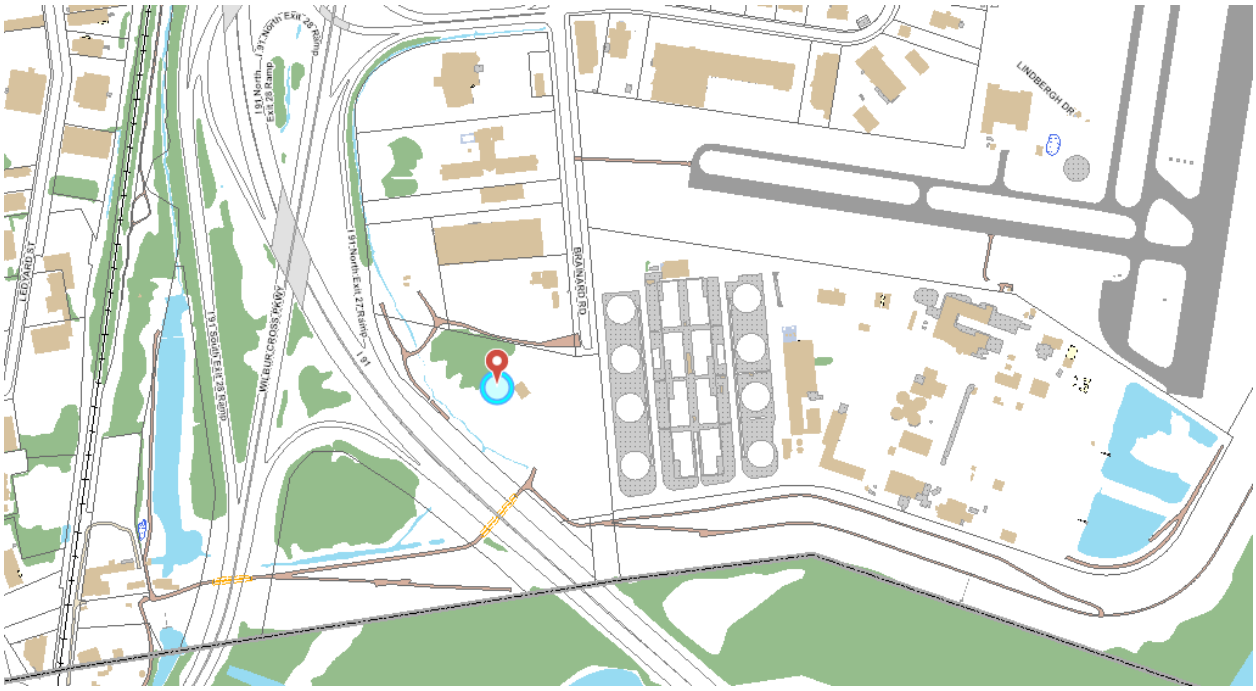
DEPARTMENT OF DEVELOPMENT SERVICES – PLANNING DIVISION
REPORT: MDC South Conveyance and Storage Tunnel Project Inland Wetlands and Watercourses Permit Extension, 255 Brainard Rd.
for consideration October 13, 2020

STAFF REPORT

TO:	**Planning & Zoning Commission as Inland Wetlands Agency**
PREPARED BY:	**Elizabeth Sanderson, Project Leader** **Tel. 860-757-9238, email Elizabeth.sanderson@hartford.gov**
PROJECT:	**MDC South Conveyance and Storage Tunnel Project** **255 Brainard Rd.** **PARCEL ID: 301-816-004** **ENERGOV ID: P&Z-COMM-2020-0255**
ZONE:	**ID-1 Industrial District**
TYPE:	**Type Extension Request of Inland Wetlands & Watercourses Permit MUNIS App #20144479 per Sections 7.9 & 7.10 of Inland Wetlands and Watercourses Regulations effective December 22, 2014 and Last Amended February 28, 2017 (the "IWW Regulations").**
APPLICANT:	Shawn Callaghan, Fitzgerald & Halliday, Inc.
OWNER:	The Metropolitan District



City GIS Map

BACKGROUND INFORMATION

Application requesting extension of Inland Wetlands & Watercourses Permit (MUNIS App #20144479), previously approved by the Planning & Zoning Commission as Inland Wetlands Agency at its regular meeting held on October 28, 2014, to conduct regulated activity related to construction of the Metropolitan District Commission (MDC) South Conveyance and Storage Tunnel Project (the "Project") (see Attachment #2). The extension is needed due to the size and complexity of the Project, as well as ongoing and unforeseen construction delays, as reported by the Applicant.

Figure 1. View of main tunnel shaft site at 255 Brainard Rd., taken 9/10/2020.

Figure 2. View of main tunnel shaft site and access road located on the property, taken 9/10/2020.

Other permits issued on this property include:

- Special Permit and Site Plan for Transportation and Utilities Facility (EnerGov ID#P&Z-COMM-2019-0035), granted by the Planning & Zoning Commission at its regular meeting on October 22, 2019.
- United States Army Corps of Engineers (USACE) Section 404 Permit (NAE-2014-261).
- State of Connecticut Department of Energy and Environmental Protection Permit (WQC-201407768).

LEGAL STANDARD

The Planning and Zoning Commission was designated to be the Inland Wetlands Agency of the City of Hartford (the "Agency") by ordinance in 1977.

The Agency shall implement the purposes and provisions of the Inland Wetlands and Watercourses Regulations of the City of Hartford and the Inland Wetlands and Watercourses Act in the City of Hartford. The Agency shall also enforce the Inland Wetlands and Watercourses Act and shall issue, issue with terms, conditions, limitations or modifications, or deny permits for all regulated activities on inland wetlands and watercourses in the City of Hartford pursuant to sections 22a-36 to 22a-45, inclusive, of the Connecticut General Statutes (CGS), as amended. (ref. IWW Regulations, Section 1)

STANDARD SPECIFIC TO THE USE

Any application to renew or amend an existing permit shall be filed with the Agency in accordance with **Sections 7 & 8 of IWW Regulations**.

Per IWW Regulations Sec. 7.10 and CGS, Chapter 440, Sec. 22a-42a(d)(2), any application to renew a permit shall be granted upon request of the permit holder unless the Agency finds that there has been a substantial change in circumstances which requires a new permit application or an enforcement action has been undertaken with regard to the regulated activity for which the permit was issued, provided no permit may be valid for more than ten (10) years…"

FINDING OF FACTS

Construction activities related to the Project are underway and ongoing (as seen in Figures 1 & 2).

The Staff Report prepared for the existing Inland Wetland & Watercourses (IWW) Permit (MUNIS App #20144479) is included as Attachment #2.

In Attachment D4, provided with this application and included in Attachment #1 of this report, the Applicant indicates that "[t]he only changes to the on-site wetlands since the 2014 City of Hartford (COH) Inland Wetlands and Watercourses Permit submission…is the construction of the first of two permitted wetland mitigation areas. The first wetland mitigation area, referenced in the project plans included in Attachment I2 as Wetland Area Z, was constructed between 2016 and 2017 in the area of Wetland G".

Figure 3. View of Wetland Mitigation Area Z, taken 9/10/2020. Two of five Wetland Mitigation Monitoring Reports have been completed for this newly created wetland area, as per State and Federal approvals.

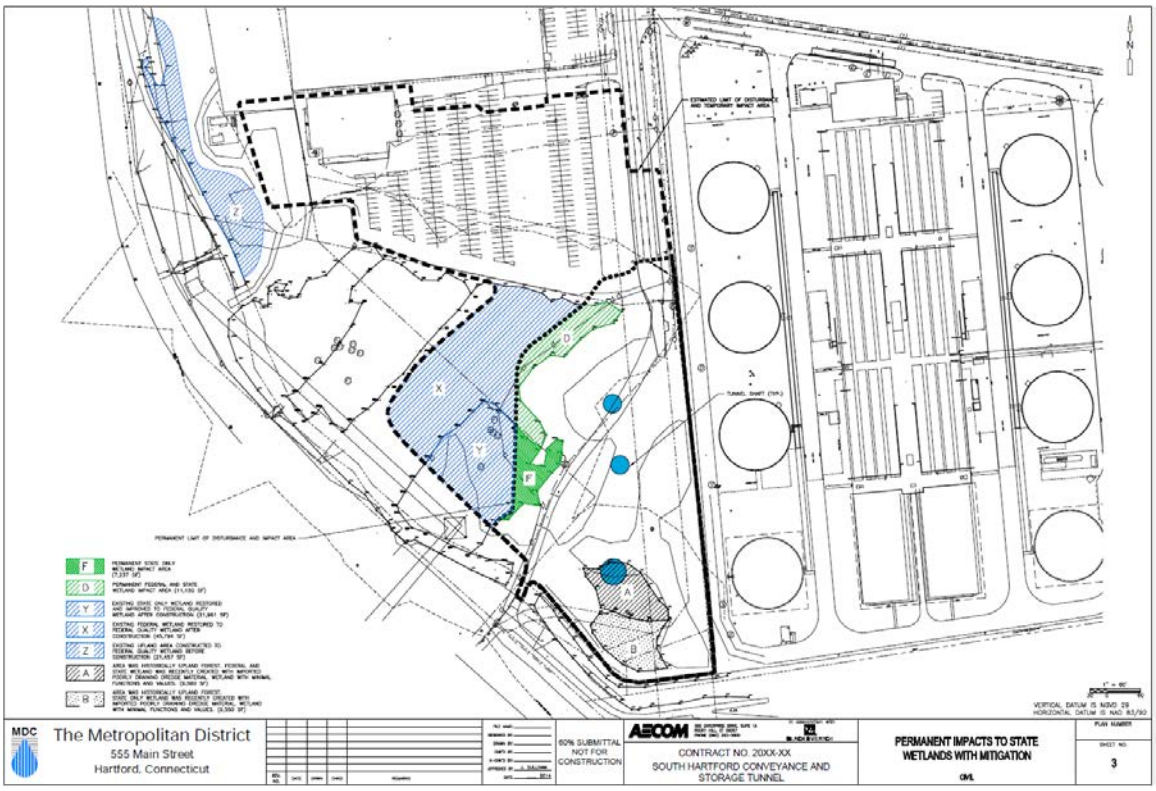


Figure 4. Map of wetlands, included with Attachment I2 (see Attachment #1 of this report). Wetland mitigation area Z has been constructed and is under monitoring, in accordance with Federal approvals. Wetland areas X and Y will be restored and/or improved after construction per applicable State and Federal approvals. Additional information about wetlands mitigation is available in "Attachment I6 Compensatory Mitigation," (see Attachment #1 of this report).

In Attachment I3 (see Attachment #1 of this report), the Applicant indicates that minor design changes to Wetland Areas X and Y were approved by USACE in April 2019 and City of Hartford on April 25, 2019 (see Appendix 2, included in Attachment #1 of this report). These minor alterations included lowering the current elevations by 1.5 feet and incorporating additional plant species in order to improve hydrology and encourage higher survival of wetland plantings.

On September 10, 2020 a site inspection was conducted with the Applicant. Eroded soil deposits were observed in low level areas onsite (see Figures 5 & 6). In an email dated September 11, 2020, the Applicant was asked to better maintain erosion controls on the property to prevent erosion into wetlands and watercourses (see Attachment #3).

Figure 5.

Figure 6.

Figures 5 & 6. Soil deposits observed at outlet pipes during site inspection on 9/10/2020.

COMMENTS RECEIVED (DEPARTMENTS, AGENCIES, NRZS, PUBLIC)

On September 22, 2020 the application was referred to the City Engineer for comment; in an e-mail from Frank Dellaripa, City Engineer, later in the day Mr. Dellaripa indicated he is familiar with this project and has no issues with the request for extension.

ANALYSIS

It appears there are no substantial changes in circumstances outside of what was initially approved related to ongoing construction of the SCST Project and wetland mitigation. Additionally, no enforcement action has been undertaken by a Municipal Wetland Agent related to the regulated activity for which the initial permit was issued. As such, Staff recommends the IWW permit be extended until October 28, 2024. This would make the permit valid for ten years from issuance, the maximum length of time permitted by law. Since the project will likely not be complete in 2024, the Applicant has indicated that a new IWW permit would be applied for in 2024.

Staff recommends that erosion and sedimentation controls be installed and/or periodically maintained throughout construction activities, and shall remain in place until the site is permanently stabilized, and in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, in order to ensure existing wetlands and watercourses, including newly created wetland mitigation area(s), are protected from soil erosion.

STAFF RECOMMENDATION

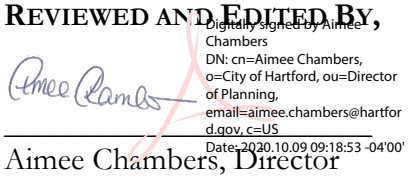
Staff recommends approval of this application.

A draft resolution follows.

ATTACHMENTS

1. Application and Supporting Documents
2. Staff Report from October 28, 2014 Planning, Zoning & Inland Wetlands Commission meeting when the existing Inland Wetlands & Watercourses Permit (MUNIS App #20144479) was approved.
3. E-mail from Wetland Agent to Applicant, dated September 11, 2020.

REVIEWED AND EDITED BY,



Aimee Chambers, Director

PLANNING & ZONING COMMISSION AS INLAND WETLAND AGENCY

INLAND WETLANDS AND WATERCOURSES PERMIT

DRAFT APPROVAL RESOLUTION

255 Brainard Road

October 13, 2020

Whereas, The Inland Wetlands Agency of the City of Hartford was established in accordance with an ordinance and designated to be the zoning commission (now the Planning and Zoning Commission) (hereinafter the "Agency") by ordinance in 1977, and shall implement the purposes and provisions of the Inland Wetlands and Watercourses Regulations and the Watercourses Act in the City of Hartford; and

Whereas, The Agency has reviewed a request to extend Inland Wetlands and Watercourses Permit #MUNIS App 20144479 ("IWW Permit") to conduct regulated activity on property identified by the City Assessor as 255 Brainard Road, Parcel ID: 301-816-004, related to construction of The Metropolitan District Commission South Conveyance and Storage Tunnel Project and the main tunnel launch shaft site (the "Project"); and

Whereas, At its regular meeting held on October 28, 2014 the Agency issued the IWW Permit, and the permit is set to expire on October 28, 2020; and

Whereas, The Project is still under construction, and due to size, complexity, and unforeseen construction delays, it will not be completed prior to expiration of the existing IWW Permit; and

Whereas, The Commission finds that there has not been a substantial change in circumstances which requires a new permit application, nor has an enforcement action been undertaken with regard to the regulated activity for which the permit was issued; **Now Therefore Be It**

Resolved, That the Agency hereby approves the request for permit extension by Shawn Callaghan of Fitzgerald & Halliday, Inc. on behalf of MDC, subject to the following conditions:

1. Erosion and sedimentation controls shall be installed and maintained to satisfaction of the Wetland Agent throughout construction activities, and shall only be removed once the site is permanently stabilized.

2. This permit shall expire on October 28, 2024, in accordance with Connecticut General Statutes Chapter 440, Sec. 22a-42a(d)(2) currently in effect.

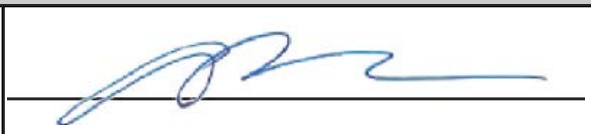
Resolved this 13th day of October, 2020

DDS- Planning and Zoning: Application for Inland Wetlands and Watercourses Permit

Submission date: 4 September 2020, 3:20PM

Receipt number: 2

Question	Response
Please Reference all attachments by appropriate identification on application form	Wetlands Permit
A. Property Information	
	255 Brainard Rd, Hartford, CT 06114, USA Map (41.7329889, -72.6619821)
Zoning District:	ID-1
Name of Property Owner:	The Metropolitan District (MDC)
Property Owner's Address	555 Main Street, Hartford, CT 06412
Phone:	860-513-3449
Email:	APerham@themdc.com
B. Applicant	
Name of Applicant	The Metropolitan District
File Date:	09/08/2020
Address:	555 Main Street, Hartford, CT 06412
Phone:	860-513-3449
Email:	APerham@themdc.com
Is applicant owner, leasee, or prospective tenant?	Owner
Property Owner's Consent to Apply:	N/A
C. Primary Point of Contact	
Name:	Shawn Callaghan, Fitzgerald & Halliday, Inc., Hartford, CT
Phone:	860-256-4918
Email:	scallaghan@fhiplan.com
D. Project Information	
1. Project Name (may be an address)	South Conveyance and Storage Tunnel Project – Hartford, CT
2. Size in Square Feet:	approximately 279,500 square feet
3. Linear Feet of Watercourse and/or Adjacent to site:	Unnamed perennial watercourse traversing the site – approximately 1,086 linear feet

4. Please describe wetlands and/or watercourses conditions that make Permit necessary:	Some of the on-site wetlands cannot be avoided to construct the project.
Proposed Action	
Activity to be Undertaken	Filing
	MDC S Conveyance COH IWWP 9-4-2020.pdf
F. Time Period	
Is this permit needed for 2, 3 ,4 or 5 years?	4 years
Will applicant request renewal of permit?	Yes
G. Nearby Property Owners	
Provide names and mailing addresses of all property owners within 150 feet of site including those opposite all public rights-of-way for map amendments and all abutting property owners for permit applications.	The Metropolitan District, 555 Main St, Hartford CT, 06142; Flood Commission, City of Hartford, 550 Main St, Hartford CT, 06103-2913; Public Works, City of Hartford, 550 Main St, Hartford CT, 06103-2913; CT Department of Transportation, I-91 Highway, 2800 Berlin Turnpike, Newington CT, 06111
H. Alternatives	
1. Explain each alternative site considered for each proposed activity and explain why it was rejected. 2. Explain each alternative considered for changing the wetlands and watercourses and explain why it was rejected.	Attach H Alternatives_8-21-20.pdf
I. Supplementary Materials	
J. Consent	
Signature of property owner	 Uploaded signature image: Andrew Signature.jpg
Name of Property Owner:	Andrew Perham
Date:	9-4-20
Signature of Applicant/ Agent:	 Uploaded signature image: Andrew Signature.jpg
Name of Applicant/ Agent:	Andrew Perham
Date:	09/04/2020

Signature of Applicant/Agent	 Uploaded signature image: Andrew Signature.jpg
Print Name of Applicant/Agent	Andrew Perham
Date:	9-4-20
Date:	9-4-20

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

416 Asylum Street
Hartford, CT 06103
t (860) 247-7200
www.fhiplan.com

September 2, 2020

Ms. Elizabeth Sanderson
Principal Planner
City of Hartford
Department of Development Services, Planning Division
250 Constitution Plaza, 4th Floor
Hartford, CT 06103

Dear Ms. Sanderson:

Subject: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT
Inland Wetland and Watercourse Permit **Extension** Request (MUNIS App #20144479)

This letter is to request an extension of the Inland Wetland and Watercourses permit (IWWP) (MUNIS App #20144479) for The Metropolitan District (MDC) South Conveyance and Storage Tunnel Project. Prior to permit application submission in October 2014, the MDC coordinated with City of Hartford (City) staff and explained that this project would not be completed in six years due to its size and complexity and that a permit extension request would be prepared and submitted. The project includes the construction of two wetland mitigation areas, one at the start of the project and one towards the end of the project construction. The first wetland mitigation area has been constructed. Most of the second wetland mitigation work is located within the active construction site and cannot be started until project construction is complete and a temporary access road supporting the construction is removed. It is anticipated this access road will be removed in approximately 2025, at the earliest. As previously discussed with your office, this is the request for the City IWWP extension.

No substantial changes to the previously proposed design have occurred since the start of construction, and the project remains the same as what was permitted in 2014 by the City. Minor design revisions have been made to the second wetland mitigation area, through close coordination with the U.S. Army Corps of Engineers, to ensure success of the site. See the attachments below for documentation of the USACE coordination, details on the status of the project, and the successful performance of the wetland mitigation site.

As mentioned, the project was always anticipated to take longer than 6 years and therefore would require a permit extension. Additionally, tunnel construction has experienced unforeseen delays due to complications with tunnel advancement resulting in more time being needed to finish tunnel construction and follow-on critical path pump station activities. The tunnel excavation and lining portion of the South Tunnel project is approximately half completed, and the boring machine is currently in the most complicated zone of geology, which has the potential to further impact tunnel advancement rates. Since the City IWWP is set to expire on October 28, 2020, we request an extension of this permit to October 28, 2024, the longest time frame allowable. It is currently anticipated that the projects would likely extend beyond October 2024. A new IWWP would be applied for in 2024 for the remainder of the project.

Should you have any questions regarding this project or need any additional information, you may contact me directly at 860-256-4918 or at scallaghan@fhiplan.com.

Very truly yours,

Shawn Callaghan
Fitzgerald & Halliday, Inc.

EnerGov App. #:_____

City of Hartford
Department of Development Services
Planning Division

Return Form to the Planning Desk at the
Licenses & Inspections Division Counter
860-757-9239
260 Constitution Plaza
Hartford, Connecticut 06103-1822

For Assistance Contact Planning Division
860-757-9040
250 Constitution Plaza, 4th Floor
Hartford, Connecticut 06103-1822
http://planning.hartford.gov

INLAND WETLANDS AND WATERCOURSES PERMIT APPLICATION

(Please reference all attachments by appropriate identification on application form)
X Wetlands Permit **EXTENSION**
_____ Map Amendment

A. PROPERTY INFORMATION

Property Address: **255 Brainard Road** City: **Hartford** State: **CT** Zip Code: **06106**

Zoning District: **ID-1 Industrial**

Property Owner: **The Metropolitan District (MDC)**

Property Owner's Address: **555 Main Street** City: **Hartford** State: **CT** Zip Code: **06412**

Phone: **860-513-3449** Email: **APerham@themdc.com**

B. APPLICANT

Name of Applicant: **The Metropolitan District** File Date: _____

Address: **555 Main Street** City: **Hartford** State: **CT** Zip Code: **06412**

Phone: **860-513-3449** Email: **APerham@themdc.com**

Is applicant owner, lessee, or prospective tenant? **Owner**

Property Owner's Consent to Apply: **N/A**

C. PRIMARY POINT OF CONTACT:

Name: **Shawn Callaghan, Fitzgerald & Halliday, Inc., Hartford, CT**

Phone: **860-256-4918**

Email: **scallaghan@fhiplan.com**

D. PROJECT INFORMATION:

1. Project Name (may be address): **South Conveyance and Storage Tunnel Project – Hartford, CT**
2. Size in Square Feet: **approximately 279,500 square feet**
3. Linear Feet of Watercourse and/or Adjacent to site: **Unnamed perennial watercourse traversing the site – approximately 1,086 linear feet**
4. Describe Wetlands and/or Watercourses conditions that make Permit necessary. **See attached.**
5. Attach an 8 ½ x 11 inch photocopy of the appropriate portion of the USGS quadrangle map with the bounds of the property outlined or pinpointed with an arrow adequate to locate site on map. **See attached.**

E. PROPOSED ACTION:

1. Activity to be Undertaken:

x **Filling**	❑ Culverting
❑ Excavation	❑ Underground utilities (no other activity)
❑ Land clearing/grubbing (only)	❑ Roadway construction
❑ Stream stabilization	❑ Drainage improvements, pond dredging/dam construction
❑ Stream clearance (removal of debris only)	❑ Other (Explain and attach)

2. How much soil will be removed by type of soil? (NCCS Classifications)? (Attach)
3. How much soil will be added by type? (NCCS Classifications)? (Attach)
4. Provide chemical analysis of fill materials by cubic yard. (Attach)
5. Describe specific activities by soil type by cubic yard. (Attach)
6. Describe all proposed paving and activities by location. (Attach)
7. Describe all proposed buildings both permanent and temporary and give dimensions. (Attach)

F. TIME PERIOD:

1. Is this permit needed for 2, 3, 4 or 5 years? **4 Years**
2. Will applicant request renewal of permit? **Yes, if an IWWP extension can be obtained. However, if a new IWWP is required then the project will obtain a new IWWP as the project will not be completed in 4 years.**

G. Provide names and mailing addresses of all property owners within 150 feet of site including those opposite all public rights-of-way for map amendments and all abutting property owners for permit applications.

H. ALTERNATIVES:

1. Explain each alternative site considered for proposed activity and explain why it was rejected. (Attach location map for each site).
2. Explain each alternative considered for changing the wetlands and watercourses and explain why it was rejected. (Attach site plans and maps).

I. Required supplementary materials which must be attached to each copy of the application prior to its official receipt. Please reference each item by its identification on this application form.

1. Site plan showing existing conditions with contours at two (2) foot intervals, in relation to wetlands and watercourses, existing drainage ways, stormwater runoff systems and how they relate to the existing sewer system (including MDC).
2. Site plans for the proposed use or operation and the property which will be affected with two (2) foot contours, which show proposed conditions, wetlands and watercourses boundaries, boundaries of land ownership, proposed alterations and uses of wetlands and watercourses, and other pertinent features of the development drawn by a professional surveyor, engineer or landscape architect licensed and registered by the State of Connecticut or by other such qualified person.
3. Appropriate engineering reports and analyses and additional drawings to fully describe the proposed project and any filling, excavation, drainage or hydraulic modification to wetlands or watercourses.
4. A map of soil types consistent with the categories established by the National Cooperative Soil Survey (NCCS) of the U.S. Soil Conservation Service delineated in the field by a soil scientist. This soil information is to be incorporated into both side plans.
5. Descriptions of the ecological communities and functions of the wetlands and watercourses involved and the effects of the proposed regulated activities on these communities and wetland functions, and descriptions of how the proposed activities will change, diminish, or enhance the ecological communities and functions of the wetlands or watercourses involved in the application, and with each alternative, a description of why each alternative considered was deemed neither feasible nor prudent.
6. Descriptions of the mitigation actions proposed, including, but not limited to plans or actions which prevent destruction or diminution of wetland or watercourse functions, recreational uses and natural habitats; which prevent flooding, degradation of water quality, erosion and sedimentation and obstruction of drainage; or which otherwise safeguard water resources.
7. DEEP Wetlands and Watercourses Activity Form: http://www.ct.gov/deep/lib/deep/water_inland/wetlands/siwwarf.pdf

J. I hereby consent to the submission of the attached application for property identified above and for the use described herein.

Signature of Property Owner

Andrew Perham

Print Name of Property Owner

09/04/2020

Date

K. The applicant hereby certifies that he is familiar with all the information provided in the application and is aware of the penalties for obtaining a permit through deception and through inaccurate or misleading information.

Signature of Applicant/Agent

Andrew Perham

Print Name of Applicant/Agent

09/04/2020

Date

L. The applicant hereby consents to necessary and proper access to the above-mentioned property by the agents of the Agency, at reasonable times, both before and after any permit in question has been granted or denied by the Agency for the purpose of evaluating the application, monitoring implementation or curtailing or correcting any violation of the Inland Wetlands and Watercourses Regulations brought about through the actions or inactions of the applicant or permittee .

Signature of Applicant/Agent

Andrew Perham

Print Name of Applicant/Agent

09/04/2020

Date

M. Additionally the applicant shall certify and attach such certification as to whether:

1. Any portion of the property on which the regulated activity is proposed is located within 500 feet of the boundary of an adjoining municipality.
2. Traffic attributable to the completed project on the site will use streets within an adjoining municipality to enter or exit a site.

3. Sewer or water drainage from the project site will flow through and impact the sewage and drainage system within an adjoining municipality.
4. Water run-off from the improved site will impact streets or other municipal or private property with an adjoining municipality.

N. Application fee accepted.

9/4/2020

Date

Signature of Agent of Agency

Attachment D4

Project Information (Wetlands)

South Conveyance and Storage Tunnel Project
Hartford, Connecticut
City of Hartford Inland Wetlands Application

Attachment D, Project Information
Question 4: Wetland and Watercourse Descriptions

The MDC main tunnel launch shaft site, located at 255 Brainard Road in Hartford contains a mix of both state and federally designated wetlands, as depicted in Figure 1. Because of these designations, coordination with both the Connecticut Department of Energy and Environmental Protection (CT DEEP) and the United States Army Corps of Engineers (USACE) is required and ongoing. Wetlands in the project corridor were delineated by a State of Connecticut Certified Soil Scientist in autumn 2013 and also in spring 2014. A detailed Soils/Wetlands report is included with the USACE Section 401 application available upon request. A detailed Soils/Wetlands description of these wetlands is provided below.

Wetland A (Flag Numbers A1 to A15)

Wetland A was located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. This palustrine emergent federal wetland is situated in a low-lying flat area just west of the HWPCF. Wetland B, which was a Connecticut wetland only, shares the southern edge of this wetland.

The Natural Resources Conservation Service (NRCS) mapped soil associated with Wetland A was Smoothed Udorthents. Vegetation was sparsely dominated by broadleaf cattail (*Typha latifolia*) and rough barnyardgrass (*Echinochloa muricata*). The principal function of this wetland was groundwater recharge.

Wetland B (Flag Numbers B1 to B16)

Wetland B was also located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. This palustrine emergent wetland falls under the definition of Connecticut wetlands due to the presence of floodplain soils. Because of the lack of hydrology, this wetland did not qualify as a federally regulated wetland. Wetland A, described above, shares the northern edge of this wetland.

The NRCS mapped soil associated with Wetland B was Smoothed Udorthents. Vegetation was dominated by common reed (*Phragmites australis*) in the eastern third, crownvetch (*Securigera varia*) and Japanese hop (*Humulus japonicas*) in the middle, and crownvetch, rough barnyardgrass, orchardgrass (*Dactylis glomerata*), and goldenrod (*Solidago spp.*) in the western third. The principal function of this wetland was wildlife habitat for birds and insects.

Wetland C (Flag Numbers C1 to C28)

Wetland C was located at the southern end of Brainard Road, just east of Interstate 91 Northbound Exit 27. This palustrine forested/scrub-shrub federal wetland formed the banks of a shallow, perennial stream which flowed from west to east. The riparian wetland zone along the stream was approximately 5 to 15 feet across, being slightly larger toward the northern extent of

the wetland and narrower toward the southern extent. The stream flowed through several culverts, including one on the western end which formed the hydraulic connection to Wetland D.

The NRCS mapped soils associated with Wetland C include Smoothed Udorthents and Flood Control Udorthents. Vegetation was dominated by common reed, sweetscented joe-pye-weed (*Eupatorium purpureum*), black locust (*Robinia pseudoacacia*), and speckled alder (*Alnus incana*). The principal functions of this wetland were shoreline stabilization and wildlife habitat.

Wetland D (Flag Numbers D1 to D109)

Wetland D was located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. The southern end of this palustrine forested/scrub-shrub/emergent federal wetland forms the banks of a shallow, perennial stream which flowed from west to east (described above in the Surface Water section). The swaled stream flowed through several culverts, including one on the western end of this wetland which formed the hydraulic connection to Wetland G and one on the eastern end of this wetland which formed the hydraulic connection to Wetland C. The northern portions of this wetland are forested and are divided in the middle by state Wetland E described below.

The NRCS mapped soils associated with Wetland D included Smoothed Udorthents, Winooski Silt Loam, and Saco Silt Loam. Vegetation along the channel was dominated by speckled alder, sweetscented joe-pye-weed, common reed, and jewelweed (*Impatiens capensis*). Vegetation in the northern portions of the wetland was dominated by reed canary grass (*Phalaris arundinacea*) and silver maple (*Acer saccharinum*). The principal functions of this wetland were groundwater recharge and wildlife habitat.

Wetland E (Flag Numbers E1 to E33)

Wetland E was located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. This forested wetland falls under the definition of Connecticut wetlands due to the presence of floodplain soils. Because of the lack of hydrology, this wetland did not qualify as a federally regulated wetland. This wetland was flanked on the south, west, and east by Wetland D, described above, and the north by a paved parking lot.

The NRCS mapped soils associated with Wetland E were Winooski Silt Loam and Saco Silt Loam. Vegetation was dominated by silver maple, multi-flora rose (*Rosa multiflora*), and sensitive fern (*Onoclea sensibilis*). The principal function of this wetland was wildlife habitat.

Wetland F (Flag Numbers F1 to F33)

Wetland F was located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. This forested wetland fell under the definition of Connecticut wetlands due to the presence of floodplain soils. Because of the lack of hydrology, this wetland did not qualify as a federally regulated wetland. This wetland was flanked on the south, north, and west by Wetland D, described above, and the east by a private unimproved dirt road.

The NRCS mapped soils associated with Wetland F were Winooski Silt Loam and Smoothed Udorthents. Vegetation was dominated by silver maple, boxelder (*Acer negundo*), multi-flora rose, and jewelweed. The principal function of this wetland was wildlife habitat.

Wetland G (Flag Numbers G1 to G25)

Wetland G was located at the southern end of Brainard Road, just east of I-91 Northbound Exit 27. This palustrine forested/emergent federal wetland formed the banks of a shallow, perennial stream (described previously in the Surface Water section) which flowed from west to east. This perennial stream flowed through several culverts including one on the eastern end of this wetland which formed the hydraulic connection to Wetland D, described above.

The NRCS mapped soils associated with Wetland G are Winooski Silt Loam and Urban Land. Vegetation is dominated by silver maple, common reed, mugwort (*Artemisia vulgaris*), wrinkle leaf goldenrod (*Solidago rugosa*), and oriental bittersweet (*Celastrus orbiculatus*). The principal functions of this wetland are shoreline stabilization and wildlife habitat.

Wetland O (Flag Numbers O1 to O25)

Wetland O was located at the southern end of Brainard Road; just east of Exit 27 on Interstate I-91 and just west of a paved parking lot. This palustrine emergent federal wetland formed the banks of a shallow, perennial stream which flowed from north to south and was directly connected to Wetland G to the south. There was strong evidence of recent fill and disturbance within and adjacent to this wetland.

The NRCS mapped soils associated with Wetland O were Winooski Silt Loam and Urban Land. Vegetation was dominated by sensitive fern, common reed, jewelweed, ladysthumb smartweed (*Polygonum persicaria*), goldenrod, and purple loosestrife (*Lythrum salicaria*). The principal functions of this wetland were sediment/toxicant retention and shoreline stabilization.

The impacts attributed to the construction of the South Conveyance and Storage Tunnel project (the project) are largely unavoidable, given the alignment of the launch shaft site and its proximity to the Hartford Water Pollution Control Facility. This is the most logical and least-impactful alternative complying with the consent decree from the United States Environmental Protection Agency (EPA) to control Combined Sewer Overflows and Sanitary Sewer Overflows by January 2023. The combined impacts to low-quality wetlands within the project area will be mitigated through restoration, creation, and enhancement of a large contiguous wetland system, where a greater range of wetland functions/values can be sustained in perpetuity. Considering that the majority of the impacted wetlands will be enhanced or replaced by wetlands complying with Federal Standards that have higher functions/values, the mitigation proposal is deemed an appropriate and beneficial approach for the project's wetland impacts. This wetland mitigation and monitoring program has been approved by and coordinated with USACE and CT DEEP.

The launch site sits adjacent to the MDC wastewater treatment plant off Brainard Road in Hartford and lies within the Folly Brook watershed which is part of the main stem Connecticut River watershed. Although there are no named watercourses, there is a perennial watercourse which flows through the main tunnel launch site location along the western perimeter of the property, paralleling Interstate 91 (I-91). The watercourse is channeled under existing access roads and through several culverts. The stream begins north of the proposed main tunnel launch site as part of a stormwater management system for I-91 and flows south onto the project site of the main tunnel launch shaft. Eventually the stream flows off-site westerly through a culvert under I-91 and

joins a larger unnamed stream that flows south into Wethersfield Cove. Surface waters within and hydrologically connected to the main launch shaft property include the unnamed tributary flowing through the site and the unnamed stream that ultimately discharges into Wethersfield Cove.

The adjacent open water currently has a surface water quality classification of “A,” with designated uses inclusive of potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation. There will be no negative impacts to the water quality of these waterbodies. There is potential for water quality improvement flowing through the site with enhanced wetlands and their functions/values.

The only changes to the on-site wetlands since the 2014 City of Hartford (COH) Inland Wetlands and Watercourses Permit (IWWP) submission is the construction of the first of two permitted wetland mitigation areas. The first wetland mitigation area, referenced in the project plans included in Attachment I2 as Wetland Area Z, was constructed between 2016 and 2017 in the area of Wetland G.

