MAINE DEPARTMENT OF TRANSPORTATION

2006 POST-CONSTRUCTION MONITORING REPORT:

Riggs Brook Mitigation Site, Augusta

(MDOT PIN 556.47)

Year 3 of 5

Compensation for Augusta Third Bridge Project, Augusta (MDOT PIN 556.20)

ACOE Permit Number: 200001630

MDEP Permit Number: L-20756-4E-C-M

March 2007

Prepared By

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2006 Post Construction Monitoring Report: Riggs Brook Site, Augusta (PIN 566.47)

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1.0 PROJECT BACKGROUND

This report presents the results of the third year (2006 growing season) of the five-year post-construction monitoring period at the Riggs Brook mitigation site in Augusta, Kennebec County (Figure 1). The site provides partial compensation for the 11.82 acres of impacts to wetlands and streams associated with the construction of the Augusta Third Bridge project by the Maine Department of Transportation (MaineDOT) as described in the Wetland Mitigation Plan (the Plan) for the project dated December 2001. Compensation at the site consisted of the enhancement of selected areas of the riparian zone within a 24.5 ± acre site along Riggs Brook. This report is being submitted to comply with the conditions contained in the permits received in 2002 from the Maine Department of Environmental Protection (MDEP) (permit number L-20756-4E-A-N), and from the U.S. Army Corps of Engineers (Corps), (permit number 200001630) for PIN 566.20 (Appendix A).

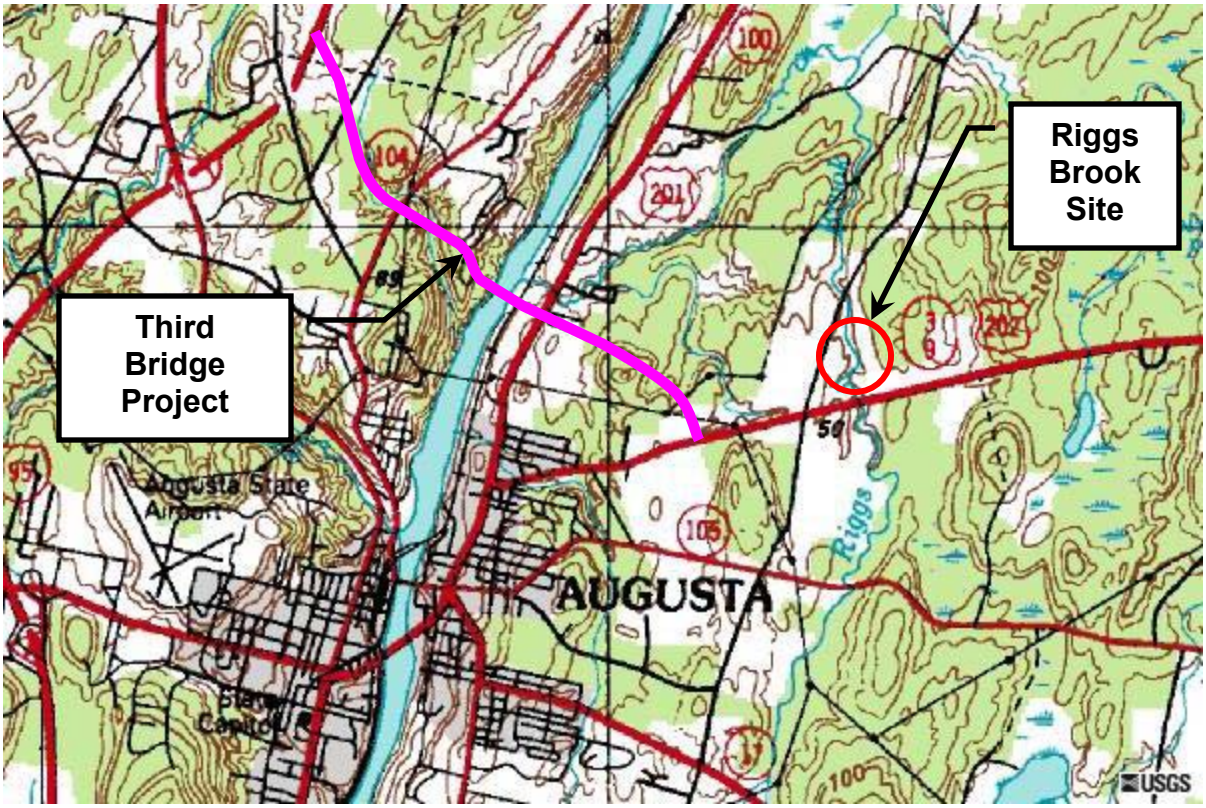
Monitoring at the Riggs Brook site consists of tracking the establishment of planted stock and volunteer species within the enhanced wetland areas at the site and relating the results to the required performance standards. Table 1 summarizes the conditions at the site end of the third growing season (2006) and compares them with the performance standards.

Table 1. Summary Table Showing Site Progress Towards Performance Standards

Performance Standard	2004 Findings (Year 1)	2005 Findings (Year 2)	2006 Findings (Year 3)	Met Standard?
Livestock Exclusion	Perimeter fencing installed	Fencing intact	Fencing intact	Yes
Stable slopes with no significant erosion	Soils stable and well vegetated	Soils stable and well vegetated	Soils stable and well vegetated	Yes
Minimum prescribed plant density in each treatment zone	High mortality due to flooding in two zones; replacement plantings installed[1]	Replacement plantings installed, planting density met in 1 of 3 planting zones	Planting density low in 3 planting zones	Too early

[1] in accordance with Corps guidelines, some plantings were shifted away from Riggs Brook in response to the extensive flooding that occurred at the site during the winter of 2003-2004.

Figure 1. Riggs Brook Site Location Map



2.0 PERFORMANCE STANDARD QUESTIONS

The goal of the enhancement at the Riggs Brook site specified in the Plan is to offset the loss of wetland functions and values resulting from the construction of the Augusta Third Bridge project. To achieve this goal, factors that previously impaired the wetland functions and values within the Riggs Brook site were addressed by excluding livestock from the riparian corridor, repairing and stabilizing individual areas of bank erosion, and re-establishing trees and shrubs within selected wetland and adjacent upland areas of the riparian zone previously degraded by agricultural activities.

The monitoring plan for the site calls for documenting the successful exclusion of livestock from the site, evaluating the stability of eroded areas, assessing the survival of planted shrubs and trees, and comparing the results to specified performance standards. In accordance with the Plan, the enhancement effort is required to meet the following performance standards by the end of the monitoring period:

***Livestock Exclusion**:* Has livestock been excluded from the site?
Yes. The perimeter fence and the mitigation area boundary signs previously installed along the perimeter were found to be intact and functioning as intended. Livestock grazing on adjacent land has been discontinued.

Soil Stabilization: Are slopes within the mitigation area stable?
Yes. Previously seeded areas were stable and herbaceous cover was well established in these areas.

