

Assateague Island National Seashore

Invasive Plant Treatment Report 2018



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Introduction

During 2018 Assateague Island National Seashore's (ASIS's) Vegetation Management Department worked to monitor or control infestations of: *Ailanthus altissima*, *Artemisia vulgaris*, *Carex kobomugi*, *Cirsium arvense*, *Clematis terniflora*, *Elaeagnus umbellata*, *Elusine indica*, *Eragrostis curvula*, *Glechoma hederacea*, *Hedera helix*, *Lagerstroemia* spp., *Lezpedeza cuneata*, *Lonicera japonica*, *Mentha* spp., *Microstegium viminium*, *Miscanthus sinensis*, *Paulownia tomentosa*, *Pennisetum alopecuroides*, *Phragmites australis*, *Pinus thunbergii*, *Rosa multiflora*, and *Rosa wichuraiana*.

Non-native invasive plant infestations that were treated by Vegetation Management during fiscal year 2018 (FY 2018) occurred in the Park on the island both in Maryland and Virginia, as well as around the park's Headquarters area, particularly in the vegetated buffers that border the property. Also, a small number of treatments did occur in the Assateague State Park. Many, but not all, previously documented and treated infestation sites were monitored during FY 2018 and those sites found to be inactive during each of the past three years were determined to be controlled, or eradicated.

ASIS was able to continue invasive plant treatments in 2018 with the assistance of (4) Student Conservation Association Native Plant CORPS personnel, of which (1) was a designated Crew Leader and the other (3) were Crew Members. This combined Vegetation Management Crew, overseen by the Permanent Biological Technician (Plants) and Resource Management Chief, were able to continue making progress in the control of 22 different plant species.

During the fall of 2018, ASIS received some much needed assistance from the Mid Atlantic Exotic Plant Management Team (MA EPMT) who came to assist us in treating *P. australis* at Burn Unit 8, the Life of the Forest Trail and also *M. viminium* along the Ferry Landing Road, where it had not yet crept into the adjacent forested lands.

Methods

ASIS Vegetation Management Program Design 2009-2018

The ASIS Vegetation Management Program follows the alien species guidelines found at the NPS inventory and monitoring website (<http://science.nature.nps.gov/im/monitor/index.cfm>) and employs the North American Weed Management Association (NAWMA) standards. The APMP also refers to the Bureau of Land Management's (BLM) Technical Reference 1730-1: Measuring and Monitoring Plant Populations and the Nature Conservancy Weed Handbook for guidance on monitoring and treating targeted alien plant populations. The ASIS Vegetation Management Program database was updated to include 2018 activities. During FY 2018 the ASIS Vegetation Management Program continued to expand its management of *P. australis* with large scale ground treatments and continued to treat/ retreat the previously mapped/ treated infestations associated with this monitoring and management project.

Data Management

The ASIS Vegetation Management Program database documents the treatment of each targeted alien plant infestation. Multiple infestations are often grouped into sites for record keeping and reporting purposes. The use of Site names has been abandoned because the process was found to be burdensome and less informative than it had been intended to be.

To indicate multiple different treatments on a single day, each treatment was given an "Rx Code" that included the characters "Rx" and the date of the treatment and if more than 1 treatment was conducted on that day the filename was appended with discreet numbers added to the end of the filename. The next treatment, for example, on 7/5/2016 would be labeled "Rx070516_2". This was especially useful in the naming of polygons that represented separate treatments that occurred on the same day.

Safety Precautions

A non-toxic marker dye has been used in herbicide mixtures at ASIS since 2004. The dye assures that proper coverage of the herbicide is administered on the foliage of targeted species. It also ensured the protection of the applicator by making visible, any possible contamination of his/her protective clothing. Proper protective equipment (PPE) was always employed during treatment activities. Employee safety is important to ASIS, especially when working with potentially hazardous materials. Therefore, the project lead assured that all equipment was in good working order and that all permits were current at the start of the season prior to large scale treatment activities. This methodology has been adopted as standard operating procedure by the ASIS Vegetation Management Team. The lead technician responsible for coordinating and implementing the Vegetation Management activities is a certified pesticide applicator (categories 2 and 5) in the State of Maryland who is therefore permitted to conduct and oversee the herbicide treatments described in this report.

Alien Plant Inventory and Monitoring

The criteria used to determine a plant species' status as an alien invasive are:

1. The species has been identified in a previous Vegetation Management report as an invasive alien Species of Management Concern (ASIS SOMC).
2. The species is included on the Maryland Department of Natural Resources Wildlife & Heritage Services' list of invasive non-native plants (<http://www.dnr.state.md.us/wildlife/invintro.asp>)
3. The species is considered to be potentially invasive by the NPS Natural Resource Program Center's Invasive Plant Program and its level of abundance at ASIS has been found to warrant Consideration by Park Managers.

Island searches for invasive plants were conducted in 2018 and Global Positioning System (GPS) units were used to record data. The Trimble® Juno 3B® handheld unit was the preferred unit in 2018. Whenever possible, the perimeter of larger alien plant infestations were mapped, however some infestations were too difficult to circumnavigate and were therefore documented using point data.

The primary focus of this years' work was to revisit previously known infestations of invasive plants on the island while looking for new, or previously unrecognized infestations of invasive, non-native plants.

Results

A summary of the ASIS Vegetation Management accomplishments during FY 2018 follows. This summary includes ASIS Vegetation Management monitoring and treatment activities as well as those activities that were conducted with the assistance of the MA EPMT. Treatment and monitoring information are presented in the narrative for each species. A summary of the ASIS Vegetation Management Program combined treatment information for the actions taken toward controlling *Phragmites australis* in 2018 are presented in Table 1. Treatment information for the combined ASIS/ EPMT actions taken in 2018 are presented in Table 2. Individual treatment actions and the time spent conducting the treatments for all species during 2018 are included in Table 3. The herbicide use log associated with treatment information of Table 3 are included for all Vegetation Management activities in Table 4.

Ailanthus altissima:



Image 1: *A. altissima* atop the dune which faces the inlet at the North End of ASIS. (NPS Photo)



Image 2: 2017 Seasonal Biotech Molly Struble treats *A. altissima* with a hack and squirt method at the top of the dune which faces the inlet on the island's North end. (NPS Photo)

A discovery of *A. altissima*, made by Biotech Jonathan Chase at the inlet and found during the Seabeach Amaranth census in August of 2017 returned this species onto our list of targeted plants, where it had been absent because we had thought the species to have been eradicated from the island after all treated sites had been inactive for 3 years. The site was monitored in August of 2018 and the previous years' treatments were found to have been successful; all trees that had been treated were dead and the

area beneath the treated trees were without any recruitment. This site must be monitored again in 2019 to look for recruitment.

A single *A. altissima* sapling was found and treated using the cut stump method 100 meters south of the inlet infestation adjacent to the forest while treating *Miscanthus sinensis* in the northern edge of the forest at the inlet.

The total area treated for this species in 2018 was 4 meters squared.

Artemesia vulgaris:

A sizable infestation of *A. vulgaris* had appeared in the vicinity of the ASIS Sinepuxent District Visitor Center since 2012, when it was first discovered and has been found to be active on the island, as well. On the mainland at Headquarters the plants are mostly found in the UMES vegetation buffer that runs the length of our southern property line. Control efforts at the Headquarters and Island infestations during 2018 continued in earnest as an apparent seed bank continues to produce many plants, particularly at the Headquarters property. The island populations, 1. The eastern guardrail by the entrance to the Park, 2. The Visitor Contact Station deer checking station on the island, 3. The north side of Bayside Drive between loops B and C and 4. The area directly surrounding the trash dumpster at the dump station on Oceanside Drive (discovered 2018) and lastly the southern side of the causeway, just near the Verrazano bridge. These 5 locations received monitoring and treatment as necessary during the summer season and only the 3rd location, the trash dumpster at the dump station on Oceanside Drive was active, requiring treatment.

The total area treated for this species in 2018 was 575 meters squared, or 0.1421 Acres.

Carex kobomugi:

The Seabeach Amaranth Restoration project provides the opportunity to locate new infestations of this species annually both before the census when we attempt to locate and protect as many plants as possible with cages in July, and also during the island wide census at the beginning of August. Because we have frequently found new infestations of this species in the past, as well as re-emergent, or newly emergent populations in previously treated sites, it is believed this species will be of continued concern for many years to come. It is recommended that searches for *C. kobomugi* continue at the same time searches to locate Seabeach Amaranth plants occur.

The Assateague State Park was a long time active site that received treatment in 2016 but was found to be inactive in 2017 and inactive again in 2018.

The total area treated for this species in 2016 was 8023.75 meters squared, or 0.1842 acres.

The total area treated for this species in 2017 was 369 meters squared, or 0.0908 acres.

The total area treated for this species in 2018 was 139 meters squared, or 0.0343 acres.

