



SLELO PRISM: North Sandy Pond Invasive Species Management and Dune Restoration

2022 Year End Project
Report



December 2022



Table of Contents

1	Initial Work Plan	1-5
1.1	Technical approach	1-5
2	On-site Activities Summary	2-6
2.1	Mechanical Removal of <i>Phragmites</i> Plant Material.....	2-6
2.1.1	Spring	2-6
2.1.2	Fall.....	2-6
2.2	Chemical Management of <i>Phragmites</i>	2-7
2.3	Botanical Survey and Native Species Inventory	2-8
2.4	Native Plant Installation	2-9
3	Observations and Recommendations for Future Activities	3-11
3.1	Observations	3-11
3.2	Recommendations for Future Activities.....	3-11

Appendices

Appendix A... Work Plan
Appendix B... Herbicide Label
Appendix C... Transect Map & Monitoring Photographs
Appendix D... Transect Data & Site Inventory
Appendix E... Planting Grid & Table
Appendix F... Field Reports

1 Initial Work Plan

1.1 Technical approach

In accordance with the requirements outlined in the email conversations from March 11, 2022 and the general scope document received on March 18, 2022, Cardno submitted a site specific work plan to SLELO PRISM on April 22nd. SLELO PRISM responded with their comments on April 27th, and a final draft was submitted on April 29th. This work plan can be found in Appendix A.

2 On-site Activities Summary

2.1 Mechanical Removal of *Phragmites* Plant Material

2.1.1 Spring

On May 18th, the crew mobilized to North Sandy Pond to clear dormant stands of common reed (*Phragmites australis*) found along the pond and dunes. After walking the site with the SLELO PRISM representative, it was decided crews would focus their efforts on the populations found at the north end of work area where the plants were the thickest. The populations that were less dense or more sporadic in nature would be left standing to assist in locating the plants during the herbicide treatment phase. Working in pairs, the crews began cutting and gathering as much dead plant debris as possible to minimize the amount that would be left floating in the pond. While cutting, the crews were careful to leave unharmed as many of the small *Salix spp.* shrubs as possible. The debris was piled along the path and then placed in to large, heavy duty tote sacks holding approximately 1 cubic yard. Approximately 7 of these large sacks were filled and taken back to the South Sandy Creek parking lot for disposal in the rented dumpster.



Crew members removing dead Phragmites stems

2.1.2 Fall

To wrap up on-site activities for this season, Cardno returned to the site on November 30th to again cut and remove the dead *Phragmites* stems from the dense stands located at the northern end of the work area. Water levels in the pond throughout the summer had been relatively low allowing the stand to expand further into the pond during the growing season. The water was even lower at the time of site work allowing for easy access to the *Phragmites* populations. Crewmembers again used brush saws to cut the dead stems as close to the ground as possible and debris in the lowest areas was again hand collected to place in large, heavy duty tote sacks. Five of these sacks were filled and removed from the site for disposal at an appropriate facility. Any additional *Phragmites* stems that were cut were left in place to decompose.



Phragmites patch after mowing

2.2 Chemical Management of *Phragmites*

In preparation of treating the site, Cardno worked with SLELO PRISM and partners to carefully consider many factors towards dune stability and ecology to ensure that this project was having the most favorable impact on invasive species reduction while minimizing impacts on all other important dune species. SLELO PRISM further consulted with both Onondaga Audubon and USFWS to ensure selection of the most effective and efficient methods and approaches of treatment. A recommendation that the OPRHP Piping Plover Project Crew Leader assist on the ground to observe plover site-use while the *Phragmites* removal work commences was accepted and added into the final work plan.