Planting Density: Do the planting zones at the mitigation site meet the minimum density requirements?
No. The three planting zones at the site are 1) the Wetland Streamside zone, 2) the Wetland Tree and Shrub zone, and 3) the Upland Tree and Shrub zone. The tree and shrub density in the Streamside, Wetland, and Upland zones did not meet the minimum density requirements for each zone. The conditions noted in 2006 are described in more detail in Section 3.0.

Invasive Species:

a) Is common reed (*Phragmites sp.)* or purple loosestrife (*Lythrum salicaria*) at the mitigation site being controlled?

Common reed and purple loosestrife were not found within the enhancement area and were not noted in the vicinity of the site.

b) Has the experimental control of reed-canary grass been implemented?

Yes. As noted during the initial evaluation of the site, reed canary grass is well-established within the floodplain of Riggs Brook. While this species was expected to persist, the streamside and wetland zone plantings were intended to eventually limit the spread of grass through shading and to allow woody vegetation to gain a foothold in the streamside areas. Some wattles from the initial planting showed evidence of sprouting and growth. A number of supplemental willow wattles and live stakes placed in selected areas within the floodplain and in adjacent transitional areas in 2005 exhibited growth. The conditions noted in 2006 are described in more detail in Section 3.0.

3.0 NARRATIVE DISCUSSION

3.1 Monitoring inspections

MaineDOT staff visited the site in April, May, June and September 2006 to check overall site conditions, assess the survival of plantings in need of replacement, and to evaluate the overall progress of the site toward meeting the performance standards. In the spring, the condition of planted trees and shrubs in each of the treatment zones was checked and plant survival was tallied. Soils in the repaired bank areas were checked to verify that they remained stable and that vegetation continued to become established as intended. In addition, signs of wildlife use, physical damage or disturbance, and the presence of invasive species were noted during site visits. In September, MaineDOT met with staff from the DEP and the Corps to review the overall condition of site and discuss potential replanting options.

3.2 Remedial Activities in 2006

No repairs, additional seeding, or replacement plantings were made at the site during the 2006 growing season.

3.3 Plant Survival and Condition

Wetland Streamside Groups

Water levels in Riggs Brook varied widely in the spring of 2006 in response to local rainfall. The streamside groups were subject to extended periods of flooding as noted in previous years that resulted in additional damage to the planted trees and shrubs from flooding, entrained plant material, ice movement, and wildlife. The alder and willow shrubs and live stakes suffered damage from beaver which were able to reach the groups relatively easily because of the high water levels. A number of the willow and elderberry plantings had resprouted despite repeated browse by beaver or damage from ice and flooding.

The May and June assessments of the streamside planting groups indicated that the average woody plant density in this zone continues to fall below the performance standard. The number of live woody plants within all seven groups was tallied to determine a density for the 2.5 acre wetland planting zone. The total number of surviving trees and shrubs in the groups was approximately 419 plants. This equates to an average density of 167 plants per acre. This density is about 50% of the standard of 340 woody plants per acre proposed for this zone in the mitigation plan. Additional supplemental planting in a location less susceptible to damage from flooding will probably be required in order to reach the performance standard for this zone within the 5-year monitoring period and will be addressed as part of the remedial plan for the site in 2007.

Wetland Tree and Shrub Plant Groups

The wetland groups closest to Riggs Brook were subjected to flooding and ice movement over the winter and during the spring of 2006 resulting in damage to the planted trees and shrubs similar to the streamside groups. Damage from beaver to scattered plants in some of the wetland groups located closest to the stream was noted in May and September. Speckled alder and willow were browsed the most heavily. Flooded or saturated conditions also occurred in locations where small seeps and drainage swales intersected plant groups in the middle and upper portions of the site. In most of the wetland groups, however, plants were affected more by herbaceous competition than flooding.

The May and June assessments of the wetland groups indicate that the average woody plant density in the Wetland Tree and Shrub zone was slightly less than the performance standards. The number of live trees and shrubs within all of the 42 plant groups in this zone was tallied to determine a density for the 6.5 acre wetland planting zone. A total of 223 trees were tallied. This results in an average density of 34 trees per acre, which is less than the standard of 45 trees per acre. The total number of shrubs tallied was 324 yielding an average shrub density of 50 per acre, falling below the standard of 60 shrubs per acre. This deficiency will be addressed as part of the remedial plan for the site in 2007. In addition, a proposed change in the performance standard for this zone is discussed in the following section.

Upland Tree and Shrub Plant Groups

The upland groups occur singly or in small clusters along knolls or in open field areas of the site and are intended to serve as starting points for the establishment of trees and shrubs in the future. Assessment of the upland groups in May and June showed that the average woody plant density was slightly less than the planted density and did not meet the performance standards. The number of live plants within all of the 39 upland groups was tallied to determine a preliminary density for the 14 acre planting zone. A total of 169 trees and shrubs were tallied. The tree density in the upland groups was approximately 8 trees per acre. The shrub density in the sampled groups was approximately 4 shrubs per acre. These densities are well below the density of 13 trees per acre and 17 shrubs per acre proposed in the mitigation plan.

As first noted in the 2005 monitoring report, however, during final design the total number of trees and shrubs planted in the upland groups was reduced by about 160 plants. These plants were shifted to the wetland zone in order to boost the planting density in the wetland groups. This change was made to improve the ability of the woody plantings in the wetland zone to compete with the well established herbaceous vegetation. Despite this change, the total number of plants actually planted at the site slightly exceeded the number originally proposed in the Plan. The actual initial planting density in the upland zone was 11 trees per acre and 8 shrubs per acre.

Given this change, MaineDOT proposed in the 2005 report to revise the density standards within the upland zone from those proposed in the mitigation plan to 9 per acre for trees and 7 per acre for

shrubs. The proposed densities are 85% of actual planted densities and are in keeping with the anticipated survival rate used to calculate the original standards proposed in the mitigation plan. These changes are summarized in Table 2. The 2006 results fall slightly below the proposed revised standard and this deficiency will be addressed as part of the remedial plan for the site in 2007.

Table 2. Existing and Proposed Planting Densities within the Upland Zone

	Trees	**Shrubs**
Density Standard Proposed in Mitigation Plan (±85% of planted density)	13/acre	17/acre
Actual Planting Density	11/acre	8/acre
Proposed Revised Density Standard (±85% of planted density)	**9/acre**	**7/acre**
2006 Results	8/acre	4/acre

Given that approximately 160 plants were shifted to the wetland groups at the time of initial planting MaineDOT proposes to revise upward the performance standard for the wetland groups to reflect this change and to offset the decrease in the standard for the upland groups. The proposed revised standards for the wetland plant groups are as follows:

Table 3. Existing and Proposed Planting Densities within the Wetland Zone

	Trees	**Shrubs**
Density Standard Proposed in Mitigation Plan (±85% of planted density)	45/acre	60/acre
Proposed Revised Density Standard (±85% of planted density)	**54/acre**	**72/acre**
2006 Results	34/acre	50/acre

Wattle Treatment Area

In May, survivorship within the wattle and live stake planting areas was assessed and tallied. Within the initial wattle planting area located in the reed canary grass dominated floodway of Riggs Brook, evidence of sprouting and growth was found in 16 of the original 35 rows. The growth was limited, however, to small scattered clumps of willow sprouts at the upper end of the wattle rows. The upper ends of the rows are slightly higher in elevation and are generally subject to less frequent and prolonged flooding.

