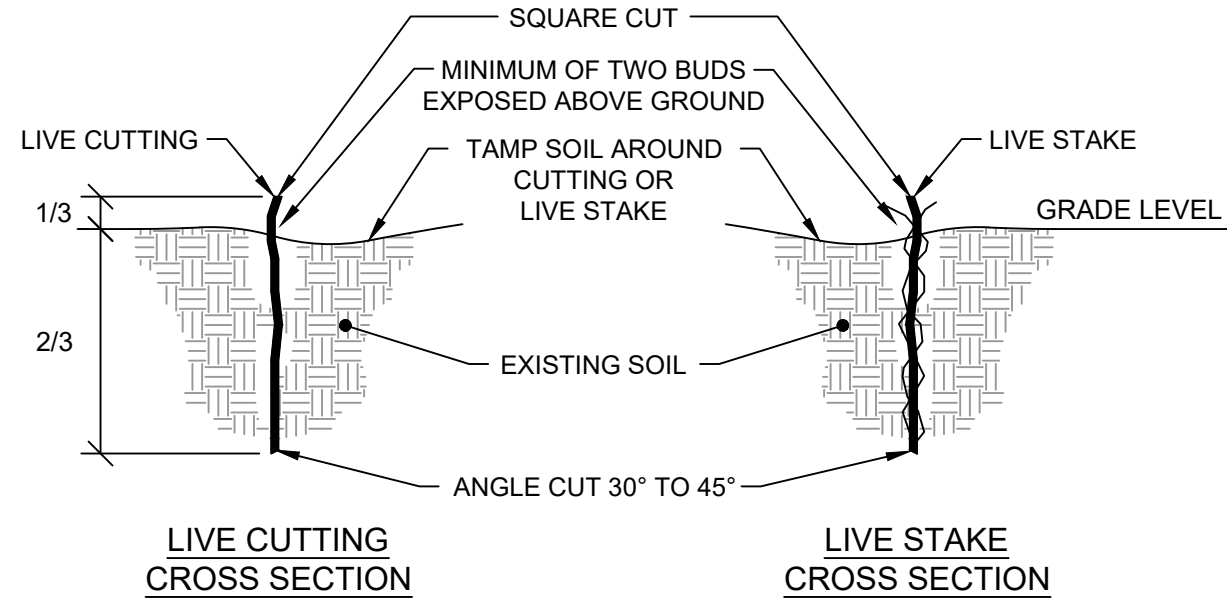
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NOTES:

1. USE FILTREXX® SEDIMENT CONTROL SYSTEM BY FILTREXX® LAND IMPROVEMENT SYSTEMS OR APPROVED EQUAL.
2. STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE SILT BARRIER AT 10' INTERVALS MAXIMUM USING LIVE VEGETATIVE STAKES.
3. SILT BARRIER TO BE ALIGNED ALONG CONTOUR AS CLOSELY AS POSSIBLE AND ABOVE THE ORDINARY HIGH WATERMARK.
4. BOTH ENDS OF EACH BARRIER SECTION MUST EXTEND AT LEAST 10 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
5. SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER.
6. ANY SILT BARRIER SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

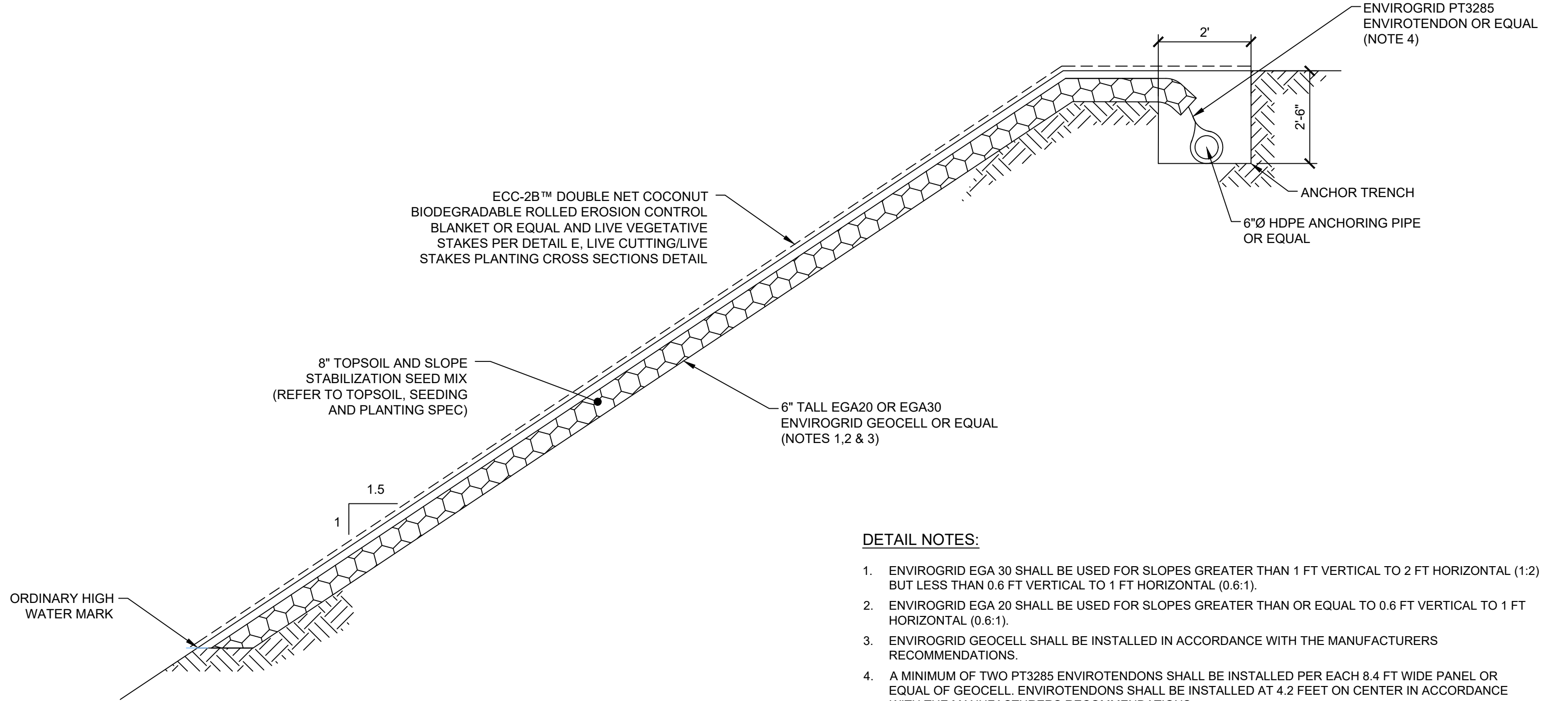
**C** SILT BARRIER  
NOT TO SCALE



NOTES:

1. LIVE VEGETATIVE STAKES SHALL BE INSTALLED PERPENDICULAR TO SLOPES IN ACCORDANCE WITH TOPSOIL, SEEDING, AND PLANTING SPECIFICATION 31 22 19

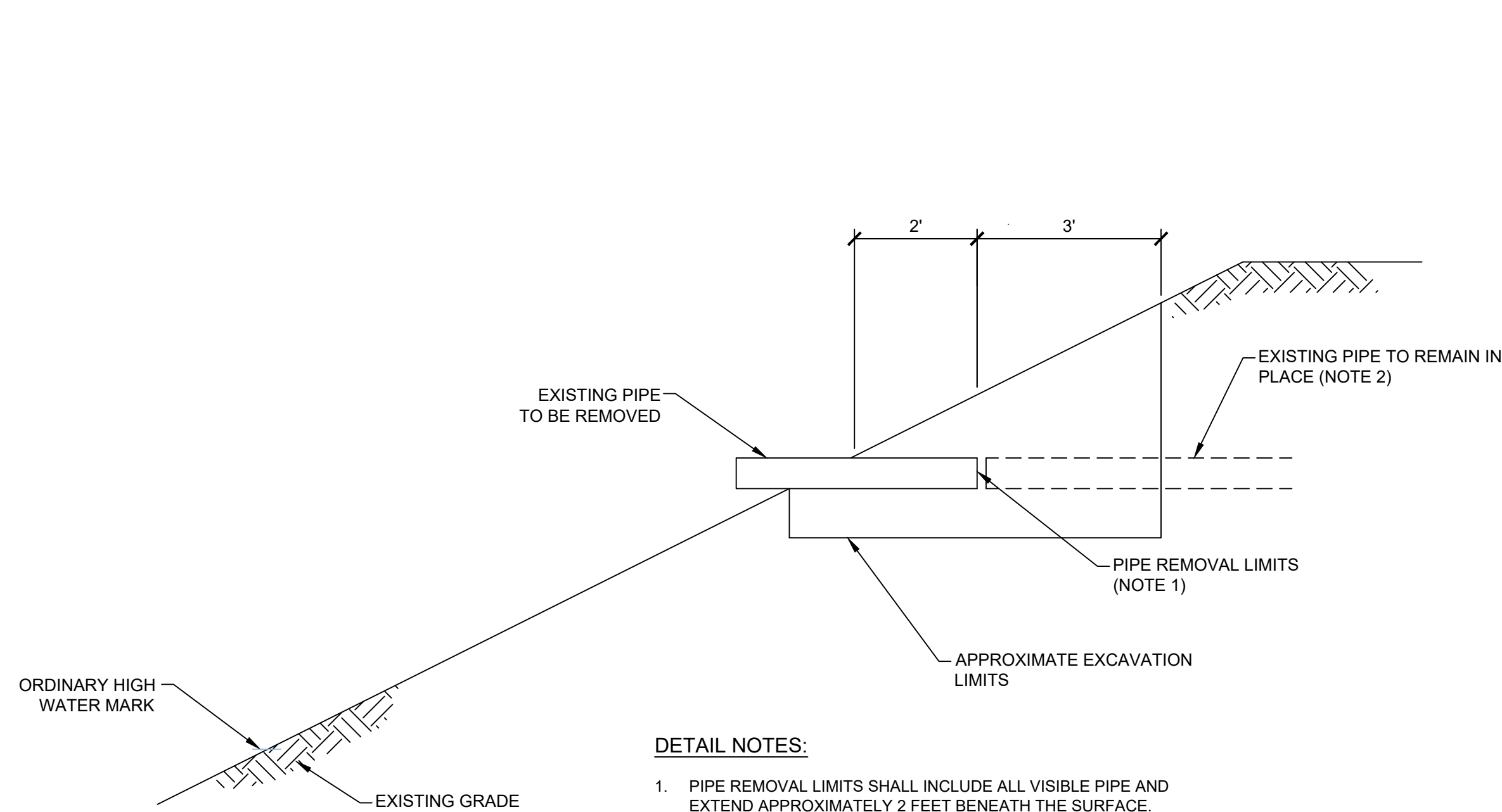
**E** LIVE CUTTINGS/LIVE STAKES PLANTING CROSS SECTIONS  
NOT TO SCALE



DETAIL NOTES:

1. ENVIROGRID EGA 30 SHALL BE USED FOR SLOPES GREATER THAN 1 FT VERTICAL TO 2 FT HORIZONTAL (1:2) BUT LESS THAN 0.6 FT VERTICAL TO 1 FT HORIZONTAL (0.6:1).
2. ENVIROGRID EGA 20 SHALL BE USED FOR SLOPES GREATER THAN OR EQUAL TO 0.6 FT VERTICAL TO 1 FT HORIZONTAL (0.6:1).
3. ENVIROGRID GEOCELL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
4. A MINIMUM OF TWO PT3285 ENVIROTENDONS SHALL BE INSTALLED PER EACH 8.4 FT WIDE PANEL OR EQUAL OF GEOCELL. ENVIROTENDONS SHALL BE INSTALLED AT 4.2 FEET ON CENTER IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
5. EROSION CONTROL BLANKET SHALL BE INSTALLED PARALLEL TO THE STREAM AND LAYERED STARTING AT THE ORDINARY HIGH WATER MARK.