MDC South Hartford Conveyance and Storage Tunnel
WETLANDS
City of Hartford Inland Wetlands Permit
Figure 1

Wetland F

Wetland G

Wetland A

Wetland E

Wetland B

Wetland D

State and Federal Wetlands

State Wetlands

Wetland C

Attachment D5

USGS Quadrangle Map

South Hartford Conveyance and Storage Tunnel

Attachment D5
Project Location

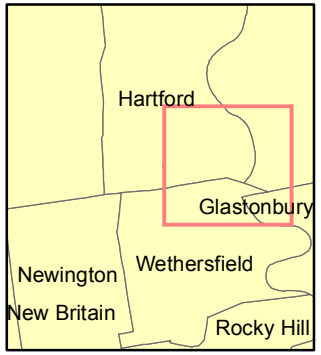
Project Location

1:24,000

USGS Quadrangle
Hartford South

N

0 1,000 2,000
Feet



MDC

Original in Color - FHI - 8/11/2014

Attachment E

Proposed Action

Attachment E: Proposed Action

South Conveyance and Storage Tunnel Project
Hartford, Connecticut
City of Hartford Inland Wetlands Application

For a detailed description of the Wetlands associated with the South Hartford Conveyance Tunnel (South Tunnel) launch shaft site, please refer to Attachment D, Question 4.

Question 1: Activity to be undertaken:
The purpose of the project is to eliminate West Hartford and Newington Sanitary Sewer Overflows (SSOs), to control Franklin Avenue Area Combined Sewer Overflows (CSOs) discharging to Wethersfield Cove, and to minimize CSO discharges to the South Branch of the Park River. These improvements will address a portion of the MDC's Clean Water Project (CWP), which will reduce CSOs; eliminate SSOs; and reduce nitrogen released into the Connecticut River. The Metropolitan District is under a consent decree from the United States Environmental Protection Agency (EPA) to eliminate Sanitary Sewer Overflows by January 2023. The MDC South Conveyance and Storage Tunnel Project will enable the MDC to comply with this consent decree within the timeframe set by the EPA.

The project consists of the following elements:

- Deep rock tunnel (18-foot internal diameter @ 21,800 linear feet) with a launch shaft near the Hartford Water Pollution Control Facility (HWPCF) located off of Brainard Road in Hartford and a retrieval shaft in West Hartford. New diversion structures would be constructed at each CSO/SSO relief point to divert overflows to new consolidation sewers (near surface). These, in-turn, would discharge flow to hydraulic drop shafts which would convey the flow in a controlled manner to the deep rock storage tunnel. Once in the tunnel, flow would be pumped to the new head works at the HWPCF.

- Up to 7,300 linear feet of near-surface consolidation sewers (36 inches to 78 inches in diameter) to bring the overflow to the deep rock tunnel.

- Seven hydraulic drop shafts.

- 40 million gallons per day (MGD) tunnel pump station.

- Odor control at all potential air release points due to the displaced air in the tunnel as the combined flow enters the system.

Question 2: How Much Soil will be removed by type of soil?
3,436 cubic yards of wetland soils from Wetlands A and B (Refer to Figure 1 in Attachment D) will be removed. The NRCS mapped soil associated with Wetland A and B is Smoothed Udorthents. 28,445 cubic yards of upland soil will be removed from the upland areas on-site.

Question 3: How much soil will be added by type?
15,090 cubic yards of fill will be added to Wetlands D and F (Refer to Figure 1 in Attachment D). The NRCS mapped soils associated with Wetland D include Smoothed Udorthents, Winooski Silt Loam, and Saco Silt Loam. The NRCS mapped soils associated with Wetland F are Winooski Silt Loam and Smoothed Udorthents. 17,180 cubic yards of fill will also be added in the upland areas.

Question 4: Provide chemical analysis of fill materials by cubic yard.
At this time, it is unknown exactly what fill materials will be utilized at the 255 Brainard Road launch shaft site. However, no contaminated materials will be used, and any clean fill brought into the location will be of a higher quality than presently found on-site.

Question 5: Describe specific activities by soil type by cubic yard.
At this time, it is unknown what soil types will be utilized for each specific activity. No contaminated materials will be used, and any fill brought into the location will be clean and of higher quality than presently found on-site.

Question 6: Describe all proposed paving and activities by location.
On-site paving will consist of access drives between the headworks of the HWPCF and the Tunnel Pump Station Control Facility. Additional driveways that also connect to the main access drive include access routes to the odor control pads, grit screening facility, and the HVAC pads. A small, paved parking lot located off the main access route, will provide entry to the main control building. All pavements shall be uniformly sloped to drain without flat areas in order to reduce the potential for pooling or puddling of stormwater. Permanent erosion and sedimentation measures shall include stormwater drain system, stormwater detention pond, parking lots, driveway sweeping and permanent seeding. Please refer to the project plans in Attachment I2 for details.

Question 7: Describe all proposed buildings both permanent and temporary and give dimensions.
Proposed buildings on-site include a main control building that will be approximately 8,400 square feet (140 feet by 60 feet). Additional structures include a grit screening facility that will be approximately 11,200 square feet (160 feet by 70 feet) and an odor control pad that will be approximately 50 feet by 25 feet. An HVAC pad will also be located near the main control building, this will house the electrical and ventilation systems for the building. Please refer to the project plans in Attachment I2 for details.

Attachment G

Property Abutters

South Hartford Conveyance and Storage Tunnel
Hartford, Connecticut
City of Hartford Inland Wetlands Application

Abutters List

Name: The Metropolitan District

Address: 235 Brainard Rd, Hartford CT, 06103-2915

Mailing Address: 555 Main St, Hartford CT, 06142

Name: Flood Commission, City of Hartford

Address: 239 Brainard Rd, Hartford CT, 06103-2913

Mailing Address: 550 Main St, Hartford CT, 06103-2913

Name: Public Works, City of Hartford

Address: 1020 Wethersfield Ave, Hartford CT, 06103-2913

Mailing Address: 550 Main St, Hartford CT, 06103-2913

Name: The Metropolitan District

Address: 255 Brainard Rd, Hartford CT, 06103-2915

Mailing Address: 555 Main St, Hartford CT, 06103-2915

Name: Bureau of Public Works, Metropolitan District

Address: 244 Brainard Rd, Hartford CT, 06103-2915

Mailing Address: 555 Main St, Hartford CT, 06103-2915

Name: CT Department of Transportation, I-91 Highway

Address: I-91 Highway, Hartford CT, 06103-2915

Mailing Address: 2800 Berlin Turnpike, Newington CT, 06111

Attachment H

Alternatives

Attachment H: Alternatives Assessment

MDC South Conveyance and Storage Tunnel Project,
Hartford and West Hartford, Connecticut
The Metropolitan District

The MDC is under a consent decree from the United States EPA to control Combined Sewer Overflows (CSO) and eliminate Sanitary Sewer Overflows (SSO) by January 2023. How to do it is not specified in the consent decree, just that it needs to be done by that date.

The purpose of the South Conveyance and Storage Tunnel (South Tunnel) is to eliminate West Hartford and Newington Sanitary Sewer Overflows (SSOs), to control Franklin Avenue Area Combined Sewer Overflows (CSOs) discharging to Wethersfield Cove, and to minimize CSO discharges to the South Branch of the Park River. These improvements will address a portion of the MDC's Clean Water Project (CWP), which will reduce CSOs; eliminate SSOs; and reduce nitrogen released into the Connecticut River.

The South Tunnel consists of a consolidation conduit (located mainly in existing streets) that will intercept overflows and divert them to a drop shaft leading down to the storage tunnel. The overflows will be directed along the approximately 4-mile long storage tunnel and then will be pumped up to the MDC plant located along the Connecticut River for treatment prior to ultimate discharge into the river.

The main launch shaft for the tunnel will be located just west of the HWPCF, on MDC owned property located off of Brainard Road. This is the key site for project construction as the main boring machine and all associated boring equipment will be launched from here and all spoils will be removed from the tunnel at this location. The site's proximity to the Hartford Water Pollution Control Facility also makes it a vital location for the launch shaft site as it must be connected to the existing system to function properly.

Project Alternatives

Alternatives were evaluated for the project as outlined in the Connecticut Final Basis of Design Report, February 2013. Alternatives considered are described below. These alternatives were evaluated against the project purposes of eliminating CSOs and SSOs by January 2023 leading to the implementation alternative described herein.

Wetland Avoidance

Given the parameters of the site, the project elements, and accessibility constraints, complete avoidance of on-site wetlands is/was not possible. However, wetland impacts were avoided and minimized to the extent practicable. Covered almost entirely by both State and Federal wetlands the Brainard Road location provided limited opportunity for building access roads or the launch shaft anywhere other than the proposed alignment. In addition, the large area required for temporary storage and handling of tunnel tailings must be located directly adjacent to the tunnel operation. This alignment is best suited to connect with the existing Hartford Water Pollution Control Facility and Brainard Road terminus.

No Build
If the MDC does not move forward with the South Tunnel Project construction, infrastructure improvements to the MDC's wastewater system would be limited and not be capable of meeting the consent decree issued by the EPA. This project protects the health and safety of citizens during storm events and addresses a federal consent decree and a Connecticut DEEP consent order to achieve Federal Clean Water Act goals.

Alignment Alternatives
An alignment study was conducted to evaluate various configurations of rock tunnels and consolidation conduits. Seven (7) conceptual rock tunnel alignments and associated consolidation conduit options were developed and evaluated. The purpose of this alignment study was to identify a cost effective and acceptable tunnel alignment that balances the expectations of the many stakeholders impacted by the project along with environmental resources. Two workshops were conducted with representatives from the MDC and their consultants which identified and prioritized various stakeholders and identified potential impacts to each group.

All the alignments began in property obtained by the District adjacent to the HWPCF off of Brainard Road. However three different locations were identified as possible deep rock termination points. Two of these locations were located in space owned by various City of Hartford departments on the east side of the of the South Branch of the Park River and the third was in an unused parking lot on Talcott Road in a light industrial area on the west side of the river (in West Hartford). This third location significantly reduced the length of consolidation conduits and allowed the South Branch of the Park River to be crossed deeply in rock using the deep rock tunnel instead of crossing the river with a shallower and more risky consolidation conduit.

Alignment F was identified as the preferred alignment and recommended to advance to final design. In general, this alignment provides the maximum reduction in consolidation conduit length which reduces the associated cost, business impacts, and construction risk of those construction activities.

Conclusion
The Brainard Road site is the most logical and appropriate location for the launch shaft terminus because of its proximity and direct connectivity to the Hartford Water Pollution Control Facility. It is the only suitable location for the proposed activities.

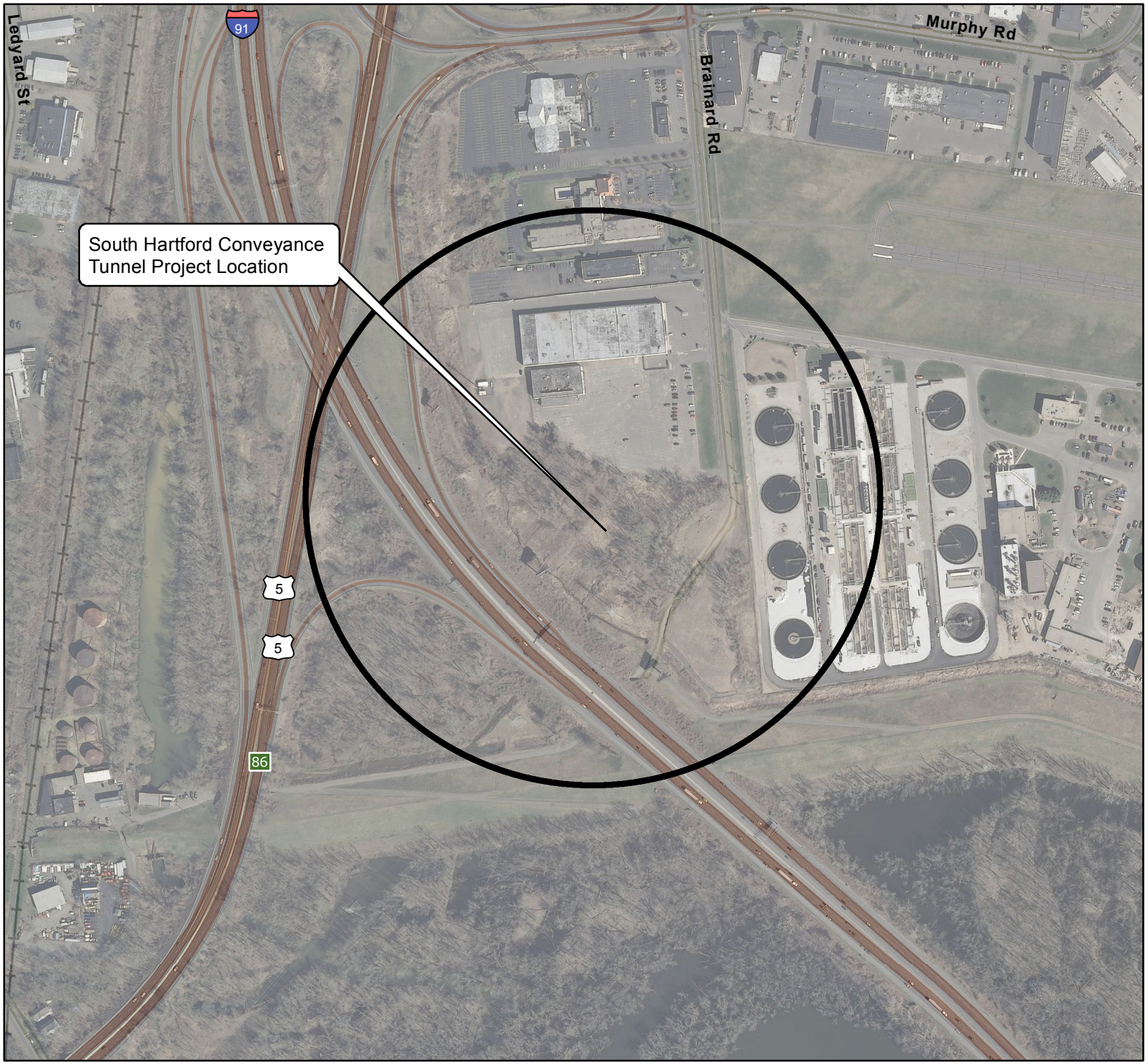
Attachment I

Supplemental Materials

Attachment I1

Supplemental Materials

Existing Conditions Site Plan



South Hartford Conveyance and Storage Tunnel

Attachment I1
Existing Conditions

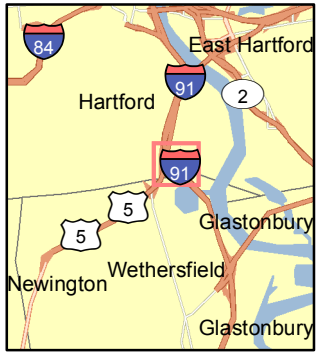
Project Location

USGS Quadrangle
Hartford South

N

0 250 500

Feet



MDC

Original in Color - FHI - 8/11/2014

Attachment I2

Supplemental Materials

Proposed Conditions Site Plan

ATTACHMENT I2

PROPOSED CHANGES TO EXISTING CONDITIONS

Proposed Changes to Existing Conditions

There are many proposed construction activities and uses designed for the main tunnel launch shaft site (see Attachment I2). These construction-related activities include the temporary placement and use of construction trailers for the duration of tunnel construction, as well as the construction of permanent bio swales, stormwater retention areas, access roads, electrical infrastructure, an equipment removal shaft, and a personnel/utility shaft. This site will also be the location of a permanent headworks pump house for the South Tunnel which will house the equipment needed to pump the wastewater up from the storage and conveyance tunnel to the surface and ultimately direct it to the nearby HWPCF.

The conveyance tunnel will be located at a depth of 200 feet below the surface drilled into solid bedrock resulting in no impacts to surface resources; however, construction at the tunnel launch site will impact natural resources at the surface. No additional impacts are anticipated as a result of construction of tunnel access drop shafts.

The proposed design for the south tunnel will result in permanent and temporary impacts to existing wetlands. Portions of some existing wetlands will be filled, leading to a reduction in wetland area as well as functionality. This reduction in wetland area and functionality will be mitigated by enhancing existing wetland areas as well as by creating higher quality wetland areas on the project site (refer to Attachment I6 – Mitigation Plan for details). Drilling spoils being excavated from the main tunnel launch shaft during the construction of the conveyance tunnel will be temporarily stockpiled, managed, and hauled away.

F — PERMANENT STATE ONLY WETLAND IMPACT AREA (7,237 SF)

D — PERMANENT FEDERAL AND STATE WETLAND IMPACT AREA (11,150 SF)

Y — EXISTING STATE ONLY WETLAND RESTORED AND IMPROVED TO FEDERAL QUALITY WETLAND AFTER CONSTRUCTION (21,961 SF)

X — EXISTING FEDERAL WETLAND RESTORED TO FEDERAL QUALITY WETLAND AFTER CONSTRUCTION (45,794 SF)

Z — EXISTING UPLAND AREA CONSTRUCTED TO FEDERAL QUALITY WETLAND BEFORE CONSTRUCTION (21,457 SF)

A — AREA WAS HISTORICALLY UPLAND FOREST. FEDERAL AND STATE WETLAND WAS RECENTLY CREATED WITH IMPORTED POORLY DRAINING DREDGE MATERIAL. WETLAND WITH MINIMAL FUNCTIONS AND VALUES. (9,590 SF)

B — AREA WAS HISTORICALLY UPLAND FOREST. STATE ONLY WETLAND WAS RECENTLY CREATED WITH IMPORTED POORLY DRAINING DREDGE MATERIAL. WETLAND WITH MINIMAL FUNCTIONS AND VALUES. (9,550 SF)

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

MDC

The Metropolitan District

555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME:
DESIGNED BY:
DRAWN BY:
CHK'D BY:
X-CHK'D BY:
APPROVED BY J. SULLIVAN
DATE: ____ 2014

60% SUBMITTAL
NOT FOR
CONSTRUCTION

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

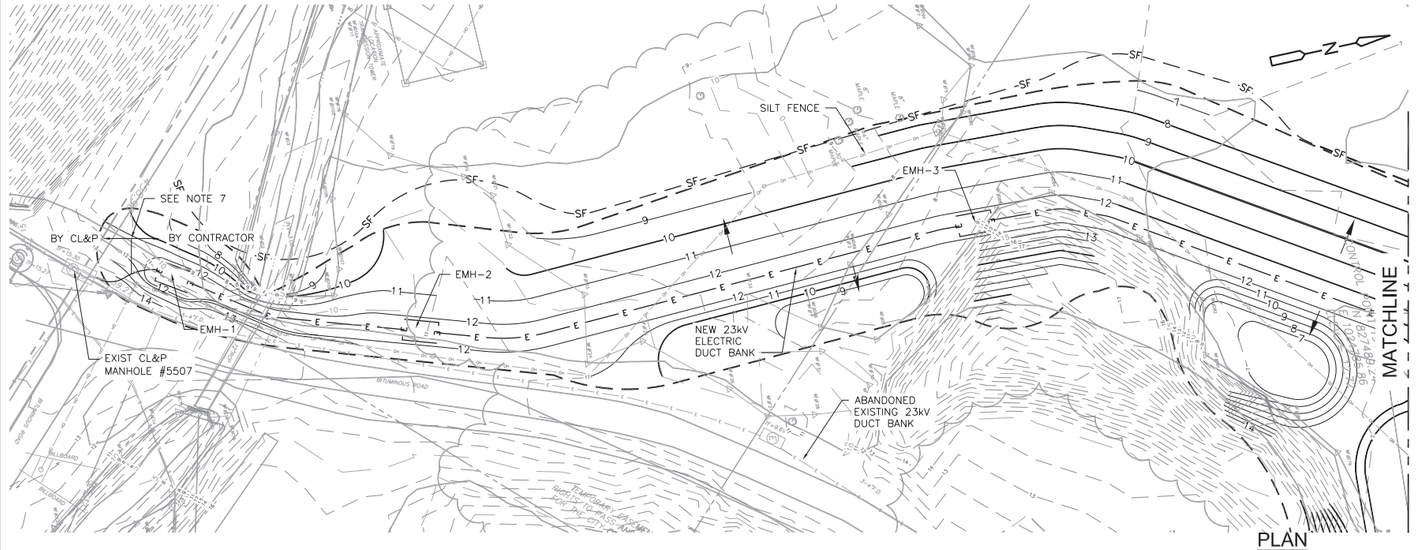
CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

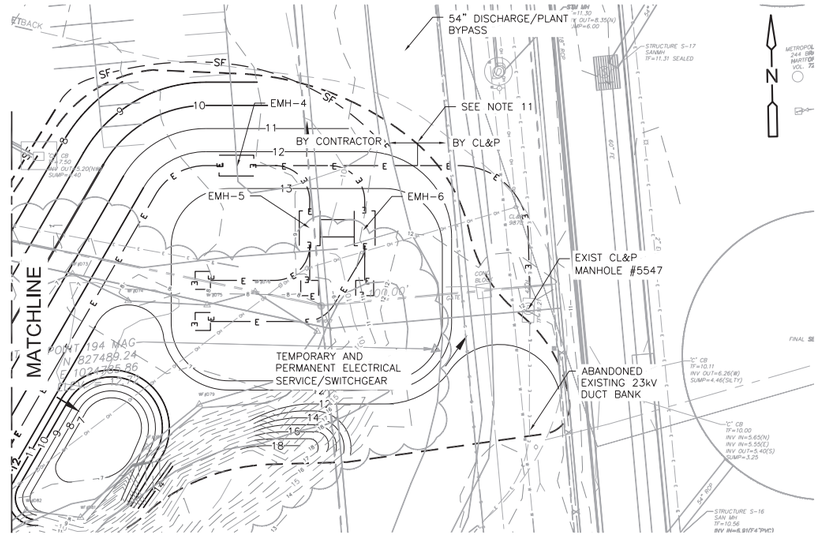
PERMANENT IMPACTS TO STATE WETLANDS WITH MITIGATION

CIVIL

PLAN NUMBER

SHEET NO.
3





PLAN
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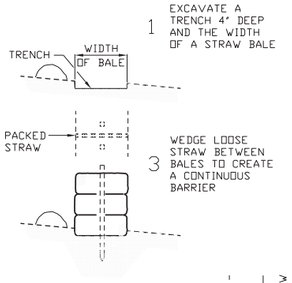
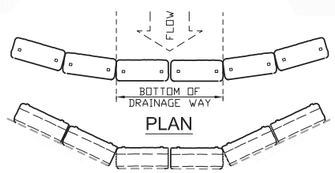


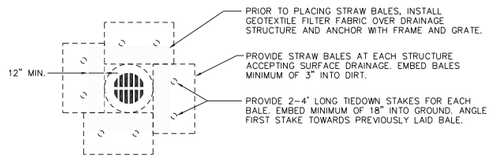


PLAN

ELEVATION

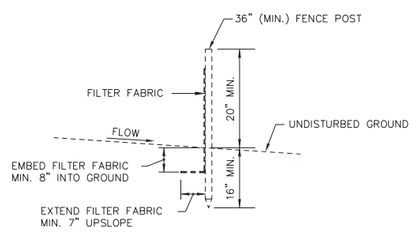
PLACEMENT AND CONSTRUCTION OF A STRAW BALE BARRIER

NOT TO SCALE

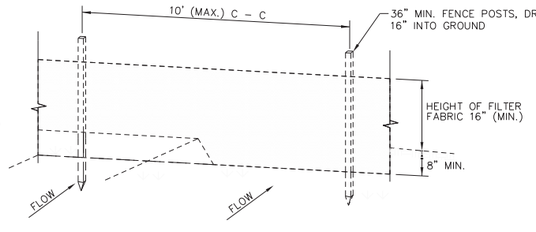


STRAW BALE PLACEMENT AT DRAINAGE STRUCTURE

NOT TO SCALE



SECTION



PERSPECTIVE VIEW

CONSTRUCTION NOTES FOR SILT FILTER FENCE

1. FILTER FABRIC TO BE FASTENED SECURELY TO FENCE POSTS.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FABRIC FENCE.

POSTS: 2"x2" HARDWOOD OR 2" SCHEDULE 40 METAL PIPE OR 1.33 LB/FT. MIN. STANDARD STEEL SECTION

FILTER FABRIC: FILTER FABRIC SHALL CONFORM TO AASHTO M288 (LINQ INDUSTRIAL FABRICS INC. GTF WOVEN GEOTEXTILE - 180 SILT FENCE, OR APPROVED EQUAL.

SILT FENCE DETAIL

NOT TO SCALE

NOTES:

1. SEE SHEET 000 G-002, AND 000 G-003 FOR LEGEND, GENERAL NOTES, AND ABBREVIATIONS.
2. ELECTRIC MANHOLES EMH-1, EMH-2, EMH-3, EMH-4 AND EMH-5 SHALL MEET ALL REQUIREMENTS SPECIFIED BY NORTHEAST UTILITIES CONSTRUCTION STANDARD DTR 76.311 TITLED "CONVENTIONAL UNDERGROUND PRECAST CONCRETE MANHOLE". CONSTRUCTION AND DIMENSION REQUIREMENTS SHALL MEET ALL REQUIREMENTS SPECIFIED IN NORTHEAST UTILITIES MATERIAL SPECIFICATION SPC M-039.01(9) AND SPC M-039.02(9) TITLED "MANHOLE - PRECAST REINFORCED CONCRETE 8'-0" X 14'-0" X 7'-0" INSIDE". ACCEPTABLE MANUFACTURES OF THE ELECTRIC MANHOLES SHALL BE ARROW CONCRETE, UNITED CONCRETE, AND OLD CASTLE, OTHER MANUFACTURERS WILL NOT BE ACCEPTABLE.
3. INSTALLATION OF MANHOLES EMH-1, EMH-2, EMH-3, EMH-4 AND EMH-5 SHALL MEET ALL REQUIREMENTS SPECIFIED BY NORTHEAST UTILITIES CONSTRUCTION STANDARD DTR 76.011(1) TITLED "CONVENTIONAL UNDERGROUND, PRECAST CONCRETE VAULT AND INSTALLATION GENERAL", AND NORTHEAST UTILITIES CONSTRUCTION STANDARD DTR 76.331 TITLED "CONVENTIONAL UNDERGROUND, PRECAST CONCRETE MANHOLE".
4. GROUNDING REQUIREMENTS AT EMH-1, EMH-2, EMH-3, EMH-4 AND EMH-5 SHALL MEET ALL REQUIREMENTS SPECIFIED BY NORTHEAST UTILITIES CONSTRUCTION STANDARD DTR 76.451(7) TITLED "CONDUIT SYSTEM - GROUNDING BELOW GRADE MANHOLES AND VAULTS".
5. MANHOLE WINDOWS AT EMH-1, EMH-2, EMH-3, EMH-4 AND EMH-5 SHALL MEET ALL REQUIREMENTS SPECIFIED BY NORTHEAST UTILITIES CONSTRUCTION STANDARD DTR 76.333 TITLED "CONVENTIONAL UNDERGROUND PRECAST, CONCRETE MANHOLE/VAULT WINDOW DETAIL".
6. DUCT BANK SHALL BE IN ACCORDANCE WITH NORTHEAST UTILITIES DESIGN & APPLICATION STANDARD 73.209(5) TITLED "CONDUIT BANK CONSTRUCTION". DUCT BANK CONFIGURATION SHALL BE AS SHOWN IN FIGURE 3. CONDUIT SIZE SHALL BE 5 INCH. CONDUIT MATERIAL SHALL BE SCHEDULE 40 PVC. MINIMUM COVER FROM TOP OF CONDUIT BANK TO EARTH SURFACE SHALL BE MINIMUM 36 INCH.
7. DUCT BANK CONSTRUCTION BETWEEN STATION 0+00 AND 0+10..
8. DUCT BANK CONSTRUCTION BETWEEN STATION 7+69 AND 8+61.
9. THREE FEET OF EACH CONDUIT SHALL NOT BE ENCASED SO CL&P CAN JOIN TO CONDUIT AND COMPLETE DUCT BANK TO EXISTING CL&P MANHOLE.

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYONET_ID

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 101 C-102
DESIGNED BY: ----
DRAWN BY: K.T.H
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ---- 2014

60% SUBMITTAL NOT FOR CONSTRUCTION

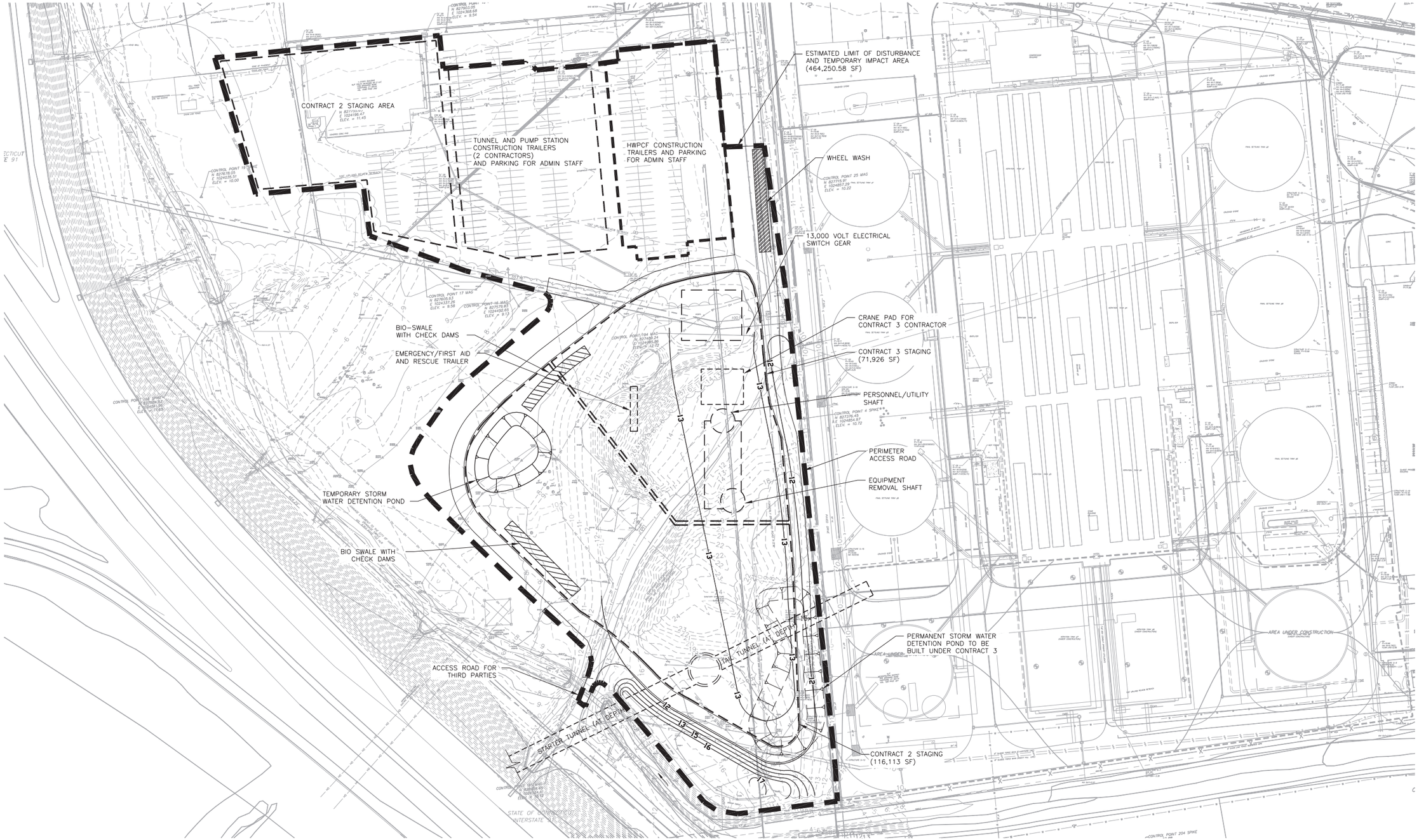
AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

EROSION AND SEDIMENT CONTROL
CIVIL / SITE

PLAN NUMBER

SHEET NO.
101 C-102



PLAN

60' 30' 0 60' 120'

1"=60'

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CIVNET_ID

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-154
DESIGNED BY: D.U.
DRAWN BY: K.T.H.
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ---- 2014

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BLACK & VEATCH

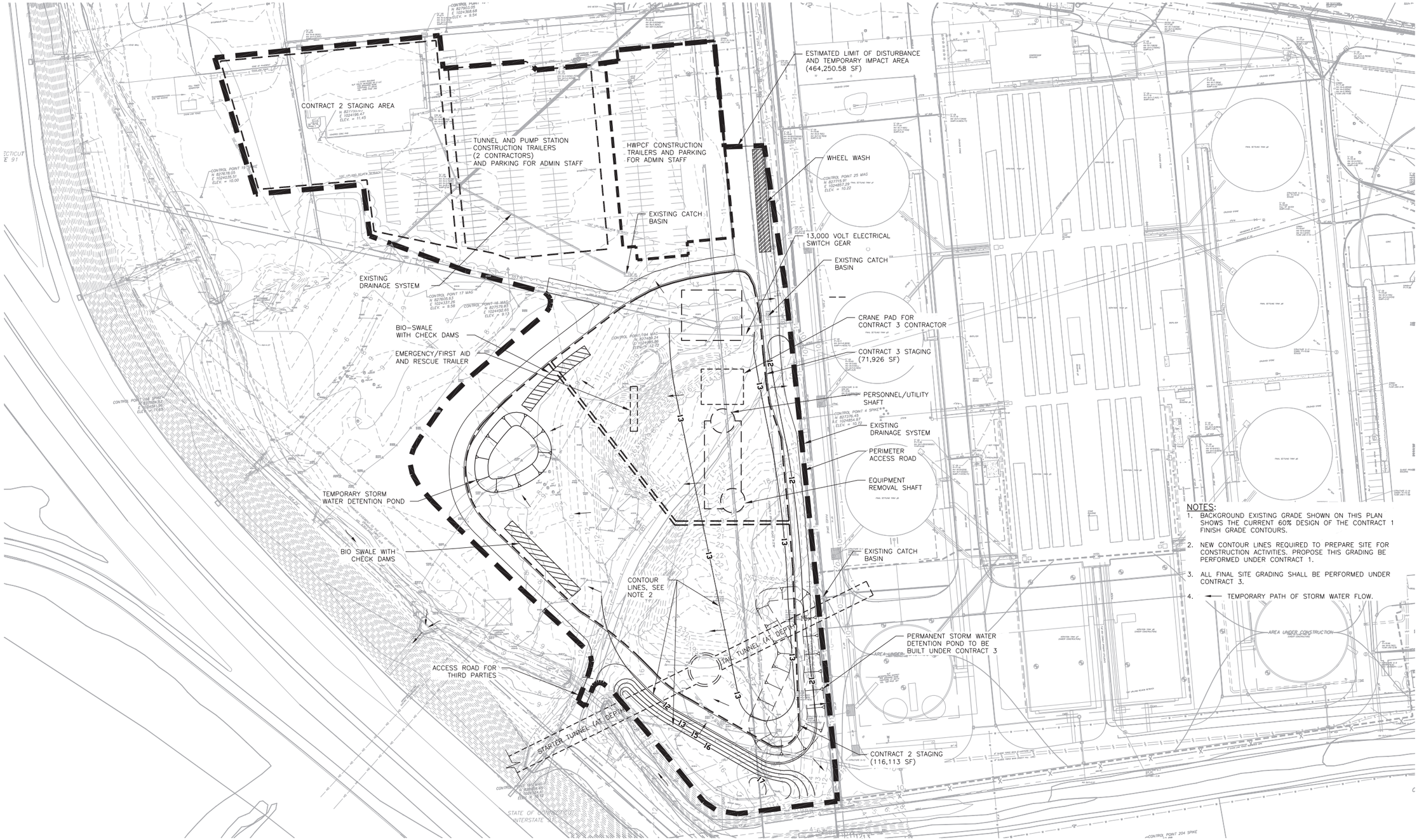
CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

STAGING AREAS PLAN

CIVIL / SITE

PLAN NUMBER

SHEET NO.
300 C-154



NOTES:

1. BACKGROUND EXISTING GRADE SHOWN ON THIS PLAN SHOWS THE CURRENT 60% DESIGN OF THE CONTRACT 1 FINISH GRADE CONTOURS.
2. NEW CONTOUR LINES REQUIRED TO PREPARE SITE FOR CONSTRUCTION ACTIVITIES. PROPOSE THIS GRADING BE PERFORMED UNDER CONTRACT 1.
3. ALL FINAL SITE GRADING SHALL BE PERFORMED UNDER CONTRACT 3.
4. ← TEMPORARY PATH OF STORM WATER FLOW.

