

# **PUBLIC NOTICE**

US Army Corps of Engineers ® New England District 696 Virginia Road Concord, MA 01742-2751 Comment Period Begins: May 2, 2017 Comment Period Ends: June 1, 2017 File Number: NAE-2016-1083 In Reply Refer To: Paul Sneeringer Phone: (978) 318-8491 E-mail: paul.j.sneeringer@usace.army.mil

The District Engineer has received a permit application to conduct work in waters of the United States from the City of Northampton Department of Public Works, 125 Locust Street, Northampton, Massachusetts. 01060. This work is proposed within Roberts Meadow Brook adjacent to 87 Reservoir Road in Northampton, Massachusetts. The project site coordinates are: Latitude 42.35381 N; Longitude -72.70675 W.

The work involves the discharge of dredged and/or fill material into at least **15,775** square feet of waters of the United States associated with Roberts Meadow Brook downstream of the Lower Roberts Meadow Reservoir Dam on Reservoir Road in Northampton. The purpose for this project is to stabilize a number of bank erosion areas along this approximately 525 linear foot section of the brook. The City proposes to install four cross vanes to re-establish the primary flow channel, to regrade erosion areas, as well as to install new stone revetments and rehabilitate existing stone revetments. As part of this project, the City proposes to bypass flows around this stream section during construction so that construction can be completed "in the dry". Stone revetments will be constructed to an elevation of at least the 100-year floodplain elevation. Construction access will be provided via a temporary gravel/stone ramp from the parking area at the Mustante Beach site.

This work is shown on the enclosed plan drawings entitled "ROBERTS MEADOW BROOK CHANNEL REHABILIATION PROJECT, NORTHAMPTON, MASSACHUSETTS," on a total of nine sheets, and dated "MAY 2016" and revised "03/16/17".

Throughout the development of this stream stabilization project, the applicant has worked to minimize permanent impacts to jurisdictional waterways and wetlands.

# AUTHORITY

Permits are required pursuant to:

\_ Section 10 of the Rivers and Harbors Act of 1899

XX Section 404 of the Clean Water Act

Section 103 of the Marine Protection, Research and Sanctuaries Act.

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

# CENAE-R FILE NO. NAE-2016-1083

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, as amended.

## NATIONAL HISTORIC PRESERVATION ACT

Based on his initial review, the District Engineer has determined that the proposed work may impact properties listed in, or eligible for listing in, the National Register of Historic Places. Additional review and consultation to fulfil requirements under Section 106 of the National Historic Preservation Act of 1966, as amended, will be ongoing as part of the permit review process.

## ENDANGERED SPECIES CONSULTATION

The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our determination.

The following authorizations have been applied for, or have been, or will be obtained:

() Permit, License or Assent from State.

(XX) Permit from Local Wetland Agency or Conservation Commission.

(XX) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the above date. If you have any questions, please contact **Paul Sneeringer** at (978) 318-8491, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

#### CENAE-R FILE NO. NAE-2016-1083

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

### THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

Barbara newman

Barbara Newman Chief, Permits and Enforcement Branch Regulatory Division

If you would prefer not to continue receiving Public Notices by email, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at <u>bettina.m.chaisson@usace.army.mil</u>. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME:	
ADDRESS:	
PHONE:	

# **PLANS**

for the

# **ROBERTS MEADOW BROOK** CHANNEL REHABILITATION PROJECT

# NORTHAMPTON, MASSACHUSETTS

**MAY 2016** 

AS REVISED THROUGH MARCH 16, 2017



GZ

#### INDEX TO PLAN SHEETS

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4	-		-	TEMPORARY SEDIMENT, EROSION, AND WATER CONTROL PLAN
5		_		BYPASS OF FLOWS AND DEWATERING PLAN
6	_	-	-	SEDIMENT, EROSION, AND WATER CONTROL NOTES AND DETAILS
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HAZARD MITIGATION GRANT PROGRAM (HMGP)

"A Federal, State, and Local Partnership through the Federal Emergency Management Agency (FEMA)"

**HMGP GRANT NUMBER 1895-07** 

**Commonwealth of Massachusetts** CHARLIE BAKER, GOVERNOR

Massachusetts Emergency Management Agency KURT N. SCHWARTZ, DIRECTOR

Department of Conservation and Recreation LEO ROY, COMMISSIONER





#### PREPARED FOR

# **CITY OF NORTHAMPTON** DEPARTMENT OF PUBLIC WORKS



#### PREPARED BY

**GZA GeoEnvironmental, Inc. Engineers and Scientists** 249 Vanderbilt Avenue Norwood, MA 02062 PHONE (781) 278-3700

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#### **DEWATERING PLAN - ROBERTS MEADOW BROOK**