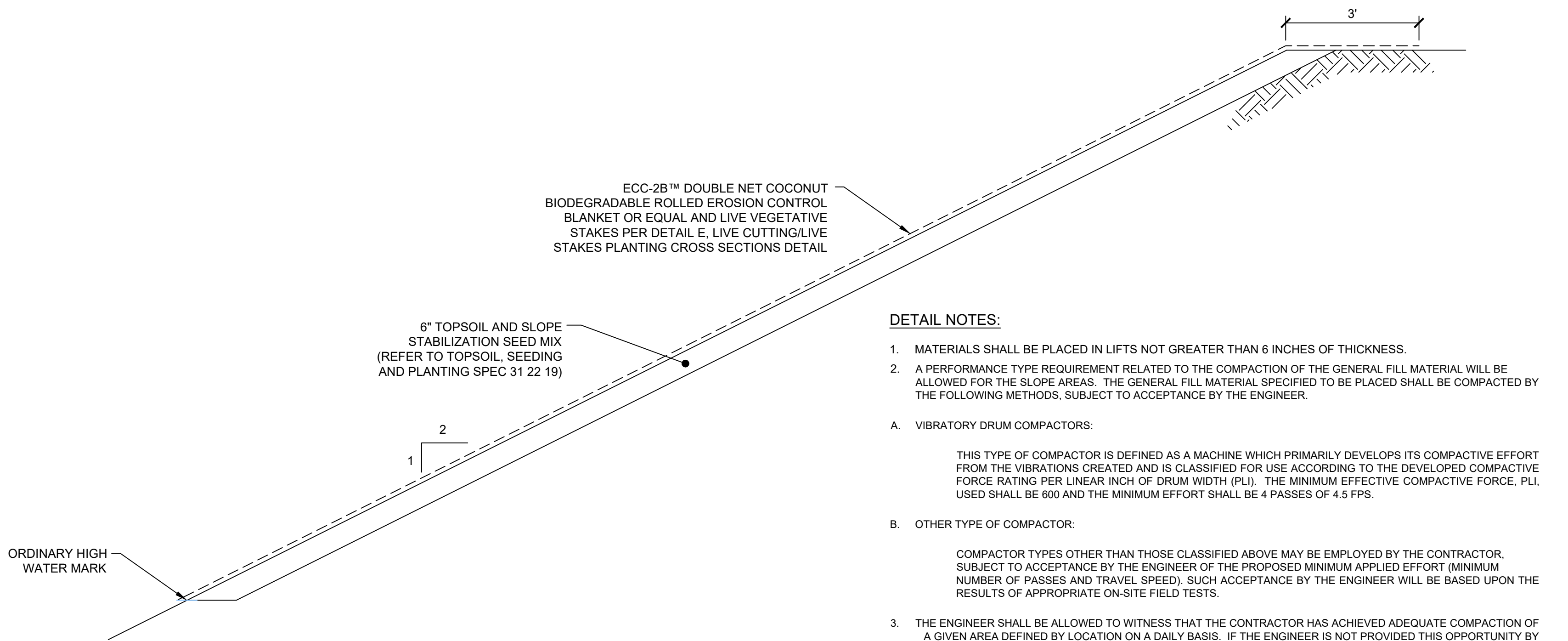
**B** TYPICAL SLOPE STABILIZATION DETAIL  
NOT TO SCALE



DETAIL NOTES:

1. PIPE REMOVAL LIMITS SHALL INCLUDE ALL VISIBLE PIPE AND EXTEND APPROXIMATELY 2 FEET BENEATH THE SURFACE.
2. THE REMAINING EXPOSED PIPE SHALL BE CRUSHED AND COVERED WITH CLAY.
3. DISTURBED AREA TO BE RESTORED TO EXISTING GRADE.

**D** PIPE REMOVAL/DECOMMISSIONING  
NOT TO SCALE



DETAIL NOTES:

1. MATERIALS SHALL BE PLACED IN LIFTS NOT GREATER THAN 6 INCHES OF THICKNESS.
2. A PERFORMANCE TYPE REQUIREMENT RELATED TO THE COMPACTION OF THE GENERAL FILL MATERIAL WILL BE ALLOWED FOR THE SLOPE AREAS. THE GENERAL FILL MATERIAL SPECIFIED TO BE PLACED SHALL BE COMPACTED BY THE FOLLOWING METHODS, SUBJECT TO ACCEPTANCE BY THE ENGINEER.
  - A. VIBRATORY DRUM COMPACTORS:

THIS TYPE OF COMPACTOR IS DEFINED AS A MACHINE WHICH PRIMARILY DEVELOPS ITS COMPACTIVE EFFORT FROM THE VIBRATIONS CREATED AND IS CLASSIFIED FOR USE ACCORDING TO THE DEVELOPED COMPACTIVE FORCE RATING PER LINEAR INCH OF DRUM WIDTH (PLI). THE MINIMUM EFFECTIVE COMPACTIVE FORCE, PLI, USED SHALL BE 600 AND THE MINIMUM EFFORT SHALL BE 4 PASSES OF 4.5 FPS.
  - B. OTHER TYPE OF COMPACTOR:

COMPACTOR TYPES OTHER THAN THOSE CLASSIFIED ABOVE MAY BE EMPLOYED BY THE CONTRACTOR, SUBJECT TO ACCEPTANCE BY THE ENGINEER OF THE PROPOSED MINIMUM APPLIED EFFORT (MINIMUM NUMBER OF PASSES AND TRAVEL SPEED). SUCH ACCEPTANCE BY THE ENGINEER WILL BE BASED UPON THE RESULTS OF APPROPRIATE ON-SITE FIELD TESTS.
3. THE ENGINEER SHALL BE ALLOWED TO WITNESS THAT THE CONTRACTOR HAS ACHIEVED ADEQUATE COMPACTION OF A GIVEN AREA DEFINED BY LOCATION ON A DAILY BASIS. IF THE ENGINEER IS NOT PROVIDED THIS OPPORTUNITY BY THE CONTRACTOR, AREAS COMPACTED ON THAT DAY ARE SUBJECT TO REJECTION.
4. EROSION CONTROL BLANKET SHALL BE INSTALLED PARALLEL TO THE STREAM AND LAYERED STARTING AT THE ORDINARY HIGH WATER MARK.

**A** TYPICAL SLOPE RESTORATION DETAIL  
NOT TO SCALE

**PRELIMINARY**  
NOT FOR CONSTRUCTION

IN CHARGE OF	M. MARKERT								
DESIGNED BY	M. MELLEN								
CHECKED BY	D. CRAWFORD								
DRAWN BY	M. BLEI								
		NO.	DATE	REVISION				INT.	

**O'BRIEN & GERE ENGINEERS, INC**

HONEYWELL INTERNATIONAL INC.  
NINEMILE CREEK BANK RESTORATION - WASTEBED 11  
WASTEBEDS 9-15  
TOWNS OF CAMILLUS AND GEDDES, NY

CIVIL  
MISCELLANEOUS DETAILS

FILE NO.  
1163.72386 -012  
DATE  
NOVEMBER 2019

C-501

## SECTION 31 20 00

### EARTHWORK

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. This Section includes excavation and backfilling including the loosening, removing, refilling, transporting, storage and disposal of all materials classified as “earth” necessary to be removed for the construction and completion of all work under the Contract, and as shown on the Contract Drawings, specified or directed.

##### 1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:
  - 1. American Society for Testing and Materials (ASTM)
    - a. D698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>)
    - b. D1556 Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
    - c. D1760 Specification for Pressure Treatment of Timber Products
    - d. D2922 Test Methods for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

##### 1.3 DEFINITIONS

- A. Excavation (or Trenching)
  - 1. Grubbing, stripping, removing, storing and rehandling of all materials of every name and nature necessary to be removed for all purposes incidental to the construction and completion of all the work under construction.
  - 2. All sheeting, sheetpiling, bracing and shoring, and the placing, driving, cutting off and removing of the same.
  - 3. All diking, ditching, fluming, cofferdamming, pumping, bailing, draining, well pointing, or otherwise disposing of water.
  - 4. The removing and disposing of all surplus materials from the excavations in the manner specified.

5. The maintenance, accommodation and protection of travel and the temporary paving of highways, roads and driveways.
  6. The supporting and protecting of all tracks, rails, buildings, curbs, sidewalks, pavements, overhead wires, poles, trees, vines, shrubbery, pipes, sewers, conduits or other structures or property in the vicinity of the work, whether over- or underground or which appear within or adjacent to the excavations, and the restoration of the same in case of settlement or other injury.
  7. All temporary bridging and fencing and the removing of same.
- B. Earth
1. All materials such as sand, gravel, clay, loam, ashes, cinders, pavements, muck, roots or pieces of timber, soft or disintegrated rock, not requiring blasting, barring, or wedging from their original beds, and specifically excluding all ledge or bedrock and individual boulders or masonry larger than one-half cubic yard in volume.
- C. Backfill
1. The refilling of excavation and trenches to the line of filling indicated on the Contract Drawings or as directed using materials suitable for refilling of excavations and trenches; and the compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required.
- D. Spoil
1. Surplus excavated materials not required or not suitable for backfills or embankments.
- E. Embankments
1. Fills constructed above the original surface of the ground or such other elevation as specified or directed.
- F. Limiting Subgrade
1. The underside of the pipe barrel for pipelines
  2. The underside of footing lines for structures
- G. Excavation Below Subgrade
1. Excavation below the limiting subgrades of structures or pipelines.
  2. Where materials encountered at the limiting subgrades are not suitable for proper support of structures or pipelines, the Contractor shall excavate to such new lines and grades as required.

#### 1.4 RELATED WORK SPECIFIED ELSEWHERE

- A. Honeywell Syracuse Portfolio Health and Safety Programs (HSP2)

### PART 2 EXECUTION

#### 2.1 UNAUTHORIZED EXCAVATION

- A. Whenever excavations are carried beyond or below the lines and grades shown on the Contract Drawings, or as given or directed by the Engineer, all such excavated space shall be refilled with special granular materials, concrete or other materials as the Engineer may direct. All refilling of unauthorized excavations shall be at the Contractor's expense.
- B. All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

#### 2.2 REMOVAL OF WATER

- A. General
  - 1. The Contractor shall at all times provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipes, structures, or other work.
  - 2. Unless otherwise specified, all excavations which extend down to or below the static groundwater elevations shall be dewatered by lowering and maintaining the groundwater beneath such excavations at all times when work thereon is in progress, during subgrade preparation and the placing of the structure or pipe thereon.
  - 3. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least 24 hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.
  - 4. Where the presence of fine grained subsurface materials and a high groundwater table may cause the upward flow of water into the excavation with a resulting quick or unstable condition, the Contractor shall install and operate a well point system to prevent the upward flow of water during construction. In addition to dewatering, the Contractor shall stabilize the bottom of the excavation by installing a concrete mud mat with a minimum thickness of 12 inches.
  - 5. Water pumped or drained from excavations, or any sewers, drains or water courses encountered in the work, shall be disposed of in accordance with the Contract Documents, without injury to adjacent property, the work

under construction, or to pavements, roads, drives, and water courses. No water shall be discharged to sanitary sewers.

6. Any damage caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor.

B. Work Included

1. The construction and removal of cofferdams, sheeting and bracing, and the furnishing of materials and labor necessary therefor.
2. The excavation and maintenance of ditches and sluiceways.
3. The furnishing and operation of pumps, well points, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

2.3 STORAGE OF MATERIALS

A. Sod

1. Any sod cut during excavation shall be removed and stored during construction so as to preserve the grass growth. Sod damaged while in storage shall be replaced in like kind at the sole expense of the Contractor.

B. Topsoil

1. Topsoil suitable for final grading shall be removed and stored separately from other excavated material.

C. Excavated Materials

1. All excavated materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travel or to adjoining property holders.
2. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, police and fire department driveways, and other points where access may involve the safety and welfare of the general public.

2.4 DISPOSAL OF MATERIALS

A. Spoil Material

1. Honeywell will contract the transportation and disposal (T&D) of all spoil materials directly with the T&D facility or to an on-site location as described on the Contract Drawings.
2. All spoil materials shall be disposed of as required by the local, state or federal regulations pertaining to the area and in accordance with the Contract Documents, or as directed by the Engineer.

3. The surface of all spoil areas shall be graded and dressed and no unsightly mounds or heaps shall be left on completion of the work.