PLAN

60' 30' 0 60' 120'

1"=60'

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYGNET_ID

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-155
DESIGNED BY: D.U.
DRAWN BY: K.T.H.
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY: J. SULLIVAN
DATE: ___ 2014

NOT FOR CONSTRUCTION

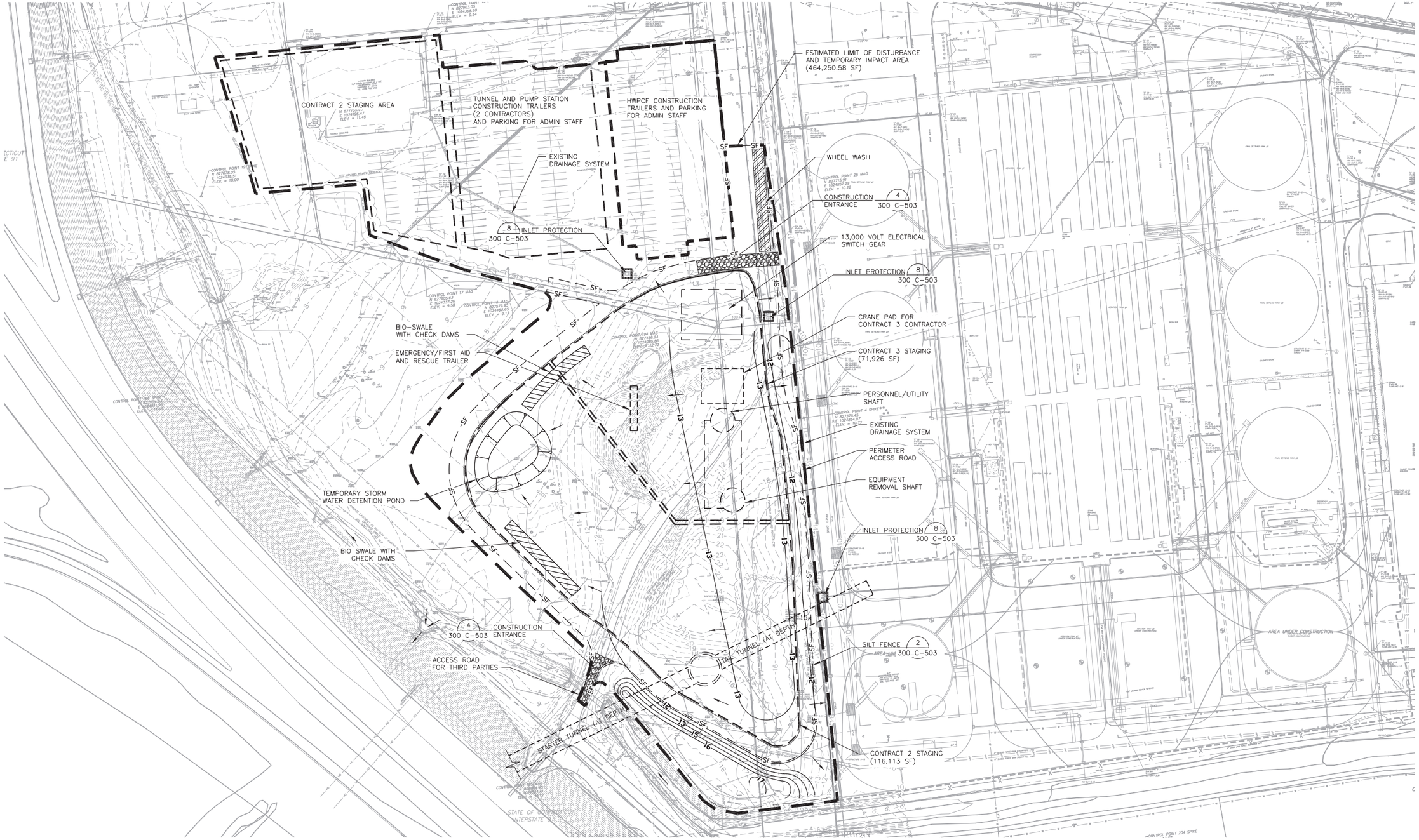
AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

GRADING AND DRAINAGE PLAN
DURING CONSTRUCTION
CIVIL / SITE

PLAN NUMBER

SHEET NO.
300 C-155



PLAN

60' 30' 0 60' 120'

1"=60'

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CIVNET_ID

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-121
DESIGNED BY: D.U.
DRAWN BY: K.T.H.
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ---- 2014

NOT FOR CONSTRUCTION

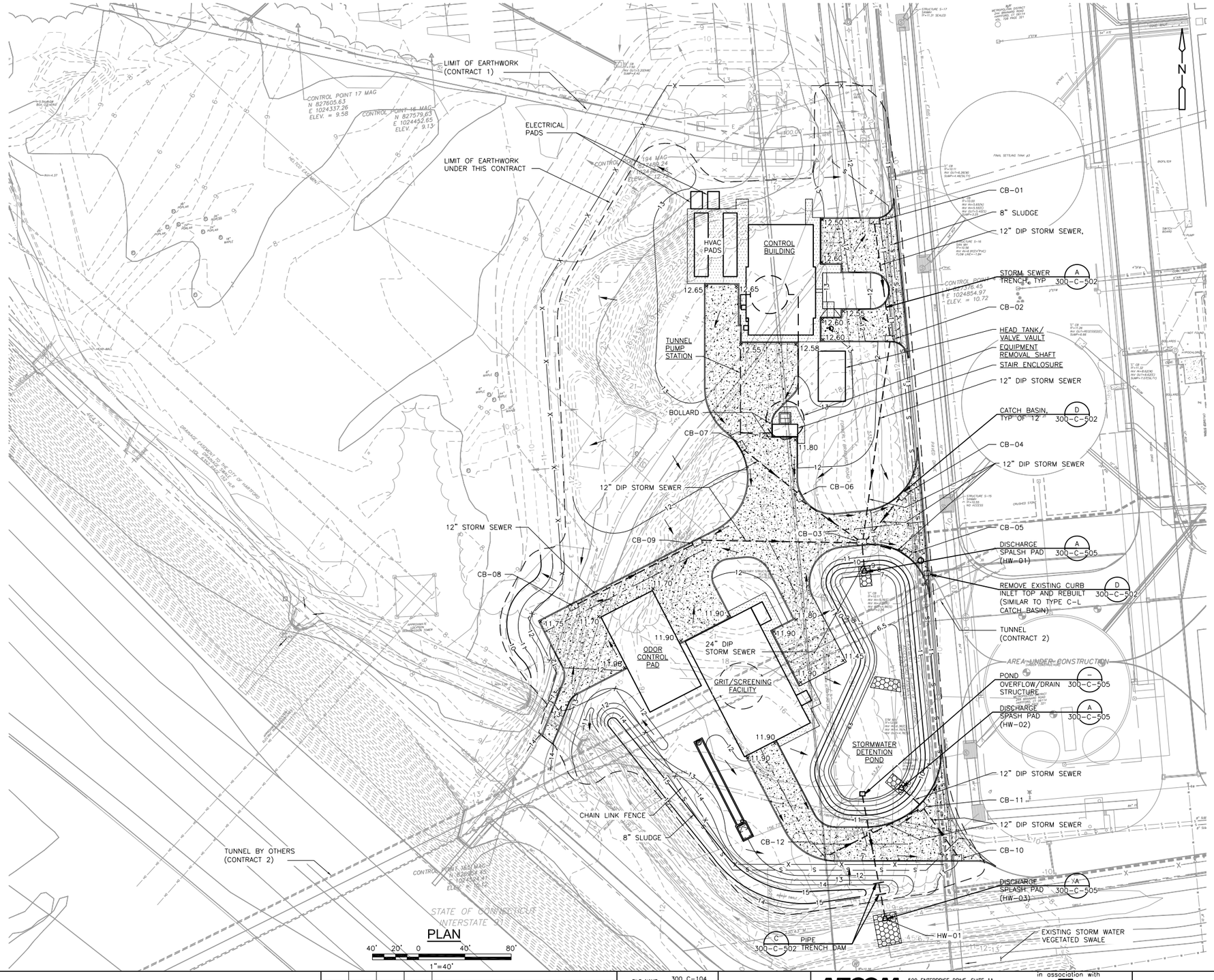
AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

SEDIMENT AND EROSION CONTROL PLANS - CONSTRUCTION
CIVIL / SITE

PLAN NUMBER

SHEET NO.
300 C-121



PLAN

40' 20' 0 40' 80'

1"=40'

STORM WATER STRUCTURE TABLE

CATCH BASIN NUMBER	TOP GRATE ELEVATION	In-INLET Out-OUTLET	SEWER SIZE	INVERT ELEVATION	SEWER LENGTH	SEWER DROP	SEWER SLOPE
CATCH BASIN							
CB-01	11.10	Out	12"	8.90			
CB-02	11.10	In from CB-01	12"	8.48	97.44	0.44	0.0045
		Out	12"	8.38			
CB-03	11.20	In from CB-02	12"	7.61	172.02	0.77	0.0045
		In from CB-04	12"	8.09	45.82	0.21	0.0045
		In from CB-05	12"	8.16	31.37	0.14	0.0045
		In from CB-06	12"	9.17	59.26	0.27	0.0045
		In from CB-09	12"	7.98	134.61	0.61	0.0045
		Out	24"	7.51			
CB-04	10.50	Out	12"	8.30			
CB-05	10.50	Out	12"	8.30			
CB-06	11.55	In from CB-07	12"	9.44	58.60	0.26	0.0045
		Out	12"	9.34			
CB-07	11.90	Out	12"	9.70			
CB-08	11.40	Out	12"	9.20			
CB-09	11.40	In from CB-08	12"	8.69	112.27	0.51	0.0045
		Out	12"	8.59			
CB-10	10.55	Out	12"	8.35			
CB-11	10.50	In from CB-10	12"	8.13	49.17	0.22	0.0045
		In from CB-12	12"	8.67	85.53	0.38	0.0045
		Out	12"	8.57			
CB-12	11.25	Out	12"	9.05			
HEADWALLS							
HW-01	NA	In from CB-03	24"	7.42	20.25	0.09	0.0045
HW-02	NA	In from CB-11	12"	8.49	18.82	0.08	0.0045
HW-03	NA	In from POND	24"	5.00	105.86	1.50	0.0142
POND OVERFLOW/DRAIN STRUCTURE							
NA	NA	Out	24"	6.50			

NOTES:

1. PAVEMENT SHALL BE UNIFORMLY SLOPED TO DRAIN BETWEEN SPOT ELEVATIONS AND/OR CONTOURS SHOWN. ALL PAVED SURFACES SHALL BE SLOPED TO DRAIN WITHOUT FLAT (PUDDLED) AREAS.
2. ALL AREAS WITHOUT STRUCTURES, PAVING OR SIDEWALKS WITHIN THE LIMIT OF EARTHWORK SHALL BE GRADED TO DRAIN AS SHOWN AND SHALL BE SEEDED WITH GRASS SEED AS SPECIFIED. THIS INCLUDES THE STORM WATER DETENTION POND.
3. PERMANENT EROSION AND SEDIMENTATION MEASURES SHALL INCLUDE STORM WATER DRAIN SYSTEM, STORM WATER DETENTION POND, PARKING LOTS, DRIVEWAY SWEEPING AND PERMANENT SEEDING.

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYGNET_LD

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-104
DESIGNED BY: D.U.
DRAWN BY: K.T.H, A.W.L
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ---- 2014

60% SUBMITTAL NOT FOR CONSTRUCTION

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

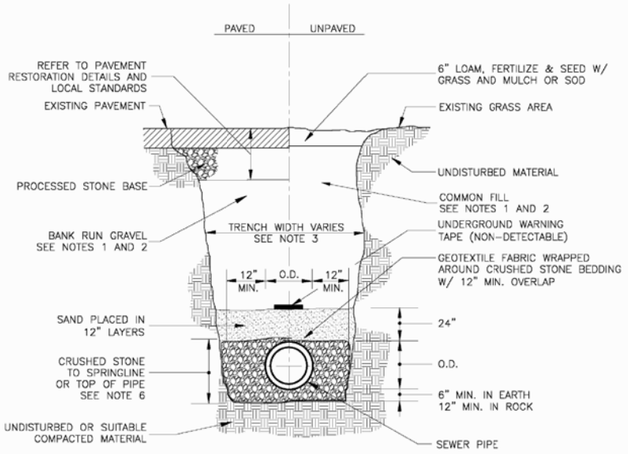
GRADING AND DRAINAGE PLAN

CIVIL / SITE

PLAN NUMBER

SHEET NO.
300 C-104

FD7000_PW



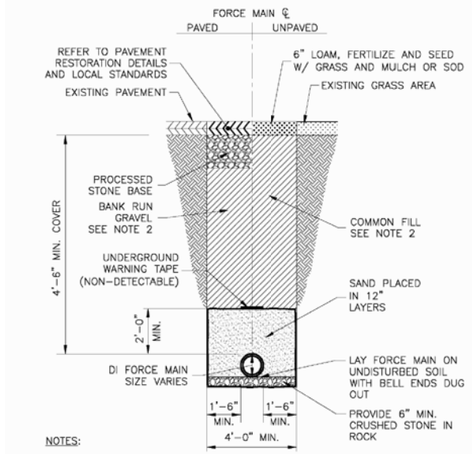
NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED.
2. BACKFILL MATERIAL SHALL BE BANK-RUN GRAVEL IN PAVED AREAS OR COMMON FILL IN UNPAVED AREAS.
3. REFER TO SURFACE RESTORATION DETAILS FOR TRENCH PAY WIDTHS.
4. TRENCHES LOCATED IN THE ROAD SHOULDER SHALL BE TREATED THE SAME AS TRENCHES IN THE PAVED ROADWAY EXCEPT FOR PAVEMENT AND SURFACE RESTORATION WORK.
5. PROVIDE IMPERVIOUS TRENCH DAM(S) IN STONE BEDDING AS DIRECTED BY THE ENGINEER. SEE PIPE TRENCH DAM DETAIL.
6. CRUSHED STONE SHALL BE INSTALLED TO TOP OF PIPE FOR PVC AND DI PIPE AND TO SPRINGLINE FOR RC PIPE.

DRAIN/SEWER TRENCH DETAIL

NTS — A

DETAIL A IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL S-1, SHEET S-D-1



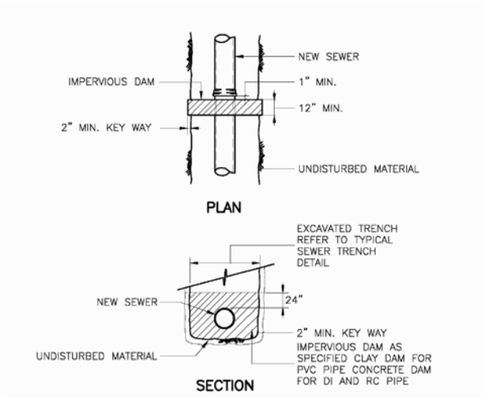
NOTES:

1. MAINTAIN MIN. 18" HORIZONTAL SEPARATION BETWEEN FORCE MAIN AND EXISTING PARALLEL UTILITIES (OUTSIDE WALL TO OUTSIDE WALL).
2. BACKFILL MATERIAL SHALL BE BANK-RUN GRAVEL IN PAVED AREAS OR COMMON FILL IN UNPAVED AREAS.

SEWER FORCE MAIN TRENCH DETAIL

NTS — B

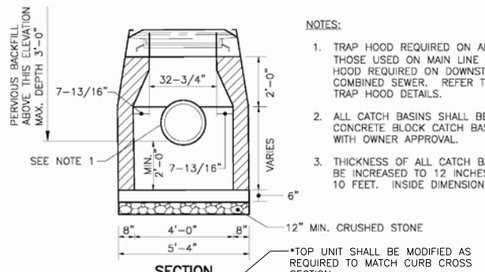
DETAIL B IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL S-3, SHEET S-D-1



PIPE TRENCH DAM

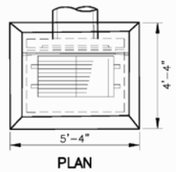
NTS — C

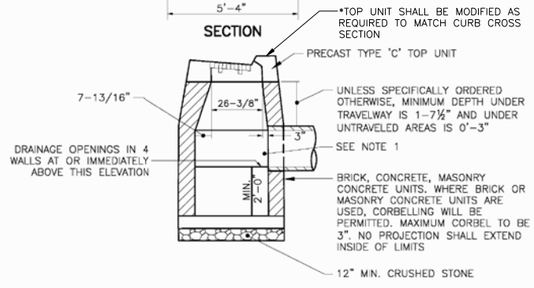
DETAIL C IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL S-4, SHEET S-D-1



NOTES:

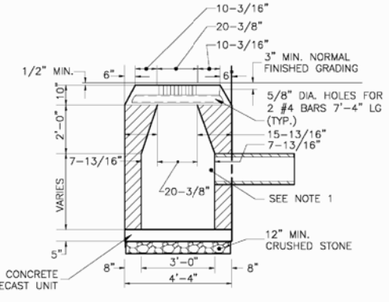
1. TRAP HOOD REQUIRED ON ALL CATCH BASINS EXCEPT THOSE USED ON MAIN LINE DRAIN (FLOW THRU). TRAP HOOD REQUIRED ON DOWNSTREAM CONNECTION BEFORE COMBINED SEWER. REFER TO CATCH BASIN TRAP AND TRAP HOOD DETAILS.
2. ALL CATCH BASINS SHALL BE PRECAST CONCRETE. CONCRETE BLOCK CATCH BASINS SHALL BE USED ONLY WITH OWNER APPROVAL.
3. THICKNESS OF ALL CATCH BASINS OVER 10 FEET SHALL BE INCREASED TO 12 INCHES STARTING AFTER THE FIRST 10 FEET. INSIDE DIMENSION SHALL REMAIN THE SAME.





TYPE 'C' CATCH BASIN

CTDOT STANDARD CATCH BASIN



TYPE 'C-L' CATCH BASIN

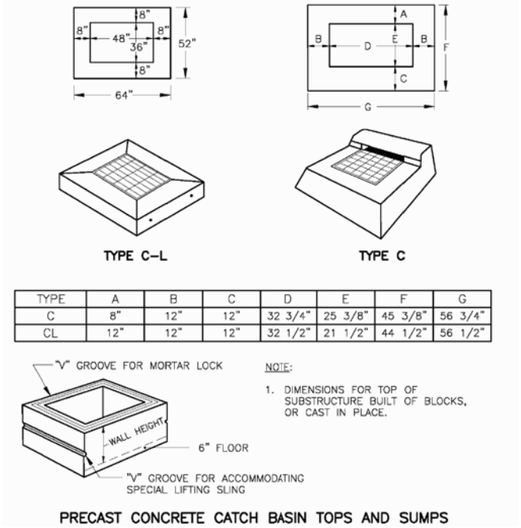
*NOTES:

1. CONTRACTOR SHALL SUMBIT PLAN OF ALL CATCH BASINS SHOWING THE PIPE CONNECTION LAYOUT. CATCH BASINS WITH MULTIPLE PIPE CONNECTIONS MAY REQUIRE AN INCREASED SIZE OF BOTTOM OF CHAMBER. CONTRACTOR SHALL SUBMIT ANY MODIFICATIONS REQUIRED. NO ADDITIONAL PAYMENT SHALL BE MADE FOR MODIFIED CATCH BASINS.
2. TYPE C-L CHAMBER SHOWN SHALL BE USED AS A GUIDE FOR THE MODIFIED TOP OF EXISTING CATCH BASIN THAT WILL BE CONVERTED FROM A CURB INLET TOP TO A TOP WITHOUT A CURB (GRATE ONLY).

CATCH BASIN DETAIL

NTS — D

DETAIL D IS A MODIFIED COPY OF MDC STANDARD DETAIL SD-1, SHEET SD-D-1 MODIFICATIONS ARE NOTED WITH *



TYPE	A	B	C	D	E	F	G
C	8"	12"	12"	32 3/4"	25 3/8"	45 3/8"	56 3/4"
CL	12"	12"	12"	32 1/2"	21 1/2"	44 1/2"	56 1/2"

NOTE:

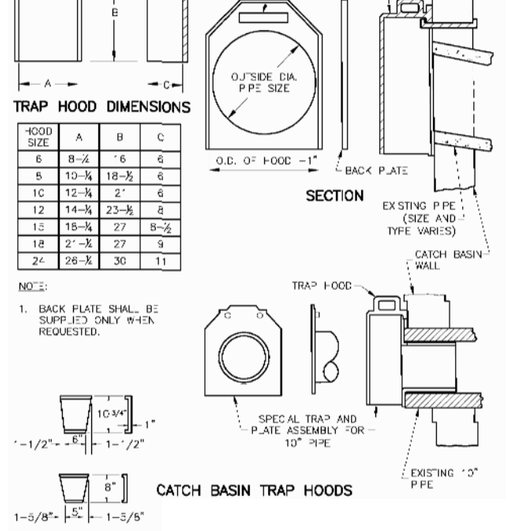
1. DIMENSIONS FOR TOP OF SUBSTRUCTURE BUILT OF BLOCKS, OR CAST IN PLACE.

PRECAST CONCRETE CATCH BASIN TOPS AND SUMPS

SEWER FORCE MAIN TRENCH DETAIL

NTS — E

DETAIL E IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL SD-5, SHEET SD-D-2



HOOD SIZE	A	B	C
6	8-¼	16	6
8	10-¼	18-½	6
10	12-¼	2'	6
12	14-¼	23-½	8
15	15-¼	27	8-½
18	2'-¼	27	9
24	26-¼	30	11

NOTE:

1. BACK PLATE SHALL BE SUPPLIED ONLY WHEN REQUESTED.

CATCH BASIN TRAP HOOD DETAIL

NTS — F

DETAIL F IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL SD-7, SHEET SD-D-2

PLOTTED_DATE
SAVED_DATE
CYONE_3D

F07000_PW

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-502
DESIGNED BY: AWL
DRAWN BY: AWL
CHK'D BY: ____
X-CHK'D BY: ____
APPROVED BY J. SULLIVAN
DATE: ___ 2014

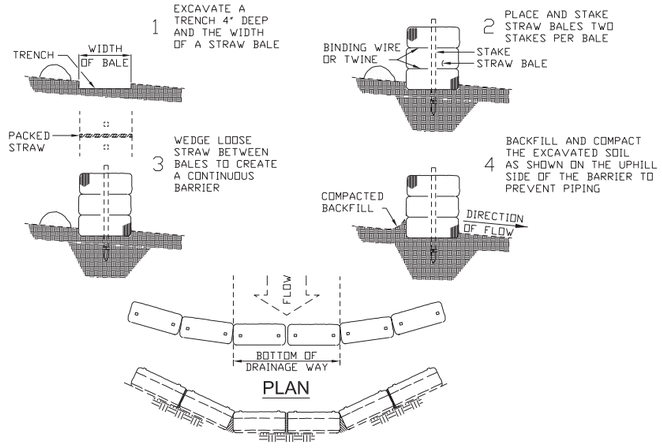
60% SUBMITTAL NOT FOR CONSTRUCTION

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

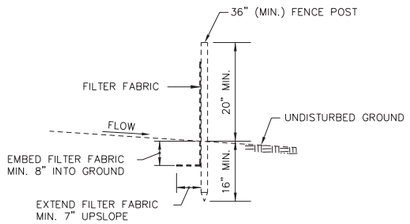
SITE DETAILS
SHEET 1 OF 3
CIVIL / SITE

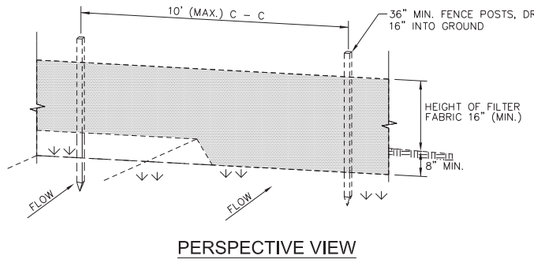
PLAN NUMBER
SHEET NO.
300 C-502



1 300 C-121 **PLACEMENT AND CONSTRUCTION OF A STRAW BALE BARRIER**

NOT TO SCALE





CONSTRUCTION NOTES FOR SILT FILTER FENCE

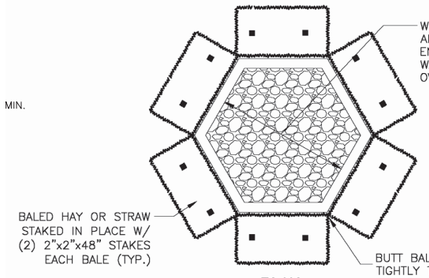
1. FILTER FABRIC TO BE FASTENED SECURELY TO FENCE POSTS.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FABRIC FENCE.

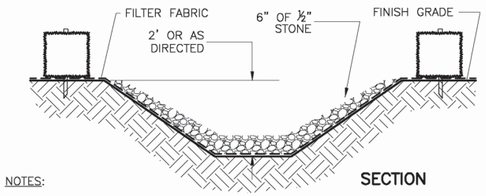
POSTS: 2"x2" HARDWOOD OR 2" SCHEDULE 40 METAL PIPE OR 1.33 LB/FT. MIN. STANDARD STEEL SECTION

FILTER FABRIC: FILTER FABRIC SHALL CONFORM TO AASHTO M288 (LINQ INDUSTRIAL FABRICS INC. GTF WOVEN GEOTEXTILE – 180 SILT FENCE, OR APPROVED EQUAL.

2 300 C-121 **SILT FENCE DETAIL**

NOT TO SCALE

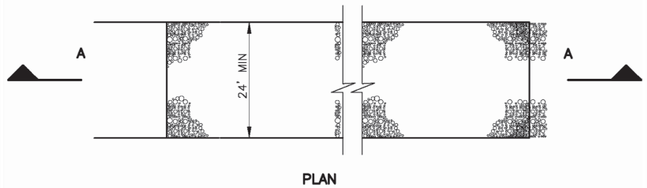




NOTES:

1. FURNISH THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER (P.E.) REGISTERED IN THE STATE OF CONNECTICUT, TO PREPARE DEWATERING AND DRAINAGE SYSTEM DESIGNS AND SUBMITTALS.
2. BASIN DIMENSIONS AND MATERIAL SPECIFICATIONS ARE SITE SPECIFIC FOR USE WORK WITHIN THE WETLAND. AFTER DEWATERING ACTIVITIES ARE COMPLETE, CONTRACTOR SHALL REMOVE AND RESTORE AREA WITH TOPSOIL AND SEED. LOCATION TO BE APPROVED BY ENGINEER.

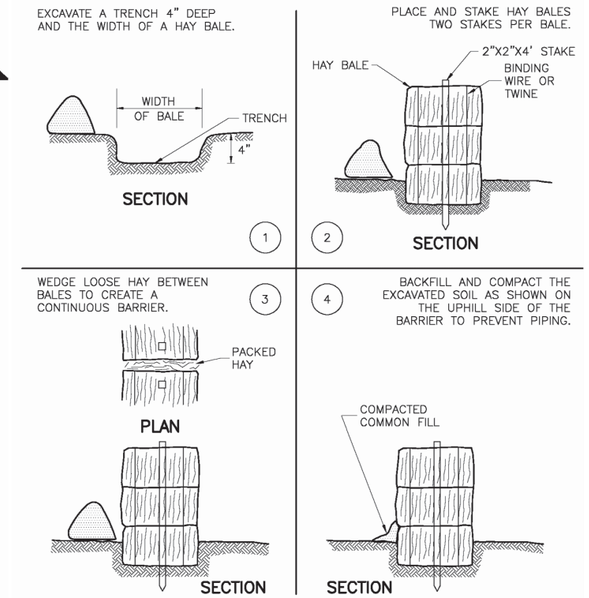
3 300 C-121 **DEWATERING BASIN**



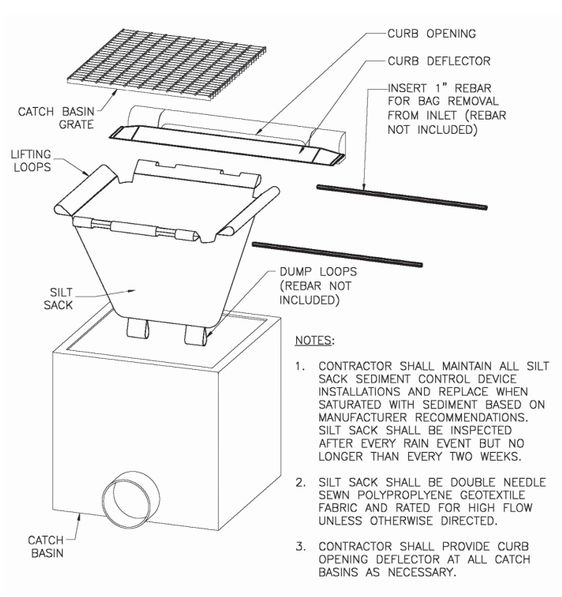
NOTES:

1. PROVIDE SMOOTH, CONTINUOUS TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND UNDISTURBED ROADWAY.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO UNDISTURBED ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDING STONE TO THE LENGTH OF THE ENTRANCE.
3. REPAIR AND CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT.
4. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO UNDISTURBED ROADWAY MUST BE REMOVED IMMEDIATELY.

4 300 C-121 **STABILIZED CONSTRUCTION ENTRANCE**



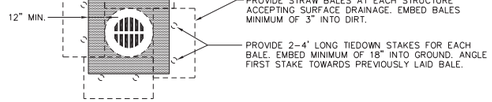
5 300 C-121 **HAY BALE BARRIER INSTALLATION**



NOTES:

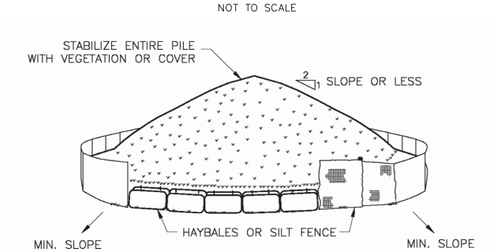
1. CONTRACTOR SHALL MAINTAIN ALL SILT SACK SEDIMENT CONTROL DEVICE INSTALLATIONS AND REPLACE WHEN SATURATED WITH SEDIMENT BASED ON MANUFACTURER RECOMMENDATIONS. SILT SACK SHALL BE INSPECTED AFTER EVERY RAIN EVENT BUT NO LONGER THAN EVERY TWO WEEKS.
2. SILT SACK SHALL BE DOUBLE NEEDLE SEWN POLYPROPLYENE GEOTEXTILE FABRIC AND RATED FOR HIGH FLOW UNLESS OTHERWISE DIRECTED.
3. CONTRACTOR SHALL PROVIDE CURB OPENING DEFLECTOR AT ALL CATCH BASINS AS NECESSARY.

6 300 C-121 **CATCH BASIN SILT SACK**



8 300 C-121 **STRAW BALE PLACEMENT AT DRAINAGE STRUCTURE**

NOT TO SCALE



NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2:1.
3. EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR HAYBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
4. UPON COMPLETION OF SOIL STOCKPILING, RESTORE STOCKPILING AREA TO EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

7 300 C-121 **STOCKPILING AREA**

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYGNET_ID

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-503
DESIGNED BY: ----
DRAWN BY: K.T.H
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ---- 2014

NOT FOR CONSTRUCTION

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
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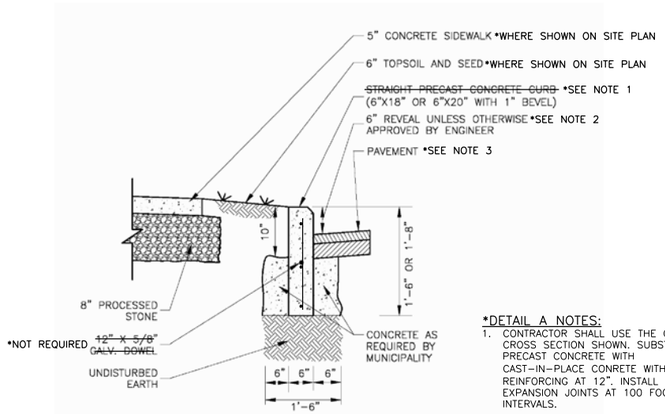
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

EROSION AND SEDIMENT CONTROL DETAILS
CIVIL / SITE

PLAN NUMBER
SHEET NO. 300 C-503

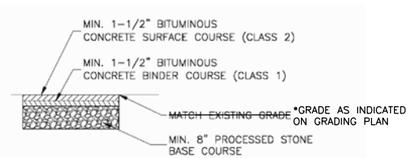


*DETAIL A NOTES:

1. CONTRACTOR SHALL USE THE CURB CROSS SECTION SHOWN. SUBSTITUTE PRECAST CONCRETE WITH CAST-IN-PLACE CONRETE WITH #4 REINFORCING AT 12". INSTALL EXPANSION JOINTS AT 100 FOOT INTERVALS.
2. REVEAL VARIES AS INDICATED ON SITE PLANS. MINIMUM REVEAL REQUIRED SHALL BE 4".
3. PAVING SHOWN AS FLOWING TO CURB GUTTER. IN SOME AREAS PAVING SLOPES AWAY FROM CURB AS INDICATED ON GRADING SITE PLAN.

DETAIL A IS A MODIFIED COPY OF MDC STANDARD DETAIL SR-13, SHEET SR-D-2 MODIFICATIONS ARE NOTED WITH *

CURB SECTION DETAIL (A)
NTS



NOTES:

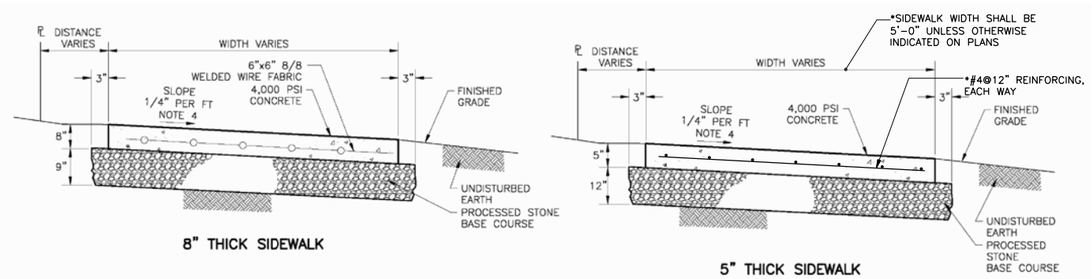
1. RESTORE SURFACE OF DISTURBED BITUMINOUS CONCRETE DRIVEWAYS OR DRIVEWAY APRONS TO MATCH EXISTING DEPTH AND DIMENSIONS.
2. SAW CUT EDGES OF EXISTING DRIVEWAY AND DISPOSE OF ALL CUTBACK MATERIALS.
3. IMMEDIATELY AFTER PLACEMENT OF BITUMINOUS CONCRETE DRIVEWAY, ALL JOINTS BETWEEN THE EXISTING AND NEW DRIVEWAY AND SIDEWALK SHALL BE SEALED.

*DETAIL B NOTES:

1. UNLESS OTHERWISE INDICATED ALL PAVING USED ON THIS PROJECT SHALL BE BITUMINOUS PAVEMENT AS DETAILED HERE.
2. ALL PAVEMENT SHALL BE SLOPED TO DRAIN AT A MINIMUM OF 0.5%. NO FLAT AREAS (PUDDLING) ALLOWED.

DETAIL B IS A MODIFIED COPY OF MDC STANDARD DETAIL SR-22, SHEET SR-D-3 MODIFICATIONS ARE NOTED WITH *

BITUMINOUS PAVEMENT DETAIL (B)
NTS



NOTES:

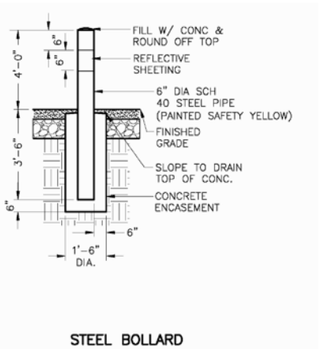
1. 8" THICK REINFORCED SIDEWALK TO BE USED AT ALL DRIVEWAY CROSSINGS UNLESS OTHERWISE REQUIRED BY THE MUNICIPALITY.
2. 1/2" PRE-MOULDED NON-EXTENABLE BITUMINUOUS JOINT MATERIAL 4" DOWELS TO BE INSTALLED ON EITHER SIDE OF ALL DRIVEWAY CROSSINGS. TOOLED JOINT PATTERN TO BE VARIED AS DIRECTED TO CONFORM TO ADJACENT MARKINGS.
3. ANY PEDESTRIAN RAMPS THAT ARE DISTURBED SHALL BE REPLACED IN-KIND. GRADE THEN 6" LOAM AND SEED ALL AREAS NOT COVERED BY SIDEWALK OR PAVEMENT THAT ARE DISTURBED DURING SIDEWALK REMOVAL AND REPLACEMENT.
4. MATCH SLOPE OF EXISTING SIDEWALK OR A 1/4" PER FOOT SLOPE.