Within the area near streamside group #7 where a number of replacement wattles and live stakes were installed in 2005, over 50% of the wattle bundles (26 out of 48) had signs of growth, and approximately 23% of the bundles (11 out of 48) had fair to good growth of willow sprouts along the row (defined as greater than 4 willow sprouts per bundle). Many of the live stakes were obscured by the herbaceous vegetation and were difficult to locate. However, the estimated live stake survival in this area appeared to be very poor probably due to prolonged saturation of the fine textured soils and herbivory.

In the bank stabilization and drainage swale areas on the west side of Riggs Brook near plant groups 6F and 7F, approximately 50% of the wattles (16 out of 31) had growth, and approximately 23% of the wattles (7 out of 31) had fair to good growth of willow sprouts along the row. Sprouts on several of the most productive wattles in this area were over 3 feet tall in late spring. Based on a visual inspection of the live stakes installed in this area, it appears that approximately 33% (22 of 66 located) had survived and had put on new growth.

3.4 Wildlife Use of the Site

Numerous wildlife species, sign and tracks were noted during visits to the site in 2006 including: deer (tracks), northern oriole, wild turkey, American robin, red-winged blackbird, American crow, white throated sparrow, barn swallow, bank swallow, bob-o-link, yellow warbler, common yellowthroat, bull frog, green frog, and a number of aquatic insects.

3.5 Other Observations

As previously noted in 2005, beaver damage to a number of the plantings continued. The damage was greatest to the planted shrubs and live stakes in portions of the streamside and lower wetland plant groups. Willow and alder appeared to be the preferred target. Despite the damage, many of the willows and alders had resprouted, however the repeated browsing has generally limited the growth of the shrubs in this planting zone to a height of 12 to 15 inches.

Browsing by beaver is likely to continue unless intensive measures to protect the planted trees and shrubs are implemented. The branching form and widely spaced distribution of the shrubs makes it impractical to protect the plants using either individual plant protectors or fencing thereby leaving them exposed to additional damage from beaver. Plant protectors are suitable for use on small trees, but are susceptible to damage from ice, high flows, and entrained plant material in areas near Riggs Brook. Based on the September 2006 site visit, the Corps site review report (dated December 2006) recommended trapping beaver at the site as a means to limit future damage to the plantings.

MaineDOT conferred with the Maine Department of Inland Fisheries and Wildlife (IF&W) Regional Biologist regarding potential control options such as capture and release offsite or trapping. IF&W explained that lethal measures would probably be necessary, and that any beaver removed from within the site would likely be replaced by new recruits moving into the site from either upstream or downstream areas. Therefore, repeated control measures will likely be necessary to minimize beaver damage to plantings within the site.

Other than scattered trash blown into the site from developed areas downstream along Route 3, no damage or disturbance from human activity was noted within the site.

4.0 REMEDIAL MEASURES FOR 2007

In response to the Corps site review report, dated December 2006, MaineDOT plans to implement remedial measures during 2007 in a good-faith effort to increase the likelihood that the Riggs Brook site will achieve the mitigation goals and performance standards by the end of the five year monitoring period. These measures are in addition to the remedial measures implemented in 2004 and 2005 and reported previously. The measures proposed for 2007 will be implemented to the

greatest extent practicable given limited project funding and are expected to use up the remaining remedial budget. Given current and anticipated MaineDOT budget constraints, funding for additional remedial work at the Riggs Brook site will not be available. As a result, MaineDOT anticipates that this will be the final remedial effort at the Riggs Brook site.

The following remedial measures are proposed:

- Reassess the condition of the streamside, wetland, and upland planting groups after bud break in the spring of 2007 to check for damage from flooding or beaver and confirm the number of plants that are alive or are likely to resprout.
- Coordinate with the IF&W Regional Biologist regarding the control of nuisance beaver within the site through measures such as trapping, in order to reduce the risk of damage to existing and proposed replacement plantings. The installation of replacement plantings within the streamside and lowermost wetland groups (described below) is contingent upon the successful implementation of the beaver control measures. If the risk of damage to plantings from beaver remains high, MaineDOT will confer with the DEP and the Corps regarding the need for additional planting in the streamside and lower wetland zone.
- Replace dead plantings within the streamside planting groups with additional native shrubs as needed to boost the woody plant density to the required standard. Depending on availability the plantings will likely consist of a mix of small (12 to15 inch) containerized shrubs and tubelings of willow (*Salix discolor, S. lucida, S. sericea*), dogwood (*Cornus amomum*), arrowwood (*Viburnum dentatum*) and elderberry and a limited number of wetland trees (3 to 4 feet), such as green and black ash (*Fraxinus nigra*), silver maple, and black willow. Planting of alder will depend on confirmation of the availability of native alder (*Alnus incana ssp. rugosa*) from the landscape contractor's supplier. In accordance with the Corps recommendations, the replacement plantings for each streamside group will be relocated to a position above the normal high water mark of Riggs Brook upgradient of the existing plant group. The replacements will be concentrated into a single group or row and will be installed in mid to late spring as site conditions allow. Prior to planting, herbicide will be applied (use of Rodeo is anticipated) in strips within the proposed planting area to control the existing dense, herbaceous growth. After planting, the plantings will be mulched with woodwaste or weed barrier blankets depending on equipment access limitations. Plastic protectors will be

installed around trees, however protection of the shrubs by the use of fencing does not appear to be practical and is not planned.

- Replace dead plantings within the wetland and upland planting groups with additional native trees and shrubs as needed to boost the density to the required standard. Depending on availability the replacements will likely consist of small (12 to15 inch) containerized shrubs of willow (*Salix discolor, S. lucida, S. sericea*), dogwood (*Cornus amomum*), elderberry, and nannyberry (*Viburnum lentago*) and trees (3-4 foot), such as green and white ash, silver maple, balsam fir and white pine. In accordance with the Corps recommendations, the replacement plantings for the lower elevation wetland plant groups will be relocated to a point above the normal high water mark of Riggs Brook. The replacements will be placed in suitable locations within existing wetland planting groups and will be installed in mid to late spring as site conditions allow. Prior to planting, spot treatments of herbicide (use of Rodeo is anticipated) will be applied to proposed planting locations to control the existing dense, herbaceous growth. After planting, the plantings will be mulched with woodwaste or weed barrier blankets depending on equipment access limitations. Plastic protectors will be installed around trees, however protection of the shrubs from herbivory by the use of fencing is not planned.
- Control non-native alder planted inadvertently within the streamside and lowermost wetland groups using herbicide. Non-native alder will be replaced as part of the supplemental planting proposed for the streamside and wetland groups as described above.
- Control herbaceous growth around surviving plants in the existing streamside, wetland, and upland groups using spot treatments of herbicide (use of Rodeo is anticipated) and replace blankets as necessary to ensure that the trees and shrubs are free to grow.