A comparison of the area treated from these last 3 treatment years indicate the great effectiveness of the current treatment method (a 2% solution of Imazapyr based herbicide (Polaris SP) with 0.5 % concentration of dye and non-ionic surfactant, because the same areas were searched each of the 3 years and while new plants were found in the 2018 search, those plants that were treated in 2017 were not encountered again in 2018. We can now comfortably state (Chase 2017) that we have this species under control island-wide, until the next storm delivers new recruits to the island. Therefore, this species must be managed until the threat is diminished.

Cirsium arvense:

This nefarious invader had become established in areas of the Maryland Headquarters starting in 2011 when various disturbances related to landscape buffer construction and large quantities of abandoned

vehicles altered mowing practices in the southern portion of this property. Judicious herbicide treatments have helped to reduce, but not eliminate, the prevalence of this species since 2011.

Treatments of *C. arvense* were conducted during June, August and October of 2018 on the Headquarters property in the un-mowed vegetation buffers (Headquarters Housing Buffer, UMES Buffer, Sinepuxent Buffer) that border our property to the north, south and east.

The total area treated for this species in 2018 was 854 meters squared, or 0.2110 Acres.



Image 3: The UMES Vegetation Buffer (denoted by green boundary)



Image 4: The Sinepuxent Vegetation Buffer (denoted by green boundary)

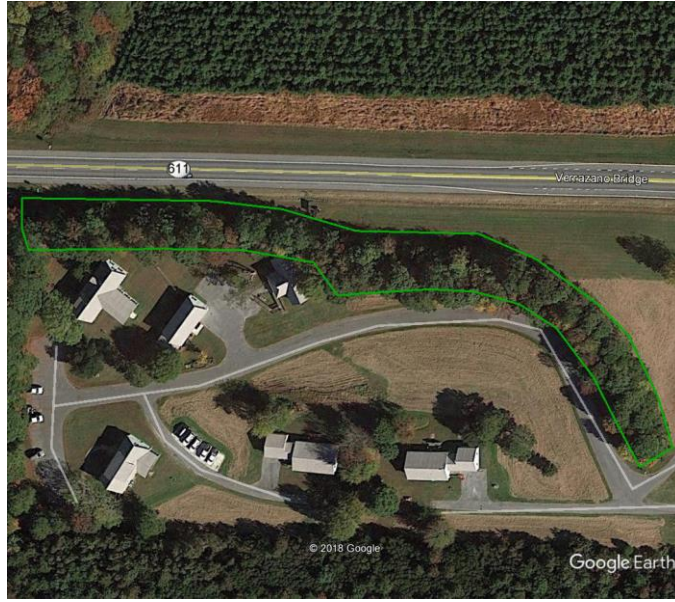


Image 5: The Headquarters Housing Vegetation Buffer (denoted by green boundary)

Clematis terniflora:

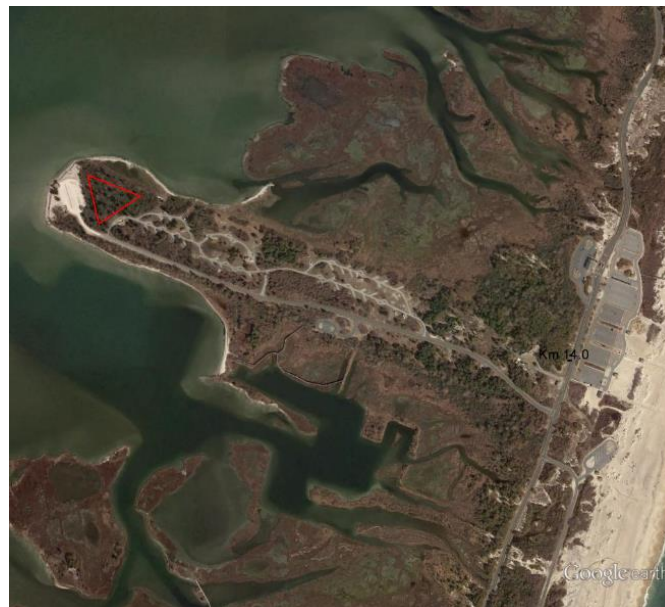


Image 6: *C. terniflora* treatment site at Bayside Drive (denoted by the red triangle)

The continuing reoccurrence of *C. terniflora* at the Bayside Peninsula is the result of an abundant seed bank, established by the original infestation over many years. The entire known infestation area (see Image 6) was found to be moderately infested during an early season assessment of the area in springtime of 2018. The site had been treated, in earnest, in late summer of 2016 after access trails were cut using a weed wacker hedge trimmer attachment. There were some vines discovered at the western portion of loop C campground on Bayside drive about 50 meters east of the dump station on the north side of Bayside Drive. The 2016 treatments were highly effective, but since then, the trails that had been cut to allow access have fully grown back over and there is a great need to treat this entire area once again in 2019, since there has been recruitment observed at the site.

C. terniflora had also been discovered on the causeway in 2 small patches that were treated for the Assateague State Park in August of 2016. In 2017, and again in summer of 2018, they were both found to be inactive.

No treatments were conducted on this species in 2018, however it will remain a target for treatment in 2019.

Elaeagnus umbellata:



Image 7: *E. umbellata* in flower (Credit: Bill Johnson (NPS))

E. umbellata saplings continue to emerge at the Headquarters area of ASIS, but none were of a detectable size in 2018, so no treatments were conducted on this species in 2018 on Park lands.

Very few trees of this species have become established on the island in the past, but there have been some found and treated on the State Park land near their pump houses along Bayberry Drive, as well as at the end of ASIS's Bayside Peninsula. Only the Assateague State Park location, found 100 meters west of the Nature Center was found to be active and received treatment in 2018. Twelve saplings were treated and a total of 24 meters squared, or 0.0059 acres comprised the area occupied by this treatment.

Because a great number of *E. umbellata* trees have been found bordering the Headquarters land in the past, as well as being well established throughout South Point, it is believed that this species will remain on our watch list for many years to come.

Elusine indica:

The bike trails and roadways are frequently encroached upon by this species which causes the pavement to crumble as the plants make their way through it, so we were asked by the Maintenance Division to treat these areas again in 2018. Both Maryland and Virginia were treated during the growing season. In Virginia the maintenance yard and the bike paths just west of the Chincoteague National Wildlife Refuge received treatments in 2018. In Maryland, the roads and bike trails on the mainland were treated in 2018.

The total area treated for this species in 2018 was 1,450 meters squared, or 0.3583 acres treated.

Eragrostis curvula:

E. curvula infestations have been treated in the Developed Area (which it has remained confined to) at ASIS since 2005 and the treatments have successfully kept this species under control. Treatments continued in 2018 along roadsides throughout the park and also in the footprint of the original loop A of the Bayside campground located just west of the Boneyard.



Image 8: *E. curvula* along Bayberry Drive just south of the Northern boundary marker (Credit: NPS ASIS 2004)

The total area treated for this species in 2018 was 55 meters squared, or 0.0136 acres.

Glechoma hederacea:

This is a newly discovered (2018) species that had become well established, triggering management action, in the “UMES Vegetation Buffer” that lies along the southern border of Headquarters between the road to the Paul S. Sarbanes Coastal Ecology Center and the entrance to Park Housing (See Image: 9).



Image 9: *G. hederacea* (Ground Ivy) forming large mat on ground. (Photo: Peter M. Dziuk 2003 Minnesota Wildflowers)

The total area treated for this species in 2018 297.5 meters squared, or 0.0735 acres.

Hedera helix:

A previously active infestation (1 of only 2 known occurrences on ASIS property) on the southeast corner of the Clement's inholding was found to be inactive in August of 2018 and did not require treatment. The second infestation, in the Headquarters Housing Vegetation Buffer behind Bayberry House, was treated in October of 2016. Later, the infestation was found to still be active when observed in August of 2018, so it was promptly treated again.

The total area treated for this species in 2018 was 37.5 meters squared, or 0.0093 acres.

Lagerstroemia spp.:

While monitoring the forest that lies 200 meters south of the Ocean City Inlet for the presence of *Miscanthus sinensis*, which has been treated there since 2004, a single Crepe Myrtle (*Lagerstroemia* spp.), sapling was discovered. We returned and treated this with a cut stump treatment using 50% Polaris brand herbicide.

The total area treated for this species in 2018 was 4 meters squared, or 0.0010 acres.