*DETAIL C NOTES:

1. UNLESS OTHERWISE INDICATED ALL CONCRETE SIDEWALKS USED ON THIS PROJECT SHALL BE 5" THICK.

DETAIL C IS A MODIFIED COPY OF MDC STANDARD DETAIL SR-21, SHEET SR-D-3 MODIFICATIONS ARE NOTED WITH *

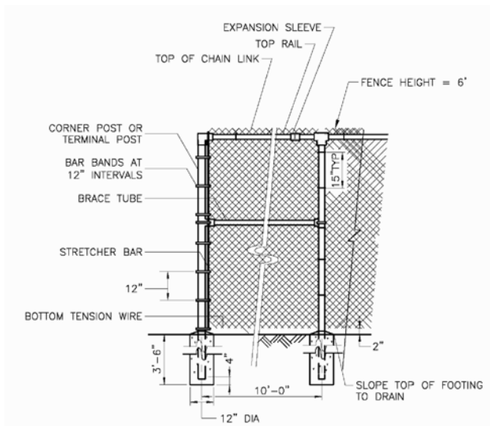
CONCRETE SIDEWALK DETAIL (C)
NTS



STEEL BOLLARD

STEEL BOLLARD DETAIL (D)
NTS

DETAIL D IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL SR-23, SHEET SR-D-4



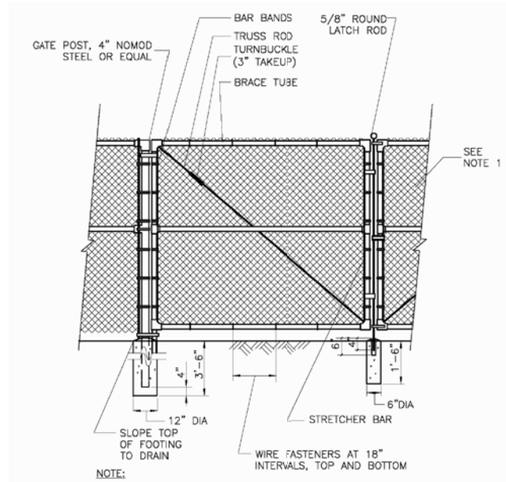
NOTE:

1. PROVIDE SHIELDING PRIVACY STRIPS IN CHAINLINK MESH

CHAIN LINK FENCE (6-FEET HIGH)

CHAIN LINK FENCE DETAIL (E)
NTS

DETAIL E IS AN UNMODIFIED COPY OF MDC STANDARD DETAIL SR-24, SHEET SR-D-4



NOTE:

1. PROVIDE SHIELDING PRIVACY STRIPS IN CHAIN LINK MESH.

CHAIN LINK FENCE GATE (6-FEET HIGH)

*DETAIL A NOTES:

1. ALL GATE OPENINGS 12'-0" AND WIDER SHALL BE DOUBLE LEAF AS SHOWN. ALL GATE OPENINGS SMALLER THAN 12'-0" SHALL BE SINGLE LEAF.
2. ALL GATES SHALL BE LOCKABLE.
3. PADLOCKS SHALL BE PROVIDED FOR ALL GATES, ALL PADLOCKS SHALL BE KEYED TO MDC STANDARDS.

CHAIN LINK FENCE GATE DETAIL (F)
NTS

DETAIL F IS A MODIFIED COPY OF MDC STANDARD DETAIL SR-25, SHEET SR-D-4 MODIFICATIONS ARE NOTED WITH *

PLOTTED_DATE
SAVED_DATE
CYONET_ID

F07000_PW

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-502
DESIGNED BY: AWL
DRAWN BY: AWL
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ___ 2014

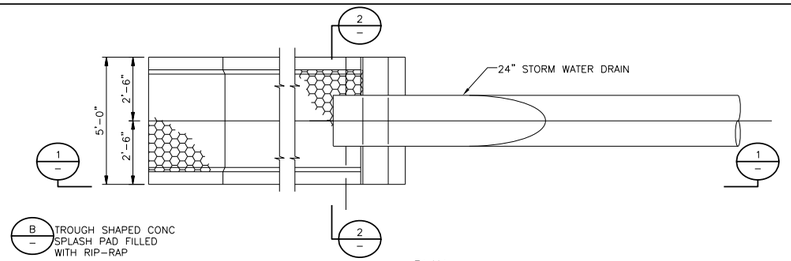
60% SUBMITTAL NOT FOR CONSTRUCTION

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

SITE DETAILS
SHEET 2 OF 3
CIVIL / SITE

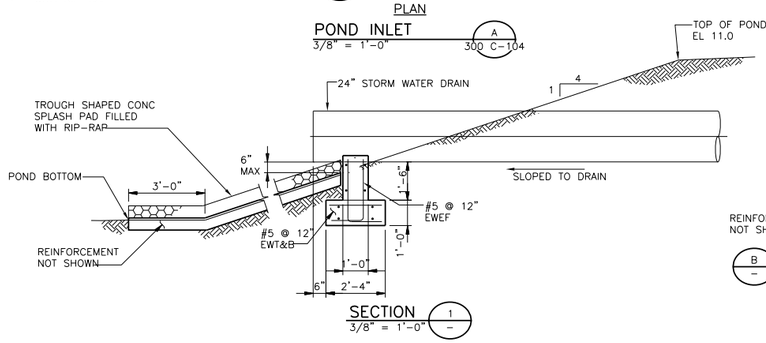
PLAN NUMBER
SHEET NO.
300 C-504



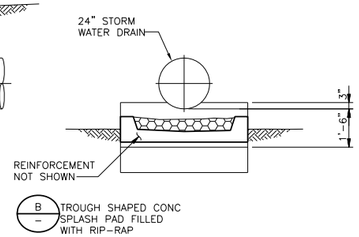
PLAN

POND INLET
3/8" = 1'-0"
A
300 C-104

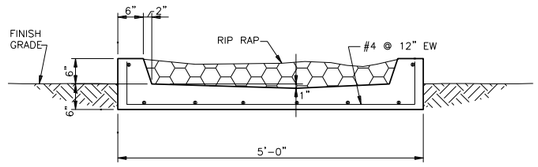
NOTES:
1. CONTRACTOR SHALL PROVIDE RIP RAP IN ACCORDANCE WITH SPECIFICATIONS RIP-RAP INSTALLED THROUGHOUT THE EXTENT OF THE CONCRETE SPLASH PAD.
2. SPLASH PAD FOR 24" POND INLET DRAIN DETAILED, SPLASH PADS FOR 12" POND INLET DRAIN AND 24" POND OUTLET DRAIN INTO EXISTING DITCH SIMILAR.



SECTION
3/8" = 1'-0"
1
–



SECTION
3/8" = 1'-0"
2
–



SECTION

SPLASH PAD DETAIL
3/4" = 1'-0"
B
–

PLOTTED_DATE
SAVED_DATE
CYGNET_ID

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 C-502
DESIGNED BY: AWL
DRAWN BY: AWL
CHK'D BY: ----
X-CHK'D BY: ----
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BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND
STORAGE TUNNEL

SITE DETAILS
SHEET 3 OF 3
CIVIL / SITE

PLAN NUMBER

SHEET NO.
300 C-505

Attachment I3

Supplemental Materials

Engineering Analyses, Drawings, And Additional Project Information

ATTACHMENT I3

ENGINEERING ANALYSES, DRAWINGS, AND ADDITIONAL PROJECT INFORMATION

Background

The COH approved the IWWP issued to the MDC for the South Conveyance and Storage Tunnel Project at 255 Brainard Road in Hartford, Connecticut in October 2014. A CD of engineering reports and analyses was included with that submission and is available upon request. Construction of Wetland Area Z, the first of two wetland mitigation elements associated with the project, started in October 2016 and was completed in 2017. Wetland mitigation annual monitoring for Wetland Area Z, as required by the USACE, began in 2018 after the first full growing season.

Most of the second wetland mitigation site work (Wetland Areas X and Y) is located within the active construction site and cannot be started until that project construction is complete and a temporary access road supporting the tunnel construction is removed. It is anticipated this access road will be removed in approximately 2025 at the earliest. However, herbicide treatment has begun and will continue to manage invasive plant species in the accessible portions of Wetland Mitigation Areas X and Y.

Project Update and Schedule

The largest contract, the tunneling contract called Contract #2, is approximately 50% complete. This contract has been experiencing delays and there is a high potential for additional delay. The follow-on consolidation conduit and pump station contracts (Contracts #3, 4, and 5) are interrelated multi-year projects. Contract #3, the pump station contract, is dependent upon the completion of the main tunnel's construction and is the main driver for finishing the wetland mitigation construction. One of the off-site consolidation conduit contracts (Contract #5) has begun. Due to tunneling delays and because bids have not been received for Contracts #3 and 4, there is uncertainty regarding the completion date of all contracts. However, it is currently anticipated that the projects would likely extend beyond October 2024. A new IWWP would be applied for in 2024 for the remainder of the project.

Construction of the first phase of wetland mitigation has been completed, which accounts for approximately 40% of the overall project wetland restoration. The remaining 60% is scheduled to be constructed following the completion of the tunnel and pump station and is currently scheduled for the summer of 2026 (at the earliest) since as stated above, the access road supporting ongoing present tunnel construction is not anticipated to be removed until 2025 at the earliest.

As previously discussed, construction of the overall project, and of the wetland mitigation portion of the project, will not be completed before the COH IWWP expires (October 28, 2020) so an extension of the permit is needed through October 28, 2024, the longest that the current IWWP may be extended to. The construction of the second wetland mitigation area depends upon the completion of the tunnel and pump station facilities. The section of tunnel that is being excavated and lined now is the most challenging subsurface area. It is likely that another extension or an additional follow on permit will be required to complete this work.

As expected, since only two years of monitoring at the first constructed wetland mitigation site have been completed, not all performance standards have been met; however, Wetland Area Z has achieved many of the performance standards outlined for the project and is trending towards meeting the remaining ones not yet achieved. Overall, Wetland Area Z has good vegetation density, vigor, and coverage and is meeting project expectations after the second growing

season. The USACE annual wetland mitigation monitoring reports for 2018 and 2019 are included below as Appendix 1.

Approved Design Changes

In April 2019, USACE approved some minor design changes to Wetland Areas X and Y that were not included in the original approved COH IWWP or the 2014 Mitigation Plan Checklist. See Appendix 2 for this USACE approval, including details of the design changes. Appendix 2 also includes the approval of these minor design changes by the COH. These minor alterations to the proposed elevations and plantings in Wetland Areas X and Y were recommended based upon some hydrologic data that was recorded at the MDC site itself that was not previously available and the observation of groundwater levels as part of the construction and monitoring of Wetland Area Z that were not available for the original design.

Based on the evaluation of this additional information, updates to the Wetland Areas X and Y mitigation design were recommended including lowering the current elevations by 1.5 feet and incorporating additional plant species to the planting plan. Lowering the elevations in Wetland Areas X and Y was designed to improve the hydrology of these wetland areas, such that they will have enough hydrology to become established and a successful, self-sustaining wetland resource. During wet years, ponding is not anticipated to be sustained or permanent, but more of a temporary condition. During dry years, the slightly lower design elevation will improve the likelihood that wetland plants have the necessary hydrology to survive.

Additionally, selecting plants that are a bit hardier, have a broad diversity in wetland indicator classifications, and that thrive in a wider range of hydrologic conditions will give Wetland Areas X and Y a greater assurance of success. Several additional plant species were added to the plant list to increase the chances of plant survival and success, and to further increase vegetation diversity. Also,55 additional plants would be planted, with four additional shrub species added to the planting plan to provide more diversity and a higher likelihood of survival and ultimate aerial coverage. The four additional plant species include: buttonbush (*Cephalanthus Occidentalis),* speckled alder (*Alnus incana*), gray dogwood (*Cornus racemosa*), and black chokeberry (*Aronia melanocarpa*).

The proposed design changes did not change the mitigation site acreage, as previously permitted. The memorandum detailing the proposed changes to the mitigation site design and the USACE approval of these proposed design changes are provided in Appendix 2.

Damage to Wetland Z Mitigation Site and Resolution

Damage to the Wetland Area Z mitigation site was first noted by the MDC at the end of August 2018. The damage was done by a contractor for the Connecticut Department of Transportation (CTDOT) as part of drainage outfall maintenance work along Interstate 91 (I-91). It appears that heavy equipment was used to remove accumulated sediment, debris, and other materials at three drainage outfalls that convey stormwater easterly from I-91. These outfalls were located off MDC property, to the west and northwest of the wetland mitigation site. The heavy equipment tracks indicate that material was placed into the mitigation site and compacted to build an approximately 15-foot-wide access road through the western portion of the mitigation site.

On May 7 through May 9, 2019, forces under the direction of CTDOT removed the unauthorized fill materials from the mitigation site, and applied seed for stabilization of the impacted areas as described below.

An excavator with a 75-foot boom was utilized by the CTDOT contractor for the fill material removal activities from the western side of the drainage channel in order to avoid access through the mitigation site and minimize impacts from the repair work. Work in the northern portion of the site necessitated some access into the mitigation site, but the tracked excavator was limited to the upland buffer area and did not cause additional damage to the Wetland Z mitigation site. The excavator removed between approximately 4 and 12 inches of soil from the surface of the areas where fill material was previously deposited. The depth of fill material varied throughout the damaged area, so a CTDOT employee directed the excavator accordingly to chase the fill material to its full depth for removal. Since the fill material was a gray color, and the original organic wetland soil was a dark brown material, CTDOT could readily determine when the material was fully removed. Once the fill materials were removed from the mitigation site, the excavator bucket was then used to re-grade the remaining organic soil in the damaged areas. The remaining soil was then hand-raked in some locations, especially in the northern portion of the site, to further smooth the material prior to seeding. Approximately 11 pounds of two seed mixes were then hand-sown in the disturbed areas. The seed mixes that were applied, including the species of plants in each seed mix, are provided in Appendix 3. Some additional coarse woody debris (section of tree trunks) was also added to the impacted areas in the southern portion of the site. No herbaceous plugs or woody shrubs were planted as part of these repair activities. Straw was then placed on the seeded areas to hold in moisture and reduce eating of the seed by wildlife or removal of the seed by rain.

CTDOT contacted USACE in May 2019 to discuss the damage to Wetland Area Z, their restoration repair response activities, and any additional actions that were needed to ensure compliance with the USACE Section 404 permit. The USACE accepted the restoration work in May 2019 and stated no further restoration work was needed. See Appendix 3 for this correspondence.

The area that was damaged in Wetland Area Z has performed well since the damage repair was completed in May 2019. As of September 2019, a vegetative cover in the disturbed area of Wetland Z had been established, with approximately 80% coverage in this area. It is anticipated that this area will continue to fill in with native vegetation and provide the soil stabilization, habitat, and cover that was previously compromised by the damage.

Conclusion

The South Hartford Conveyance and Storage Tunnel project is progressing and continues to adhere to the IWWP approved by the COH in October 2014. There were some minor changes to the design of the second wetland mitigation area (Wetland Areas X and Y) approved by USACE and the COH in April 2019. Some accidental damage by a third party to the existing Wetland Area Z mitigation site has been repaired and the repair work was accepted by USACE in May 2019. As previously discussed with the COH, this project will not be fully constructed by the permit expiration date of October 28, 2020, so an extension of the approved IWWP is requested to October 28, 2024.

Appendix 1

2018 & 2019 USACE Annual

Mitigation Monitoring Reports

October 22, 2018

Ms. Lindsay Flieger
U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Flieger:

Subject: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT
Wetland Area Z - USACE: NAE-2014-261

Enclosed please find the Year-One wetland mitigation monitoring report for The Metropolitan District (MDC) South Conveyance and Storage Tunnel Project (USACE: NAE-2014-261). Wetland Area Z performed very well the first year, having already met many of the performance standards. Overall, the mitigation site is trending towards meeting the performance standards that have not already been achieved.

Just after completion of the attached Year-One monitoring report, there was some disturbance of Wetland Area Z by a third-party entity while maintaining drainage facilities associated with Interstate 91. This disturbance occurred after the first growing year monitoring report was completed, so this Year-One report reflects an accurate assessment of conditions at Wetland Area Z for Year-One, prior to the third-party disturbance. The MDC is currently in the process of assessing damage to Wetland Area Z, coordinating with the third-party entity, and determining steps to address the impacted area. Actions taken in this area will be available in the Year-Two report.

Should you have any questions regarding this project, you may contact me directly at (860) 256-4918.

Very truly yours,

Shawn Callaghan
Fitzgerald & Halliday, Inc.

MITIGATION MONITORING REPORT TRANSMITTAL AND SELF-CERTIFICATION

DEPARTMENT OF THE ARMY PERMIT NUMBER: NAE-2014-261
PROJECT TITLE: The Metropolitan District South Conveyance and Storage Tunnel Project

PERMITTEE: The Metropolitan District
MAILING ADDRESS: 555 Main Street, Hartford, CT 06142

TELEPHONE: 860-278-7850

AUTHORIZED AGENT: Susan Negrelli, P.E.

MAILING ADDRESS: 555 Main Street, Hartford, CT 06142

TELEPHONE: 860-278-7850

ATTACHED MITIGATION REPORT
TITLE: The Metropolitan District
2018 Wetland Mitigation Monitoring Report

PREPARERS: Shawn Callaghan, Fitzgerald & Halliday, Inc.

DATE: 8-27-18

CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit **[is]** in full compliance with the terms and conditions of that permit.

CORRECTIVE ACTION: A need for corrective action **[is not]** identified in the attached report.

CONSULTATION: I **[do not]** request consultation with the Corps of Engineers to discuss a corrective strategy or permit modification.

CERTIFIED: _____ 10/23/18
(Signature of permittee) Date

The Metropolitan District

2018 Wetland Mitigation Monitoring Report

Report Date: August 27, 2018

Report Number: 1 of 5 (Year 1, 2018)

1. Project Overview

Project Name:	The Metropolitan District South Conveyance and Storage Tunnel Project
Project Location:	Wetlands adjacent to 255 Brainard Road, Hartford, Connecticut Latitude: 41.73127°N, Longitude: -72.6607°E
Project Owner:	The Metropolitan District (MDC)
Contractor and Consultant:	Kenny-Obayashi (KO) and AECOM/Fitzgerald & Halliday, Inc.
Start and Completion Dates:	September 2016 – December 2020
USACE and DEEP Permit Numbers:	USACE: NAE-2014-261 CT DEEP: WQC-201407768

Project Summary:

The proposed compensatory mitigation plan includes the restoration of 0.58 acres of historically-filled wetlands, the creation of approximately 0.5 acres of new wetlands (restoring a temporarily-impacted state-only wetland to federal wetland standards), and the restoration of 1.05 acres of temporarily-impacted wetlands. It also includes payment to the In-Lieu Fee Program of approximately $113,000 to compensate for the permanent loss of 0.48 acres of Federal wetlands. This payment will be put towards future compensatory wetland mitigation, as administered by Audubon Connecticut under the In-Lieu Fee Program. The majority of wetland restoration area will consist of PFO wetlands, followed by PEM, and finally PSS wetlands. This corresponds to the wetland types impacted by the proposed project. The focus of this Year 1 report is Wetland Area Z, which is the portion being restored to a PEM wetland.

After the first full growing season, the mitigation site was observed to be functioning as a PEM wetland as designed.

2. Requirements

1. The site has the necessary hydrology to support the designed wetland with a minimum of 80 percent of the site meeting desired hydrology levels. Groundwater elevation at the site has fluctuated reflecting seasonal and temporal variations. The groundwater elevation at the time of the most recent measurements (August 2, 2018) was close to the design elevation, therefore no corrective measures are recommended at this time. Additional groundwater observations will be conducted to ensure that levels will support the continued success of the site.
2. The vegetation diversity goals in Wetland Area Z after the first growing season have been met, with 20 species planted and 65 species documented in Wetland Area Z.
3. The vegetation density in Wetland Area Z after the first growing season is approaching the proposed goals. Although the density goals have not yet been met for this first year (95% areal

coverage by native species), the density is trending towards meeting this goal at 80% coverage for Wetland Area Z. The density goal for the emergent areas (80% cover) has been met at 80%. The density goal for scrub-shrub areas (60%) has been exceeded at 70%, including at least 15% cover by woody species. There are no forested areas proposed for Wetland Area Z.

4. The fifth year (Year 5) monitoring report will document if all vegetation within the buffer areas is healthy and thriving. Since this is Year 1, this performance standard cannot be met yet, however after the first growing season the buffer zone vegetation exhibits healthy, robust growth.
5. Evidence of natural colonization is present, however after the first year, the required 100 volunteer native trees and/or shrubs per acre has not been met. Since this wetland is planned as a mostly PEM wetland with some PSS areas, the volunteer native tree/shrub requirement is not applicable to Wetland Area Z. The 0.59-acre mitigation site has approximately 42 volunteer plant species, including three trees and no shrubs. One of these three volunteer tree species is native: Eastern Cottonwood (*Populus deltoides*). The site was observed to have approximately four volunteer native trees/shrubs per acre, which is lower than the 59 native trees/shrubs per acre site requirement. Much of the mitigation site is comprised of emergent areas, and the species that have colonized the site are mostly herbaceous, with some shrubs, and fewer trees. This species composition aligns with the planned wetland types (PEM and PSS), as a limited number of trees were planted in the buffer zone, and none were installed in the emergent areas. The volunteer native tree/shrub requirement is not applicable to this planned PEM wetland, and natural colonization of herbaceous plants is occurring.
6. Invasive plant species are being actively treated and managed at the site, including: Common Reed (*Phragmites australis*) and Purple Loosestrife (*Lythrum salicaria*). In addition to the invasive species, Broadleaf Cattail (*Typha latifolia*) is also being controlled. Details of the invasive species treatment are included below.
7. The third year (Year 3) monitoring report will document if evidence of redoximorphic features are present in the soils at the site. Since this is Year 1, this performance standard is not applicable yet, however redoximorphic features are already present in on-site soils below the soil that was added for this project as described below.
8. Observations in Year 1 revealed that slopes, soils, substrates, and constructed features are relatively stable.
9. The payment of $113,000 was received by Audubon Connecticut on 8/25/15 for the Connecticut In Lieu Fee program to satisfy mitigation requirements for that program.
10. Mitigation for the temporary and permanent impacts have been conducted according to the submitted mitigation document titled *The Metropolitan District South Hartford Conveyance and Storage Tunnel – US Army Corps of Engineers Mitigation Plan Checklist* (mitigation checklist). All mitigation activities have not been completed to date, as portions of the wetland mitigation work is located within the active construction site, and per the approved mitigation checklist, cannot be started until the project construction is complete and an access road supporting the construction is removed. The construction of Wetland Area Z has been completed and maintenance and observation of the wetland has begun. Per the approved mitigation checklist, the reconstruction work on Wetland Areas X and Y will commence following construction of the tunnel, pump station, and ancillary construction requiring the access road and work zone is complete.

As expected, since this is Year 1 of monitoring at the mitigation site, not all performance standards have been met, however many of them have as described above. Overall, the mitigation site is trending towards meeting the performance standards.

3. Monitoring Information

- *Address achievement of performance standards and/or measures to attain the standards.*
  The achievement of performance standards/measures is described in section 2 above. The primary goal of restoring and enhancing Wetland Area Z is underway and progressing well.

- *Describe the monitoring inspections, and provide their dates, that occurred since the last report.*
  Shawn Callaghan of Fitzgerald & Halliday, Inc. (FHI) inspected the site on numerous occasions throughout the first year. Monitoring photographs from July 24, 2018 documenting the site inspection for Year 1 are included in Appendix C.

- *Soils data, commensurate with the requirements of the soils portion of the most recent Corps of Engineers Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Manual, should be collected after construction and every alternate year throughout the monitoring period. If IRIS tubes, monitoring wells, or gauges were installed as part of the project, this hydrology data should be submitted annually.*
  There were no IRIS tubes, monitoring wells, or gauges installed as part of this wetland mitigation project, therefore annual hydrologic data collected via these means is not available. The soil sampled at the site after Year 1 revealed the following profile:
  - 0 – 11" – Loam, 7.5 YR 3/1
  - 11 – 24" – Sandy loam, Matrix: Gley 1 3/5GY, Concentrations: 7.5 YR 4/6 at 2%
  - 24 – 38" – Loamy sand, Matrix: Gley 1 5/10Y, Concentrations: 7.5 YR 4/6 at 50%
  - 38" + - Loamy sand, Matrix: Gley 1 4/5G, Concentrations: 7.5 YR 4/4 at 20% and 7.5 YR 2.5/1 at 5%
- *Concisely describe remedial actions done during the monitoring year to meet the performance standards – actions such as removing debris, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.*
  During Year 1, and in the previous year, there were numerous activities conducted to prepare and construct Wetland Area Z. The site was cleared of vegetation and debris, excavated, graded, had invasive plant species (Phragmites) excavated out and removed, had invasive species treated with herbicide, added topsoil, added coarse woody debris, planted live American Pussy Willow (*Salix discolor*) stakes, and installed plantings. In Year 1, work was also conducted on Wetland Areas X and Y, which will be restored after construction is completed. Excavation of Phragmites and treatment with herbicide was conducted in Wetland Areas X and Y as well.

  Invasive plant species have been managed at the site since before construction of Wetland Area Z began. In June and September of 2015, herbicide spraying of invasive plant species was conducted to target Phragmites. Polaris AC Complete (Imazapyr) was the herbicide sprayed on

those two dates via truck-mounted sprayers. In March of 2016, mowing was conducted to further stress and manage the Phragmites stands that were previously sprayed.

Additional dates of herbicide applications include the following: April 2017, July 2017, October 2017, March 2018, June 2018, and July 2018. These treatments included the use of Imazapyr and Glyphosate in backpack sprayers. The treatment in October 2017 also included the use of Glyphosate for hand wicking of individual plants in sensitive areas.

Phragmites was the main target of the herbicide treatments, but Oriental Bittersweet (*Celastrus orbiculatus*) and Common Mugwort (*Artemisia vulgaris*) were also targeted. Invasive plant species were treated in Wetland Area Z, Wetland Areas X and Y, as well as throughout the remainder of the site where these species were observed.

- *Report the status of all erosion control measures on the restoration/enhancement site. Are they in place and functioning? If temporary measures are no longer needed have they been removed?*
  Erosion control measures were observed to be in place and functioning properly. No erosion issues were documented at Wetland Area Z.

- *What fish and wildlife use the site and what do they use it for (nesting, feeding, shelter, etc.)?*
  The wildlife observed utilizing the site were Killdeer (*Charadrius vociferous*) for nesting purposes and Wild Turkey (*Meleagris gallopavo*) for food/cover.

  White-tail deer (*Odocoileus virginianus*) tracks were observed, and it is assumed that some on-site browsing of plants was done by this species, however evidence of extensive deer browsing was not noted. Tracks of the North American Raccoon (*Procyon lotor*) were also observed.

- *By species planted, describe the general health and vigor of the surviving plants, the prognosis for their future survival, and a diagnosis of the cause(s) of morbidity or mortality.*
  Most of the plants installed in May 2017 at Wetland Area Z are generally healthy and appear to be performing well after one growing season. Only one of the plant species that were installed was not performing well: Northern Bayberry (*Morella pensylvanica*). There were approximately 14 Northern Bayberry shrubs that were replaced in June 2018 since they did not perform well the first year. It should be noted that other Northern Bayberry shrubs at the site were in good health, so it is not that this species cannot thrive at the site. It is likely that those individual plants were not as hardy as some of the others that survived. Survival of the remaining Northern Bayberry shrubs is expected since many of the plants exhibited no signs of stress. There were several emergent plant species included in the original wetland seed mix that were not noted growing at the site yet, including Fringed Sedge (*Carex crinita*), Fowl bluegrass (*Poa paulstris*), New York Ironweed (*Vernonia noveboracensis*), Starved/Calico Aster (*Symphyotrichum lateriflorum*), Blue Flag (*Iris versicolor*), and American Mannagrass (*Glyceria grandis*). The absence of these plant species did not adversely affect the vegetative cover, since coverage on the seeded areas is approximately 80%.

4. Summary and Conclusions

Include a general statement describing the conditions of the compensatory mitigation project.

After Year 1, Wetland Area Z has achieved many of the performance standards outlined for the project and is trending towards the remaining ones not yet achieved. Overall, Wetland Area Z has good vegetation density, vigor, and coverage and is meeting project expectations after the first growing season. Wetland mitigation work at Wetland Areas X and Y will not commence in earnest until overall project construction has been completed, however herbicide treatment has begun and will continue to manage invasive plant species.

If performance standards are not being met, a brief discussion of the difficulties and potential remedial actions proposed by the permittee, including a timetable, must be provided.

Not applicable.

5. Appendices

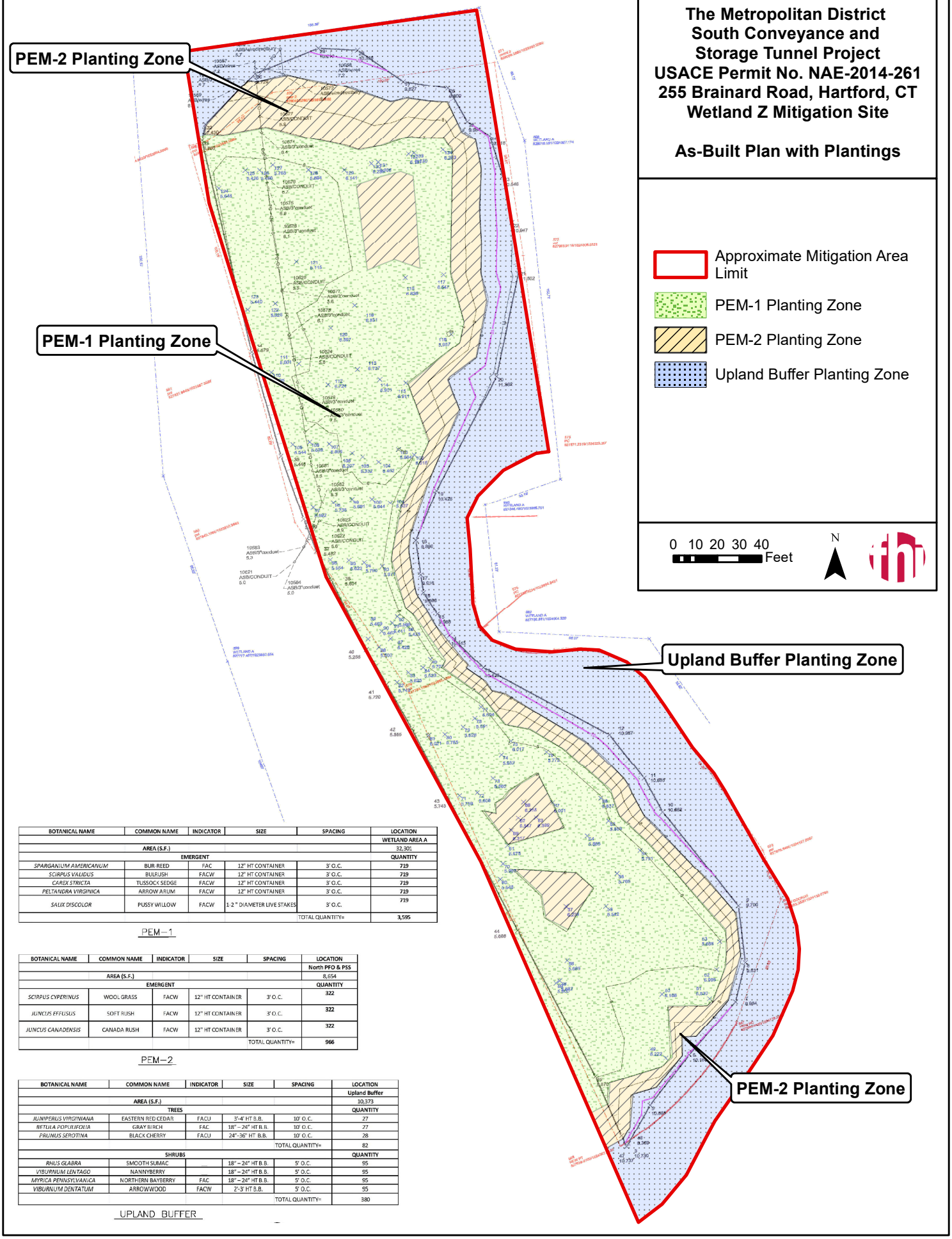
- Appendix A – An as-built plan showing topography and the location and extent of the designed plant community types.
- Appendix B – A vegetative species list of each plant community type.
- Appendix C – Representative photos of each mitigation site.