### 3.5 BACKFILLING

#### A. General

1. All excavations shall be backfilled to the original surface of the ground or to such other grades as may be shown, specified or directed.
2. Backfilling shall be done with suitable excavated materials which can be satisfactorily compacted during refilling of the excavation. In the event the excavated materials are not suitable, Special Backfill as specified or ordered by the Engineer shall be used for backfilling.
3. Any settlement occurring in the backfilled excavations shall be refilled and compacted.

#### B. Unsuitable Materials

1. Stones, pieces of rock or pieces of pavement greater than 1 cubic foot in volume or greater than 1.5 feet in any single dimension shall not be used in any portion of the backfill.
2. All stones, pieces of rock or pavement shall be distributed through the backfill and alternated with earth backfill in such a manner that all interstices between them shall be filled with earth.
3. Frozen earth shall not be used for backfilling.

#### C. Compaction and Density Control

1. The compaction shall be as specified for the type of earthwork, i.e., structural, trenching or embankment.
  - a. The compaction specified shall be the percent of maximum dry density.
  - b. The compaction equipment shall be suitable for the material encountered.
2. Where required, to assure adequate compaction, in-place density test shall at the expense of the Contractor be made by an approved testing laboratory.
  - a. The moisture-density relationship of the backfill material shall be determined by ASTM D698, Method D.
    - 1) Compaction curves for the full range of materials used shall be developed.



- b. In-place density shall be determined by the methods of ASTM D1556 or ASTM D2922 and shall be expressed as a percentage of maximum dry density.
3. Where required, to obtain the optimum moisture content, the Contractor shall add, at his expense, sufficient water during compaction to assure the specified maximum density of the backfill. If, due to rain or other causes, the material exceeds the optimum moisture content, it shall be allowed to dry, assisted if necessary, before resuming compaction or filling efforts.
4. The Contractor shall be responsible for all damage or injury done to pipes, structures, property or persons due to improper placing or compacting of backfill.

### 3.6 OTHER REQUIREMENTS

#### A. Drainage

1. All material deposited in roadway ditches or other water courses shall be removed immediately after backfilling is completed and the section, grades and contours of such ditches or water courses restored to their original condition, in order that surface drainage will be obstructed no longer than necessary.

#### B. Unfinished Work

1. When, for any reason, the work is to be left unfinished, all trenches and excavations shall be filled and all roadways, sidewalks and watercourses left unobstructed with their surfaces in a safe and satisfactory condition. The surface of all roadways and sidewalks shall have a temporary pavement.

#### C. Hauling Material on Streets

1. When it is necessary to haul material over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the crosswalks, streets and pavements clean and free from dirt, mud, stone and other hauled material.

#### D. Dust Control

1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of his operations to such a degree that it will not endanger the safety and welfare of the general public.
2. Calcium chloride and petroleum products shall not to be used for dust control.

#### E. Test Pits

1. For the purpose of obtaining detail locations of underground obstructions, the Contractor shall make excavations in advance of the work. Payment for the excavations ordered by the Engineer will be made under an appropriate

item of the Contract and shall include sheeting, bracing, pumping, excavation and backfilling.

\* \* \* \* \*

SECTION 31 22 19

TOPSOIL, SEEDING AND PLANTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes topsoil, seed, plantings, mulch, and associated work.

1.2 REFERENCES

- A. Improvement, restoration, and mitigation activities shall be performed in substantive compliance with Sections 401 and 404 of the Clean Water Act.
- B. Analytical References
  - 1. pH – ASTM D4972
  - 2. Organic Matter – ASTM D22974
  - 3. Particle size distribution – ASTM D422

1.3 PERFORMANCE REQUIREMENTS

- A. The Contractor shall comply with all applicable Federal, State and Local codes, ordinances, regulations, statutes and standards.

1.4 SUBMITTALS

- A. The following items shall be submitted:
  - 1. The name and location of source and data (pH, organic matter, particle size distribution) for off-site soil.
  - 2. Samples and test reports of each material shall include analytical data that complies with Part 375 Unrestricted Use Soil Cleanup Objectives and 40 CFR 261.20 for Maximum Concentration of Contaminants for the Toxicity Characteristic.
  - 3. An affidavit from the Owner for each product stating that the site of the source was never used as a dump site for chemical, toxic, hazardous, or radioactive materials and it is not now or ever been listed as a suspected depository for chemical toxic, hazardous, or radioactive materials by any federal, state, or other governmental agency, department, or bureau.
  - 4. Latin name, source and content data for seed mixes and live stakes. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.
  - 5. Should hydroseeding be used, the Contractor shall submit data including material and application rates.
  - 6. Source and content data for organic mulch.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Topsoil shall have moderate pH (5 to 7.5) and organic matter concentration from 3 to 15%.

1. Topsoil shall be natural or manufactured, friable and fertile soil that meets the USDA basic soil texture classes of loam, silt loam or sandy loam to be recovered from the A horizon of an in-place soil. Topsoil shall be capable of sustaining healthy plant life. Topsoil shall be unscreened but be reasonably free of subsoil, heavy or stiff clay, brush, weeds, foreign material, stones larger than 4 inches in greatest dimension. Topsoil as delivered to the site or stockpiled shall meet the following requirements:

- a. Topsoil shall be well graded and have the following particle size distribution (by weight):
1. 85 to 100 percent passing 1 inch, 65 to 100 percent passing 1/4 inch, and 15 to 80 percent passing a Number 200 sieve (0.075 mm, 0.003 inch). The 2 micron particle size shall not be greater than 20 percent of the total sample mass, as determined by hydrometer analysis.
  2. Organic materials used in the manufacture of topsoil shall meet the requirements of NYSDOT 713-15.
  3. Topsoil shall contain no nuisance weeds including seeds, stems or rhizomes of purple loosestrife, common reed, Japanese knotweed or plants on the Federal Noxious Weeds list.
  4. Each load of topsoil shall be inspected by the Owner's Representative and is subject to rejection.

- B. Seed

1. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The percent of pure live strain of the seed shall be submitted with the seed mixture.
2. The state of origin of the seed shall be indicated on the seed tag or on associated nursery submittals.
3. The following weed seeds shall not be present in seed mix:
  - a. smooth brome (*Bromus inermis*)
  - b. tall fescue (*Schedonorus phoenix*)
  - c. purple loosestrife (*Lythrum salicaria*)
  - d. common reed (*Phragmites australis*)
  - e. cattail (*Typha angustifolia*, *T. x glauca*)
  - f. reed canarygrass (*Phalaris arundinacea*)
  - g. others included in the Federal Noxious Weeds list

4. Seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).
- C. Live Stake material requirements:
1. Live stakes shall be dormant and have a green cambium (sapwood) upon arrival to the job site.
  2. Live stakes shall be stored in a continuously cool, moist environment.
  3. In general, live stakes shall be approximately 24 inches long and 3/8 inch to 1-1/2 inch in diameter and dormant
- D. Mulch to accompany permanent seeding shall be organic matter as per NYSDOT Section 713-15, Type C Compost.
- E. Plant materials shall be as specified in Tables 1 and Table 2 with substitutions due to commercial availability subject to approval by the Owner's Representative.

Table 1. Successional old-field seed mix for bank restoration treatments.<sup>1</sup>

Common name	Latin name	Weight percent
Big bluestem	<i>Andropogon gerardii</i>	10
Switchgrass	<i>Panicum virgatum</i>	10
Canada wildrye	<i>Elymus canadensis</i>	8
Virginia wildrye	<i>Elymus virginicus</i>	8
Little bluestem	<i>Schizachyrium scoparium</i>	8
Indiangrass	<i>Sorghastrum nutans</i>	8
Sideoats grama	<i>Bouteloua curtipendula</i>	5
Partridge pea	<i>Chamaecrista fasciculata</i>	5
Black-eyed Susan	<i>Rudbeckia hirta</i>	5
American senna	<i>Senna hebecarpa</i>	5
Ticklegrass	<i>Agrostis scabra</i>	3
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	3
Maximilian sunflower	<i>Helianthus maximilianii</i>	3
Rough stemmed goldenrod	<i>Solidago rugosa</i>	3
Many-flowered aster	<i>Aster ericoides</i>	3
Purple bergamot	<i>Monarda media</i>	3
Lance-leaf coreopsis	<i>Coreopsis lanceolata</i>	2
Annual sunflower	<i>Helianthus annuus</i>	2
Wild bergamot	<i>Monarda fistulosa</i>	2
Tall white beardtongue	<i>Penstemon digitalis</i>	2
New England aster	<i>Aster novae-angliae</i>	1
Purple coneflower	<i>Echinacea purpurea</i>	1

<sup>1</sup>Apply seed mix at 40 lbs/acre.

Seed mix to be applied with 20 lbs/acre of oats (*Avena sativa*).

If seed mix is applied in the fall (October 15 to December 1), add 10 pounds per acre of winter wheat (*Triticum aestivum*).



Table 2. Live stake mix for bank restoration.

Common Name	Latin name	Spacing (feet on center)
Southern arrow wood	<i>Viburnum dentatum</i>	4
Redosier dogwood	<i>Cornus sericea</i>	4
Pussy willow	<i>Salix discolor</i>	4

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Topsoil shall be applied to 6" or 8" depth on average as specified in design drawings and tracked perpendicular to the slope gradient.
- B. Seeding procedures
  - 1. Seeding shall be performed during two seasonal windows: April 1 to June 15, October 15 through December 1, or as otherwise practicable and reviewed by the Owner's Representative. If site soils require stabilization at times outside of these dates, they shall be temporarily stabilized using one ton per acre of straw and 100 lbs/acre of oats.
  - 2. When the topsoil surface has been graded, tracked and planting completed, the seed mixture shall be uniformly applied upon the soil surface.
  - 3. Seeding and mulching shall not be done during windy weather (greater than 5 mph or as reviewed by the Owner's Representative).
  - 4. Seed and mulch shall be spread to form a continuous blanket over the seed bed and will be installed in two parts. The final 0.25" of mulch will contain seed mix.
- D. Planting procedures for live stakes:
  - 1. Live stakes shall be planted when materials are dormant, after leaf drop in the fall and before bud break in the spring.
  - 2. Install stakes following placement of seed and erosion control matting by initially creating a pilot hole of sufficient depth such that 2 inches to 4 inches and two live buds of the stakes shall be exposed above the soil surface upon planting.
  - 3. The pilot hole may be created with a dibble bar, stinger on an excavator bucket or equivalent, and the diameter of the hole shall be minimally wide enough to avoid damaging the stake upon planting.
  - 4. If soil conditions do not allow a sufficiently deep pilot hole to be created, the live stake may be trimmed to appropriate length with a sharp, fine toothed saw or lopper.
  - 5. A dead blow hammer may be used to assist with stake installation. The hammer head should be filled with sand or shot.
  - 6. Following installation, soil shall be firmed around each stake.
  - 7. Live stakes that are damaged during installation shall be left in place and supplemented with an intact stake.

8. Upon installation, each stake shall be watered with approximately 2 quarts of water unless the area is moist (as determined by the Owner's Representative) at the time of plant installation.
9. Unless the ground is consistently moist, plants shall be watered as often as required to obtain and maintain satisfactory growth.
10. Equal numbers of each species shall be planted by mixing the species placement throughout the planting area.