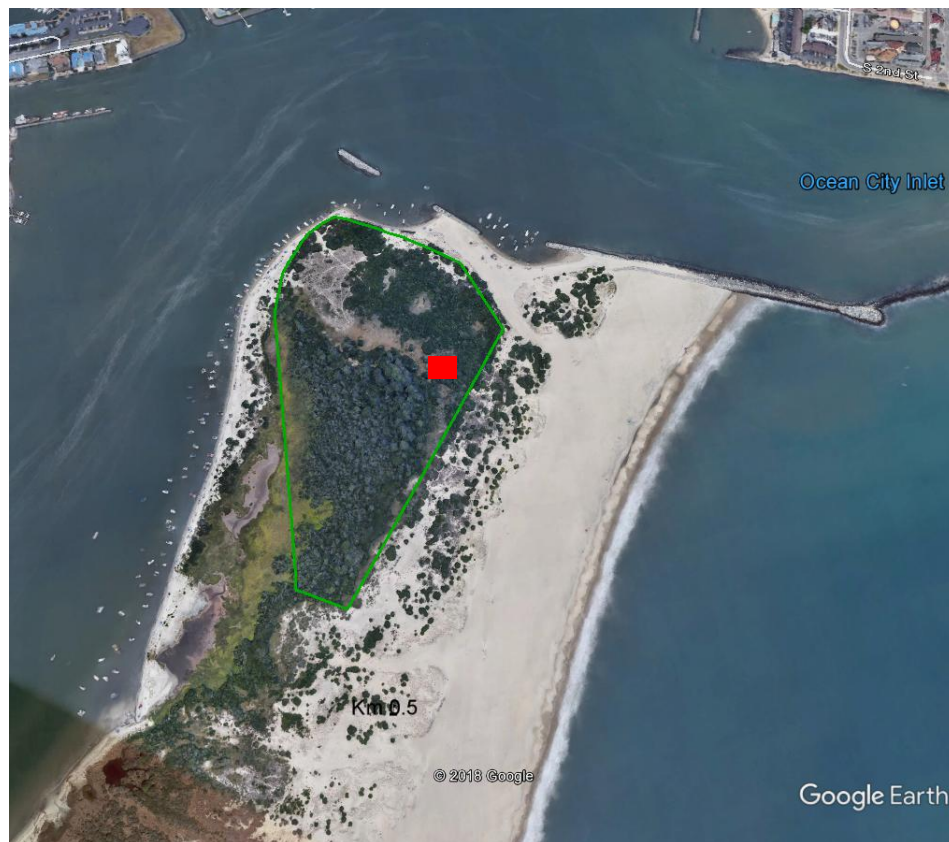


Image 10: The forest at the North End Inlet (denoted by green boundary), the red square indicates the location of the *Lagerstroemia* spp. specimen.

Lezpedeza cuneata:

The developed area in Maryland, and behind the Sinepuxent District Visitor Center in the Sinepuxent Vegetation Buffer were targeted for this species in 2018. The entire developed area was treated along with *E. curvula* in August of 2018. In all of the areas that were treated in 2018, significantly less plants were discovered after the 2017 treatments which indicates that the previous years' treatments are effective.

This species is present at (2) Park locations, they are: 1. The Sinepuxent Vegetation Buffer: behind the ASIS Sinepuxent District Visitor Center and 2. The Developed Area. Treatments have been conducted on the mainland in the past, but not on the island. This species should be monitored later in the growing season when it is most detectible. Because the level of detection has increased at both locations, treatments of this highly invasive species are recommended to continue in the fall of 2019.

The total area treated for this species in 2018 was 193.75 meters squared, or 0.0479 acres.

Ligustrum vulgare:

This species may now be considered to have been eradicated from the Headquarters property.

Lonicera japonica:

In 2016 ASIS had been greatly assisted by the NCR EPMT who helped them to treat *L. japonica* at the Bayside Campground peninsula. In May of 2017 all of the area south of Bayside Drive to the marshland was treated for *L. japonica* to tie in with the previous years' work. Additional treatments of *L. japonica* were conducted at the MD Headquarters property in the vegetated buffers there in 2017. In 2018 the following areas were targeted for treatment of this species: 1. Bayberry Drive, 2. UMES Vegetation Buffer and 3. Valentine's Road on the north side of the road between 250 to 400 meters west of the bridge on the north side of the road. Return treatments there are recommended in 2019.

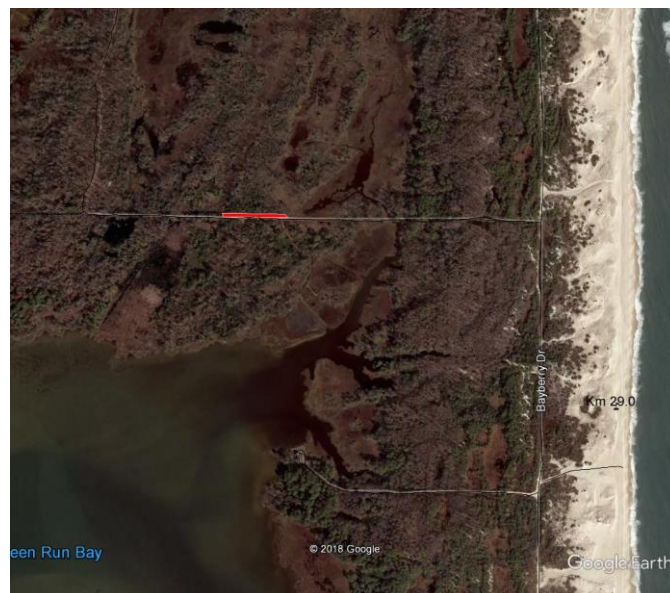


Image 11: *L. japonica* treatment area on Valentine's Road (represented by red polygon near image center).

The total area treated for this species in 2018 was 1,118.75 meters squared, or 0.2764 acres.

Mentha spp.:

A species of non-native, hybridized mint was discovered to have become well-established in the vicinity of Loblolly house in Park Headquarters Housing during the 2014 growing season. Because it had escaped the mowed areas behind the house and entered the vegetated islands that do not get mowed, it was able to flourish. The original source is unknown, but is thought to have been planted by a previous resident of Park housing.

This infestation in Maryland Park housing was again found to be inactive in 2018, due to it having been treated in 2016, which continued to be an effective treatment. This species required no treatment in 2018.

Microstegium vimineum:

A very sizable infestation, the extent of which remains unknown, but is thought to occupy more than an acre of cover, was discovered in the fall of 2014 by Seasonal Biological Technician Kristina Fahey. The infestation lies on land owned and managed by the Maryland Department of Natural Resources (MDDNR) which borders the southern and western boundaries of Park Headquarters.

This species had invaded the Park Headquarters all along our southern border, so we treated all discoveries of this species on the Headquarters property in August of 2018. Also, the infestation across the road from the well head on the north side of the road along Ferry Landing Road was treated with the assistance of the MAEPMT. All occurrences of *M. viminium* on ASIS land were treated in 2018.

The total area treated for this species in 2018 was 349.37 meters squared, or 0.0863 acres.

Miscanthus sinensis:

The population of *M. sinensis* that had been treated extensively in the past beginning in 2004, located on the North End in the forest 200 meters south of the inlet, was found to be active again in September of 2017, therefore in 2018 the area received a thorough gridding and treatment in 2018.

The (2) new, small sites discovered during searches in 2015, will require treatments in 2019. These sites were located at (NAD 1983, UTM Zone 18N) N 42247067, E 485229 (4 plants) and N 4224710, E 485231 (2 plants).

The total area treated for this species in 2018 was 200 meters squared, or 0.0494 acres.

Morus alba:

This species has been eradicated from the island.

Paulonia tomentosa:



Image 12: Closeup of the *Paulonia tomentosa* leaves (NPS Photo)

The single *P. tomentosa*, located at (NAD83, UTM Zone 18N) N 4224376, E 485171 was not monitored in 2018, but is presumed to have been eradicated from the 2016 treatment. Confirmation may be needed.

Pennisetum alopecuroides:



Image 13: *P. alopecuroides* behind the Sinepuxent District Visitor Center in September 2014 (NPS ASIS Photo)

This species had some new recruits established once again across our entire Headquarters property in FY 2018 (see Image 13), so treatments were conducted in October of 2017 and August of 2018.

The total area treated for this species in 2018 was 85 meters squared, or 0.0210 acres.

Phragmites australis:

The native coastal communities of Assateague Island National Seashore (ASIS) are threatened by the expansion of *P. australis* (Phragmites or common reed) an invasive, alien plant species. Assateague Island contains the only intact natural barrier island ecosystem remaining in the state of Maryland. At the mid-Atlantic regional scale ASIS represents the largest contiguous expanse of native coastal communities that still collectively functions as an intact barrier island ecosystem. This valuable and unique resource is being degraded and functionally altered by the invasion of *P. australis* and through the development of dense infestations.

P. australis is an aggressive invader that spreads from established infestations by sending out rhizome and root runners thereby creating a thick mat of rhizome which may extend down several feet in depth. *P. australis* spreads to new sites via three routes; through seeds dispersed by wind and water, through dispersal of pieces of rhizome carried in water, and through pieces of rhizome contained in dirt and mud tracked by vehicles and equipment. *P. australis* forms dense monotypic stands, displaces and outcompetes native wetland and terrestrial vegetation, changes marsh hydrology, alters wildlife habitat, and increases wildfire potential.

P. australis has gradually (over a period of years or decades) established an expansive foothold on Assateague Island in a variety of coastal habitats. Individual infestations of varying sizes occur throughout the island. Over time *P. australis* infestations have expanded to the point that today vast areas of once diverse native forest, shrub and marsh communities have been replaced with dense monocultures of itself. Given the comparative rarity of undisturbed coastal communities present elsewhere throughout the region, the serious and continued threat posed by *P. australis* invasion, and the conservation mandate expressed by Congress in ASIS' founding legislation, the park continues to undertake this large scale project to document and treat *P. australis* infestations in order to restore native coastal communities and ecosystem health. After many years of treatments, ASIS has made measurable progress in the effort to gain control of this aggressive invader.