Appendix A

As-built Plan

The Metropolitan District
South Conveyance and Storage Tunnel Project
USACE Permit No. NAE-2014-261
255 Brainard Road, Hartford, CT
Wetland Z Mitigation Site

As-Built Plan with Plantings



BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					WETLAND AREA A
AREA (S.F.)					32,301
EMERGENT					QUANTITY
SPARGANIUM AMERICANUM	BUR-REED	FAC	12" HT CONTAINER	3' O.C.	719
SCIRPUS VALIDUS	BULRUSH	FACW	12" HT CONTAINER	3' O.C.	719
CAREX STRICTA	TUSSOCK SEDGE	FACW	12" HT CONTAINER	3' O.C.	719
PELTANDRA VIRGINICA	ARROW ARUM	FACW	12" HT CONTAINER	3' O.C.	719
SALIX DISCOLOR	PUSSY WILLOW	FACW	1-2 " DIAMETER LIVE STAKES	3' O.C.	719
				TOTAL QUANTITY=	3,595

PEM-1

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					North PFO & PSS
AREA (S.F.)					8,654
EMERGENT					QUANTITY
SCIRPUS CYPERINUS	WOOL GRASS	FACW	12" HT CONTAINER	3' O.C.	322
JUNCUS EFFUSUS	SOFT RUSH	FACW	12" HT CONTAINER	3' O.C.	322
JUNCUS CANADENSIS	CANADA RUSH	FACW	12" HT CONTAINER	3' O.C.	322
				TOTAL QUANTITY=	966

PEM-2

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					Upland Buffer
AREA (S.F.)					10,373
TREES					QUANTITY
JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	FACU	3'-4' HT B.B.	10' O.C.	27
BETULA POPULIFOLIA	GRAY BIRCH	FAC	18" – 24" HT B.B.	10' O.C.	27
PRUNUS SEROTINA	BLACK CHERRY	FACU	24"-36" HT B.B.	10' O.C.	28
				TOTAL QUANTITY=	82
SHRUBS					QUANTITY
RHUS GLABRA	SMOOTH SUMAC		18" – 24" HT B.B.	5' O.C.	95
VIBURNUM LENTAGO	NANNYBERRY		18" – 24" HT B.B.	5' O.C.	95
MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	FAC	18" – 24" HT B.B.	5' O.C.	95
VIBURNUM DENTATUM	ARROWWOOD	FACW	2'-3' HT B.B.	5' O.C.	95
				TOTAL QUANTITY=	380

UPLAND BUFFER

Appendix B

Vegetative Species List

List of Volunteer (V), Seeded (S), or Planted (P) Plant Species Identified wihtin the MDC South Conveyance Tunnel Wetland Z mitigation site - South Meadows, Hartford, CT									
Scientific name	**Common Name**	**Origin**	**Growth form**	**% in Plot 1**	**% in Plot 2**	**% in Plot 3**	**% in Plot 4**	**% in Plot 5**	**Notes**
Ambrosia trifida	Giant Ragweed	V	Forb						
Arctium major	Giant Burdock	V	Forb						
Artemesia vulgaris	**Mugwort**	**V**	**Forb**			**3**	**8**		
Asclepias incarnata	Swamp Milkweed	S	Shrub				<5		
Aster puniceus	Swamp aster	S	Forb				5	<5%	
Betula populifolia	Gray Birch	P	Tree						
Bidens c.f. frondosa	Beggar Tick	V	Forb						
Calystegia sepium	Hedge Bindweed	V	Liana						
Carex stricta	Tussock Sedge	P	Sedge						
Carex lurida	Lurid Sedge	S	Gramminoid	5		5	20	33	
Carex vulpinoidea	Fox Sedge	S	Gramminoid	5					
Carex scoparia	Blunt broom sedge	S	Gramminoid	<3		5		15	
Cassia fasiculata	Partridge Pea	S	Forb						
Catalpa speciosa	Northern Catalpa	V	Tree					3	Seedling
Celastrus orbiculatus	**Oriental Bittersweet**	**V**	**Liana**						
Cirsium arvense	**Canada Thistle**	**V**	**Forb**						
Cirsium vulgare	Bull Thistle	V	Forb						
Daucus carota	Queen Anne's Lace	V	Forb						
Dianthus armeria	Deptford Pink	V	Forb						
Dichantelium clandestinum	Deer-tongue Grass	V	Grass						
Eleocharis palustris	Spike Rush	S	Gramminoid						
Eupatorium maculatum	Joe Pyeweed	S	Forb					<1	
Eupatorium perfoliatum	Boneset	V	Forb						
Humulus japonicus	**Japanese Hops**	**V**	**Liana**						
Impatiens capensis	Jewelweed; Touch-me-not	V	Forb						
Juncus effuses	Soft Rush	S	Gramminoid	15	45		30	20	
Juniperus virginiana	Red Cedar	P	Tree						
Lathyrus latifolius	Everlasting Pea	V	Liana						
Lotus corniculatus	Bird'sfoot Trefoil	V	Forb						
Ludwigia alterniflora	Seedbox	V	Forb					3	
Lythrum salicaria	**Purple Loosestrife**	**V**	**Forb**						
Medicago lupulina	Black Medic	V	Forb					10	
Melilotus alba	Sweet clover	V	Forb						
Melilotus officinalis	Yellow Sweet Clover	V	Forb						
Mimulus ringens	Allegheny Monkeyflower	S	Forb					<1%	
Moerella pensylvanica	Bayberry	P	Shrub						
Monarda fistulosa	Wild Bergamot	S	Forb						
Onothera biennis	Evening Primrose	V	Forb						
Oxalis sp.	Wood Sorrel	V	Forb						
Peltandra virginica	Arrow Arum	V	Forb	<3		<3			
Phalaris arundinacea	**Reed Canary Grass**	**V**	**Grass**						
Phlox sp.	**Phlox**	**V**	**Forb**						
Populus deltoides	Eastern Cottonwood	V	Tree						
Phragmites australis	**Common Reed**	**V**	**Grass**	**5**					**dying from treatment**
Prunus serotina	Black Cherry	P	Tree						
Robinia pseudoacacia	**Black Locust**	**V**	**Tree**						
Rhus glabra	Smooth Sumac	P	Shrub						
Rudbeckia hirsuta	Black-eyed Susan	S	Forb						
Rumex crispus	Curly Dock	V	Forb						
Schoenoplectus sp.	Bulrush	V	Gramminoid						
Scirpus c.f. cyperinus	Woolgrass	V	Forb			40			
Scirpus atrovirens	Green Bullrush	S	Gramminoid	<3		5		20	
Sparganium sp.	Burrweed	V	Forb						
Strophostyles helvola	Trailing Wild Bean	V	Liana						
Swidia ammomum	Silky Dogwood	P	Shrub						
Toxicodendron radicans	Poison Ivy	V	Liana						
Trifolium sp.	Clover	V	Forb		<3				
Typha latifolia	Cattail	V	Forb	3					
	Unidentified Forb No. 1	V	Forb		8		40	33	
Verbascum thapsus	Common Mullein	V	Forb						
Verbena hastata	Blue vervain	S	Forb		15		20		
Viburnum dentatum	Northern Arrowwood	P	Shrub						
Viburnum lentago	Nannyberry	P	Shrub						
Viccia cracca	Bird Vetch	V	Forb		<3		5		
Vitus riparia	Riverbank Grape	V	Liana						

***Plants in Red bold type are included on Connecticut Invasive Plant List**

Appendix C

Photographs

The Metropolitan District South Conveyance and Storage Tunnel Project
USACE Permit No. NAE-2014-261
255 Brainard Road, Hartford, CT
Wetland Z Mitigation Site

Photo Point

Approximate Wetland Z Mitigation Site Boundary

APPENDIX C: PHOTOGRAPHS

Photo Point 1 looking south

Photo Point 2 looking southwest

Photo Point 3 looking west

Photo Point 4 looking west

Photo Point 5 looking northwest

Photo Point 6 looking northwest

September 30, 2019

Mr. Taylor Bell
U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Bell:

Subject: The Metropolitan District South Conveyance and Storage Tunnel Project - Hartford, CT
Wetland Area Z - USACE: NAE-2014-261

Enclosed please find the Year-Two wetland mitigation monitoring report for The Metropolitan District (MDC) South Conveyance and Storage Tunnel Project (USACE: NAE-2014-261). Wetland Area Z performed very well the second year, having already met many of the performance standards. Overall, the mitigation site is trending towards meeting the performance standards that have not already been achieved.

Just after completion of the Year-One monitoring report, there was some disturbance of Wetland Area Z by a third-party entity while maintaining drainage facilities associated with Interstate 91. Actions taken in this area to repair the damage and improve the wetland mitigation site are included in the attached Year-Two monitoring report. Overall, progress in the damaged area is advancing well, with an 80% vegetative cover already established.

Should you have any questions regarding this project, you may contact me directly at (860) 256-4918.

Very truly yours,

Shawn E. Callaghan

Shawn Callaghan
Fitzgerald & Halliday, Inc.

MITIGATION MONITORING REPORT TRANSMITTAL AND SELF-CERTIFICATION

DEPARTMENT OF THE ARMY PERMIT NUMBER: NAE-2014-261
PROJECT TITLE: The Metropolitan District South Conveyance and Storage Tunnel Project

PERMITTEE: The Metropolitan District
MAILING ADDRESS: 555 Main Street, Hartford, CT 06142

TELEPHONE: 860-278-7850

AUTHORIZED AGENT: Susan Negrelli, P.E.

MAILING ADDRESS: 555 Main Street, Hartford, CT 06142

TELEPHONE: 860-278-7850

ATTACHED MITIGATION REPORT
TITLE: The Metropolitan District
2019 Wetland Mitigation Monitoring Report

PREPARERS: Shawn Callaghan, Fitzgerald & Halliday, Inc.

DATE: 9-30-19

CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit **[is]** in full compliance with the terms and conditions of that permit.

CORRECTIVE ACTION: A need for corrective action **[is not]** identified in the attached report.

CONSULTATION: I **[do not]** request consultation with the Corps of Engineers to discuss a corrective strategy or permit modification.

CERTIFIED: _____ 10/7/19
(Signature of permittee) Date

The Metropolitan District

2019 Wetland Mitigation Monitoring Report

Report Date: September 30, 2019

Report Number: 2 of 5 (Year 2, 2019)

1. Project Overview

Project Name:	The Metropolitan District South Conveyance and Storage Tunnel Project
Project Location:	Wetlands adjacent to 255 Brainard Road, Hartford, Connecticut Latitude: 41.73127°N, Longitude: -72.6607°E
Project Owner:	The Metropolitan District (MDC)
Contractor and Consultant:	Kenny-Obayashi (KO) and AECOM/Fitzgerald & Halliday, Inc.
Start and Completion Dates:	September 2016 – December 2020
USACE and DEEP Permit Numbers:	USACE: NAE-2014-261 CT DEEP: WQC-201407768

Project Summary:

The proposed compensatory mitigation plan includes the restoration of 0.58 acres of historically-filled wetlands, the creation of approximately 0.5 acres of new wetlands (restoring a temporarily-impacted state-only wetland to federal wetland standards), and the restoration of 1.05 acres of temporarily-impacted wetlands. See Appendix A for a site location plan. It also includes payment to the In-Lieu Fee Program of approximately $113,000 to compensate for the permanent loss of 0.48 acres of Federal wetlands. This payment will be put towards future compensatory wetland mitigation, as administered by Audubon Connecticut under the In-Lieu Fee Program. The majority of wetland restoration area will consist of Palustrine Forested (PFO) wetlands, followed by Palustrine Emergent (PEM), and finally Palustrine Scrub/Shrub (PSS) wetlands. This corresponds to the wetland types impacted by the proposed project. The focus of this Year 2 report is Wetland Area Z project limits, which is the portion being restored to a PEM wetland. The project area limits are depicted on the site plan provided in Appendix A.

After the second full growing season, the mitigation site was observed to be functioning as a PEM wetland as designed.

2. Requirements

1. The site has the necessary hydrology to support the designed wetland with a minimum of 80 percent of the site meeting desired hydrology levels. Groundwater elevation at the site has fluctuated reflecting seasonal and temporal variations. The groundwater elevation at the time of the most recent measurements (August 21, 2019) was close to the design elevation, therefore no corrective measures are recommended at this time. Additional groundwater observations will be conducted to ensure that levels will support the continued success of the site.

2. The vegetation diversity goals in Wetland Area Z after the second growing season have been met, with 11 species previously planted and 82 species documented in Wetland Area Z. See Appendix B for the list of plant species observed at Wetland Z.
3. The vegetation density in Wetland Area Z after the second growing season is approaching the proposed goals. Although the density goals have not yet been met for this second year (95% areal coverage by native species), the density is trending towards meeting this goal, with current coverage at 80% in Wetland Area Z. The density goal for the emergent areas (80% cover) has been met at 80%. The density goal for scrub-shrub areas (60%) has been exceeded at 70%, including at least 15% cover by woody species. There are no forested areas proposed for Wetland Area Z.
4. The fifth year (Year 5) monitoring report will document if all vegetation within the buffer areas is healthy and thriving. Since this is Year 2, this performance standard cannot be met yet, however after the second growing season the buffer zone vegetation exhibits healthy, robust growth.
5. Evidence of natural colonization is present, however after the second year, the required 100 volunteer native trees and/or shrubs per acre has not been met. Since this wetland is planned as a mostly PEM wetland with some PSS areas, the volunteer native tree/shrub requirement is not applicable to Wetland Area Z. The 0.59-acre mitigation site has approximately 58 volunteer plant species, including five trees and no shrubs. Three of these five volunteer tree species are native: Silver maple (*Acer saccharinum*), Northern catalpa (*Catalpa speciosa*), and Eastern Cottonwood (*Populus deltoides*). The site was observed to have approximately 8.5 volunteer native trees/shrubs per acre, which is lower than the 59 native trees/shrubs per acre site requirement. Much of the mitigation site is comprised of emergent areas, and the species that have colonized the site are mostly herbaceous, with some shrubs, and fewer trees. This species composition aligns with the planned wetland types (PEM and PSS), as a limited number of trees were planted in the buffer zone, and none were installed in the emergent areas. The volunteer native tree/shrub requirement is not applicable to this planned PEM wetland, and natural colonization of herbaceous plants is occurring.
6. Invasive plant species are being actively treated and managed at the site, including: Commmon Mugwort (*Artemesia vulgaris*), Common Reed (*Phragmites australis*), Purple Loosestrife (*Lythrum salicaria*), Japanese Hops (*Humulus japonicus*), and Oriental Bittersweet (*Celastrus orbiculatus*). In addition to the invasive species, Broadleaf Cattail (*Typha latifolia*) is also being controlled. Details of the invasive species treatment are included below (See Section 3.0 – Monitoring Information).
7. The third year (Year 3) monitoring report will document if evidence of redoximorphic features are present in the soils at the site. Since this is Year 2, this performance standard is not yet applicable, however redoximorphic features are already present in on-site soils below the soil that was added for this project as described below.
8. Observations in Year 2 revealed that slopes, soils, substrates, and constructed features are relatively stable.
9. The payment of $113,000 was received by Audubon Connecticut on 8/25/15 for the Connecticut In Lieu Fee program to satisfy mitigation requirements for that program.
10. Mitigation for the temporary and permanent impacts have been conducted according to the submitted mitigation document titled *The Metropolitan District South Hartford Conveyance and*

Storage Tunnel – US Army Corps of Engineers Mitigation Plan Checklist (mitigation checklist). All mitigation activities have not been completed to date, as portions of the wetland mitigation work is located within the active construction site, and per the approved mitigation checklist, cannot be started until the project construction is complete and an access road supporting the construction is removed. The construction of Wetland Area Z has been completed and maintenance and observation of the wetland has begun. Per the approved mitigation checklist, the reconstruction work on Wetland Areas X and Y will commence once construction of the tunnel, pump station, and ancillary construction (requiring the access road and work zone) is complete.

As expected, since this is Year 2 of monitoring at the mitigation site, not all performance standards have been met; however many of them have, as described above. Overall, the mitigation site is trending towards meeting the performance standards.

3. Monitoring Information

- *Address achievement of performance standards and/or measures to attain the standards.*
  The achievement of performance standards/measures is described in section 2 above. The primary goal of restoring and enhancing Wetland Area Z is underway and progressing well.

- *Describe the monitoring inspections, and provide their dates, that occurred since the last report.*
  Shawn Callaghan of Fitzgerald & Halliday, Inc. (FHI) inspected the site on numerous occasions throughout the second year. Monitoring photographs from August 21, 2019 documenting the site inspection for Year 2 are included in Appendix C.

- *Soils data, commensurate with the requirements of the soils portion of the most recent Corps of Engineers Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Manual, should be collected after construction and every alternate year throughout the monitoring period. If IRIS tubes, monitoring wells, or gauges were installed as part of the project, this hydrology data should be submitted annually.*
  There were no IRIS tubes, monitoring wells, or gauges installed as part of this wetland mitigation project, therefore annual hydrologic data collected via these means is not available. The soil sampled at the site after Year 2 revealed the following profile:
  - 0 – 10" – Fine sandy loam, 10 YR 2/2
  - 10 – 18" – Silt loam, Matrix: 10 YR 4/1, Concentrations: 10 YR 4/3 at 40%
  - 18" + – Fine sand, Matrix: 2.5 Y 3/1, Concentrations: 2.5 Y 4/4 at 30%
    This soil profile meets the A11: Depleted Below Dark Surface Indicator for Identifying Hydric Soils in New England Version 4 (NEHSTC, 2017).
- *Concisely describe remedial actions done during the monitoring year to meet the performance standards – actions such as removing debris, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.*

During Year 2, there were numerous activities conducted to help Wetland Area Z meet performance standards and thrive. In late August 2018, a third party entity, the Connecticut Department of Transportation (CTDOT), caused disturbance within Wetland Z as part of drainage outfall maintenance work along Interstate 91 (I-91). The heavy equipment tracks indicate that material from the outfalls was placed into the mitigation site and compacted to build an access road through the western portion of Wetland Z. The northern portion of the mitigation site, mostly within the upland buffer, also had fill material placed there and compacted by the equipment.

On May 7th, 8th, and 9th of 2019, contractors under the direction of CTDOT removed the fill materials from the mitigation site, and applied seed for stabilization of the impacted areas. An excavator with a 75-foot boom was utilized by the CTDOT contractor for the fill material removal activities from the western side of the drainage channel in order to avoid access through the mitigation site and minimize impacts from the repair work. Work in the northern portion of the site necessitated some access into the mitigation site, but the tracked excavator was limited to the upland buffer area and did not cause additional damage to the wetland mitigation site. Photographs documenting the repair work at the mitigation site are attached in Appendix C.

The excavator removed between approximately 4 and 12 inches of soil from the surface of the areas where fill material was previously deposited. The depth of fill material varied throughout the damaged area, so a CTDOT employee directed the excavator accordingly to chase the fill material to its full depth for removal. Since the fill material was a gray color, and the original organic wetland soil was a dark brown material, CTDOT could readily determine when the material was fully removed. The fill material removed from the mitigation site was removed from project area limits and deposited to the west of the drainage channel within state-owned (CTDOT Right of Way) property. Once the fill materials were removed, the excavator bucket was then used to re-grade the remaining organic soil in the damaged areas. The remaining soil was then hand-raked in some locations, especially in the northern portion of the site, to further smooth the material prior to seeding. Approximately 11 pounds of two seed mixes were then hand-sown in the disturbed areas. The seed mixes that were applied, including the species of plants in each seed mix, are provided below in Appendix D. Some additional coarse woody debris (section of tree trunks) was also added to the impacted areas in the southern portion of the site. No herbaceous plugs or woody shrubs were planted as part of these initial repair activities. On May 9, 2019, straw was placed on the seeded areas to hold in moisture and reduce eating of the seed by wildlife or removal of the seed by rain. A vegetative cover in the disturbed area of Wetland Z has been established, with approximately 80% coverage in this area.

Additional work performed in Year 2 included invasive plant species treatment with herbicide in Wetland Areas Z, X, and Y. Invasive plant species have been managed at the site since June of 2015, before construction of Wetland Area Z began. The dates of herbicide applications in 2019 included the following: May 31st, August 18th, and September 13th. These treatments included the use of Imazapyr and Glyphosate amended with adjuvants, surfactant, and a tackifier in backpack sprayers. The main target of the herbicide treatments included *Phragmites*, Purple Loosestrife, Oriental Bittersweet, Japanese Hops, and Common Mugwort. Invasive plant species

were treated in Wetland Area Z, and additionally in Wetland Areas X and Y, as well as throughout the remainder of the site where these species were observed.

- *Report the status of all erosion control measures on the restoration/enhancement site. Are they in place and functioning? If temporary measures are no longer needed have they been removed?*
  Erosion control measures were observed to be in place and functioning properly. No erosion issues were documented at Wetland Area Z.

- *What fish and wildlife use the site and what do they use it for (nesting, feeding, shelter, etc.)?*
  The wildlife observed utilizing the site were Killdeer (*Charadrius vociferous*) for nesting purposes and Wild Turkey (*Meleagris gallopavo*) for food/cover. Four Wild Turkey chicks were observed with their mother this year, so nesting and/or reproduction may also be occurring on-site.

  White-tailed deer (*Odocoileus virginianus*) tracks were observed, and it is assumed that some on-site browsing of plants was done by this species, however evidence of extensive deer browse was not noted. Tracks of the Northern Raccoon (*Procyon lotor*) were also observed.

  Birds observed using the site for food and/or cover included: Osprey (*Pandion haliaetus*), Red-winged Blackbird (*Agelaius phoeniceus*), Baltimore Oriole (*Icterus galbula*), and Song Sparrow (*Melospiza melodia*). An Osprey nest was observed in the electrical tower located in the buffer zone of Wetland Z. Butterflies observed using the site for food and shelter included the following: Monarch (*Danaus plexippus*), Cabbage White (*Pieris rapae*), and Common Buckeye (*Junonia coenia*). Dragonflies using the site for food and shelter included: Common Whitetail (*Plathemis lydia*) and Twelve-spotted Skimmer (*Libellula pulchella*).

- *By species planted, describe the general health and vigor of the surviving plants, the prognosis for their future survival, and a diagnosis of the cause(s) of morbidity or mortality.*
  Most of the plants installed in May 2017 at Wetland Area Z are generally healthy and appear to be performing well after two growing seasons. The newer seeded areas are also exhibiting a high growth rate, and the recently disturbed areas have achieved approximately 80% vegetative coverage.

4. Summary and Conclusions

Include a general statement describing the conditions of the compensatory mitigation project.

After Year 2, Wetland Area Z has achieved many of the performance standards outlined for the project and is trending towards the remaining ones not yet achieved. Overall, Wetland Area Z has good vegetation density, vigor, and coverage and is meeting project expectations after the second growing season. Wetland mitigation work at Wetland Areas X and Y will not commence in earnest until overall project construction has been completed, however herbicide treatment has begun and will continue to manage invasive plant species.

If performance standards are not being met, a brief discussion of the difficulties and potential remedial actions proposed by the permittee, including a timetable, must be provided.

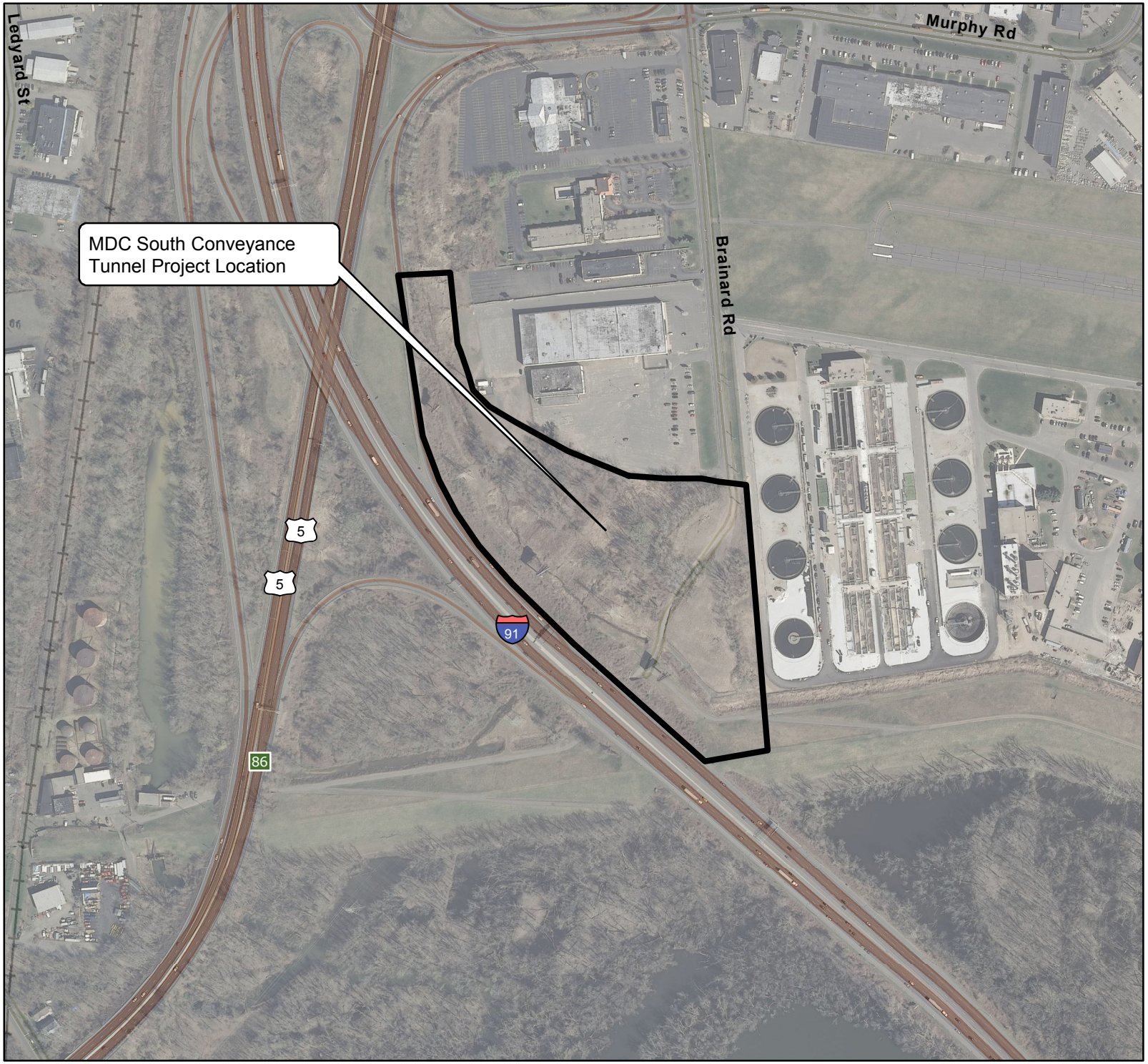
Not applicable.

5. Appendices

- Appendix A – Site Location Map
- Appendix B – A vegetative species list of each plant community type
- Appendix C – Representative photos of each mitigation site
- Appendix D – Seed mixes for the damage repair

Appendix A

Site Location Plan



MDC South Conveyance and Storage Tunnel Project

Figure 1
Site Location

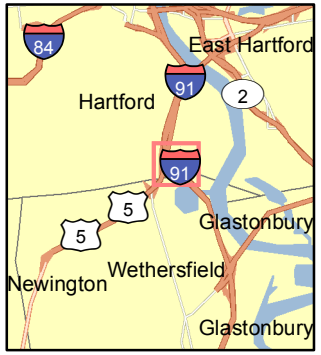
Project Location

USGS Quadrangle
Hartford South

N

0 250 500

Feet



Original in Color - FHI - 10/8/2014

Appendix B

Vegetative Species List

Year 2

List of Volunteer (V), Seeded (S), or Planted (P) Plant Species Identified within the MDC South Conveyance Tunnel Wetland Z mitigation site - Hartford, CT									
Scientific name	**Common Name**	**Origin**	**Growth form**	**% in Plot 1**	**% in Plot 2**	**% in Plot 3**	**% in Plot 4**	**% in Plot 5**	**Notes**
Acer saccharinum	Silver Maple	V	Tree					5	seedling
Ambrosia trifida	Giant Ragweed	V	Forb						
Ampelopsis brevipedunculata	**Porceleinberry**	**V**	**Liana**						
Arctium major	Giant Burdock	V	Forb						
Artemesia vulgaris	**Mugwort**	**V**	**Forb**				**20**		
Asclepias incarnata	Swamp Milkweed	S	Shrub						
Aster puniceus	Swamp aster	S	Forb					<3	
Betula populifolia	Gray Birch	P	Tree						
Bidens frondosa	Beggars Tick	V	Forb	<3					
Calystegia sepium	Hedge Bindweed	V	Liana						
Carex stricta	Tussock Sedge	P	Sedge						
Carex lurida	Lurid Sedge	S	Gramminoid		38	10	23	50	
Carex vulpinoidea	Fox Sedge	S	Gramminoid						
Carex scoparia	Blunt broom sedge	S	Gramminoid					<1	
Chamaecrista fasiculata	Partridge Pea	S	Forb						
Catalpa speciosa	Northern Catalpa	V	Tree				<3	3	seedling
Celastrus orbiculatus	**Oriental Bittersweet**	**V**	**Liana**						
Chenopodium alba	Goosefoot	V	Forb						
Cirsium arvense	**Canada Thistle**	**V**	**Forb**						
Cirsium vulgare	Bull Thistle	V	Forb						
Cyperus strigosus	False Nutsedge	V	Forb	10					
Daucus carota	Queen Anne's Lace	V	Forb						
Dianthus armeria	Deptford Pink	V	Forb						
Dichanthelium clandestinum	Deer-tongue Grass	V	Grass						
Echinichloa crusgalli	Barnyard Grass	V	Grass						
Eleocharis palustris	Spike Rush	S	Gramminoid	3					
Erechtites hieracifolia	Burnweed	V	Forb						
Eupatorium maculatum	Joe Pyeweed	S	Forb						
Eupatorium perfoliatum	Boneset	V	Forb						
Euthamia graminifolia	Grass-leaved Goldenrod	V	Forb						
Humulus japonicus	**Japanese Hops**	**V**	**Liana**						
Impatiens capensis	Jewelweed; Touch-me-not	V	Forb				10		
Juncus effusus	Soft Rush	S	Gramminoid		38		10	20	
Juniperus virginiana	Red Cedar	P	Tree						
Lathyrus latifolius	Everlasting Pea	V	Liana						
Lotus corniculatus	Bird'sfoot Trefoil	V	Forb						
Ludwigia alterniflora	Seedbox	V	Forb					3	
Lythrum salicaria	**Purple Loosestrife**	**V**	**Forb**						
Medicago lupulina	Black Medic	V	Forb						
Melilotus alba	Sweet clover	V	Forb						
Melilotus officinalis	Yellow Sweet Clover	V	Forb						
Mimulus ringens	Allegheny Monkeyflower	S	Forb					5	
Morella pensylvanica	Bayberry	P	Shrub						
Morus alba	White Mulberry	V	Tree						
Monarda fistulosa	Wild Bergamot	S	Forb						
Oenothera biennis	Evening Primrose	V	Forb						
Oxalis europea	Wood Sorrel	V	Forb						
Peltandra virginica	Arrow Arum	V	Forb	<3		<1			
Phalaris arundinacea	**Reed Canary Grass**	**V**	**Grass**						
Phlox sp.	Phlox	V	Forb						
Phragmites australis	**Common Reed**	**V**	**Grass**						
Phytolacca americana	Pokeweed	V	Forb						
Persicaria maculosa	Lady's Thumb	V	Forb						
Persicaria c.f. punctatum	Water Smartweed	V	Forb						
Populus deltoides	Eastern Cottonwood	V	Tree						
Potentilla sp.	unidentified cinquefoil	V	Liana						
Prunus serotina	Black Cherry	P	Tree						
Robinia pseudoacacia	**Black Locust**	**V**	**Tree**						**Cut**
Rhus glabra	Smooth Sumac	P	Shrub						
Rudbeckia hirsuta	Black-eyed Susan	S	Forb						
Rumex crispus	Curly Dock	V	Forb						
Salix discolor	Pussy Willow	P	Shrub						
Setaria sp.	Foxtail	V	Grass						
Scirpus cyperinus	Woolgrass	V	Forb			33			
Scirpus atrovirens	Green Bullrush	S	Gramminoid			<3		3	
Solanum dulcimara	Common Nightshade	V	Liana						
Solidago c.f. gigantea	Late Goldenrod	V	Forb						
Solidago c.f. altissima	Tall Goldenrod	V	Forb					<1	
Sparganium sp.	Burrweed	V	Forb	<1					
Strophostyles helvola	Trailing Wild Bean	V	Liana						
Swidia ammomum	Silky Dogwood	P	Shrub						
Toxicodendron radicans	Poison Ivy	V	Liana						
Trifolium sp.	Clover	V	Forb						
Typha latifolia	Cattail	V	Forb	3					
	Unidentified Forb No. 1	V	Forb						
Verbascum thapsus	Common Mullein	V	Forb						
Verbena hastata	Blue vervain	S	Forb		40		<3	<1	
Verbena urticifolia	Whie Vervain	V	Forb						
Viburnum dentatum	Northern Arrowwood	P	Shrub						
Viburnum lentago	Nannyberry	P	Shrub						
Viccia cracca	Bird Vetch	V	Forb						
Vitus riparia	Riverbank Grape	V	Liana		3				

Plants in green cells were not previously observed

***Plants in Red bold type are included on Connecticut Invasive Plant List**

Appendix C

Photographs

The Metropolitan District South Conveyance and Storage Tunnel Project
USACE Permit No. NAE-2014-261
255 Brainard Road, Hartford, CT
Wetland Z Mitigation Site

Photo Point

Approximate Wetland Z Mitigation Site Boundary

MONITORING PHOTOGRAPHS

Photo Point 1 looking south

Photo Point 2 looking southwest

Photo Point 3 looking west

Photo Point 4 looking west

Photo Point 5 looking northwest


Photo Point 6 looking northwest

DAMAGE REPAIR PHOTOGRAPHS

Excavator removing fill material in the northern/central portion of the site looking southwest

Southern portion of the site after fill material removal and seeding looking north

Vegetation growing in the damaged area looking north

Vegetation growing in the damaged area looking north

Vegetation growing in the damaged area looking southwest

Appendix D

Seed Mixes

S0015

ERNST *Seeds*
8884 Mercer Pike, Meadville, PA 16335
(800) 873-3321 or (814) 336-2404

New England Wet Mix

Item	*Botanical Name*	Purity	Germ	Hard	Dorm	Production Origin	Genetic Origin
Fox Sedge, PA Ecotype	*Carex vulpinoidea, PA Ecotype*	33.90%	12.5%		78.3%	PA	
Lurid (Shallow) Sedge, PA Ecotype	*Carex lurida, PA Ecotype*	9.61%	50.6%		35.7%	PA	
Hop Sedge, PA Ecotype	*Carex lupulina, PA Ecotype*	8.97%	1.0%		80.0%	PA	
Fowl Bluegrass	*Poa palustris*	7.61%	68.0%		17.0%	CN	
Blunt Broom Sedge, PA Ecotype	*Carex scoparia, PA Ecotype*	6.79%	61.0%		20.0%	PA	
Beggartick, PA Ecotype	*Bidens frondosa, PA Ecotype*	4.55%	5.0%		90.0%	PA	
Green Bulrush, WI Ecotype	*Scirpus atrovirens, WI Ecotype*	3.98%	95.0%			WI	
Fringed (Nodding) Sedge, PA Ecotype	*Carex crinita, PA Ecotype*	2.95%	25.0%		23.0%	PA	
Soft Rush	*Juncus effusus*	2.94%	1.0%		62.0%	PA	
Swamp Milkweed, PA Ecotype	*Asclepias incarnata, PA Ecotyp*	2.73%	20.0%		68.0%	PA	
New York Ironweed, PA Ecotype	*Vernonia noveboracensis, PA Ec*	2.51%	14.0%		84.0%	PA	
Blueflag, PA Ecotype	*Iris versicolor, PA Ecotype*	1.99%	1.0%		94.0%	PA	
Calico Aster	*Aster lateriflorus*	1.73%	87.0%			PA	
American Mannagrass, PA Ecotype	*Glyceria grandis, PA Ecotype*	0.99%	7.0%		5.0%	PA	
Square Stemmed Monkeyflower, PA Ecotype	*Mimulus ringens, PA Ecotype*	0.89%	1.0%		96.0%	PA	
Spotted Joe Pye Weed, PA Ecotype	*Eupatorium maculatum, PA Ecoty*	0.87%	14.0%		71.0%	PA	

Other Crop: 0.33%
Inert Matter: 6.63%
Weed Seed: 0.03%

Net Weight: 0.50 LB
Lot Number: NEWE00214 - 180403
Date Tested: April 2018 AMS 1039

S0015
1.25
ratio

ERNST Seeds
8884 Mercer Pike, Meadville, PA 16335
(800) 873-3321 or (814) 336-2404

OBL Wetland Mix

Item	Botanical Name	Purity	Germ	Hard	Dorm	Production Origin	Genetic Origin
Fox Sedge, PA Ecotype	*Carex vulpinoidea, PA Ecotype*	33.69%	19.0%		59.0%	PA	
Lurid (Shallow) Sedge, PA Ecotype	*Carex lurida, PA Ecotype*	16.84%	31.0%		57.0%	PA	
Hop Sedge, PA Ecotype	*Carex lupulina, PA Ecotype*	14.19%	4.0%		93.0%	PA	
Blunt Broom Sedge, PA Ecotype	*Carex scoparia, PA Ecotype*	7.85%	43.0%		30.0%	PA	
Giant Bur Reed, PA Ecotype	*Sparganium eurycarpum, PA Ecot*	4.49%	1.0%		94.0%	PA	
Blue Vervain, PA Ecotype	*Verbena hastata, PA Ecotype*	3.98%	1.0%		96.0%	PA	
Soft Rush	*Juncus effusus*	2.85%	4.0%		91.0%	PA	
Eastern Bur Reed	*Sparganium americanum*	2.48%	1.0%		77.0%	PA	
Flat Topped White Aster, PA Ecotype	*Aster umbellatus, PA Ecotype*	1.00%	19.0%		58.0%	PA	
Blueflag, PA Ecotype	*Iris versicolor, PA Ecotype*	1.00%	1.0%		94.0%	PA	
Sensitive Fern	*Onoclea sensibilis*	0.99%	85.0%			PA	
Purplestem Aster, PA Ecotype	*Aster puniceus, PA Ecotype*	0.98%	87.0%			PA	
Swamp Milkweed, PA Ecotype	*Asclepias incarnata, PA Ecotyp*	0.97%	28.0%		64.0%	PA	
Woolgrass, PA Ecotype	*Scirpus cyperinus, PA Ecotype*	0.95%	1.0%		60.0%	PA	
Boneset, PA Ecotype	*Eupatorium perfoliatum, PA Eco*	0.87%	14.0%		72.0%	PA	
Softstem Bulrush, PA Ecotype	*Scirpus validus, PA Ecotype*	0.50%	1.0%		82.0%	PA	
Roughleaf Goldenrod, PA Ecotype	*Solidago patula, PA Ecotype*	0.49%	20.0%		59.0%	PA	
Mud Plantain (Water Plantain), PA Ecotype	*Alisma subcordatum, PA Ecotype*	0.46%	1.0%		90.0%	PA	
Seedbox, PA Ecotype	*Ludvigia alternifolia, PA Ecot*	0.46%	8.0%		87.0%	PA	
Spotted Joe Pye Weed, PA Ecotype	*Eupatorium maculatum, PA Ecoty*	0.44%	14.0%		71.0%	PA	
Squere Stemmed Monkeyflower, PA Ecotype	*Mimulus ringens, PA Ecotype*	0.44%	1.0%		96.0%	PA	
Turtlehead, PA Ecotype	*Chelone glabra, PA Ecotype*	0.12%	3.0%		80.0%	PA	

Other Crop: 0.09%
Inert Matter: 3.82%
Weed Seed: 0.05%

Net Weight: 0.50 LB
Lot Number: ERNMX-131-180213
Date Tested: February 2018

Appendix 2

USACE and City of Hartford

Approved Design Changes

April 17, 2019

Mr. Taylor Bell
U.S. Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Bell:

Subject: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT
Wetland Areas X and Y Updates - USACE: NAE-2014-261

Enclosed please find documents pertaining to proposed minor updates to the approved wetland mitigation design for The Metropolitan District (MDC) South Conveyance and Storage Tunnel Project (USACE: NAE-2014-261).

The attached memo details additional information that was obtained since the permit approval, which forms the basis for the proposed updates. These are proposed minor updates to grading and plantings, however, the area of wetland mitigation will remain unchanged.

