Boyle Associates, Environmental Consultants
Mailing Address:
25 Dundee Rd.
Gorham, ME 04038
Phone: 207.591-5220
www.boyleassociates.net

Memorandum

To: Jay Clement (USACE), Marybeth Richardson (MDEP)

Cc: Arthur Sewall (Jetport), Larry Grondin (Grondin), Jim Boyle (Boyle Associates); Ruthann Brien (USACE); Angela Blanchette (Town of Scarborough)

From Heather Storlazzi Ward (Boyle Associates) on behalf of Grondin Aggregates/Larrabee Farms Wetland Mitigation Site

Date: March 2, 2016

Re: **Portland International Jetport Wetland Mitigation Project at Larrabee Farms Wetland Mitigation Monitoring Report – Year 6 (2015) Remediation and Project Update**

Corps Permit No.: NAE-2008-00053
Maine DEP NRPA Project Number: L-13760-AN-A/TG-AO-N

2015 marks the sixth year since construction of wetlands created as compensation for functions and values impacted by the construction of the Portland International Jetport (PIJ) project was completed. According to the approved mitigation plan for this project, complete monitoring procedures are not required in the sixth year, however the site is not currently meeting all of the performance standards set forth in the mitigation plan and remedial activities to address these deficiencies were initiated in 2015.

In September of 2015, along with representatives from Grondin and Boyle Associates, the Corps of Engineers performed a site inspection. Overall comments were positive and observations made by the Corps are similar to those outlined by this memorandum. Areas of concern or interest identified by the Corps include invasive species. Their memorandum of findings is attached at the end of this report.

This memorandum will provide an update of the current state of this wetland creation project, describe remedial actions that occurred in 2015, and lay out site assessments planned for the remaining four year monitoring period.

Annual Monitoring

Construction of the Portland International Jetport project impacted approximately 11.58 acres of freshwater wetland (0.64 acres of emergent, drainage ditch wetland, 3.85 acres of mixed forested/shrub/emergent wetlands, 2.2 acres of emergent wetland which includes 1.61 acres of NRPA-defined wetlands of special significance and 4.89 acres of mixed emergent/scrub-shrub wetland). Wetland compensation took place at two sites, Maine Wetlands Bank and Grondin

Aggregate's Larrabee Farms Wetland Mitigation Site, a multi-user mitigation project site. Wetland compensation for the PIJ expansion at Larrabee Farms includes permanent protection of 100 acres consisting of 3.5 acres of wetland creation (1 acre PEM and 2.5 acres PSS), preservation of 58.5 acres of existing upland and preservation of 38 acres of existing wetland (including approximately 7,000 linear feet of the Nonesuch River).

The mitigation plan for the project outlines that wetland creation and buffer areas will be assessed annually during the summer growing season (May-October) for at least 10 years. Monitoring has taken place twice per season during the first through fifth years following planting; one visit in the spring to assess general site health and identify any corrective needs and a second visit later in the growing season to assess plant mortality/vitality and to gather data for the annual monitoring reports. After year five, full data gathering and reporting procedures occur only during the 7th and 10th years, if the site is not meeting the performance standards. If the site is meeting all of the success criteria, the fifth year will be the final year of monitoring. Unfortunately, at the end of year five, the site was not meeting all of the performance standards, thus sixth year monitoring took place in 2015. Unfortunately again in 2015, the site does not meet the performance standards and additional monitoring and reporting will be provided in the 7th year. The following section provides an overview of the successes at the site to date, which performance standards are being met and what remedial activities are occurring.