#### 1. Introduction

This Dewatering Plan consists of this narrative report and the attached drawins entitled "Roberts Meadow Brook Channel Rehabilitation Project", by GZA, Sheets 1-9 of 9, dated March, 2017, which should be reviewed in concert with all permits issued for the Project. The Project Site includes the reach of Roberts Meadow Brook from the Lower Roberts Meadow Reservoir Dam to the Reservoir Road bridge, a distance of about 550 feet. This Dewatering Plan has been prepared for the City of Northampton to accompany its applications for wetland permitting. All work as shown on the above-referenced drawings shall rely on the same components for control ion, as discussed herei

MassDEP requires that a specific Dewatering Plan be prepared in accordance with MA DEP Western Region - Bureau of Resource Protection - Wetlands Program document entitled "Minimum Information and Documentation for Dewatering Plans". This Dewatering Plan has been organized to follow the required listing of information provided in that MassDEP document for ease of review

Following construction contract award and prior to any land-disturbing activities at the Site, the City of Northamoton's contractor shall prepare and submit for approval the contractor's specific plans for implementing this Dewatering Plan to the satisfaction of the City and the permitting authorities.

#### 2. Regulatory "Time-of-Year" (TOY) Restrictions

As of the date this Dewatering Plan was prepared, no TOY restrictions have been imposed for work at the Site by the U.S. Army Corps of Engineers, Massachusetts Natural Heritage and Endangered Species Program, or Massachusetts Division of Fisheries and Wildlife.

Start and end dates for work at the Site for elements of the Project shall be as per approvals for the various project elements and as per any specific schedules cited in the any of the Project's final permits.

#### 3. Cold-Water Fishery Identification

The following MA Department of Fish and Game "Coldwater Fishery Resources" website was reviewed:

#### http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/coldwater-fish-resources-map.html

Based on this review. Roberts Meadow Brook is listed as a cold water fishery resource (SARIS ID 3418900).

#### 4. Work Area Isolation and Bypass of Water Around the Areas of Alteration

The contractor shall provide a written Dewatering Plan that shall be consistent with these specifications and shall detail what means and materials will be employed by the contractor for Work Area Isolation and Bypass of Water Around the Areas of Alteration.

During construction, active work areas shall be isolated from upstream and downstream wetlands and watercourses. Such isolation is facilitated by the relatively sleep gredient (2.7%±) of the Project reach. Over the 400¢ feet of active stream channel work, the stream battom forgo samost 11 feet. The immediately-upgradient Lower Roberts Meadow Reservoir Dam shall function as a cofferdam retaining the Lower Reservoir, and the down-slope portions of the work shall be protected by the elevational refief above downgradient waters supplemented by temporary cofferdams as may be required by the contractor's work (see note c., below)

Normal flows within Roberts Meadow Brook shall be bypassed around the active work area by using the low-level drawdown mechanism of the Lowar Roberts Meadow Reservoir. The intake for the low level outlet for the dam is approximately 45 feet upstream of the dam's spillway. The low level outlet consists of a 12-inch diameter ductile iron pipe, which ties into a manhole in the sandy beach on the upstream side of the dam near the middle of the right embankment (Musante Beach). Flow in the 12-inch diameter ductile iron pipe is regulated by a gate valve located immediately upstream of the manhole. From the manhole, flow is conveyed via a 24-inch diameter outlet conduit, which discharges from a stone headwall to a discharge channel located downstream of the right side of the dam, on the east (downgradient) side of Reservoir Road. The low-level outlet utilizes components installed after the 1955 flood and newer elements added in the late 1980s in preparation for the opening of Musante Beach

The overall capacity of the low-level outlet works is controlled (and limited) by the 12-inch diameter pipe. The theoretical capacity of the 12-inch low level outlet ranges from approximately 12 cfs, with the reservoir at normal pool elevation, to 15 cfs with the reservoir at the top of the dam. The capacity of the low-level outlet has been judged insufficient for drawing down the reservoir in a reasonable period of time under reasonably-anticipated hydrologic conditions. Notwithstanding, the low-level four-fold increase in flow area as compared to the 12° outlet pipe. In times of need, the bypass capacity can be increased by supplemental pumping from the reservoir and discharging directly to the opened manhole, combining the pumped flow with the flow coming from the 12° outlet pipe. In such events, the bypass capacity is limited by the downstream culvert passing under the private driveway prior to the flow joining back to Roberts Meadow Brock, immediately downstream of the Reservoir Road bridge. Assuming a maximum allowable headwater of five feet at the upstream end of this culvert (the height of the driveway crossing is approximately seven feet) the ultimate bypass capacity is limited to about 35 cfs. Atthough it is likely impractical to pump across Reservoir Road, supplementa bypass pumps could be installed in the vicinity of the bath house, with the discharge hose(s) extending longitudinally down the brook channel to points downstream of the active work areas. In all cases, the contractor shall adjust their operations such that the water level within the Lower Reservoir is not lowered more than two feet ow the Mean Annual Low Water Level (top of overflow spillway at dam).