5.0 FUTURE MONITORING REPORTS

Annual monitoring focused on assessing plant density in the different plantings zones will be conducted again in 2007 and a fourth-year report will be submitted to the MDEP and the Corps by March 31st, 2008.

Appendix A

PERMITS

MDEP Permit Number L-20756-4E-A-N

Corps Permit Mitigation Special Conditions
(CorpsPermit Number: 200001630)

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

DEPARTMENT OF TRANSPORTATION	) NATURAL RESOURCES PROTECTION ACT
Augusta, Kennebec County	) WETLAND ALTERATION AND
AUGUSTA THIRD BRIDGE	) WATER QUALITY CERTIFICATION
L-20756-4E-A-N	) FINDINGS OF FACT AND ORDER
(APPROVAL)	

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of DEPARTMENT OF TRANSPORTATION with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Application: The applicant proposes to construct a new highway and bridge connecting I-95 to Route 3 in Augusta. The project includes the construction of a new I-95 interchange, a new highway on new alignment, and a new bridge crossing over the Kennebec River.

B. Summary of Proposal: The applicant is proposing to construct a third bridge in Augusta with an associated new, limited access highway approximately three miles long connecting Interstate 95 to Routes 3, 9, and U.S. 202, including a new Interstate 95 Interchange. The new bridge will cross the Kennebec River approximately one-half mile above the site of the former Edwards Dam. The bridge proposal includes two piers that will be located in the flood zone and two piers that will be located in the river channel. The proposed project will be phased as described below:

1. Phase I consists of earthwork and drainage from the Interstate to the Kennebec River;
2. Phase II consists of the construction of the Kennebec River bridge and all earthwork and drainage from the Kennebec River, east;
3. Phase III consists of the construction of the Interstate 95 overpass and the Eight Rod Road construction;
4. Phase IV consists of final paving, curb and guardrail alignment, signals at intersections, and landscaping; and
5. Phase V consists of final construction and monitoring of the compensation area.

C. Site Description: The applicant has obtained all necessary property rights as authorized under 23 M.R.S.A § 153.

2. WATER QUALITY CONSIDERATIONS:

MDOT requires that its contractors adhere to temporary erosion control measures specified in "Special Provision Section 107: Soil Erosion and Water Pollution Control." Special Provision Section 107 mandates that

the selected contractor develop a specific erosion and sedimentation control plan and submit it to MDOT's Office of Environmental Services (OES) for review, comment, and approval. The plan must meet the standards and commitments described in Section II of the manual "MDOT Best Management Practices for Erosion and Sediment Control (BMP)," dated September 1997 or latest revision.

Based on past experience, the Department's Division of Watershed Management (DMW) finds that the OES's Water Resource Unit is capable of obtaining an erosion control plan from contractors that meets Department standards for the resource protection. DMW requires no further review and approval of the temporary erosion control plan provided that, prior to construction, the applicant and/or its contractor submits a final plan to the Deportment for inclusion in the project file and that the Department receives written approval of the plan from MDOT prior to the start of construction.

The Department finds that an employee of the Maine Department of Transportation qualified to assess erosion and sedimentation control measures, must submit a report summary of all work completed, erosion control compliance, and general progress of the project on a monthly basis by the 15th of each month during construction, for inspections completed during the previous month, and must notify the Department within 24 hours upon the discovery of erosional concerns or otherwise, resulting in a discharge of soil into a protected natural resource.

3. WILDLIFE HABITAT CONSIDERATIONS:

The Maine Department of Inland Fisheries & Wildlife (MDIFW) has reviewed the proposed project and finds that the portion of the project that requires work in the Kennebec river is considered work within a Significant Wildlife Habitat because this portion of the river contains two species of freshwater mussels (Yellow Lampmussel and Tidewater Mucket) that are currently listed as endangered species in the State of Maine. The Maine Endangered Species Act provides for the inadvertent incidental take of these species associated with project construction and development provided that an Incidental Take Plan (ITP) is developed and implemented. The applicant and MDIFW have met to discuss and develop an ITP that is reasonable and minimizes the incidental take of these listed species.

The Department of Marine Resources (DMR) has reviewed the project as proposed and finds that the river at the proposed bridge crossing should be considered as a migratory pathway for all anadromous fish species native the State of Maine that now have access to the 17 miles of riverine habitat above the former Edwards Dam. The majority of the anadromous fish species migrate upstream from April 1 through June 30 except Atlantic sturgeon, which would be likely to migrate upstream from mid June through July. To avoid interference with the upstream migration for the majority of the anadromous fish species in the Kennebec River, the Department of Marine Resources recommends that a timing window be established from April 1 through June 30 during which no instream work will be permitted. DMR also recommends that instream work in July be limited to the pier most distant from the main channel

to facilitate the upstream migration of Atlantic strugeon and late migrating species.

The Atlantic Salmon Commission (ASC) has commented on the proposed project and finds that the river at the proposed bridge crossing is not rearing or spawning habitat for Atlantic salmon, but is used as a migratory corridor. ASC finds that the major concern would be to prevent extensive sedimentation downstream toward Bond Brook which contains a documented sensitive salmon population. To minimize interference with migration and to limit sedimentation downstream for Bond Brook, ASC recommends that an instream work window of July1 through September 15 should be established.

The Department finds that the project as proposed will not cause any significant adverse impact to habitats provided that the applicant submits an ITP to the Department and Maine Department of Inland Fish & Wildlife (MDIFW), for review and approval, prior to beginning construction of Phase II of the proposed project. The Department also finds that an instream work window of July 1 through September 15 be established, and that work during July be limited to the pier most distant from the main channel.

4. WETLAND CONSIDERATIONS:

A. SUMMARY OF IMPACTS: The proposed project will result in approximately 476,911 square feet (10.95-acres) of wetland impact due to fill placement for construction of the new interchange, connector roads, and bridge. At least six wetland complexes have been identified and are described in detail in Exhibit 11 of the application and shown on Table 1 below. The proposed connector road will cross 14 small streams that will require culverting, impacting approximately 20,202 square feet of stream area.

