



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

November 8, 2024

Regulatory Division
File Number: **NAE-2024-00051**

Massachusetts DCR – Office of Dam Safety
Attn: William Salomaa
10 Park Plaza
Boston, Massachusetts 02116
Sent by email: [william.salomaa@mass.gov]

Dear Mr. Salomaa:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to discharge dredged and/or fill material into approximately **4.36** acres of waters of the United States, associated with Pontoosuc Brook (aka the West Branch of the Housatonic River), the Bel Air Dam impoundment and associated adjacent wetlands adjacent to 400 Wahconah Street in Pittsfield, Massachusetts as part of the Bel Air Dam Removal Project. The goals of this project are 1.) to breach the existing High Hazard Potential Dam, so that it is no longer a regulated dam, and 2.) to re-establish normal river flow patterns and fish passage through this section of the West Branch of the Housatonic River.

This project involves the partial removal of the Bel Air Dam embankment and the excavation of a new channel (approximately **1230** linear feet long and **40** feet wide) with localized upland floodplain areas through the upriver impoundment. The proposed main channel will be armored. Massachusetts DCR proposes to bypass 72 cubic feet per second of flow around the active in-river construction areas.

Depths of sediment removal from the Bel Air Dam embankment and the upriver impoundment vary from 2-feet to 15+ feet. All totaled, approximately **35,500** cubic yard of contaminated sediment will be removed. This sediment will be treated on-site and then permanently disposed of at an approved off-site upland location. Note: This is only a portion of the overall accumulated sediments. Additional accumulated sediments in the upriver impoundment will be capped in place with geo-cells and clean fill and then seeded and/or planted with native vegetation.

The project team estimates that once the Bel Air Dam is removed and this impoundment is permanently dewatered, approximately **3.22** acres of open-water and adjacent wetlands will be converted to an upland riparian area. The remaining **1.14** acres of the impoundment will be converted to the new main channel.

This work is described on the enclosed reduced plan drawing set entitled “MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION, BEL AIR DAM REMOVAL, PITTSFIELD, MA,” on a total of thirteen of the original twenty two sheets, dated “JUNE 2024” and four additional plan drawings [Bel Air Dam Existing Environmental Resources – Sheet 4, Bel Air Dam Future Environmental Resources – Sheet 5, C-103 – Estimated Depths of Sediment Removal – Sheet 11, and C-301 – Typical Channel Cross-Sections – Sheet 12].

Based on the information that you have provided, we verify that the activity is authorized under General Permit **#10** (Aquatic Habitat Restoration, Establishment, and Enhancement Activities) and **#15** (Survey Activities) of the June 2, 2023, federal permit known as the General Permits for the Commonwealth of Massachusetts (GP MA). The GP MA are available at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit>.

Please review the GP MA carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GP MA are fully aware of and comply with its terms and conditions. A copy of the GP MA and this verification letter shall be available at the work site as required by General Condition **#17**. In addition, you must perform this work in compliance with the following special conditions:

1. You must maintain the activity authorized herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition **#39** on page 50 of the GP MA. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.

2. Massachusetts DCR (the permittee) must complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated date for starting the authorized work.

3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed reduced plan drawing set entitled “MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION, BEL AIR DAM REMOVAL, PITTSFIELD, MA,” on a total of thirteen of the original twenty two sheets, dated “JUNE 2024” and four additional plan drawings. If you make changes to the plans or construction methods for work within the West Branch of the Housatonic River, the Bel Air Dam impoundment and/or in adjacent

wetlands, please contact us immediately to discuss modification of this authorization. The Corps must approve any changes before you undertake them.

4. This Corps permit does not authorize you to “take” a federally listed endangered or threatened species, in particular the northern long-eared bat (*Myotis septentrionalis*). See 16 USC 1532(13) and 16 USC 1532(19) for definitions of take, which include harassment and harm. See 50 CFR 17.3 which further define harassment and harm.

5. No tree-clearing operations shall be conducted during the time-period between June 1st and July 31st of any year, in order to avoid impacts to northern long-eared bat pup roosting habitat areas. However, if an appropriate project-specific survey demonstrates that bats are absent from the action area, this special condition would not apply. Please contact us if you would like to conduct a survey in accordance with the “Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines.”

6. The Stockbridge-Munsee Band of Mohicans Tribal Historic Preservation Officer (THPO) has expressed concerns about the cultural sensitivity of the Bel Air Dam Removal project area. Massachusetts DCR is required to conduct a geoprobe coring archaeological survey in order to identify archaeological sensitive areas, which could be potentially impacted by this dam removal project. This pre-construction archaeological survey shall be conducted in accordance with the attached “Geomorphology Assessment Scope,” dated “September 26, 2024” [see Enclosure #1]. This document also outlines that it will adhere to the Stockbridge-Munsee Band’s Inadvertent Discovery Policy in the event of an accidental discovery. Results of the geoprobe coring archaeological survey shall be forwarded to the Corps and to the Stockbridge-Munsee Band of Mohicans THPO prior to starting the dam removal component of this project.

7. Massachusetts DCR is required to monitor any ground disturbances associated with the Bel Air Dam Removal Project. These may include additional areas of ground disturbance, such as the creation of access roads, parking areas, staging areas, etc. Project related activities with the potential for ground disturbance within the project site will be monitored by a professional archaeologist (hereafter known as the “monitor”) meeting the Secretary of the Interior’s Professional Qualification Standards (36 CFR 61). The monitor will be required to be present for all ground-disturbing activities that take place within the Bel Air Dam Removal Project. The monitor will be required to be present for any additional ground disturbing activities that may involve access to the Bel Air Dam Removal Project.

8. Massachusetts DCR is required to notify the Stockbridge-Munsee Band of Mohicans THPO, at thpo@mohigan-nsn.gov, at least 7 business days prior to the start of any ground disturbance activities associated with the Bel Air Dam Removal Project. A tribal representative(s) must be allowed to be present during any ground disturbance or excavation activities to identify any possible cultural or historic items found on site during these demolition and construction activities. The representatives will need to comply with construction site safety requirements.

Massachusetts DCR shall also notify the Corps at least 7 business days prior to the start of any ground disturbance activities associated with the Bel Air Dam Removal Project. This will allow the Corps to coordinate with the Stockbridge-Munsee Band of Mohicans THPO prior to the start of ground disturbance activities.

9. If during sediment removal or other construction activities, previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, the permittee shall temporarily suspend all construction activities that may damage or alter such resources. Resources covered by this paragraph include, but are not limited to, human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, and other cultural deposits. Upon such discovery or find, immediately notify the Corps Project Manager and Regulatory Archaeologist so that the Massachusetts State Historic Preservation Officer (MA SHPO), the Tribes, and other appropriate authorities may be notified, and a determination made as to their significance and disposition (see Special Condition **#14(d)** of the GP MA for more details).

10. Results of the construction phase archaeological monitoring shall be provided to the Corps and to the Stockbridge-Munsee Band of Mohicans THPO. Any archaeological excavations/collections reports associated with the geoprobe coring archaeological survey (see Special Condition **#7**) and the construction phase archaeological monitoring (see Special Condition **#8**) will be provided to the Corps and the THPO within six months of the completion of monitoring. The monitoring report will include a description of the undertaking, a description of any recorded cultural features, and an inventory of collected artifacts/samples. Copies of all field notes, maps, sketches, locus forms, and photographs of features and diagnostic artifacts will be appended to the monitoring report. Massachusetts DCR will adhere to archaeological standards outlined in 950 CMR 70.

11. Appropriate measures must be taken to maintain normal downriver flows and to minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, etc., are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must be placed in a manner that will not be eroded by expected high flows. See General Condition **#22(f)** of the GP MA for more details.

12. Sediment to be removed shall be dewatered in place or within an on-site dewatering facility. This will allow the suspended sediment to settle and the filtered water to evaporate, percolate into the ground, or flow downriver in the West Branch of the Housatonic River. The scheduling of sediment removal and dewatering operations shall be such that the capacity of the dewatering area is not exceeded under any circumstances.

13. All sediment removal and management activities authorized under this permit shall be conducted in accordance with the requirements of Massachusetts DEP's water quality certification for this project.

14. Prior to transporting any sediment off-site for permanent disposal, Massachusetts DCR or their contractor will coordinate with the Corps the location(s) of the upland facilities where the excavated sediments will be permanently disposed.

15. All temporary construction fills and non-biodegradable sedimentation/erosion controls installed during the demolition/construction phase of this project shall be removed promptly after the completion of construction, in order to minimize the potential entrapment of wildlife. Any plastic construction debris shall be completely removed from this site. See General Conditions **#25(e)** of the GP MA for more details.

16. The introduction, spread, or the increased risk of invasion of non-native invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work is prohibited and shall be managed appropriately. The Corps may require Massachusetts DCR to develop a DRAFT invasive species control plan (ISCP) if this becomes an issue. The DRAFT ISCP would need to be coordinated with the Corps for our approval prior to implementing it. See General Condition **#29** GP MA for more details.

17. Prior to being onsite, the contractor shall thoroughly inspect and remove seeds, plant material, soil, mud, insects, and other invertebrates on all equipment, including construction mats, to be used on the project site to prohibit introduction of invasive organisms. At a minimum, the following shall be inspected and cleaned on terrestrial vehicles where applicable:

Rubber Tired Vehicles - Crevices in upper surface and panels, tires, rims, and fender wells, spare tire mounting area, bumpers, front and rear quarter panels, around and behind grills, bottom of radiator vent openings, brake mechanisms, transmission, stabilizer bar, shock absorbers, front and rear axles, beds, suspension units, exhaust systems, light casings, and mirrors.

Tracked Land Vehicles - Crevices in upper surface and panels, top of axles and tensioners, support rollers, between rubber or gridded areas, beneath fenders, hatches, under casings, and grills.

Interiors of All Vehicles - Beneath seats, beneath floor mats, upholstery, beneath foot pedals, inside folds of gear shift cover.

18. Massachusetts DCR provided the attached “Bel Air Dam Ecological Restoration Plan” dated “June 2024” (see Enclosure **#2**). This plan details specific environmental restoration goals to restore connectivity for this section of the West Branch of the Housatonic River. These goals include 1.) minimizing potential flooding risks to downriver areas by removing the existing High Hazard Potential Dam; 2.) constructing a stable (armored) main channel through the upriver impoundment to better connect upriver and downriver section of the river (to allow more sediment transport, better fish passage, and to reduce potential thermal impacts); 3.) adequately capping contaminated sediment that will remain within the permanently dewatered Bel Air Dam impoundment; and 4.) re-establishing native vegetation within the permanently dewatered Bel Air Dam impoundment. Massachusetts DCR is required to achieve these environmental restoration goals and may need to conduct additional adaptive management actions in order to achieve them.

19. The attached “Bel Air Dam Ecological Restoration Plan” dated “June 2024” (see Enclosure **#2**) and the “Bel Air Dam Removal Restoration Summary” (see Enclosure **#3**) describe physical stream surveys, on-site vegetation surveys, and photo documentation surveys, which will be conducted to document whether the restoration success criteria detailed in Special Condition **#18** are achieved. The Corps approves these restoration monitoring documents, with the inclusion of the updated language:

- i.) Massachusetts DCR must remove enough of the Bel Air Dam so that the Massachusetts Office of Dam Safety (ODS) no longer considers it a regulated dam. The permittee will provide the Corps with electronic copies of Massachusetts ODS’s dam hazard reclassification approval and all supporting documentation.

- ii.) Pertinent survey results will be submitted to the Corps as part of annual restoration monitoring reports. Annual restoration monitoring reports shall be submitted to the Corps no later than December 31st of the year when the monitoring was conducted.

20. Within the five-year monitoring period, Massachusetts DCR is required to meet the following riparian plant restoration requirements for areas adjacent to the new main channel and within permanently dewatered portions of the Bel Air Dam impoundment: 1.) at least a 70% survivable rate for trees and shrubs planted; 2.) at least 75% areal coverage of native plants/vegetation within these areas; and 3.) at least 90% eradication of invasive plant species from these areas.

21. Your responsibility to achieve the restoration success criteria as set forth in Special Condition #18 will not be considered fulfilled until you have demonstrated restoration success and have received a written verification from the U.S. Army Corps of Engineers. If Massachusetts DCR is not able to document restoration success within the five-year monitoring period, the Corps may require additional environmental enhancement work or compensatory mitigation. Demonstration of success under this permit shall consist of the required restoration monitoring, corrective measures (when needed), submittal of restoration monitoring reports, and a final restoration assessment.

22. Except where stated otherwise, reports, drawings, correspondence, and any other submittals required by this permit shall be marked with the words "Permit #**NAE-2024-00051**" and submitted via: a) MAIL: Massachusetts Section - Regulatory Division, Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751; b) EMAIL: paul.j.sneeringer@usace.army.mil and cenae-r@usace.army.mil; or c) FAX: (978) 318-8303. Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit. Requirements for immediate notification to the Corps shall be done by telephone to (978) 318-8338.

23. Within one month of the completion of authorized demolition and construction components of this dam removal/river restoration project, Massachusetts DCR shall fill out and return the enclosed Compliance Certification Form verifying that that this project was completed in compliance with all conditions of this GP MA authorization.

24. Within six months of the completion of the Bel Air Dam Removal Project, Massachusetts DCR shall forward a set of project plans and relevant technical documentation to the Risk Analysis Branch, Mitigation Division, Federal Emergency Management Agency ("FEMA"), Region 1, 220 Binney Street, Cambridge, Massachusetts 02142. This submission shall be made in a digital format, and provide a level of content detail, acceptable to FEMA Region 1 personnel. Such a submission is necessary so that upon confirmation of the recent physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

25. If at any time, there is a project design change that may:

- a) result in any increase to the crossed waterway's National Flood Insurance Program ("NFIP") Base Flood Elevation ("BFE") profile;
- b) result in a greater than 0.5 foot decrease to the crossed waterway's NFIP BFE profile; or
- c) require an alteration to the waterway's existing NFIP Regulatory Floodway delineation.

Massachusetts DCR shall coordinate with the FEMA Region 1 Risk Analysis Branch personnel to determine if initiation of an NFIP flood insurance study change review process is warranted. If FEMA personnel determine that a change to the flood insurance study pertinent to the project may be required, the permittee will submit all required information to FEMA and complete the applicable process. Once completed, Massachusetts DCR will provide written notice to the Corps regarding the coordination process outcome.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special conditions provided above or all the terms and conditions of the GP MA may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey>.

Please contact Mr. Paul Sneeringer of my staff at (978) 318-8491 or at paul.j.sneeringer@usace.army.mil if you have any questions about this authorization letter.

Type text here

Sincerely,

Paul Maniccia

Paul Maniccia
Chief, Massachusetts Section
Regulatory Division

Enclosures

Copies Furnished:

Ed Reiner, U.S. EPA, Region 1, Boston, Massachusetts, reiner.ed@epa.gov
Rachel Croy, U.S. EPA, Region 1, Boston, Massachusetts, croy.rachel@epa.gov
David Simmons, USFWS, New England Field Office, Concord, New Hampshire,
david_simmons@fws.gov
Michael McHugh, Massachusetts DEP Western Regional Office, Wetlands and
Waterways, Springfield, MA, michael.mchugh@mass.gov (DEP File #263-1236)
Kenneth Aledipis, MassDEP – Boston Central Office, Water Quality Certification,
Boston, Massachusetts, kenneth.aledipis@mass.gov
(DEP WQC # 24-WW26-0038-APP)
Kerry Bogdan, Federal Emergency Management Agency, Region 1, 220 Binney Street,
Cambridge, Massachusetts 02142, kerry.bogdan@fema.dhs.gov
Brona Simon, Massachusetts State Historic Preservation Officer, Massachusetts
Historical Commission, 220 Morrissey Boulevard, Boston, Massachusetts 02125
David Robinson, Massachusetts Board of Underwater Archaeological Resources
(BUAR), david.s.robinson@mass.gov
Jeffrey Bendremer, Stockbridge- Munsee Community Tribal Historic Preservation
Officer, 86 Spring Street, Williamstown, Massachusetts, thpo@mohican-nsn.gov
Rob Van Der Kar, Pittsfield Conservation Commission, 70 Allen Street, Pittsfield,
Massachusetts , rvanderkar@cityofpittsfield.org
Jennifer Doyle-Breen, AECOM, 250 Apollo Drive, Chelmsford, Massachusetts,
jennifer.doyle-breen@aecom.com

Permittee: william.salomaa@mass.gov



US Army Corps
of Engineers®
New England District

General Permits for the Commonwealth of Massachusetts

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks prior to starting the authorized work)

EMAIL TO: paul.j.sneeringer@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: **Paul Sneeringer**
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Corps of Engineers Permit #NAE-2024-00051 was issued to November 8, 2024 to Massachusetts DCR(the permittee). This permit authorized the permittee to discharge dredged and/or fill material into approximately 4.36 acres of waters of the United States, associated with Pontoosuc Brook (aka the West Branch of the Housatonic River), the Bel Air Dam impoundment and associated adjacent wetlands adjacent to 400 Wahconah Street in Pittsfield, Massachusetts as part of the Bel Air Dam Removal Project. The goals of this project are 1.) to breach the existing High Hazard Potential Dam, so that it is no longer a regulated dam, and 2.) to re-establish normal river flow patterns and fish passage through this section of the West Branch of the Housatonic River.

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This work is described on the enclosed reduced plan drawing set entitled
“MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION, BEL AIR
DAM REMOVAL, PITTSFIELD, MA,” on a total of thirteen of the original twenty two sheets,
dated “JUNE 2024” and four additional plan drawings.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Phone & email: () _____ () _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: November 8, 2024 **Date Permit Expires:** June 1, 2028

FOR USE BY THE CORPS OF ENGINEERS

PM: Paul Sneeringer **Submittals Required:** Yes

Inspection Recommendation: Yes



**US Army Corps
of Engineers**®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification
within one month of the completion of work.)

Permit Number: NAE-2024-00051

Project Manager: Paul Sneeringer

Name of Permittee: Massachusetts DCR – Bel Air Dam Removal (Pittsfield, MA)

Permit Issuance Date: November 8, 2024

Please sign this certification and return it to our office upon completion of the activity.

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*****
* E-MAIL TO: cenae-r-ma@usace.army.mil; or *
* * *
* MAIL TO: Massachusetts Section *
* Regulatory Division *
* U.S. Army Corps of Engineers, New England District *
* 696 Virginia Road *
* Concord, MA 01742-2751 *
*****

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Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

Printed Name

Date of Work Completion

() _____
Telephone Number

() _____
Telephone Number

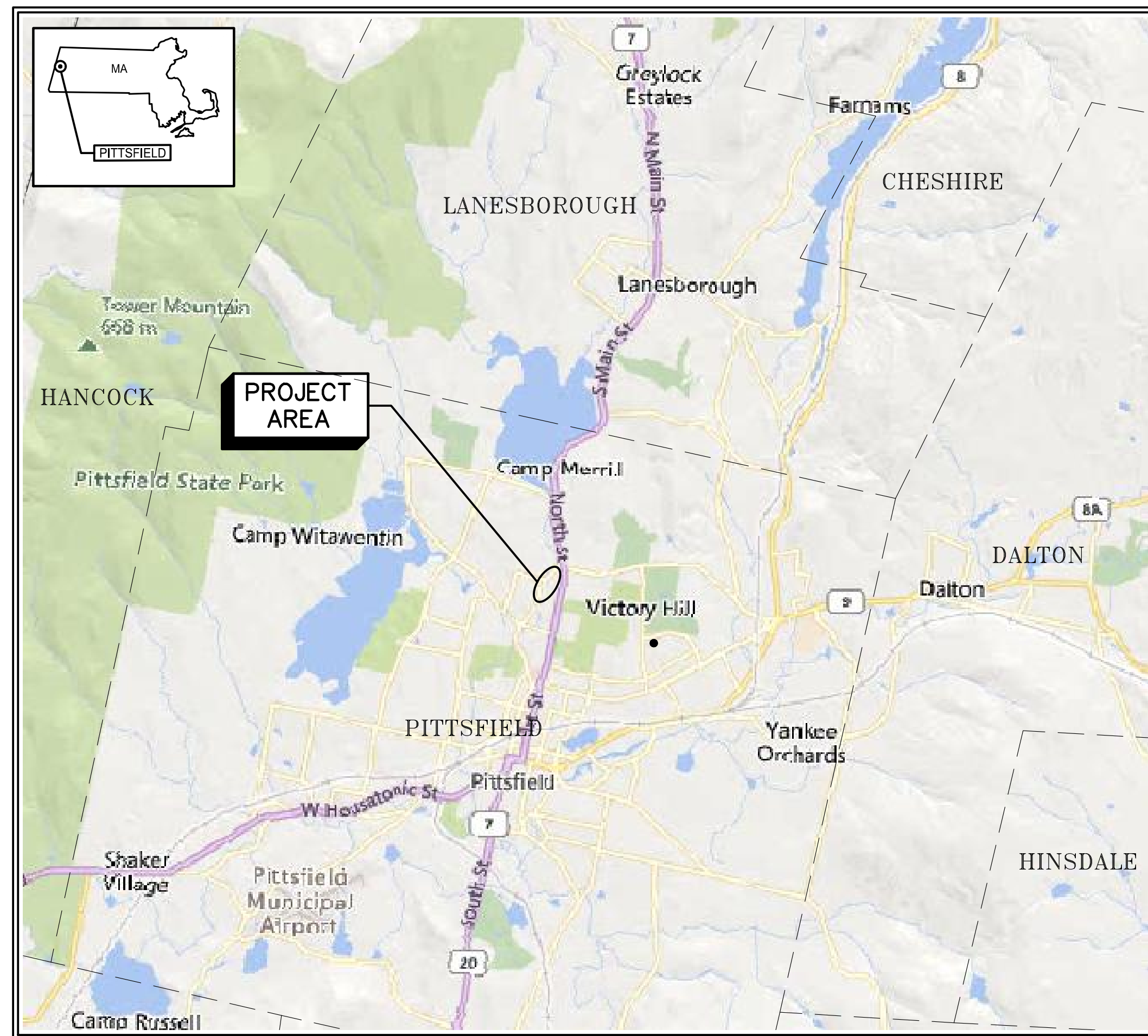
MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION

BEL AIR DAM REMOVAL

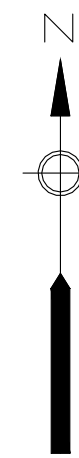
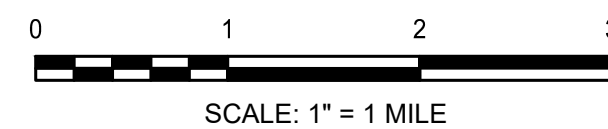
PITTSFIELD, MA

DCR PROJECT No. FOR CONSTRUCTION P25-3601-C1A

NOVEMBER 2024



LOCATION PLAN
 APPROXIMATE SCALE: 1" = 1 Mile



INDEX OF DRAWINGS

DRAWING NO.	DRAWING TITLE
GENERAL	
00 G-001	COVER SHEET, LOCATION PLAN AND INDEX OF DRAWINGS
CIVIL	
00 C-001	LEGEND, ABBREVIATIONS AND GENERAL NOTES
00 C-101	EXISTING CONDITIONS AND EROSION PROTECTION PLAN
00 C-102	STAGING AND SITE ACCESS PLAN
00 C-103	PROPOSED CHANNEL GRADING PLAN
00 C-104	PROPOSED CHANNEL STREAM BASELINE DATA
00 C-105	MATERIALS PLAN
00 C-106	PROJECT HYDROLOGY AND HYDRAULIC DATA
00 C-201	PROPOSED CHANNEL PROFILE
00 C-301	SECTIONS 1 OF 3
00 C-302	SECTIONS 2 OF 3
00 C-303	SECTIONS 3 OF 3
99 C-501	CIVIL DETAILS I
99 C-502	CIVIL DETAILS II
99 C-503	CIVIL DETAILS III
99 C-504	CIVIL DETAILS IV
99 C-505	CIVIL DETAILS V
TRAFFIC	
00 T-001	TEMPORARY TRAFFIC CONTROL PLAN 1
00 T-002	TEMPORARY TRAFFIC CONTROL PLAN 2
00 T-003	TEMPORARY TRAFFIC CONTROL PLAN 3
00 T-004	DETOUR PLAN
00 T-005	TRAFFIC SIGN SUMMARY

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

Designed By:	JDB
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE

GENERAL SHEET TITLE

**BEL AIR DAM REMOVAL
 COVER SHEET, LOC. PLAN
 AND INDEX OF DRAWINGS
 SHEET NUMBER**

00 G-001

PROJECT

**MASS DCR
ABANDONED DAMS
BEL AIR DAM REMOVAL
CONTRACT NO.
P19-3264-D4A**

CLIENT

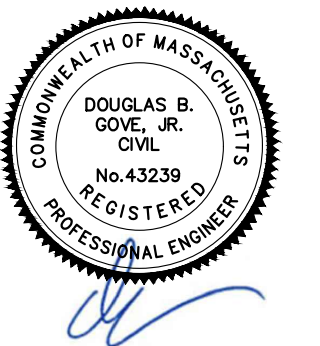
**Massachusetts Department
of Conservation and
Recreation**

10 Park Plaza, Suite 6620
Boston, MA 02116
617.626.1250 tel 617.626.1351 fax
www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT

AECOM TECHNICAL SERVICES, INC.
250 APOLLO DRIVE
CHELMSFORD, MA 01824
PHONE: (978) 905-2100
www.aecom.com

REGISTRATION



ISSUE/REVISION

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Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE

**CIVIL
SHEET TITLE**

**BEL AIR DAM REMOVAL
LEGEND, ABBREVIATIONS
AND GENERAL NOTES
SHEET NUMBER**

00 C-001

LEGEND

EXISTING	PROPOSED
BOUND FOUND	LIMIT OF WORK
BENCH MARK	TEMPORARY CONSTRUCTION ENTRANCE
UTILITY POLE	EROSION CONTROL BARRIER
GUY WIRE	DEMOLITION
CATCH BASIN	STRUCTURE
DRAIN MANHOLE	MINOR CONTOUR
UTILITY MANHOLE	MAJOR CONTOUR
DIRECTIONAL FLOW ARROW	SPOT ELEVATION
EXISTING SPOT GRADE	NEW TREELINE
STAKE LOCATED	CHAIN LINK FENCE
WATER SHUTOFF	COORDINATE LOCATION
APPROXIMATE PROPERTY LINE	SEED MIX
EXISTING CONTOUR	
EDGE OF GRAVEL	
EDGE OF BITUMINOUS	
EDGE OF WATER	
RIVER THREAD	
METAL HAND RAIL	
WIRE FENCE	
CHAIN LINK FENCE	
METAL GUARDRAIL/DECK RAILING	
UNDERGROUND STORM DRAIN	
OVERHEAD WIRES	
EDGE OF BRUSH/TREELINE	
DECIDUOUS TREE (SIZE)	

ABBREVIATIONS

BIT.	BITUMINOUS
BOT	BOTTOM
CONC.	CONCRETE
DH	DRILL HOLE
EL./ELEV.	ELEVATION
INV	INVERT
MAG	MAG NAIL
RET	RETAIN
R.O.P.	RIGHT-OF-WAY
RR	RAILROAD
S&M	STONE AND MORTAR
SPK	SPIKE
UP	UTILITY POLE
VGC	VERTICAL GRANITE CURB
W.S.	WATER STOP

GENERAL PLAN NOTES

- TOPOGRAPHIC SURVEY IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED IN MAY AND JUNE OF 2020 BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC.
- THE HORIZONTAL DATUM FOR THIS PROJECT IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83).
- THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- RESOURCE AREA DELINEATION WAS PERFORMED BY AECOM ON AUGUST 2023.
- NO UTILITY INVESTIGATION WAS PERFORMED FOR THIS PROJECT. UTILITY LOCATION SHALL BE PERFORMED BY THE CONTRACTOR IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY WORK. CALL "DIG SAFE" AT 811.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF THE EXISTING FEATURES AND STRUCTURES ADJACENT TO THE LIMIT OF WORK. IN THE EVENT OF DAMAGE, THE REPAIRS OR REPLACEMENT SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AS APPROVED BY THE ENGINEER.
- UTILITIES DAMAGED DURING THE CONTRACTOR'S OPERATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE AT NO COST TO THE OWNER.
- EXISTING CONDITIONS ARE SHOWN ON THE PLANS IN A SCREENED (LIGHTER) PENWEIGHT. PROPOSED WORK IS SHOWN IN BOLDER PENWEIGHT.
- THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK AS INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER OR OWNER IN CONFORMANCE WITH ALL APPLICABLE CODES AND IN A PROPER AND WORKMANLIKE MANNER.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WASTE MATERIAL, CONCRETE, MASONRY, TREES, SHRUBS, SEDIMENT, AND DEBRIS AND OTHER MATERIALS NECESSARY FOR THE SATISFACTORY COMPLETION OF THE WORK AND AS REQUIRED BY THE OWNER. CONSTRUCTION DEBRIS SHALL BE DISPOSED OF IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LOCAL STREET OPENING OR BUILDING PERMITS AND FOR COORDINATING INSPECTIONS AS REQUIRED. PERMIT FEES SHALL BE PAID DIRECTLY BY THE CONTRACTOR AND SHALL BE INCLUDED IN THE APPROPRIATE ITEM OF THE BID. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE PERMITS OBTAINED BY THE OWNER AND REFERENCED IN SPECIFICATION 01110.