A StreamStats (v3.0) evaluation of Roberts Meadow Brook at the Reservoir Road bridge reveals a statistical annual "D50" low flow of 10.8 cfs, and an "August D50" of 3.4 cfs. The USGS Wandle Method (Estimating Peak Discharges of Small Rural Streams in Massachusetts, S. Wandle, Jr., Open File Report 80-876, U.S. Geological Survey) predicts a 2-year return frequency storm peak flow of about 430 cfs, significantly higher than the bypass capacity. This level of flow is judged impractical to effectively bypass. In consideration that all materials to be re-distributed or imported into areas below the MAHVUL will consist of natural inert materials already in the channel or similar naturally-occurring materials imported from off-site locations, inundation during periods of high flow is not anticipated to have unacceptable environmental impacts to either the work area or areas downstream

In cases where watershed flows in excess of the bypass capacity are anticipated, the work shall cease, all equipment and loose materials shall be removed from the active work areas and to areas above the 100-year flood elevation, and the watershed flows shall be allowed to overlop the Lower Reservoir dam and flow through the secured work areas. Following cessation of high flows, the bypass and work activities shall resume.

Relative to the Bypass of Water Around the Area of Alteration, work within the Roberts Meadow Brook waterway shall meet the following standards:

- a. Work below the MAHWL of Roberts Meadow Brook shall be timed to take place during low- or no-flow conditions, when the flow of the brook can be bypassed around the active work area by utilization of the low-level bypass, in conjunction with additional bypass pumps. In addition to the capacity of the un-assisted low-level outlet works (12-15 cfs), the contractor shall have on-hand, at the Site and in working order, a minimum bypass pumping capacity of at least 20 cfs (9,000 gpm; typically provided by two (2) 8\*-diameter diesel-powered centrifugal pumps). Thus, a combined bypass capacity of 35 cfs shall be realized. Low flow conditions are defined as flow within the Roberts Meadow Brook system at Reservoir Road that are at or below the Contractor's actual bypass capacity, considering the combined total of the unassisted low-level outlet works and any contractor-supplied bypass numping infrastructure.
- b. When bypass pumping is necessary or desired, the intake hose(s) shall be placed on a stable surface or floated to prevent sediment from entering the hose. The bypass discharge shall be placed on a nonerodible, energy dissipating surface prior to rejoining the stream flow and shall not cause erosion. Filtering of bypass water shall be performed is the bypass water has become sediment-laden as a result of the proposed construction activities.

#### 5. Dewatering of the Work Areas

The contractor shall provide a written Dewatering Plan that shall be consistent with these specifications and shall detail what means and materials will be employed by the contractor for the dewatening of the work areas and the removal of sediments from dewatering activities.

The contractor shall dewater the active work area(s) to remove accumulated groundwater and surficial runoff. During dewatering of the active work areas, all sediment-laden water shall be filtered to remove sediment. These drawings and associated permit applications have been prepared using bithag@ geotextile de-watering bags as a preferred means to remove sediment from dewatering waters. Possible other options for sediment removal may include baffle systems, frac tanks, or other appropriate methods.

Standing water within the active work areas shall be removed via pumping to the Dirtbag®, using flow rates in accordance with manufacturer's instructions. Once the work areas have been initially devalered, a low-level sump with washed crushed stone shall be installed as per the Drawings to allow for the use of a pump to maintain a dry work area during the construction and channel rehabilitation process. At a minimum, the dewatering pump shall be a 2-inch trash (mud) pump or equivalent. Sufficient pumping capacity shall be available on site 24 hours a day, 7 days a week to maintain adequate dewatering rates. Flows from the dewatering pumps shall be conveyed via flexible hose (4-inch max, diameter) to the Dirtbag® for treatment prior to discharge. The dewatering pumping rate shall not exceed the treatment rate of the Dirtbag®.

Due to the size and nature of the work area, the dewatering sump shall be moved or additional sumps located along the work area as construction progresses along the stream channel. All sumps shall be installed using the same technique and same discharge routing to a separate (or relocated) DirtBag® placed on an upland area adjacent to the work area.

The Dirtbag® shall provide for sediment capture and velocity dissipation for dewatering dis-charges and allow filtered water to pass through the geotextile material, discharging from the bag. The DirtBag® shall be placed within a basin constructed of a crushed stone and geotextile base and straw wattle walls to provide infiltration and additional filtering. An outlet to the basin shall be constructed of a crushed stone overflow wer lined with jute netting. The jute netting shall continue along the ground surface, extending beyond the footprint of the crushed stone out-let. This configuration shall also allow for the addition of powdered anionic flocculent and/or the use of FlocLoge®, in the event that fine grained soils are encountered and additional sediment removal is required beyond that provided by the Dirtbag®. Water shall be directed to flow overland from the filter basin outlet, discharging downgradient in an upland area located adjacent to Roberts Meadow Brook or, in some cases, the upgradient rese

Discharge water will be considered clean only if it does not result in a visually-identifiable degradation of water clarity.