Should you have any questions regarding this project, you may contact me directly at (860) 256-4918.

Very truly yours,

Shawn Callaghan
Fitzgerald & Halliday, Inc.

Cc: Andrew Perham, MDC
Brian Canterbury, AECOM
Sandy Fry, City of Hartford
FHI file: P1130.12

Enclosures

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

416 Asylum Street
Hartford, CT 06103
t (860) 247-7200
www.fhiplan.com

MEMORANDUM

To:	Taylor Bell, USACE	Project:	MDC South Hartford Conveyance and Storage Tunnel (USACE: NAE-2014-261)
From:	Shawn Callaghan, FHI	Date:	4/17/19
Subject:	Proposed updates to Wetland Areas X and Y mitigation design		

Introduction

The purpose of this memorandum is to summarize the evaluation of new information obtained after permit approvals and the recommended wetland mitigation design updates based upon that evaluation. In 2016 and 2017, the Metropolitan District (MDC) constructed Wetland Area Z, the first of two wetland mitigation areas required as part of the South Hartford Conveyance and Storage Tunnel project (SHCST) (see Figure 1 – Project Location). During routine post-construction monitoring, test holes were dug at Wetland Area Z to measure the depth to groundwater while the mitigation construction activities were being conducted in 2016 and 2017. Observations revealed that the depth to groundwater was greater than anticipated, based on the conditions recorded at the site prior to design. Since the groundwater depths on the site appear to fluctuate, this was viewed as an opportunity to reevaluate the Wetland X and Y mitigation design to be sure that grading, elevations, and plant species selections for Wetland Sites X and Y are appropriate and will result in a successful wetland mitigation site. It should be noted that Wetland Z is thriving, and plants have become well established. Hydrology within Wetland Areas X and Y (which together comprise one wetland mitigation site) was observed to determine if design adjustments need to be made to ensure the future success of the sites (see Figure 2 for Proposed Mitigation areas). The summary of results from the investigation and evaluation are included below. Based on the evaluation, updates to the Wetland Areas X and Y mitigation design are recommended including lowering the current elevations by 1.5 feet and adding additional plant species to the planting plan.

Summary of Investigation

Fitzgerald & Halliday, Inc. (FHI) conducted research into rainfall at the mitigation site by reviewing data from the Connecticut Department of Environmental Protection (CT DEEP), Federal Emergency Management Agency (FEMA), and United States Geological Survey (USGS). Overall, 2016, 2017, and 2018 were wetter years, while 2013, 2014, and 2015 were drier years, based upon recorded rainfall amounts. These dry and wet trends were considered when comparing and analyzing recorded water data at the site.

In order to understand if water levels at the site are affected by upstream or downstream controls, FHI interviewed staff at the City to obtain information about how water is controlled at the site. The City of Hartford (the City) controls the flood gates and pump station associated with the dike system around the MDC property and the surrounding area. See Figure 3 – Water Controls for details. On December 6, 2018, FHI spoke with Frank Dellaripa, City Engineer and Assistant Director to the Department of Public Works (DPW) about controls both upstream and downstream of the MDC mitigation site. Mr. Dellaripa explained that all surface water flows to the South Meadows pump station, located approximately 1,500 feet southwest of Wetland Areas X and Y. Water flows southerly past Wetland Area Z, crosses under I-91 through a culvert, and continues westerly to a storage pond associated with the South Meadows pump station on the west side of I-91. The South Meadows pump station is owned by the City and water levels are manually controlled by employees on-site, not by automation controlled off-site. Normally, water from inside the dike is discharged by gravity during normal conditions. When the water level of the Connecticut River reaches elevation five (5), pumps are turned on to pump water out of the storage pond on the north side of the dike to the river side. He stated that there is no set schedule for water draw downs, as it is based solely on river elevation and storm frequency. Mr. Dellaripa suggested FHI speak with another person from the City Engineering Department, Nicholas Casparino, who is familiar with how water is controlled at the site.

On December 20, 2018, FHI spoke with Nicholas Casparino, Civil Engineer with the City, about how water is controlled in the channels at the MDC wetland mitigation site. Mr. Casparino explained that ownership of the drainage system in and around the MDC mitigation site is divided at the box culvert located at I-91, with the City responsible for the system south and east of the box culvert and the State of Connecticut responsible north of the culvert. The storage pond at the South Meadows pump station is designed for the 10-year storm and has 13.5 acre/foot storage capacity. The actions at this pump station are based on the Connecticut River elevation and the amount of rain that is received. When the water in the Connecticut River reaches elevation 5, staff at the pump station close the river gate, and pumping operations begin. The pump station has a capacity of approximately 700 cubic feet per second. Mr. Casparino stated there are no controls on the Connecticut River south of Hartford, as these are all tidal waters. Mr. Casparino stated, that to his knowledge, this gate on the river is the only control structure that would influence water at the site.

Research revealed some hydrologic data that was recorded at the MDC site itself that was not previously available. Site investigations prior to construction associated with the SHCST launch shaft site provided information about hydrologic conditions at the site back to 2013. AECOM provided data generated on behalf of the MDC including: monitoring well installation logs, soil logs, and groundwater measurements recorded in the area of the launch shaft, which is located just east of Wetland Areas X and Y. A summary of groundwater level measurements in observation wells adjacent to the Wetland X and Y area is included in Table 1 (attached). The results have also been broken out to show averages of all groundwater levels, and averages for groundwater only within the growing season. For the purposes of this investigation, it was assumed the growing season is from mid-April to the end of September. Figure 4, a map showing the location of these observation wells is also attached for reference. Review of the observation well water levels

adjacent to the Wetland X and Y area revealed that even with rainfall fluctuations from year-to-year, the areas that were delineated as federally-jurisdictional wetlands had sufficient hydrology to support wetland functions and values.

The assessment of groundwater elevations focused primarily on nine long-term groundwater wells located directly to the east of the proposed Wetland Areas X and Y mitigation site. No groundwater well was located directly within the mitigation site, however, the wells described for this evaluation are within approximately 210 feet of the mitigation site. See Figure 4 for details. Generally, data was obtained every week for a period of just over one year (November 2013 to December 2014), however, data was collected more sporadically prior to and after this time period for some wells. Well PS-5 was destroyed and Well PS-5A was installed in its place in August 2018. PS-5A was installed approximately 180 feet southeast of Well PS-5. Based on the evaluation of these nine wells, average groundwater elevations ranged from 2.3 ft to 7.4 ft for all data. Average elevations during the growing season were similar, with a range of 2.54 ft. to 8.05 ft. When focusing in on the wells closest to the proposed mitigation site (Wells PS-5 and PS-22), groundwater elevations averaged 5.09 ft for Well PS-5 and 2.60 ft for Well PS-22. Well PS-22 was consistently the lowest elevation of all groundwater wells on the site, with all others ranged closer and higher than Well PS-5. Based on this assessment, we feel there is enough water at the site to support a wetland system, however, by dropping the overall elevation of the proposed wetland, the wetland will be in more of a "sweet spot" of hydrology which will allow it to survive both dryer and wetter years well.

FHI installed three observation wells in 2018 to observe the water levels at the site under current conditions. The location of these wells is shown in Figure 5 below. These three wells were installed just to the west of the temporary access road installed for the SHCST project construction. Water levels recorded at these three wells ranged from one inch to 11.5 inches from the ground surface. Therefore, hydrology is present in this area to support the success of Wetlands X and Y. It should be noted that 2018 was a particularly wet year and the area of the three observation wells may be receiving additional stormwater due to the additional impervious surfaces created by the construction staging areas (particularly the temporary access road). These additional hydrologic inputs were considered when assessing these water levels.

There is a state-only jurisdictional wetland area located adjacent and to the west of the Wetland X and Y area, then further to the west are more federal and state wetlands. There is likely a hydraulic groundwater connection between all these areas. See Figure 6 below for the pre-construction federally jurisdictional wetland area to the west that was used as a reference wetland for planning the elevations and grading for Wetland Areas X and Y. This control wetland has sufficient hydrology to qualify as a federal wetland, and often exhibits standing water.

Conclusion

Based on the water level measurements in the observation wells and the research conducted, the current Wetland X and Y mitigation design would likely have high plant survival rates as it is currently permitted and designed. However, due to the previous construction experience at Wetland Z and the fluctuations of groundwater levels observed in that wetland, we feel if the design elevations in Wetlands X and Y are lowered there would be greater assurance that the site will be successful. Lowering the elevations in Wetlands X and Y would provide some added assurance that this wetland area will have enough hydrology to become established and become a successful, self-sustaining wetland resource. During wet years, ponding is not anticipated to be sustained or permanent, but more of a temporary condition. During dry years, the slightly lower design elevation will help to ensure the wetland plants have the necessary hydrology to survive. See Figure 7 below for the currently permitted grading plan that was adjusted based on this memorandum.

Additionally, selecting plants that are a bit hardier, have a broad diversity in wetland indicator classifications, and will thrive in a wider range of hydrologic conditions will give Wetlands X and Y a greater assurance of success. Some additional plant species were added to the planting plan as indicated below.

Recommendations

We recommend lowering the current elevations at Wetlands X and Y by 1.5 feet to ensure this area has sufficient hydrology for wetland establishment and success. The highest elevation in the current grading plan would be lowered from 8 ft. to 6.5 ft., while the lowest current elevation would be adjusted from 6 ft. to 4.5 ft. Lowering the elevations any more than 1.5 feet would likely cause too much ponding at the site, which is not the intention of the design, nor what was permitted with the City and USACE. The average groundwater elevation recorded during the growing season is 5.45 ft. Therefore, during much of the growing season there would be approximately one foot of water in the bottom of the mitigation area (elevation 4.5 feet). This water level would fluctuate throughout the growing season, and saturation would be expected above 4.5 feet.

The mitigation site would be re-graded to provide sufficient hydrology, while minimizing deep ponding, to ensure a self-sustaining wetland into the future, and to accommodate a wide variety of climate variability (e.g., wet and dry seasons). Regrading of the site has been undertaken so that there is no loss of mitigation site acreage, as previously permitted. See Figure 8 below for the updated grading plan.

We also recommend adding several additional plant species to the plant list to increase the chances of plant survival and success, and to further increase vegetation diversity. 55 additional plants would be planted, with four additional shrub species added to the planting plan to provide more diversity and a higher likelihood of survival and ultimate aerial coverage. The four additional plant species include: buttonbush (*Cephalanthus Occidentalis),* speckled alder (*Alnus incana*),

gray dogwood (*Cornus racemosa*), and black chokeberry (*Aronia melanocarpa*). The installation of the plantings will be overseen by a wetland scientist to be sure the correct species are planted in the appropriate elevation zone. For example, some of the species that can tolerate drier conditions (wetland indicator facultative) should be located in the PFO-2 zones, while the species that grow best in wetter conditions (wetland indicator obligate) should be planted at lower elevations where they will receive more water. See Figures 9 and 10 below for the currently permitted and updated planting plans, respectively.

South Hartford Conveyance and Storage Tunnel

Figure 1
Project Location

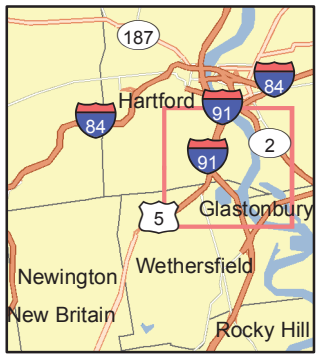
Project Location

1:24,000

USGS Quadrangle
Hartford South

N

0 1,000 2,000
Feet



Original in Color - FHI - 10/8/2014

ESTIMATED LIMIT OF DISTURBANCE AND TEMPORARY IMPACT AREA

TUNNEL SHAFT (TYP.)

PERMANENT LIMIT OF DISTURBANCE AND IMPACT AREA

Note: Mitigation area is unchanged from original permitted Area

D	PERMANENT FEDERAL WETLAND IMPACT AREA (11,150 SF)
Y	EXISTING STATE ONLY WETLAND RESTORED AND IMPROVED TO FEDERAL QUALITY WETLAND AFTER CONSTRUCTION (21,961 SF)
X	EXISTING FEDERAL WETLAND RESTORED TO FEDERAL QUALITY WETLAND AFTER CONSTRUCTION (45,794 SF)
Z	EXISTING UPLAND AREA CONSTRUCTED TO FEDERAL QUALITY WETLAND BEFORE CONSTRUCTION (21,457 SF)
A	AREA WAS HISTORICALLY UPLAND FOREST. WETLAND WAS RECENTLY CREATED WITH IMPORTED POORLY DRAINING DREDGE MATERIAL. WETLAND WITH MINIMAL FUNCTIONS AND VALUES. (9,590 SF)

N

1" = 60'
30 0 60

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

MDC

The Metropolitan District

555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME:
DESIGNED BY:
DRAWN BY:
CHK'D BY:
X-CHK'D BY:
APPROVED BY J. SULLIVAN
DATE: ____ 2014

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800

in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 2: Proposed Mitigation

PLAN NUMBER

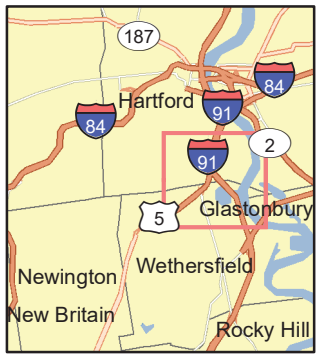
South Hartford Conveyance and Storage Tunnel

Figure 3
Water Controls

USGS Quadrangle
Hartford South

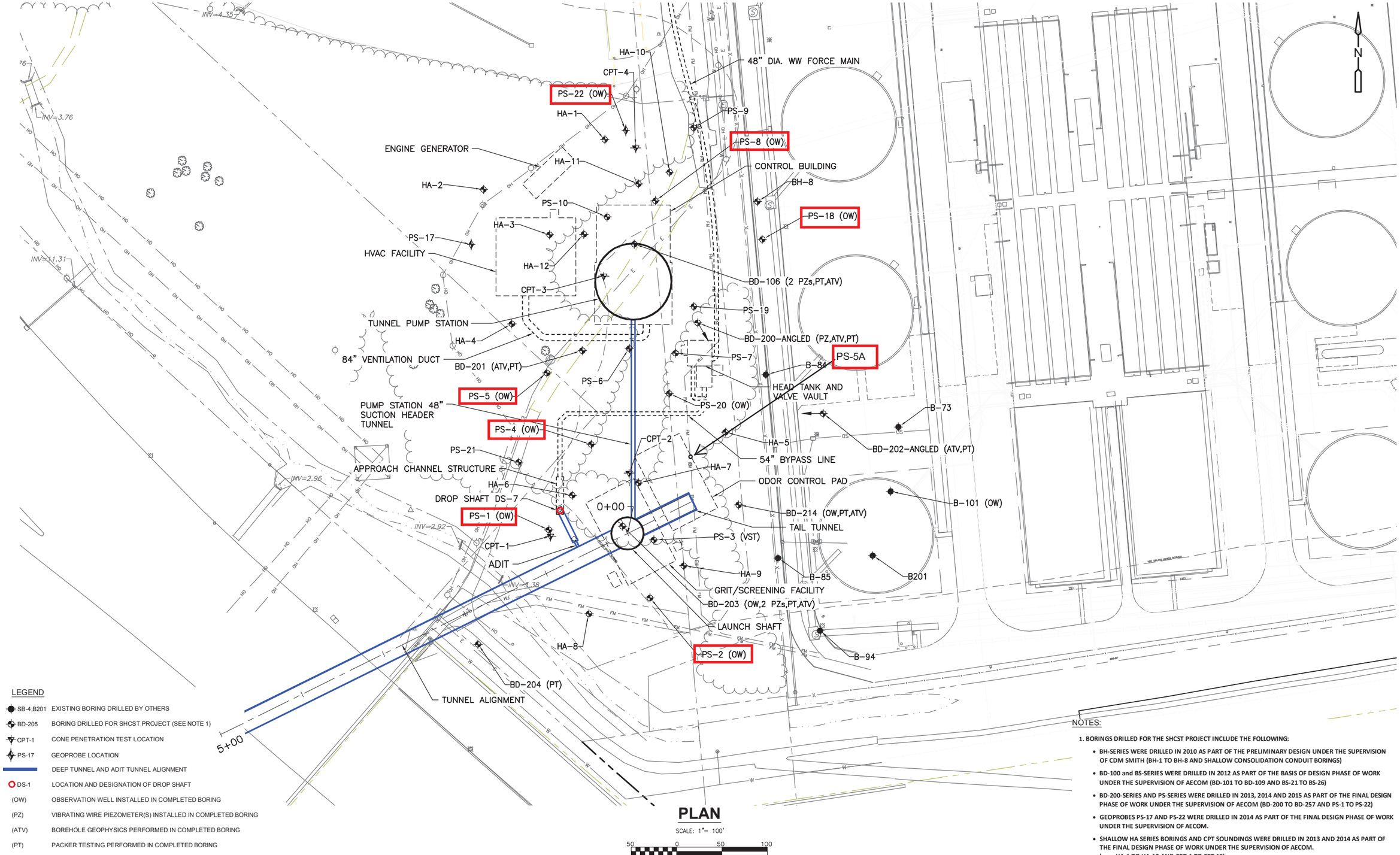
N

0 750 1,500
Feet



MDC

Original in Color - FHI - 4/12/2019



LEGEND

SB-4,B201	EXISTING BORING DRILLED BY OTHERS
BD-205	BORING DRILLED FOR SHCST PROJECT (SEE NOTE 1)
CPT-1	CONE PENETRATION TEST LOCATION
PS-17	GEOPROBE LOCATION
	DEEP TUNNEL AND ADIT TUNNEL ALIGNMENT
DS-1	LOCATION AND DESIGNATION OF DROP SHAFT
(OW)	OBSERVATION WELL INSTALLED IN COMPLETED BORING
(PZ)	VIBRATING WIRE PIEZOMETER(S) INSTALLED IN COMPLETED BORING
(ATV)	BOREHOLE GEOPHYSICS PERFORMED IN COMPLETED BORING
(PT)	PACKER TESTING PERFORMED IN COMPLETED BORING
(VST)	VANE SHEAR TESTS PERFORMED IN BORING

PLAN

SCALE: 1"= 100'

50 0 50 100

NOTES:

1. BORINGS DRILLED FOR THE SHCST PROJECT INCLUDE THE FOLLOWING:
   - BH-SERIES WERE DRILLED IN 2010 AS PART OF THE PRELIMINARY DESIGN UNDER THE SUPERVISION OF CDM SMITH (BH-1 TO BH-8 AND SHALLOW CONSOLIDATION CONDUIT BORINGS)
   - BD-100 and BS-SERIES WERE DRILLED IN 2012 AS PART OF THE BASIS OF DESIGN PHASE OF WORK UNDER THE SUPERVISION OF AECOM (BD-101 TO BD-109 AND BS-21 TO BS-26)
   - BD-200-SERIES AND PS-SERIES WERE DRILLED IN 2013, 2014 AND 2015 AS PART OF THE FINAL DESIGN PHASE OF WORK UNDER THE SUPERVISION OF AECOM (BD-200 TO BD-257 AND PS-1 TO PS-22)
   - GEOPROBES PS-17 AND PS-22 WERE DRILLED IN 2014 AS PART OF THE FINAL DESIGN PHASE OF WORK UNDER THE SUPERVISION OF AECOM.
   - SHALLOW HA SERIES BORINGS AND CPT SOUNDINGS WERE DRILLED IN 2013 AND 2014 AS PART OF THE FINAL DESIGN PHASE OF WORK UNDER THE SUPERVISION OF AECOM. (e.g., HA-1 TO HA-12 AND CPT-1 TO CPT-19)

PATH/FILENAME: C:\USERS\BANKOVICZ\ 60287608-SHCST\CONTRACT 2\CIVIL-SITE\BV\FIG 1 PLAN.DWG
LAST UPDATE: Tuesday, July 28, 2015 9:07:15 AM
PLOT DATE: Tuesday, July 28, 2015 9:07:50 AM

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: FIG 1 PLAN.DWG
DESIGNED BY: W. SONG
DRAWN BY: Z. BANKOVIC
CHK'D BY: L. MARTIN
X-CHK'D BY: R. DILL
APPROVED BY: J. SULLIVAN
DATE: JULY, 2015

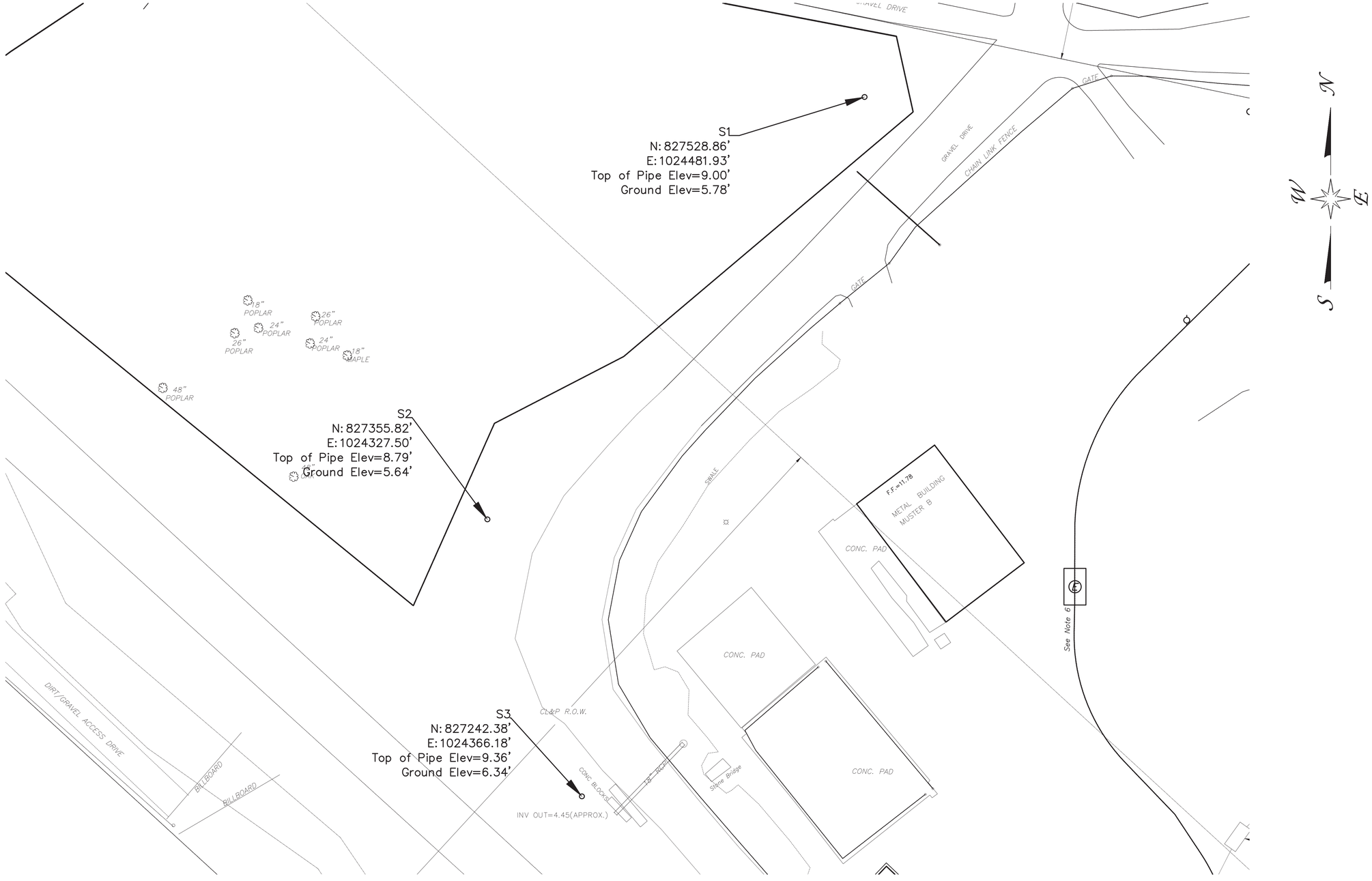
AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 2015B-27
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 4: Observation Wells

PLAN NUMBER

SHEET NO.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83

MDC

The Metropolitan District

555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 31-140 – GROUNDWATER GAUGING.DWG 12-14-18.DWG
SURVEYED BY:
DRAWN BY: F.V.
CHK'D BY: J.P.B.
X-CHK'D BY:
APPROVED BY A.R.M.
DATE: 11-27-18

THIS MAP IS NOT VALID WITHOUT ORIGINAL SIGNATURE AND SEAL

A. RAFAEL MARTINEZ LLS

AECOM 500 ENTERPRISE DRIVE, SUITE 1A ROCKY HILL, CT 06067 PHONE (860) 263-5800
in association with BLACK & VEATCH MCA MARTINEZ COUCH & ASSOCIATES, LLC

CONTRACT NO.
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 5: Additional Wetland Observation Wells

PLAN NUMBER

SHEET NO.

N

LEGEND

- 20 — EXISTING ELEVATION CONTOUR
- EXISTING ELECTRIC
- OH WIRES
- EXISTING STORM
- EXISTING WATER
- EXISTING SEWER
- WETLANDS
- TREE LINE
- WATERCOURSE
- PROPERTY LINE
- 100 FT WETLANDS BUFFER

EXISTING HISTORICAL FEDERAL AND STATE WETLAND AREAS

EXISTING HISTORICAL STATE ONLY WETLAND AREAS

A — AREA WAS HISTORICALLY UPLAND FOREST. FEDERAL AND STATE WETLAND WAS RECENTLY CREATED WITH IMPORTED POORLY DRAINING DREDGE MATERIAL. WETLAND WITH MINIMAL FUNCTIONS AND VALUES.

B — AREA WAS HISTORICALLY UPLAND FOREST. STATE ONLY WETLAND WAS RECENTLY CREATED WITH IMPORTED POORLY DRAINING DREDGE MATERIAL. WETLAND WITH MINIMAL FUNCTIONS AND VALUES.

1" = 50'
25 0 50

NOTES:

1. VERTICAL DATUM FOR THIS DRAWING IS NGVD29.

MAP REFERENCES:

1. SURVEY INFORMATION FROM THE DISTRICT'S WET WEATHER EXPANSION PROJECT WAS UTILIZED FOR THE LOCATION OF UTILITIES, STRUCTURES, VEGETATION, WETLANDS, AND WETLAND SETBACKS. FILE PROVIDED BY ARCADIS.
2. TOPOGRAPHIC CONTOUR INFORMATION PROVIDED BY THE DISTRICT'S GIS SYSTEM IN NAVD 88 AND CONVERTED BY AECOM TO NGVD 29.
3. PARCEL INFORMATION PROVIDED BY THE DISTRICT'S GIS SYSTEM.

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: CSTPL006A
DESIGNED BY: ----
DRAWN BY: ----
CHK'D BY: ----
X-CHK'D BY: ----
APPROVED BY J. SULLIVAN
DATE: ____ 2014

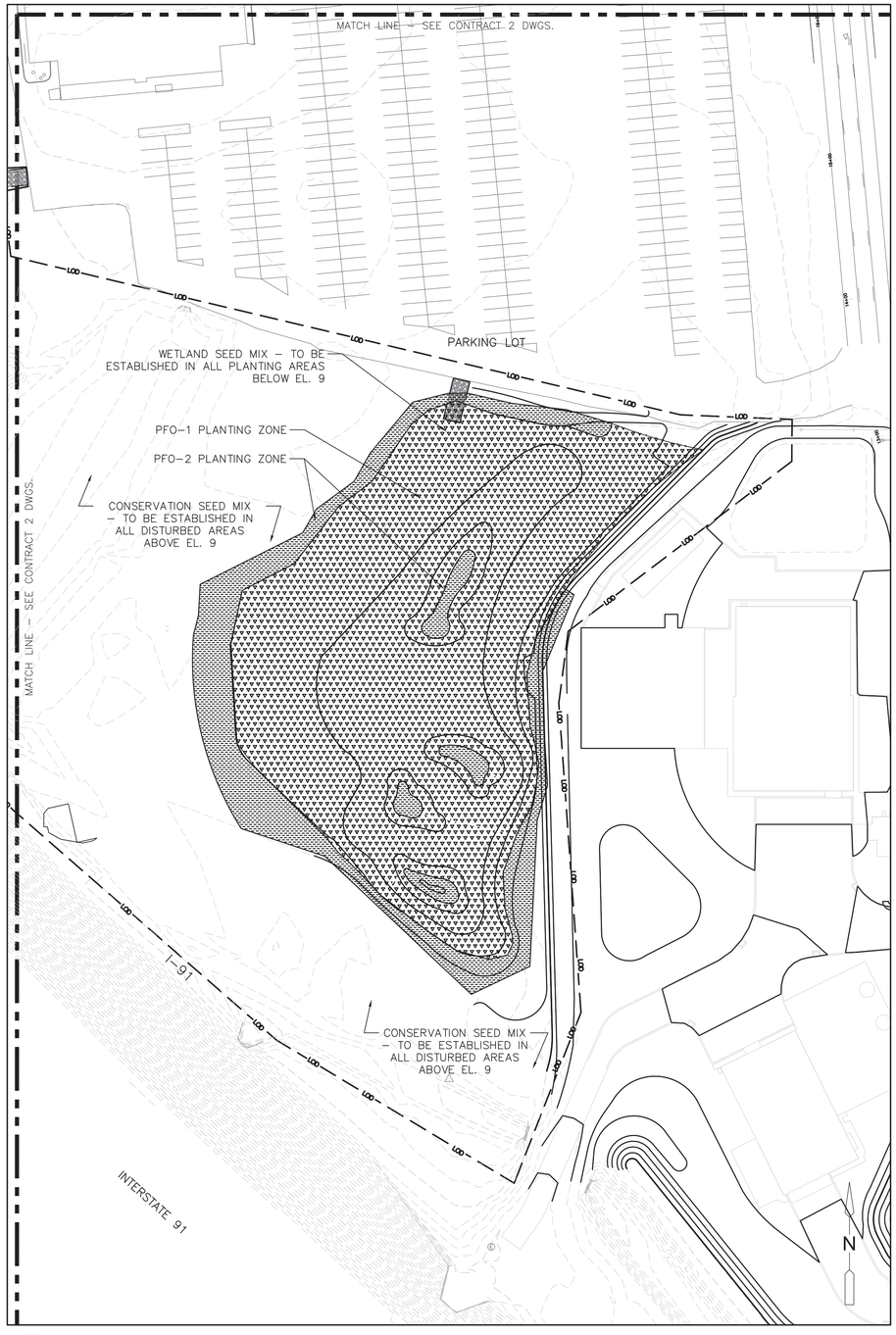
AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 20XX-XX
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 6: Pre-construction Reference Wetlands

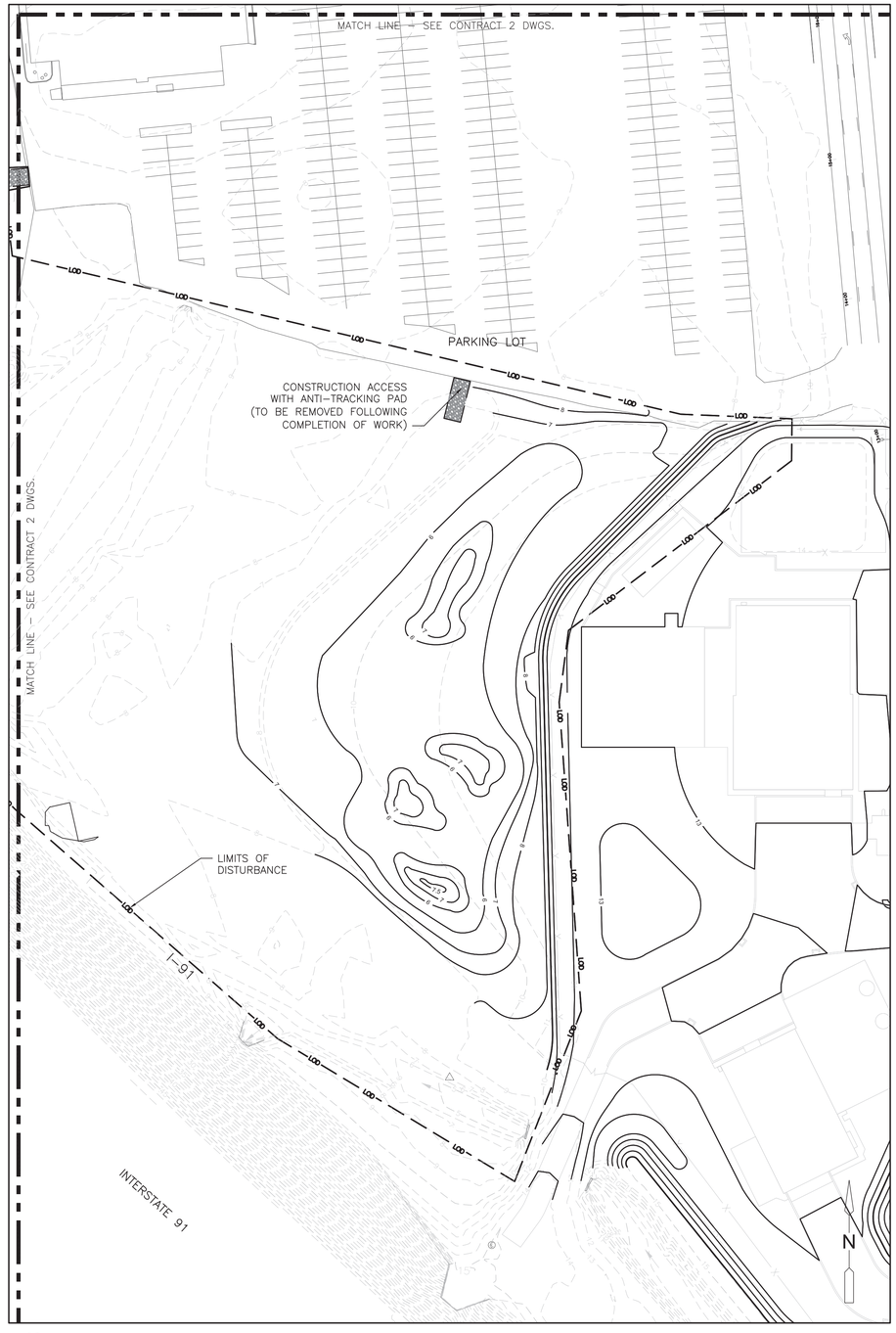
PLAN NUMBER

SHEET NO.