In the original work plan, Cardno proposed applying Vastlan at a 1% concentration primarily through a hand-wicking or cut/drip method in early spring. Vastlan is a triclopyr-based material that has been approved for use in wetlands and is labeled for control of *Phragmites* specifically during an earlier stage of plant growth. Stakeholders involved with North Sandy Pond had concerns with how the site work would affect the migratory bird population using the site during June and July. These entities asked that work be put on hold until a path forward could be settled upon to satisfy all involved. Unfortunately, this delay gave the *Phragmites* time to grow to a height that was outside the label recommendations for Vastlan, the initial chemical that was proposed for use. Cardno then began the search for another wetland approved, non glyphosate herbicide that was labeled for use on mature *Phragmites* plants. The herbicide Clearcast was eventually proposed for use and upon approval, an application for its use was submitted to the NYSDEC as part of the area to be treated was near standing water. The label for this chemical can be found in Appendix B.

During this time, water levels in the pond continued to drop and it was determined that herbicide applications would be far enough from the water's edge to proceed. On September 16th, Cardno was able to complete an initial herbicide treatment on the *Phragmites* populations located throughout the work area using Clearcast applied at 2% concentration. Applications were done with a back pack sprayer in areas of thick growth and few desirable plants. However, in areas of sparse populations or where the *Phragmites* were mixed with other native plants, applications were done by hand-wicking the foliage to minimize off-target damage. As with all herbicide applications, a blue marker dye was also mixed into the herbicide solution to aid in visualizing where chemical had been applied. A total of 64 fl oz of the herbicide was applied over the entire work area.



Phragmites treated via hand-wicking near desirable species

Due to the delays, there was only time for one herbicide application during the season before the plants went dormant for the season.

2.3 Botanical Survey and Native Species Inventory

On August 10, a Cardno staff scientist conducted the botanical survey and species inventory at North Sandy Pond. Prior to arriving on-site, three prospective transect locations were identified that would provide a thorough representation of the site. The starting point of each transect was marked on the map file allowing the staff to locate the point in the field with the use of a R1 GPS unit and the online map. Once at the site, these transect starting points were identified and marked with a PVC post. The end points were also marked with a PVC post once each of the transect had been measured out. Within each transect, the quadrats were spaced out equally and located by pacing from one quadrat to the next. One "pace" is approximately 3 feet in length. Pacing on all transects begins at the back of the quadrat previously surveyed. The quadrats are not marked with either a post or mapped point.

Below, Table 2.1, lists the details for each transect and their associated quadrats. Note Transect 3 has the least number of quadrats due to the sparse nature of the *Phragmites* population at the southern end of the project area. A map of the transects can be found in Appendix C.

Transect ID	Quantity of Quadrats	Paces between each quadrat	Transect notes
1	10	15	Q1 is located at the transect start post
2	19	15	Q1 is located at the transect start post; break in the transect after Q12 due to private beach access fence...spot has been marked on the map
3	5	10	Q1 is located at the transect start post

Table 2.1: Transect Details

Before starting a transect, a photograph was taken at the post looking down the transect line. These photographs can be found in Appendix C. The Cardno staff member would then proceed with surveying each quadrant. Data taken included total vegetative cover, all species encountered in the 1 m² plot, and

the individual percent cover of those species. At the end of the transect, another photograph was taken looking back along the transect line. The process was repeated for each transect.

As the staff member was walking between transects and quadrats, they made note of any vegetative species observed. After completing the transect work, they also performed a “meander” survey of the project site, looking for any other species that might not have been observed during the transect survey. This list of species can be found in Appendix D, along with the data from the transect survey. These reports were initially generated using the Universal FQA calculator and NatureServe-NEIWPCC Northeast FQA Project database for the Eastern Great Lakes and Hudson Lowlands – Ecoregion 83 published in 2018. However, when comparing the data results with species information displayed on the New York Flora Atlas, there were three species that showed different native statuses. The reports were adjusted to match New York Flora Atlas’s data on those species. They include false indigo bush (*Amorpha fruticosa*), lamb’s quarters (*Chenopodium album*), and common St. John’s wort (*Hypericum perforatum*).

To conclude the survey, the Cardno staff member also established two photostations on the site. Photographs were taken looking in all four cardinal directions. These photographs can also be found in Appendix C.