Areas from the toe to the top of the side slopes shall be temporarily stabilized during construction to reduce the potential for erosion and the transport of sediments into the areas to be atered. All areas disturbed due to construction activities shall be restored to proposed conditions and fully stabilized prior to accepting flows.





- TEMPORARY SEDMENT AND EROSION CONTROL BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 0.1560 OF THE SPECIFICATIONS AND THE APPROVED CONTRACTOR REPEARDS TO STORWATER POLITON PREVENTION PLAN (SNVPP), A COPY OF THE APPROVED SNVPP, SIGNED BY ALL RESPONSIBLE PARTIES, SHALL BE KEPT ON SITE AT ALL TIMES. ALL WORKEMAN EPIDERDIMENTIAL RECORDANCE WITH DES GAUDRE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY SEDIMENT AND EROSION CONTIROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, ON IN COMPLIANCE WITH THE TERMS AND CONDITIONS CONTAINED IN THE CONTRACT OF AND PROJECT PERMITS. CONTROLS SHOWN ON THE CONTRACT DRAWINGS AND MENTIONED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACT OF MALLE MPLOY ER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT WETLANDS, WATERS, AND ADJACEN ROM DISTURBANCE OR DISCHARGE OF SEDIMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SEDIMENT AND EROSION CONTROLS TO MEET THE CONDITIONS OF ALL APPLICABLE PERMITS AND REGULATIONS. SUCH CONTROLS SHALL BE INSTALLD WHEREVER THE POTENTIAL DISTS FOR THE DISTURBANCE OF LAND OR THE TRANSPORT OF SEDIMENT.
- THE CONTRACTOR SHALL NOT DISTURB VEGETATED AREAS OUTSIDE OF THE WORK ZONE, EX THE MINIMUM EXTENT NECESSARY FOR ACCESS AND ACCOMPLISHMENT OF THE WORK SHOWN
- THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENT DISCHARGE THROUGHOUT THE DURATION OF THE PROJECT AND UNITE (FINAL STABILIZATION, IT SHALL BE HIG RESPONSIBILITY TO PROTECT THE RESERVOUR, BROOK, AND ADMCENT WEITANDO FROM SEDIMENT ANU/OR POLUTIANTS DIRGHARTING FROM ANY WORK COME ON OR IN SUPPORT OF THE PROJECT, INCLUMING SEDIMENT DUE TO EROSION FROM STORMARTER RUNDET.
- ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT MIGRATION INTO WATER BY SILT, SEDIMENT, FUELS, SOLVENTS, LUBRICANTS, CONCRETE, GROUT, OR ANY OTHER POLLUTANTS ASSOCIATED WITH CONSTRUCTION PROCESURES.
- ACTUAL LOCATIONS OF EROSION CONTROLS AND BMPS MAY YARY DUE TO FIELD CHANGES, ONGOING CONSTRUCTION, ACCESS NEEDS, WEATINE, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THESE CHANGES AND ADUSTING REOSION CONTROLS AND RAM LOCATIONS ACCORDINGLY. IN PARTICULAR, THE CONTRACTOR SHALL COORDINATE THE INSTALLAYION AND
- ALL EROSION CONTROLS AND BMPS SHALL REMAIN IN PLACE, EXCEPT AS OTHERWISE NECESSARY, UNTIL CONSTRUCTION IS COMPLETED AND FINAL TABLIZATION IS ARHIEVED. ALL SHIT FENONG SHALL BE REMOVED LOOK SUBSTANTLA LOOMERTOIN OF THE ROFICET SUCH TATA TO ANY STAW WATTLES ARE LEFT IN PLACE. STRAW WATTLES SHALL BE BROKEN UP AND SPREAD AS MULCH PRIOR TO FINAL
- P. THE CONTRACTOR SHALL POST COPIES DF THE PROJECT PERMITS AND AUTHORIZATIONS PROMINENTLY AT THE SITE. THE CONTRACTOR SHALL POST A SIGN WITH THE PROPER MADEP FILE NUMBER PROMINENTLY AT THE SITE.