DEMOLITION NOTES

- DAMAGE DUE TO DEMOLITION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- PATCH AND FINISH EXPOSED SURFACES TO MATCH THE ADJACENT AREA UNLESS OTHERWISE INDICATED OR SPECIFIED.

EROSION PROTECTION NOTES

- EROSION PROTECTION MEASURES SHALL BE CHECKED AND MAINTAINED ON A DAILY BASIS. SEDIMENT DEPOSITS UPSTREAM OF THE BALES AND SILT FENCING SHALL BE REMOVED ON A REGULAR BASIS.
- REPAIR OR REPLACEMENT OF EROSION CONTROL MEASURES SHALL BE MADE PROMPTLY AS NEEDED, OR AS DIRECTED BY THE ENGINEER.
- EROSION CONTROL BLANKETS SHALL BE INSTALLED AS QUICKLY AS POSSIBLE ALONG DISTURBED SLOPES WITH POTENTIAL TO ERODE.
- TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE SHOWN IN SECTION 01063 MISCELLANEOUS REQUIREMENTS OF THE SPECIFICATIONS. MODIFICATIONS TO THE SEQUENCE NECESSARY TO THE CONTRACTOR'S SCHEDULE SHALL BE SUBMITTED IN WRITING AND APPROVED BY THE OWNER AND ENGINEER PRIOR TO PROCEEDING. ANY WORK PERFORMED WITHOUT THE APPROVAL IS AT THE RISK OF THE CONTRACTOR, INCLUDING APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

TRAFFIC MANAGEMENT

- CONTRACTOR SHALL COORDINATE A TRAFFIC MANAGEMENT PLAN WITH LOCAL AUTHORITIES PRIOR TO THE START OF THE PROJECT PER SPECIFICATION 01063.
- CONTRACTOR TO PROVIDE ALL REQUIRED SIGNAGE, FLAGGING, AND TRAFFIC CONTROL DEVICES AS PART OF THE TRAFFIC MANAGEMENT PLAN.

PATH: \\P01\PROJECTS\2024\08\08\MASSDCR SIX ABANDONED DAMS\SHEETS\CIBEL AR000 C-001 BEL.DWG
 LAST UPDATE: Thursday, October 31, 2024 12:00:37 PM
 PLOT DATE: Friday, November 1, 2024 11:57:00 AM



I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

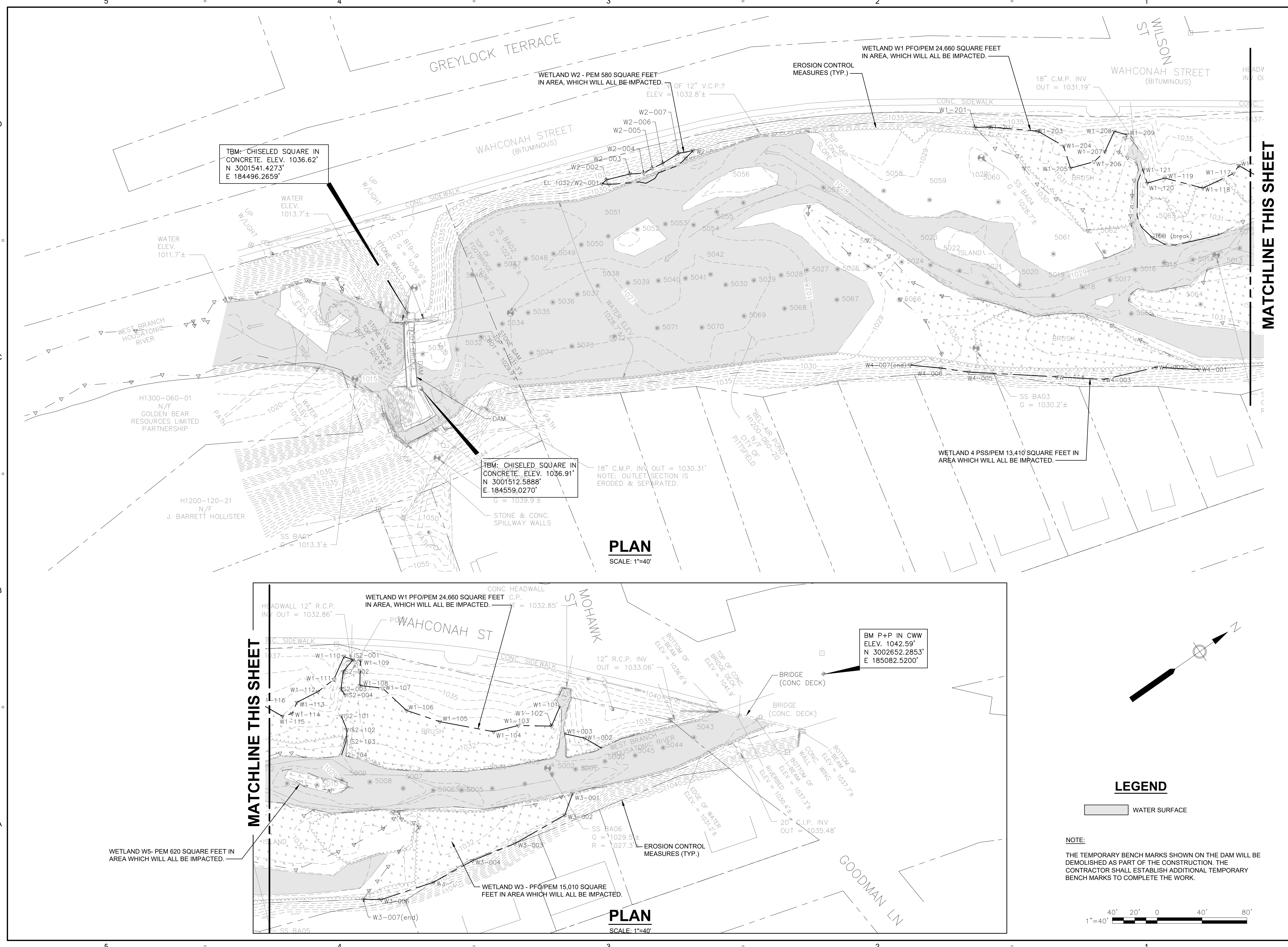
60604936

Designed By:	JPM
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

CIVIL

SHEET TITLE
EXISTING CONDITIONS
AND EROSION
PROTECTION PLAN
SHEET NUMBER

00 C-101



TBM: CHISELED SQUARE IN CONCRETE, ELEV. 1036.62'
 N 3001541.4273'
 E 184496.2659'

TBM: CHISELED SQUARE IN CONCRETE, ELEV. 1036.91'
 N 3001512.5888'
 E 184559.0270'

BM P+P IN CWW
 ELEV. 1042.59'
 N 3002652.2853'
 E 185082.5200'

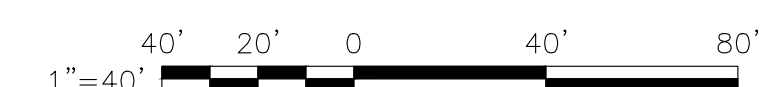
PLAN
 SCALE: 1"=40'

PLAN
 SCALE: 1"=40'

LEGEND

WATER SURFACE

NOTE:
 THE TEMPORARY BENCH MARKS SHOWN ON THE DAM WILL BE DEMOLISHED AS PART OF THE CONSTRUCTION. THE CONTRACTOR SHALL ESTABLISH ADDITIONAL TEMPORARY BENCH MARKS TO COMPLETE THE WORK.



MATCHLINE THIS SHEET

MATCHLINE THIS SHEET

PATH: I:\PROJECTS\MASS DCR\ABANDONED DAMS\PROJECTS\CIBEL_AIR00 C-101 BEL.DWG
 LAST UPDATE: Wednesday, October 30, 2024 7:45:42 AM
 PLOT DATE: Friday, November 1, 2024 11:57:06 AM



C:\Work\BelAirDam_EEN\FMaps\EnvironmentalResources.mxd

**BEL AIR DAM
EXISTING ENVIRONMENTAL RESOURCES**

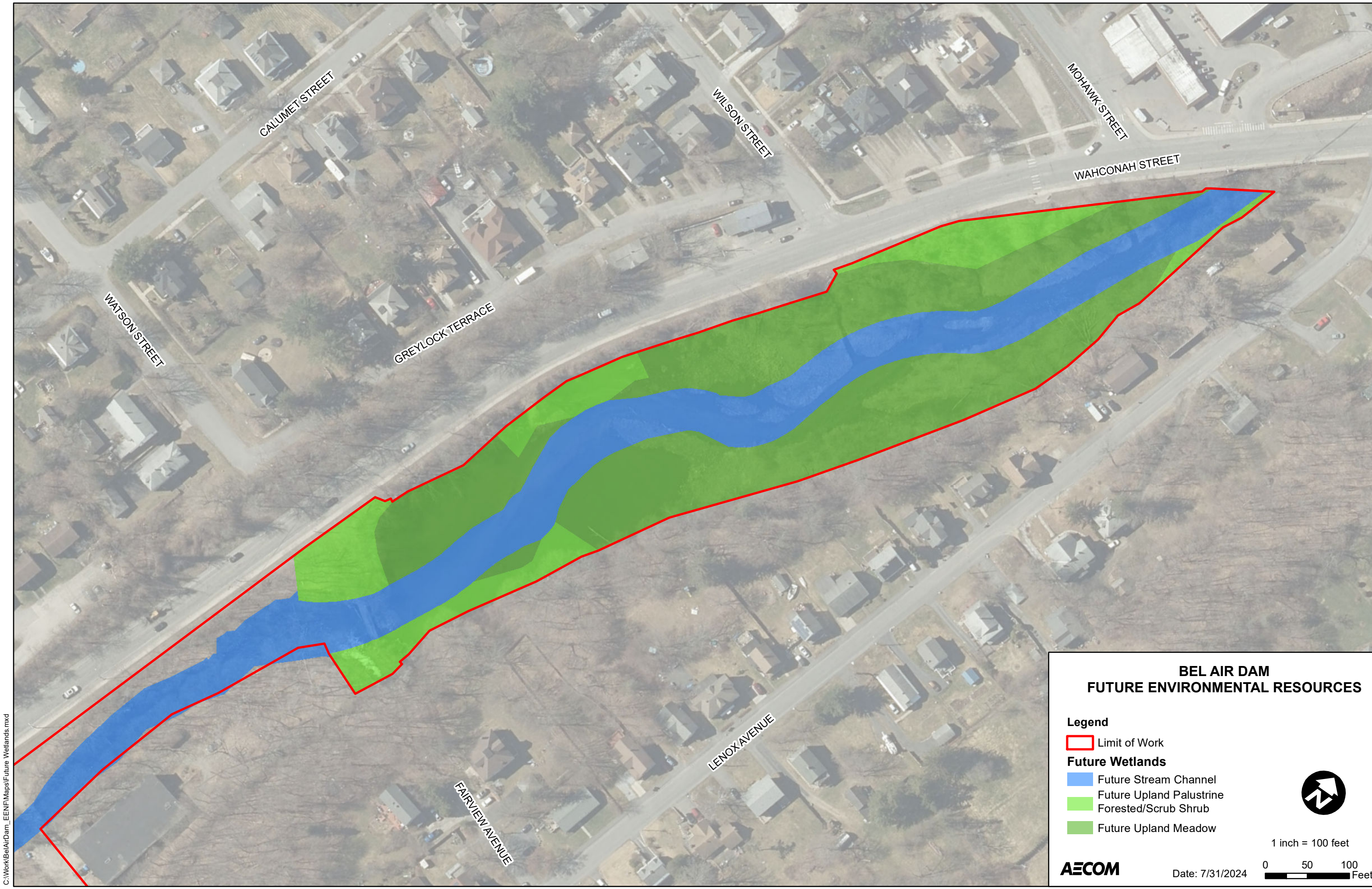
Legend

- Limit of Work
- Vegetated Wetlands
- Waters of the US
- Upland

1 inch = 100 feet

0 50 100 Feet

AECOM Date: 7/30/2024




C:\Work\BelAirDam_EEN\FMaps\Future Wetlands.mxd

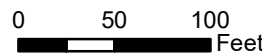
**BEL AIR DAM
FUTURE ENVIRONMENTAL RESOURCES**

Legend

- Limit of Work
- Future Wetlands**
- Future Stream Channel
- Future Upland Palustrine Forested/Scrub Shrub
- Future Upland Meadow



1 inch = 100 feet



AECOM Date: 7/31/2024

PROJECT

MASS DCR
 ABANDONED DAMS
 BEL AIR DAM REMOVAL
 CONTRACT NO.
 P19-3264-D4A

CLIENT

Massachusetts Department
 of Conservation and
 Recreation
 10 Park Plaza, Suite 6620
 Boston, MA 02116
 617.626.1250 tel 617.626.1351 fax
 www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT

AECOM TECHNICAL SERVICES, INC.
 250 APOLLO DRIVE
 CHELMSFORD, MA 01824
 PHONE: (978) 905-2100
 www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

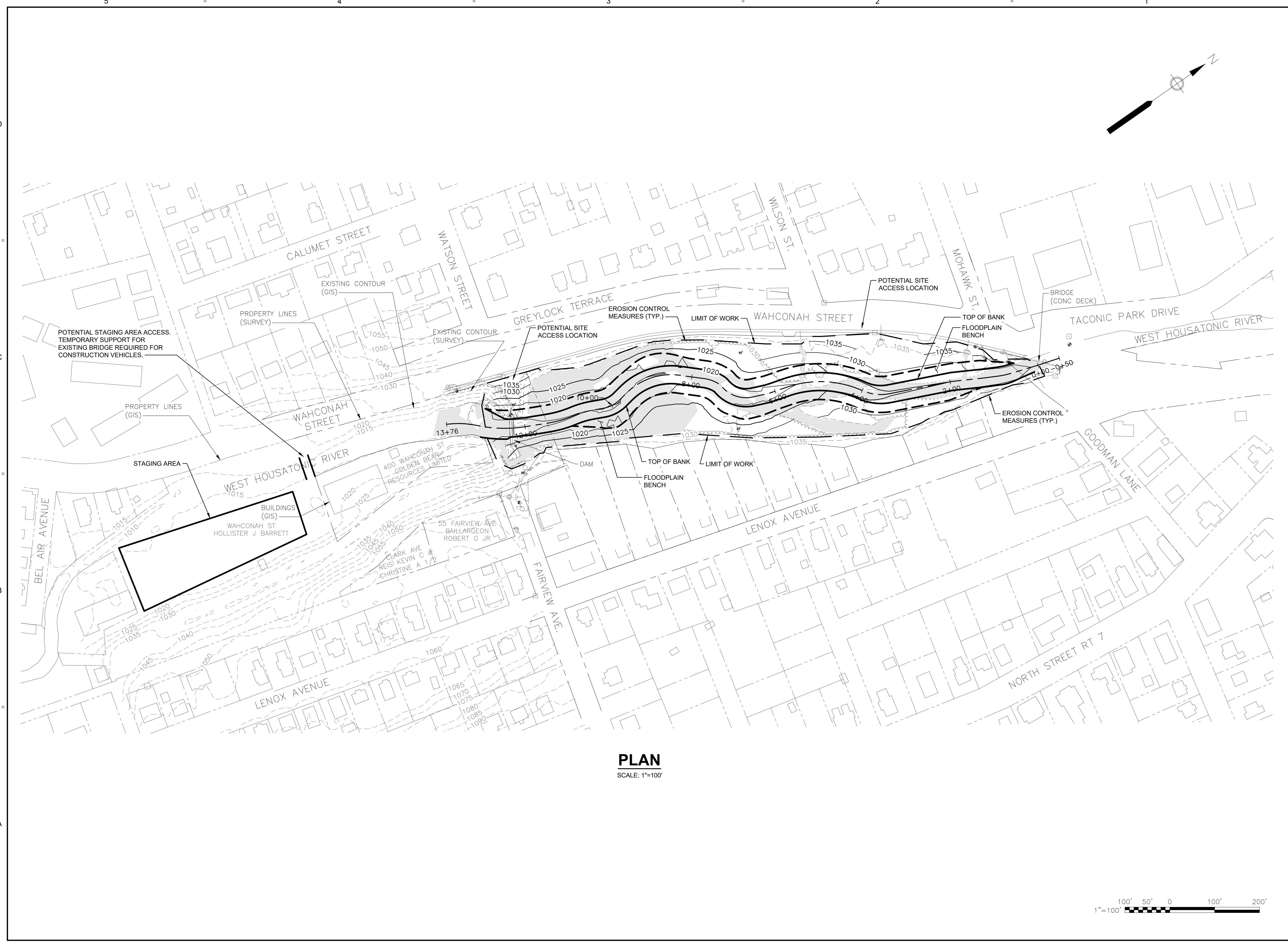
Designed By:	JPM
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE

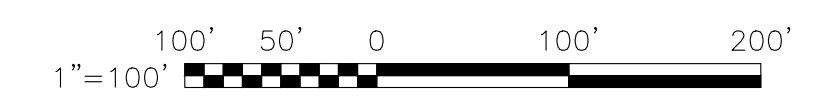
CIVIL
 SHEET TITLE

BEL AIR DAM REMOVAL
 STAGING AND SITE
 ACCESS PLAN
 SHEET NUMBER

00 C-102



PLAN
 SCALE: 1"=100'



P:\PROJECTS\2024\MASSDCR SIX ABANDONED DAMS\SHEETS\CIBEL AIR\00 C-102 BEL.DWG
 LAST UPDATE: Thursday, October 31, 2024 6:57:11 AM
 PLOT DATE: Friday, November 1, 2024 11:57:12 AM



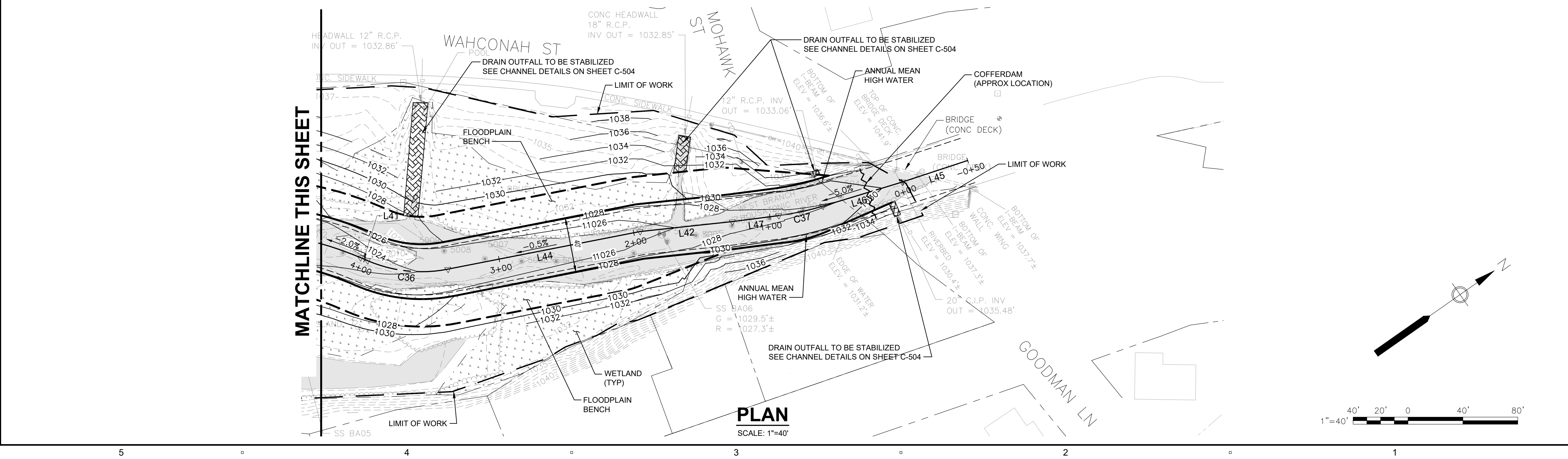
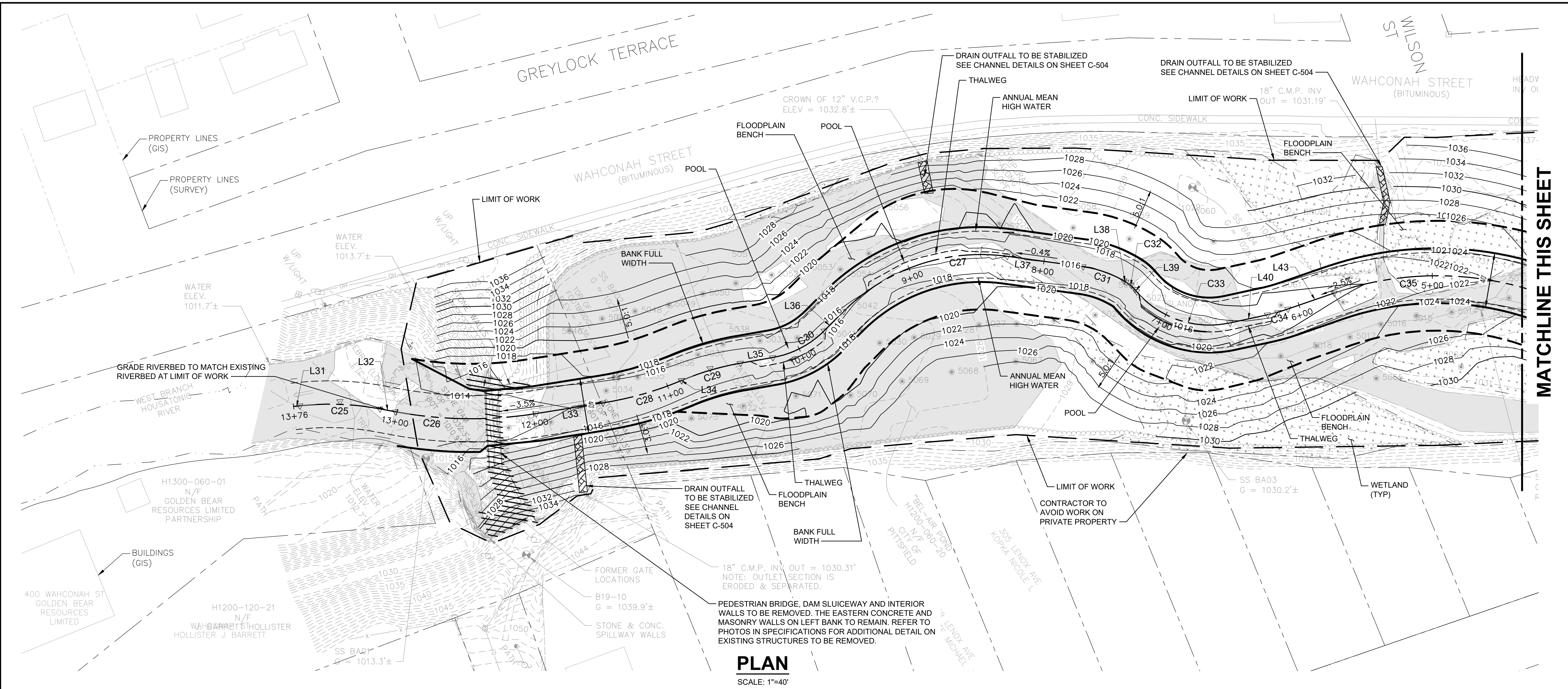
ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER
 60604936

Designed By:	JPM
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE
 CIVIL
SHEET TITLE
 BEL AIR DAM REMOVAL
PROPOSED CHANNEL
GRADING PLAN
SHEET NUMBER
00 C-103



PATH: \\AECOM\PROJECTS\MASSDCR\60604936 - MASSDCR SIX ABANDONED DAMS\SHEETS\CIBEL_AIR00 C-103-104 BEL.DWG
 LAST UPDATE: Friday, November 1, 2024 12:07:54 PM
 PLOT DATE: Friday, November 1, 2024 12:09:56 PM



PROJECT

MASS DCR
ABANDONED DAMS
BEL AIR DAM REMOVAL
CONTRACT NO.
P19-3264-D4A

CLIENT

Massachusetts Department
of Conservation and
Recreation

10 Park Plaza, Suite 6620
Boston, MA 02116
617.626.1250 tel 617.626.1351 fax
www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT

AECOM TECHNICAL SERVICES, INC.
250 APOLLO DRIVE
CHELMSFORD, MA 01824
PHONE: (978) 905-2100
www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

Designed By:	JP
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE

CIVIL
SHEET TITLE

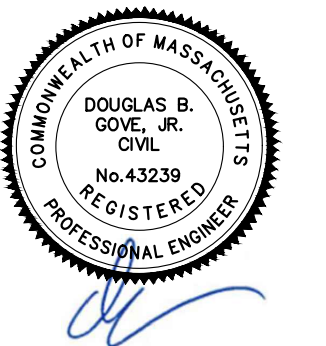
BEL AIR DAM REMOVAL
PROPOSED CHANNEL
STREAM BASELINE DATA
SHEET NUMBER

00 C-104

BEL AIR STREAM CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L45	-0+50.00	3002615.7984	185094.2188		S16°45'55"W 50.00'	0+00.00	3002567.9237	185079.7963
L46	0+00.00	3002567.9237	185079.7963		S18°08'17"W 60.61'	0+60.61	3002510.3220	185060.9267
C37	0+60.61	3002510.3220	185060.9267	R = 200.00' Δ = 9°26'45" L=32.97' T=16.52'		0+93.59	3002479.9742	185048.1316
L47	0+93.59	3002479.9742	185048.1316		S27°35'02"W 34.04'	1+27.63	3002449.8003	185032.3679
L42	1+27.63	3002449.8003	185032.3679		S28°52'00"W 67.74'	1+95.37	3002390.4771	184999.6647
L44	1+95.37	3002390.4771	184999.6647		S23°54'58"W 142.64'	3+38.01	3002260.0861	184941.8392
C36	3+38.01	3002260.0861	184941.8392	R = 100.00' Δ = 34°16'22" L=59.82' T=30.83'		3+97.82	3002215.6470	184903.1373
L41	3+97.82	3002215.6470	184903.1373		S58°11'20"W 5.55'	4+03.38	3002212.7208	184898.4198
C35	4+03.38	3002212.7208	184898.4198	R = 230.00' Δ = 42°14'20" L=169.56' T=88.84'		5+72.93	3002080.4722	184798.5120
L43	5+72.93	3002080.4722	184798.5120		S15°57'00"W 35.64'	6+08.58	3002046.2022	184788.7177
C34	6+08.58	3002046.2022	184788.7177	R = 130.00' Δ = 6°47'38" L=15.41' T=7.72'		6+23.99	3002031.6663	184783.6139
L40	6+23.99	3002031.6663	184783.6139		S22°44'38"W 28.08'	6+52.08	3002005.7655	184772.7562
C33	6+52.08	3002005.7655	184772.7562	R = 70.00' Δ = 61°32'17" L=75.18' T=41.68'		7+27.26	3001963.1766	184715.1737
L39	7+27.26	3001963.1766	184715.1737		S84°16'54"W 2.23'	7+29.49	3001962.9541	184712.9509
C32	7+29.49	3001962.9541	184712.9509	R = 24.75' Δ = 18°52'53" L=8.16' T=4.12'		7+37.65	3001960.8309	184705.1141
L38	7+37.65	3001960.8309	184705.1141		S65°24'01"W 1.87'	7+39.52	3001960.0538	184703.4168
C31	7+39.52	3001960.0538	184703.4168	R = 80.52' Δ = 22°36'02" L=31.76' T=16.09'		7+71.28	3001941.5493	184677.8538
L37	7+71.28	3001941.5493	184677.8538		S42°47'59"W 55.91'	8+27.19	3001900.5252	184639.8654
C27	8+27.19	3001900.5252	184639.8654	R = 141.24' Δ = 52°49'46" L=130.23' T=70.16'		9+57.42	3001779.9591	184604.4150
L36	9+57.42	3001779.9591	184604.4150		S10°01'47"E 19.97'	9+77.40	3001760.2938	184607.8931