Site Successes and Deficiencies

In general, the wetland creation areas are responding well after six growing seasons. In the wetland creation area, hydrology is adequate and wetland conditions are being achieved. As planned, the site is progressing toward a diverse mix of common wetland covertypes and successfully replacing functions and values of the impacted wetlands. Herbaceous plants are growing well, aerial cover is high and established woody species are doing well. Many of the red osier dogwood (*Cornus sericea*) specimens have new growth and appear healthy. Winterberry (*Ilex verticillata*) specimens are smaller and have limited new growth, but still appear healthy. Past experience has shown that winterberry takes longer than other species to successfully establish. Despite the healthy appearance of planted individuals, a shortfall of winterberry was observed, resulting in an unmet diversity standard, described below. A total of 98 individual winterberry plants were counted in 2014. This is an improvement from 2013 where a total of 41 was counted, but far short of monitor's expectations, considering the addition of 150 new plants in 2014. It seems unlikely, given the healthy nature of observed individuals and lack of dead individuals, that approximately half of the newly planted individuals were lost. Some observer bias could be attributed to the low counts (missed plants due to thick herbaceous cover). Monitors propose additional surveys for the overall health and vigor of the newly planted red osier dogwood and winterberry in early spring of 2016, prior to the emergence of the thick herbaceous layer.

As described above, the diversity of planted woody species is not meeting the permitted goal of four different species with at least 50 plants per acre. Currently, there are three species that have a density greater than 50 plants/acre: speckled alder (*Alnus incana*), red osier dogwood and pussy willow (*Salix discolor*). A fourth species, winterberry, is slightly shy of the 50 plant per acre goal at 42 plants per acre. While the site performance standards are not technically being met, many additional woody trees and shrubs are present across the site including red maple (*Acer rubrum*), highbush blueberry (*Vaccinium corymbosum*), black chokeberry (*Aronia melanocarpa*) and others contributing to a diverse array of woody species.

Monitors believe that the combination of thick herbaceous cover and the fact that winterberry in particular takes longer than most species to become established (and in some cases may appear dead) may be contributing to a low success rate. We recommend a comprehensive count of winterberry during the early spring of 2016, prior to the emergence of the herbaceous layer.

Remedial Actions Completed in 2015

Included as part of the remedial action measures in the 2014 Mitigation Monitoring Report, monitors recommended that monitoring and control of invasive plant species continue. Site walk overs to identify colonies of invasive plants around the site were conducted in mid-September, 2015. Infestations of invasive plants were found within and directly adjacent to the creation basin. Invasive species noted included: purple loosestrife (*Lythrum salicaria*), European alder (*Alnus glutinosa*), crown vetch (*Securigera varia*), bittersweet nightshade (*Solanum dulcamara*) and multiflora rose (*Rosa multiflora*). Invasive species locations were marked on a plan and provided to an approved licensed herbicide applicator.

Purple loosestrife: Monitors observed a moderate amount of purple loosestrife throughout the basin. The density of these plants will be assessed in the spring of 2016 to determine whether biological control should be considered. To date, chemical and mechanical control efforts have been used. Chemical and mechanical control efforts will continue unless the spring assessment results in a strong case for biological control. If chemical and mechanical control is recommended then the current herbicide contractor (Absolute Property Management) will apply herbicide to the purple loosestrife during the mid-summer 2016 when it is in flower and before it goes to seed. At this point, annual herbicide applications are limited in scope and target the open, central portion of the site. A key to long-term control without the use of herbicides will be contingent upon the establishment of woody vegetation enough to shade out the seedlings and keep loosestrife spread in check indefinitely. This trend is already beginning in the northern portion of the PSS creation area where speckled alder has created a closed canopy, thus reducing the viability of purple loosestrife individuals.

European alder: Several European alders were identified during the 2014 monitoring. These individuals were flagged during the fall of 2015 then cut and left on site as a woody debris component. The stumps were treated with undiluted triclopyr. Monitors will assess the success of the herbicide treatment during the 2016 growing season.

Crown vetch: Several areas of crown vetch were identified within the wetland basin. The vetch appears to be concentrated to the drier, planned mounds within the wetland basin. An herbicide application was used for control in 2012 and while monitoring in 2013 revealed that chemical control was successful, crown vetch rebounded with a vengeance in 2014. Formerly dead patches nearly doubled in size. In 2015, monitors worked with a licensed applicator to seek out a different herbicide than previously applied, with the intent of more effective control. An undiluted application of triclopyr was used during the fall of 2016. A site inspection several days after the herbicide application revealed shriveled and dead vegetation. Long term control will be monitored during the 2016 and 2017 growing seasons. A fast-growing seed mix of native vegetation will be applied to treated areas during the early spring of 2016.