2.4 Native Plant Installation

Cardno began composing a list of potential plants species to be used in revegetating the project area. The purchase of this material was funded by the Town of Sandy Creek’s Water Quality Program grant, and the tentative list of species was submitted to SLELO PRISM before attempting to source the material. Upon approval, the search began. Unfortunately, many of the more unique dune species were commercially unavailable within a reasonable geographic distance, and adjustments to the plant list had to be made to utilize the full budget. The final approved list of 19 species, comprising of 1,550 individual plants, that were installed at North Sandy Pond can be found on the next page in Table 2.2.

As Cardno received the plant material in two batches, installation was split between two mobilizations. Planting began September 23rd and 24th, and with assistance from SLELO PRISM, all the container shrubs and a portion of the plug stock was installed. Stock was laid out in groups along the beach and Cardno staff installed the plant material with the use of shovels for the container trees and shrubs, while plug stock was planted with the use of planting bars. Locations chosen for planting were based on hydrological needs and filling in any bare areas observed on the dunes. Attention was also given to what species were already growing in an area and species were planted near known associates. Generally, upland species were placed on the dunes, mesic species were either placed in bowl-like depressions on top of the dunes or along the base of the dune, while wet obligate species were placed along the pond shoreline or in the sandy shelf that is inundated during part of the year. A total of 572 herbaceous plugs and 140 woody container plants were installed during this first mobilization.

The second mobilization occurred the following week on September 28th. Again, SLELO PRISM was able to assist for a portion of the day by helping with record keeping as the installation occurred. The planting process and methodology was similar to the first visit, however a planting bar was used to install all the material as it was entirely plug stock. Cardno installed an additional 550 herbaceous and 288 woody plugs.

In an effort to track where plants were installed and track survival in the future, a grid of numbered polygons was created on a map of the site and uploaded to an online mapping tool. As plants were installed, a staff member was able to use a R1 GPS device and the online map to track what polygon the plant was installed in and record the location. Appendix E shows this grid and a table detailing where the plants were installed.



Installed Asclepias, Juniperus, and Rosa plants

Species	Type	Quantity	Container size
Arctostaphylos uva-ursi	shrub upland	96	32 tubling
Asclepias incarnata	herbaceous wetland	100	50 plug
Asclepias syriaca	herbaceous upland	200	deep 50 plug
Calamagrostis canadensis	herbaceous wetland	100	50 plug
Cephalanthus occidentalis	shrub wetland	96	32 tubling
Cornus racemosa	shrub mesic	96	32 tubling
Elymus virginicus	herbaceous wet mesic	100	deep 50 plug
Eupatorium perfoliatum	herbaceous wet mesic	50	50 plug
Euthamia graminifolia	herbaceous mesic	128	128 plug
Hibiscus moscheutos	herbaceous wetland	50	50 plug
Juniperus virginiana	tree upland	35	2 gal
Persicaria amphibium	herbaceous wetland	72	deep 72 plug
Pontederia cordata	herbaceous wetland	50	50 plug
Rosa virginica	shrub upland	50	1 gal
Rosa virginica	shrub upland	25	2 gal
Sagittaria latifolia	herbaceous wetland	50	50 plug
Salix discolor	shrub wet mesic	30	2 gal
Schoenoplectus acutus	herbaceous wetland	100	50 plug
Schoenoplectus pungens	herbaceous wetland	50	50 plug
Sparganium eurycarpum	herbaceous wetland	72	deep 72 plug
19 species	Totals	1,550	

Table 2.2: North Sandy Pond Plant List

3 Observations and Recommendations for Future Activities

3.1 Observations

The North Sandy Pond project area is a unique challenge for invasive control as not only are the *Phragmites* found along the pond shoreline, they are also establishing on the top of the dune where there is enough moisture to support a more mesic vegetative community. The continual manmade disturbances of dredging and moving sand around the site also provide additional challenges as this activity spreads the *Phragmites* rhizomes to areas where the species was previously absent.