BEL AIR STREAM CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C30	9+77.40	3001760.2938	184607.8931	R = 70.00' Δ = 35°06'42" L=42.90' T=22.15'		10+20.29	3001718.4287	184602.3620
L35	10+20.29	3001718.4287	184602.3620		S25°04'55"W 23.91'	10+44.20	3001696.7778	184592.2283
C29	10+44.20	3001696.7778	184592.2283	R = 200.00' Δ = 12°50'16" L=44.81' T=22.50'		10+89.01	3001654.4106	184577.9182
L34	10+89.01	3001654.4106	184577.9182		S12°14'39"W 0.08'	10+89.09	3001654.3338	184577.9015
C28	10+89.09	3001654.3338	184577.9015	R = 250.00' Δ = 13°40'38" L=59.68' T=29.98'		11+48.77	3001598.0691	184558.4371
L33	11+48.77	3001598.0691	184558.4371		S25°55'17"W 49.36'	11+98.12	3001553.6788	184536.8619
C26	11+98.12	3001553.6788	184536.8619	R = 300.00' Δ = 19°39'37" L=102.94' T=51.98'		13+01.06	3001470.5456	184477.0114
L32	13+01.06	3001470.5456	184477.0114		S45°34'54"W 11.62'	13+12.68	3001462.4129	184468.7119
C25	13+12.68	3001462.4129	184468.7119	R = 200.00' Δ = 16°45'51" L=58.52' T=29.47'		13+71.20	3001415.9672	184433.4584
L31	13+71.20	3001415.9672	184433.4584		S28°49'02"W 4.58'	13+75.78	3001411.9540	184431.2506

PATH: I:\PROJECTS\2024\11\56\19\AM\AECOM\60604936 - MASS DCR SIX ABANDONED DAMS\SHEETS\CIBEL_AIR00 C-103-104 BEL.DWG
LAST UPDATE: Friday, November 1, 2024 11:56:19 AM
PLOT DATE: Friday, November 1, 2024 11:57:15 AM



I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

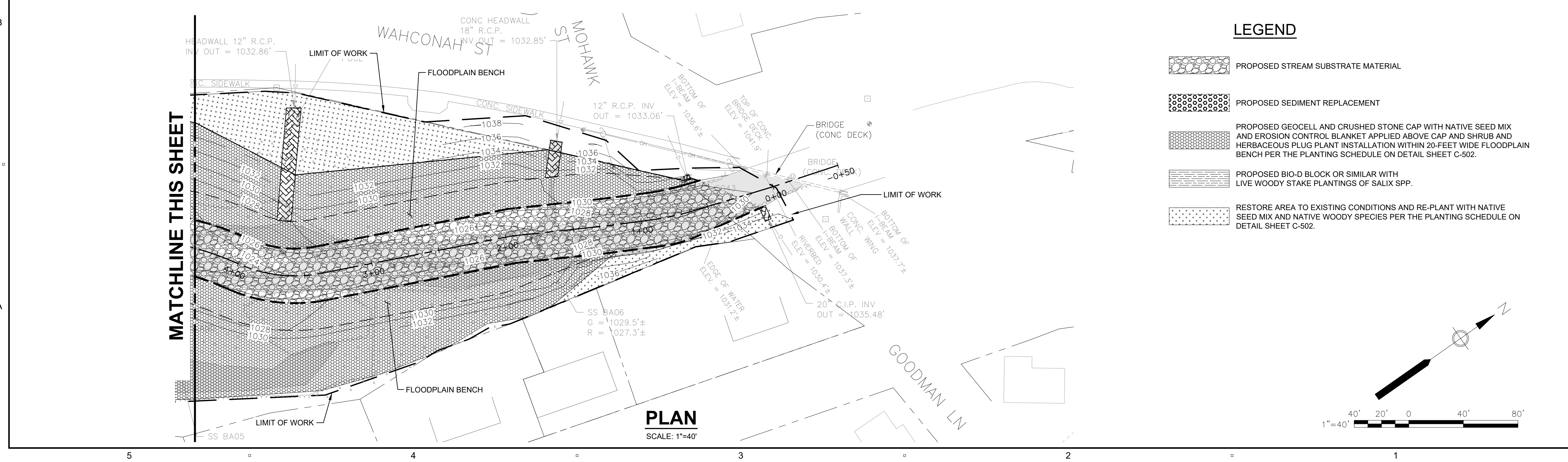
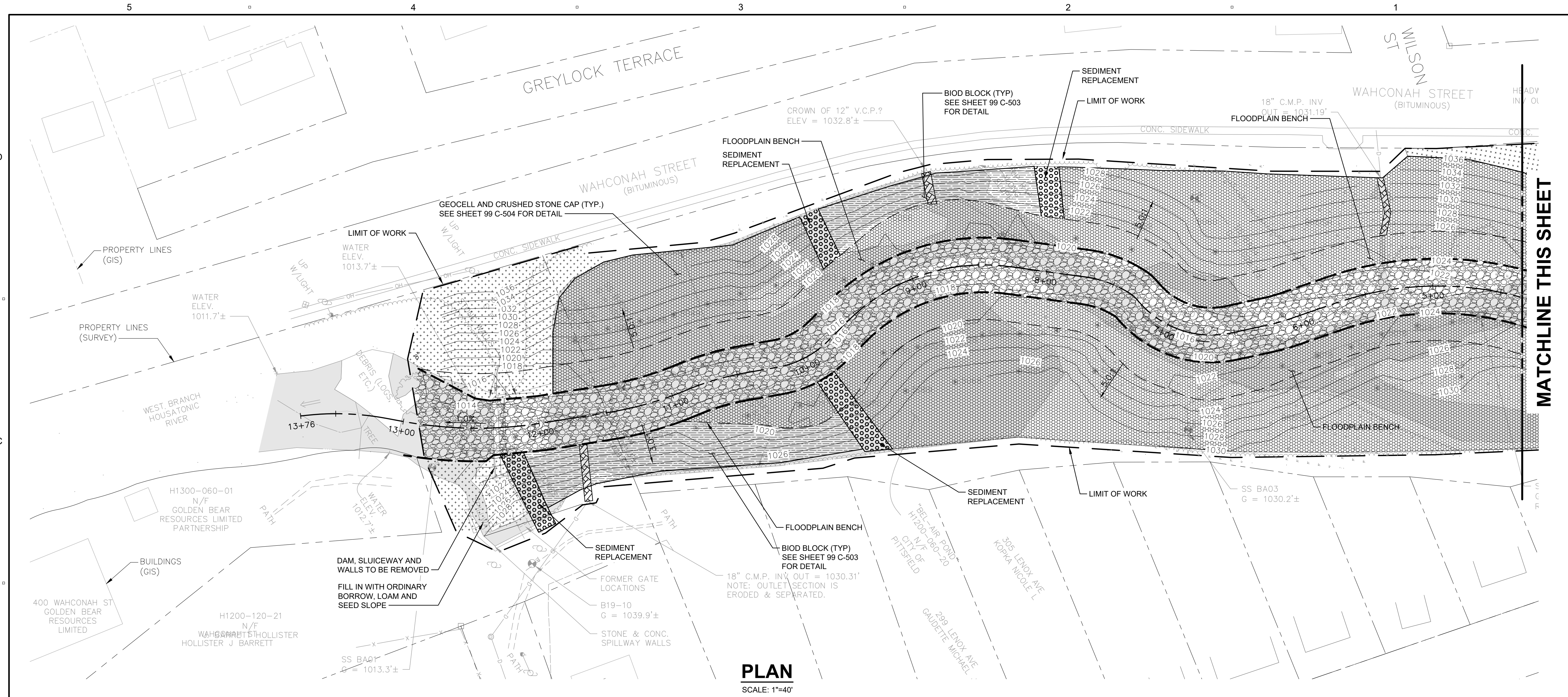
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Designed By:	BR
Drawn By:	SN
Dept Check:	JDB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

CIVIL

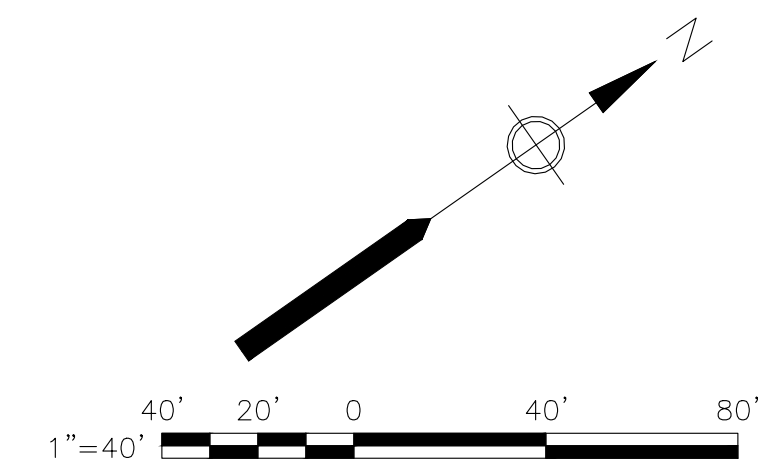
BEL AIR DAM REMOVAL
MATERIALS PLAN

00 C-105

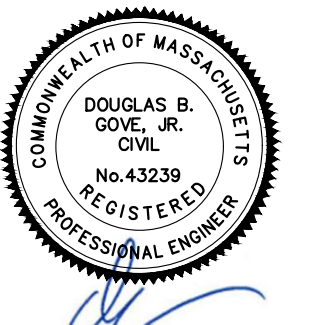


LEGEND

- PROPOSED STREAM SUBSTRATE MATERIAL
- PROPOSED SEDIMENT REPLACEMENT
- PROPOSED GEOCELL AND CRUSHED STONE CAP WITH NATIVE SEED MIX AND EROSION CONTROL BLANKET APPLIED ABOVE CAP AND SHRUB AND HERBACEOUS PLUG PLANT INSTALLATION WITHIN 20-FOOT WIDE FLOODPLAIN BENCH PER THE PLANTING SCHEDULE ON DETAIL SHEET C-502.
- PROPOSED BIO-D BLOCK OR SIMILAR WITH LIVE WOODY STAKE PLANTINGS OF SALIX SPP.
- RESTORE AREA TO EXISTING CONDITIONS AND RE-PLANT WITH NATIVE SEED MIX AND NATIVE WOODY SPECIES PER THE PLANTING SCHEDULE ON DETAIL SHEET C-502.



PATH: \\AECOM\PROJECTS\MASSDCR\61904386 - MASSDCR SIX ABANDONED DAMS\SHEETS\CIVIL\AR00 C-105 BEL.DWG
 LAST UPDATE: Friday, November 1, 2024 9:06:10 AM
 PLOT DATE: Friday, November 1, 2024 11:57:21 AM



I/R	DATE	DESCRIPTION
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1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

60604936

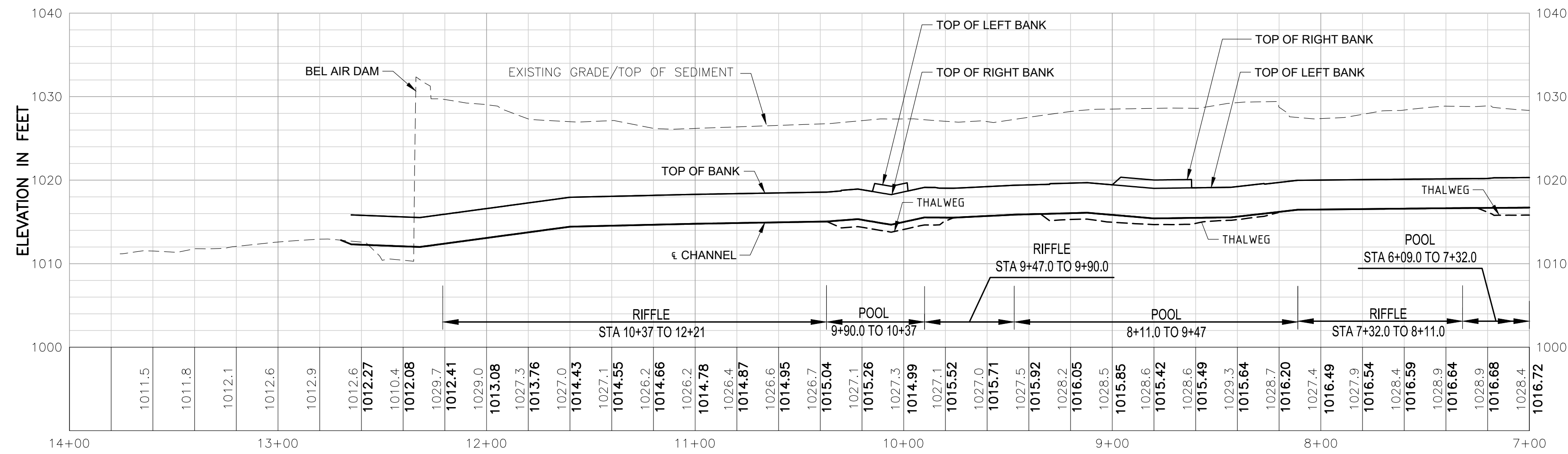
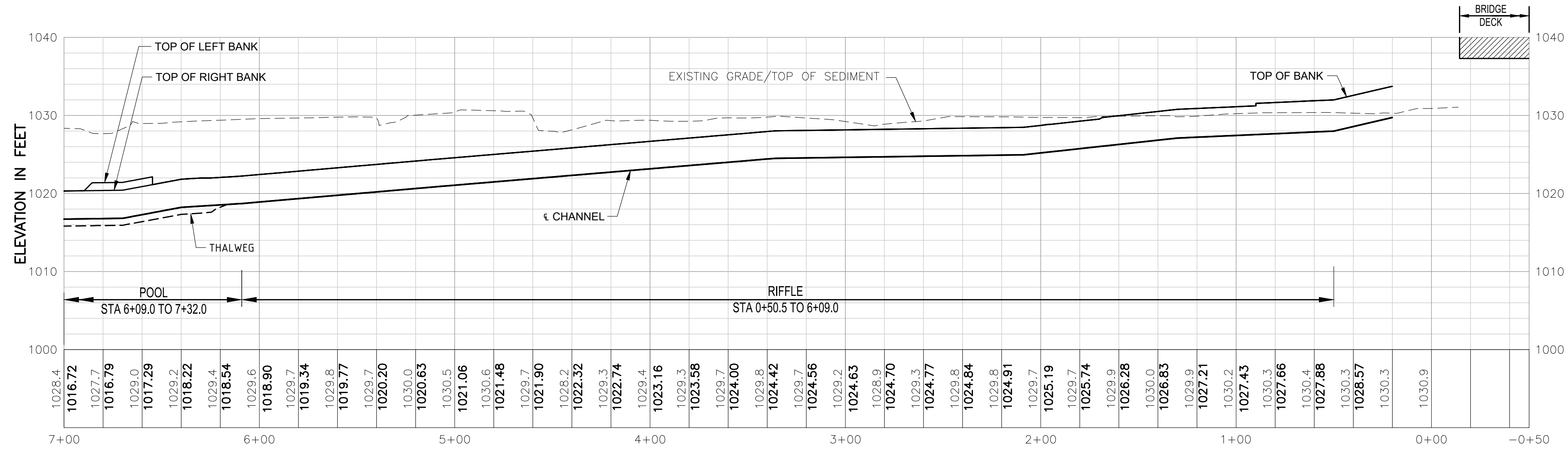
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Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

CIVIL

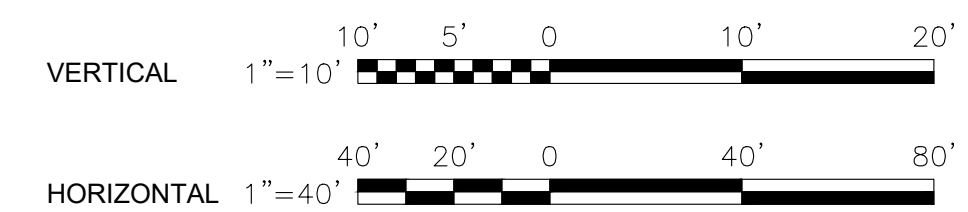
BEL AIR DAM REMOVAL
PROPOSED CHANNEL
PROFILE
SHEET NUMBER

00 C-201

CONTINUATION THIS SHEET



CONTINUATION THIS SHEET



I/R	DATE	DESCRIPTION

60604936

Designed By: **JPM**

Drawn By: **SN**

Dept Check: **CB**

Proj Check: **D. GOVE**

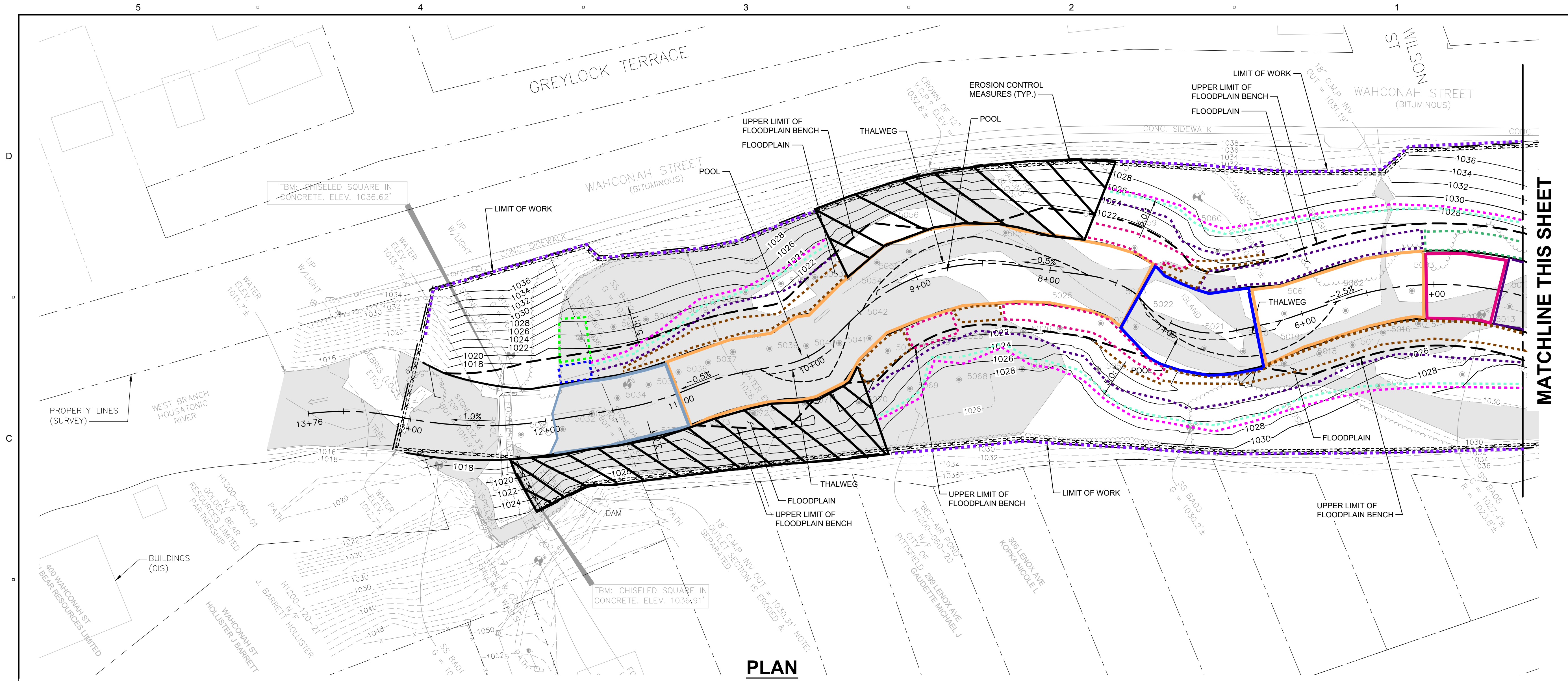
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Scale: **AS NOTED**

CIVIL

**REL AIR DAM REMOVAL
PROPOSED CHANNEL
GRADING PLAN
SHEET NUMBER**

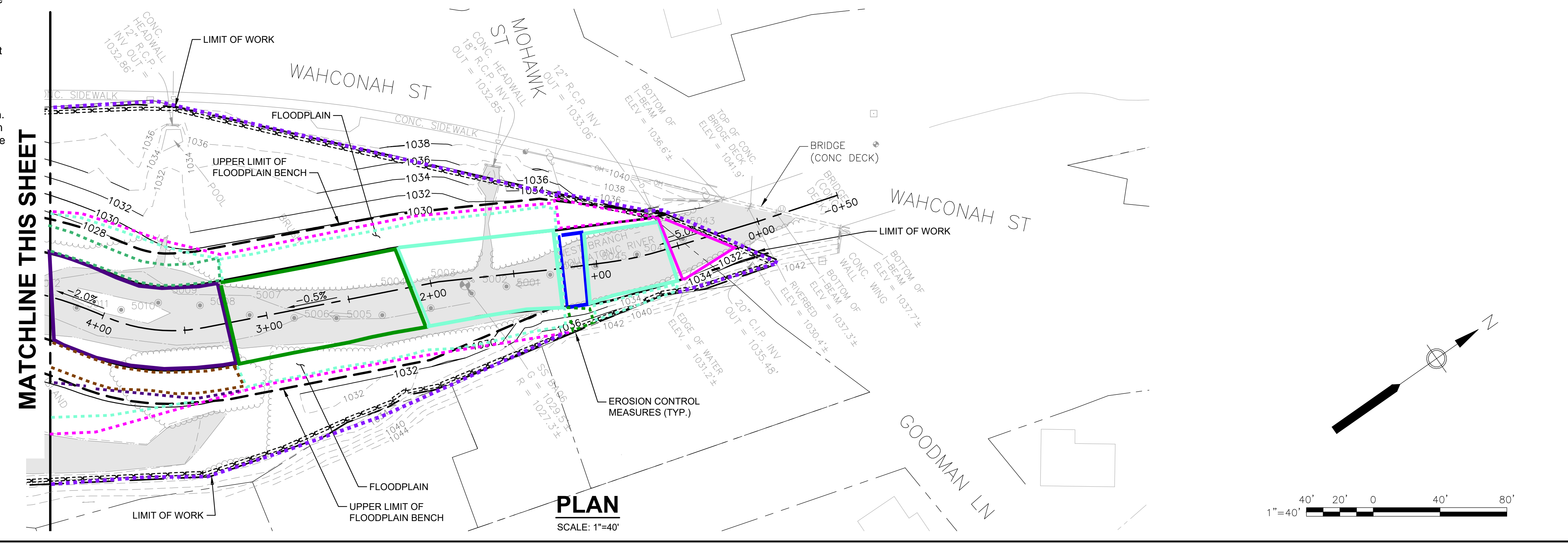
00 C-103



PLAN
SCALE: 1"=40'

Legend
Approximate depths of excavation of accumulated soft sediments are indicated by the color key below. Solid lines represent areas within the stream channel to top of bank. Excavation within the limits of the proposed stream channel and the areas shown in black cross-hatching is anticipated to reach to the bottom of the accumulated soft sediments and intersect with denser grade material, which is presumed to pre-date sediment accumulation that began around the time the dam was constructed. In other areas, excavation is anticipated to end above the estimated bottom of sediment, and remaining sediment will be capped in place with a geocell application. The information regarding sediment depths is based on interpretation and extrapolation of 2019 and 2024 boring data distributed across the site, as well as 2019 hand administered sediment probing approximately along the proposed stream channel.

- 0-2 feet
 - 3-4 feet
 - 4-5 feet
 - 5-6 feet
 - 7-8 feet
 - 8-9 feet
 - 10-11 feet
 - 12-13 feet
 - 13-14 feet
 - 15-17 feet
- Stream Channel
 - Outside Stream Channel
 - Outskirt of Grading