P 1 LAUNCH SHAFT – WETLANDS MITIGATION AREA B – PLANTING PLAN

0 25 50 100
SCALE IN FEET

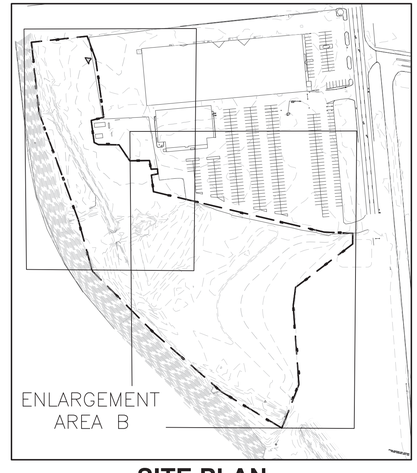


P 2 LAUNCH SHAFT – WETLANDS MITIGATION AREA B – GRADING PLAN

0 25 50 100
SCALE IN FEET

LEGEND

- LOD — LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- 114 — EXISTING CONTOUR LINE
- 114 — PROPOSED CONTOUR LINE
- PFO–2 PLANTING ZONE
- PFO–1 PLANTING ZONE



SITE PLAN

NOT TO SCALE

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYGNET_LO

MDC

The Metropolitan District

555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 L–101
DESIGNED BY: A. LAVALLEE
DRAWN BY: H.BEALL
CHK'D BY: V. AYMER
X–CHK'D BY: B. CANTERBURY
APPROVED BY J. SULLIVAN
DATE: NOVEMBER 2016

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263–5800
in association with
BLACK & VEATCH

CONTRACT NO. 2015B-33
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

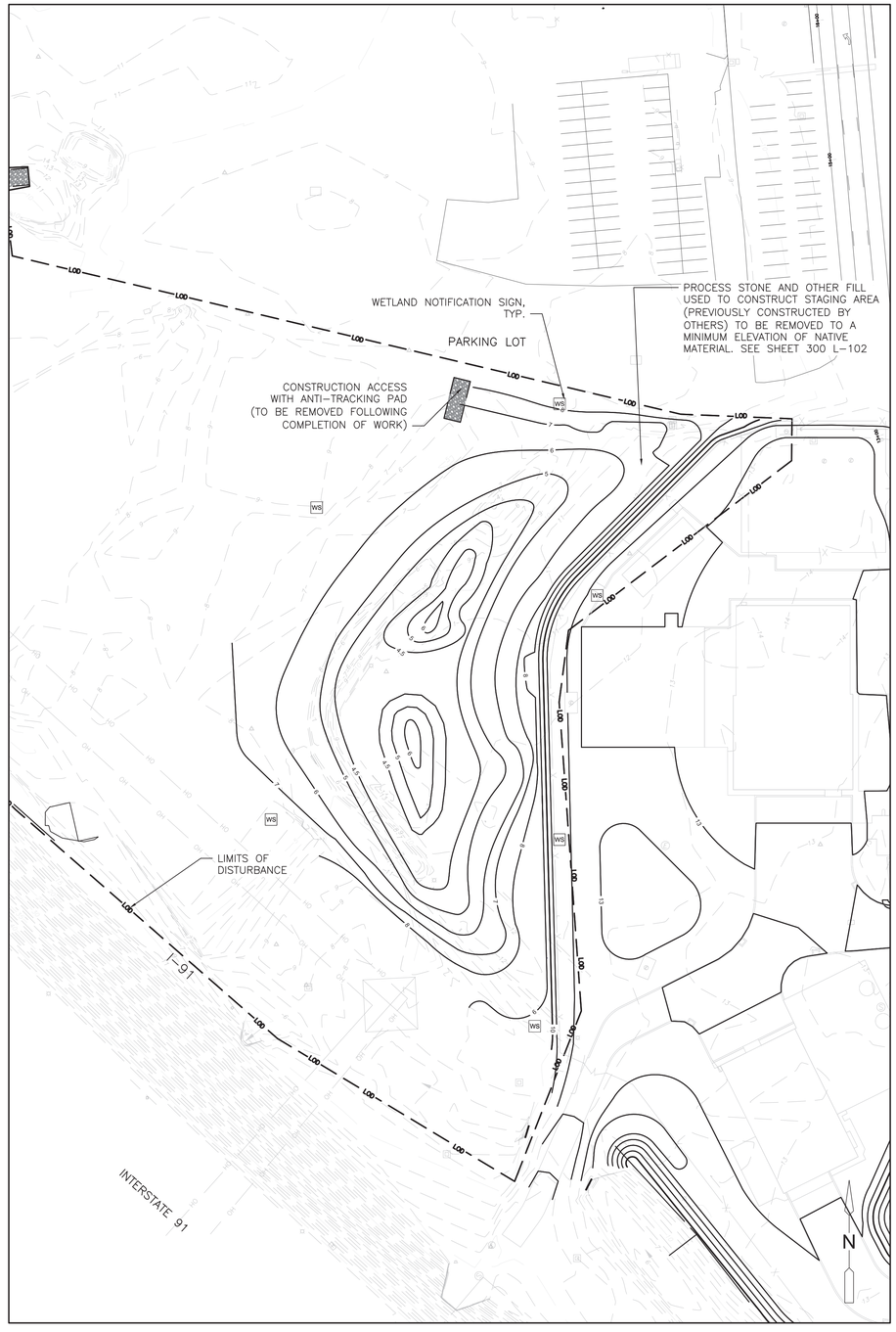
Figure 7: Currently Permitted Grading Plan

PLAN NUMBER

SHEET NO.

P 1 LAUNCH SHAFT – WETLANDS MITIGATION AREA X/Y – PLANTING PLAN

0 25 50 100
SCALE IN FEET

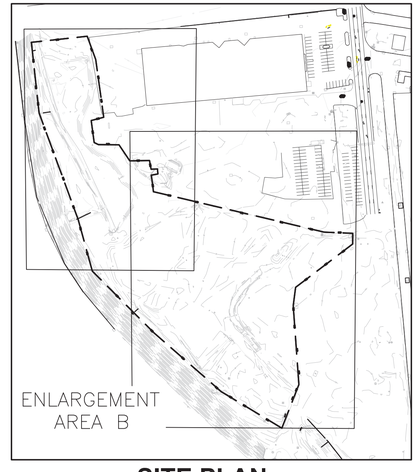


P 2 LAUNCH SHAFT – WETLANDS MITIGATION AREA X/Y – GRADING PLAN

0 25 50 100
SCALE IN FEET

LEGEND

- LOD — LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- 114 — EXISTING CONTOUR LINE
- 114 — PROPOSED CONTOUR LINE
- PFO–2 PLANTING ZONE
- PFO–1 PLANTING ZONE
- WS — WETLAND NOTIFICATION SIGN



SITE PLAN
NOT TO SCALE

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

PLOTTED_DATE
SAVED_DATE
CYGNET_LO

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 L–101
DESIGNED BY: A. LAVALLEE
DRAWN BY: Y.YANG
CHK'D BY: K.HALSTEAD
X–CHK'D BY: B. CANTERBURY
APPROVED BY J. SULLIVAN
DATE: APRIL 2019

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263–5800
in association with
BLACK & VEATCH

CONTRACT NO. 2015B-33
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 8:
Updated Grading Plan

PLAN NUMBER

SHEET NO.

PFO–1

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					North PFO & PSS
AREA (S.F.)					65,553
TREES					QUANTITY
FRAXINUS PENNSYLVANICA	GREEN ASH	FACW	2 - 2 1/2" CAL B.B.	10' O.C.	**165**
ACER RUBRUM	RED MAPLE	FACW	2- 2 1/2" CAL B.B.	10' O.C.	**164**
QUERCUS PALUSTRIS	PIN OAK	FACW	2 1/2 - 3" CAL B.B.	10' O.C.	**164**
SALIX NIGRA	BLACK WILLOW	FACW	2 1/2 - 3" CAL B.B.	10' O.C.	**164**
				TOTAL QUANTITY=	**656**
SHRUBS					QUANTITY
CORNUS AMOMUM	SILKY DOGWOOD	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
CORNUS SERICEA	REDOSIER DOGWOOD	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
SALIX DISCOLOR	PUSSY WILLOW	FACW	24 - 30" HT #5 CONT.	10' O.C.	**109**
SUMBUCUS CANADENSIS	ELDERBERRY	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
VIBURNUM DENTATUM	ARROWOOD	FACW	24 - 30" HT #5 CONT.	10' O.C.	**109**
VIBURNUM TRILOBUM	CRANBERRYBUSH	FACW	18" – 24" HT #3 CONT.	10' O.C.	**109**
				TOTAL QUANTITY=	**654**

PFO–2

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					North PFO & PSS
AREA (S.F.)					17,439
TREES					QUANTITY
ACER NEGUNDO	BOXELDER	FAC	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
ACER SACCHARINUM	SILVER MAPLE	FACW	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
FRAXINUS PANNSYLVANICA	GREEN ASH	FACW	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
ACER RUBRUM	RED MAPLE	FACW	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
				TOTAL QUANTITY=	**180**
SHRUBS					QUANTITY
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	FAC	24-36" HT #5 CONT.	10' O.C.	**30**
CORNUS SERICEA	REDOSIER DOGWOOD	FACW	18" – 24" HT #3 CONT.	10' O.C.	**30**
SAMBUCUS CANADENSIS	ELDERBERRY	FACW	18" – 24" HT #3 CONT.	10' O.C.	**30**
VIBURNUM DENTATUM	ARROWOOD	FACW	24 - 30" HT #5 CONT.	10' O.C.	**30**
VIBURNUM LENTAGO	NANNYBERRY	FAC	3'-4' HT B.B.	10' O.C.	**30**
VIBURNUM TRILOBUM	CRANBERRBUSH	FACW	18" – 24" HT #3 CONT.	10' O.C.	**30**
				TOTAL QUANTITY=	**180**

PUMP STATION

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	
TREES				QUANTITY
JV	*JUNIPERUS VIRGINIANA*	EASTERN RED CEDAR	7-8' HT B&B	8
BP	*BETULA POPULIFOLIA*	GRAY BIRCH	2 1/2-3" CAL B&B	5
			TOTAL QUANTITY=	13
SHRUBS				QUANTITY
RG	*RHUS GLABRA*	SMOOTH SUMAC	18 - 24" HT #3 CONT	10
VL	*VIBURNUM LENTAGO*	NANNYBERRY	18 - 24" HT #3 CONT	19
MP	*MYRICA PENNSYLVANICA*	NORTHERN BAYBERRY	18 - 24" HT #5 CONT	10
VD	*VIBURNUM DENTATUM*	ARROWWOOD	24 - 36" HT #5 CONT.	20
			TOTAL QUANTITY=	59

(1) L–502 PLANT LIST FOR WETLAND RESTORATION AREA

PLOTTED_DATE
SAVED_DATE
CYGNET_LD

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 L–502
DESIGNED BY: V.AYMER
DRAWN BY: H.BEALL
CHK'D BY: T.A.T.
X–CHK'D BY: B. CANTERBURY
APPROVED BY J. SULLIVAN
DATE: NOVEMBER 2016

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263–5800
in association with
BLACK & VEATCH

CONTRACT NO. 2015B-33
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 9:
Currently Permitted Planting Plan

PLAN NUMBER

SHEET NO.

PFO–1

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					North PFO & PSS
AREA (S.F.)					64,870
TREES					QUANTITY
FRAXINUS PENNSYLVANICA	GREEN ASH	FACW	2 - 2 1/2" CAL B.B.	10' O.C.	**165**
ACER RUBRUM	RED MAPLE	FAC	2- 2 1/2" CAL B.B.	10' O.C.	**164**
QUERCUS PALUSTRIS	PIN OAK	FACW	2 1/2 - 3" CAL B.B.	10' O.C.	**164**
SALIX NIGRA	BLACK WILLOW	OBL	2 1/2 - 3" CAL B.B.	10' O.C.	**164**
				TOTAL QUANTITY=	**656**
SHRUBS					QUANTITY
ALNUS INCANA	SPECKLED ALDER	FACW	18 - 24" HT .	10' O.C.	**109**
CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	OBL	18 - 24" HT .	10' O.C.	**55**
CORNUS AMOMUM	SILKY DOGWOOD	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
CORNUS ALBA	RED-OSIER DOGWOOD	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
SALIX DISCOLOR	PUSSY WILLOW	FACW	24 - 30" HT #5 CONT.	10' O.C.	**109**
SAMBUCUS CANADENSIS	ELDERBERRY	FACW	18 - 24" HT #3 CONT.	10' O.C.	**109**
VIBURNUM TRILOBUM	CRANBERRYBUSH	FACW	18" – 24" HT #3 CONT.	10' O.C.	**109**
				TOTAL QUANTITY=	**709**

PFO–2

BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	SPACING	LOCATION
					North PFO & PSS
AREA (S.F.)					18,122
TREES					QUANTITY
ACER NEGUNDO	BOXELDER	FAC	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
ACER SACCHARINUM	SILVER MAPLE	FACW	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
FRAXINUS PANNSYLVANICA	GREEN ASH	FACW	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
ACER RUBRUM	RED MAPLE	FAC	2 - 2 1/2" CAL. B.B.	10' O.C.	**45**
				TOTAL QUANTITY=	**180**
SHRUBS					QUANTITY
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	FAC	24-36" HT #5 CONT.	10' O.C.	**30**
CORNUS RACEMOSA	GRAY DOGWOOD	FAC	18" – 24" HT #3 CONT.	10' O.C.	**30**
PHOTINIA MELANOCARPA	BLACK CHOKEBERRY	FAC	18" – 24" HT #3 CONT.	10' O.C.	**30**
SAMBUCUS CANADENSIS	ELDERBERRY	FACW	18" – 24" HT #3 CONT.	10' O.C.	**30**
VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	FAC	24 - 30" HT #5 CONT.	10' O.C.	**30**
VIBURNUM LENTAGO	NANNYBERRY	FAC	3'-4' HT B.B.	10' O.C.	**30**
				TOTAL QUANTITY=	**180**

PUMP STATION

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	
TREES				QUANTITY
JV	*JUNIPERUS VIRGINIANA*	EASTERN RED CEDAR	7-8' HT B&B	8
BP	*BETULA POPULIFOLIA*	GRAY BIRCH	2 1/2-3" CAL B&B	5
			TOTAL QUANTITY=	13
SHRUBS				QUANTITY
RG	*RHUS GLABRA*	SMOOTH SUMAC	18 - 24" HT #3 CONT	10
VL	*VIBURNUM LENTAGO*	NANNYBERRY	18 - 24" HT #3 CONT	19
MP	*MYRICA PENNSYLVANICA*	NORTHERN BAYBERRY	18 - 24" HT #5 CONT	10
VD	*VIBURNUM DENTATUM*	ARROWWOOD	24 - 36" HT #5 CONT.	20
			TOTAL QUANTITY=	59

(1) L–502 PLANT LIST FOR WETLAND RESTORATION AREA

PLOTTED_DATE
SAVED_DATE
CYGNET_ID

VERTICAL DATUM IS NGVD 29
HORIZONTAL DATUM IS NAD 83/92

MDC

The Metropolitan District

555 Main Street
Hartford, Connecticut

REV. NO.	DATE	DRWN	CHKD	REMARKS

FILE NAME: 300 L–502
DESIGNED BY: V.AYMER
DRAWN BY: Y. YANG
CHK'D BY: K. HALSTEAD
X–CHK'D BY: B. CANTERBURY
APPROVED BY: J. SULLIVAN
DATE: APRIL 2019

AECOM
500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800
in association with
BLACK & VEATCH

CONTRACT NO. 2015B-33
SOUTH HARTFORD CONVEYANCE AND STORAGE TUNNEL

Figure 10:
Updated Planting Plan

PLAN NUMBER

SHEET NO.

From: Bell, Taylor M CIV USARMY CENAE (US)
To: Shawn Callaghan
Subject: RE: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates
Date: Monday, April 22, 2019 10:44:50 AM

Shawn,

The changes are to the mitigation are OK. Move forward as described in your April 18, 2019 email to me.

Thanks,

Taylor

-----Original Message-----
From: Shawn Callaghan [mailto:scallaghan@fhiplan.com]
Sent: Monday, April 22, 2019 10:31 AM
To: Bell, Taylor M CIV USARMY CENAE (US) <Taylor.M.Bell@usace.army.mil>
Subject: [Non-DoD Source] RE: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates

Good Morning Taylor,

Thank you for the speedy reply. Are the updates to the mitigation site design approved? I want to be sure we are all set, and wondered if we need a letter or formal acceptance of the updated design. Even email confirmation from you would work.

Thanks,
Shawn

-----Original Message-----
From: Bell, Taylor M CIV USARMY CENAE (US) <Taylor.M.Bell@usace.army.mil>
Sent: Friday, April 19, 2019 9:16 AM
To: Shawn Callaghan <scallaghan@fhiplan.com>
Cc: APerham@themdc.com; Sullivan, James <James.Sullivan@aecom.com>; Canterbury, Brian <Brian.Canterbury@aecom.com>; mccarthybj@cdmsmith.com
Subject: RE: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates

Thanks Shawn, will add documents to the file.

-----Original Message-----
From: Shawn Callaghan [mailto:scallaghan@fhiplan.com]
Sent: Thursday, April 18, 2019 1:41 PM
To: Bell, Taylor M CIV USARMY CENAE (US) <Taylor.M.Bell@usace.army.mil>
Cc: APerham@themdc.com; Sullivan, James <James.Sullivan@aecom.com>; Canterbury, Brian <Brian.Canterbury@aecom.com>; mccarthybj@cdmsmith.com
Subject: [Non-DoD Source] The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates

Hi Taylor,

I just left you a voicemail message. For the MDC South Hartford Conveyance and Storage Tunnel project (USACE:

NAE-2014-261), we have a wetland mitigation site we will be constructing towards the end of the overall project construction. Based on some additional data and after constructing the first wetland mitigation area, we are proposing some minor updates to the approved design. The same mitigation area is proposed, but we would like to lower the elevations in the wetland by 1.5 feet and add some additional plant species to the planting plan.

The recommended updates are attached for your review. A hard copy of this package was also mailed to you today as well.

Please do not hesitate to call if you have any questions.

Thanks,

Shawn

Shawn Callaghan, PSS

Project Manager
scallaghan@fhiplan.com <mailto:scallaghan@fhiplan.com> / (860) 256-4918

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CT • NY • NJ | BlockedBlockedwww.fhiplan.com <BlockedBlockedhttp://www.fhiplan.com/>

Canterbury, Brian

From: Shawn Callaghan <scallaghan@fhiplan.com>
Sent: Thursday, April 25, 2019 6:36 PM
To: Canterbury, Brian
Subject: Fwd: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates

We are officially approved!

Sent from my iPhone

Begin forwarded message:

> **From:** "Fry, Sandra" <Sandra.Fry@hartford.gov>
> **Date:** April 25, 2019 at 6:27:54 PM EDT
> **To:** Shawn Callaghan <scallaghan@fhiplan.com>
> **Subject: RE: The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates**
>
> Hi Shawn,
> This change is acceptable to the City and will not change the status of the approved IWWW permit for this work.
>
> Sandy Fry
> Bicycle and Pedestrian Coordinator
> Senior Project Manager
> Department of Development Services
> City of Hartford
> 250 Constitution Plaza, 4th Floor
> Hartford, CT 06103
> 860-757-9222
>
> ---
>
> **From:** Shawn Callaghan <scallaghan@fhiplan.com>
> **Sent:** Thursday, April 18, 2019 1:44 PM
> **To:** Fry, Sandra <Sandra.Fry@hartford.gov>
> **Cc:** APerham@themdc.com; Sullivan, James <James.Sullivan@aecom.com>; Canterbury, Brian <Brian.Canterbury@aecom.com>; mccarthybj@cdmsmith.com
> **Subject:** The Metropolitan District South Conveyance and Storage Tunnel Project – Hartford, CT, USACE: NAE-2014-261 - minor updates
>
> Hi Sandy,
>
> It was great talking with you today. As discussed, for the MDC South Hartford Conveyance and Storage Tunnel project, we have a wetland mitigation site we will be constructing towards the end of the overall project construction. Based on some additional data and after constructing the first wetland mitigation area, we are proposing some minor updates to the approved design. The same mitigation area is proposed, but we would like to lower the elevations in the wetland by 1.5 feet and add some additional plant species to the planting plan.

The recommended updates are attached for your review.

Please do not hesitate to call if you have any questions.

Thanks,
Shawn

Shawn Callaghan, PSS
Project Manager
scallaghan@fhiplan.com / (860) 256-4918

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Appendix 3

Damage Repair Details and Approval

S0015

ERNST *Seeds*
8884 Mercer Pike, Meadville, PA 16335
(800) 873-3321 or (814) 336-2404

New England Wet Mix

Item	*Botanical Name*	Purity	Germ	Hard	Dorm	Production Origin	Genetic Origin
Fox Sedge, PA Ecotype	*Carex vulpinoidea, PA Ecotype*	33.90%	12.5%		78.3%	PA	
Lurid (Shallow) Sedge, PA Ecotype	*Carex lurida, PA Ecotype*	9.61%	50.6%		35.7%	PA	
Hop Sedge, PA Ecotype	*Carex lupulina, PA Ecotype*	8.97%	1.0%		80.0%	PA	
Fowl Bluegrass	*Poa palustris*	7.61%	68.0%		17.0%	CN	
Blunt Broom Sedge, PA Ecotype	*Carex scoparia, PA Ecotype*	6.79%	61.0%		20.0%	PA	
Beggartick, PA Ecotype	*Bidens frondosa, PA Ecotype*	4.55%	5.0%		90.0%	PA	
Green Bulrush, WI Ecotype	*Scirpus atrovirens, WI Ecotype*	3.98%	95.0%			WI	
Fringed (Nodding) Sedge, PA Ecotype	*Carex crinita, PA Ecotype*	2.95%	25.0%		23.0%	PA	
Soft Rush	*Juncus effusus*	2.94%	1.0%		62.0%	PA	
Swamp Milkweed, PA Ecotype	*Asclepias incarnata, PA Ecotyp*	2.73%	20.0%		68.0%	PA	
New York Ironweed, PA Ecotype	*Vernonia noveboracensis, PA Ec*	2.51%	14.0%		84.0%	PA	
Blueflag, PA Ecotype	*Iris versicolor, PA Ecotype*	1.99%	1.0%		94.0%	PA	
Calico Aster	*Aster lateriflorus*	1.73%	87.0%			PA	
American Mannagrass, PA Ecotype	*Glyceria grandis, PA Ecotype*	0.99%	7.0%		5.0%	PA	
Square Stemmed Monkeyflower, PA Ecotype	*Mimulus ringens, PA Ecotype*	0.89%	1.0%		96.0%	PA	
Spotted Joe Pye Weed, PA Ecotype	*Eupatorium maculatum, PA Ecoty*	0.87%	14.0%		71.0%	PA	

Other Crop: 0.33%
Inert Matter: 6.63%
Weed Seed: 0.03%

Net Weight: 0.50 LB
Lot Number: NEWE00214 - 180403
Date Tested: April 2018 AMS 1039

S0015
1.25
ratio

ERNST Seeds
8884 Mercer Pike, Meadville, PA 16335
(800) 873-3321 or (814) 336-2404

OBL Wetland Mix

Item	Botanical Name	Purity	Germ	Hard	Dorm	Production Origin	Genetic Origin
Fox Sedge, PA Ecotype	*Carex vulpinoidea, PA Ecotype*	33.69%	19.0%		59.0%	PA	
Lurid (Shallow) Sedge, PA Ecotype	*Carex lurida, PA Ecotype*	16.84%	31.0%		57.0%	PA	
Hop Sedge, PA Ecotype	*Carex lupulina, PA Ecotype*	14.19%	4.0%		93.0%	PA	
Blunt Broom Sedge, PA Ecotype	*Carex scoparia, PA Ecotype*	7.85%	43.0%		30.0%	PA	
Giant Bur Reed, PA Ecotype	*Sparganium eurycarpum, PA Ecot*	4.49%	1.0%		94.0%	PA	
Blue Vervain, PA Ecotype	*Verbena hastata, PA Ecotype*	3.98%	1.0%		96.0%	PA	
Soft Rush	*Juncus effusus*	2.85%	4.0%		91.0%	PA	
Eastern Bur Reed	*Sparganium americanum*	2.48%	1.0%		77.0%	PA	
Flat Topped White Aster, PA Ecotype	*Aster umbellatus, PA Ecotype*	1.00%	19.0%		58.0%	PA	
Blueflag, PA Ecotype	*Iris versicolor, PA Ecotype*	1.00%	1.0%		94.0%	PA	
Sensitive Fern	*Onoclea sensibilis*	0.99%	85.0%			PA	
Purplestem Aster, PA Ecotype	*Aster puniceus, PA Ecotype*	0.98%	87.0%			PA	
Swamp Milkweed, PA Ecotype	*Asclepias incarnata, PA Ecotyp*	0.97%	28.0%		64.0%	PA	
Woolgrass, PA Ecotype	*Scirpus cyperinus, PA Ecotype*	0.95%	1.0%		60.0%	PA	
Boneset, PA Ecotype	*Eupatorium perfoliatum, PA Eco*	0.87%	14.0%		72.0%	PA	
Softstem Bulrush, PA Ecotype	*Scirpus validus, PA Ecotype*	0.50%	1.0%		82.0%	PA	
Roughleaf Goldenrod, PA Ecotype	*Solidago patula, PA Ecotype*	0.49%	20.0%		59.0%	PA	
Mud Plantain (Water Plantain), PA Ecotype	*Alisma subcordatum, PA Ecotype*	0.46%	1.0%		90.0%	PA	
Seedbox, PA Ecotype	*Ludvigia alternifolia, PA Ecot*	0.46%	8.0%		87.0%	PA	
Spotted Joe Pye Weed, PA Ecotype	*Eupatorium maculatum, PA Ecoty*	0.44%	14.0%		71.0%	PA	
Squere Stemmed Monkeyflower, PA Ecotype	*Mimulus ringens, PA Ecotype*	0.44%	1.0%		96.0%	PA	
Turtlehead, PA Ecotype	*Chelone glabra, PA Ecotype*	0.12%	3.0%		80.0%	PA	

Other Crop: 0.09%
Inert Matter: 3.82%
Weed Seed: 0.05%

Net Weight: 0.50 LB
Lot Number: ERNMX-131-180213
Date Tested: February 2018

From: Perham, Andrew
To: Canterbury, Brian
Cc: Sullivan, James; Shawn Callaghan
Subject: FW: Hartford I91 at Brainard Road MDC Mitigation Site Maps and Deeds
Date: Tuesday, May 21, 2019 1:57:21 PM

Hey Brian,

I am forwarding the email thread between the CT DOT and the Army Corps regarding the Wetlands Z damage / repair.

I haven't heard anything from MDC legal yet regarding this news.

-Andrew

-----Original Message-----
From: Lesay, Kimberly C [mailto:Kimberly.Lesay@ct.gov]
Sent: Monday, May 20, 2019 3:35 PM
To: Perham, Andrew
Cc: Lee, Susan K NAE (Susan.K.Lee@usace.army.mil); Caiola, Jeff; 'Ruth.M.Ladd@usace.army.mil'; Dudack, Brian J.; DeCastro, John S; Carifa, Kevin F; Reagan, Richard P; Miller, Michelle A.; Boice, Jason E
Subject: FW: Hartford I91 at Brainard Road MDC Mitigation Site Maps and Deeds

Andrew - per our telephone conversation today, and in response to your email dated May 15, 2019, please see below correspondence from the ACOE regarding the mitigation site adjacent to our drainage ditch. I explained to the ACOE that the site was re-graded and re-seeded earlier this month following our maintenance activities. Since the portion of the mitigation area in question was proposed as a PEM wetland, they are indicating that further action is not required. DEEP is also cc'd on this string. I'll be drafting up a response to your letter memorializing our efforts on site and that any future maintenance will be from the I-91 embankment side of the site.

Kimberly Lesay
Transportation Assistant Planning Director
Office of Environmental Planning
Connecticut Department of Transportation
D Direct (860) 594-2931

-----Original Message-----
From: Lee, Susan K CIV USARMY CENAD (USA) <Susan.K.Lee@usace.army.mil>
Sent: Friday, May 17, 2019 5:03 PM
To: Lesay, Kimberly C <Kimberly.Lesay@ct.gov>
Cc: Ladd, Ruth M CIV USARMY CENAE (US) <Ruth.M.Ladd@usace.army.mil>; Carifa, Kevin F <Kevin.Carifa@ct.gov>; Caiola, Jeff <Jeff.Caiola@ct.gov>
Subject: RE: Hartford I91 at Brainard Road MDC Mitigation Site Maps and Deeds

Hi Kim - Ruth and I reviewed the relevant file record info on the MDC mitigation site adjacent to the drainage channel.

The file record shows the subject mitigation site was designed as a PEM wetlands area/wetland seed mix.

If your crew has restored the linear area disturbed by the recent access road with wetland seed mix and, in the future, can practicably access/maintain this length of drainage channel from along the westerly side, then no further action on the recently disturbed areas of the mitigation area is required from CTDOT or MDC.

Thanks for advising us of the disturbance/activity affected the mitigation area.

Any questions, please let me know.
Susan

Susan K Lee
Project Manager
USACE - New England District
Regulatory Division
696 Virginia Rd
Concord, MA 01742-2751
978-318-8494

-----Original Message-----
From: Lesay, Kimberly C [mailto:Kimberly.Lesay@ct.gov]
Sent: Thursday, May 16, 2019 7:23 PM
To: Lee, Susan K CIV USARMY CENAD (USA) <Susan.K.Lee@usace.army.mil>
Subject: [Non-DoD Source] Re: Hartford I91 at Brainard Road MDC Mitigation Site Maps and Deeds

Thank you susan!

Sent via the Samsung Galaxy S7, an AT&T 4G LTE smartphone

-------- Original message --------
From: "Lee, Susan K CIV USARMY CENAD (USA)" <Susan.K.Lee@usace.army.mil>
Date: 5/16/19 5:16 PM (GMT-05:00)
To: "Lesay, Kimberly C" <Kimberly.Lesay@ct.gov>, "Caiola, Jeff" <Jeff.Caiola@ct.gov>
Cc: "Carifa, Kevin F" <Kevin.Carifa@ct.gov>, "Reagan, Richard P" <Richard.Reagan@ct.gov>
Subject: RE: Hartford I91 at Brainard Road MDC Mitigation Site Maps and Deeds

Kim - thanks for follow up and research.
as soon as I catch up with Ruth regarding the affected mitigation area, will advise.

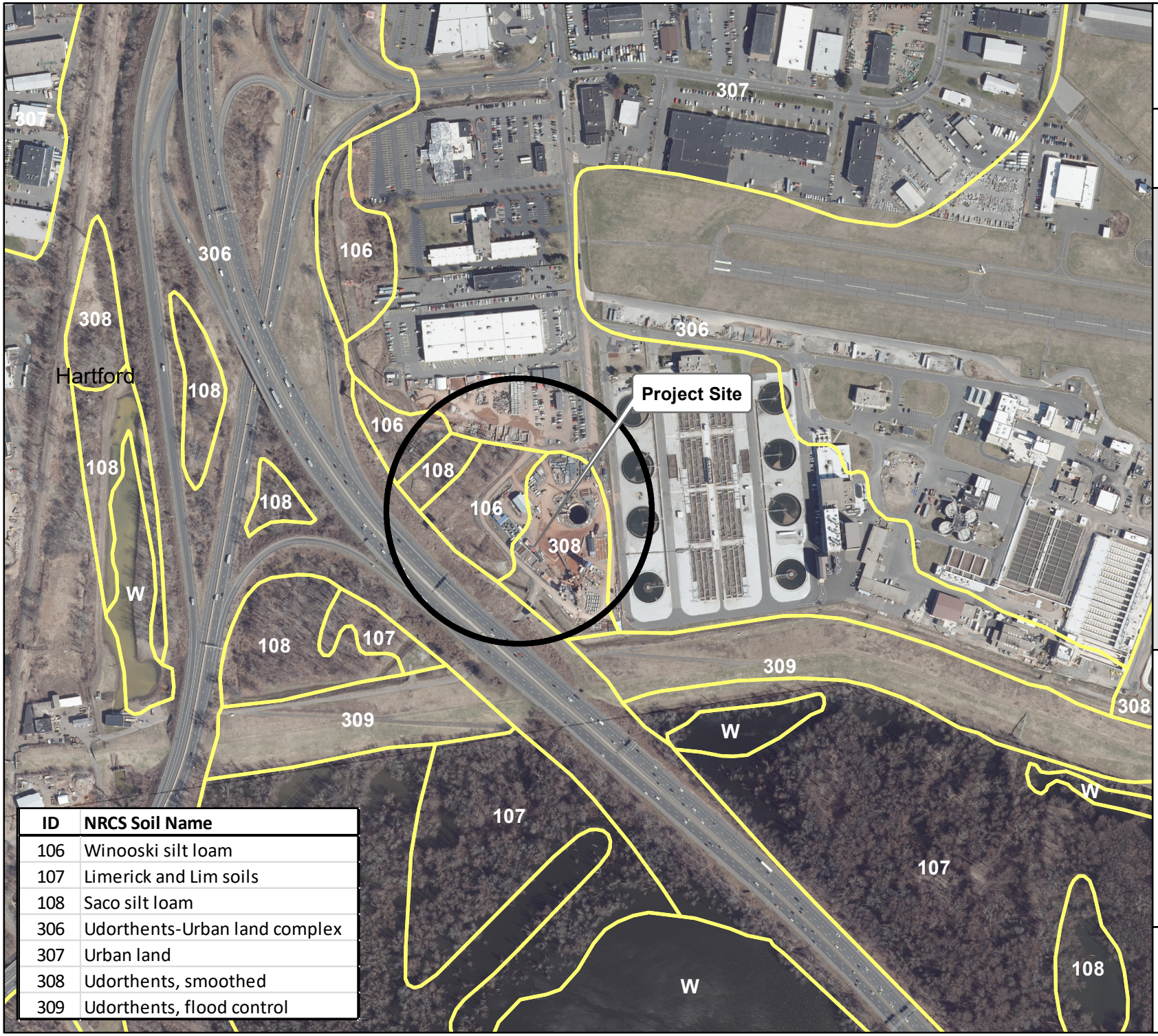
Thanks
Susan

Susan K Lee
Project Manager
USACE - New England District
Regulatory Division
696 Virginia Rd
Concord, MA 01742-2751
978-318-8494

Attachment I4

Supplemental Materials

NRCS Soils



ID	NRCS Soil Name
106	Winooski silt loam
107	Limerick and Lim soils
108	Saco silt loam
306	Udorthents-Urban land complex
307	Urban land
308	Udorthents, smoothed
309	Udorthents, flood control

MDC South Conveyance and Storage Tunnel Project

Hartford, CT
NRCS Soils
Attachment I4

Legend

- Natural Resources Conservation Service (NRCS) Mapped Soils
- South Hartford Conveyance Tunnel Work Site

USGS Quadrangle
Hartford

1:6,000

0 125 250 500
Feet

N

Original in Color - FHI - 7/29/2020

Attachment I5

Supplemental Materials

Environmental Communities

ATTACHMENT I5

ENVIRONMENTAL COMMUNITIES

Wetlands

Wetlands in the project corridor were delineated by a State of Connecticut Certified Soils Scientist in autumn 2013 and also in spring 2014. A detailed Soils/Wetlands report is included with the USACE Section 401 application available upon request. The wetlands associated with the South Tunnel project are composed of both open water and vegetated wetlands. According to the Cowardin, et. al. (1979) system of wetland classification, the primary wetland types within the project area are palustrine. A total of 14 wetland systems were delineated within the project study corridor. Wetland systems A, B, C, D, E, F, and G/O are located within and adjacent to the main tunnel launch site area west of the HWPCF and Connecticut River Flood Control Levee. Wetlands H, I, J, K, L, M, and N are located along the proposed alignment through Hartford and West Hartford. Wetlands that will be physically impacted by project construction or that are adjacent or integral to the proposed wetland mitigation areas are defined in more detail below. (See Attachment I6, Figure 1 for wetland overview map) Wetlands are described in detail in Attachment D, Question 4: Wetland and Watercourse Descriptions.

Evaluation of Impacts

Wetlands

Throughout the duration of project construction, there will be several permanent and temporary impacts to on-site wetlands. Temporary impacts to wetlands can be expected at those areas designated as contractor laydown areas, as well as at segment storage and tunnel laydown areas. Additional permanent wetland impacts to Wetlands A and B are expected to occur from the main conveyance tunnel boring site, access roads, and crane pad used by the tunnel contractor.

Temporary Impact Areas. Based on the current design, project activities will affect federal wetland resources only within the tunnel launch site area. The temporary impacts to wetlands will result primarily from the creation of staging areas to support the construction of the deep rock tunnel; work pads and access roads, and temporary water handling measures. As indicated on project plans in Attachment I2, only one area of temporary impact will occur on the site: Wetland D (45,794 sf). Since the tunnel will take approximately ten more years to construct, the temporary impact will be in place for this period of time. Wetland D will be re-established as a federal wetland of higher quality than as it exists today.

Reestablishment of temporarily impacted Wetland D areas will consist of re-grading of the soil surface, placement of an organic soil material, as needed, and planting of various native wetland herbaceous and shrub vegetation species. Soil erosion and sedimentation controls will not be removed until vegetation is established. The specific species to be reestablished will depend on the pre-disturbance inventory of dominant herbaceous, shrub and tree wetland plants within a particular wetland impact area. In some cases, it may be more effective to apply an approved wetland seed mixture.

Permanent Impact Areas. The wetlands located within the permanent limit of disturbance include a portion of Wetland D (11,150 sf) and federal Wetland A (9,590 sf). Therefore, the total permanent wetland impact resulting from the project will be 20,740 sf (0.48 ac) as shown in Table 2.

To determine the distribution of wetland classes within the areas of permanent wetland impact, field work was conducted to map these areas as palustrine forest (PFO), palustrine emergent (PEM), and palustrine scrub-shrub (PSS) wetland areas. This mapping of wetland types was overlain on the proposed wetland impact areas to determine impacts to each wetland type. A summary of total permanent federal wetland impacts to the four wetland types is shown in Table 1.

Table 1: Summary of Impacts by Wetland Type

Wetland Type	Acres
Palustrine Forested (PFO) Wetland	0.24
Palustrine Emergent (PEM) Wetland	0.24
Palustrine Scrub-Shrub (PSS) Wetland	0.0
TOTAL	**0.48**

Function and Value Impacts

The functions and values of the wetland impact areas were tabulated and the total permanent impact area for each function was determined for the project area. Of the 13 functions and values outlined in the United States Army Corps of Engineers (USACE) *Highway Methodology Supplement*, two were recorded as principal functions within at least one of the wetlands impacted by the project. Because the project is on private property, for the most part, recreation, as well as visual quality/aesthetics, uniqueness/heritage, and educational/scientific are not considered primary values of these wetlands. A summary of wetland function and value impacts is presented in Table 2.