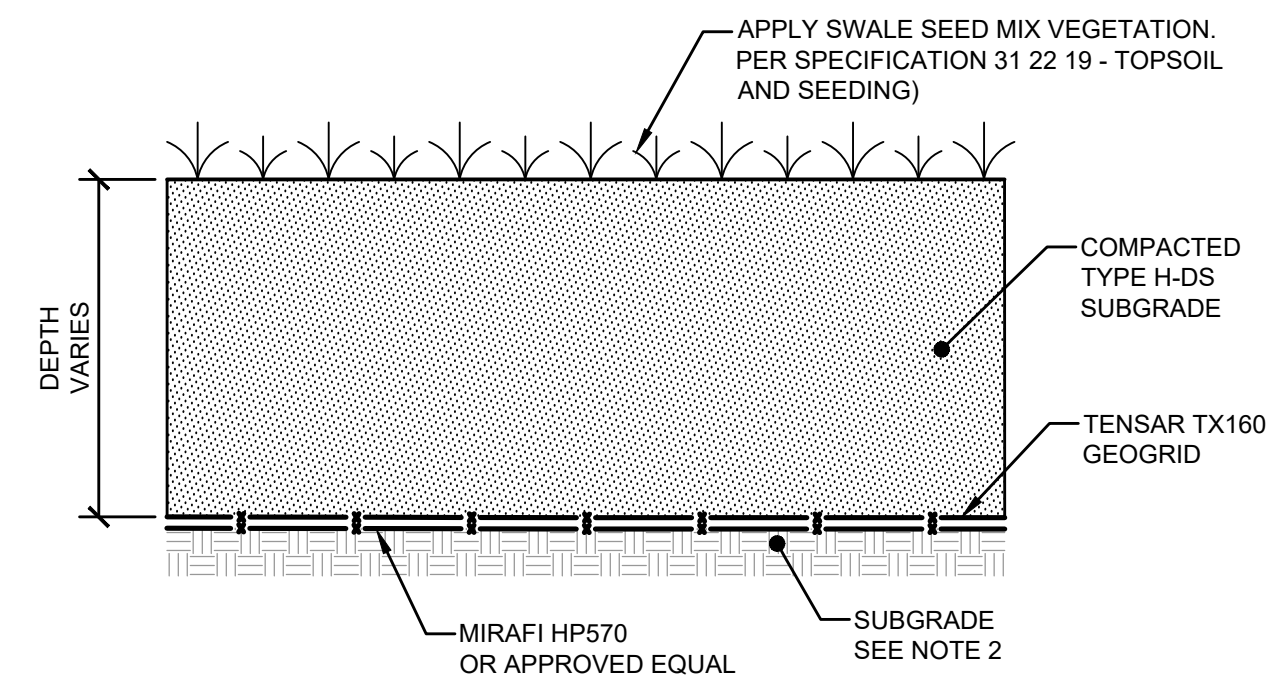
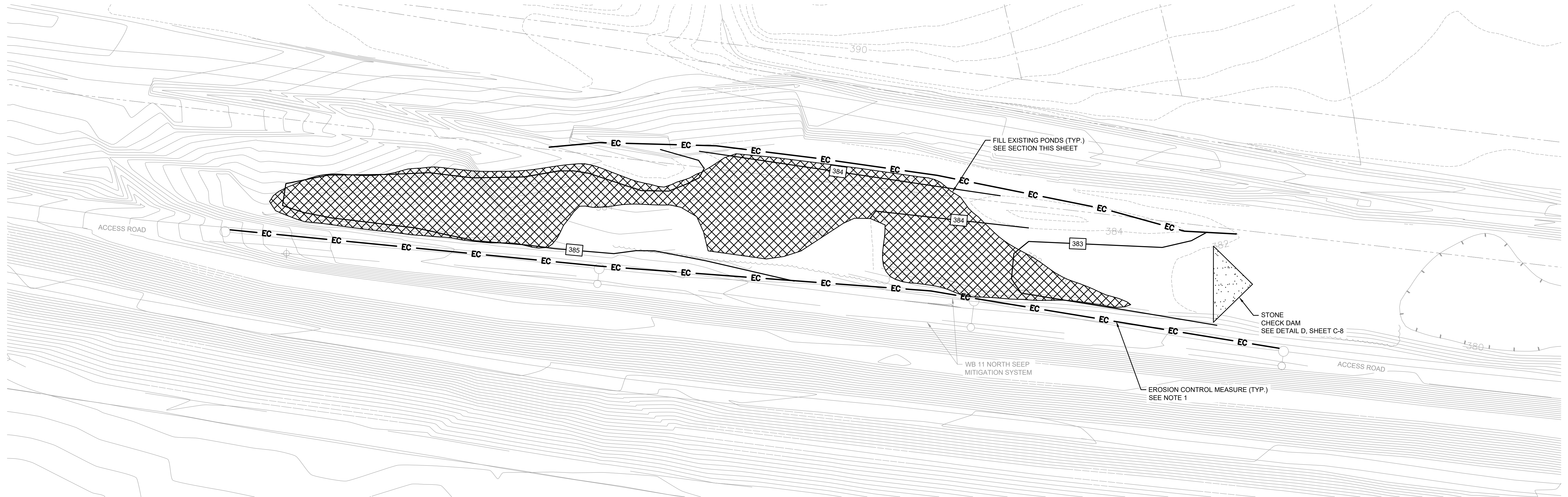
### 3.2 MAINTENANCE

- A. Restored areas shall be monitored for a period of five years after construction is completed and corrective actions taken to maintain:
  1. 80% vegetative cover is achieved in accordance with the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002) and areas are accepted by the owners' representative. Maintenance responsibilities begin immediately after seeding and planting and continue through at least the first full growing season following the year of planting.
- B. Watering of live stakes shall occur if one inch of rain is not received during any seven-day window from May 15 through August 31 in the year of installation.
- C. Additional maintenance and monitoring activities may be performed in accordance with the project Performance Verification Plan or as directed by the Owner.

END OF SECTION

## **APPENDIX C**

### **WB 11 NORTH PONDED AREAS DESIGN DRAWINGS AND SPECIFICATIONS**




**A** TYPICAL FILL SECTION  
NOT TO SCALE

- NOTES:**
- CONTRACTOR SHALL INSTALL SILT FENCE, SILT BARRIER, OR WOOD CHIP BERM AS SHOWN IN DETAILS A, B, OR C, SHEET C-8.
  - PRIOR TO BACKFILLING, THE CONTRACTOR SHALL EXCAVATE SEDIMENT UNTIL NATIVE OR COMPETENT SOILS ARE ENCOUNTERED. EXCAVATED SEDIMENT SHALL BE TRANSPORTED AND STAGED ON WB-11, OR AS DIRECTED.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR TO DETERMINE THE ACTUAL SCALE. DRAWING IS NOT SCALABLE IF NO SCALE BAR IS PRESENT.

IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	V. WARNER				
DRAWN BY	D. KENT				
1 NO.	06/07/2019 DATE	ISSUED FOR CONSTRUCTION REVISION	RL INT.		



O'BRIEN & GERE ENGINEERS, INC  
333 WEST WASHINGTON ST., SYRACUSE, NY 13202

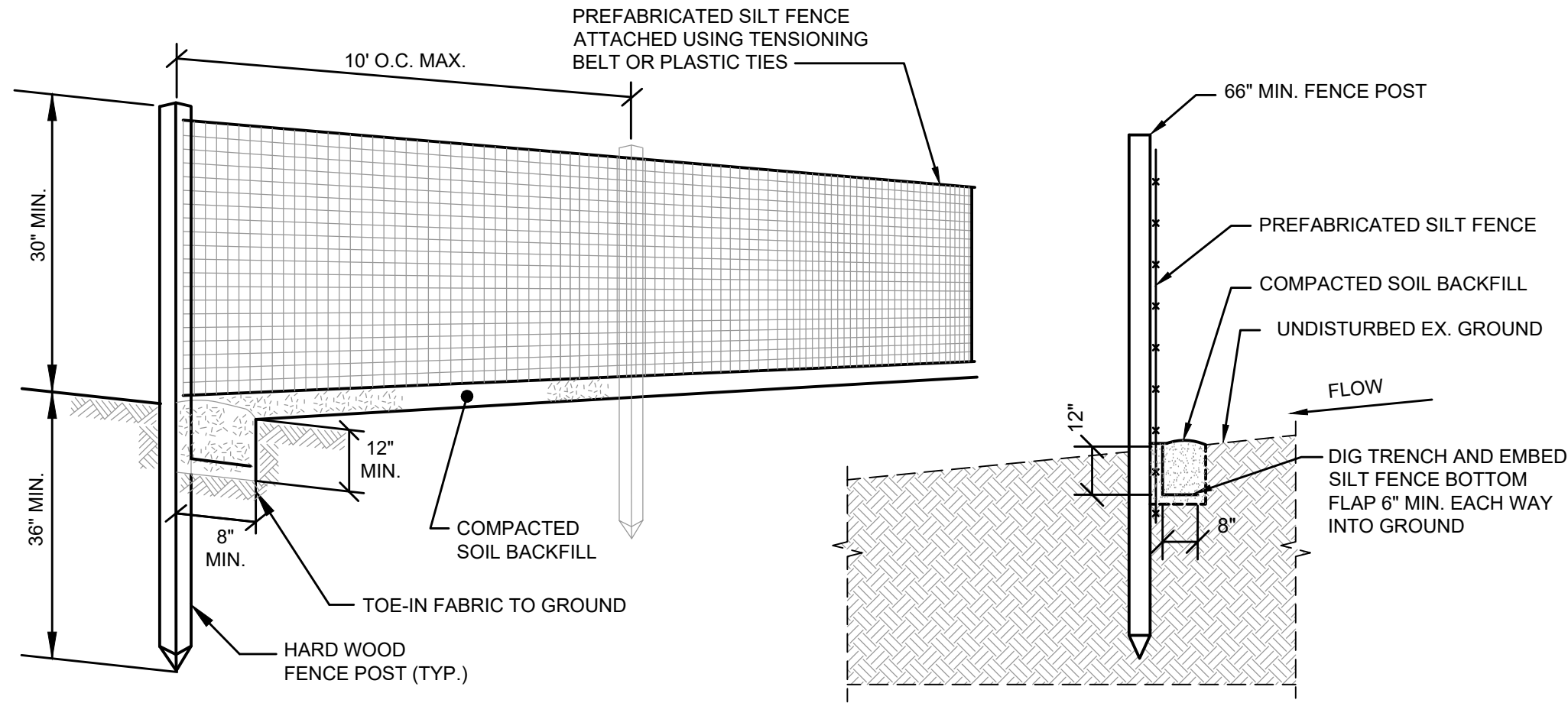
HONEYWELL INTERNATIONAL, INC.  
WASTEBED 9-15 SITE CLOSURE AND RESTORATION  
2019 - PHASE 1  
TOWN OF GEDDES AND CAMILLUS, NY

CIVIL  
WASTEBED 11 SEEP MITIGATION  
**GRADING PLAN AND SECTION**

FILE NO. 1163.67102 -029
DATE APRIL 2019

SAVED: 6/7/19 9:00 AM

I:\HONEYWELL\1163\67102-SB-9-15-CLOSURE\DWG\SHEETS\SEEP\_2019\67102-034-C008.DWG



- NOTES:**
1. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
  2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
  3. FENCE TO BE ALIGNED ALONG CONTOUR AS CLOSELY AS POSSIBLE.
  4. SILT FENCE MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST 10 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
  5. SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
  6. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED AT DIRECTION OF CONTRACTING OFFICER.
  7. PREFABRICATED SILT FENCE MATERIAL SHALL BE MIRAFI ENVIROFENCE OR APPROVED EQUAL.
  8. SILT FENCE - SILT SOCK MAY BE USED IN LIEU OF PREFABRICATED SILT FENCE. SEE DETAIL THIS SHEET.