Ground Treatment of Infestations:

The effective control of *P. australis*, particularly larger well-established stands, has required multiple treatments using a combination of methods including aerial applications of herbicide and ground based foliar spraying with herbicide. The use of herbicide treatments is recommended as the primary control method and the first step towards effective control for *P. australis*. By applying herbicide to actively growing green foliage and flower plumes of the target plants after full leaf elongation and up to first killing frost, it is believed to produce the most effective way to control *P. australis*. However, because the window of hiring opportunity and workforce availability occurs earlier than this optimal treatment time period, ASIS has had to conduct their treatments during the growing season, rather than at the end of the growing season. Despite treating this species outside of optimal treatment interval ASIS has had success in gaining control of this species.

During FY 2018 *P. australis* was sprayed exclusively from the ground with only foliar backpack applications. Backpack sprayers were used in infestations and a 50 gallon ATV sprayer, transported on a Kawasaki Teryx® UTV, was often used to fill the backpacks near the treatment areas.

All treatments were sprayed with a solution containing 2% concentration of Polaris® herbicide and 0.5% concentration of surfactant and 0.5% marker dye. The solution was mixed in water and sprayed on *P. australis* infestations starting from the crown of the plant and working down covering approximately 70% of the plant. See Tables 1 and 2 below for the summary of treatments associated with the *P. australis* at ASIS during FY 2018.

When applied to the foliage of actively growing plants, Imazapyr, the active ingredient in Polaris®, is rapidly absorbed and transported throughout the plant tissues. The herbicide kills the entire plant: leaves, stems, and rhizomes. ASIS has primarily used Imazapyr-based herbicides to control this species, because it has been proven to be statistically superior (see reference below) in efficacy.

Efficacy of Imazapyr and Glyphosate in the Control of Non-Native *Phragmites australis*, Thomas J. Mozdzer^{1,*}, Curtis J. Hutto, Paul A. Clarke and Dorothy P. Field, Restoration Ecology, Volume 16 Issue 2, May 2008.

The crews' efforts during 2018 were employed in the retreatment of *P. australis* within the ASIS burn unit 8 (aerially sprayed in 2009), along Valentine's Road in the park's backcountry, and in Virginia at the crabbing decks on the east side of the bridge at the entrance of the Chincoteague National Wildlife Refuge (see Table: 1 and Figures: 1 and 4).

Later, in the fall of September, ASIS received assistance from the MA EPMT. Together, ASIS and the MAEPMT treated *Phragmites* at the Life of the Forest Trail, east of the Bayside Drive entrance, at Life of the Forest Trail, Burn Unit 2 and also at Burn Unit 8. (See Table: 2 and Figures: 1, 2 and 3).

Phragmites australis Discussion:

Further treatments at ASIS are recommended to follow the same prescription that has been conducted in the past (ie. aerial spray treatments followed by controlled burning and then follow-up ground treatments for infestations with high density and poor accessibility. Smaller satellite infestations with densities less than or equal to 60% may still be treated with backpack sprayers, but the effort put into spraying infestations of high density and poor accessibility with backpack sprayers is still not recommended (Chase 2014).

There was no additional monitoring of burn units in FY 2018.

The total area treated for this species in 2018 was 257,905.03 meters squared, or 63.73 acres.

Figure 1: FY 2018 Combined ASIS and MAEPMT Ground Treatments of *Phragmites australis* at Burn Unit 8

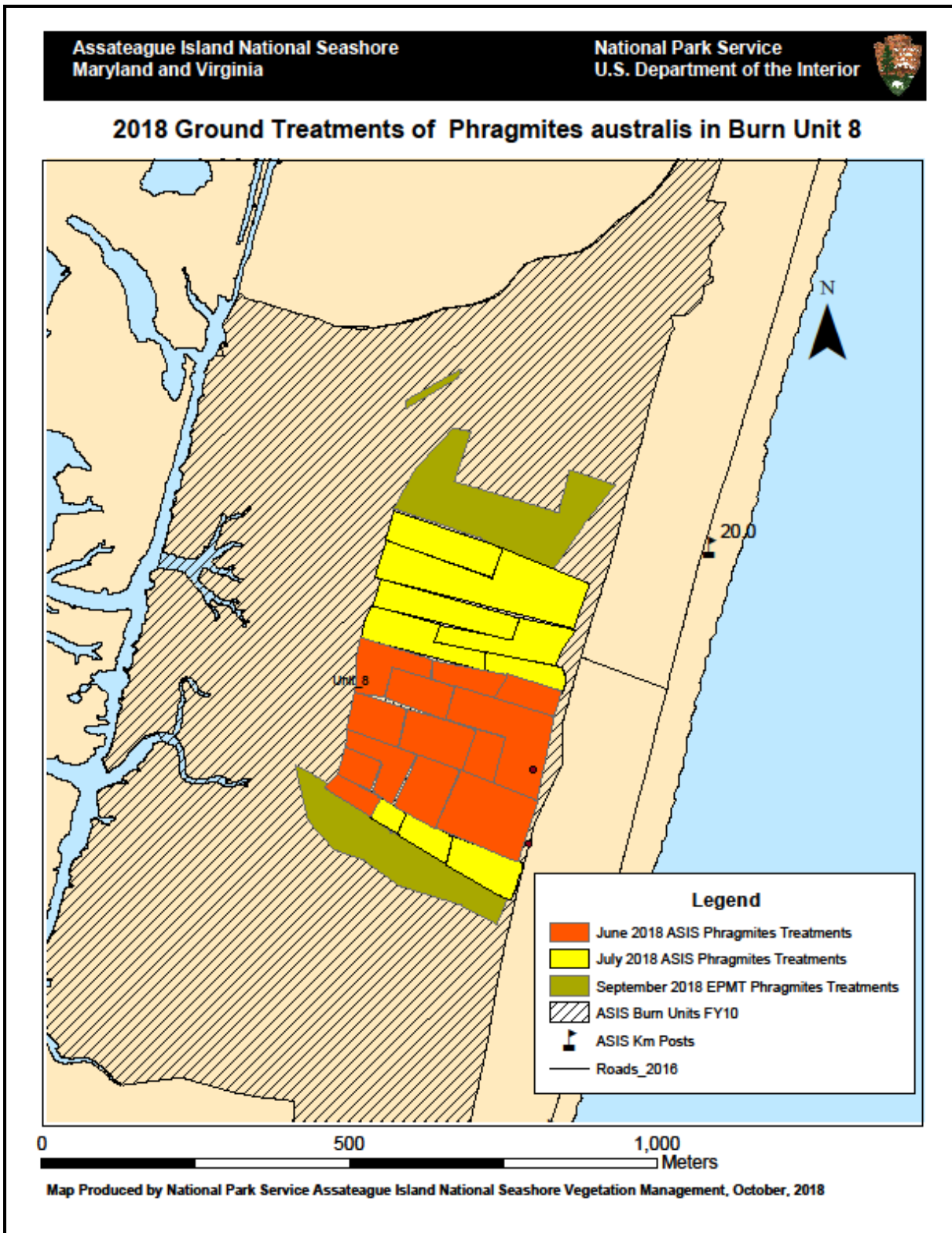


Figure 2: FY 2018 MAEPMT Ground Treatments of *Phragmites australis* at the Ferry Landing Road