There are several other invasive species that were observed during the monitoring visit that will require monitoring and possible control measures if they increase in frequency. These include purple loosestrife (*Lythrum salicaria*), Marrow's honeysuckle (*Lonicera morrowii*), and spotted knapweed (*Centaurea stoebe*).

However, transect and meander survey information shows that native vegetation is in abundance on the site with 86% of the observed species being native. During site visits, it was noted that even in the thicker areas of *Phragmites*, native species such as river bulrush (*Bolboschoenus fluviatilis*), beach grass (*Ammophila breviligulata*), and willow species (*Salix* sp) were growing abundantly. These species generally fill in quickly once the invasive species is brought under control.

3.2 Recommendations for Future Activities

Cardno recommends the following actions for continuing work at North Sandy Pond:

- Continue with aggressive control of the *Phragmites* populations at both the north end of the work area and along the top of the dunes.
- Continue with the botanical transect monitoring for an additional 9 years, or until the *Phragmites* population is considered eradicated based upon its presence no longer being detected within the project area. Tasks to be carried out during these visits should continue to include a meander survey, pictures taken at the established photostations, and transect sampling performed with the use of permanently marked quadrats (both mapped and staked). Adding a second event in late spring may help identify potentially problematic populations of invasives earlier in the season and allow time for management during the same growing season. Data should be compared with past years' results in order to evaluate emerging issues or identify species that could be used to enhance the existing native vegetation.
- Develop a plan to address the additional invasive species on-site, particularly the purple loosestrife and spotted knapweed. This should include monitoring the populations and possible herbicide treatments. Treatment options include the use of Tordon or Transline for an early season application to the spotted knapweed rosettes, and applications of a triclopyr-based herbicide on purple loosestrife plants while in bloom.
- Once *Phragmites* populations are reduced, monitor the areas and identify any significant areas of bare vegetation that may need supplemental native plantings.
- Options for sand or dredge material management to prevent the continued re-introduction of *Phragmites* into the project area should these activities continue. Also, public outreach aimed at dredging firms and others creating manmade disturbances on-site and around North Sandy Pond could be organized. Such outreach may be in the form of signage, brochures, or webinars.

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Management and
Dune Restoration

2022 Year End
Project Report

APPENDIX

A

INITIAL WORK PLAN

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North Sandy Pond
Invasive Species
Management and
Dune Restoration

2022 Year End
Project Report

APPENDIX

C

TRANSECT MAP &
MONITORING PHOTOGRAPHS

North Sandy Pond Transects and Photostations



Transect photographs - August 10, 2022



Transect 1 - start



Transect 1 - end



Transect 2 - start



Transect 2 - end

Transect and Photostation photographs - August 10, 2022



Transect 3 - start



Transect 3 - end



Photostation 1 - looking north



Photostation 1 - looking east

Photostation photographs - August 10, 2022



Photostation 1 - looking south



Photostation 1 - looking west



Photostation 2 - looking north



Photostation 2 - looking east

Photostation photographs - August 10, 2022



Photostation 2 - looking south



Photostation 2 - looking west

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North Sandy Pond
Invasive Species
Management and
Dune Restoration

2022 Year End
Project Report

APPENDIX

E

PLANTING GRID & TABLE

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North Sandy Pond
Invasive Species
Management and
Dune Restoration

2022 Year End
Project Report

APPENDIX

F

FIELD REPORTS









WEEKLY FIELD REPORT

ACTIVITY	HRS./ STAFF	# STAFF	TOTAL HRS.	NOTES (density, species, etc.)
Common reed stem removal	8	3	24	
Tarp removal	2	1	2	
TOTAL				



Cardno crewmember a using brush cutter to mow Phragmites stems

WEEKLY FIELD REPORT



South Sandy Creek Phragmites patch post mowing



North Sandy Pond dense Phragmites patch post mowing

About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Cardno Zero Harm

Cardno
ZERO
HARM
EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.