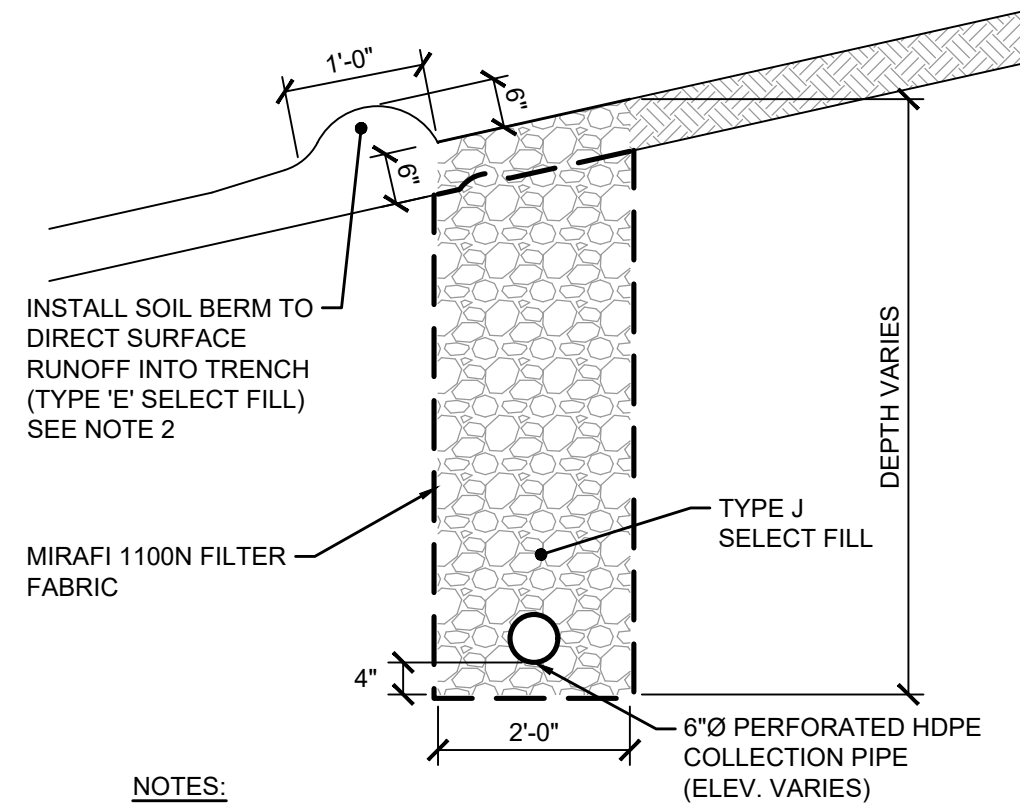
POSTS: STEEL T-POSTS, CHANNEL POST, OR 2"x2" HARDWOOD STAKE

FILTER CLOTH: MINIMUM TENSILE STRENGTH OF 120 LBS. (ASTM D-16826)

STANDARD SYMBOL — SF — SF

### A SILT FENCE DETAIL

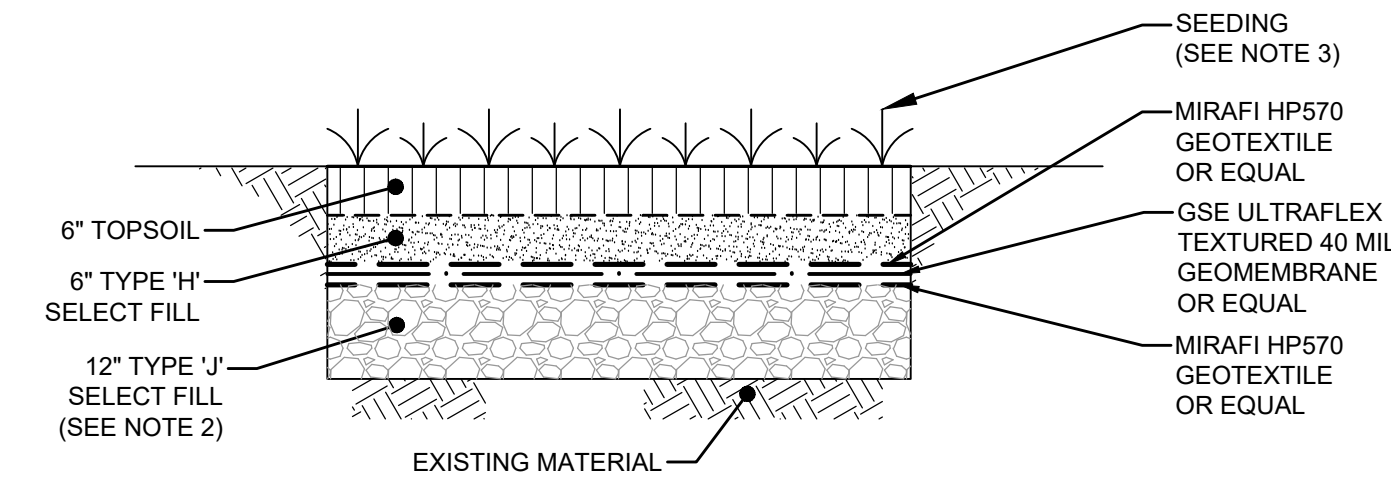
NOT TO SCALE



- NOTES:**
1. 6" PERFORATED PIPE IS PERFORATED SDR-17 HDPE PIPE OR EQUAL. PERFORATIONS SHALL BE CLASS II PER AASHTO M252 OR EQUAL (SEE HDPE PIPE SPECIFICATION 33 31 70).
  2. SOIL BERM IS NOT REQUIRED ALONG TRENCHES IN AREAS WITH MINIMAL SLOPE, AS APPROVED BY THE ENGINEER.

### E COLLECTION TRENCH DETAIL

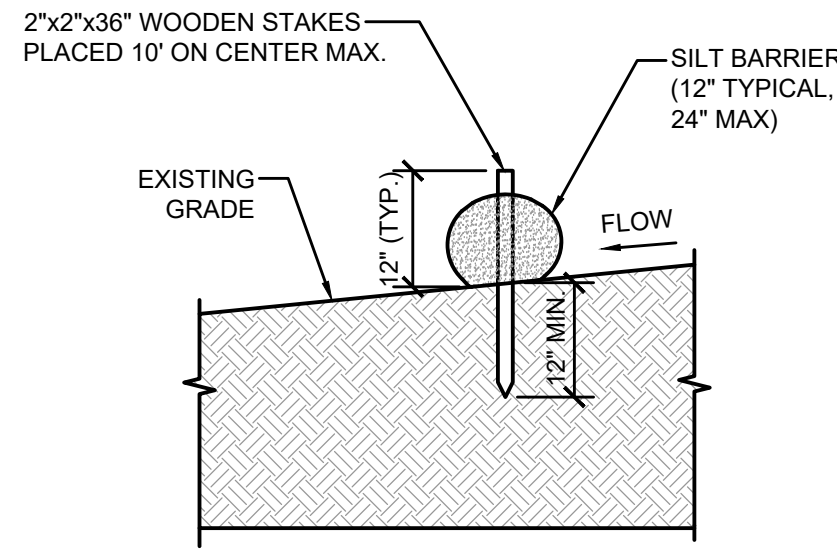
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- NOTES:**
1. TYPE 'H' SELECT FILL AND TOPSOIL SHALL BE PLACED ON THE SLOPE AS REQUIRED TO RESTORE EXISTING GRADES. SEE SHEET C-6 FOR LIMITS OF THIS MATERIAL.
  2. LIMITS OF TYPE 'J' SELECT FILL ARE SHOWN ON SHEET C-6.
  3. SUCCESSIONAL OLD FIELD SEED MIX SHALL BE APPLIED IN AREAS OUTSIDE OF WETLAND LIMITS. WHEN IN THE LIMITS OF THE WETLAND SEED MIX SHALL BE APPLIED. ALL SEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATION 31 22 19 TOPSOIL AND SEEDING.

### F SEEP APRON DETAIL

NOT TO SCALE

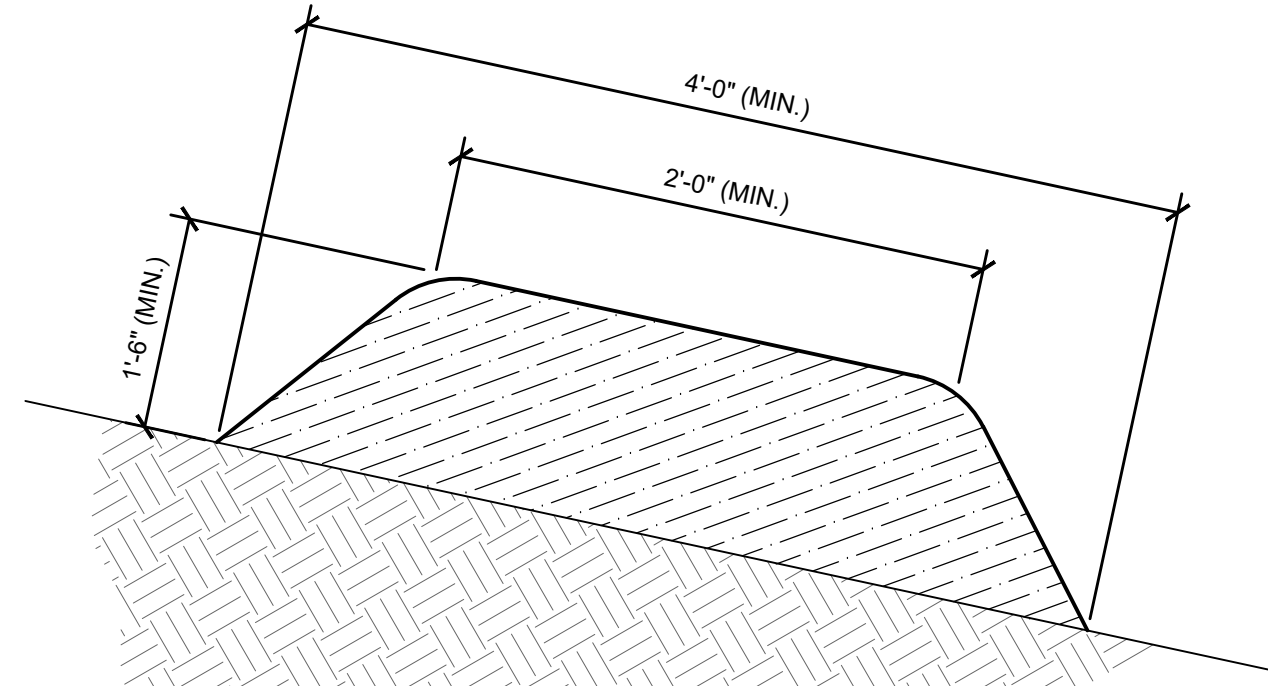


- NOTES:**
1. USE FILTREXX® SEDIMENT CONTROL SYSTEM BY FILTREXX® LAND IMPROVEMENT SYSTEMS OR APPROVED EQUAL.
  2. STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE SILT BARRIER AT 10' INTERVALS MAXIMUM USING HARDWOOD STAKES.
  3. SILT BARRIER TO BE ALIGNED ALONG CONTOUR AS CLOSELY AS POSSIBLE.
  4. BOTH ENDS OF EACH BARRIER SECTION MUST EXTEND AT LEAST 10 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
  5. SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER.
  6. ANY SILT BARRIER SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