Wetland ID	PFO*	PSS*	PEM*	Stream*	River*	Pond*	Shoreline**	W.S.S.*	Type	Total Impacts	Primary Functions
95-1			14,726							14,726	ST
95-2	22,974	48,079	58,495	7,192		595	1,356	10,323	PEM	165,311	ST/WL
								16,297	PSS		
A		4,345	74,764							79,091	ST
B	22,863	10,882	3,617	4,275			1,060	11,755	PSS	62,504	WL/GW/FF/SS
								8,052	PFO		
E	2,570			2,322	3,145		1,352	16,769	PFO	24,806	WL/GW/SS
G	15,365	9,626	80,555	6,413			1,595	7,966	PSS	130,484	WL/FF/SS/GW/ST
								8,964	PEM		
TOTALS	63,772	72,932	232,139	20,202	3,145	595	5,363	80,126		476,922	
* Measurements in square feet											
** Measurement in linear feet											

The Department of Transportation conducted a delineation and a function and value assessment. Wetlands were field surveyed and delineated from May through October 1998. Delineations were done using the U.S. Army Corps of Engineers' 1987 3-parameter routine determination approach and the 1995 and 1998 Field Indicators for Identifying Hydric Soils in New England. Wetland functions and values were identified using the U.S. Army Corps of Engineers' Highway Methodology. This assessment indicated that there are six major wetland complexes identified on the project site. One complex (E) includes direct impacts to the Kennebec River and four others (95-2, B, E, & G) that impact tributary streams to the Kennebec. Wetland complex 95-2 also includes impacts to a small pond. Approximately 2,000 square feet of seasonally flooded depressions, including some areas of possible vernal pool habitat area, and approximately 80,126 square feet of freshwater wetlands of special significance will also be filled. Primary functions identified are described in Exhibit 11 of the NRPA permit application and shown on Table 1 above. The applicant has proposed mitigation to replace the functions & values of the wetlands impacted by the proposed project.

B. AVOIDANCE & MINIMIZATION: The applicant has submitted an alternative analysis for the project as proposed that demonstrates that the proposed project constitutes the least practicable damaging alternative. The applicant has modified the design and construction methods for the proposed roads, bridge, and interchange to minimize wetland impacts. The Department has reviewed these materials and finds that wetland impacts have been avoided and minimized as much as possible given the site and design constraints through the design of the project, methods of construction and stabilization, and proposed wetland compensation plan.

C. WETLAND COMPENSATION: As compensation for wetland impacts associated with the proposed project, the applicant proposes to enhance wetland and upland pasture along Riggs Brook on the Gamage Property in Augusta, Maine, and to preserve a parcel of land that will join two distinct compartments of MDIFW's Garcelon Wildlife Management Area (WMA). No opportunities exist for on-site mitigation. Multiple off-site mitigation sites were evaluated, as described in Section 2 of Exhibit 14 in the NRPA permit application.

The Riggs Brook enhancement site occupies approximately 24-acres of riparian wetland and upland along Riggs Brook, in the middle of a 100 ± acre cow pasture. The site includes approximately 2,500 feet of Riggs Brook, with approximately 10-acres of adjacent wetland and 14-acres of upland slopes extending 100 to 300 feet on either side of the brook. The proposed wetland enhancement site will be acquired by MDOT and protected from future development or agricultural uses. In addition, enhancement measures will be implemented to achieve the compensation objectives, including fencing to exclude livestock, discontinuation of mowing, repair and stabilization of eroded banks, and planting of trees and shrubs to accelerate the establishment of woody cover in wetlands and upland

buffers. Specific treatments are described in Section 3.1 of Exhibit 14 in the application and shown on the first nine plans in a set of ten, the first of which is entitled "Maine Department of Transportation Augusta Third River Crossing Project Preliminary Wetland Compensation - Project Location Map," prepared by Duke Engineering & Services, dated December, 2001.

The Spectacle Pond Preservation Site consists of nine contiguous parcels totaling approximately 146-acres, straddling the municipal boundary in northeastern Augusta and southwestern Vassalboro. The northern and southern limits of the site abut properties owned by MDIFW that have been managed as separate compartments of the Garcelon WMA. The site is mostly hardwood forested upland with all or parts of two forested/scrub shrub wetland complexes, several intermittent streams and vernal pools, and approximately 2,250 feet of frontage on Spectacle Pond. Acquisition and transfer of this site to MDIFW will fulfill a long-term management objective to connect these distinct compartments and will contribute to the objective of securing a substantial portion of the Spectacle Pond shoreline. Details of the preservation site are described in Section 3.2 of Exhibit 14 in the application and shown as plan 10 entitled "Maine Department of Transportation Augusta Third River Crossing Project Preliminary Wetland Compensation - Spectacle Pond Preservation Site Plan," prepared by Duke Engineering & Services, dated December, 2001.

D. COMPENSATION MAINTENANCE: The applicant intends to maintain the Riggs Brook mitigation area. The applicant will maintain the livestock fencing during and after the completion of the proposed five year post-construction monitoring period or until such time that the applicant transfers the mitigation parcel to a qualified third party for long-term stewardship. If such a time arises the applicant must notify the Department of the transfer candidate. Prior to the completion of 50% of the proposed project, the applicant must initiate the compensation project and notify the Department. The Department finds that the applicant must file a finalized Declaration of Covenants and Restrictions for the compensation area, referencing the final construction plans, with the Kennebec County Registry of Deeds, within six months after the initiation of the compensation project. Evidence of filing must be submitted to the Bureau of Land and Water Quality, Division of Land Resource Regulation, within 30 days of the filing date. Evidence must consist of copies of the restrictions stamped with Book and Page numbers or accompanied by a letter from the Registrar.

E. COMPENSATION MONITORING: A qualified wetland scientist will be on-site to monitor construction of the wetland compensation area. Monitoring during construction will verify that excavation, grading, planting, and erosion control measures are implemented according to plans and specifications. The applicant proposes to monitor the compensation project annually over a 5-year period starting the following spring from when planted. A qualified, professional wetland scientist must conduct all field assessments. Reports detailing the findings must be submitted to the Department

prior to December 15 of each of the reporting years. The reports must include labeled photographs representing current site conditions, and a narrative detailing existing site conditions during the monitoring event. The narrative must include, but not be limited to, vegetative coverage and success rates, vegetative community diversity, spatial extent, and wetland functions, and any measure required to remediate adverse site conditions as described in Section 14 of the NRPA application.

5. OTHER CONSIDERATIONS:

The Department has not identified any other issues involving existing scenic, aesthetic, or navigational uses, soil erosion, habitat or fisheries, the natural transfer of soil, natural flow of water, water quality, or flooding.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment provided that the project is completed as proposed and that the applicant meets all of the requirements in Finding 2

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment provided that the project is completed as proposed and that the applicant meets all of the requirements in Findings 2 & 3

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided that the project is completed as proposed and that the applicant meets all of the requirements in Findings 3 & 4.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters provided that the project is completed as proposed and that the applicant meets all of the requirements in Findings 3 & 4.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in Title 38 M.R.S.A. Section 480-P.

THEREFORE, the Department APPROVES the above noted application of Department of Transportation to construct a new highway with I-95 interchange and a new bridge, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that their activities or those of their agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. The applicant and/or its contractor shall submit a final erosion and sedimentation control plan to the Department for inclusion in the project file and the applicant shall receive written approval of the plan from the Department prior to the start of construction.