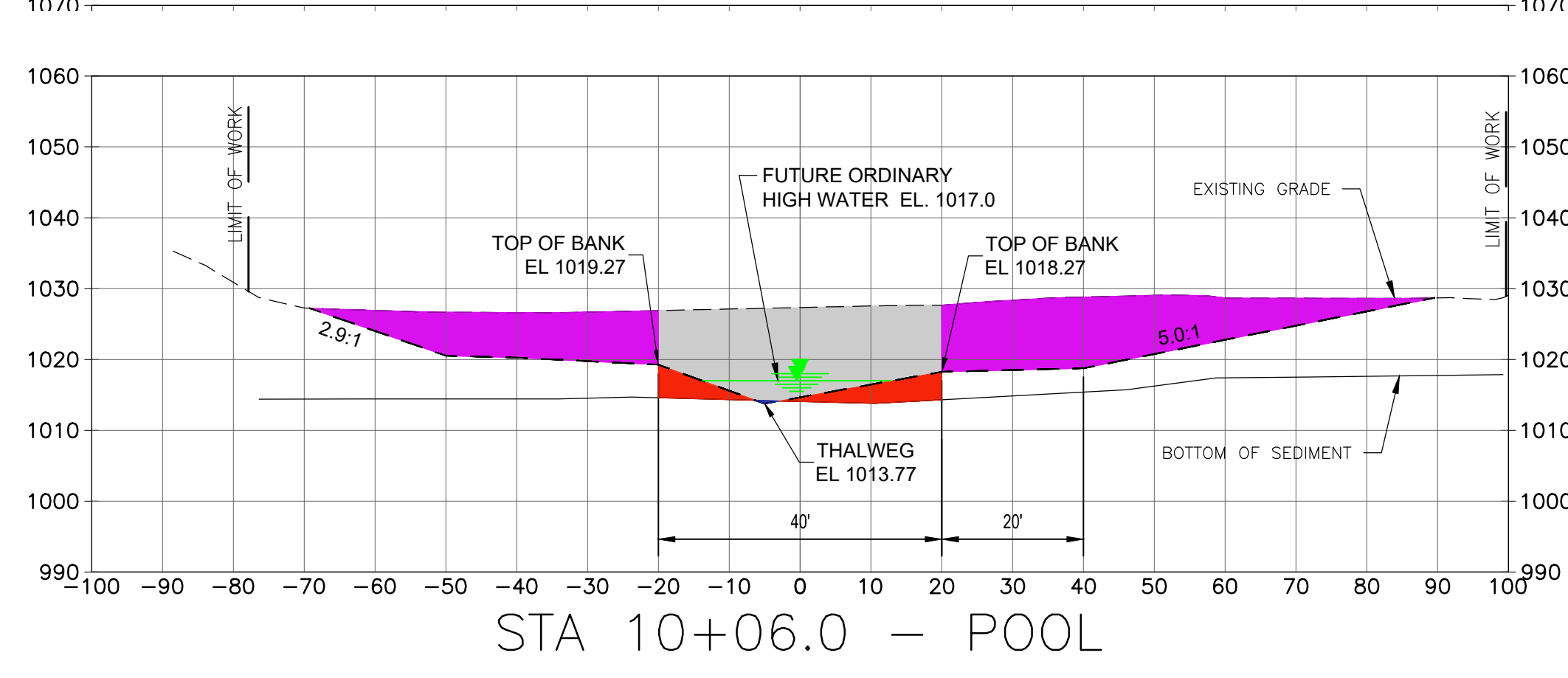
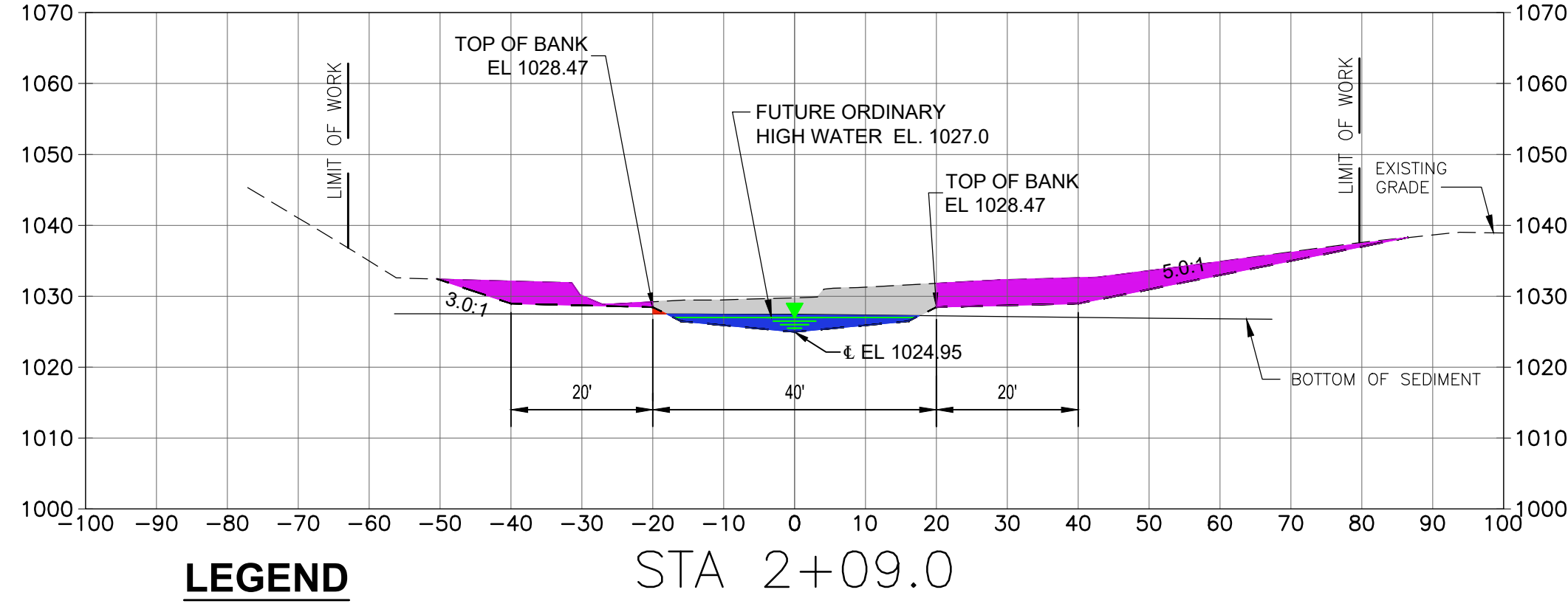
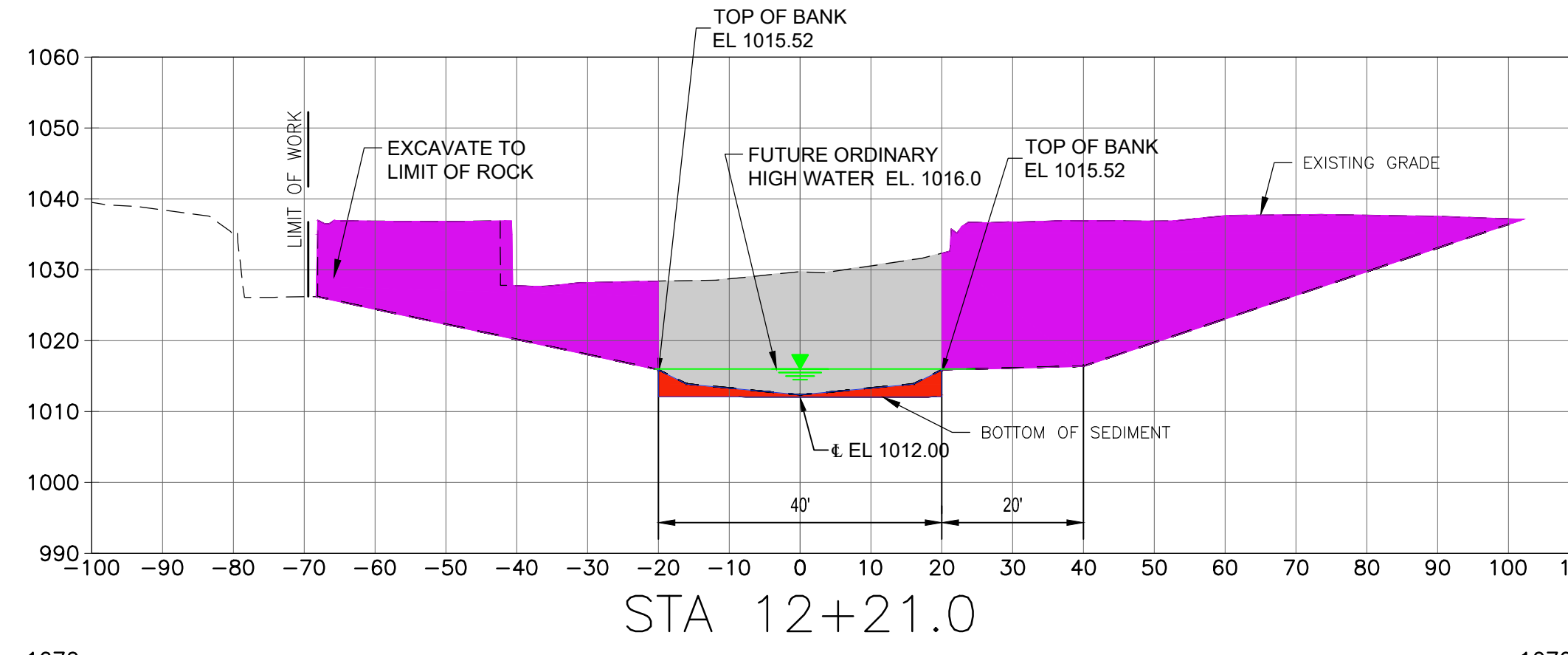
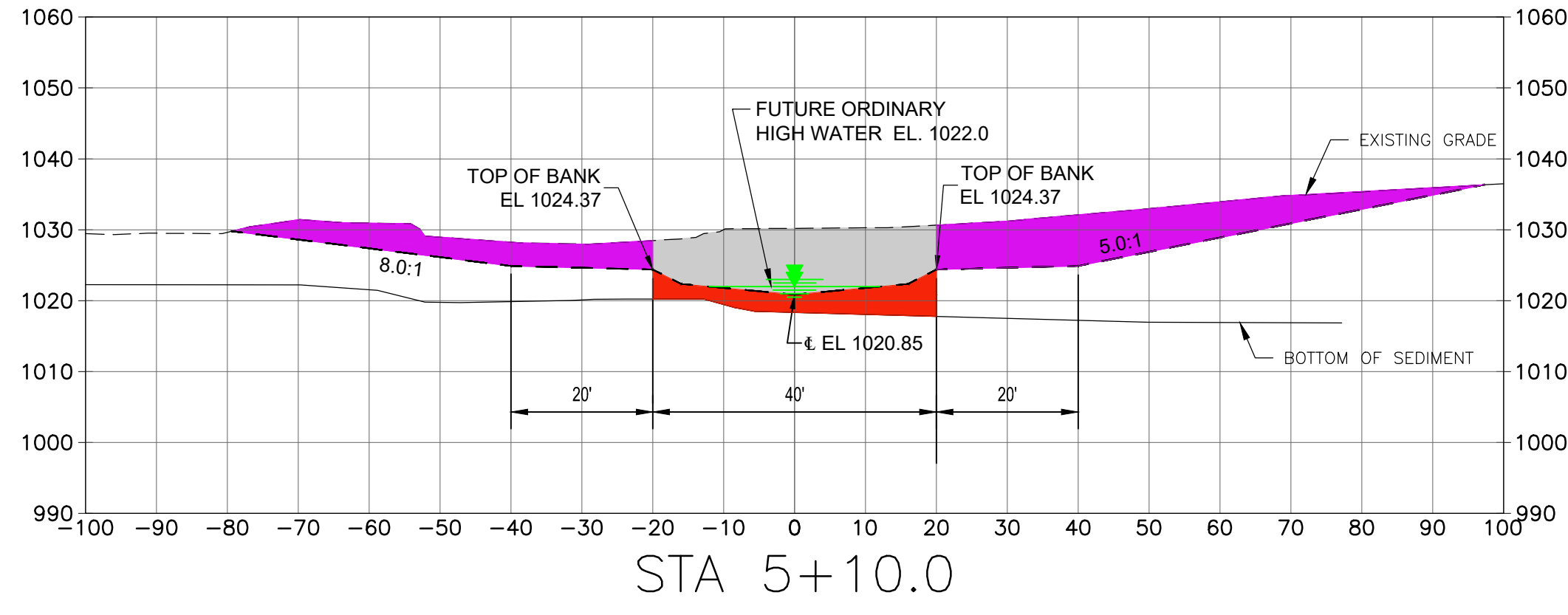
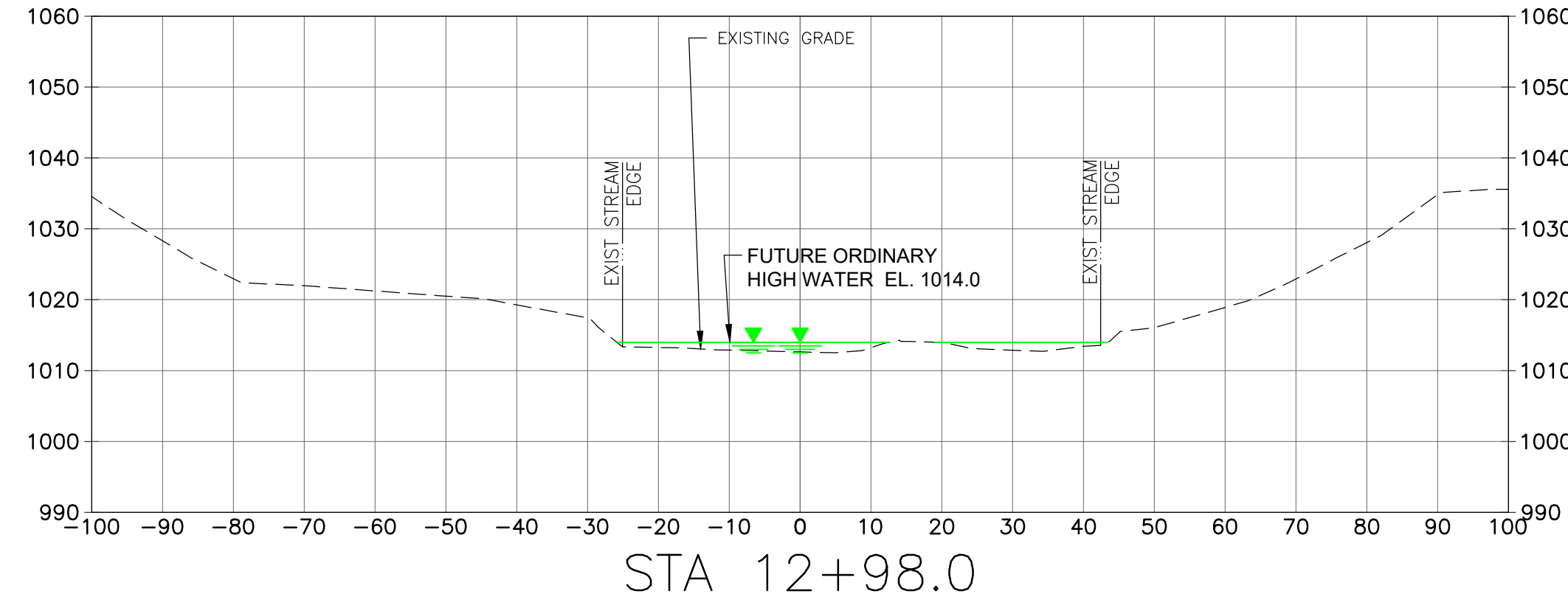
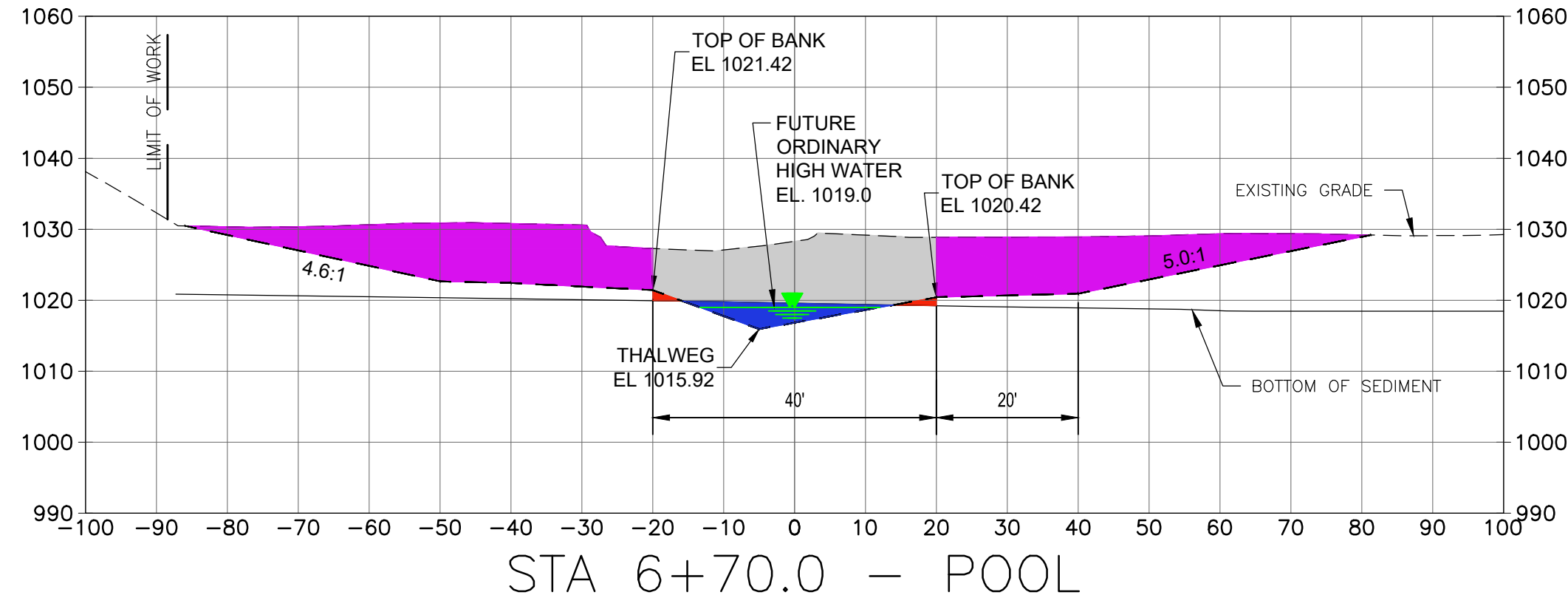
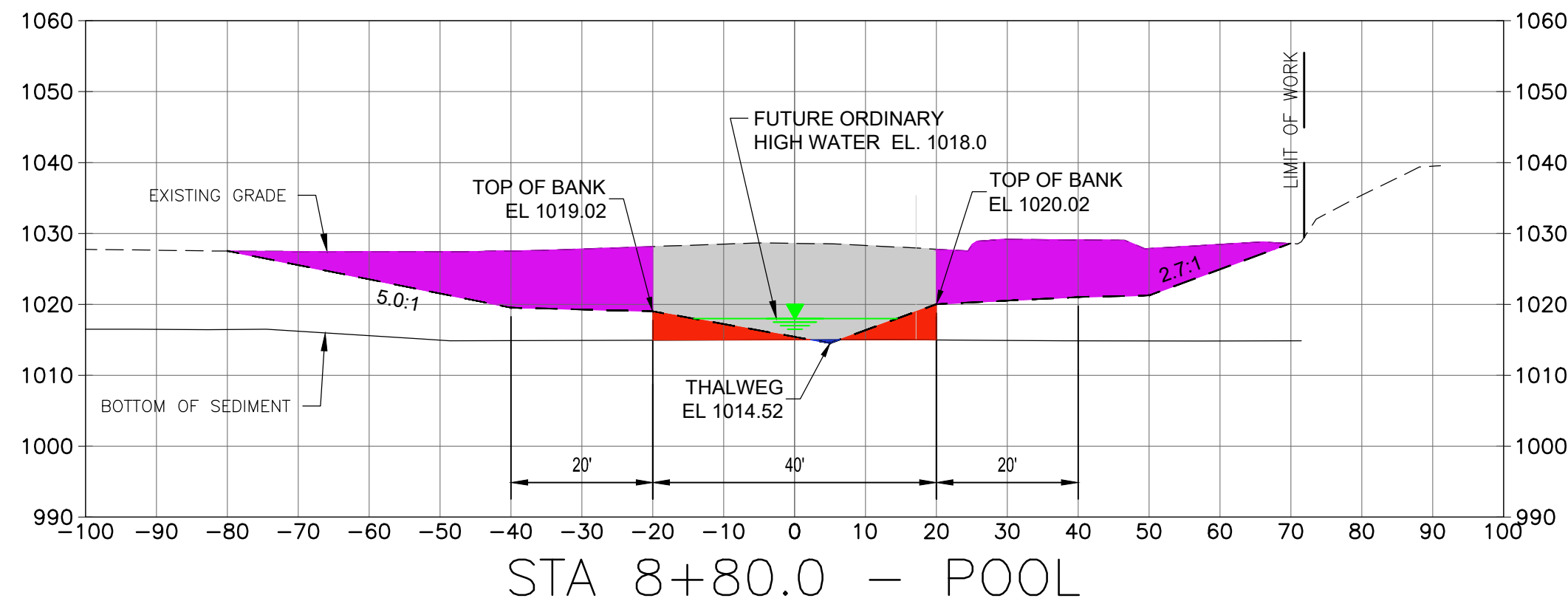
PLAN
SCALE: 1"=40'

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LAST UPDATE: Wednesday, June 26, 2024 1:28:43 PM
PLOT DATE: Wednesday, June 26, 2024 1:30:50 PM

I/R	DATE	DESCRIPTION

60604936

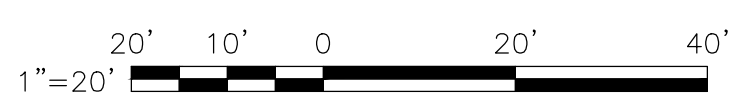
Designed By:	JPM
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	JUNE 2024
Scale:	AS NOTED



- LEGEND**
- SEDIMENT TO BE EXCAVATED TO CREATE STREAM PROFILE
 - COARSE MATERIAL TO BE EXCAVATED 1 TO 2 FEET BELOW ELEVATION SHOWN, AND BACKFILLED WITH STONE TO ACHIEVE ELEVATION INDICATED TO CREATE STREAM PROFILE
 - SEDIMENT TO BE EXCAVATED TO CREATE FLOODPLAIN BENCH
 - SEDIMENT TO BE EXCAVATED AND REPLACED WITH STONE TO CREATE STREAM PROFILE
 - FUTURE ORDINARY HIGH WATER

SECTIONS - BEL AIR CHANNEL

SCALE: 1"=20' HORIZ
 1"=20' VERT



PATH: P:\WORK\PROJECTS\MASSDCR\ABANDONED DAMS\SHEETS\CIBEL AIR\00 C-301-308 BEL.DWG
 LAST UPDATE: Tuesday, August 20, 2024 8:10:15 AM
 PLOT DATE: Tuesday, August 20, 2024 8:16:51 AM



NO.	DATE	DESCRIPTION
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1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE
I/R	DATE	DESCRIPTION

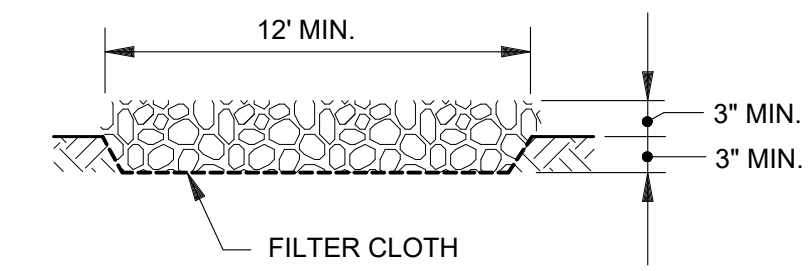
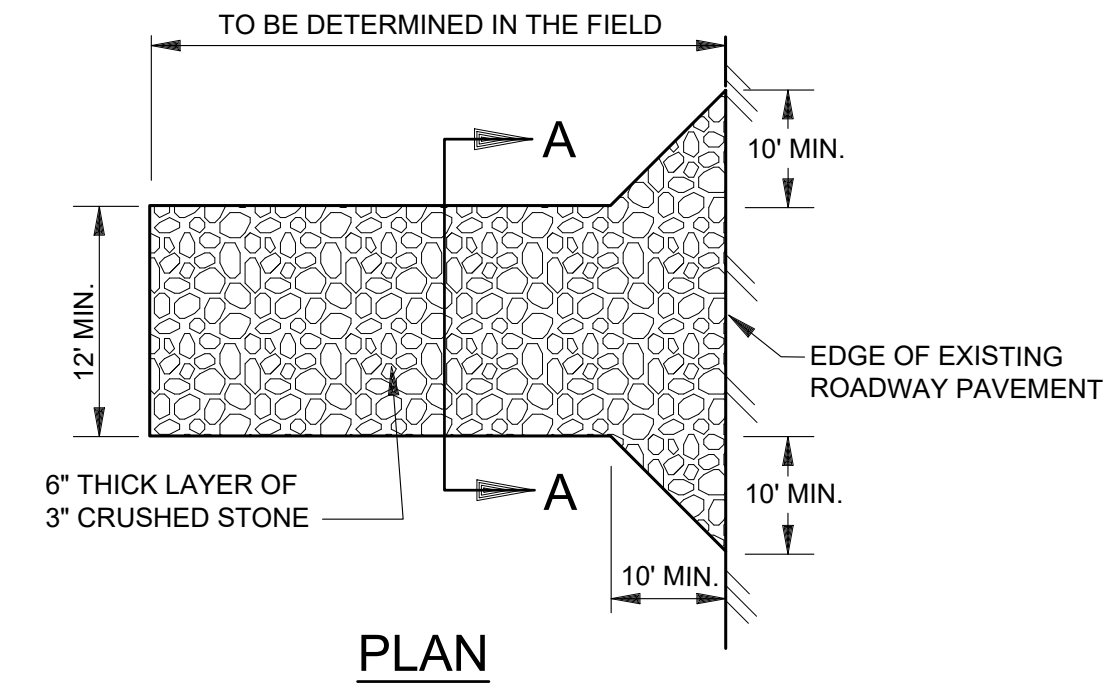
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Designed By:	BR
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

CIVIL
SHEET TITLE

BEL AIR DAM REMOVAL
CIVIL DETAILS I

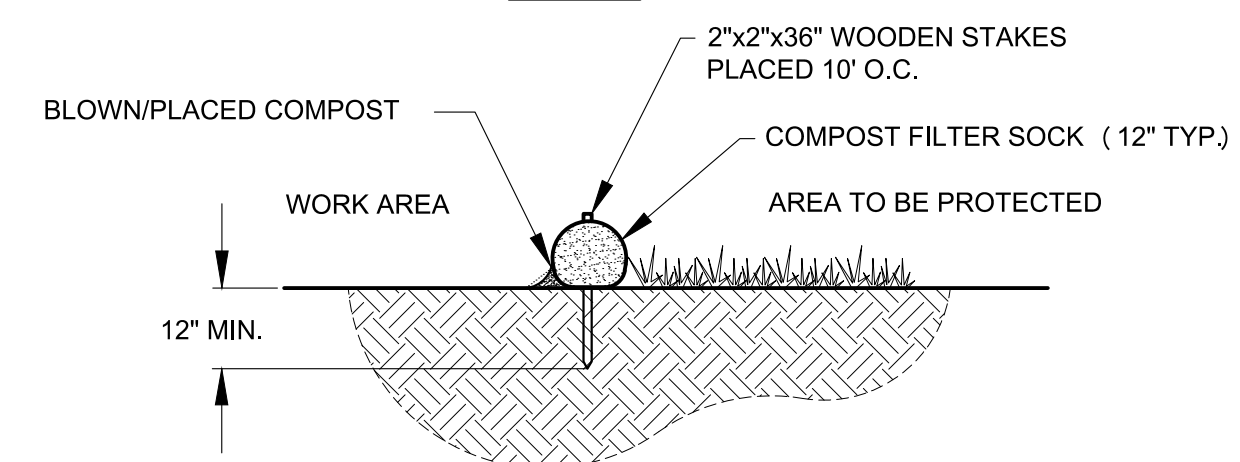
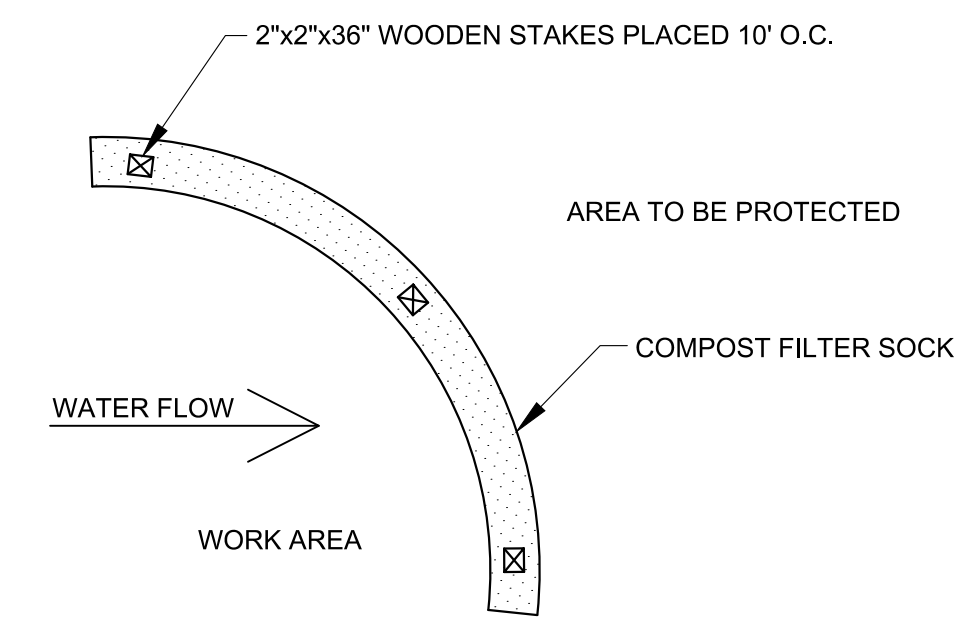
99 C-501



SECTION A-A

TEMPORARY CONSTRUCTION ENTRANCE

NOT TO SCALE

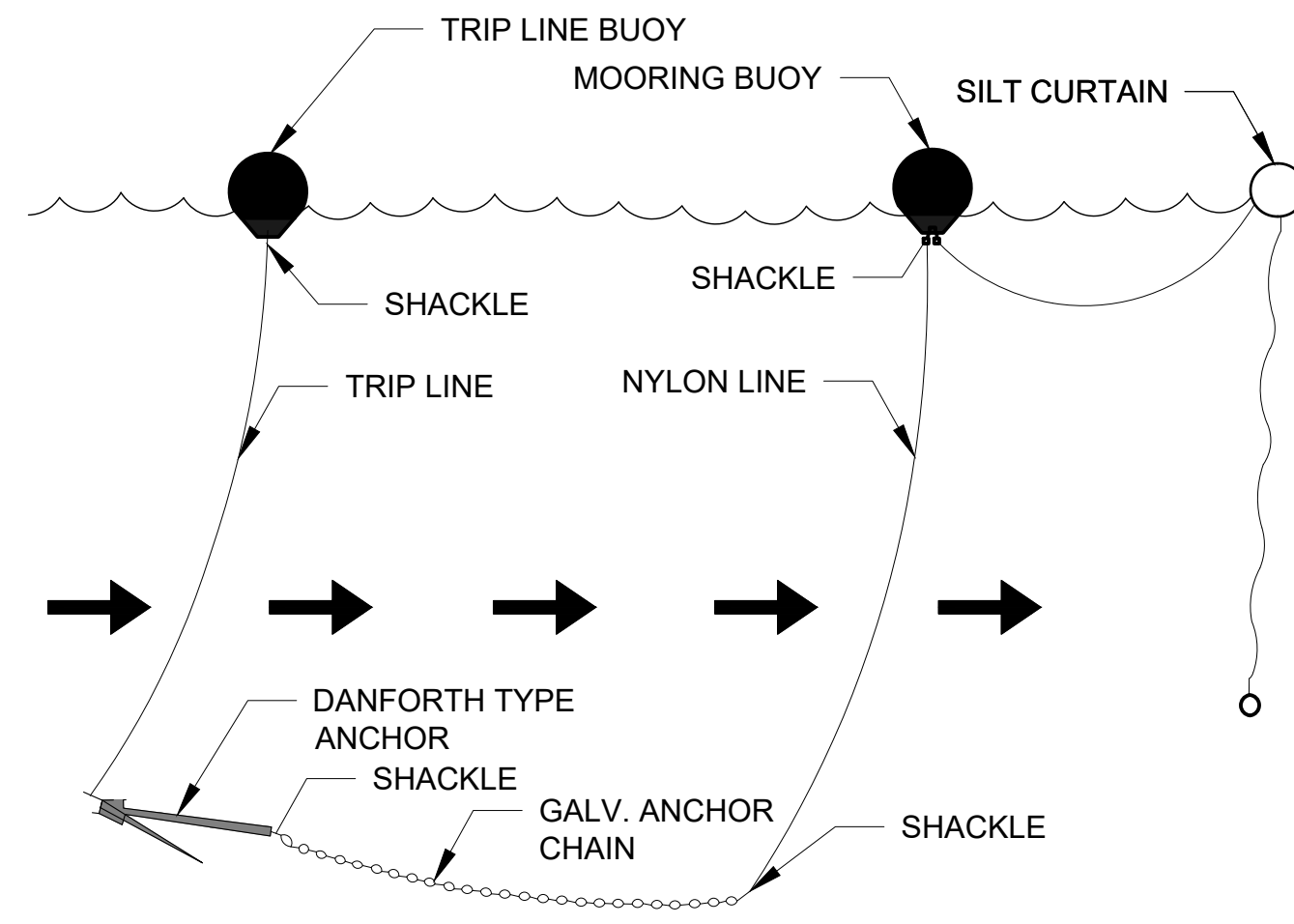


SECTION

NOTES:

- SEE SPECIFICATION FOR COMPOST FILTER SOCK AND COMPOST FILL MATERIAL REQUIREMENTS.