#### BEST MANAGEMENT PRACTICES:

INSPECTION AND MAINTENANCE

- SEDIMENT AND EROSION CONTROLS AND BMPS SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE STIE. HO WORK WHICH SHALL DETURD THE STIF OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMERCE UNIT THE STIF STORMET AND RESOLUTION CONTROLS MAYE BEEN INSPECTED AND APPROVED BY THE COMMERCE HISTORIENT AND RESOLUTIONS THE NORTHAMPTION COMBERVATION COMMERSION. ALL CONTROLS AND BMPS SHALL SUBJECT TO AN INTIAL INSPECTION BY THE COMMER, HIS REPRESIONATION AND REQUATORY AGENCIES INCLUDING THE MORTHAMPTION CONSERVATION COMMERVATION COMMERSION. ALL ANTIME THEREATER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MASSURES AND BEST MANAGEMENT PRACTICES (BMPS) ARE REQUIRED AND SHALL BE PERFORMED BY THE CONTRACTOR. ALL CONTROL AND BMPS SHALL BE INSPECTED EVERY 70 ANS AND WITHIN 24 HOURS OF MAINFALL EVENTS OF GAS INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REQUEE THE CHARCE OF FOLLUTING STOMMATCR BY THOMOR AND COMACCINIC PROBLEMS BEFORE THE SWAFP.
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- THE FOCUS OF THE FERIODIC CONTINACTOR LED INSPECTIONS SHALL BE TO DETERMINE: 3) WHETHER OR NOT THE MIASURE WAS INSTALLED / FERIOMED COMPECTIV; 3) WHETHER OR NOT THERE HAS BEEN ANY DANAGET OT HE MEASURE SINCE IT WAS INSTALLED OR PENIODMELE; AND 3) WHAT SHOULD BE DONE TO CORRECT ANY FROBEINS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF ITS STILLEFFECTIVE. IN SOME CASES, SPECIFIC MASUREMENTS MAY BE TAKEN TO DETERMINE IF ITS STILLEFFECTIVE. IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

#### SITE MANAGE

PRIOR TO CONSTRUCTION, A SITE MANAGER SHALL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF ERDSION AND SEDIMENT CONTROL MEASURES.

 IN ADDITION TO THE AFOREMENTIONED INSPECTION AND MAINTENANCE PROCEDURES, THE
 CONTRACTOR SHALL KEEP A RECORD OF THE FOLLOWING INFORMATION: O THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR IN A PARTICULAR AREA

O THE DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA, TEMPORARILY OR PERMANENTLY;

#### O THE DATES WHEN AN AREA IS STABILIZED, TEMPORARILY OR PE

O A COPY OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND ALL REPORTS GENERATED DURING CONSTRUCTION ACTIVITIES ARE TO BE RETAINED AS REQUIRED BY REQUIRITION.

#### STABILIZED CONSTRUCTION ENTRANCE

- TO BEDLICE THE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE ONTO TO REDUCE THE TRACENSIO OF SECIMENT FROM THE CONFIDUCTION STILE UNTO OTHERAPISE THE PROPERT RANOTOR FUELT CROADS, SA YELL AS THE FRODUCTION OF AIRIORNE OUST, A STABILIZED CONSTRUCTION ENTRANCE IS TO BE ESTABLISHED AS SHOWN AND AT ANY ADDITIONAL AUTORIZED CONSTRUCTION STAGING RARE, THE ENTRANCE IS TO CONSIST OF A MINIMUM 6-MICH THICK PAG OF CRUSHED STORE UNDERLAIN WITH FILTER FABRIC AND STALL BE CONSTRUCTION ON LIVEL GROUPS.
- ADDITIONAL TEMPORARY CONSTRUCTION SITE ENTRANCES MAY BE ADDED AROUND THE SITE PER THE CONTRACTOR'S APPROVED WORK PLAN.

#### SITE CLEARING

PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED DOWNLOPE (STRAW WATTLE' SITE FERCE BARRIERS) ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING ST DE LIMITED OT TONDES REALS OF REPORTSOE WORK. DISTUBBED AREAS ARE TO BE KEPT TO A MINIMUM, NO TREE WITH A BERZST HEIGHT DAMETER OF ORBATER THAN 6 INCHES SHALL BECLERCHED FROM STAGING BEARS WITHOUT DIRA PREVAL AROW THE OWNER.

STANDARD DUST CONTROL MEASURES, INCLUDING THE USE OF WATER TRUCKS AND MISTING SHALL BE USED AS INCESSARY. CALCIUM CHIORDE SHALL BE USED ONLY WITH PRIOR APPROVAL FROM THE OWNER AND AS ALLOWED BY PROJECT PERMITS.

THE CONTRACTOR MAY ESTABUSH LAYDOWN AND STAGING AREAS IN WHICH TO STORE EQUIPMENT AND MATERIALS IN AREAS IDENTIFIED BY THE OWNER. LOCATION OF ADDITIONAL AREAS, IF REEDED, SHALL BE COORDINATED WITH AND SHALL BE SUBJECT TO APPROVAL BY THE OWNER.

#### STOCKPILED MATERIALS

STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE SHALL BE SURROUNDED WITH COMPOST SOCKS, STRVW WATTLES, AND/OR SIT FENCE WHERE POSSIBLE. OTHER ALTERNATIVES UTILIZED MAY INCLUDE GRAVEL FILTER BERMS ON SIMILAR MEASURES IAID ADDUND THE PRIMETER OF THE STOCKPILE. SO FOODELE MATERIAL SHALL BE COVIRID PROB TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYEINFILME SHEETING.