4. The applicant shall submit an ITP to the Department and Maine Department of Inland Fish & Wildlife (MDIFW), for review and approval, prior to beginning construction of Phase II of the proposed project.

5. All instream work shall occur between July 1 and September 15.

6. Instream work in July shall be limited to the pier most distant from the main channel to facilitate the upstream migration of Atlantic strugeon and late migrating species.

7. The applicant shall submit a monthly summary report of all work completed and erosion control compliance by the 15th of each month during construction. This report shall include inspections completed during the previous month and shall notify the Department within 24 hours of discovery of any discharge of soil into a protected natural resource. This report shall be completed by an employee of the Maine Department of Transportation qualified to assess erosion and sedimentation control measures.

8. The applicant shall maintain the livestock fencing on the mitigation site during and after the completion of the proposed five year post-construction monitoring period or until such time that the applicant transfers the mitigation parcel to a qualified third party for long-term stewardship. If such a time arises, the applicant shall notify the Department of the transfer candidate.

9. Prior to the completion of 50% of the proposed project, the applicant shall initiate the compensation project and notify the Department. The applicant shall file a finalized Declaration of Covenants and Restrictions for the compensation area, referencing the final construction plans, with the Kennebec County Registry of Deeds, within six months after the initiation of the compensation project. Evidence of filing shall be submitted to the Bureau of Land and Water Quality, Division of Land Resource Regulation, within 30 days of the filing date. Evidence shall consist of copies of the restrictions stamped with Book and Page numbers or accompanied by a letter from the Registrar.

10. The applicant shall monitor the compensation project annually over a 5-year period starting the following spring from when planted. A qualified, professional wetland scientist shall conduct all field assessments. Reports detailing the findings shall be submitted to the Department prior to December 15 of each of the reporting years (year 1, 2, and 3, with a final assessment report after the 5th year following installation). The reports shall include labeled photographs representing current site conditions, and a narrative detailing existing site conditions during the monitoring event. The narrative shall include, but not be limited to, vegetative coverage and success rates, vegetative community diversity, spatial extent, and wetland functions, and any measure required to remediate adverse site conditions as described in Section 14 of the NRPA application.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED AT AUGUSTA, MAINE, THIS 13 DAY OF March, 2002.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____
MARTHA G. KIRKPATRICK, COMMISSIONER

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES…

Date of initial receipt of application 12/07/2001
Date of application acceptance 12/18/2001

Date filed with Board of Environmental Protection
LK/L20756AN

FILED
MAR 14 2002
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE

DEPARTMENT OF THE ARMY PERMIT

Permittee Maine Dept. of Transporation, 16 State House Station, Augusta, Maine 04333

Permit No. 200001630

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Place fill in conjunction with the construction of a new connector road from I-95 to Route 3. The work includes new right-of-way clearing, culverted or bridge crossings of Fisher and Riggs Brooks, numerous crossings of wetlands and intermittent and perennial streams, a new interchange at I-95, and a pier supported bridge crossing of the Kennebec River. Wetland and waterway impacts on the approaches to the Kennebec River crossing total approximately 7.2 acres and the three piers supporting the bridge will impact approximately 0.075 acres of river bottom.

In accordance with the attached plans "MAINE DEPT. OF TRANSPORTATION, AUGUSTA THIRD BRIDGE PROJECT, AUGUSTA, MAINE, DOT PIN 556.11" in 12 sheets undated

Project Location:

In numerous waterways and wetlands between I-95 and Route 3 at Augusta, Maine.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on JUN 03 2007. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. 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 4 below. 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 permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all

Special Conditions Continued on Page 4

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

John E. Bouly Chief Eng. — June 7, 2002

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Christine Godfrey — 6/3/02

(DISTRICT ENGINEER) (DATE)
BRIAN E. OSTERNDORF
COLONEL, CORPS OF ENGINEERS

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

☆U.S. GOVERNMENT PRINTING OFFICE: 1986 — 717-425

contracts and sub–contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different unauthorized work in areas of Corps of Engineers jurisdiction. contractors or sub–contractors, all contractors and sub–contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub–contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

2. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

3. The permittee and his contractors shall conduct a pre-construction meeting with Corps, Maine Dept. of Environmental Protection and other appropriate resource agency staff prior to construction at the project site.

4. This permit authorizes impacts to only those areas of wetlands shown on the attached plans. No other filling, clearing or other disturbance in wetlands shall occur.

5. There shall be no in-stream work in the Kennebec River from April 1 to June 30 to minimize impacts to essential fish habitat, anadromous fish, and endangered shortnose sturgeon.

6. Mitigation shall be performed in accordance with the attached mitigation plan entitled, "AUGUSTA THRID RIVER CROSSING PROJECT, PIN 556.XX, PRELIMINARY WETLAND COMPENSATION PLAN, PIN 556.44" and dated "DECEMBER 2001" and revised by the attached memo dated "February 26, 2002".

Appendix B

AS-BUILT PLAN

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	MAINE	STP–556(44)	3	5

AS-BUILT NOTES:

1. PROJECT COMPLETION DATES:
   - SLOPE REPAIR OPERATIONS (SCARIF SOILS, INSTALL STRAW MATS AND SEED MIX) WERE COMPLETED IN MAY, 2003.
   - THE COIR ROLL, AND SLOPE REPAIRS WERE INSTALLED IN JUNE, 2003 (DELAYED DUE TO HIGH WATER LEVELS).
   - TWO MOWINGS OF THE REED CANARY-GRASS OCCURRED IN JULY AND AUGUST, 2003.
   - ROTOTILLING OF PLANT ROWS, INITIAL PLANTING OPERATIONS AND OCCURRED DURING AUGUST AND SEPTEMBER, 2003.
   - BOUNDARY FENCE INSTALLATION WAS COMPLETED IN OCTOBER, 2003.
   - WATTLE INSTALLATION WAS COMPLETED IN DECEMBER, 2003.
   - INSTALLATION OF BRUSH PILES WAS ELIMINATED DUE TO SATURATED SOIL CONDITIONS AND DIFFICULTY FINDING LOCALLY AVAILABLE SOURCES MEETING CONTRACT SPECIFICATIONS.