COMPOST SILT SOCK
 NOT TO SCALE



NOTES:

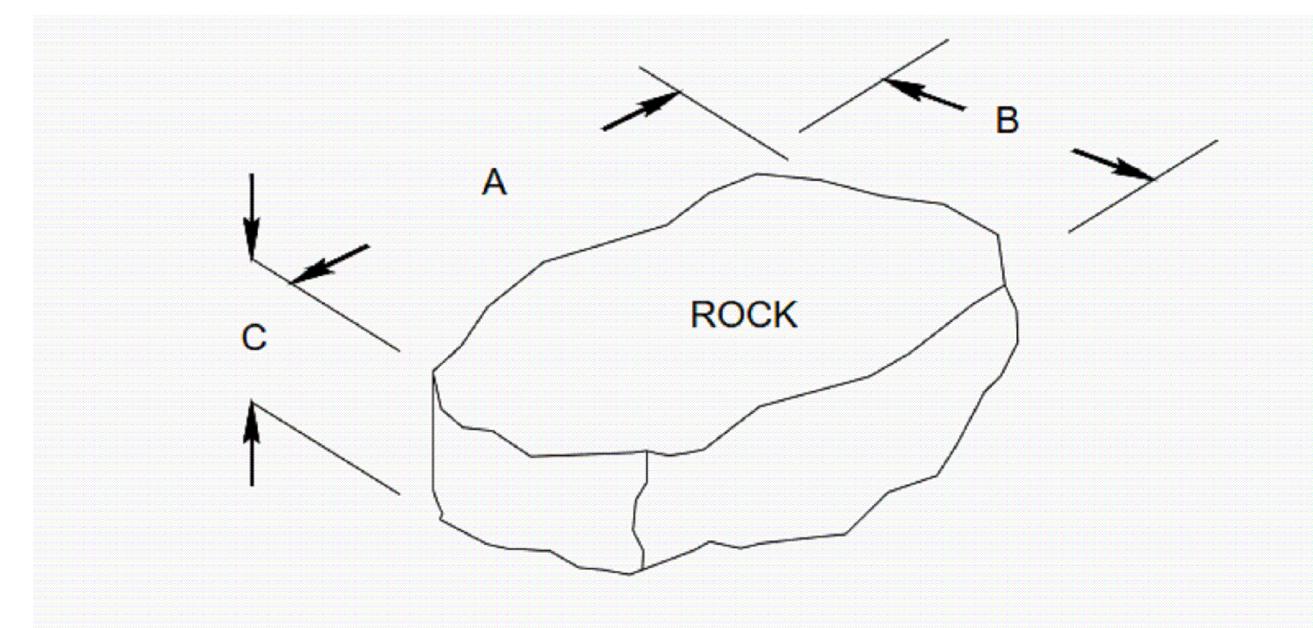
- THE GALVANIZED ANCHOR CHAIN MAY BE REMOVED IN AREAS OF LOWER FLOW (I.E. TRIBUTARIES) AND IF APPROVED BY THE OWNER'S REPRESENTATIVE.

ANCHOR DETAIL
 SCALE: NTS

STREAM SUBSTRATE MIXTURE SPECIFICATIONS

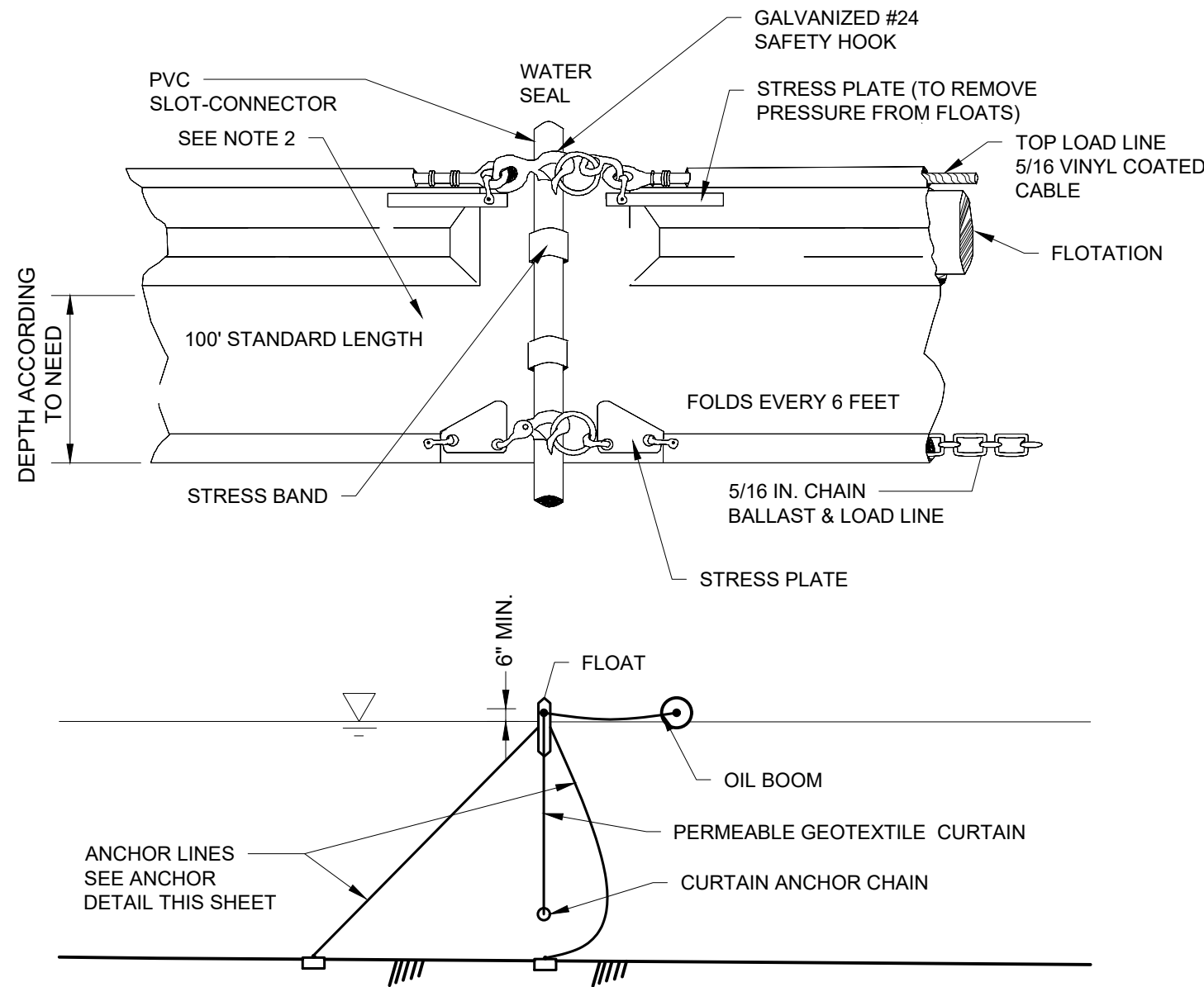
STREAM SUBSTRATE BED MIXTURE UTILIZED IN THE BED OF THE STREAM WITHIN THE STREAM CHANNEL TO PROVIDE A STABLE SUBSTRATE OR FILL AREA.

GENERALLY, STREAM SUBSTRATE MIXTURE SHALL CONSIST OF LARGE STONE MIXED WITH SMALL STONE, AND FINE AGGREGATE. THE STREAM SUBSTRATE MIXTURE MUST MEET THE MATERIAL SPECIFICATIONS PROVIDED IN THE SUBSTRATE MIXTURE TABLE.



- EACH STREAM SUBSTRATE MIXTURE SHALL CONTAIN THE PERCENTAGE BY VOLUME OF THE MATERIALS SPECIFIED IN THE STREAM SUBSTRATE MIXTURE TABLE.
- SUBSTRATE WILL BE NATURAL IN COLOR (BROWN, YELLOW, TAN OR GRAY). NO WHITE ROCK SHALL BE ALLOWED.
- SUBSTRATE SHALL BE FREE OF IMPURITIES AND CONTAMINANTS
- SUBSTRATE SHALL BE NATURAL AND FREE OF SLAG.
- SIZING IS BASED ON THE INTERMEDIATE B-AXIS OF THE ROCK.
- FOR MIN. THICKNESS DEPTHS GREATER THAN 1.5 FEET THE BED MIXTURE SHOULD BE PLACED IN LIFTS NO GREATER THAN 12 INCHES. THE CONTRACTOR SHALL INSPECT THE INSTALLATION OF STREAM SUBSTRATE MIXTURE TO ENSURE THE PLACEMENT IS INSTALLED AS HOMOGENEOUS AS POSSIBLE VISUALLY FREE OF LARGE VOIDS. LARGE VOIDS SHOULD BE WASHED WITH ADDITIONAL FINE AGGREGATE OR SALVAGABLE STREAM BED MATERIAL IF NEEDED.
- ADDITIONAL AVAILABLE ON SITE SALVAGABLE STREAM BED MATERIAL SHOULD BE BLENDED AND BACKWASHED INTO THE ROCK TO FILL VOIDS, IF NECESSARY.
- REFER TO THE GRADING PLAN AND PROFILE FOR THE LIMITS OF PLACEMENT.

STREAM SUBSTRATE MIXTURE TABLE AND SPECS



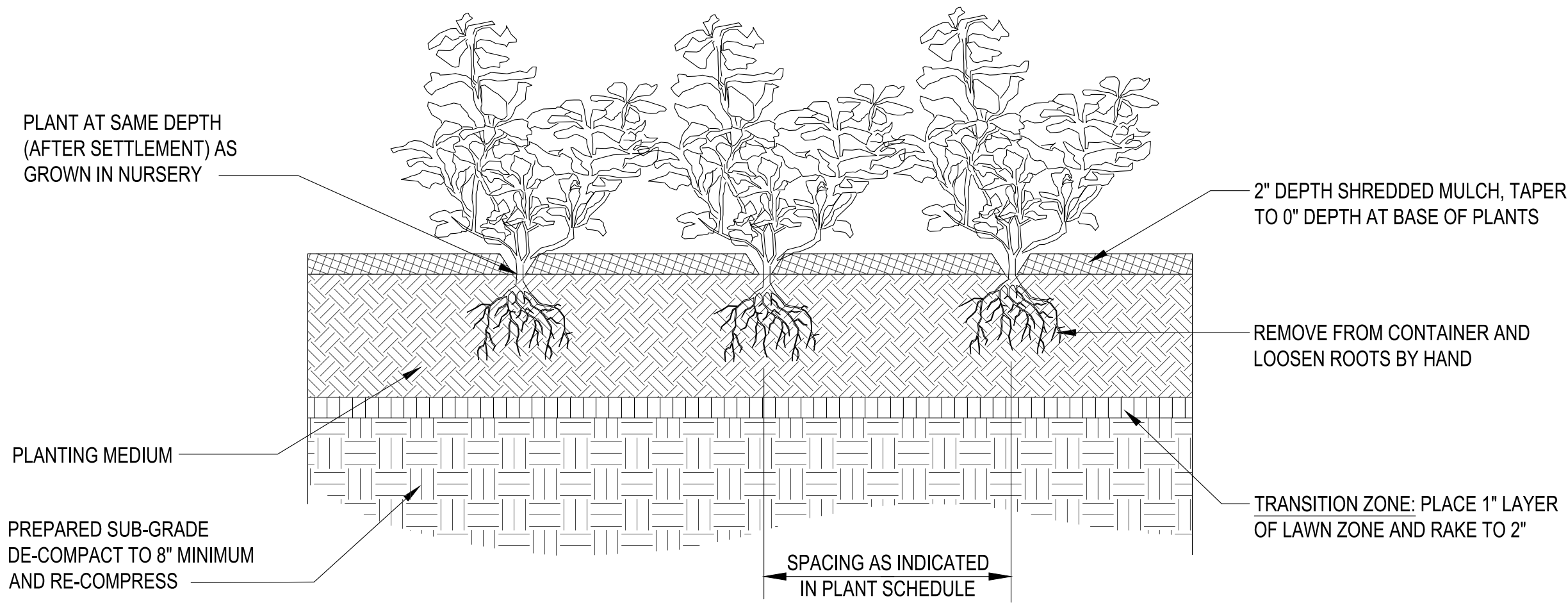
NOTES:

- ANCHOR CURTAINS PER ANCHOR DETAIL THIS SHEET.
- TURBIDITY CURTAIN SHALL BE A GEOSYNTHETIC HAVING A FILTRATION APPARENT OPEN SIZE (AOS) OF 0.220 MM MAXIMUM FOR NON-WOVEN GEOTEXTILES, AND AOS OF 0.425 MM MAXIMUM FOR WOVEN TEXTILES, OR SUITABLE ALTERNATIVE.
- ALL CURTAIN ANCHOR POINTS SHALL HAVE SUFFICIENT HOLDING POWER TO RETAIN THE CURTAIN UNDER THE EXISTING CURRENT CONDITIONS, PRIOR TO PUTTING THE FURLED CURTAIN INTO THE WATER.
- THE FURLED CURTAIN SHALL BE SECURED TO THE UPSTREAM ANCHOR POINT AND THEN SUBSEQUENTLY ATTACHED TO EACH NEXT DOWNSTREAM ANCHOR POINT UNTIL THE ENTIRE CURTAIN IS IN POSITION.
- FURLING LINES SHALL NOT BE CUT UNTIL LOCATION IS ASCERTAINED AND INSPECTED.
- ANCHOR LINES SHALL BE ATTACHED TO THE FLOTATION DEVICE AND NOT TO THE BOTTOM OF THE CURTAIN.
- WEIGHTS SHALL BE LOCATED AT 10' INTERVALS ALONG LENGTH OF CURTAIN. WEIGHTS SHALL BE A MINIMUM OF 5 POUNDS AND EXTEND 12" BELOW THE CURTAIN.
- FLOATS SHALL BE SPACED ON 5' INTERVALS WITH A MINIMUM OF 2 FLOATS FOR EACH CURTAIN.
- OIL BOOM MATERIAL, TYPE, AND HEIGHT SHALL BE SUBJECT TO ENGINEER APPROVAL.
- BUOYANCY PROVIDED BY THE FLOAT SHALL BE SUFFICIENT TO SUPPORT THE WEIGHT OF THE TURBIDITY CURTAIN AND MAINTAIN A MINIMUM FREEBOARD OF 6" ABOVE THE WATER SURFACE.

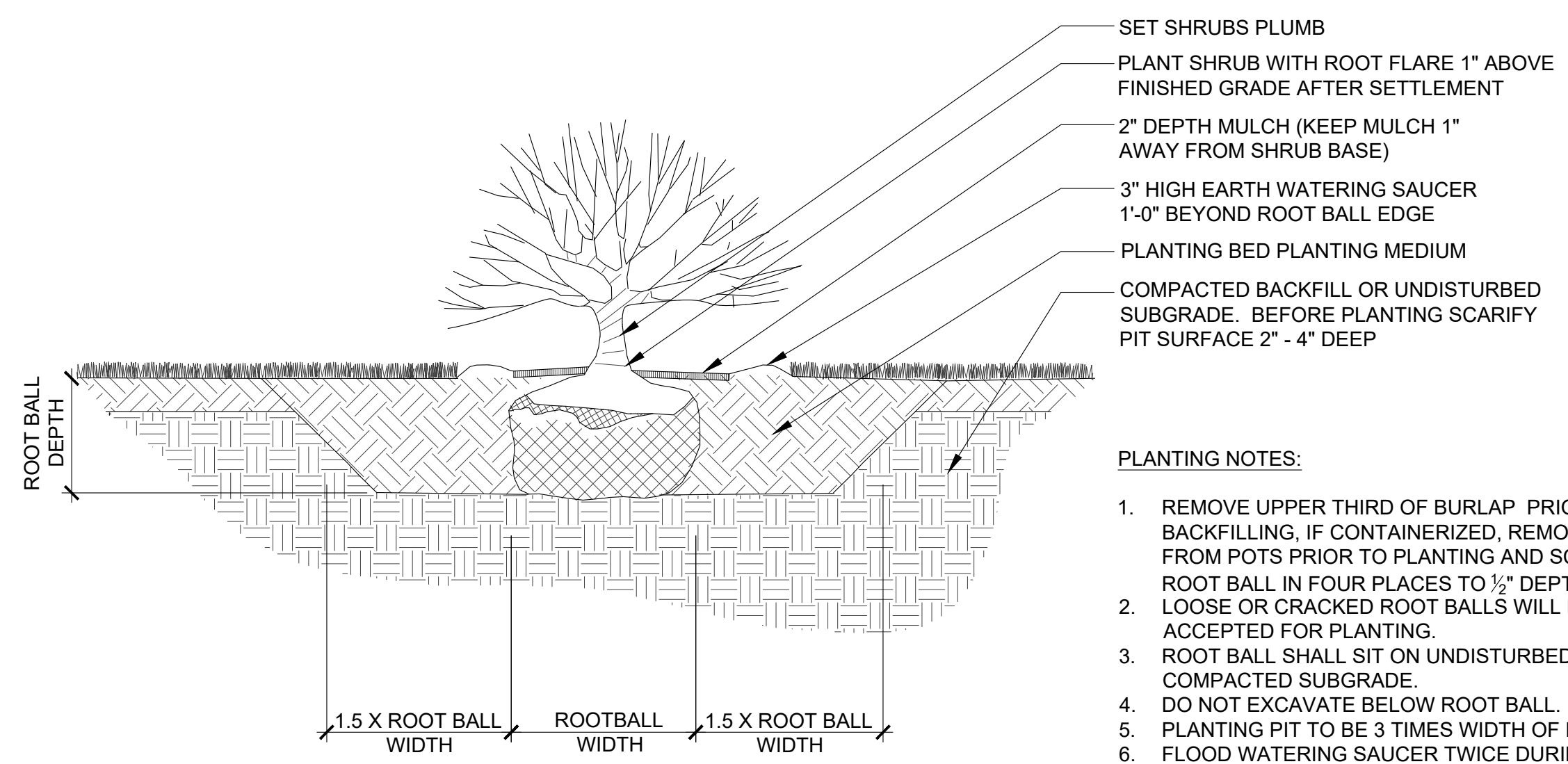
TURBIDITY CURTAIN AND OIL BOOM
 SCALE: NTS

STREAM SUBSTRATE MIXTURE TABLE				
ID	MATERIAL CATEGORY	INTERMEDIATE B-AXIS SIZE RANGE	APPROX. % BY VOLUME	MIN. THICKNESS (FT)
RIFFLE/RUN/GLIDE	LARGE STONE	MASS DOT CLASS 4 RIPRAP D50 = 14"	20%	2.0'
	SMALL STONE	MASS DOT CLASS 3 RIPRAP D50 = 10"	60%	
	FINE AGGREGATE	AGGREGATE SIZE D50 = 2.5"	20%	
POOL	SMALL STONE	AGGREGATE SIZE D50 = 2.5"	100%	2.0'

PATH: \\AECOM\PROJECTS\2024\MASSDCR SIX ABANDONED DAMS\PROJECTS\CIVIL\AR99 C-501 BEL.DWG
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 PLOT DATE: Friday, November 1, 2024 11:57:42 AM



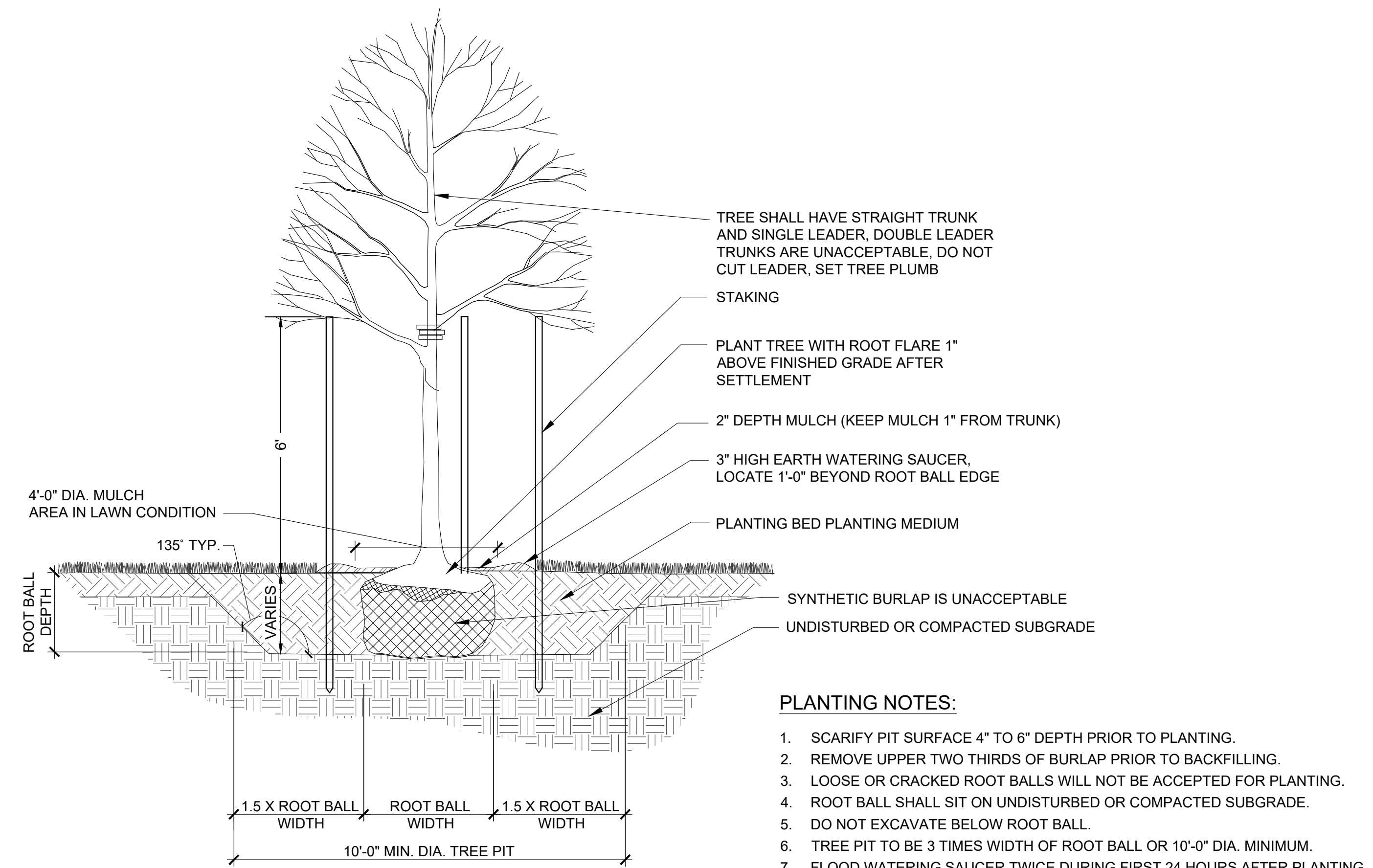
PERENNIAL PLANTING
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE

PLANTING SCHEDULE

Total Quantity	Scientific Name	Common Name	Location	Size	Spacing / Notes
Deciduous Trees					
35	<i>Prunus serotina</i>	Black Cherry	Northwestern Planting Area and Adjacent to Dam Locus	3-4 Foot Height, Containerized	10-20 feet o.c.
30	<i>Quercus alba</i>	White Oak		3-4 Foot Height, Containerized	10-20 feet o.c.
Shrubs					
50	<i>Cornus amomum</i>	Silky Dogwood	Northwestern Planting Area	2-3 Foot Height, Containerized	5-8 feet o.c. in discrete clumps
65			Adjacent to Dam Locus		
10			Northeastern Strip Adjacent to Lenox Ave Properties		
300		Floodplain Bench			
50	<i>Alnus incana</i>	Speckled Alder	Northwestern Planting Area	2-3 Foot Height, Containerized	5-8 feet o.c. in discrete clumps
65			Adjacent to Dam Locus		
10			Northeastern Strip Adjacent to Lenox Ave Properties		
300		Floodplain Bench			
300	<i>Salix discolor</i>	Pussy Willow	Floodplain Bench	2-3 Foot Height, Containerized	5-8 feet o.c. in discrete clumps
Woody Stake Plantings					
2,000	<i>Salix nigra</i>	Black Willow	Bio-D Blocks	Tubelings/Live Stakes	N/A
Herbaceous Plants					
4,800	<i>Elymus virginicus</i>	Virginia Wild Rye	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
4,800	<i>Andropogon gerardii</i>	Big Bluestem	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
4,800	<i>Asclepias tuberosa</i>	Butterfly Milkweed	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
4,800	<i>Euthamia graminifolia</i>	Flat-topped Goldenrod	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
4,800	<i>Juncus tenuis</i>	Path Rush	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
4,800	<i>Eutrochium maculatum</i>	Spotted Joe-Pye-Weed	Floodplain Bench	2-inch plug	2-feet o.c. in discrete clumps
Seed Mix					
25 lbs/acre; 1,750 Sq Ft/lb	N/A	New England Wetland Plants New England Conservation/Wildlife Mix or Equivalent	All Disturbed/Restored Areas	N/A	N/A



DECIDUOUS TREE PLANTING
NOT TO SCALE



PROJECT
MASS DCR
ABANDONED DAMS
BEL AIR DAM REMOVAL
CONTRACT NO.
P19-3264-D4A

CLIENT
Massachusetts Department of Conservation and Recreation
10 Park Plaza, Suite 6620
Boston, MA 02116
617.626.1250 tel 617.626.1351 fax
www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT
AECOM TECHNICAL SERVICES, INC.
250 APOLLO DRIVE
CHELMSFORD, MA 01824
PHONE: (978) 905-2100
www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

Designed By:	BR
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

DISCIPLINE

CIVIL

SHEET TITLE

BEL AIR DAM REMOVAL
CIVIL DETAILS II

SHEET NUMBER

99 C-502

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 PLOT DATE: Friday, November 1, 2024 11:57:47 AM

PROJECT

MASS DCR
 ABANDONED DAMS
 BEL AIR DAM REMOVAL
 CONTRACT NO.
 P19-3264-D4A

CLIENT

Massachusetts Department
 of Conservation and
 Recreation
 10 Park Plaza, Suite 6620
 Boston, MA 02116
 617.626.1250 tel 617.626.1351 fax
 www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT

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 250 APOLLO DRIVE
 CHELMSFORD, MA 01824
 PHONE: (978) 905-2100
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REGISTRATION



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0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

Designed By:	BR
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

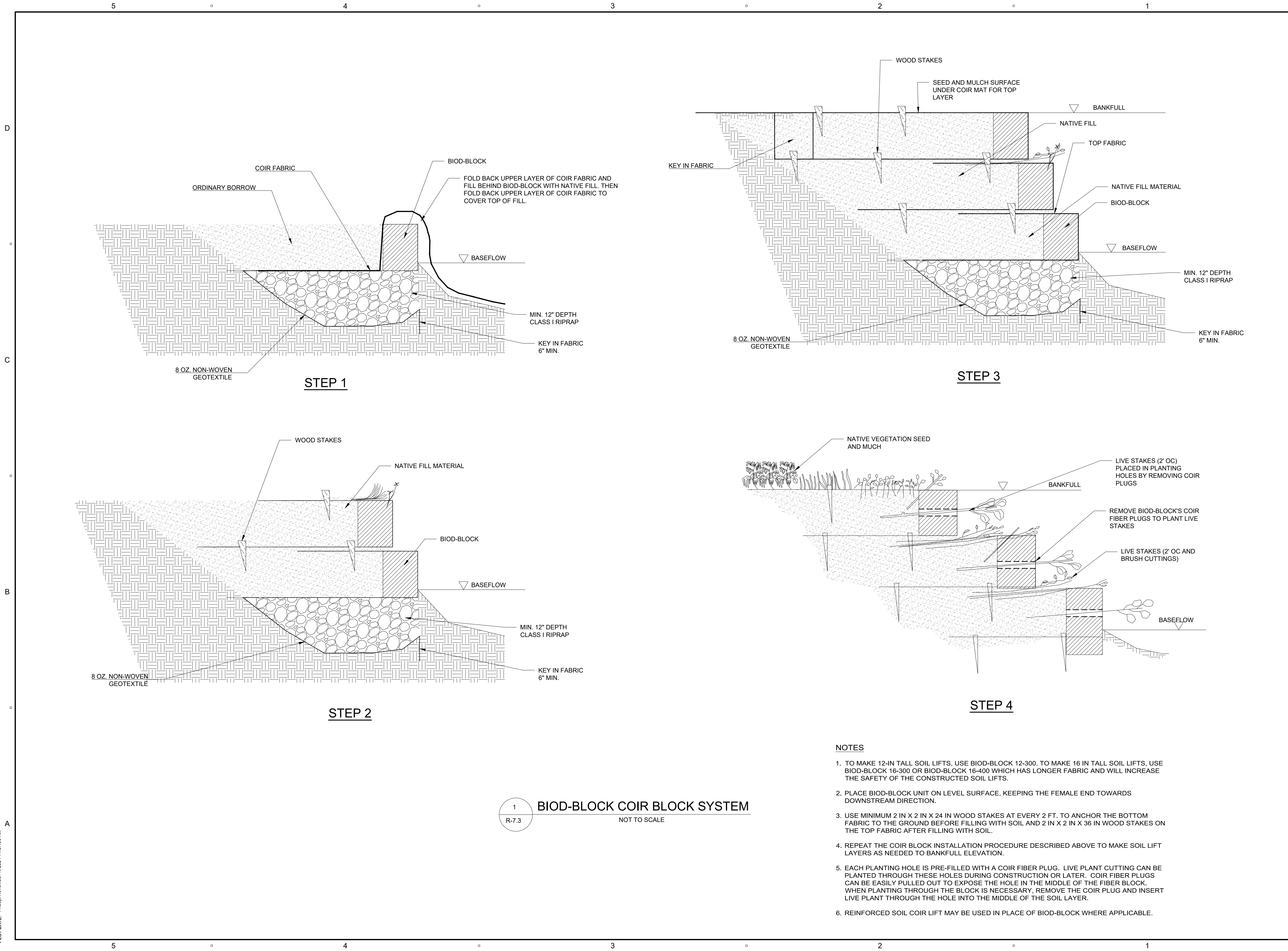
DISCIPLINE

CIVIL
 SHEET TITLE

**BEL AIR DAM REMOVAL
 CIVIL DETAILS III**

SHEET NUMBER

99 C-503



1 BIOD-BLOCK COIR BLOCK SYSTEM
 R-7.3 NOT TO SCALE

- NOTES**
- TO MAKE 12-IN TALL SOIL LIFTS, USE BIOD-BLOCK 12-300. TO MAKE 16 IN TALL SOIL LIFTS, USE BIOD-BLOCK 16-300 OR BIOD-BLOCK 16-400 WHICH HAS LONGER FABRIC AND WILL INCREASE THE SAFETY OF THE CONSTRUCTED SOIL LIFTS.
 - PLACE BIOD-BLOCK UNIT ON LEVEL SURFACE, KEEPING THE FEMALE END TOWARDS DOWNSTREAM DIRECTION.
 - USE MINIMUM 2 IN X 2 IN X 24 IN WOOD STAKES AT EVERY 2 FT. TO ANCHOR THE BOTTOM FABRIC TO THE GROUND BEFORE FILLING WITH SOIL AND 2 IN X 2 IN X 36 IN WOOD STAKES ON THE TOP FABRIC AFTER FILLING WITH SOIL.
 - REPEAT THE COIR BLOCK INSTALLATION PROCEDURE DESCRIBED ABOVE TO MAKE SOIL LIFT LAYERS AS NEEDED TO BANKFULL ELEVATION.
 - EACH PLANTING HOLE IS PRE-FILLED WITH A COIR FIBER PLUG. LIVE PLANT CUTTING CAN BE PLANTED THROUGH THESE HOLES DURING CONSTRUCTION OR LATER. COIR FIBER PLUGS CAN BE EASILY PULLED OUT TO EXPOSE THE HOLE IN THE MIDDLE OF THE FIBER BLOCK. WHEN PLANTING THROUGH THE BLOCK IS NECESSARY, REMOVE THE COIR PLUG AND INSERT LIVE PLANT THROUGH THE HOLE INTO THE MIDDLE OF THE SOIL LAYER.
 - REINFORCED SOIL COIR LIFT MAY BE USED IN PLACE OF BIOD-BLOCK WHERE APPLICABLE.