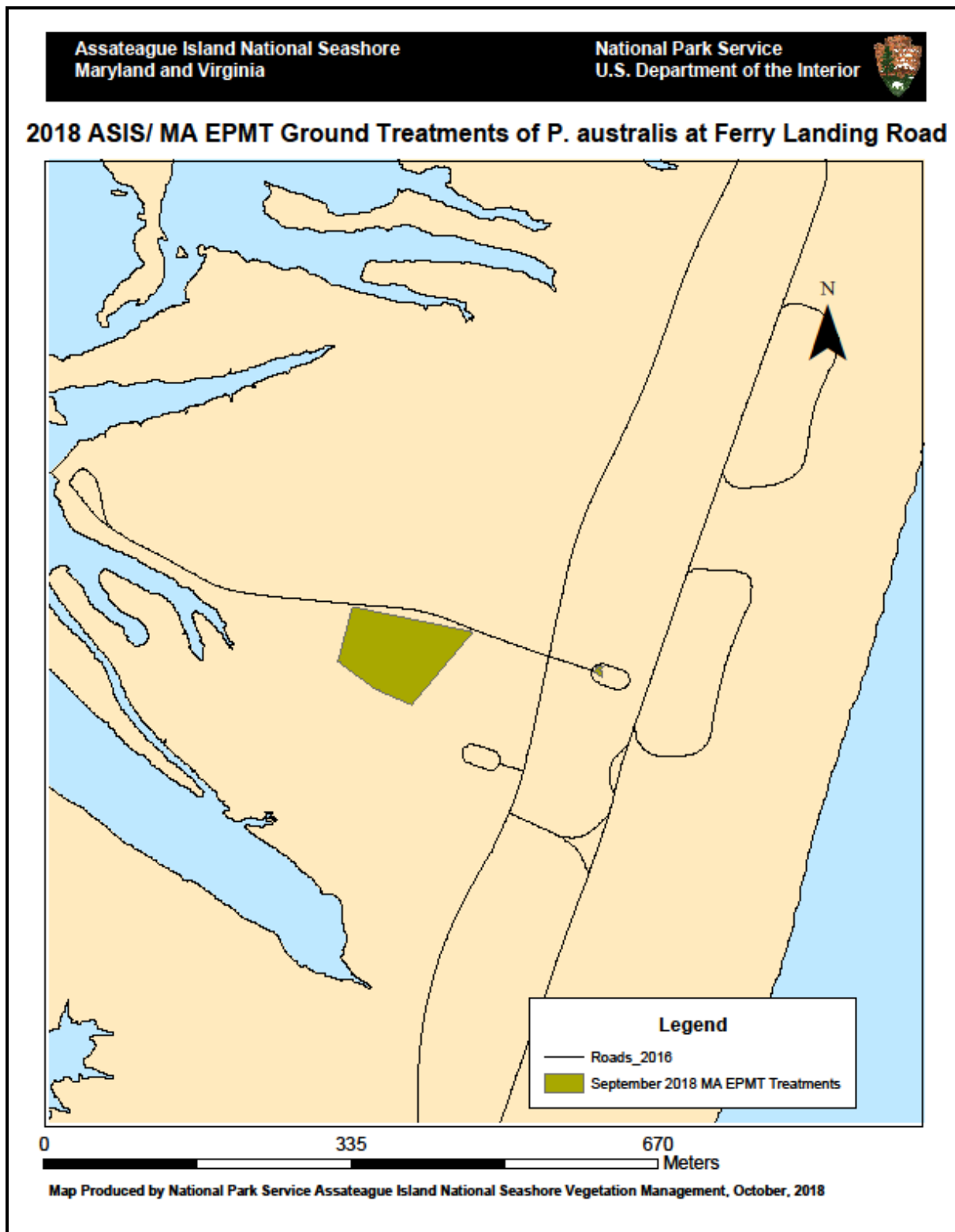


Figure 3: FY 2018 ASIS/ MA EPMT Treatments of *M. viminium* at Ferry Landing Road

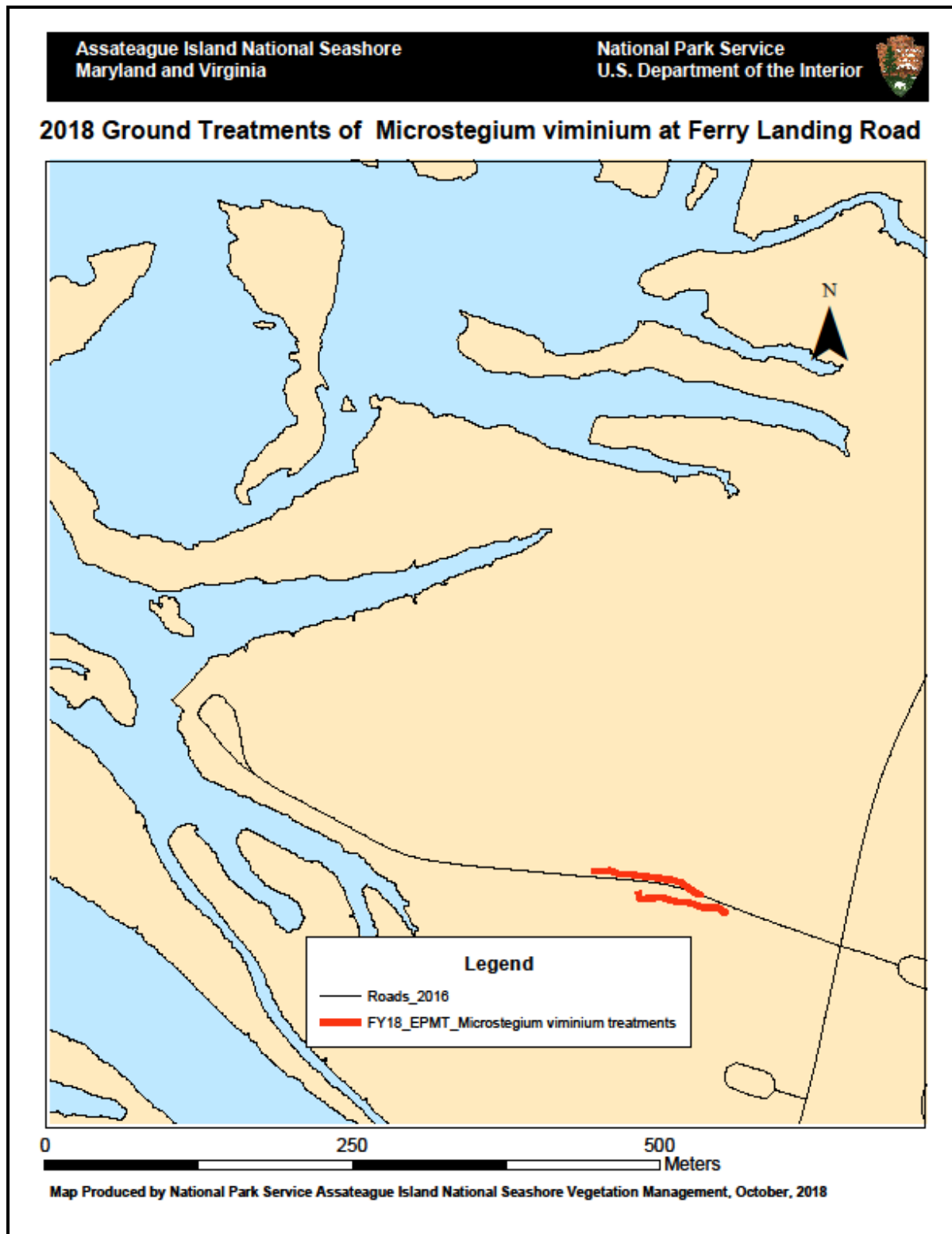


Figure 4: FY 2018 Ground Treatments of *P. australis* at Valentine's Road

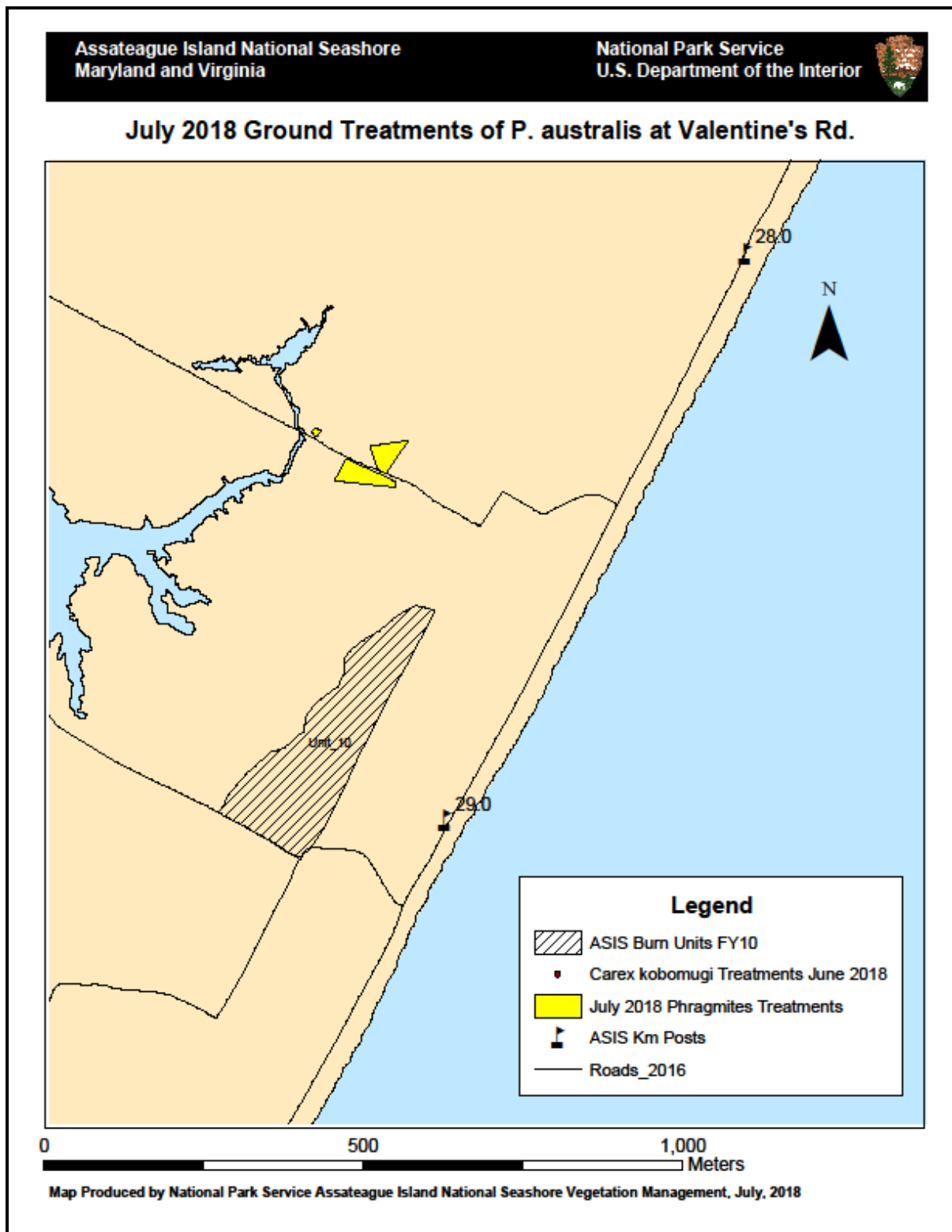


Table 1: FY2018 ASIS Treatment Accomplishments for *P. australis*: (2018 Summer Season)