Bittersweet nightshade: Bittersweet nightshade has not been observed in significant quantities at the Jetport site in past monitoring years. This year marks a proliferation of the climbing invasive vine. Left on its own, this invasive species will continue to climb the alders and eventually choke them out. State of Maine and Massachusetts invasive species control experts were contacted to gain information regarding successful control of this species. These professionals concurred with the monitor's suggestion to pull the individual plants in this first

year. Because the vine climbs the alder trunks and stems, reaching the crown in many cases, a foliar herbicide application was not chosen as a method of control. It was reasoned that the herbicide would likely kill or impair the alders under the nightshade. As a result, the herbicide contractor hand-pulled the vine and removed all stands of nightshade to the best of reasonable ability. The nightshade will likely re-sprout, so multiple pullings may be necessary, perhaps over several years depending on the establishment of the infestation and whether it has already set seed into the soil. Stem swabbing was also considered, however in an effort to remove viable seeds and save on labor costs, mechanical removal was chosen as the most effective method of control for 2015. Stem swabbing may be considered for stem resprouts next year, if necessary. All plant material was removed from the site, left to desiccate in an appropriate area and disposed of.

Multiflora rose: A few well-established individuals of multiflora rose were observed in the northern end of the wetland basin. During the fall of 2015, a licensed herbicide applicator cut the rose and applied herbicide to the stumps. Any plants with a seed were removed from the site.

Future Monitoring

Complete monitoring procedures for the site will take place in 2017 (Year 7) to assess the on-going health of the site and assure that it is successfully replacing the functions and values impacted by the construction of the Portland International Jetport project. If the performance standards are not met in year 7, year 8 will be a quick site assessment and update of remedial actions and outcomes. Monitors will pay particular attention to the status of the shrub survivorship and diversity thresholds in the PSS component and provide a discussion detailing their expected survivability in next year's (Year 7) Mitigation Monitoring Report.

If you have any questions or would like to conduct a site visit, please contact Larry Grondin (207-854-1147) or myself (207-317-6630).

Thank you,

Heather Storlazzi Ward, Senior Wetland Scientist/Project Manger
heather@boyleassociates.net

Attachment 1: Army Corps of Engineers Memorandum

CENAE-R-PT 24 September 2015

MEMORANDUM FOR File

SUBJECT: Site visit to Larrabee Farms mitigation site for Portland Jetport; Scarborough, Maine; File No. NAE-2008-00053

Inspection Date: 21 September 2015
Time arrived: 1145 Time departed: 1230
Weather conditions: sunny, 65 degrees

This is the third of the mitigation projects at this pooled mitigation site, completed approximately seven years ago.

Overall, the site appears to be doing well, with good vegetative cover and hummocky microtopography. Early on there had been some heavy concentrations of cattail (*Typha latifolia*), but some responsive regrading allowed for establishment of a more diverse plant community in these areas. There are still some small patches of cattail, which appear even smaller than last year, but they add to the diversity. Alders are establishing well in portions of the site and the majority of them appear to be the native *Alnus incana*. There are a few specimens (3-4) that appear to be the invasive *Alnus glutinosa* and these specimens have been tagged for immediate removal. Replacing such removed individuals is not necessary since they make up only a very small proportion of the alders present. In addition to the alder and cattails, plants commonly present at the site include *Scirpus cyperinus*, *Juncus effusus*, *Carex lurida*, and many species in the aster family (Asteraceae).

Monitoring and control of invasive species should continue. For the first time, they are considering hiring commercial herbicide applicators. Crown vetch (*Securigera varia*) continues to exist in several patches and there are plans to treat them this year. This is an off year for monitoring.

PAUL MINKIN
Senior Wetland Scientist
Environmental Resource Section
Policy and Technical Support Branch