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 LAST UPDATE: Thursday, October 31, 2024 2:28:40 PM
 PLOT DATE: Friday, November 1, 2024 11:57:59 AM

PROJECT

MASS DCR
ABANDONED DAMS
BEL AIR DAM REMOVAL
CONTRACT NO.
P19-3264-D4A

CLIENT

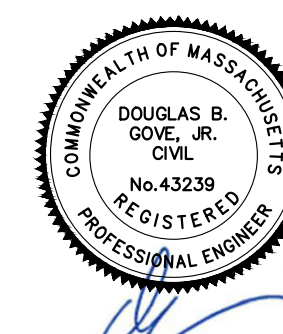
Massachusetts Department
of Conservation and
Recreation

10 Park Plaza, Suite 6620
Boston, MA 02116
617.626.1250 tel 617.626.1351 fax
www.mass.gov/orgs/departement-of-conservation-recreation

CONSULTANT

AECOM TECHNICAL SERVICES, INC.
250 APOLLO DRIVE
CHELMSFORD, MA 01824
PHONE: (978) 905-2100
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REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
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0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

PROJECT NUMBER

60604936

Designed By:	BR
Drawn By:	SN
Dept Check:	JDB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED

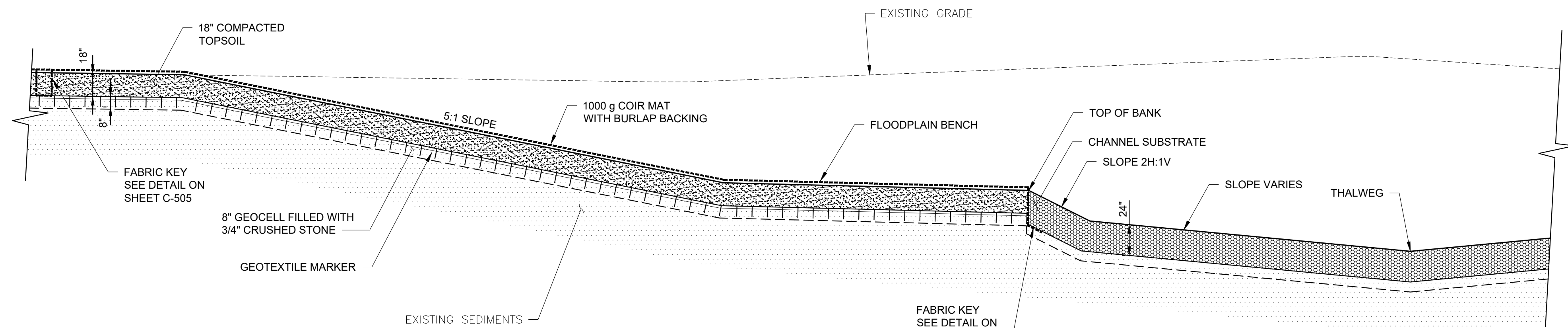
DISCIPLINE

CIVIL
SHEET TITLE

BEL AIR DAM REMOVAL
CIVIL DETAILS IV

SHEET NUMBER

99 C-504

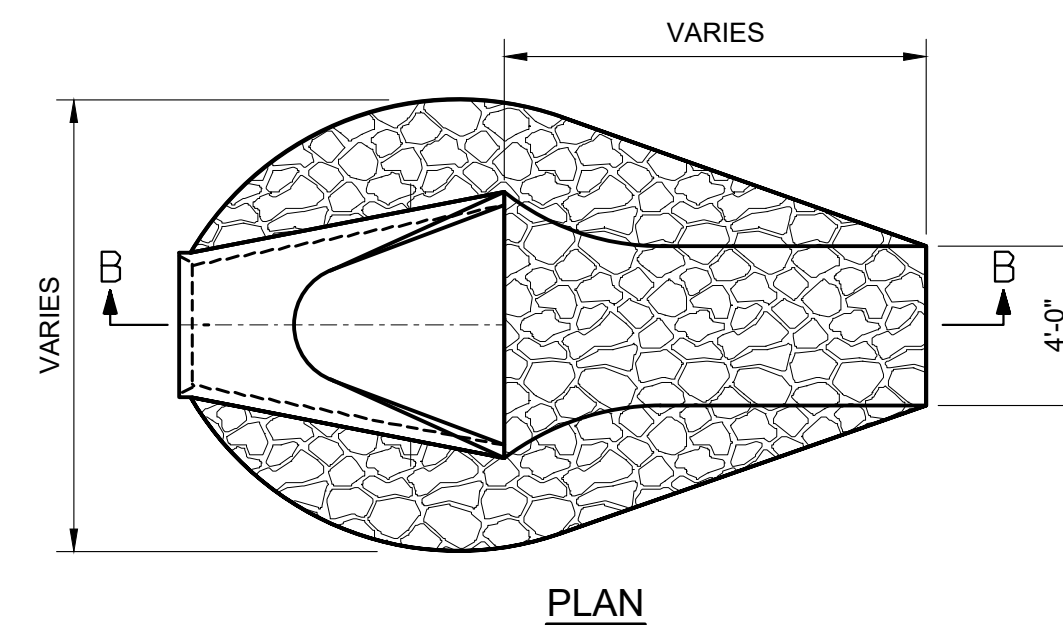


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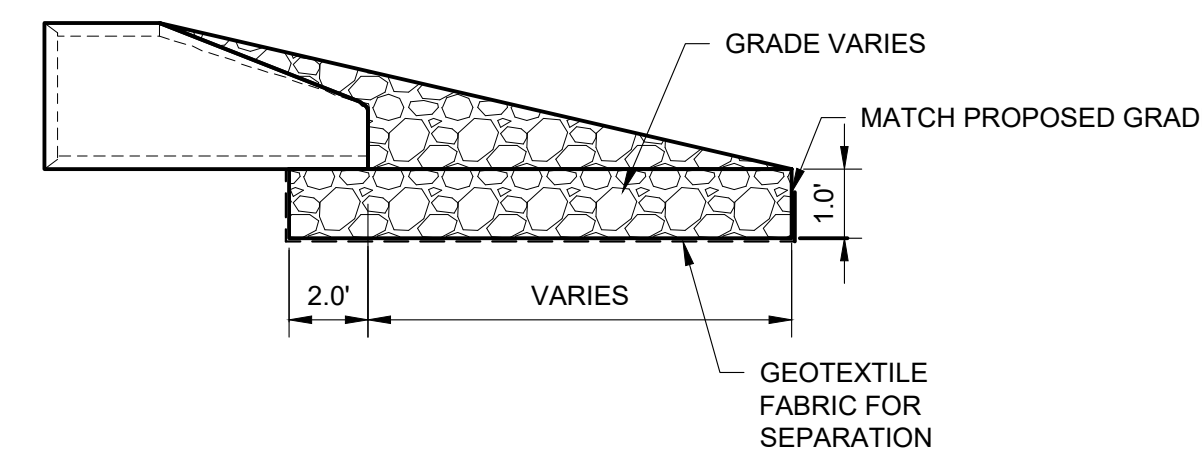
EXTEND GEOCELL AND TOPSOIL COVER TO TOE OF WESTERN SLOPE ALONG WAHCONAH STREET AND/OR TOE OF EASTERN SLOPE BEHIND RESIDENCES ON LENOX AVENUE.

TYPICAL DETAIL - IMPACTED SEDIMENT SLOPE

SCALE: 1" = 5'



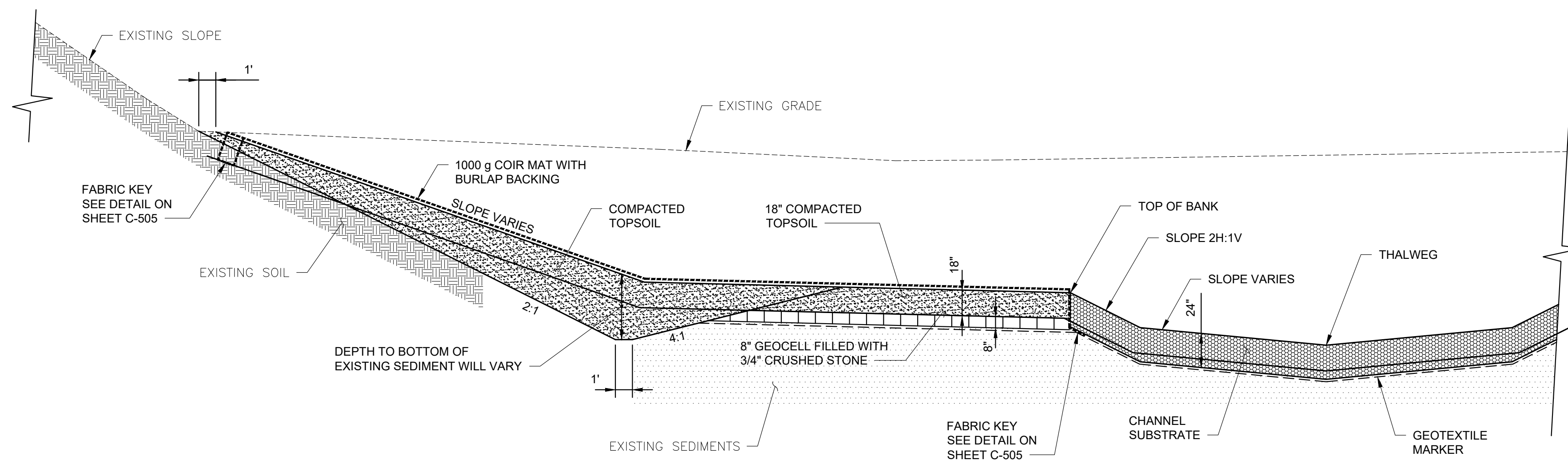
PLAN



SECTION B-B

PIPE OUTLET TO WELL-DEFINED CHANNEL

SCALE: NTS

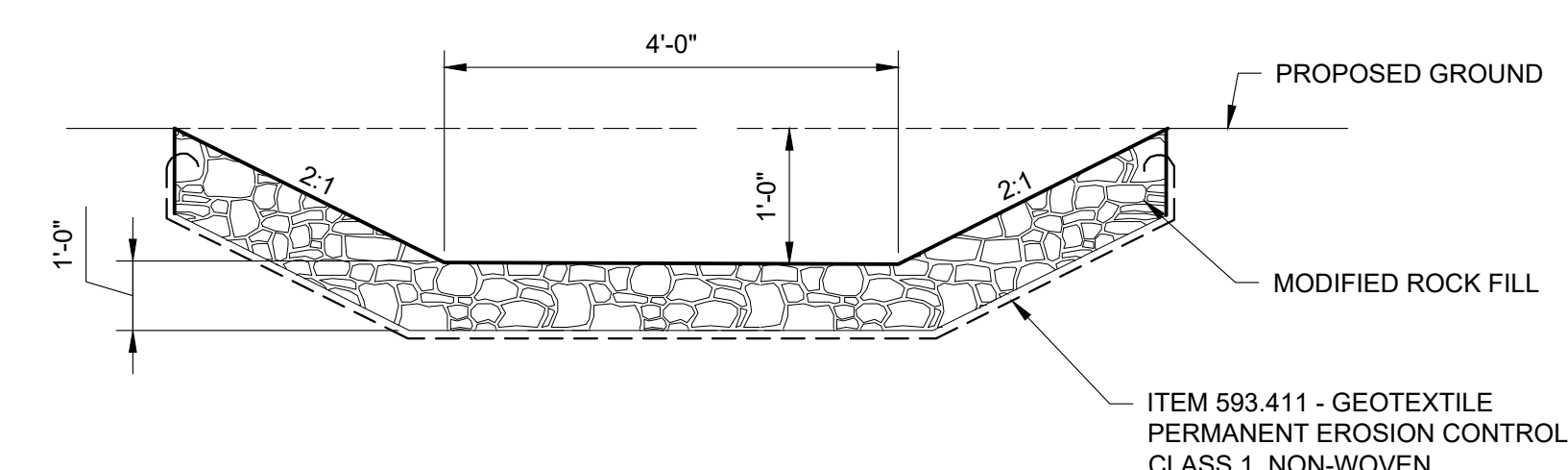


NOTE:

COMPACTED TOPSOIL SHALL CONFORM TO ASTM D5268 AND SHALL BE COMPACTED TO 90% OF THE MATERIAL'S MODIFIED PROCTOR. ONLY ORGANIC SILTS/SEDIMENTS SHALL BE EXCAVATED.

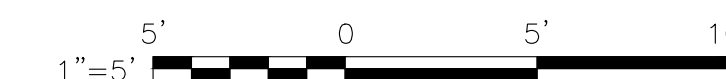
TYPICAL DETAIL - SEDIMENT REPLACEMENT

SCALE: 1" = 5'

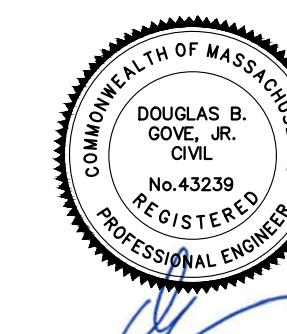


STONE LINE CHANNEL

SCALE: NTS



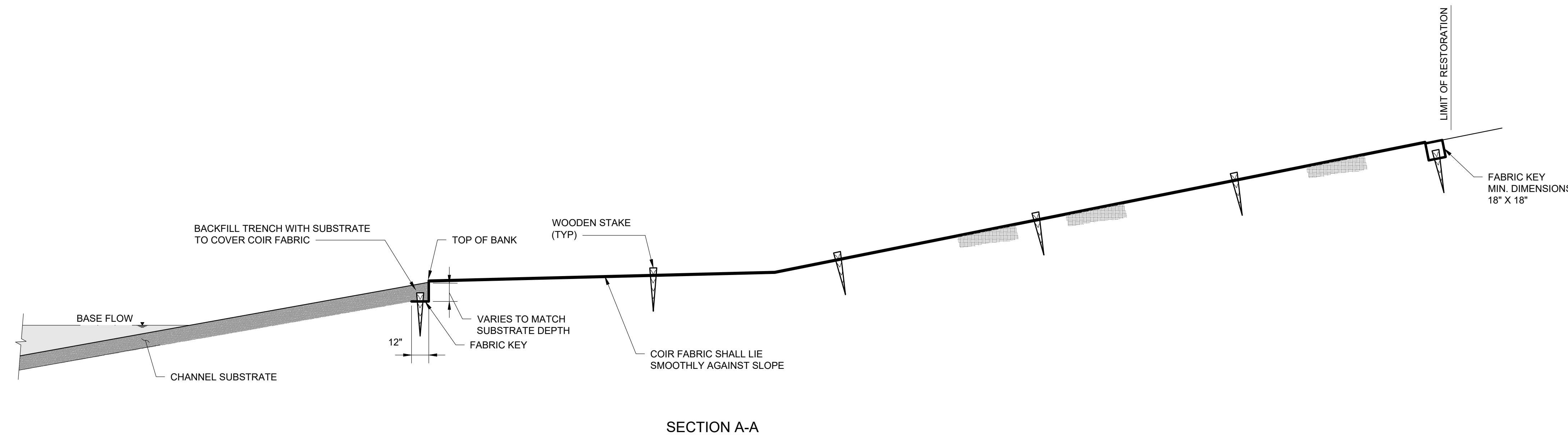
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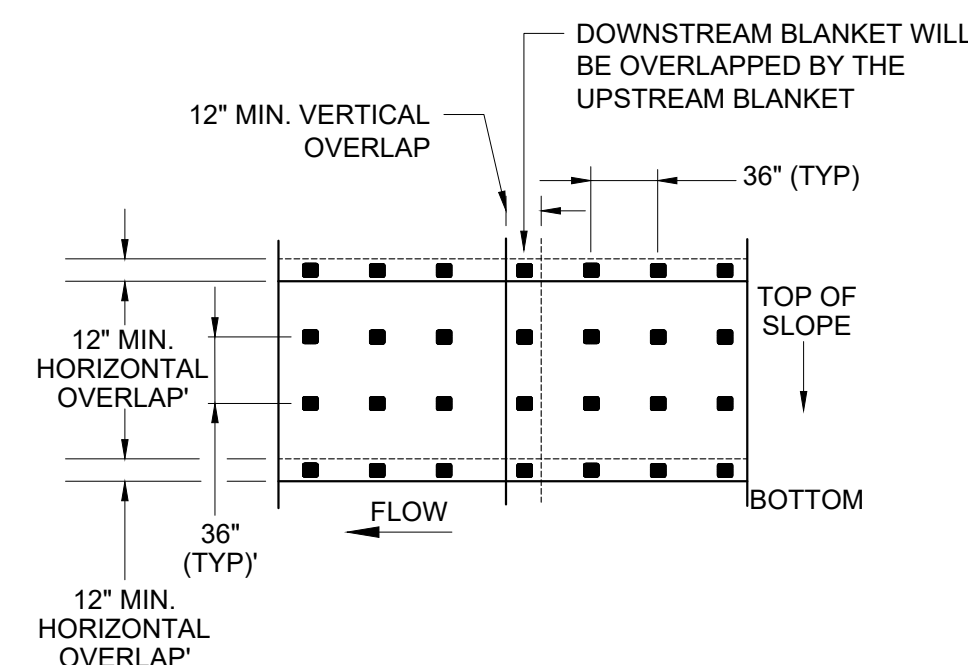
I/R	DATE	DESCRIPTION
2	10/31/2024	CONSTRUCTION BIDDING
1	10/17/2024	PITTSFIELD CONSERVATION COMMISSION ORDER OF CONDITIONS
0	9/26/2024	CHAPT 253 PERMIT ISSUANCE

60604936

Designed By:	BR
Drawn By:	SN
Dept Check:	CB
Proj Check:	D. GOVE
Date:	OCTOBER 2024
Scale:	AS NOTED



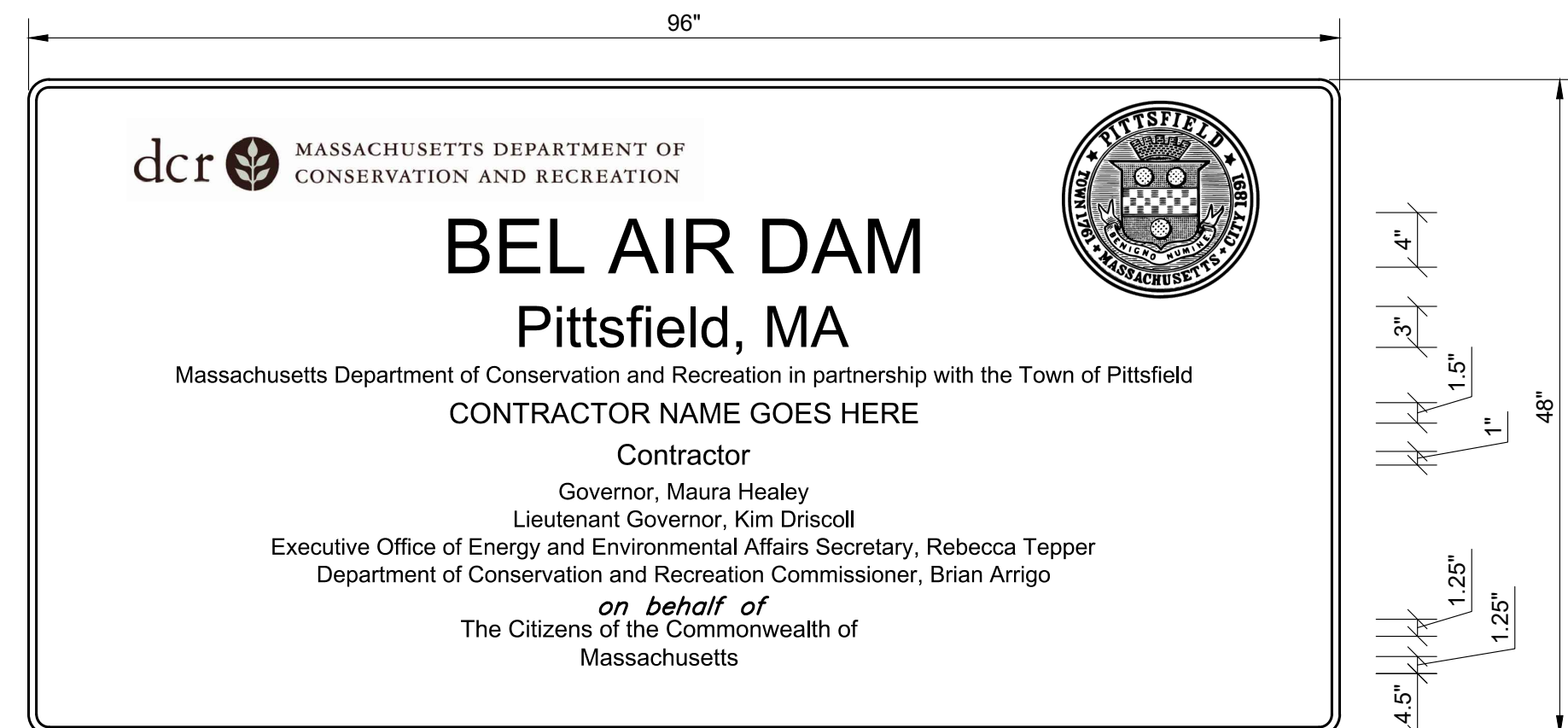
SECTION A-A



MATTING STAKING VIEW

- NOTES:**
- ALL AREAS THAT USE COIR FIBER EROSION CONTROL BLANKET WILL USE 1000G COIR MAT WITH BURLAP BACKING.

COIR FIBER EROSION CONTROL BLANKET

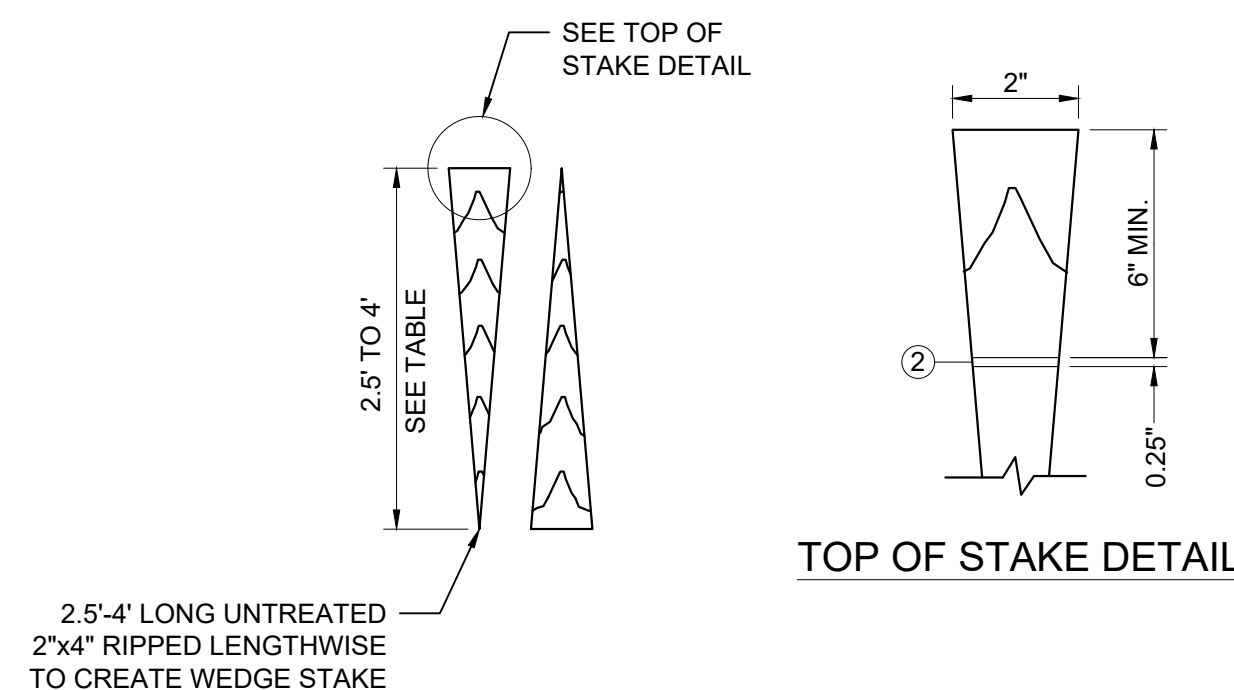


PROJECT SIGN NOTES:

- SIGN SIZE 4'x8'. SIGN SUBSTRATE 3/4" MDO PLYWOOD OR 0.080 INCH ALUMINUM MOUNTED ON 4"x6" WOOD POSTS OR 2"x12" METAL U-CHANNELS. U-CHANNELS MUST BE GALVANIZED OR PAINTED BLACK. A TWO PART POST SYSTEM WITH AN 8" U-CHANNEL BOLTED TO A 4" U-CHANNEL IN THE GROUND MAY BE USED. USE STAINLESS HEX HEAD BOLTS TO ATTACH SIGN TO POSTS. INSTALL POSTS A MINIMUM 4' BELOW GRADE. BOTTOM OF SIGN 4' ABOVE GRADE.
- DATA CONTAINED: PROJECT NAME, PROJECT LOCATION, DCR LOGO, CONTRACTOR AND CREDITS ON TWO LINES.
- DCR LOGO: CONTACT THE DCR SIGN SHOP TO OBTAIN A PRE CUT VINYL DCR LOGO. 617-727-5742.
- INCLUDE GC NAME ONLY. (USE OTHER SAMPLE CONSTRUCTION SIGN FOR DESIGNER AND CONTRACTOR NAMES).
- FOR PROJECT NAMES REQUIRING THREE LINES, THE TEXT SIZE MAYBE REDUCED TO 3.75" HIGH.
- SITING: TO BE DETERMINED BY DCR PROJECT MANAGER.
- COLORS: SIGN BOARD COLOR SAGE PMS 5655U. ALL TEXT IS BLACK. LOGO COLOR IS DARK MAROON PMS 504U.
- ALL TYPE IS FRUITGER 65 BOLD AND FRUITGER 55 ROMAN. LOGO IS GARAMOND.