#### EQUIPMENT FUELING

EQUIPMENT FUELING AND OTHER ACTIVITES INVOLVING PETROLEUM, OIL OR OTHER POTENTIALLY HAZARODUS SUBSTANCES SHALL BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE STULP INVENTION AND CONTROL MASSINES. THIS AREA SHALL BE LOCATED ON AN ASPHALT PAYED SUBFACE, AWAY FROM CATCH BASING AND OTHER DRAHAGE STRUCTURES, DONTABLE SECONDARY CONTRAINMENT IS TO BE LOCATED ON AN ASPHALT PAYED SUBFACE, AWAY FROM CATCH BASING AND OTHER DRAHAGE ARE TO BE PLACED AROUND THE PERIMETRA OF THE FUELING AND SORIENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETRA OF THE FUELING AREA. FUELING WITHIN THE STRUCTURES, DEFIER 2004 [CON CRET FROM PERIADOS OR BANNY MIL GENERALLY NOT BE

#### WATER CONTROL NOTES

- 1. TEMPORARY WATER CONTROL BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS AND SECTION 01565 OF THE SPECIFICATIONS.
- 2. THE CONTINUENDAL BE RESPONDED FOR ALL TEMPORARY CONTINUE OF SUBFACE WATERS AND CROUNDATER INCESSARY TO DESCRIPT AND COMPLETE IN WORK OF THE CONTINUENDAL OF THE RESTRUCTIONS CONTINUED IN THE CONTINUE DOCUMENTS AND PROKET FRAMMS. SHOWN IN THE CONTINUENDAL OF THE RESPONDED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTINUEND SHALL BARE/OR WINTER'S SUBFACEMENTARY THESES IN CESSARY TO PROFECT THE STE AND THE WORKS, AT IN ADDITIONAL COST TO THE OWNER.
- ALL TEMPORARY WATER CONTROL MEASURES SHALL BE IMPLEMENTED IN CONJUNCTION WITH APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES SO AS TO MITIGATE TO THE GREATEST EXTENT POSSIBLE RELEASE OF SEDIMENT INTO WATER BODIES AND POTENTIAL EROSION OF SOIL.
- 4. ACTIVE DRAWDOWN, PUMPING, OR DEWATERING OF LOWER ROBERTS MEADOW RESERVOIR BELOW EL. 369± (NGVD29) SHALL NOT BE ALLOWED
- 5. THE RESERVOIR WATER LEVELS AND STREAM FLOWS TYPICALLY FLUCTUATE IN RESPONSE TO CLIMATE CONDITION
- 6. ANY TEMPORARY PUMPS UTILIZED AT THE SITE SHALL BE PROPERLY BAFFLED AGAINST EXCESSIVE NOISE. PUMPS OR GENERATORS WHICH UTILIZE UQUID PUEL SHALL BE PLACED WITHIN AN IMPERMEABLE SECONDARY CONTAINMENT AREA WITH SUFFICIENT CAPACITY TO CONTAIN THE FULL VOLUME OF THE FUEL TANK.
- 7. PUMP OR SIPHON INTAKES SHALL BE PLACED SUCH THAT SEDIMENY AND CEBRIS ENTRAINMENT IS MINIMIZED
- B. WATER PUMPED FROM EXCAVATIONS SHALL BE PASSED THROUGH A SEDIMENTATION TANK OR OTHER SUCH BEST MANAGEMENT PRACTICE (BMP) FEATURE PRIOR TO BEING DISCHARGED BACK TO A SURFACE WATER BODY.
- 9. FOLLOWING TREATMENT IN AN APPROPRIATE BMP, WATER PUMPED FROM EXCAVATIONS SHOULD GENERALLY BE DISCHARGED SUCH THAT IT ENTERS THE BRODK, RATHER THAN BACK INTO THE WORK AREA.
- 10. THE DISCHARGE AREA FOR THE PUMP OR SIPHON OUTLET SHALL BE PROPERLY PROTECTED TO PREVENT EROSION BY HIGH VELOCITY FLOW
- 11. DISCHARGE FLOW VELOCITY FROM PUMPS OR SIPHONS OVER UNPROTECTED, VEGETATED GROUND SHALL NOT EXCEED A MAXIMUM OF 1 FOOT PER SECOND. DISCHARGE FLOW VELOCITY FROM PUMPS OR SIPHONS WITHIN THE UNPROTECTED NATURAL BROOK CHANNEL SHALL NOT EXCEED A MAXIMUM 3 FEET PER SECOND. IN THE EVENT EROSION RESULTS FROM VELOCITIES OF THESE MAGNITUDES, THE CONTRACTOR SHALL TAKE STEPS TO MITIGRATE THE FORSION OR SHALL REDUCE DSCHARGE FLOW VELOCITY.
- SELECTION OF CO.
- 13. SEE ALSO DRAWING NO. 5.