Site	#Treatments	Days	Acres Treated	Qty. Herbicide Used (L)	Responsible Party	Herbicide Used
Burn Unit 8	25	22	41.0298	26.89	ASIS	Polaris® EPA Reg. Num. (228-534)
CNWR Crabbing Decks	1	1	0.0198	0.12	ASIS	Polaris® EPA Reg. Num. (228-534)
Valentine's Road	1	1	0.92	0.88	ASIS	Polaris® EPA Reg. Num. (228-534)

Table 2: FY2018 MA EPMT/ ASIS Treatment Accomplishments (September 2018)

Site	Species	#Treatments	Days	Acres Treated	Qty. Herbicide Used (L)	Responsible Party	Herbicide Used
Burn Unit 8	Phragmites australis	1	1	5	1.2	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)
Burn Unit 8	Phragmites australis	1	1	15	1.6	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)
Boathouse Parking Lot	Artemisia vulgaris	1	1/16	0.0025	Trace	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)
Ferry Landing Road North Side	Microstegium viminium	1	1/3	0.9500	0.6	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)
Ferry Landing Road South Side	Microstegium viminium	1	1/3	0.9500	0.6	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)
Burn Unit 2 and Life of Forest North of Trail	Phragmites australis	1	1/3	2.700	0.8	ASIS/MAEPMT	Polaris® EPA Reg. Num. (228-534)

Pinus thunbergii:

P. thunbergii at Clement's inholding

Monitoring of this site in August of 2018 did not turn up any saplings, so no treatments were necessary.

P. thunbergii at High Winds

Monitoring of this site in June of 2017 indicated that all of the trees that were treated there in 2016 were found to be dead, except for 1 tree, located on the southeastern corner of the house there. This site was revisited by the Vegetation Management crew in 2018 to look for additional saplings and to treat the remaining single, live tree there. Upon visiting the site in July of 2018, (2) trees were found to need a final girdling and 4 saplings were cut down. No herbicides were used in this treatment. Also, it was observed that an additional tree that is located on the causeway leading to the house from the east, (NAD 1983, UTM Zone 18N) N4224917 E484637, 300 meters due east of the High Winds house, was observed to have expired without any treatment likely due to its proximity to the high salinity of the bayshore and the erosive forces there. The tree had been there for decades and finally expired without assistance. No recruitment has ever been observed at this tree (Chase 2018).



Image 14: Location of expired *P. thunbergii* tree on causeway leading to High Winds Inholding.

Rosa multiflora

A single shrub was treated in the Assateague State Park west of the Nature Center in May of 2018. An additional single shrub was treated behind the Sinepuxent District Visitor Center in May as well.

The total area treated for this species in 2018 was 8 meters squared, or 0.0020 acres.

Monitoring of a very large infestation (@100meters squared), that had eluded detection until 2017 because it was disguised by surrounding vegetation when it was discovered and promptly treated, was found to have been effective (see Image: 15) in June of 2018. This location should be monitored again in 2019, to look for recruitment. No other plants were found during searches of the peninsula in April and June of 2018.



Image 15: Large *R. multiflora* infestation at the intersection of B and C loops at the Bayside Campground.

Rosa wichuraiana:

While treating the UMES Vegetation Buffer in June and August of 2018 many small *R. wichuraina* seedlings were discovered and treated.

The total area treated for this species in 2018 was 88.75 meters squared, or 0.0219 acres.

Table 3: ASIS Vegetation Management Program Treatment Information FY2018

Rx Code	Location	Species	Applicator	Start Time	End Time	Rx Method	Retreatment	Comments
RX080918_2	North end inlet forest	Ailanthus altissima	AR, RH, LP	8:00	12:00	Cut Stump	No	squirt bottle used
RX051518_1	Causeway, south side by bridge	Artemisia vulgaris	JC	8:00	10:00	Foliar	No	
RX060118_2	UMES buffer	Artemisia vulgaris	JC, LP, AR, RH, AD	9:00	9:30	Foliar	Yes	25% cover for each species and @ 5% for Gle hed
RX060418_1	UMES buffer	Artemisia vulgaris	JC, LP, AR, RH, AD	9:00	14:00	Foliar	Yes	
RX081018_1	Sinepuxent Veg Buffer	Artemisia vulgaris	AR, LP, AD	8:00	10:00	Foliar	Yes	
RX081018_2	HQ Housing Buffer	Artemisia vulgaris	AR, LP, AD	10:00	11:30	Foliar	Yes	
RX081318	UMES Veg Buffer	Artemisia vulgaris	JC, AD, AR, LP, RH	7:30	14:30	Foliar	Yes	
RX081418	Bayberry Drive	Artemisia vulgaris	JC, AD, LP, AR, RH	7:30	13:00	Foliar	Yes	

RX092718_1	Boathouse Parking Lot	Artemisia vulgaris	JC and MA EPMT	7:00	12:00	Foliar	Yes	_1 was Art vul in the boathouse parking lot, _2 was Mic vim along Ferry Landing road on North Side and _3 was Mic vim along Ferry Landing road on South Side, _4 was the Phr aus next to the old north portion of the life of the Forest Trail, also some veg was cleared at the intersection of Ferry Landing and Bayberry roads
RX102717	ASIS HQ, SE corner	Artemisia vulgaris	JC	11:30	12:00	Foliar	Yes	
RX061218_2	Burn Unit 8	Carex kobomugi	AD, LP, AR, JC, RH	8:00	13:45	Foliar	No	
RX062518_2	Burn Unit 8	Carex kobomugi	AD, LP, RH, AR	8:00	14:00	Foliar	No	
RX080718_1	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236227.196, 489495.55, CAR KOB 6 ramets
RX080718_10	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4229273.458, 486995.328, CAR KOB 3m diameter
RX080718_11	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4229257.424, 486988.991, CAR KOB 2m diameter
RX080718_12	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4228432.371, 486701.615, CAR KOB 2.5m diameter
RX080718_13	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4226336.495, 485865.668, CAR KOB 9 m diameter

RX080718_14	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4225219.771, 485574.798, CAR KOB 3 m diameter
RX080718_15	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4223819.537, 485323.331, CAR KOB 2 m diameter
RX080718_16	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4223245.792, 485128.356, CAR KOB 2 m diameter
RX080718_17	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4221592.53419772, 484562.058532964, CAKO3
RX080718_18	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4220363.044, 484330.53, CAR KOB 2 m diameter
RX080718_19	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4216546.894, 482936.404, CaR kob 2 ramets
RX080718_2	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236224.616, 489511.637, CAR KOB 2 m diameter
RX080718_20	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4216538.585, 482943.084, CAR KOB 1 ramet
RX080718_21	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4214400.679, 481828.307, CAR KOB 1m diam 8 ramets

RX080718_22	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4213144.334, 481176.406, car KOB 3 M diameter
RX080718_23	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4209764.588, 479075.068, CaR KOB 1m diam
RX080718_3	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4235587.948, 489215.202, CAR KOB 7 m diameter
RX080718_4	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4233962.915, 488633.277, CAR KOB 1M diam
RX080718_5	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4233663.033, 488511.528, CAR KOB 6 m diameter
RX080718_6	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4233587.054, 488505.326, CAR KOB 4 m diameter
RX080718_7	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4233004.59422434, 488274.270620342, CAKO2
RX080718_8	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4232666.328, 488149.505, CAR KOB 3 m diameter
RX080718_9	OSV	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4229505.166, 487084.54, CAR KOB 1m diameter 7 ramets

RX080818_1	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241735.554, 491765.775, CAR KOB 1m diameter 5 ramets
RX080818_10	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241454.388, 491595.263, CAR KOB 2m diameter
RX080818_11	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241448.78423268, 491587.843746911, CAKO12
RX080818_12	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241420.757, 491633.724, CAR KOB 3m diameter
RX080818_13	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240437.324, 490977.19, CAR KOB 2.5 m diameter
RX080818_14	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240354.474, 490916.625, CAR KOB 2m diameter
RX080818_15	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240312.718, 490967.194, CAR KOB 1m 10 ram
RX080818_16	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240134.74, 490837.246, CAR KOB 1 ramets
RX080818_17	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240068.433, 490791.802, CAR KOB 1m diam