PROJECT SIGN

NOT TO SCALE



TOP OF STAKE DETAIL

WOOD STAKE DETAIL

STAKE LENGTH	
SOIL TYPE	LENGTH (FEET)
CLAY	2.5
SILT	3.0
SAND	4.0
LOAM	2.0

NOTES:

- PRE-MANUFACTURED WOOD OR BIODEGRADABLE STAKES OF SUFFICIENT LENGTH MAY BE USED IN PLACE OF 2"x4" RIPPED WEDGE STAKES. NO METAL OR NON BIODEGRADABLE FASTENERS MAY BE USED IN PLACE OF WOOD STAKES.
- NOTCH STAKES TO 3/8" DEPTH (BOTH SIDES). TWINE, STRING, OR WIRE SHALL BE WRAPPED 1 TURN MIN. AROUND EACH STAKE AND PLACED WITHIN NOTCH.



ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.®

15 Research Drive
Amherst, Massachusetts 01002
Tel 413.256.0202 Fax 413.256.1092
www.swca.com

September 26, 2024

Jennifer Doyle-Breen, PWS
AVP, Project Manager VI, East Domestic
AECOM
250 Apollo Drive
Chelmsford MA 01824
Via email: jennifer.doyle-breen@aecom.com

Re: Geomorphology Assessment Scope, Bel Air Dam Removal Project, Pittsfield, Massachusetts

Dear Jennifer Doyle-Breen:

SWCA Environmental Consultants (SWCA) is pleased to offer this geomorphology assessment scope of work to AECOM to provide professional archaeological services for the proposed removal of the Bel Air Dam in Pittsfield, Massachusetts.

Work will include conducting a geomorphological assessment of the subsurface stratigraphy using a Geoprobe coring methodology to access deeply buried subsurface deposits. The work will entail laboratory evaluation and analysis of the recovered cores to identify soil-sedimentary horizons with archaeological potential. The results of this assessment will be summarized in a report and will guide the development of an informed archaeological monitoring plan for the project area.

We understand the MHC has been notified of the project, declining any archaeological survey in favor of archaeological monitoring. We also understand the Tribal Historic Preservation (THPO) of the Stockbridge-Munsee Community Band of Mohican Indians has concerns regarding the archaeological sensitivity of the project area, concurring with the geomorphology assessment and also requesting archaeological monitoring.

SWCA employees have extensive experience conducting similar cultural resources investigations and monitoring programs in Massachusetts and New England. For this project, Dr. Christopher Donta will serve as Project Manager and Dr. Suanna Crowley as Field Director. Dr. Crowley is also a geomorphologist who is an expert in alluvial processes in relation to archaeological deposits.

If you require any further information or clarification on any of the elements of our proposal, please feel free to contact me directly.

Sincerely,

A handwritten signature in black ink that reads "Christopher Donta". The signature is written in a cursive, slightly slanted style.

Christopher Donta, Ph.D.
Senior Cultural Resources Team Lead
413-992-7593
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SCOPE OF WORK

BACKGROUND RESEARCH

Recent discussion with the Army Corps of Engineers, AECOM, and the Tribal Historic Preservation Office of the Stockbridge-Munsee Community underscores the need to more accurately assess the subsurface stratigraphy within the Bel Air Dam project area. Desktop evaluations undertaken for the purposes of an initial Phase Ib intensive (locational) survey permit application in August 2024 as well as a site visit on September 18, 2024, by SWCA Geoarchaeologist Dr. Suanna Crowley indicate the need for a targeted deep testing approach within the project area.

Previous geotechnical borings within the impoundment area north of the Bel Air Dam and along upstream floodplain and terrace positions identify a significant accumulation of soil and sediment horizons overlying a dense, gravelly glacial till deposit noted between 1,013-1,017 feet elevation below surface. These overlying horizons were described by the geotechnical investigation as up to 10-12 feet of brown to black organic clays, silts, or sandy silts with trace fine grained gravels (AECOM 2024).

Additionally, desktop review of regional geological, pedological, hydrological, and geomorphological literature and databases provided an assessment of previously documented soil-sedimentary data sets within or adjacent to the project area (EEA 2024; HVA 2024; Newton et al. 1975; NRCS 2024). This information contextualized the observations provided by the geotechnical borings.

The site visit evaluation, geotechnical data, and background environmental settings research indicate that there is potential for a complex association of Holocene age soil-sediment horizons containing deeply buried archaeological deposits within the project area. This observation aligns with the density of known archaeological sites in the region as well as the ethnographic and historic interest in the West Housatonic River drainage by the Stockbridge-Munsee Community Band of Mohican Indians, as noted by Dr. Jeffrey Bendremer, Tribal Historic Preservation Officer. Because of these combined factors, SWCA recommends a program of deep subsurface testing (1) to provide more detailed understanding of the potential for archaeologically sensitive deposits within the project area and (2) to better guide the development of an archaeological monitoring plan during construction.

GEOMORPHOLOGY SURVEY

The proposed deep testing methodology is designed to assess the potential for cultural deposits at depths below the 1-meter (m) reach of standard archaeological testing approaches. While shovel test pits (STPs) are used effectively to examine archaeological potential across New England, this standard testing strategy does not access all depositional contexts.

SWCA proposes a soil boring methodology to probe approximately 6 m below surface and examine the soil-stratigraphic indicators of landscape stability within the terrestrial, not inundated, zones of the project area north of the dam impoundment. Indicators of landscape stability, including soil development as marked by buried surface horizons (“Buried A” soil layers), signal the presence of past landforms that may preserve archaeological deposits (Rick et al. 2022; Stein 1986). The 6-m depth threshold reaches subsurface deposits characterized as glacial till, a relative time-stratigraphic marker denoting the geologic period prior to human occupation of the region.

A series of up to eleven soil borings will be extracted using Geoprobe coring equipment to examine soils and sediments below the present surface of the project area. These borings are approximately 6cm in diameter and will be placed across the project area in four transects running west-to-east across the stream

valley (Figure 1). The stratigraphic profiles of individual borings will be evaluated and synthesized into schematic profiles (subsurface maps) for the four transects, providing opportunity to identify depositional change and/or archaeological potential across the project area.

The proposed testing pattern will sample the landform in which the Bel Air Dam is currently situated. Where accessible, Geoprobe cores will be placed across the anticipated construction zone as noted in the testing plan (see Figure 1). Such tests will help contextualize soils and sediments observed within the project area. This pattern will allow for even and sufficient coverage of the project area with respect to subsurface stratigraphy. Soil borings will be extracted near the Bel Air Dam (Transect A) and then in three additional transects (Transects B, C, and D) at approximately 60-m intervals starting at the northern edge of the standing water impoundment to the northern limit of the project area, where geomorphology and present conditions allow. Cores will be collected in 5-foot long, clear, PVC tube liners, capped, and labeled for transport to SWCA's Amherst office. If the Geoprobe is refused between 0-50 centimeters (cm) below surface, a second location for the test will be selected to see if deeper penetration of the soil boring can be achieved.

Extracted soils and sediments will be examined for physical characteristics using determinations of texture, consistence, inclusions, and standard Munsell colors. No screening for artifacts will take place, although any artifacts observed in the Geoprobe cores during analysis will be recorded and bagged. Artifacts, if recovered in the Geoprobe cores, will be processed and evaluated in the Amherst laboratory. Stratigraphy observed in all profiles will be logged using SWCA soil boring recordation sheets. Field documentation including written notes, photographs, and GIS data on digital tablets, will be taken to record observations and depths. All core locations will be backfilled upon their completion, returning them to as close to pre-survey conditions as possible. It is anticipated that the Geoprobe coring procedure will require 2 to 3 days to complete.

The deep testing project will be led by Dr. Christopher Donta, Team Lead and Principal Investigator. Dr. Suanna Crowley will serve as Geoarchaeologist. Additional support will be provided by a SWCA Project Archaeologist and Laboratory Assistant as needed. Steve Anderson and Jalyynn Stewart will provide GIS mapping and technical support.

LABORATORY PROCESSING AND ANALYSIS

Mapping data, recovered cores, and field notes will be returned to the SWCA Amherst laboratory for processing and analysis. Cores will be opened and examined for constituent physical characteristics to help define soil-sedimentary horizons.

SWCA will temporarily house any materials collected as part of these investigations and will dispose of coring samples once data analysis is complete. Should any artifacts be recovered in the Geoprobe cores, consultation with the Stockbridge-Munsee would guide permanent disposition of the collection.

REPORTING

An archaeological report will be prepared following Secretary of the Interior and MHC standards and guidelines, which will include descriptions of the project background, goals, authority, methodology, cultural contexts, field results, analysis, interpretations, and recommendations. The report will include tabular data and maps detailing the Geoprobe core locations and results. The report will be circulated among the project team members for review, and then submitted to the stakeholders and agencies. Although MHC has not expressed interest in the project, our findings will be provided to them for permanent curation, as the data may be useful in the future for projects in the area.

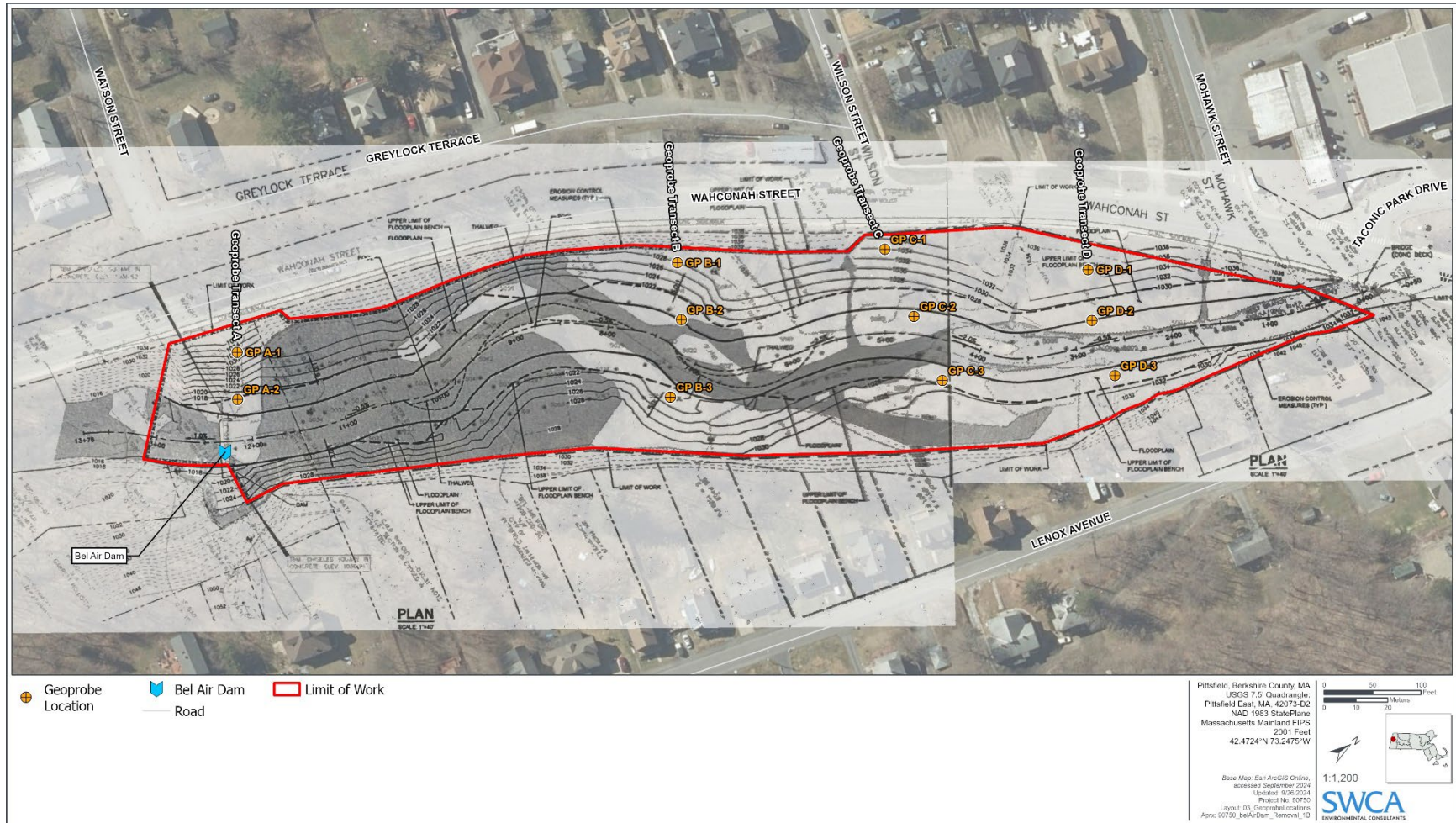


Figure 1. Bel Air Dam Project Area, Proposed Geoprobe Testing Plan.

PROCEDURES FOR ARCHAEOLOGICAL MONITORING

The results of the geomorphology assessment will provide more detailed characterization of the subsurface alluvial landforms and archaeological preservation potential within the Bel Air Dam project area. In addition to this information, the results of the coring procedure and subsequent analysis will generate schematic subsurface maps of the floodplain and youngest alluvial terrace deposits on the west and east banks of the West Housatonic River, pending accessibility of the Geoprobe equipment.

Although cultural materials (artifacts) are rarely recovered through Geoprobe cores, any identification of older buried surfaces will align with the concerns of the Stockbridge-Munsee Community THPO regarding the potential for deep archaeological deposits and undisturbed portions of the project area. The schematic maps to be generated by the Geoprobe coring procedure will guide the development of an informed archaeological monitoring plan, allowing the project team to focus time and resources on the subsurface zones with greatest archaeological potential.

As those maps become available, SWCA can make specific archaeological monitoring recommendations. In general, however, SWCA recommends archaeological monitoring to coincide with removal of soils and sediments within the limits of project area.

Archaeological monitoring involves the observation of mechanical excavation by a qualified Archaeologist for the purposes of identifying, recovering, preserving, and/or documenting archaeological information or cultural materials. The location of the excavation area, depth, and expanse are directed by the construction contractors or supervisors, not the Archaeologist. Although excavation activities are under the direction of the construction team, the on-site Archaeologist will safely coordinate with those team members to temporarily halt construction work to evaluate areas or materials of interest. The goal of the monitoring project is to ensure that resources not previously known within the project area are identified and documented by the SWCA Archaeologist.

Monitoring will allow for the identification and investigation of any archaeological remains that may be preserved. This phase of work will involve the recording of observations within field notes, photographs, and digital mapping platforms. Any observed cultural materials or archaeological features will also be evaluated for their relevance to the archaeology and culture history of the region. Finally, the results of the research, monitoring, and analysis will be documented in an archaeological report.

This effort will require coordination with the City of Pittsfield, Massachusetts Department of Conservation and Recreation, the U.S. Army Corps of Engineers, AECOM, the mechanical excavation contractors, the Stockbridge-Munsee Community, and SWCA project team members. This archaeological protocol will not require a permit from the State Archaeologist at the MHC, because it does not include subsurface archaeological testing. MHC was notified of the project but declined to request any archaeological investigation.

Archaeological monitoring of areas undergoing mechanical excavation is a valuable approach to addressing archaeological potential because of the possibility of buried surface horizons in the project area and because of the proximity of previously identified archaeological sites within the West Housatonic River drainage. To provide effective monitoring during ground disturbance, an SWCA Archaeologist will be on-site while construction personnel are excavating within the project area. Monitoring will not be necessary for project setup or in areas where disturbance has excluded any chance of finding archaeological deposits, or as the geomorphology assessment may identify in other project area locations. This task will require two main steps at the start of the monitoring effort:

- First, the Archaeologist will provide a brief introductory orientation to project personnel regarding the archaeological potential of the site and the procedures for documentation in case of inadvertent discovery during ground disturbance. This will facilitate coordination between the heavy-equipment operators, ensure prompt recognition of subsurface areas of interest or increased potential, and ensure timely completion of the monitoring request.
- Second, the Archaeologist will observe and document the areas exposed by the construction team by standing in close, but safe, proximity to excavation and removal equipment. The Archaeologist will coordinate with construction personnel on appropriate and safe opportunities, when possible, to halt work for closer examination and documentation. Monitoring will seek to identify potential cultural deposits and associations. Photographs will be taken of all structures and features of interest. Field notes will also be recorded documenting the date, time, and location, conditions, and any additional observations. Documentary techniques including the recordation of descriptive notes, photographs, collection of GPS mapping points or other spatial measurements, field identification of cultural materials, or similar methods of documenting archaeological deposits, artifacts, and associated landscape contexts will be completed.

SWCA understands that many portions of the project area have undergone ground disturbance in the past, but the monitoring Archaeologist will maintain close observation of subsurface horizons for evidence of cultural materials. The monitoring Archaeologist will use a tablet with the ArcGIS Collector application and a Geode antenna for the highest available accuracy in collecting relevant GPS measurements. All locations, features, and structures of note will be plotted in the field, including data points and photo points. Photographs will be taken of all structures and features of interest. Field notes will also be recorded documenting the date, time, and location, conditions, and any additional observations.

Further, the monitoring Archaeologist will adhere to the stipulations set forth by the Stockbridge-Munsee Community THPO and coordinate with stakeholders on any inadvertent discovery. The following stipulations for archaeological monitoring have been set forth by the THPO as follows:

- If previously undocumented archaeological resources are encountered, please contact the THPO promptly and follow the Inadvertent Discovery Policy on the Stockbridge-Munsee Community website: <https://www.mohican.com/mt-content/uploads/2022/09/smc-inadvertent-discovery-policy.pdf>
- Please give due attention to the incidental or routine movement of heavy machinery both inside and outside the stated area of potential effects (APE) that may cause unintended or inadvertent impacts to cultural resources.
- Should the proposed work be altered to expand beyond the current scope of work and/or APE, the THPO asks to be notified.

When possible, artifacts will be documented in field notes and collected for laboratory processing and analysis and for inclusion in the summary report. SWCA will continue to coordinate with all stakeholders to refine the landscape history and historic mapping of the project parcel as mechanical excavation proceeds. This will also include any additional research that may be required by discoveries made during archaeological monitoring.

A daily briefing will be provided following the completion of each workday, detailing what areas were excavated, what was found, and initial impressions about the significance of any cultural materials.

Several assumptions inform the development of this archaeological monitoring procedure, including:

- The Geoprobe equipment will be able to access proposed coring locations as outlined in the testing plan. Coordination with the Geoprobe equipment operator and their assessment of the accessibility of the testing location will be required and may result in the need to write off locations that present hazards to the team members or the Geoprobe itself. ‘
- The development of subsurface stratigraphic models depends on the recovery of sufficient soil-sedimentary samples as extracted by the Geoprobe coring equipment. Saturated or loose, sandy soils may be difficult to recover and result in gaps within the subsurface samples.
- Core samples collected during the Geoprobe analysis will only be evaluated for the observable physical properties and characteristics. No geochemical, advanced physical (particle size analysis), or absolute dating analysis will be conducted in this proposed phase of investigation.
- Due to the known issues of soil contamination, no soil samples will be separated and archived for future analysis. After processing and analysis, core samples will be collected and combined for return to the project area for proper disposal during mechanical excavation.
- All archaeological monitoring procedures recommended by SWCA will align with the standard monitoring protocols and procedures for inadvertent discoveries as recommended by the Stockbridge-Munsee Community.

SCHEDULE

SWCA is prepared to begin upon the availability of the Geoprobe subcontractor. The fieldwork is expected to require 2-3 days to complete, based on final coordination with Geoprobe subcontractor, weather conditions, and accessibility of the site. Laboratory analysis will take 1-2 weeks and report writing will take approximately 1-2 weeks to complete. Interim results may be available sooner.

Task	Schedule
Geophysical Survey	2-3 days for fieldwork
Laboratory Processing and Analysis	1-2 weeks
Reporting	1-2 weeks
Overall Length of Project:	Approximately 5 weeks

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Bel Air Dam Ecological Restoration Plan

Pittsfield, Massachusetts

Application for:

**Massachusetts Department of Conservation and Recreation, Office of
Dam Safety**



Submitted to:

**US Army Corps of Engineers Regulatory Division
(New England District)**

Prepared by:

AECOM

June 2024

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Attachments

Attachment A – Project Locus Map Wetland Data Sheets

Attachment B – Wetland Data Sheets

Attachment C – Project Drawings

Figures

Figure 1. 2-Year Flood Hydraulic Profile after Fill Dam Removal

Tables

Table 1. Disposal Locations

Table 2. Temporary and Permanent Impacts to WOTUS

1.0 Project Background

Bel Air Dam is part of the Massachusetts Department of Conservation and Recreation (MassDCR) Office of Dam Safety's (ODS) pilot Abandoned Dams program. As part of this program, MassDCR is seeking to address safety concerns pertaining to dams in the Commonwealth that have no identifiable owner. In general, MassDCR seeks to partner with a municipality or other interested party in order to implement a Repair Alternative. If a municipality or other interested party will commit to achieving property ownership, then MassDCR will implement required dam repairs prior to property acquisition by others. Given no municipal or private party interest in achieving dam ownership, the Full or Partial Removal Alternatives are preferred. In the case of Bel Air Dam, neither the City of Pittsfield nor any other interested party has expressed willingness to take ownership of the dam; therefore, the MassDCR ODS is proposing to remove the dam. The proposed project will remove the Bel Air Dam on the West Branch of the Housatonic River and thereby restore the natural connectivity of a waterway, improving water quality, fish passage, and riparian habitat. The project is proposed as an Aquatic Habitat Restoration/Enhancement project under General Permit 10 of the US Army Corps of Engineers June 2024 General Permits for the Commonwealth of Massachusetts.

The proposed project will remove the entire dam structure, restore a stream channel in the area of the current impoundment, establish adjacent floodplain, and install native herbaceous and woody species. The project area historically contained riparian habitat which has been degraded due to the impoundment. Changes to the environment caused by the presence of the dam include alteration of water temperatures and chemistry, river flow characteristics, and silt loads. The proposed project will also remove contaminated sediment that has accumulated upstream of the dam and includes elevated levels of chromium, arsenic, lead, polynuclear aromatic hydrocarbons (PAHs), and extractable petroleum hydrocarbons (EPHs).

2.0 Restoration Goals

Goals of the Bel Air restoration project include:

- Improve hydrologic connectivity, restore a natural hydrologic regime, and increase sediment transport by the removal of a dam and reconstruction of approximately 1,200 feet of stream channel.
- Lower risk of flooding in the immediate project vicinity by lowering the 100-year floodplain elevation.

- Improve water quality by removing accumulated sediment in the existing ponded impoundment and tributary stream and restoring a natural flow regime.
- Improve wildlife habitat adjacent to the restored stream by removal of invasive species and installation of native seed and plants.

To achieve the project's restoration goals, the removal of the Bel Air Dam structure and the reconstruction of a stream channel is proposed. There will no longer be an impoundment, instead there will be a free-flowing river, which will improve aquatic resource and riparian habitat functions. This project would restore the environment to its historic condition by reconnecting the West Branch of the Housatonic River, which will offset the temporary impacts and loss of Waters of the US (WOTUS) in the proposed project location.

3.0 Existing Conditions

Bel Air Dam impounds the West Branch of the Housatonic River approximately 1.1 miles downstream of Pontoosuc Lake. The West Branch watershed is approximately 22.8 square miles at the Bel Air Dam site (USGS HUC 01100005). See the project locus map in **Attachment A**. Downstream of the dam the West Branch continues flowing south through the Berkshires in Massachusetts and through New York to Long Island Sound. The impoundment has a normal water surface area of 3 acres and is reported to have a storage capacity of 56 acre-feet, although sediment accumulation has reduced this capacity. The water elevation on the upstream side of the Dam is 1,026.0 feet NAVD88 and is controlled by the spillway outlet elevation, while the water elevation on the downstream side of the dam is approximately 1,014 feet. NAVD88

Bel Air Dam is a combined earthen embankment, stone masonry, and concrete structure. Looking downstream from right to left, the dam consists of an earthen embankment, a stone masonry auxiliary spillway (original principal spillway), an earthen and stone masonry embankment, a stone masonry and concrete sluiceway structure, and an earthen bank. The auxiliary spillway is uncontrolled and has a length of 56.5 feet, a crest width of 5 feet, and structural height of 26.5 feet. The sluiceway consists of two stone culverts side by side, each culvert being 3 feet wide, 4 feet high, and 8 feet long. The total length of the dam is approximately 200 feet, including the embankments and masonry structures.

The sluiceway currently acts as the principal spillway, diverting the flow through two stone culverts to the east of the dam. WOTUS regulated under Section 404 of the Clean Water Act at the site include the impounded pond area, as well as a tributary stream. At the northern end of assessor's

parcel including the impoundment, the water surface consists of approximately 800 feet of linear, confined stream channel flowing under Wahconah Street and continuing south before discharging to the ponded area extending approximately 400 feet upstream of the dam. The impoundment is bordered by relatively dense vegetation on both sides, including invasive species and vines. The western edge of the ponded impoundment borders Wahconah Street and is within close proximity to the toe of the embankment along Wahconah Street. In the upstream extent, grades on the west are substantially less steep between the edge of the stream and the toe of the embankment along the road. There are four stormwater outfalls discharging into the impoundment and tributary stream on the western bank. When the dam was constructed, the formation of the impoundment eliminated riparian areas and created low value degraded habitat that now includes many invasive species.

WOTUS on the site also include five Vegetated Wetlands, the boundaries of which were delineated during an August 2023 site visit. The wetlands are described below, and wetland data sheets are provided in **Attachment B**:

Wetland W1

The “W1” flagging series includes wetland flag segments W1-001 to W1-003, W1-101 to W1-121, and W1-201 to W1-209 and demarcates the upper boundary of Vegetated Wetland (VW) located along the western shore of the West Branch of the Housatonic River. Wetland W1 is a combination of Palustrine Emergent Marsh (PEM) and Palustrine Forested Wetland (PFO). Dominant vegetation includes box elder (*Acer negundo*; FAC) and American elm (*Ulmus americana*; FACW) in the tree stratum, box elder in the sapling/shrub stratum, and spotted Joe Pye weed (*Eutrochium maculatum*; OBL), giant goldenrod (*Solidago gigantea*; FACW), and moneywort (*Lysimachia nummularia*; FACW) in the herb stratum.

Wetland W2

The “W2” flagging series includes wetland flag segment W2-001 to W2-008 and demarcates the upper boundary of a narrow-VW fringe located along the western shore of the dam impoundment. The downgradient boundary of this wetland fringe is demarcated by a discernible break in slope as delineated by Bank segment B1-101 to B1-108. Wetland W2 is a PEM dominated by herbaceous vegetation. Herbaceous vegetation present includes a mix of giant goldenrod, creeping buttercup (*Ranunculus repens*; FAC), a variety of sedges (*Carex* spp.), reed canary grass (*Phalaris arundinacea*; FACW), among other species.

Wetland W3

The “W3” flagging series includes wetland flag segments W3-001 to W3-007 and demarcates the upper boundary of Vegetated Wetland located along the eastern shore of the West Branch of the Housatonic River. Wetland W3 is a combination of PEM and PFO. Dominant vegetation includes box elder and American elm in the tree stratum, box elder and silky dogwood (*Cornus amomum*; FACW) in the sapling/shrub stratum, and giant goldenrod in the herbaceous stratum.

Wetland W4

The “W4” flagging series includes wetland flag segments W4-001 to W4-007 and demarcates the upper boundary of Vegetated Wetland located along the eastern shore of the West Branch of the Housatonic River. Wetland W4 is a combination of PEM and Palustrine Scrub-Shrub (PSS) wetland. Dominant vegetation includes a few American elm and silver maple (*Acer saccharinum*; FACW) in the tree stratum, silky dogwood, boxelder, and glossy buckthorn (*Frangula alnus*; FAC) in the sapling/shrub stratum, and Joe Pye weed, fringed loosestrife (*Lysimachia ciliata*; FACW), and giant goldenrod in the herbaceous stratum.