#### TEMPORARY STABILIZATIO

WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING STRAW WATLE / SIT FRNCE BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEDEOR, THEN THE CONTRACTOR SWALL INSTAL LANDING, SUCH AS STRAW, JUTE, WOOD FIBER, OR IBO OR PHOTO-DEGRADABLE MESH AT NO ADDITIONAL COST TO THE OWNER: LCLARMIC, GAUBBING AND REMOVAL OF CLAM SHALL ONLY COCUL IN AREAS THAT WILL BE GRADED AND PROTECTED TO MITIGATE EROSIDN AND TRANSPORT OF SEDMENT INTO THE ROBERTS MEADOW REMOVA.

IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A KATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.

IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN
ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT
NO ADDITIONAL COST TO THE OWNER.

LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

#### SITE RESTORATION

STABILIZATION OF DISTURIED AREAS OR NEW SOIL FILS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITES HAVE TEMPORABILY OR PREMAMENTY CASED, APPROVENTE VIGETATIVE CON STABILIZATION IS TO BE USED TO MINIMIZE BEOSION, TEMPORARY AND PREMAMENT VIGETATIVE COVER IS TO BE ESTABLISHED IN ACCOMPACE WITH THE PROJECT PURAS AND SPECIFICATIONS, USING THROS-SEEDING, BROADCASTING, ON OTHER

THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND ARIAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND ARIAS SHALL CONSIST OF REFLACEMENT OF INFORMET OF LANGEMENT OF INFORMATION LOAN AS REEDED SUCH TRAT A MINIMUM OF & INCIES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY, LIMED, FERTILES, GARDE, MN SCAMHED.

SWITCHGRASS (PANICUM VIRGATUM),
VIRGINIA WILD RYE (ELYMUS VIRGINICUS),
CREEPING RED FESCUE (FESTUCA RUBRA),
FOX SEDGE (CAREX VULPINOIDEA),
CREEPING BENTGRASS (AGROSTIS STOLONIFERA),
SOFT RUSH (JUNCUS EFFUSUS),
NEW ENGLAND ASTER (ASTER NOVAE-ANGLIAE),
GRASS-LEAVED GOLDENROD (EUTHAMIA GRAMINIFOLIA),
NODDING BUR MARIGOLD (BIDENS CERNUA),
GREEN BULRUSH (SCIRPUS ATROVIRENS),
JOE-PYE WEED (EUPATORIUM MACULATUM),
BONESET (EUPATORIUM PERFOLIATUM),
BLUE VERVAIN (VERBENA HASTATA).

RESTORED AREAS SHALL BE ROLLED AND THE APPROPRIATELY MULCHED WITH STRAW, WOOD CHIPS OR OTHER APPROVED WEEF PRES MATERNAL. BIO OR PHOTO-DEGRADABLE EROSION CONTROL FARRIC IS ALSO ACCEPTABLE FOR POST-RESTORATION STABILIZATION. ON FIAT SURFACES AND ON SLOPES OF 310 FRATTER, MULCH OR EROSION CONTROL MATTING SHALL TO BE USED AFTER FERMANEINT SEEDING TO PROTECT SOL FROM THE IMMOCT OF FALLING RAIN AND TO INCRAGE THE CARAMENT SEEDING TO PROTECT SOL FROM THE IMMOCT OF FALLING RAIN AND TO INCRAGE THE CARAMENT OF THE SOL TO ASJORB WATER. FOR STEEPER SLOPES, EROSION CONTROL MATTING SMALL BE USED AS DESCRIBED IN SECTION 02930

FINAL STABILIZATION SMALL BE CONSIDERED COMPLETE WHEN ALL SOLUBISTUBBING ACTIVITIES HAVE BLESS CONFETTOR AND A UNIFORM, PERSIMAL VIGETATIVE COVER WITH A DISSTIT OF ENGITY FRECHT HAS BEEN STABILISHED OR EQUIVALENT STABILIZATION MASURES (SUCH AS THE USE OF MULCIES OR REGISION CONTINUE MATTING HAVE BEEN MENOYED ON ALL UNPAVED AREAS AND ARLAS NOT COVERED BY PERMANENT STRUCTURES. ACHIEVEMENT OF FINAL STABILIZATION SMALL BE DETERMINED OT THE CITY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTORULA MAINTENANCE PERIOD.



THE INTENT OF THIS ANTICIPATED CONSTRUCTION SEQUENCE IS TO PROVIDE GUIDANCE TO THE CONTRACTOR TOWARDS MEETING THE TERMS AND CONDITIONS OF ENVIRONMENTAL PROTECTION PERMITS AND BEST MANAGEMENT PRACTICES AND THEREFORE IS NOT CONSIDERED COMPLETE. CERTINA ASPECT OF THIS ANTICIPATED CONSTRUCTION SEQUENCE MAY ENTERING BY THE CONTRACTOR WITH APPROVAL FROM THE OWNER OR ENGINEER, EXCEPT AS REQUIRED BY PERMIT CONDITIONS AND SPECIFIC REQUIREMENTS OF THE CONTRACT DOLUMENTS.