STANDARD SYMBOL — SB — SB

### B SILT BARRIER

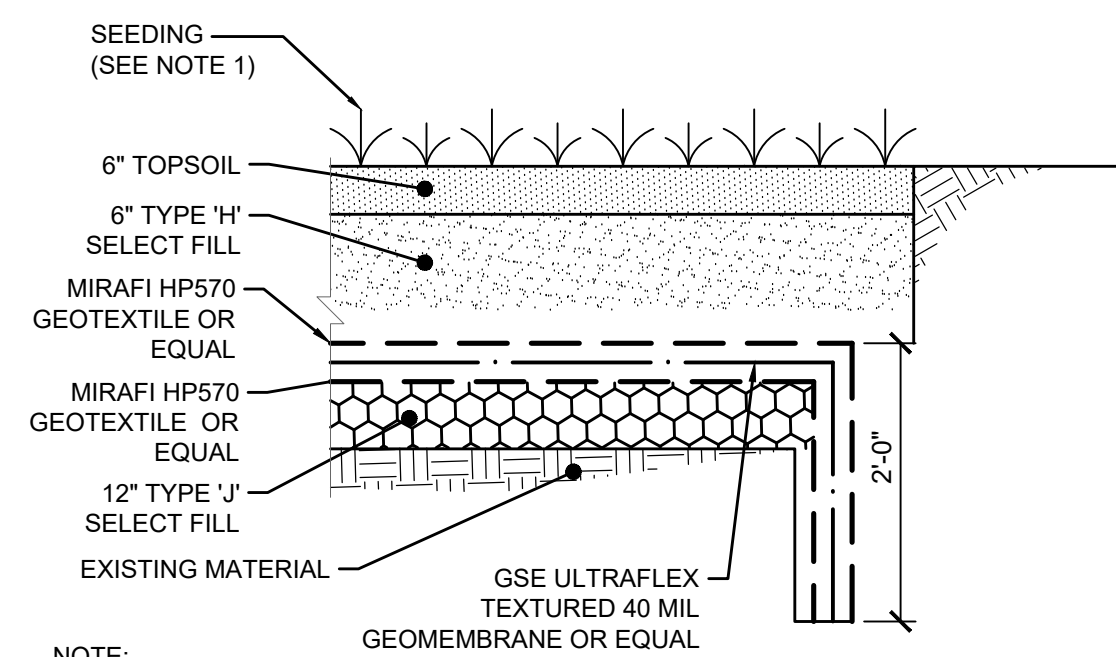
NOT TO SCALE



- NOTES:**
1. PRIOR TO PLACEMENT, OBSTRUCTIONS SUCH AS TREE LIMBS, LARGE ROCKS, ETC. SHALL BE REMOVED.
  2. BERMS SHALL BE ALIGNED PARALLEL TO EXISTING CONTOURS AND LOCATED BELOW ALL DISTURBED AREAS.
  3. BERMS SHOULD MAINTAIN A 2:1 MINIMUM BASE TO HEIGHT RATIO.
  4. WHERE PRACTICABLE WHEN USED ADJACENT TO A WATERWAY (E.G., LAKE, STREAM), A MINIMUM 50' WIDE VEGETATED STRIP SHALL BE MAINTAINED DOWNGRADIENT OF THE BERM.
  5. BOTH ENDS OF THE BERM SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BERM ALIGNMENT.
  6. BERMS SHALL NOT BE LOCATED IN AREAS OF CONCENTRATED FLOW.
  7. BERMS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE HEIGHT OF THE BERM. DAMAGED OR DETERIORATED PORTIONS OF THE BERM SHALL BE REPLACED IMMEDIATELY UPON INSPECTION.
  8. WHEN THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED, THE BERM MAY BE LEFT IN PLACE IF IT DOES NOT IMPACT PEDESTRIAN OR VEHICULAR FLOW. BERMS MAY ALSO BE RAKED AND LEVELED TO PROVIDE A MULCH LAYER AROUND WOODY VEGETATION.

### C WOOD CHIP BERM DETAIL

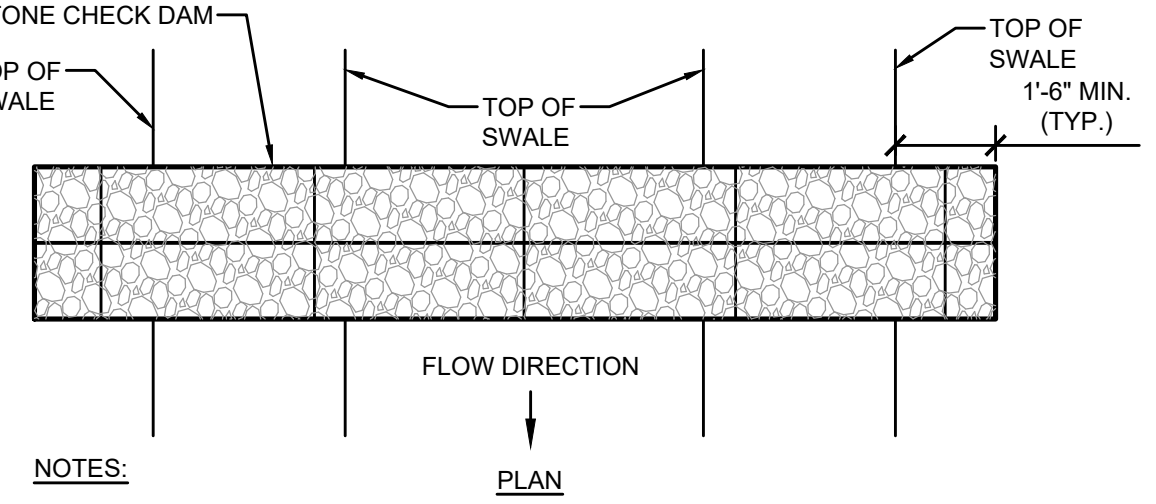
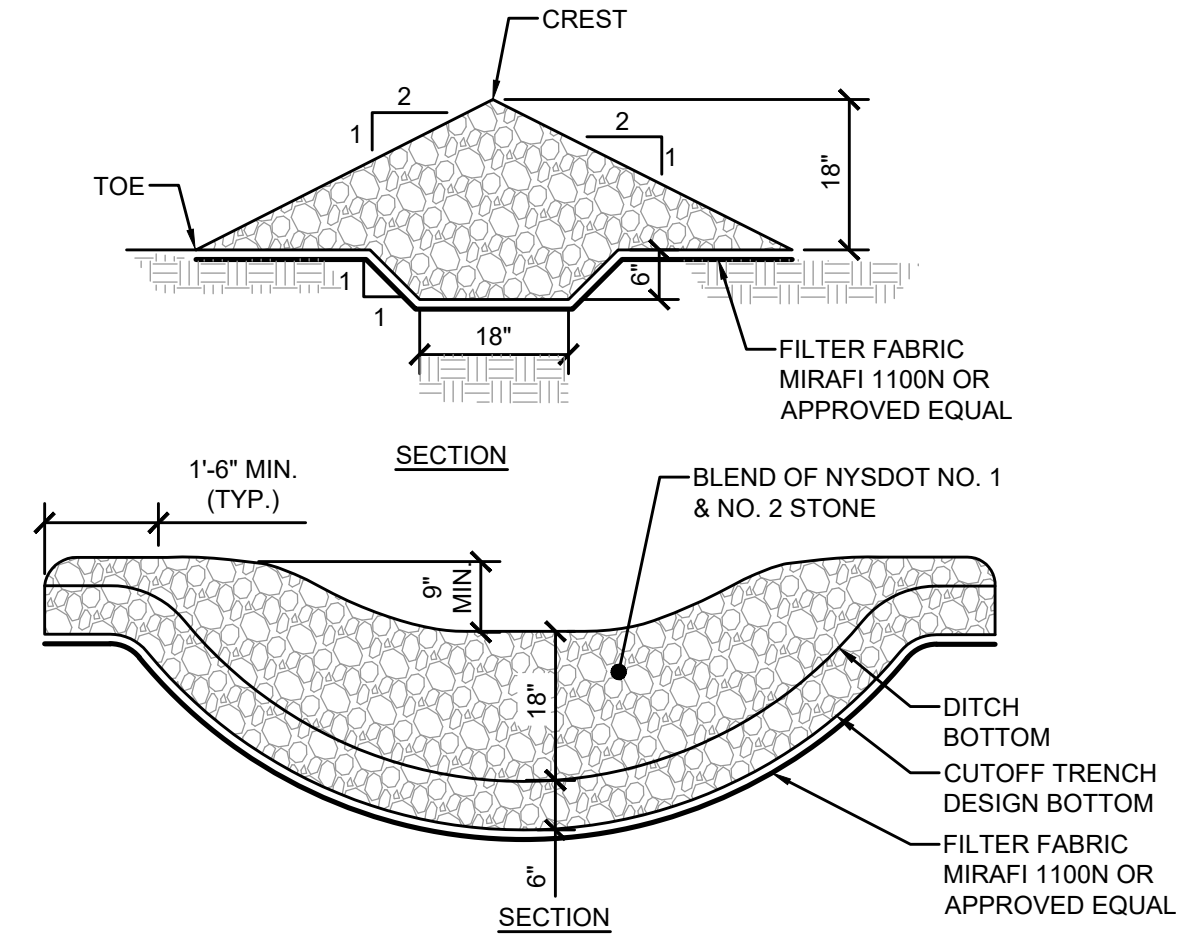
NOT TO SCALE



- NOTE:**
1. SUCCESSIONAL OLD FIELD SEED MIX SHALL BE APPLIED IN AREAS OUTSIDE OF WETLAND LIMITS. WHEN IN THE LIMITS OF THE WETLAND SEED MIX SHALL BE APPLIED. ALL SEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATION 31 22 19 TOPSOIL AND SEEDING.

### G TYPICAL SEEP APRON TUCK DETAIL

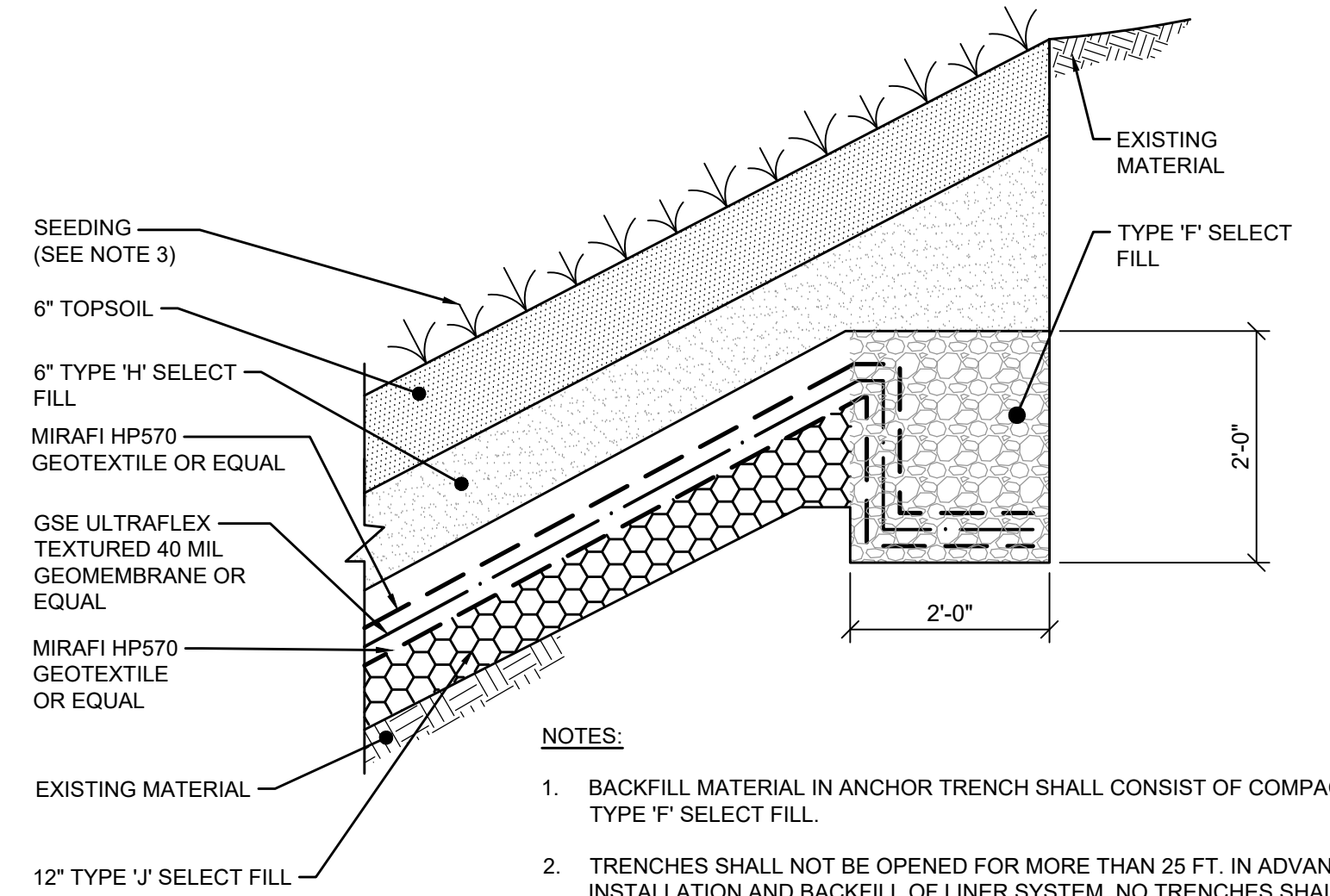
NOT TO SCALE



- NOTES:**
1. STONE SHALL BE PLACED ON A FILTER FABRIC FOUNDATION.
  2. SET SPACING OF CHECK DAMS SUCH THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
  3. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.