Table 2: Summary of Permanent Impacts, by Function and Value

Primary Functions & Values	Acreage
Wildlife habitat	0.24
Groundwater discharge/recharge	0.48

Note: Total acreage is greater than the 0.48 acres of wetlands impacted because all wetlands have more than one function and/or value.

Watercourses

The adjacent open water currently has a surface water quality classification of "A," with designated uses inclusive of potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation. There will be no negative impacts to the water quality of these bodies. There is potential for water quality improvement flowing through the site with enhanced wetland function.

Floodplains

The project area falls within a FEMA flood Zone "X" which is a zone that is being protected by a levee. South of the dike outside the project area is the 100 year flood zone, Zone "AE".

Seasonal Pools

There were no seasonal pools located on-site.

Wildlife

Coordination with the CT DEEP Natural Diversity Division (NDDB) was completed in 2014 and revealed that there are no mapped NDDB areas or species located within the project area. The nearest mapped NDDB area to the project site was approximately one thousand feet southwest along Folly Brook to the Wethersfield Cove area. Review of the June 2020 NDDB map revealed that the nearest mapped NDDB area was adjacent to the project site to the east, surrounding the Connecticut River.

Although no species were identified within the project site, an NDDB consultation was conducted in 2014 to ensure limited species disturbance to the surrounding project vicinity. Based on review of current NDDB mapping, the project site is located outside of any mapped NDDB areas.

CT DEEP records indicate the following extant population of species within the vicinity of the site:

- Bald eagle (*Haliaeetus leucocephalus*) Protection Status: Threatened
- Yellow lamp mussel (Lampsilis cariosa) Protection Status: Endangered
- Tidewater mucket (Leptodea ochracea) Protection Status: Species of Special Concern

No impacts to these listed species will occur from activities associated with the project. Construction and long-term water quality best management practices (BMPs) will be utilized to avoid any impacts to the Yellow lamp mussel or the Tidewater mucket listed species within the Connecticut River and Wethersfield Cove. No impacts are expected to the Bald eagle as none are known to nest within 600 feet of the proposed main tunnel launch site. Monitoring was conducted prior to the start of construction and did not reveal Bald eagles nesting within 600 feet of the project.

Listed Plant Species

No listed plant species have been identified within the project site.

Fish Habitat

There are no fish habitats located on-site.

Attachment I6

Supplemental Materials

Proposed Mitigation Action

ATTACHMENT I6

COMPENSATORY MITIGATION

The wetland mitigation strategy for this project calls for wetland restoration of former wetlands, and limited areas of enhancement where existing wetlands have been degraded. The remaining area of the parcel will be used for upland buffer creation, and preservation of existing resources. As shown in the concept plan, the majority of wetland restoration will consist of PFO wetlands, followed by PEM and finally PSS wetlands. This corresponds to the wetland types impacted by the proposed project, as shown in Table 1. Although areas of Palustrine Open Water (POW) are not shown on the concept plan, small areas of POW wetlands will be created within the proposed PFO, PEM, and PSS zones to add additional diversity to these areas. See Attachments I3 and I6 for mitigation plans and details.

Wetland Creation. The initial component of the proposed mitigation plan would be the creation of 11,150 sf of wetlands at a location within the Connecticut River watershed. These wetlands would be created through the USACE in-lieu fee program. The in-lieu fee of approximately $113,000 was paid by MDC in August 2015 to compensate for this portion of permanent loss to Wetland D.

The tunnel launch site contains former wetland areas, existing wetland areas, and areas colonized by invasive plant species. Therefore, the site provides potential for wetland restoration. The second component of the proposed wetland creation is the construction of a 21,457 sf wetland in an existing upland area in the northwest corner of the site. Wetland Area Z was created to federal quality before construction started to offset the remaining wetland impacts from the project.

Wetland Restoration. Reestablishment of temporarily impacted wetland areas would consist of re-grading of the soil surface, placement of an organic soil material, as needed, and planting of various native wetland herbaceous and shrub vegetation species. Wetland D (shown as Wetland Area X in Attachment I3) would be re-established as a 45,794 sf federal wetland of equal or higher quality than exists today. Although currently a state-only regulated wetland, Wetland F (shown as Wetland Area Y in Attachment I3), would also be restored to a federal wetland with a significantly higher functional level than it currently has.

Soil erosion and sedimentation controls would not be removed until vegetation is established.

The specific plant species and seed mixes in the planting plan are shown in Attachment I3.

Wetlands

The tunnel launch site contains former wetland areas, existing wetland areas, and areas colonized by invasive plant species; conditions favorable to wetland restoration. The portion of the tunnel launch site most suited for wetland mitigation was identified within an area of fill material to the north of the site – adjacent to an existing telecommunications tower (Wetland Area Z). Based on the USACE guidance of suggested ratios in Table 2, the proposed acreage for wetland creation and the acreage of impacted wetlands compensated for (“Area of Wetlands Compensated”) are shown below in Table 1.

Table 1: Wetland Impact Area and Areas of Wetlands Compensated

Wetland Type	Total Project Wetland Impact Area	Restoration ratio*	Total Area of Wetlands Compensated
PFO	0.24	2:1	0.48
PEM	0.24	2:1	0.48
PSS	0.0	2:1	0.0
TOTAL	0.48		*0.96*

Note: all areas reported in acres * Suggested higher ratios taken from USACE 2010 New England Division Compensatory Mitigation Guidance

Table 2: USACE Minimum Suggested Wetland Mitigation Ratios

Wetland Type	Wetland Mitigation Method	
	Restoration*	Enhancement*
PFO	2:1	5:1
PEM	2:1	3:1
PSS	2:1	3:1

* Suggested higher ratios taken from USACE 2010 New England Division Compensatory Mitigation Guidance

The impacts from the South Tunnel project construction are largely unavoidable, given the alignment of the launch shaft site and its proximity to the HWPCF. This is the most logical and least-impactful alternative complying with the consent decree from the EPA to eliminate Sanitary Sewer Overflows by January 2023 as well as the consent order from CT DEEP to control Combined Sewer Overflows. The combined impacts to low-quality wetlands within the project area are being mitigated through restoration, creation, and enhancement of a large contiguous wetland system, where a greater range of wetland functions-values can be sustained in perpetuity. Considering that all of the impacted wetlands will be enhanced or replaced by wetlands complying with Federal Standards that have higher functions/values, this is deemed an appropriate and beneficial mitigation proposal for the project's wetland impacts. This mitigation approach was coordinated with and approved by USACE and CT DEEP.

Watercourses

There are no temporary or permanent impacts anticipated to the on-site perennial watercourse. Additionally, no long term impacts to water quality or stream functions are expected. In many areas, post-construction conditions will be more stable than pre-construction conditions, minimizing long-term erosion and sedimentation problems and improving water quality.

Floodplains

Although there will be impacts within FEMA Zone X, this area is protected by the levee so therefore no mitigation is proposed.

Seasonal Pools

There are no seasonal pools located within the launch shaft tunnel site, therefore no mitigation is needed.

Wildlife

Although no wildlife impacts are anticipated and therefore no mitigation is proposed, the area between this property and Wethersfield Cove is floodplain forest. Any unnecessary incursions into this natural community could affect the ecological value. During construction, erosion and sedimentation controls will be used in all areas adjoining the floodplain forest. BMPs will be implemented and maintained during the entire course of the project to ensure no impacts occur to the extant populations of Bald Eagle (*Haliaeetus leucocephalus*), Yellow lamp mussel (*Lampsilis cariosa*) and Tidewater Mucket (*Leptodea ochracea*) that have been identified within bordering project vicinity.

Listed Plant Species

There are no listed plant species located within the launch shaft tunnel site, therefore no mitigation is needed.

Fish Habitat

There is no fish habitat located on-site therefore no mitigation is proposed.

Attachment I7

CT DEEP Inland Wetlands and Watercourses Activity Reporting Form

Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

GIS CODE #: ___ ___ ___ ___ ___ ___ ___ ___ ___
For DEEP Use Only

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Statewide Inland Wetlands & Watercourses Activity Reporting Form

Please complete and mail this form in accordance with the instructions on pages 2 and 3 to:
DEEP Land & Water Resources Division, Inland Wetlands Management Program, 79 Elm Street, 3rd Floor, Hartford, CT 06106
Incomplete or incomprehensible forms will be mailed back to the municipal inland wetlands agency.

PART I: Must Be Completed By The Inland Wetlands Agency

1. DATE ACTION WAS TAKEN: year: **Click Here for Year** month: **Click Here for Month**
2. CHOOSE ACTION TAKEN (see instructions for codes): **Click Here to Choose a Code**
3. WAS A PUBLIC HEARING HELD (check one)? yes ☐ no ☐
4. NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:

   (type name) _____ (signature) _____

PART II: To Be Completed By The Inland Wetlands Agency Or The Applicant

5. TOWN IN WHICH THE ACTION IS OCCURRING (type name): **Hartford**
   does this project cross municipal boundaries (check one)? yes ☐ no ☒
   if yes, list the other town(s) in which the action is occurring (type name(s)): _____, _____
6. LOCATION (click on hyperlinks for information): USGS quad map name: **Hartford South** or quad number: _____
   subregional drainage basin number: **4005**
7. NAME OF APPLICANT, VIOLATOR OR PETITIONER (type name): **The Metropolitan District (MDC)**
8. NAME & ADDRESS / LOCATION OF PROJECT SITE (type information): **255 Brainard Rd, Hartford,CT**
   briefly describe the action/project/activity (check and type information): temporary ☒ permanent ☒ description:
   Construction of a deep rock tunnel (approx. 21,800 lf) from Hartford to West Hartford to reduce CSOs, eliminate SSOs, and reduce nitrogen entering the Connecticut River.
9. ACTIVITY *PURPOSE* CODE (see instructions for codes): **F**
10. ACTIVITY *TYPE* CODE(S) (see instructions for codes): **1, 2, 12, 14**
11. WETLAND / WATERCOURSE AREA ALTERED (type acres or linear feet as indicated):
    wetlands: **0.48** acres open water body: **0.00** acres stream: **0.00** linear feet
12. UPLAND AREA ALTERED (type acres as indicated): **1.95** acres
13. AREA OF WETLANDS / WATERCOURSES RESTORED, ENHANCED OR CREATED (type acres as indicated): **2.03** acres

PART III: To Be Completed By The DEEP

DATE RECEIVED: DATE RETURNED TO DEEP:

FORM COMPLETED: YES NO FORM CORRECTED / COMPLETED: YES NO

Attachment M1

Adjoining Municipality Letter

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

416 Asylum Street
Hartford, CT 06103
t (860) 247-7200
www.fhiplan.com

South Hartford Conveyance and Storage Tunnel
Hartford, Connecticut

Notice of Permit Application

Mr. Derrick Gregor, P.E.
Town Engineer
505 Silas Deane Highway
Wethersfield, CT 06109

Dear Mr. Gregor,

Fitzgerald & Halliday, Inc. (FHI) is a sub-consultant to AECOM, who has been contracted by the Metropolitan District (MDC) to design and obtain permits for the South Conveyance and Storage Tunnel (South Tunnel) project. The purpose of this letter is to inform your municipality of the proposed South Tunnel construction activities that will affect regulated wetlands located within 500 feet of the municipal boundary between the City of Hartford and Town of Wethersfield. This notification is a requirement of the City of Hartford Inland Wetlands and Watercourses permit (IWWP) for a permit to conduct an activity in a wetland or watercourse. The MDC has the IWWP for the project and is now requesting an extension of the permit.

The South Tunnel project is a significant component of the MDC's Long Term Control Plan (LTCP) which was approved by the Connecticut Department of Energy and Environmental Protection (CT DEEP). This project will address a portion of the MDC's Clean Water Project (CWP), which will control Combined Sewer Overflows (CSOs); eliminate Sanitary Sewer Overflows (SSOs); and reduce nitrogen released into the Connecticut River.

The purpose of the South Tunnel project is to eliminate West Hartford and Newington Sanitary SSOs, control Franklin Avenue Area CSOs discharging to Wethersfield Cove, and to minimize CSO discharges to the South Branch of the Park River. During dry weather, the South Tunnel will not receive flow as the existing MDC collection system can adequately convey flow to the Hartford Water Pollution Control Facility (HWPCF). During wet weather, when the capacity of the existing collection system is exceeded, the South Tunnel will receive overflows that would have previously discharged directly to receiving waters.

Proposed construction-related activities include the temporary placement and use of construction trailers for the duration of tunnel construction, as well as the construction of permanent bio swales, stormwater retention areas, access roads, electrical infrastructure, an equipment removal shaft, and a personnel/utility shaft. This site will also be the location of a permanent head works pump house for the South Tunnel which will house the equipment needed to pump the wastewater up from the storage and conveyance tunnel to the surface and ultimately direct it to the nearby MDC HWPCF.

The conveyance tunnel will be located at a depth of 200 feet below the surface drilled into solid bedrock resulting in no impacts to surface resources; however, construction at the tunnel launch site will impact natural resources at the surface. No additional impacts are anticipated as a result of construction of tunnel access drop shafts.

The proposed design for the South Tunnel at the main tunnel launch shaft site will result in permanent and temporary impacts to existing wetlands. Portions of some existing wetlands will be filled, leading to a reduction in overall wetland area as well as functionality. This reduction in wetland area and functionality will be mitigated by restoring existing wetland areas on-site and enhancing their overall quality and functionality over the long term.

Based on the current design, project activities will impact federal wetland resources only within the tunnel launch site area. Permanent impacts to federal-jurisdictional wetlands will be 20,740 square feet (sf), or 0.48 acres (ac). Temporary impacts to federal-jurisdictional wetlands will be 45,794 sf (1.05 ac). Since the tunnel will take approximately ten more years to drill, these temporary impacts will be in place for this period of time.

Temporary impacts to wetlands will primarily result from staging area construction, construction access areas, and temporary water handling measures. Wetlands temporarily impacted by these activities will be restored to their original, or better, conditions. Approximately 1.05 acres of federal wetland will be impacted; 1.55 acres of temporary wetland impact area will be restored to a federal level, for a gain of 0.5 acres of federal wetland.

Reestablishment of temporarily impacted wetland areas will consist of re-grading of the soil surface, placement of an organic soil material, as needed, and planting of various native wetland herbaceous and shrub vegetation species. Soil erosion and sedimentation controls will not be removed until vegetation is established.

Interested persons may obtain copies of the IWWP application from Shawn Callaghan, 416 Asylum Street, Hartford, CT, 860-247-7200.

Thank You,

Shawn Callaghan
Project Manager
Professional Soil Scientist
FHI | Fitzgerald & Halliday, Inc.
Innovative Planning, Better Communities

Attachment H: Alternatives Assessment

MDC South Conveyance and Storage Tunnel Project,
Hartford and West Hartford, Connecticut
The Metropolitan District

The MDC is under a consent decree from the United States EPA to control Combined Sewer Overflows (CSO) and eliminate Sanitary Sewer Overflows (SSO) by January 2023. How to do it is not specified in the consent decree, just that it needs to be done by that date.

The purpose of the South Conveyance and Storage Tunnel (South Tunnel) is to eliminate West Hartford and Newington Sanitary Sewer Overflows (SSOs), to control Franklin Avenue Area Combined Sewer Overflows (CSOs) discharging to Wethersfield Cove, and to minimize CSO discharges to the South Branch of the Park River. These improvements will address a portion of the MDC's Clean Water Project (CWP), which will reduce CSOs; eliminate SSOs; and reduce nitrogen released into the Connecticut River.

The South Tunnel consists of a consolidation conduit (located mainly in existing streets) that will intercept overflows and divert them to a drop shaft leading down to the storage tunnel. The overflows will be directed along the approximately 4-mile long storage tunnel and then will be pumped up to the MDC plant located along the Connecticut River for treatment prior to ultimate discharge into the river.

The main launch shaft for the tunnel will be located just west of the HWPCF, on MDC owned property located off of Brainard Road. This is the key site for project construction as the main boring machine and all associated boring equipment will be launched from here and all spoils will be removed from the tunnel at this location. The site's proximity to the Hartford Water Pollution Control Facility also makes it a vital location for the launch shaft site as it must be connected to the existing system to function properly.

Project Alternatives

Alternatives were evaluated for the project as outlined in the Connecticut Final Basis of Design Report, February 2013. Alternatives considered are described below. These alternatives were evaluated against the project purposes of eliminating CSOs and SSOs by January 2023 leading to the implementation alternative described herein.

Wetland Avoidance

Given the parameters of the site, the project elements, and accessibility constraints, complete avoidance of on-site wetlands is/was not possible. However, wetland impacts were avoided and minimized to the extent practicable. Covered almost entirely by both State and Federal wetlands the Brainard Road location provided limited opportunity for building access roads or the launch shaft anywhere other than the proposed alignment. In addition, the large area required for temporary storage and handling of tunnel tailings must be located directly adjacent to the tunnel operation. This alignment is best suited to connect with the existing Hartford Water Pollution Control Facility and Brainard Road terminus.

No Build
If the MDC does not move forward with the South Tunnel Project construction, infrastructure improvements to the MDC's wastewater system would be limited and not be capable of meeting the consent decree issued by the EPA. This project protects the health and safety of citizens during storm events and addresses a federal consent decree and a Connecticut DEEP consent order to achieve Federal Clean Water Act goals.

Alignment Alternatives
An alignment study was conducted to evaluate various configurations of rock tunnels and consolidation conduits. Seven (7) conceptual rock tunnel alignments and associated consolidation conduit options were developed and evaluated. The purpose of this alignment study was to identify a cost effective and acceptable tunnel alignment that balances the expectations of the many stakeholders impacted by the project along with environmental resources. Two workshops were conducted with representatives from the MDC and their consultants which identified and prioritized various stakeholders and identified potential impacts to each group.

All the alignments began in property obtained by the District adjacent to the HWPCF off of Brainard Road. However three different locations were identified as possible deep rock termination points. Two of these locations were located in space owned by various City of Hartford departments on the east side of the of the South Branch of the Park River and the third was in an unused parking lot on Talcott Road in a light industrial area on the west side of the river (in West Hartford). This third location significantly reduced the length of consolidation conduits and allowed the South Branch of the Park River to be crossed deeply in rock using the deep rock tunnel instead of crossing the river with a shallower and more risky consolidation conduit.

Alignment F was identified as the preferred alignment and recommended to advance to final design. In general, this alignment provides the maximum reduction in consolidation conduit length which reduces the associated cost, business impacts, and construction risk of those construction activities.

Conclusion
The Brainard Road site is the most logical and appropriate location for the launch shaft terminus because of its proximity and direct connectivity to the Hartford Water Pollution Control Facility. It is the only suitable location for the proposed activities.

City of Hartford
Connecticut's Capital City

Planning & Zoning Commission as the Inland Wetlands and Water Courses Commission

Staff Report

Wetlands Permit Application

To construct the South Conveyance and Storage Tunnel Launch Shaft Site in a designated wetlands area.

October 28, 2014

Applicant
The Metropolitan District Commission (MDC)

Owner
The Metropolitan District Commission (MDC)

Staff
Name Jonathan E. Mullen, AICP
Title Principal Planner
Email mullj002@hartford.gov
Phone (860) 757-9050

Zone
C-1

POCD Designation
General Industrial

Lot Size(s)
11.09 acres

Current Use
Utility

Applicable Zoning Regulations
City of Hartford Wetlands Regulations Section 6.1 Regulated Activities.

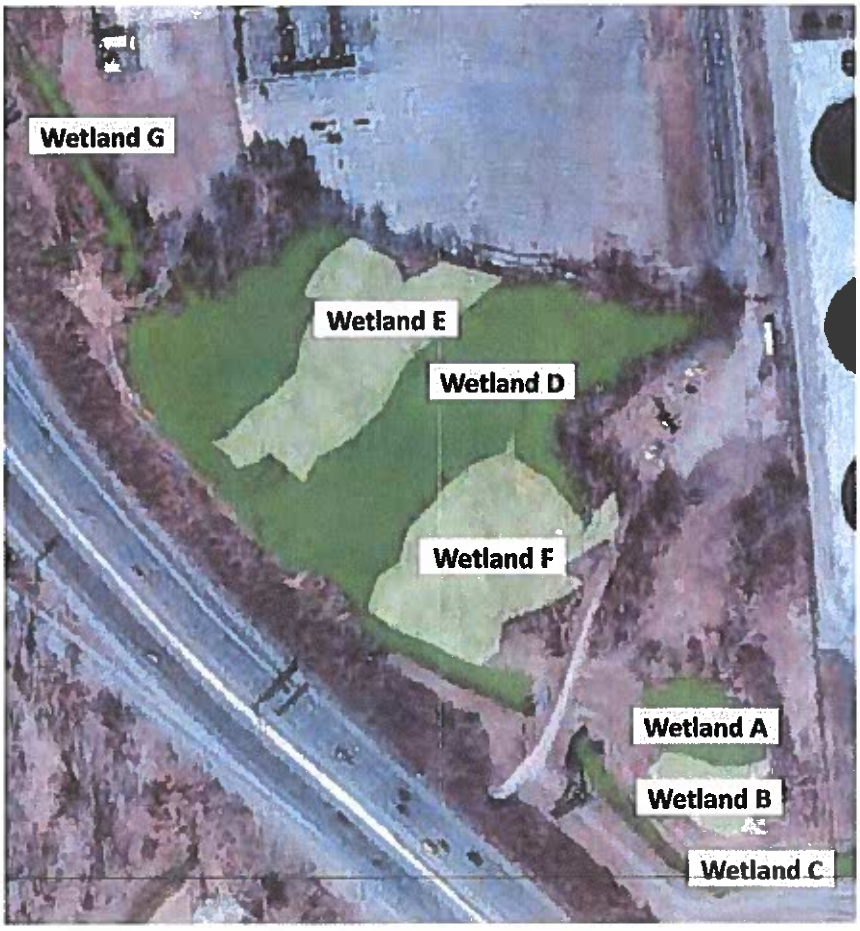
Notification
- Hartford Courant
October 17, October 24

PROPOSAL

The applicant proposes to construct the launch shaft site for the South Conveyance and Storage Tunnel. The project will include temporary and permanent disturbance of on site wetlands. The applicant intends to mitigate any wetlands disturbance by restoring temporarily disturbed wetlands to above federal standards, creating new wetlands at the site and paying an "in lieu" fee to the US Army Corps of Engineers. All restored and newly created wetlands will be monitored to ensure their survival.

STAFF RECOMMENDATION

The Planning Division recommends approval of the wetlands permit to construct the South Conveyance and Storage Tunnel Launch Shaft site in a designated wetlands area.



City of Hartford, Department of Development Services, Planning Division

CITY OF HARTFORD
PLANNING AND ZONING COMMISSION
AS THE INLAND WETLAND AND WATERCOURSES COMMISSION
RESOLUTION
244 BRAINARD ROAD
WETLANDS PERMIT
TO CONSTRUCT THE SOUTH CONVEYANCE AND STORAGE TUNNEL LAUNCH SHAFT SITE IN A DESIGNATED WETLANDS AREA
OCTOBER 28, 2014

Whereas, The City of Hartford Planning and Zoning Commission acting in its capacity as the Inland Wetlands and Watercourses Commission has reviewed an application for wetlands permit to construct the South Conveyance and Storage Tunnel Launch Shaft Site in a designated wetlands area; and

Whereas, There are both state and federally regulated wetlands present on the site; and

Whereas, The project will include temporary and permanent disturbance of on site state and federal wetlands; and

Whereas, The applicant intends to restore any temporarily disturbed state and federal wetlands to above federal standards; and

Whereas, The applicant intends to off set the permanent loss of state wetlands through creating new wetlands that will exceed federal standards at the site; and

Whereas, The applicant will pay an "in lieu" fee to the U.S. Army Corps of Engineers for permanent disturbance of federally regulated wetlands; and

Whereas, All restored and newly created wetlands will be monitored to ensure their survival; Now Therefore Be It

Resolved, The City of Hartford Planning and Zoning Commission acting in its capacity as the Inland Wetlands and Watercourses Commission hereby approves the application for a wetlands permit to construct the South Conveyance and Storage Tunnel Launch Shaft Site in a designated wetlands area as described in the submission package entitled "The Metropolitan District South Conveyance and Storage Tunnel Project" prepared by AECOM 500 Enterprise Drive Suite 1A Rocky Hill, CT 06067, and Fitzgerald & Halliday, Inc 416 Asylum Street, Hartford, CT 06103, date September 22, 2014 subject to the following condition:

1. The applicant coordinate with a local environmental group to explore using the "in lieu" fee to the U.S. Army Corps of Engineers for disturbance of federally regulated wetlands for a project that will benefit wetlands and watercourses within the City of Hartford.

Now Be It Further;

Resolved, This twenty eighth day of October, 2014

REVIEW

SITE DESCRIPTION

The site is undeveloped and almost entirely covered in vegetation. Brainard Road extends into the site and provides access to the dikes at the southern end of the property.

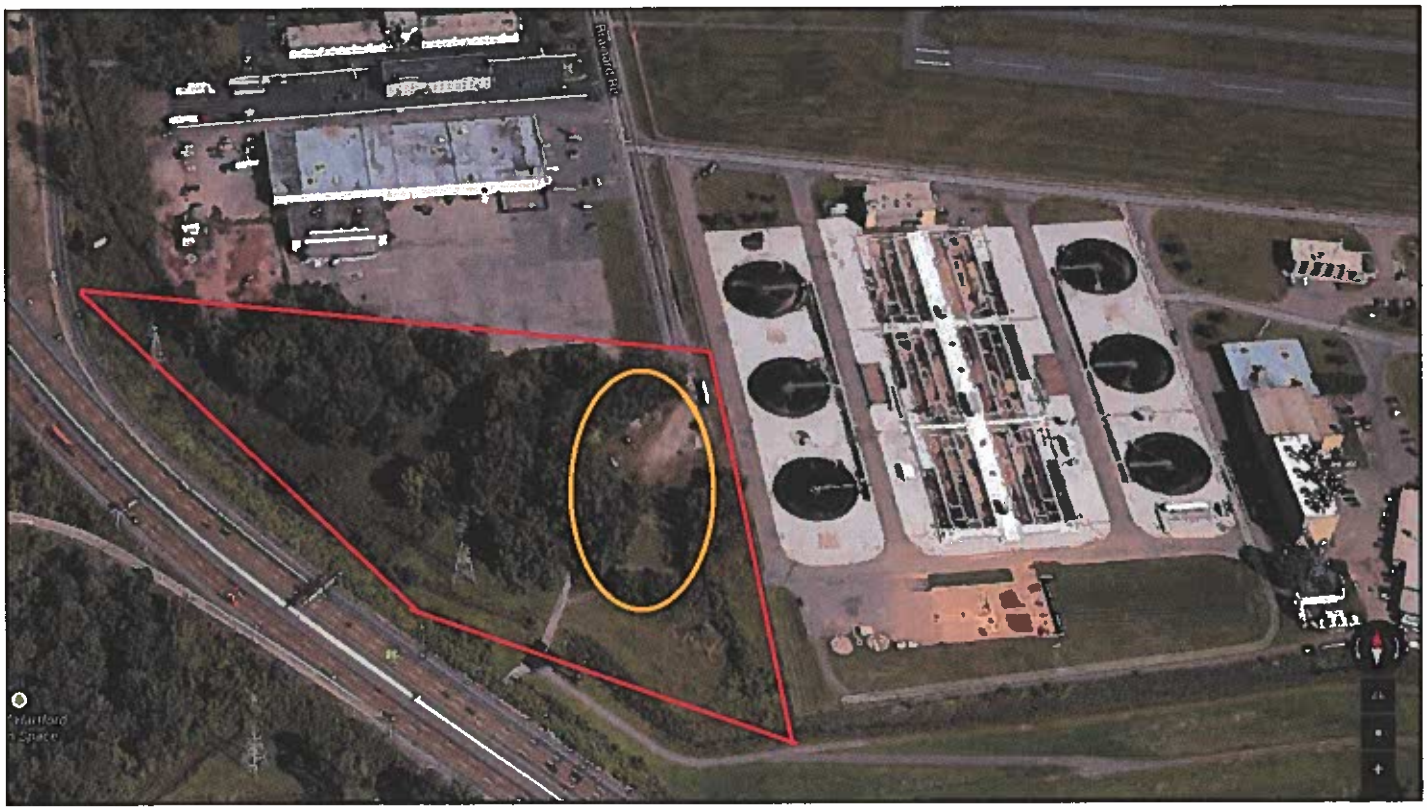
ADJACENT USES

NORTH – A Parking Lot

SOUTH – The Town of Wethersfield

EAST – The MDC Wastewater Treatment Facility

WEST – Interstate 91



Aerial view of project site looking north

PROJECT DESCRIPTION

According to the applicant's submission the project consists of the following elements:

• Deep rock tunnel (18' internal diameter @ 21 ,800 linear feet) with a launch shaft near the Hartford Water Pollution Control Facility (HWPCF) in Hartford and a retrieval shaft in West Hartford. New diversion structures would be constructed at each CSO/SSO relief point to divert overflows to new consolidation sewers (near surface). These, in-turn, would discharge flow to hydraulic drop shafts which would convey the flow in a controlled manner to the deep rock storage tunnel. Once in the tunnel, flow would be pumped to the new head works at the HWPCF.

• Up to 7,300 linear feet of near-surface consolidation sewers (36 inches to 78 inches in diameter) to bring the overflow to the deep rock tunnel.

• Seven hydraulic drop shafts.

• 40 MGD tunnel pump station.

• Odor control at all potential air release points due to the displaced air in the tunnel as the combined flow enters the system.

PROPOSED CHANGES TO EXISTING CONDITIONS

There are many proposed construction activities and uses designed for the main tunnel launch shaft site. These construction-related activities include the temporary placement and use of construction trailers for the duration of tunnel construction, as well as the construction of permanent bio swales, storm water retention areas, access roads, electrical infrastructure, an equipment removal shaft, and a personnel/utility shaft. This site will also be the location of a permanent headworks pump house for the South Tunnel which will house the equipment needed to pump the wastewater up from the storage and conveyance tunnel to the surface and ultimately direct it to the nearby HWPCF.

The conveyance tunnel will be located at a depth of 200 feet below the surface drilled into solid bedrock resulting in no impacts to surface resources; however, construction at the tunnel launch site will impact natural resources at the surface. No additional impacts are anticipated as a result of construction of tunnel access drop shafts.

The proposed design for the south tunnel will result in permanent and temporary impacts to existing wetlands. Portions of some existing wetlands will be filled, leading to a reduction in wetland area as well as functionality. This reduction in wetland area and functionality will be mitigated by enhancing existing wetland areas as well as by creating higher quality wetland areas on the project site. Drilling spoils being excavated from the main tunnel launch shaft during the construction of the conveyance tunnel will be temporarily stockpiled, managed, and hauled away.

EVALUATION OF IMPACTS

Wetlands

Throughout the duration of project construction, there will be several permanent and temporary impacts to on-site wetlands. Temporary impacts to wetlands can be expected at those areas designated as contractor laydown areas, as well as at segment storage and tunnel laydown areas. Additional permanent wetland impacts to Wetlands A and B are expected to occur from the main conveyance tunnel boring site, access roads, and crane pad used by the tunnel contractor.

Temporary Impact Areas. Based on the current design, project activities will affect federal wetland resources only within the tunnel launch site area. The temporary impacts to wetlands will result primarily from the creation of staging areas to support the construction of the deep rock tunnel; work pads and access roads, and temporary water handling measures. Only one area of temporary impact will occur on the site: Wetland D (45,794 sf). Since the tunnel will take approximately five years to construct, the temporary impact will be in place for this period of time. Wetland D will be re-established as a federal wetland of higher quality than as it exists today.

Reestablishment of temporarily impacted Wetland D areas will consist of re-grading of the soil surface, placement of an organic soil material, as needed, and planting of various native wetland herbaceous and shrub vegetation species. Soil erosion and sedimentation controls will not be removed until vegetation is established. The specific species to be reestablished will depend on the pre-disturbance inventory of dominant herbaceous, shrub and tree wetland plants within a particular wetland impact area. In some cases, it may be more effective to apply an approved wetland seed mixture.

Permanent Impact Areas. The wetlands located within the permanent limit of disturbance include a portion of

Wetland D (11,150 sf) and federal Wetland A (9,590 sf). Therefore, the total permanent wetland impact resulting from the project will be 20,740 sf (0 .48 ac).

To determine the distribution of wetland classes within the areas of permanent wetland impact, field work was conducted to map these areas as palustrine forest (PFO), palustrine emergent (PEM), and palustrine scrub-shrub (PSS) wetland areas. This mapping of wetland types was overlain on the proposed wetland impact areas to determine impacts to each wetland type.

COMPENSATORY MITIGATION

The wetland mitigation strategy for this project calls for wetland restoration of former wetlands, and limited areas of enhancement where existing wetlands have been degraded. The remaining area of the parcel will be used for upland buffer creation, and preservation of existing resources.

Wetland Creation. The initial component of the proposed mitigation plan would be the creation of 11,150 sf of wetlands at a location within the Connecticut River watershed. These wetlands would be created through the USACE in-lieu fee program. The in-lieu fee of approximately $113,000 will be paid by MDC, and would compensate for this portion of permanent loss to Wetland D. The Planning Division is recommending as a condition of approval that the applicant work with the USACE to develop a project that would directly benefit the City of Hartford.

The tunnel launch site contains former wetland areas, existing wetland areas, and areas colonized by invasive plant species. Therefore, the site provides potential for wetland restoration. The second component of the proposed wetland creation would be the construction of a 21,457 sf wetland in an existing upland area in the northwest corner of the site Wetland Z would be created to federal quality before construction starts, and would offset the remaining wetland impacts from the project.

Wetland Restoration - Reestablishment of temporarily impacted wetland areas would consist of regrading of the soil surface, placement of an organic soil material, as needed, and planting of various native wetland herbaceous and shrub vegetation species. Wetland D (shown as Wetland X on Sheet 3) will be reestablished as a 45,794 sf federal wetland of equal or higher quality than exists today. Although currently a state-only regulated wetland, Wetland F (shown as Wetland Y on Sheet 3), will also be restored to a federal wetland with a significantly higher functional level than it currently has.

Soil erosion and sedimentation controls would not be removed until vegetation is established.
The specific species to be reestablished will depend on the pre-disturbance inventory of dominant herbaceous, shrub and tree wetland plants within a particular wetland impact area. In some cases, it may be more effective to apply an approved wetland seed mixture. The detailed planting plan would be submitted once the mitigation plans have been finalized.

Attachment #3: Email from Wetland Agent to Applicant

Re: Great to meet you!

Sanderson, Elizabeth <Elizabeth.Sanderson@hartford.gov>

Fri 9/11/2020 8:41 AM

To: Shawn Callaghan <scallaghan@fhiplan.com>

Hi Shawn,
It was nice to finally meet you in person! Thanks for showing me around the site, and for providing contact info. for USACE.
I hope to review the submitted documents and confirm the meeting date over the next few days. Initial thoughts are that this extension would not be subject to public hearing, and would likely be added to the 10/13 Planning, Zoning & Inland Wetlands meeting agenda.

During our sitewalk it came to attention that eroded soil is building up in downstream areas, which indicates better measures need to be taken to prevent erosion at the construction site. Please work with Brian and/or the construction manager or contractor to remove silt build-up and install additional erosion controls to reduce potential for future build-up.

Thanks again,
Elizabeth

From: Shawn Callaghan <scallaghan@fhiplan.com>
Sent: Thursday, September 10, 2020 3:18 PM
To: Sanderson, Elizabeth <Elizabeth.Sanderson@hartford.gov>
Subject: Great to meet you!

Hi Elizabeth,

Excellent finally meeting you this morning. Brian was able to submit the hard copy of the MDC IWWP permit and payment today, so that is great.

You asked who the Project Manager for this project is at the USACE, and last I checked with them there is actually not one assigned to this right now. Some staffing changes, including the promotion of Taylor Bell, coupled with Covid, means they are still assigning a new PM. They may have assigned one by now, so if you need to contact USACE, you can reach out to the Bureau Chief:

Kevin R. Kotelly, P.E.
Chief, Permits and Enforcement Branch
Regulatory Division
(978) 318-8703

How do we get on the agenda for the next Conservation Commission meeting?

If you need anything else, please don't hesitate to ask.

Thanks,
Shawn

Shawn Callaghan, PSS

Project Manager
scallaghan@fhiplan.com / (860) 256-4918

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