RX080818_18	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4240063.625, 490808.108, CAR KOB 1 m diameter
RX080818_19	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4239913.305, 490721.871, CAR KOB 2 m diameter
RX080818_2	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241716.471, 491671.755, CAR KOB 1m diameter 2 ramets
RX080818_20	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4239668.468, 490573.298, CAR KOB 3 RAMETS
RX080818_21	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4239621.411, 490484.392, CAR KOB 3 m diameter
RX080818_22	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4238180.443, 490036.923, CAR KOB 1 m diameter
RX080818_23	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4238030.754, 489988.388, CAR KOB 3 m diameter
RX080818_24	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237883.297, 489988.383, CAR KOB 1m diam
RX080818_25	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237685.894, 489899.948, CAR KOB 1m diam

RX080818_26	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237677.538, 489909.6, CAR KOB 2 m diameter
RX080818_27	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237515.195, 489827.537, CAR KOB 1m diameter
RX080818_28	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237502.288, 489829.909, CAR KOB 5 m diameter
RX080818_29	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237053.38316788, 489691.840779295, CAKO080218 7
RX080818_3	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241712.185, 491681.325, CAR KOB 1m diameter 6 ramets
RX080818_30	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4237052.36450283, 489707.582433581, CAKO080218 8
RX080818_31	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236999.24485891, 489684.774869876, CAKO080218 6
RX080818_32	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236839.30093258, 489640.227079553, CAKO080218 5
RX080818_33	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236675.54385108, 489627.509869747, CAKO080218 4

RX080818_34	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236517.56078995, 489525.496137175, CAKO080218 3
RX080818_35	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4236483.81311852, 489538.310090915, CAKO080218 2
RX080818_4	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241705.89, 491686.923, CAR KOB 1 individual ramet
RX080818_5	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241704.588, 491685.513, CAR KOB 1 individual ramet
RX080818_6	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241702.503, 491689.745, CAR KOB 1m diameter 10 ramets
RX080818_7	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241702.379, 491684.617, CAR KOB 1 individual ramet
RX080818_8	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241695.46, 491691.874, CAR KOB 2m diameter
RX080818_9	North End	Carex kobomugi	JC, AR, LP, RH	7:30	14:30	Foliar	No	4241681.265, 491693.409, CAR KOB 2m diameter

RX060118_2	UMES buffer	Cirsium arvense	JC, LP, AR, RH, AD	9:00	9:30	Foliar	Yes	25% cover for each species and @ 5% for Gle hed
RX060418_1	UMES buffer	Cirsium arvense	JC, LP, AR, RH, AD	9:00	14:00	Foliar	Yes	
RX081018_1	Sinepuxent Veg Buffer	Cirsium arvense	AR, LP, AD	8:00	10:00	Foliar	Yes	CIR ARV 2.75 L USED, LEZ CUN 3 L USED, MIC VIM 7.5 L USED, ART VUL 2.25 L USED
RX081018_2	HQ Housing Buffer	Cirsium arvense	AR, LP, AD	10:00	11:30	Foliar	Yes	CIR ARV 3 L USED, ART VUL 1.5 L USED, HED HEL 1.5 L USED
RX081318	UMES Veg Buffer	Cirsium arvense	JC, AD, AR, LP, RH	7:30	14:30	Foliar	Yes	ART VUL 7 L USED, CIR ARV 13 L USED, GLE HED 2.7 L USED, LON JAP 2 L USED, MIC VIM 2.1 L USED< ROS WIC 2.3 L USED
RX102717	ASIS HQ, SE border	Cirsium arvense	JC	10:00	11:00	Foliar	No	South and east of bridge
RX102717	ASIS HQ, SE corner	Cirsium arvense	JC	11:00	11:30	Foliar	Yes	
RX051018_2	State park west of Nature Center	Eleaegnus umbellata	JC	11:00	14:30	Foliar	No	(12) 2mx1mx2m

RX062918_1	CNWR Crab Deck	Elusine indica	JC, AR, RH, AD	8:00	9:00	Foliar	Yes	
RX081618	HQ Bike Path, Housing, Parking lots	Elusine indica	AD	7:00	13:45	Foliar	Yes	Road edges and path edges and parking lot cracks treated
RX051518_3	Bayberry Dr, west side, starting at ASIS sign	Eragrostis curvula	JC	12:30	14:30	Foliar	Yes	
RX081418	Bayberry Drive	Eragrostis curvula	JC, AD, LP, AR, RH	7:30	13:00	Foliar	Yes	ART VUL 0.7 L USED, ERA CUR 6.55 L USED, LEZ CUN 4.75 L USED
RX060118_2	UMES buffer	Glechoma hederaceae	JC, LP, AR, RH, AD	9:00	9:30	Foliar	Yes	25% cover for each species and @ 5% for Gle hed
RX060418_1	UMES buffer	Glechoma hederaceae	JC, LP, AR, RH, AD	9:00	14:00	Foliar	No	
RX081318	UMES Veg Buffer	Glechoma hederaceae	JC, AD, AR, LP, RH	7:30	14:30	Foliar	No	
RX081018_2	HQ Housing Buffer	Hedera helix	AR, LP, AD	10:00	11:30	Foliar	Yes	
RX080918_3	North end inlet forest	Lagerstroemia spp	AR, RH, LP	8:00	12:00	Cut Stump	No	squirt bottle used
RX081018_1	Sinepuxent Veg Buffer	Lezpedeza cuneata	AR, LP, AD	8:00	10:00	Foliar	Yes	

RX081418	Bayberry Drive	Lezpedeza cuneata	JC, AD, LP, AR, RH	7:30	13:00	Foliar	Yes	
RX051018_1	Dev area, Bayberry at north boundary	Lonicera japonica	JC	11:00	14:30	Foliar	Yes	Fee area sign on west side of rd up to ASIS sign pullout
RX051518_2	Bayberry Dr, west side, starting at ASIS sign	Lonicera japonica	JC	12:30	14:30	Foliar	No	
RX060118_2	UMES buffer	Lonicera japonica	JC, LP, AR, RH, AD	9:00	9:30	Foliar	Yes	25% cover for each species and @ 5% for Gle hed
RX060418_1	UMES buffer	Lonicera japonica	JC, LP, AR, RH, AD	9:00	14:00	Foliar	Yes	
RX060818_2	Valentines Rd, west of LZ (north side of road)	Lonicera japonica	JC	10:00	10:30	Foliar	Yes	Return in 2 weeks for SPB and get south side
RX081018_1	Sinepuxent Veg Buffer	Microstegium viminium	AR, LP, AD	8:00	10:00	Foliar	Yes	
RX092718_2	Ferry Landing Road North Side	Microstegium viminium	JC and MA EPMT	7:00	12:00	Foliar	Yes	With MA EPMT
RX092718_3	Ferry Landing Road South Side	Microstegium viminium	JC and MA EPMT	7:00	12:00	Foliar	Yes	With MA EPMT

RX080918_1	North end inlet forest	Miscanthus sinensis	AR, RH, LP	8:00	12:00	Foliar	Yes	
RX053118_1	HQ	Nuisance Weeds	JC, LP, AR, RH, AD	12:30	14:20	Foliar	Yes	
RX060118_1	VC	Nuisance Weeds	JC, LP, AR, RH, AD	7:30	9:00	Foliar	Yes	
RX062118	VA Maint. Yard	Nuisance Weeds	AD, RH, LP, AR, JC	9:00	13:00	Foliar	Yes	
RX081318	UMES Veg Buffer	Pennisetum alopecuroides	JC, AD, AR, LP, RH	7:30	14:30	Foliar	Yes	
RX102717	ASIS HQ, S/E border	Pennisetum alopecuroides	JC	11:00	12:00	Foliar	No	South and east of bridge
RX060518_1	Burn Unit 8	Phragmites australis	JC, LP, AR, RH, AD	8:30	13:30	Foliar	Yes	
RX060618_1	Burn Unit 8	Phragmites australis	LP, AR, RH, AD	8:00	13:30	Foliar	Yes	
RX060718	Burn Unit 8	Phragmites australis	LP, AR, RH, AD	9:00	13:50	Foliar	Yes	
RX060818_1	Burn Unit 8	Phragmites australis	LP, AR, RH, AD	8:30	11:45	Foliar	Yes	
RX061218_1	Burn Unit 8	Phragmites australis	AD, LP, AR, JC, RH	8:00	13:45	Foliar	Yes	