### D STONE CHECK DAM DETAIL

NOT TO SCALE



- NOTES:**
1. BACKFILL MATERIAL IN ANCHOR TRENCH SHALL CONSIST OF COMPACTED TYPE 'F' SELECT FILL.
  2. TRENCHES SHALL NOT BE OPENED FOR MORE THAN 25 FT. IN ADVANCE OF INSTALLATION AND BACKFILL OF LINER SYSTEM. NO TRENCHES SHALL BE LEFT OPEN OVERNIGHT.
  3. SUCCESSIONAL OLD FIELD SEED MIX SHALL BE APPLIED IN AREAS OUTSIDE OF WETLAND LIMITS. WHEN IN THE LIMITS OF THE WETLAND SEED MIX SHALL BE APPLIED. ALL SEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATION 31 22 19 TOPSOIL AND SEEDING.

### H TYPICAL SEEP APRON ANCHOR TRENCH DETAIL

NOT TO SCALE

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

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IN CHARGE OF	M. MARKERT				
DESIGNED BY	M. MELLEN				
CHECKED BY	V. WARNER				
DRAWN BY	D. KENT				
1 NO.	06/07/2019 DATE	ISSUED FOR CONSTRUCTION REVISION	RL INT.		

**O'BRIEN & GERE ENGINEERS, INC.**  
333 WEST WASHINGTON ST., SYRACUSE, NY 13202

**HONEYWELL INTERNATIONAL, INC.**  
WASTEBED 9-15 SITE CLOSURE AND RESTORATION  
2019 - PHASE 1  
TOWN OF GEDDES AND CAMILLUS, NY

CIVIL

**MISCELLANEOUS DETAILS**

FILE NO.  
1163.67102 -034

DATE  
APRIL 2019

C-8



## SECTION 31 05 14

### SELECT FILL

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes select fill materials used as either embedment or special backfill, as specified, as directed by the Owner's Representative, or as shown on the Contract Drawings.

##### 1.2 REFERENCES

- A. Materials and installation shall comply with the latest revision of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
  - 1. American Society for Testing and Materials (ASTM)
    - a. D422 - Method for Particle-Size Analysis of Soil

##### 1.3 SUBMITTALS

- A. The name and location of the source of each material. Samples and test reports of each material, including analytical that complies with Part 375 Unrestricted Use Soil Cleanup Objectives and 40 CFR 261.20 for Maximum Concentration of Contaminants for the Toxicity Characteristic.
- B. An affidavit from the Owner for each product stating that the site of the source was never used as a dump site for chemical, toxic, hazardous, or radioactive materials and it is not now or ever been listed as a suspected depository for chemical toxic, hazardous, or radioactive materials by any federal, state, or other governmental agency, department, or bureau.

##### 1.4 DEFINITIONS

- A. Embedment or Lining
  - 1. Granular material specified or directed to be placed below an imaginary line drawn one foot above the inside diameter of the pipe crown and within the trench limits.
- B. Special Backfill
  - 1. Pipelines

- a. Select fill material specified or directed to be placed above an imaginary line drawn one foot above the inside diameter of the pipe crown and within the trench limits.
- 2. Structures
  - a. Select fill material specified or directed to be placed within the excavation limits, either in, under or adjacent to the structure.
- C. Special Granular Material
  - 1. Special granular material shall mean granular materials listed below or other materials ordered by the Owner.

## PART 2 - PRODUCTS

### 2.1 SELECT FILL MATERIALS

#### A. Type A Select Fill

##### 1. Crushed Gravel

- a. Thoroughly washed crushed, durable, sharp angled fragments of gravel free from coatings. Crushed particles shall be a minimum of 85% by weight of the particles with at least two fractured faces. The total area of each fractional face shall exceed 25% of the maximum cross-sectional area of the particle.
- b. Crushed Gravel shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	1½-inch
0-25	¾-inch
0-5	½-inch

#### B. Type B Select Fill

##### 1. Crushed Stone

- a. Thoroughly washed clean, sound, tough, hard crushed limestone or equal free from coatings. Gradation for crushed stone shall be the same as specified for Type A Select Fill.

#### C. Type C Select Fill

##### 1. Crushed Stone

- a. Thoroughly washed, clean, sound, tough, hard, crushed limestone or equal free from coatings. It shall have the following gradation by weight.

<u>% Passing</u>	<u>SIEVE</u>
100	1-1/2-inch
90-100	1-inch
0-15	1/4-inch

D. Type D Select Fill

1. Washed Sand

- a. Washed coarse sand having the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	3/8-inch
95-100	No. 4
80-100	No. 8
50-85	No. 16
25-60	No. 30
10-30	No. 50
0-10	No. 100

E. Type E Select Fill

1. Run-of-Bank Gravel

- a. Run-of-bank gravel or other acceptable granular material free from organic matter with the following gradation by weight, as determined by washing through the sieve in accordance with ASTM D422.

<u>% Passing</u>	<u>SIEVE</u>
100	1½-inch
30-65	¾-inch
0-10	No. 200

F. Type F Select Fill

1. Run-of-crusher Stone

- a. Run-of-crusher hard durable limestone, or equal, having the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	2-inch
30-65	¾-inch

5-40  
0-10

No. 40  
No. 200

G. Type G Select Fill

1. A mixture of Type E Select Fill material and Portland Cement mixed in a ratio of 15:1 and placed in a dry state.

H. Type H Select Fill

1. Habitat Subgrade

- a. Habitat subgrade material fraction passing the #40 sieve shall have a soil pH from 5.5 to 7.5 and soil organic matter concentration of 0.5 to 6%. The Habitat Subgrade Material shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	4- inch
30-65	1/4-inch
15-60	No. 40
0-20	No. 200

I. Type H-DS Select Fill

1. Habitat Subgrade for Drainage Swales

- a. Habitat subgrade material fraction passing the #40 sieve shall have a soil pH from 5.5 to 7.5 and soil organic matter concentration of 0.5 to 6%. The Habitat Subgrade Material shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
80-100	4- inch
60-80	1/4-inch
40-60	No. 40
20-40	No. 200

J. Type I Select Fill

1. Liner Puncture/Gas Venting Layer Sand

- a. Clean, hard, durable, non-crushed dense grains having the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	3/8-inch

80-100	No. 4
60-80	No. 8
40-60	No. 16
25-40	No. 30
10-20	No. 50
0-10	No. 100

K. Type J Select Fill

1. Stone Substrate

- a. Washed stone substrate shall be thoroughly washed, clean, non-angular, sound, hard, round, cobbley, "river stone" or "river rock" or other equal material free from coatings and organic matter. Washed stone substrate shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	4-inch
5-20	1½ -inch
0-10	½-inch
0-5	No. 200

L. Type K Select Fill

1. Revetment Rip Rap

- a. Rip Rap shall meet the requirements of New York State Department of Transportation item number 620.04M with the following gradation adjustment:

<u>% Passing</u>	<u>SIEVE</u>
100	18-inch
0-5	10-inch

M. Type L Select Fill

1. Revetment Filter Material

- a. Revetment Filter Material fraction passing the #40 sieve shall have a soil pH from 5.5 to 7.5 and soil organic matter concentration of 0.5 to 6%. The Revetment Filter Material shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	6-inch
75-85	3-inch
15-40	No. 20

0-15

No. 200

N. Type M Select Fill

1. Collection Trench Sand

- a. Clean, hard, durable, non-crushed, dense grains having the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
100	3/8-inch – No. 20
70	No. 4 – No. 25
30	No. 16 – No. 30
0	No. 25 – No. 60

O. Type N Select Fill

1. Pea Gravel

- a. Pea Gravel shall meet the requirements of New York State Department of Transportation item number 733.2001 Underdrain Filter Type 1 with the following gradation:

<u>% Passing</u>	<u>SIEVE</u>
100	1-inch
30-100	1/2-inch
0-30	1/4-inch
0-10	No. 10
0-5	No. 20

P. Type O Select Fill

1. Lower Ditch A (Downstream Reach)

- a. Stone substrate shall be non-angular, sound, hard, round, cobbly, “river stone” or “river rock” or other equal material. Stone substrate shall have the following gradation by weight:

<u>% Passing</u>	<u>SIEVE</u>
90-100	12-inch
40-60	8-inch
0-10	4-inch

Q. Type P Select Fill



1. Course Granular Fill

- a. Course Granular Fill shall meet the requirements of New York State Department of Transportation item number 733.0403 Sub base Type 3 with the following gradation:

<u>% Passing</u>	<u>SIEVE</u>
100	4-inch
30-75	1/4-inch
5-40	No. 40
0-10	No. 200

PART 3 - EXECUTION

3.1 INSTALLATION

1. Install special granular material for pipeline embedment in accordance with the Section entitled "Pipeline Installation" as specified or directed.
2. Install special backfill in accordance with the backfilling provisions of the Section entitled "Excavation and Fill", "Structural Excavation and Fill", and the Section entitled "Earthwork", where specified or directed.

3.2 SETTLEMENTS

1. Settlements in the finished work shall be repaired to establish the proposed or existing grade, as the case may be.

END OF SECTION

SECTION 31 22 19

TOPSOIL AND SEEDING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes topsoil, seed, mulch, and associated work.

1.2 REFERENCES

- A. Improvement, restoration, and mitigation activities shall be performed in substantive compliance with Sections 401 and 404 of the Clean Water Act.
- B. Analytical References
  - 1. pH – ASTM D4972
  - 2. Organic Matter – ASTM D22974
  - 3. Particle size distribution – ASTM D422

1.3 PERFORMANCE REQUIREMENTS

- A. The Contractor shall comply with all applicable Federal, State and Local codes, ordinances, regulations, statutes and standards.

1.4 SUBMITTALS

- A. The following items shall be submitted:
  - 1. The name and location of source and data (pH, organic matter, particle size distribution) for off-site soil.
  - 2. Samples and test reports of each material shall included analytical that complies with Part 375 Unrestricted Use Soil Cleanup Objectives and 40 CFR 261.20 for Maximum Concentration of Contaminants for the Toxicity Characteristic.
  - 3. An affidavit from the Owner for each product stating that the site of the source was never used as a dump site for chemical, toxic, hazardous, or radioactive materials and it is not now or ever been listed as a suspected depository for chemical toxic, hazardous, or radioactive materials by any federal, state, or other governmental agency, department, or bureau.
  - 4. Latin name, source and content data for seed mixes. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.
  - 5. Should hydroseeding be used, the Contractor shall submit data including material and application rates.
  - 6. Source and content data for organic mulch.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Topsoil shall have moderate pH (5 to 7.5) and organic matter concentration from 3 to 15%.
  - 1. Topsoil shall be natural or manufactured, friable and fertile soil that meets the USDA basic soil texture classes of loam, silt loam or sandy loam to be recovered from the A horizon of an in-place soil. Topsoil shall be capable of sustaining healthy plant life. Topsoil shall be unscreened but be reasonably free of subsoil, heavy or stiff clay, brush, weeds, foreign material, stones larger than 4 inches in greatest dimension. Topsoil as delivered to the site or stockpiled shall meet the following requirements:
    - a. Topsoil shall be well graded and have the following particle size distribution (by weight):
      - 1. 85 to 100 percent passing 1 inch, 65 to 100 percent passing 1/4 inch, and 15 to 80 percent passing a Number 200 sieve (0.075 mm, 0.003 inch). The 2 micron particle size shall not be greater than 20 percent of the total sample mass, as determined by hydrometer analysis.
      - 2. Organic materials used in the manufacture of topsoil shall meet the requirements of NYSDOT 713-15.
      - 3. Topsoil shall contain no nuisance weeds including seeds, stems or rhizomes of purple loosestrife, common reed, Japanese knotweed or plants on the NYS Prohibited and Regulated Species List or Federal Noxious Weeds list.
      - 4. Each load of topsoil shall be inspected by the Owner's Representative and is subject to rejection.
- B. Seed
  - 1. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The percent of pure live strain of the seed shall be submitted with the seed mixture.
  - 2. The nursery shall provide a seed analysis report including certified analyses of percent viability, percent weed seeds, and percent of other crop seed. The certifying laboratory shall be indicated on the seed tag or on associated nursery submittals.
  - 3. The state of origin of the seed shall be indicated on the seed tag or on associated nursery submittals.
  - 4. The following weed seeds shall not be present in seed mix:
    - a. smooth brome
    - b. tall fescue
    - c. purple loosestrife

- d. common reed
  - e. cattail
  - f. reed canarygrass
  - g. others included in the NYS Prohibited and Regulated Species List or Federal Noxious Weeds list
5. Seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).