1. DEVELOP PROJECT SCHEDULE, APPLY FOR NECESSARY PERMITS, AND BEGIN PREPARATION OF SUBMITTALS PRIOR TO START OF WORK AT SITE AFTER \_\_\_\_\_\_\_201\_\_\_

- 9. CLEAR, GRUB, AND STRIP PROPOSED WORK AREA ALONG NORTHERLY BANK OF BROOK
- 10, REMOVE EXISTING STONE MASONRY WALL NEAR LEFT (NORTHERLY) TRAINING WALL OF LOWER ROBERTS MEADOW RESERVOIR DAM SPILLWAY
- 11. EXCAVATE NORTHERLY BANK TO THE LINES AND GRADES SHOWN ON THE CONTRACT DRAWINGS. INSTALL RIPRAP EROSION PROTECTION.

12, GRADE SLOPE ABOVE RIPRAP TO LINES AND GRADES SHOWN ON CONTRACT DRAWINGS.

ANTICIPATED CONSTRUCTION SEQUENCE:

13. REMOVE RIPRAP ACCESS RAMP AND RESTORE VEGETATION ON THE BANKS OF THE STREAM CHANNEL DOWNSTREAM OF THE SPILLWAY TO MATCH EXISTING CONDITIONS.

14. LOAM AND SEED REWORKED AREAS AS NOTED ON THE CONTRACT DOCUMENTS, RESTORE ALL DISTURBED AREAS; COVER OR MULCH NEWLY SEEDED AREAS.

15. MAKE ALL MISCELLANEOUS SITE RESTORATIONS TO STAGING AREAS, FENCING, UTILITIES, PAVEMENT, OR OTHER FACILITIES CAUSED AS A RESULT OF THE WORK AND/OR MOBILIZATION/DEMOBILIZATION.

17. PROVIDE ON-GOING MAINTENANCE AND MONITORING OF NEWLY VEGETATED AND RESTORED AREAS AS PER THE CONTRACT DOCUMENT.



WHERE NOT OTHERWISE SPECIFIED, DISTURBED UPLAND ARLAS BEYOND THE JOO' WETLAND BUFFER ZONE SHALL THEN BE SEEDED WITH AN APPROVED SEED MIX AT A ARTE GF 2 HOUNDS OF LIVE SEED PER JOO S. S. SEEDEM ARTE SHALL BE DOUBLE FOR ORMANT SEEDING. SEED MIX FOR ARLAS BEYOND THE JOO' WETLAND BUFFER ZONE SHALL BE AS FOLLOWS OR AS APPROVED BY THE ENGINEER:

CREEPING BED EESCUE	5
KENTUCKY 31	2
DOMESTIC RYE	10
RED TOP	55
LADINO CLOVER	5
	CREEPING RED FESCUE KENTUCKY 31 DOMESTIC RYE RED TOP LADINO CLOVER

WHERE NOT OTHERWISE SPECIFIED, DISTURBED UPLAND AREAS WITHIN THE 100' WETLAND BUFFER ZONE SHALL THEN BE SEEDED WITH AN APPROVED SEED MIX AT A RATE OF 1 POUND OF LIVE SEED PER 1,000 S.F. SEEDING RATE SHALL BE COUBLED FOR DORRANT SEEDING. SEED MIX FOR AREAS WITHIN THE 100' WETLAND BUFFER ZONE SHALL BE AS FOLLOWS OR AS APPROVED BY

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX (MOIST SITES) TYPICALLY CONTAINS THE FOLLOWING:









MMON / BOTANICAL NAME	SYMBOL.	SIZE	QTY.	REMARKS
ole / Acer rubrum		2.5* Cal.	6	Balled & Burlapped
k / Quercus rubra	0	25" Cal.	4	Balled & Burlapped
zel / Hamamelis virginiana	A	3 Gal.	B	Container grown
AS (3 AREAS, TOTAL OF 1,500 SQ.FT.)				
llex verticillata	3'-4' ht.	10	Container grown	
/ Cornus amomum	3'-4' ht.	15	Container grown	
r /Alnus incana (rugosa)	3'-4' ht.	10	Container grown	
Carex lurida	2" Plug	150	Place in Clumps of 3	
/ Carez crinita	2" Plug	150	Place in Clumps of 3	
Goldenrod Euthamia graminifol	2" Plug	50	Place in Clumps of 2	

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PROJ MGR: MAT	REVIEWED BY: MAT	CHECKED BY: TEJ	DRAWING	
DESIGNED BY: TEJ	DRAWN BY: EDM	SCALE: AS NOTED	0	
DATE: JAN. 2017	PROJECT NO. 172029	REVISION NO.	9	