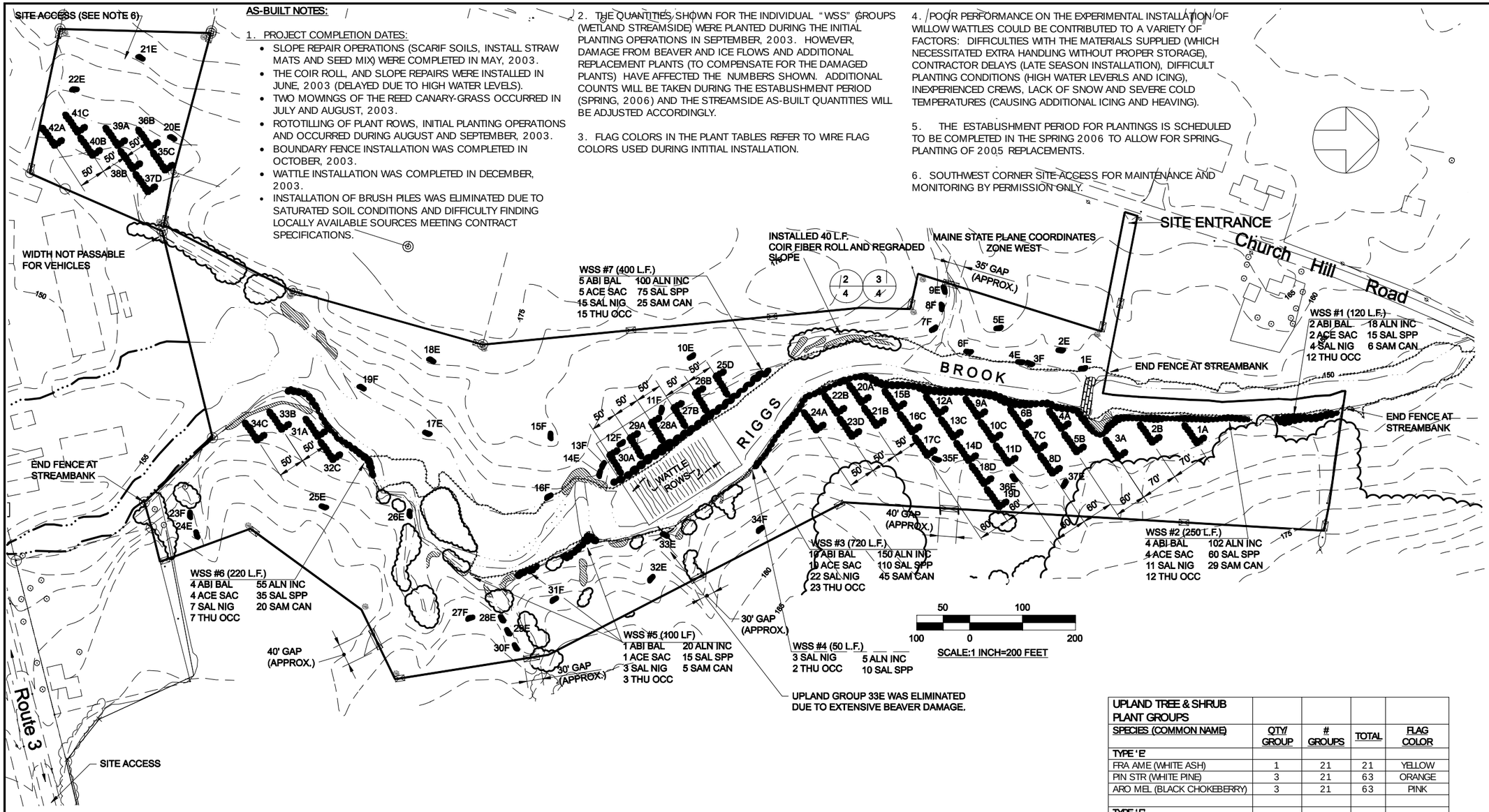
2. THE QUANTITIES SHOWN FOR THE INDIVIDUAL "WSS" GROUPS (WETLAND STREAMSIDE) WERE PLANTED DURING THE INITIAL PLANTING OPERATIONS IN SEPTEMBER, 2003. HOWEVER, DAMAGE FROM BEAVER AND ICE FLOWS AND ADDITIONAL REPLACEMENT PLANTS (TO COMPENSATE FOR THE DAMAGED PLANTS) HAVE AFFECTED THE NUMBERS SHOWN. ADDITIONAL COUNTS WILL BE TAKEN DURING THE ESTABLISHMENT PERIOD (SPRING, 2006) AND THE STREAMSIDE AS-BUILT QUANTITIES WILL BE ADJUSTED ACCORDINGLY.

3. FLAG COLORS IN THE PLANT TABLES REFER TO WIRE FLAG COLORS USED DURING INTITIAL INSTALLATION.

4. POOR PERFORMANCE ON THE EXPERIMENTAL INSTALLATION OF WILLOW WATTLES COULD BE CONTRIBUTED TO A VARIETY OF FACTORS: DIFFICULTIES WITH THE MATERIALS SUPPLIED (WHICH NECESSITATED EXTRA HANDLING WITHOUT PROPER STORAGE), CONTRACTOR DELAYS (LATE SEASON INSTALLATION), DIFFICULT PLANTING CONDITIONS (HIGH WATER LEVERLS AND ICING), INEXPERIENCED CREWS, LACK OF SNOW AND SEVERE COLD TEMPERATURES (CAUSING ADDITIONAL ICING AND HEAVING).

5. THE ESTABLISHMENT PERIOD FOR PLANTINGS IS SCHEDULED TO BE COMPLETED IN THE SPRING 2006 TO ALLOW FOR SPRING PLANTING OF 2005 REPLACEMENTS.

6. SOUTHWEST CORNER SITE ACCESS FOR MAINTENANCE AND MONITORING BY PERMISSION ONLY.



LEGEND:

- MITIGATION SITE BOUNDARY & FENCE
- STREAM (RIGGS BROOK)
- EDGE OF WETLAND
- EXISTING 5 FOOT CONTOUR
- APPROX. EDGE OF REED CANARY GRASS (RCG) ZONE
- REPAIRED SLOPE
- EXISTING TREELINE
- FENCE GAP
- TREE PLANTING AT BOUNDARY CORNERS (PIN STR, 11 TOTAL)
- UPLAND BUFFER PLANT GROUP
- WETLAND TREE & SHRUB PLANT GROUP (WTS)
- WETLAND STREAMSIDE PLANT ZONE (WSS)
- GRANITE BLOCK CROSSING NOT SUITABLE FOR VEHICLES
- EXISTING UTILITY POLE

WETLAND TREE & SHRUB PLANT GROUPS				
SPECIES (COMMON NAME)	QTY/ GROUP	# GROUPS	TOTAL	FLAG COLOR
TYPE 'A'				
ABI BAL (BALSAM FIR)	4	13	52	LIME
FRA PEN (GREEN ASH)	3	13	39	WHITE
ULM AME (AMER. ELM)	3	13	39	RED
ALN INC (SPECKLED ALDER)	6	13	78	LIME
SAL SPP (WILLOW SHRUB SPECIES)	7	13	91	WHITE
TYPE 'B'				
FRA NIG (BLACK ASH)	3	12	36	ORANGE
PIC MAR (BLACK SPRUCE)	4	12	48	FL. PINK
THU OCC (N. WHITE CEDAR)	3	12	36	WHITE
ALN INC (SPECKLED ALDER)	7	12	84	LIME
VIB REC (N. ARROWWOOD)	6	12	72	RED