Wetland W5

Wetland W5 is a small, low vegetated island located in the middle of (surrounded by) the West Branch of the Housatonic River. This Vegetated Wetland is a PEM and is bounded on all sides by the upper boundary of Bank demarcated by flagging series B1-501 to B1-511. Wetland W5 is dominated by reed canary grass, with lesser coverages of phragmites (*Phragmites australis*; FACW), forget-me-not (*Myosotis scorpioides*; OBL), and smallspike false nettle (*Boehmeria cylindrica*; OBL), among others.

4.0 Proposed Conditions

The full removal of the Bel Air Dam will include the demolition of the existing dam to eliminate the impoundment, restoration of the hydraulic connectivity of the original waterway by the reconstruction a stream channel, the dredging of accumulated contaminated sediment, bank stabilization, and revegetation with native species. No new impervious surface will be created as a result of this project.

Work will include clearing vegetation on both sides of the existing dam within the LOW for construction access, excavation, and grading. It is anticipated that a phased breach would be completed by removing individual courses of rock at one-foot intervals to slowly dewater the

impoundment. The final breach would be carried down to El. 1,014 feet-NAVD88. Removal of the dam will include demolition of the existing stone masonry, dam spillway, and appurtenant structures to eliminate the impoundment. The auxiliary spillway and training walls will also be demolished. The adjacent embankment will be reconstructed by backfilling the principal spillway with salvaged masonry stone and other suitable material that was recovered during the dam demolition process. Additionally, the pedestrian bridge over the dam will be removed. The bridge is immediately above the dam and must be removed to access the dam to implement removal activities.

4.1 Dredging

Dredging and associated sediment removal will occur in the impoundment and tributary stream between Wahconah Street and the ponded area to restore the historic stream channel. Approximately 35,500 cubic yards of sediment is planned to be removed and transported out-of-state for final disposal. After the dam is removed and the water level permanently lowered, material that was once below the water and considered sediment will be exposed at the surface and considered soil subject to the Massachusetts Contingency Plan (MCP) Reportable Concentrations (RCs). As a result of the cost of disposal and project budget, some of the existing sediment outside of the proposed stream channel will remain in place after construction is complete. Due to RC exceedances, a risk assessment screening was conducted and determined that the accumulated sediment that will remain in place and become soil in the future is not suitable for direct exposure to humans or wildlife. Consequently, material remaining outside of the future stream channel will be covered with an impenetrable “cap” consisting of an 8-inch deep geocell layer which will be covered by 12-inches of clean fill.

4.2 Stream Restoration

With the proposed dam removal, the connectivity of the West Branch of the Housatonic River will be restored. Following sediment removal, a stream channel will be constructed, and bank grading and stabilization will occur. The stream channel design assumes that the channel alignment would closely follow the drainage pattern depicted in the existing bathymetric survey.

A HEC-RAS model at Bel Air Dam was developed to evaluate the full removal alternative. The model was developed using a design approach that considered natural channel design principals to restore channel conditions through the location of the existing dam. This approach uses regional hydraulic regression curves that relate drainage area to bankfull discharge and bankfull

channel dimensions (width, depth, and cross-sectional area) at surveyed gaged locations within a physiographic region.

Bankfull discharge is an important stream feature for determining the relationships between drainage area size and stream channel dimensions. Bankfull discharge is the transition between the channel and its floodplain and is thus a morphologically significant streamflow (Leopold et al, 1964). Bankfull discharge is the flow that moves the most sediment over time and occurs every one to two years or 1.5 years on average.

The entire state of Massachusetts is located in the New England Province. There are no published regional hydraulic regression curves for the New England Province. Therefore, regional hydraulic regression curves from other physiographic regions were considered that would have similar physiographic conditions. These curves include Scientific Investigations Report 2005-5147 (Appalachian Plateau, Ridge and Valley and Piedmont Provinces), Scientific Investigations Report 2004-5247, (Appalachian Plateau Province) and Vermont Regional Hydraulic Geometry Curves, 2006 (New England Province).

Bankfull channel templates were prepared and added to the design channel invert at the base of the dam. These templates were then added to the existing cross sections upstream of the dam using the proposed profile where sediment refusal depths are projected. Bankfull floodplain benches were added to both sides of the bankfull design channel to provide additional flow capacity.

The resulting HEC-RAS model consists of a 1,600-foot-long reach of the West Housatonic River extending from about 80 feet downstream of the dam location to about 50 feet upstream of the Wahconah Street bridge upstream of the dam (**Figure 1**). The restored reach begins about 1,200 feet upstream of the dam location and consists mainly of a 40-foot-wide channel with a maximum bankfull depth of 3.5 feet and approximately 20-foot-wide floodplain benches along the stream channel except at the outside outer bends adjacent to pools and/or where existing topography and property lines limit the extent of achievable floodplain.

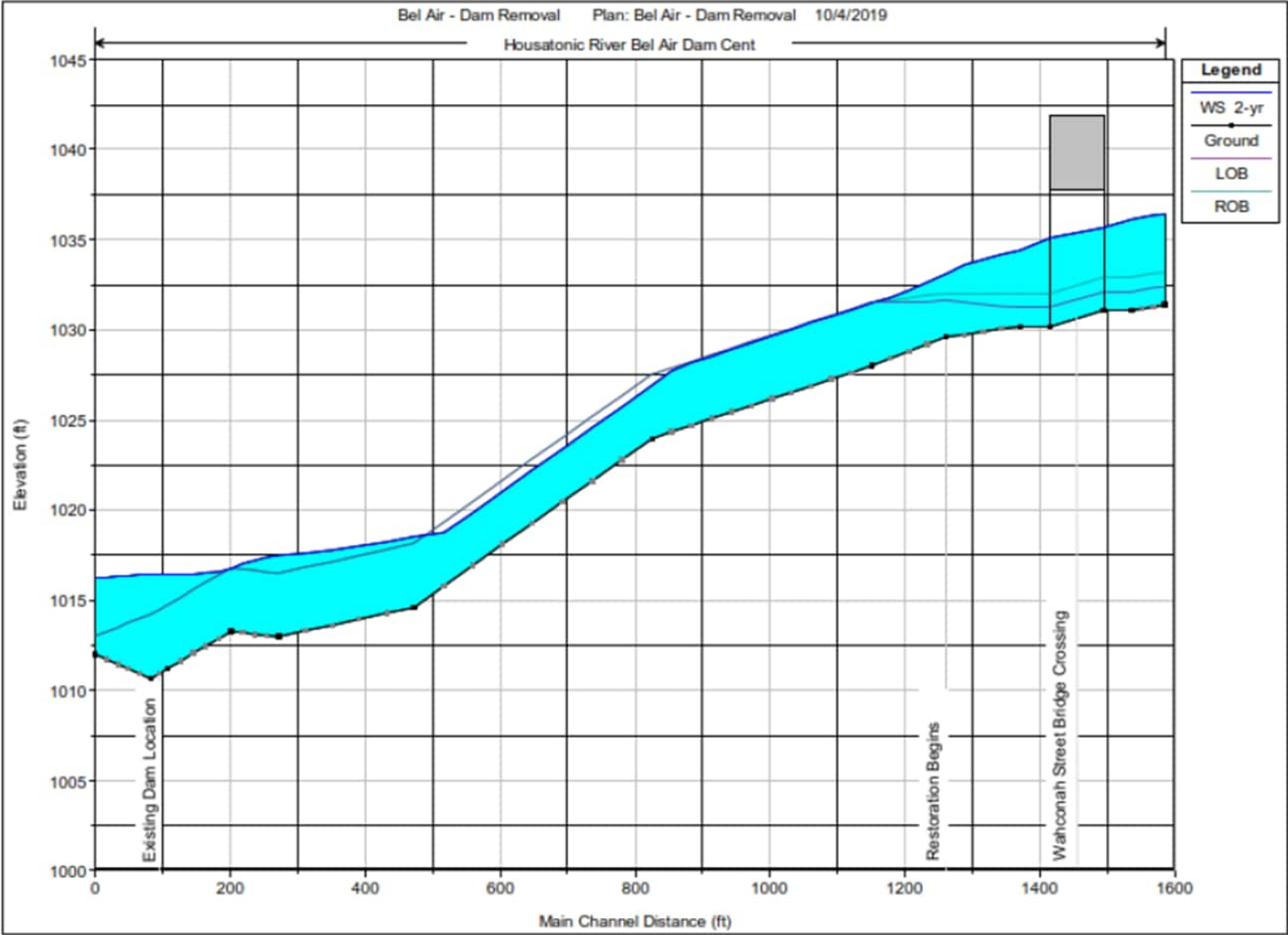
Downstream boundary conditions were estimated based on the tailwater rating curve developed from the FEMA Flood Insurance Study (FIS) results. Flow profiles were calculated for the 2-year flood to evaluate the stream stability under normal flow conditions, and for the flows used in the FIS, i.e., 10-, 50-, 100- and 500-year floods. The hydraulic profile indicates uniform hydraulic depths ranging from 2 to 3 feet over the length of the restored channel with maximum flow

velocities of 7.0 feet per second in the steepest section of the reach. The shear stresses at the bottom of the channel were calculated to range from 1.8 to 3.5 pounds per square foot.

Due to the velocities anticipated to occur during storm events, the stream channel has been designed to include a reinforced bed consisting of a mix of small and large rock, which is natural in color. The project drawings include the details of the stream substrate material, which will be placed to a depth of 12-inches in the pools and 24-inches in riffle sections. In order to place the stream substrate material, all existing sediment will be excavated to a depth at, or below, denser material (based on sediment sampling conducted to date). It is anticipated that removal of all finer-grained sediment from the stream channel and immediate banks will remove sources of contamination, however the placement of 12 – 24 inches of rock material will provide an additional level of protection against migration of any fine materials downstream.

Final construction activities will include the stabilization of remaining exposed sediment with a native seed mix and biodegradable erosion control blankets. In two areas where steep slopes prevail, contaminated sediments will be entirely removed along the stream channel, allowing the installation of “Bio-D” blocks planted with live woody stakes. In addition, the area at the far north-western extent of the stream below Wahconah Street that may be disturbed for construction access will be restored with native woody plantings. Three drainage channels from the stormwater outfalls on the west side of the impoundment (Wahconah Street) will be constructed and armored with stone to withstand potentially high velocity of water discharging from the outfalls during large storm events. A wetland scientist and/or stream restoration specialist shall be on-site to monitor all stages of construction to confirm compliance with the restoration plan and to adjust when appropriate to meet restoration goals.

Figure 1. 2-Year Flood Hydraulic Profile after Fill Dam Removal



4.3 Sediment Management

As a result of sediment data collected to date, the material excavated to create the new stream channel, banks, and floodplain will be required to be disposed of out-of-state. The table below, **Table 1**, includes potential disposal sites. Quotes were solicited from vendors in November 2021.

Table 1. Disposal Locations

Vendor	Landfill/Reuse Facility		Type
Green Rock	LaFarge Holcim	Ravena, New York	Beneficial Reuse
Green Rock	Seneca Meadows Landfill	Waterloo, New York	Beneficial Reuse as Alternative Daily Cover
Green Rock	Seneca Meadows Landfill	Waterloo, New York	Disposal in Landfill
Waste Management	Turnkey Landfill	Rochester, New Hampshire	Disposal in Landfill
Waste Management	High Acres Landfill	Perinton/Macedon, New York	Disposal in Landfill

The facilities identified in the table above will be re-contacted prior to initiation of dredging activities to confirm required sampling data for acceptance. Before the contaminated sediment is disposed of out of state, the sediment will be sampled to meet the requirements of the selected disposal facility.

After the full dam removal, and subsequent elimination of the impoundment, the lowering of the current water level will result in the exposure of sediment beyond the edge of the stream banks/floodplain. Once exposed sediments in the upland area qualify as soil, under the MCP, the material is then subject to notification requirements to MassDEP. Due to the RC exceedances, a risk assessment screening determined that that the material that will become soil in the future is not suitable for direct exposure to humans or wildlife. Consequently, material remaining outside of the future stream channel will be covered with an impenetrable “cap” consisting of an 8-inch deep geocell layer which will be covered by 12-inches of clean fill.

4.4 Proposed Native Plant Species

Project work would remove the numerous invasive plant species and install native species. Invasive species will be managed as outlined in the June 2024 *Bel Air Dam Invasive Species Management Plan*. Due to the need for a sediment cap in many portions of the site, it will not be possible to plant woody species everywhere, however live willow (*Salix* spp) stakes will be installed in the two areas where sediment will be removed and replaced along with a “Bio-D” toe treatment (refer to Drawings in **Attachment C**). The areas of the cap will be seeded with a fast-

A flow by-pass system would also be installed to divert flowing water away from active dredge areas. This would allow for the flow to be by-passed around the active dredge areas at the project site to minimize the potential for sediment re-suspension or turbidity. The selected flow diversion or bypass pump must be able to handle a minimum of 80% of the daily flow or 20 cubic feet per second (10,000 gallons per minute). Any turbidity generated during this activity would be addressed through the use of a settling basin or frac tanks. During deep excavation events, water would be excluded from the excavation area. If excessive turbidity is produced, a small diameter (2-inch or larger) pump can be used to pump water to the channel or to a filter bag to remove suspended fine materials. If material is collected in filter bags, it would be added to the sediment stockpile for sampling and disposal.

Temporary devices and structures to control erosion and sedimentation in and around mitigation sites shall always be properly maintained. The devices and structures shall be disassembled and properly disposed of as soon as the site is stable but no later than November 1st of the third full growing period after planting. Sediment collected by these devices will be removed and placed upland in a manner that prevents its erosion and transport to a waterway or wetland. No plastic netting will be used.

4.6 Impacts to Waters of the US

The removal of Bel Air Dam will result in temporary and permanent impacts to WOTUS, including vegetated wetlands, as summarized in **Table 2**. The permanent impacts to WOTUS are necessary to facilitate the removal of the hazardous dam. There will be a reduction in WOTUS, as the dam removal will consequentially remove the adjacent impoundment and a stream channel will be constructed. The elimination of the impoundment will also contribute to the loss of Vegetated Wetlands. No wetlands will be restored as part of this project. Despite this loss in WOTUS, the dam removal will have considerable positive impacts over the long term. Removal will reestablish natural hydrological connectivity of the West Branch of the Housatonic River and contribute to the restoration of the Housatonic River Watershed. All impacts will be contained within the LOW and will occur during the construction phase estimated to last from April 2025 to December 2026.

Table 2. Temporary and Permanent Impacts to WOTUS

Resource Area	Permanent Impacts via Removal/Filling	Created	Net Permanent Gain/Loss
Unvegetated WOTUS	135,740 SF from the impoundment's removal	49,200 SF from the new stream channel	Loss of 86,540 SF of WOTUS
Vegetated Wetlands	53,660 SF of permanent impact to Vegetated Wetlands	0 SF	Loss of 54,280 SF of VW

5.0 Performance Standards

Eight performance standards are proposed for this site, as described below.

- Following dam removal, the footprint of the former dam is stable and continues to be stable through the monitoring period.
- The site will be revegetated, with an average of 90% coverage by native species by the end of five years, as documented by data from permanent vegetation monitoring plots.
- The restored stream channel will be stable and approximating design targets within one-year of construction, as documented by an as-built longitudinal profile survey as well as as-built surveyed cross-sections at approximately 100-foot intervals.
- The site will include less than 10% dominance by invasive species within five years, as documented by data from permanent vegetation monitoring plots.
- The northwestern corner of the site to be restored with woody species will include at least 3 woody species with a presence of at least 20% cover each within five years, as documented by date from permanent vegetation monitoring plots.
- The overall site will include at least 2 native herbaceous species with a presence of at least 20% cover each within five years, as documented by date from permanent vegetation monitoring plots.
- The average height of trees and shrubs planted in the northwest corner of the restored area shall increase by not less than an average of 10% per year by the fifth year of monitoring.
- The overall site will be stable by the end of five years, with no significant erosion present, based on a visual site survey.

6.0 Monitoring Requirements

MassDCR will be responsible for monitoring the project site. For each of the first five full growing periods following construction of the mitigation site(s), the site(s) will be monitored, and annual monitoring reports submitted. Observations will occur at least two times during the growing period – in late spring/early summer and again in late summer/early fall.

The following steps will be taken during each monitoring event to confirm that the performance standards described in Section 5.0 are achieved, which will provide evidence of meeting the restoration goals:

- Site walk to observe the site's general condition
- Photographs of the site at permanently marked photo-stations
 - Permanent photo-stations will be established along the restored stream. In addition to collecting photographs during the monitoring period, photographs will also be collected at these locations prior to initiation of dam removal activities. Permanent photo-stations will be marked in the field with surveyed wooden stakes.
- Surveying the longitudinal profile of the stream as well as cross-sections every 100-feet
- Visual surveys of restored stream reach to document the presence of fish or other wildlife species utilizing the restored riparian habitat as well as the presence of any erosion/bank destabilization
- Visual surveys of the overall site to document vegetation species present
- Permanent vegetation sampling plots to document areal percent vegetation cover and species present. Three permanent sampling plots will be established within the “cap” area on the west side of the stream, and three plots will be established within the “cap” area – for a total of six plots within the “cap” area. Three additional permanent sampling plots will be established within the area in the northwestern corner planned to be restored with woody plantings. Permanent plots will be staked in the field. Percent areal coverage of trees and shrubs will be assessed within a 15-foot radius of the plot center, and herbaceous cover will be assessed within a 5-foot radius of the plot center.

Monitoring and surveys of this area will need to occur at least yearly for five years to ensure that the native plants are establishing, and that non-native species are not (see the *Invasive Species Management Plan*). Some maintenance such as mowing, trimming, or hand pulling may be required to ensure the success of the site. Invasive species should be immediately removed and

if necessary additional native species planted or additional seed mix used to encourage native species dominance.

The post-construction assessment will include an as-built of the restored stream dimensions as overlaid onto the design drawing of the anticipated stream layout. The post-construction assessment will discuss the level of attainment of the performance standards, describe significant problems and solutions during construction/maintenance, and identify agency procedures or policies that encumbered implantation of the project.

7.0 Reporting Requirements

Within 60 days of completing construction, the applicant will submit a signed letter to the Corps, Policy and Technical Support Branch or email to CENAE-R@usace.army.mil, specifying the date of completion of the mitigation work and the Corps permit number. If construction is initiated in, or continues throughout the year, but is not completed by December 31 of any given year, the permittee will provide the Corps, Policy and Technical Support Branch, a letter providing the date mitigation work began and the work completed as of December 31. The letter will be sent or emailed to CENAE-R@usace.army.mil no later than January 31 of the next year. The letter will include the Corps permit number.

The format of the monitoring report will be as follows:

1. Project Overview (1 page)
 - a. This section will provide an overview of the project as well as highlight any site problems requiring immediate attention.
2. Requirements (1 page)
 - a. This section will list the restoration goals, monitoring requirements, success standards, and evaluate whether the restoration site is on a trend toward success
3. Summary Data (maximum of 4 pages)
 - a. This section will summarize qualitative site observations.
 - b. A description of monitoring inspections and their dates will be provided.
 - c. Data collected will be discussed in regard to success standards.
 - d. Remedial measures completed during the monitoring year to meet the success standards will be discussed – actions such as removing debris, replanting, controlling invasive plant species, regrading the site, applying additional topsoil or soil amendments, etc.

- e. The status of all erosion control measures on the restoration site will be reported.
 - f. Observations of fish and wildlife using the site will be reported.
 - g. The general health and vigor of the planted species will be described, as well as their prognosis for survival.
4. Maps (maximum of 3 pages)
 - a. This section will include maps illustrating the site boundaries
 5. Conclusions (1 page)

Appendices to the Monitoring Report will include the following:

Appendix A – An as-built plan showing longitudinal profile and cross-sections

Appendix B – Permanent plot vegetation sampling data

Appendix C – Representative photos taken from permanent photo-stations. Photos will be dated and clearly labeled with the direction from which the photo was taken. Photo-stations will be identified on a map.

Appendix D – Copy of USACE Permit including Special Conditions

Each annual monitoring report, in the format provided in Regulatory Guidance Letter 08-03 (Appendix E), will be submitted to the Corps, Regulatory Division, Policy and Technical Support Branch or CENAE-R@usace.army.mil, no later than December 15 of the year being monitored. Failure to perform the monitoring and submit monitoring reports constitutes permit non-compliance. A self-certification form will be completed and signed as the transmittal coversheet for each annual monitoring report and will indicate the permit number and the report number (Monitoring Report 1 of 5, for example). The report will also include a Mitigation Monitoring Report Project Overview Form. The reports will address the performance standards in the summary data section and will address the additional items noted in the monitoring report requirements, in the appropriate section. The reports will also include the monitoring-report appendices. The first year of monitoring will be the first year that the site has been through a full growing period after completion of construction and planting. For these permit special conditions, a growing period starts no later than May 31. However, if there are problems that need to be addressed and if the measures to correct them require prior approval from the Corps, the permittee will contact the Corps by phone (800-362-4367), email to CENAE-R@usace.army.mil, or letter as soon as the need for corrective action is discovered.

Remedial measures will be implemented - at least two years prior to the completion of the monitoring period - to attain the performance standards described above within five growing

periods after completion of construction of the mitigation site(s). Should measures be required within two years of the end of the original monitoring period, the monitoring period will be extended as necessary so that two years of monitoring occur after the remedial work is completed. Measures requiring earth movement or changes in hydrology will not be implemented without written approval from the Corps.

A post-construction assessment of the condition of the mitigation site(s) shall be performed at the end of the monitoring period. The assessment report shall be submitted to the Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

8.0 Long Term Management Plan

The long-term management plan for the site, after the five-year annual reporting to USACE is complete, will include an annual site visit by MassDCR and/or City of Pittsfield staff. These annual site visits will be based on visual inspection to confirm that no significant erosion or bank slumping has occurred. Action will be taken as needed based on these visual observations.

9.0 Adaptive Management

If it is determined that the goals for the site aren't being met, then MassDCR would consult with the City of Pittsfield and USACE to identify any remedial actions that can be taken. These actions may include but are not limited to: revised grading, additional seeding or planting, invasive plant removal, or repair of banks/erosion. If corrective measures are needed, MassDCR and the City of Pittsfield will consult to identify the funding source and implementing authority.

10.0 Off-Road Vehicle Use

There is no current off-road vehicle use in the project area and there is currently no trails or access points for recreational off-road vehicle use. No off-road vehicle use is anticipated in the future at the site.

11.0 Schedule

The construction phase is estimated to last from April 2025 to December 2026. Monitoring of the area will last for at least five years to confirm that the restoration goals are being met, and that no additional measures will need to be taken.

12.0 References

- Chaplin, Jeffery J., 2005. *Development of Regional Curves Relating Bankfull Channel Geometry and Discharge to Drainage Area for Streams in Pennsylvania and Selected Areas of Maryland: U.S Geological Survey Scientific Investigations Report 200-5147, 34 p.*
- Leopold, L. B., Wolman, M. G., and Miller, J. P, 1964. *Fluvial processes in geomorphology.* San Francisco, Calif., W.H. Freeman and Co.
- River Management Program, Vermont Department of Environmental Conservation, 2006. *Vermont Regional Hydraulic Geometry Curves.*
- Westergard, B.E. Mulvill, C.I. Ernst, S.G. and Baldigo, B.P, 2005. *Regional Equations for Bankfull Discharge and Channel Characteristics in New York State-Hydrologic Region 5 in Central New York: U.S. Geological Survey Scientific Investigations Report 2004-5247.*

Bel Air Dam Removal Restoration Summary*

Restoration Goal	Performance Standard	Monitoring Approach to Assess Goal	Monitoring and Reporting Frequency	Adaptive Management Anticipated if Goal is Not Met
Restore Natural Hydrologic Regime/Connectivity	Remove dam and sediment, grade to create stream banks, and incorporate features to stabilize banks over a long-term period	Conduct post-construction as-built survey to document longitudinal and cross-section conditions; cross-sections shall be surveyed and documented at the upstream end, downstream end, two riffle locations, and one pool location, for a total of 5 cross-sections	Initial Post-Construction Survey to occur within 16 weeks of final construction	Remobilize construction contractor to re-grade and add additional slope stabilization measures
		Conduct second post-construction survey compare results to immediate post-construction as-built survey to document stable conditions	Subsequent post-construction survey to occur five years after construction	Remobilize construction contractor to re-grade and add additional slope stabilization measures
		Conduct visual site inspections to document site stability and absence of visible bank erosion along stream length	Visual site inspections to occur annually for five years	Remobilize construction contractor to re-grade and add additional slope stabilization measures
Improve Natural Sediment Transport	Restore natural stream flow by removing dam and accumulated sediment and creating stable streambanks	Conduct post-construction as-built survey to document longitudinal and cross-section conditions ; cross-sections shall be surveyed and documented at the upstream end, downstream end, two riffle locations, and one pool location, for a total of 5 cross-sections	Initial Post-Construction Survey to occur within 8 weeks of final construction	Remobilize construction contractor to re-grade and add additional slope stabilization measures

		Conduct second post-construction survey and compare results to immediate post-construction as-built survey	Subsequent post-construction survey to occur five years after construction	Remobilize construction contractor to re-grade and add additional slope stabilization measures
		Conduct annual visual site inspections to document site stability and absence of visible bank erosion along stream length	Visual site inspections to occur annually for five years	Remobilize construction contractor to re-grade and add additional slope stabilization measures
Lower Flood Risk In Immediate Project Area	Create grading that lowers water elevations and creates new floodplain areas able to store water during a storm event	Develop FEMA compliant HEC-RAS model to document predicted post-construction hydrologic conditions demonstrating a lowered 100-year floodplain elevation and provide documentation to City of Pittsfield via No-Rise Documentation	HEC-RAS modeling results and No-Rise Documentation to be provided to USACE New England Regulatory by October 1, 2024	Consult and collaborate with City of Pittsfield to review, discuss, and address any comments or concerns regarding modelling

		Conduct post-construction survey to document as-built elevations that conform to HEC-RAS Model and associated design	Post-Construction Survey As-Built to be provided to USACE Regulatory within 16 weeks after construction completion	Remobilize construction contractor to re-grade and add additional slope stabilization measures
		Provide Letter of Map Revision (LOMR) Request to FEMA to document lowered 100-year floodplain elevation and obtain FEMA approval	LOMR Request to be submitted to FEMA within 6 months of construction completion	Consult and collaborate with FEMA as needed to review, discuss, and address any comments or concerns regarding modelling or the FEMA review process
Improve Water Quality	Remove accumulated, contaminated sediment to limit resuspension in the water column and thereby improve water quality	Conduct post-construction as-built survey to document longitudinal and cross-section conditions ; cross-sections shall be surveyed and documented at the upstream end, downstream end, two riffle locations, and one pool location, for a total of 5 cross-sections	Post-Construction Survey As-Built to be provided to USACE Regulatory within 16 weeks after construction completion	Remobilize construction contractor to re-grade as/if needed to achieve design profile and cross-sections

	Restore natural streamflow, which should increase dissolved oxygen levels	Conduct second post-construction survey compare results to immediate post-construction as-built survey to document stable conditions	Subsequent post-construction survey to occur five years after construction	Remobilize construction contractor to re-grade as/if needed to achieve design profile and cross-sections and add additional bank stabilization/erosion control measures as/if needed
		Conduct visual site inspections and obtain photographs to document site stability and absence of visible bank erosion along stream length	Visual site inspections to occur annually for five years	Remobilize construction contractor to re-grade as/if needed to achieve design profile and cross-sections and add additional bank stabilization/erosion control measures as/if needed
Improve Wildlife Habitat through Invasive Species Removal and Establishment of Native Plant Species	Achieve an average of 80% cover by non-invasive plants	Establish permanent vegetation sampling plots to document areal percent vegetation cover and species present post-construction. Three permanent sampling plots will be established within the “cap” area on the west side of the stream, and three plots will be established within the “cap” area – for a total of six plots within the “cap” area. Three additional permanent sampling plots will be established within the area in the northwestern corner planned to be restored with woody plantings. Plots will be staked in the field. Percent areal coverage of trees and shrubs will be assessed within a 15-foot radius of the plot center, and herbaceous cover will be assessed within a 5-foot radius of the plot center.	Permanent Plot sampling to occur annually for five years	Implement invasive species control measures as/if needed if presence of invasives is the reason for not meeting the cover goal – in accordance with Invasive Species Management Plan. Alternatively, if areas of bare ground persist, plant additional woody or herbaceous species.

		Conduct annual site inspection to visually assess overall percent vegetative cover on site	Visual site inspections to occur annually for five years	Implement invasive species control measures as/if needed if presence of invasives is the reason for not meeting the cover goal – in accordance with Invasive Species Management Plan. Alternatively, if areas of bare ground persist, plant additional woody or herbaceous species.
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*Notes:

1. Monitoring results will be summarized in annual reports to be submitted to the USACE Regulatory Group by December 31)
2. Adaptive Management measures identified would be implemented after consultation with USACE Regulatory to balance net benefits versus degree of performance standard non-conformance