Table 1. Successional old-field seed mix <sup>1</sup>

Common name	Latin name	Weight percent
Big bluestem	<i>Andropogon gerardii</i>	10
Switchgrass	<i>Panicum virgatum</i>	10
Canada wildrye	<i>Elymus canadensis</i>	8
Virginia wildrye	<i>Elymus virginicus</i>	8
Little bluestem	<i>Schizachyrium scoparium</i>	8
Indiangrass	<i>Sorghastrum nutans</i>	8
Sideoats grama	<i>Bouteloua curtipendula</i>	5
Partridge pea	<i>Chamaecrista fasciculata</i>	5
Black-eyed Susan	<i>Rudbeckia hirta</i>	5
American senna	<i>Senna hebecarpa</i>	5
Ticklegrass	<i>Agrostis scabra</i>	3
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	3
Maximilian sunflower	<i>Helianthus maximiliani</i>	3
Rough stemmed goldenrod	<i>Solidago rugosa</i>	3
Many-flowered aster	<i>Aster ericoides</i>	3
Purple bergamot	<i>Monarda media</i>	3
Lance-leaf coreopsis	<i>Coreopsis lanceolata</i>	2
Annual sunflower	<i>Helianthus annuus</i>	2
Wild bergamot	<i>Monarda fistulosa</i>	2
Tall white beardtongue	<i>Penstemon digitalis</i>	2
New England aster	<i>Aster novae-angliae</i>	1
Purple coneflower	<i>Echinacea purpurea</i>	1

<sup>1</sup>Apply seed mix at 40 lbs/acre.

Seed mix to be applied with 20 lbs/acre of oats (*Avena sativa*).

If seed mix is applied in the fall (October 15 to December 1), add 10 pounds per acre of winter wheat (*Triticum aestivum*).

Table 2. Swale seed mix<sup>1</sup>

Common name	Latin name	Weight percent
Oats	<i>Avena sativa</i>	21
Alkaligrass	<i>Puccinellia distans</i>	15
Virginia wildrye	<i>Elymus virginicus</i>	12
Redtop	<i>Agrostis alba</i>	10
Creeping bentgrass	<i>Agrostis stolonifera</i>	9
Switchgrass	<i>Panicum virgatum</i>	8
Fox Sedge	<i>Carex vulpinoidea</i>	5

Canada wildrye	<i>Elymus canadensis</i>	5
Softstem bulrush	<i>Schoenoplectus tabernaemontani</i>	5
Hardstem bulrush	<i>Schoenoplectus acutus</i>	5
Ticklegrass	<i>Agrostis scabra</i>	2
Autumn bentgrass	<i>Agrostis perennans</i>	2
Path rush	<i>Juncus tenuis</i>	0.5
Soft rush	<i>Juncus effuses</i>	0.5

<sup>1</sup>Apply seed mix at 30 lbs/acre.

If seed mix is applied in the fall (October 15 to December 1), add 10 pounds per acre of winter wheat (*Triticum aestivum*).

Table 3. Wetland seed mix<sup>1</sup>

Common name	Latin name	Weight percent
Oats	<i>Avena sativa</i>	40
Virginia wildrye	<i>Elymus virginicus</i>	15
Switchgrass	<i>Panicum virgatum</i>	8
Indiangrass	<i>Sorghastrum nutans</i>	8
Showy tick trefoil	<i>Desmodium canadense</i>	5
Bluejoint grass	<i>Calamagrostis canadensis</i>	5
American senna	<i>Senna hebecarpa</i>	4
Nodding beggar-ticks	<i>Bidens cernua</i>	2
Smooth panicgrass	<i>Panicum dichotomoflorum</i>	2
Softstem bulrush	<i>Schoenoplectus tabernaemontani</i>	2
Hardstem bulrush	<i>Schoenoplectus acutus</i>	2
Redtop	<i>Agrostis alba</i>	1.5
Devil's beggar-ticks	<i>Bidens frondosa</i>	1.5
Fox sedge	<i>Carex vulpinoidea</i>	1.5
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1
Rattlesnake grass	<i>Glyceria canadensis</i>	1
Soft rush	<i>Juncus effuses</i>	0.5

<sup>1</sup>Apply seed mix at 40 lbs/acre.

If seed mix is applied in the fall (October 15 to December 1), add 10 pounds per acre of winter wheat (*Triticum aestivum*).

## PART 3 - EXECUTION

### 3.1 *INSTALLATION*

- A. Where specified in design drawings, topsoil shall be applied to the depth indicated and tracked perpendicular to the slope gradient.
- B. Seeding procedures
  - 1. Seeding shall be performed during two seasonal windows: April 1 to June 15, October 15 through December 1, or as otherwise practicable and reviewed by the Owner's Representative. If site soils require stabilization at times outside of these dates, they shall be temporarily stabilized using one ton per acre of straw and 100 lbs/ac of oats.
  - 2. When the topsoil surface has been graded and tracked, the seed mixture shall be uniformly applied upon the soil surface following Table 4 or by a method reviewed by the Owner's Representative.
  - 3. Seeding and mulching shall not be done during windy weather (greater than 5 mph or as reviewed by the Owner's Representative).
  - 4. Seed and mulch shall be spread to form a continuous blanket over the seed bed, and will be installed in two parts. The final 0.25" of mulch will contain seed mix as directed. The initial application will be applied without seed to 0.25" below the depth specified for that particular vegetation (Table 4).



Table 4: Summary of seeding treatments

Vegetation zone	Plant materials	Mulch and application rate	Notes
Successional old-field	Per Table 1	Wood fiber hydromulch with tackifier (manufacturer recommended rate according to slope) or EcoBlanket (1 inch depth)  Broadcast seeding with straw placement (1 inch depth) is also acceptable.	Hydroseeding shall be applied in 2 passes <ul style="list-style-type: none"> <li>• First pass = 50% of seed as well as minimally enough hydromulch and tackifier for visual metering</li> <li>• Second pass = remaining seed, hydromulch and tackifier</li> </ul>
Swale	Per Table 2	Wood fiber hydromulch with tackifier (manufacturer recommended rate according to slope)  Broadcast seeding with straw placement (1 inch depth) is also acceptable.	EcoBlanket shall be applied in 2 passes <ul style="list-style-type: none"> <li>• First pass = 0.75" thick and containing no seed</li> <li>• Second pass = 0.25" thick and containing seed</li> </ul>
Wetland	Per Table 3	Wood fiber hydromulch with tackifier (manufacturer recommended rate according to slope) or EcoBlanket (1 inch depth)	

### 3.2 MAINTENANCE

- A. Restored areas shall be monitored for a period of five years after construction is complete and corrective measures taken to maintain:
- B. 80% vegetative cover is achieved in accordance with the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002) and areas are accepted by the owners' representative. Maintenance responsibilities begin immediately after seeding and planting and continue through at least the first full growing season following the year of planting.
- C. Additional maintenance and monitoring activities may be performed in accordance with the project Operations, Maintenance, and Monitoring plan or as directed by the Owner.

END OF SECTION

## **APPENDIX D**

### **FIGURE 5 WB 9-11 VEGETATIVE SURVEY**



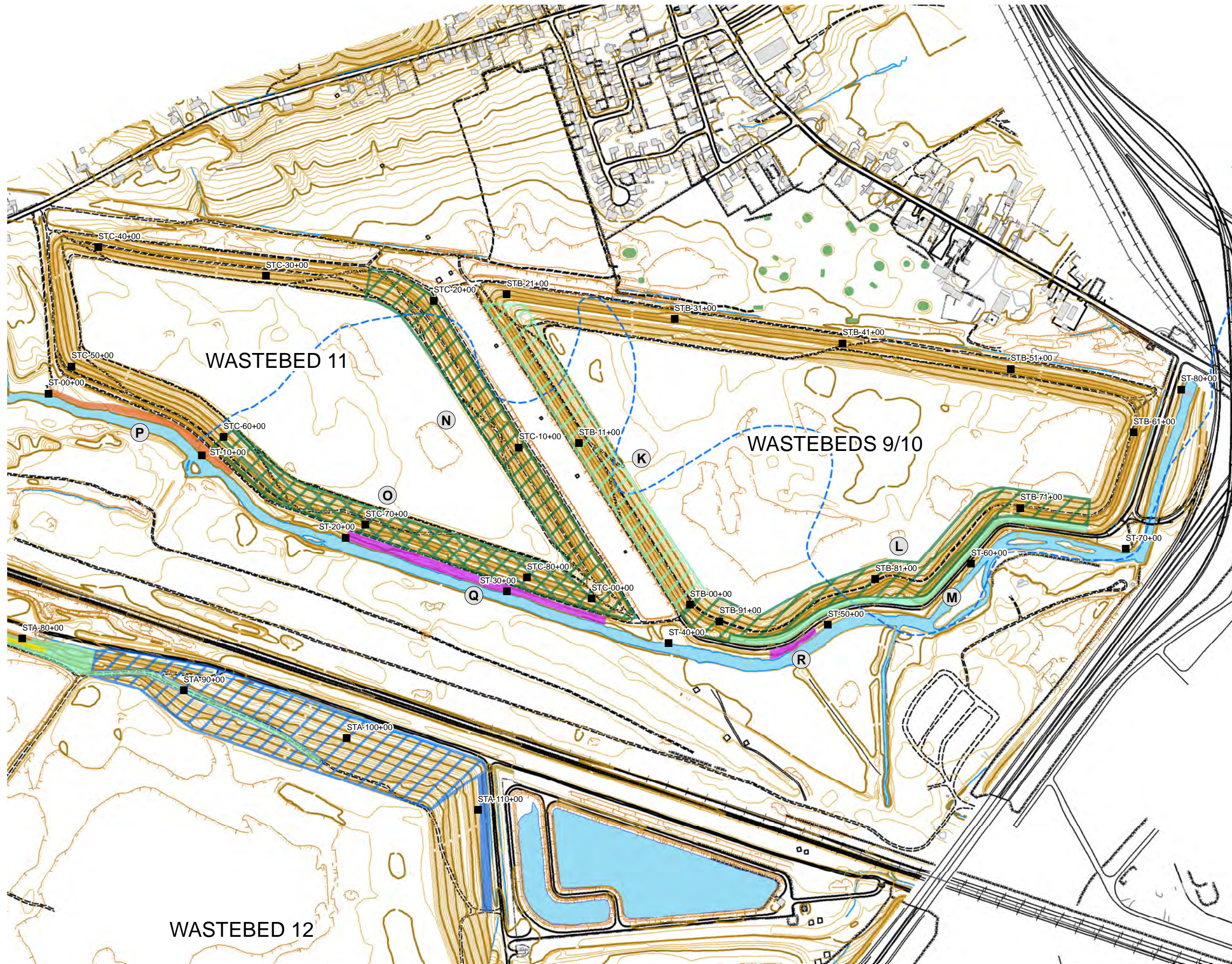


FIGURE 5



LEGEND

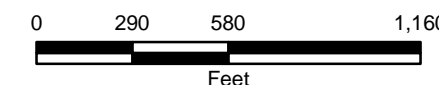
- BERM 1000ft STATION
- REMEDY 1A 20% APPLICATION
- REMEDY 2A 30% APPLICATION
- REMEDY 1A 30% APPLICATION
- REMEDY 1A 100% APPLICATION
- REMEDY 1B 30% APPLICATION
- REMEDY 1B 50% APPLICATION
- REMEDY 1C 100% APPLICATION
- REMEDY 2A 30% APPLICATION
- REMEDY 2A 100% APPLICATION
- REMEDY 2B 100% APPLICATION
- REMEDY 3 100% APPLICATION

CONTOUR INTERVAL

- 10-FT
- 10-FT DEPRESSION
- 2-FT
- 2-FT DEPRESSION

HONEYWELL  
WASTEBEDS 9-15  
BERM STABILIZATION AND  
EROSION CONTROL -  
INTERIM MEASURE  
GEDDES AND CAMILLUS, NY

WASTEBEDS 9-11  
VEGETATIVE  
SURVEY



MAY 2013  
1163.49926