WETLAND TREE & SHRUB PLANT GROUPS – Cont'd	QTY / GROUP	# GROUPS	TOTAL	FLAG COLOR
TYPE 'C'				
CAR CAR (AMER. HORNBEAM)	3	9	27	PINK
FRA PEN (GREEN ASH)	3	9	27	WHITE
PIN RES (RED PINE)	4	9	36	YELLOW
COR SER (REDOSIER DOGWOOD)	6	9	54	ORANGE
SAM CAN (ELDERBERRY)	7	9	63	FL. ORANGE
TYPE 'D'				
FRA AME (WHITE ASH)	3	8	24	YELLOW
PIN RES (RED PINE)	4	8	32	YELLOW
TIL AME (AMER. BASSWOOD)	3	8	24	BLUE
COR AMO (SILKY DOGWOOD)	6	8	48	YELLOW
VIB LEN (NANNYBERRY)	7	8	56	BLUE

WETLAND STREAMSIDE (WSS) PLANT TOTALS		FLAG COLOR
SPECIES (COMMON NAME)	TOTAL	
ABI BAL (BALSAM FIR)	26	LIME
ACE SAC (SILVER MAPLE)	26	LIME
SAL NIG (BLACK WILLOW)	65	FL. ORANGE
THU OCC (N. WHITE CEDAR)	64	WHITE
ALN INC (SPECKLED ALDER)	455	LIME
SAL SPP (WILLOW SHRUB SPECIES)	320	WHITE
SAM CAN (ELDERBERRY)	130	FL. ORANGE

UPLAND TREE & SHRUB PLANT GROUPS				
SPECIES (COMMON NAME)	QTY/ GROUP	# GROUPS	TOTAL	FLAG COLOR
TYPE 'E'				
FRA AME (WHITE ASH)	1	21	21	YELLOW
PIN STR (WHITE PINE)	3	21	63	ORANGE
ARO MEL (BLACK CHOKEBERRY)	3	21	63	PINK
TYPE 'F'				
TIL AME (AMER. BASSWOOD)	1	16	16	BLUE
PIN RES (RED PINE)	3	16	48	YELLOW
VIB LEN (NANNYBERRY)	3	16	48	BLUE
BOUNDARY – PIN STR			11	ORANGE

PLOT DATE: 1/12/05
FILE NAME: planting plan 3.1.dwg

REVISIONS Description	APPROVED Me. DOT	FHWA

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

RIGGS BROOK MITIGATION SITE

AS–BUILT

MITIGATION PLAN

JANUARY, 2005

SHEET OF AUGUSTA, MAINE

AUGUSTA 556(44)

Appendix C

PHOTOGRAPHS

Photo 1. View to southeast (upstream) of Riggs Brook floodplain in the early spring. 4-20-06.

Photo 2: Area of streamside planting group #7 on west side of Riggs Brook in early spring. 4-20-06.

Photo 3: View to northwest (downstream) of trees and shrubs at upper end of streamside planting group #7 in early spring. 4-20-06.

Photo 4: Planted tree in streamside planting group damaged by ice. 4-20-06.

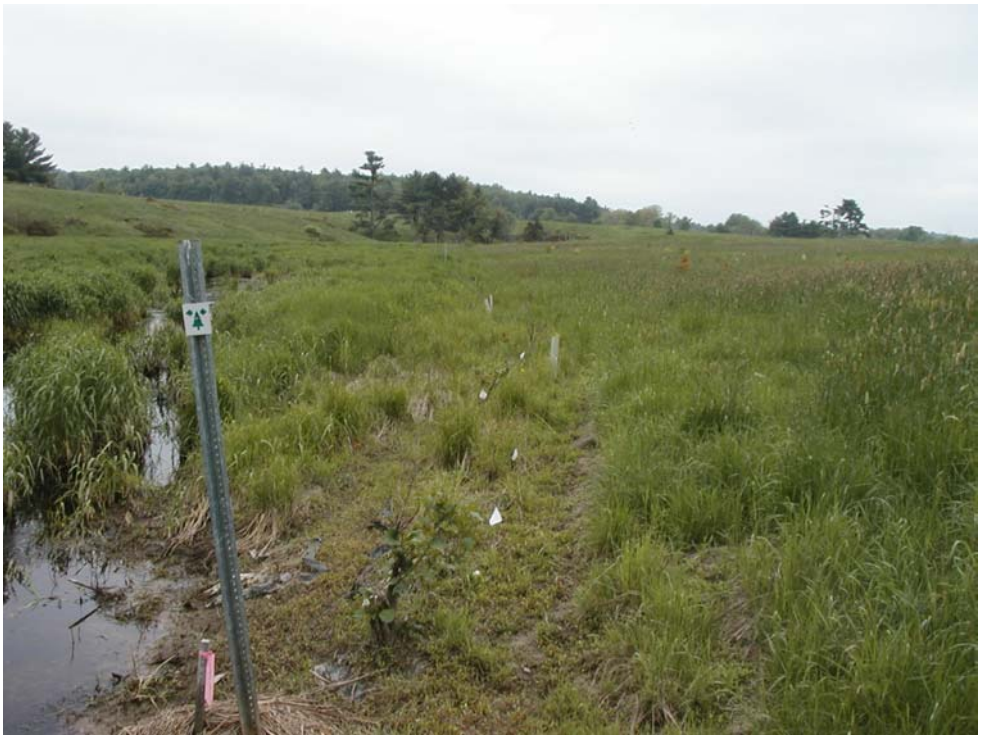


Photo 5: View to southeast (upstream) of streamside plant group #7 on west side of Riggs Brook floodplain showing limited shrub growth. 5-31-06.

Photo 6: View to north of streamside plant group #2 on east side of Riggs Brook floodplain showing scattered trees and shrubs. 6-1-06.

Photo 7. View to southwest (upstream) of section of streamside plant group #6 showing damage to plantings from flooding and wildlife. 6-1-06.

Photo 8. View to southwest (upstream) of section of streamside plant group #5 showing damage to plantings from flooding and wildlife. 6-1-06.

Photo 9: Willow stems sprouting from wattle installed in May 2005 along slope area near plant group 6F. 5-31-06.

Photo 10. Wattles installed in shallow trench near plant group 6F that failed to establish. 6-1-06.

Photo 11. Coir log after placement of willow wattles and live stakes. 6-1-06.

Photo 12: Formerly eroded streambank area on west side of Riggs Brook two to three years after seeding and installation of live stakes. 6-1-06.

Photo 13: Shrubs planted in upland plant group; shrub on right has weed barrier blanket around base. 6-2-06.

Photo 14. Non-native European alder (*Alnus glutinosa*) planted within the streamside planting group by landscape contractor. Note browse by beaver. 9-7-06.

Photo 15. View to the northeast of upland planting group 2E in the northern section of the site. 6-1-06.

Photo 16. Planted green ash in tree protector within wetland planting group. 9-7-06.