RX061318_1	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	8:00	14:00	Foliar	Yes	
RX061818_1	Burn Unit 8	Phragmites australis	AD, LP, AR, JC, RH	8:00	14:00	Foliar	Yes	
RX061918	Burn Unit 8	Phragmites australis	AR, JC, RH, LP	8:30	12:00	Foliar	Yes	High heat index
RX062018	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	8:00	13:50	Foliar	Yes	
RX062518_1	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	8:40	13:30	Foliar	Yes	
RX062618	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	8:00	11:30	Foliar	Yes	
RX062718_1	Burn Unit 8	Phragmites australis	AR, LP, AD	8:00	14:00	Foliar	Yes	
RX062718_2	Burn Unit 8	Phragmites australis	AR, LP, AD	8:00	14:00	Foliar	Yes	
RX062918_2	CNWR Crab Deck North	Phragmites australis	JC, AR, RH, AD	9:00	9:30	Foliar	No	N. Side of road across from "Entrance fee ahead sign" North of round about
RX070218	Burn Unit 8	Phragmites australis	AD, LP, AR, RH	8:00	10:30	Foliar	Yes	
RX070318	Burn Unit 8	Phragmites australis	AD, LP, AR, RH	7:30	10:30	Foliar	Yes	
RX070518_1	Burn Unit 8	Phragmites australis	AD, LP, AR, RH	7:30	11:00	Foliar	Yes	

RX070518_2	Burn Unit 8	Phragmites australis	LP, AR, RH	10:30	11:30	Foliar	Yes	Stopped early due to heat HI 113 deg. F
RX070618	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	7:30	11:00	Foliar	Yes	Stopped early due to heat HI 108 deg. F
RX070918	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	7:30	13:30	Foliar	Yes	AD tied three new transects
RX071018	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	7:30	13:30	Foliar	Yes	
RX071118	Burn Unit 8	Phragmites australis	AD, LP, RH, AR	7:30	13:30	Foliar	Yes	
RX071318_1	Valentines Road, east of bridge	Phragmites australis	JC, RH	8:30	10:30	Foliar	Yes	5 patches
RX071318_2	Valentines Road, east of bridge	Phragmites australis	JC, RH	10:30	11:00	Foliar	Yes	3 patches
RX071318_3	Valentines Road, east of bridge	Phragmites australis	JC, RH	11:00	11:15	Foliar	Yes	2 patches
RX072018_1	Burn Unit 8	Phragmites australis	JC, RH, AR. LP	8:00	11:15	Foliar	Yes	1% sand
RX092518_1	Burn Unit 8	Phragmites australis	JC and MA EPMT	7:00	17:00	Foliar	Yes	With MA EPMT
RX092618_1	Burn Unit 8	Phragmites australis	JC and MA EPMT	7:00	17:00	Foliar	Yes	With MA EPMT
RX092718_4	Burn Unit 2 and Life of Forest North of Trail	Phragmites australis	JC and MA EPMT	7:00	12:00	Foliar	Yes	With MA EPMT

RX072618	High Winds	Pinus thunbergii	JC, AD, RH, AR, LP	7:30	13:30	Cut Stump	Yes	4 Saplings cut, 2 trees girdled (retreatment from 2015)
RX051018_2	State park west of Nature Center	Rosa multiflora	JC	11:00	14:30	Foliar	No	(1) 2mx2mx2m
RX051518_4	MD VC Sinepuxent, veg buffer	Rosa multiflora	JC	12:30	14:30	Foliar	No	1 bush 2x2x2m
RX060118_2	UMES buffer	Rosa wichuraina	JC, LP, AR, RH, AD	9:00	9:30	Foliar	Yes	25% cover for each species and @ 5% for Gle hed
RX081318	UMES Veg Buffer	Rosa wichuraina	JC, AD, AR, LP, RH	7:30	14:30	Foliar	Yes	
RX070518_3	Pope Bay Campsite Entrance Gate Posts	Toxicodendron radicans	AD	11:00	12:00	Foliar	No	Sprayed poison ivy growing on posts at the entrance of Pope Bay Campsite
RX082218_1	Tingles Campground	Toxicodendron radicans	AD	8:30	9:00	Foliar	No	sprayed around bathroom and all fire rings
RX082218_2	Pinetree Campground	Toxicodendron radicans	AD	9:15	9:30	Foliar	No	sprayed around bathroom and all fire rings
RX082218_3	Green Run Campsite	Toxicodendron radicans	AD	9:45	10:30	Foliar	No	sprayed around bathroom and all fire rings and picnic benches

RX082218_4	State Line Campground	Toxicodendron radicans	AD	11:00	11:15	Foliar	No	sprayed around bathroom, perimeter and by benches
RX082218_5	Pope Bay Campground	Toxicodendron radicans	AD	11:20	11:55	Foliar	No	sprayed around bathroom, perimeter and by benches

Table 4: ASIS Vegetation Management Program Herbicide Use Information for FY2018

Rx Code	Location	Species	Rx Method	Product	EPA Reg #	Active Ingredient	Amt Product (mL)	% Conc	Area Treated (m sq)	Total Amt Spray (L)	Equipment Used
RX080918_2	North end inlet forest	Ailanthus altissima	Cut Stump	Polaris	228-534	Imazapyr	5	50%	4.00	0.005	Backpack Sprayer
RX051518_1	Causeway, south side by bridge	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	40	2%	50.00	2	40 gal sprayer
RX060118_2	UMES buffer	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	25	2%	31.25	1.25	Backpack Sprayer
RX060418_1	UMES buffer	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	142	2%	177.50	7.1	Backpack Sprayer
RX081018_1	Sinepuxent Veg Buffer	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	45	2%	56.25	2.25	Backpack Sprayer
RX081018_2	HQ Housing Buffer	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	30	2%	37.50	1.5	Backpack Sprayer
RX081318	UMES Veg Buffer	Artemisia vulgaris	Foliar	Rodeo	6271 9-324	Glyphosate	140	2%	175.00	7	Backpack Sprayer
RX081418	Bayberry Drive	Artemisia vulgaris	Foliar	Polaris	228-534	Imazapyr	14	2%	17.50	0.7	Backpack Sprayer
RX092718_1	Boathouse Parking Lot	Artemisia vulgaris	Foliar	Polaris	228-534	Imazapyr	trace	trace	10	trace	Backpack Sprayer

RX102717	ASIS HQ, SE corner	Artemisia vulgaris	Foliar	Garlon 3A	6271 9-37	Triclopyr	100	3%	30.00	5	Backpack Sprayer
RX061218_2	Burn Unit 8	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	10	2%	12.00	0.5	Backpack Sprayer
RX062518_2	Burn Unit 8	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	10	2%	12.00	0.5	Backpack Sprayer
RX080718_1	North End	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718_10	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718_11	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	5.16	2%	2.00	0.258	Backpack Sprayer
RX080718_12	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718_13	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	23.22	2%	9.00	1.161	Backpack Sprayer
RX080718_14	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718_15	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	5.16	2%	2.00	0.258	Backpack Sprayer
RX080718_16	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	5.16	2%	2.00	0.258	Backpack Sprayer
RX080718_17	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718_18	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	5.16	2%	2.00	0.258	Backpack Sprayer
RX080718_19	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718_2	North End	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	5.16	2%	2.00	0.258	Backpack Sprayer
RX080718_20	OSV	Carex kobomugi	Foliar	Polaris	228-534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer

RX080718 _21	OSV	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718 _22	OSV	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718 _23	OSV	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718 _3	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	18.06	2%	7.00	0.903	Backpack Sprayer
RX080718 _4	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718 _5	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	15.48	2%	6.00	0.774	Backpack Sprayer
RX080718 _6	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	10.32	2%	4.00	0.516	Backpack Sprayer
RX080718 _7	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080718 _8	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	7.74	2%	3.00	0.387	Backpack Sprayer
RX080718 _9	OSV	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	2.58	2%	1.00	0.129	Backpack Sprayer
RX080818 _1	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _10	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer
RX080818 _11	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _12	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	12.453	2%	3.00	0.622 7	Backpack Sprayer
RX080818 _13	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	12.453	2%	3.00	0.622 7	Backpack Sprayer
RX080818 _14	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer

RX080818 _15	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _16	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _17	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _18	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _19	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer
RX080818 _2	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _20	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _21	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	12.453	2%	3.00	0.622 7	Backpack Sprayer
RX080818 _22	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _23	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	12.453	2%	3.00	0.622 7	Backpack Sprayer
RX080818 _24	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _25	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _26	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer
RX080818 _27	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _28	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	20.755	2%	5.00	1.037 8	Backpack Sprayer
RX080818 _29	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer

RX080818 _3	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _30	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _31	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _32	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _33	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _34	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _35	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _4	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _5	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _6	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _7	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	4.151	2%	1.00	0.207 6	Backpack Sprayer
RX080818 _8	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer
RX080818 _9	North End	Carex kobomugi	Foliar	Polaris	228- 534	Imazapyr	8.302	2%	2.00	0.415 1	Backpack Sprayer
RX060118 _2	UMES buffer	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	25	2%	31.25	1.25	Backpack Sprayer
RX060418 _1	UMES buffer	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	134	2%	167.50	6.7	Backpack Sprayer

RX081018 _1	Sinepuxent Veg Buffer	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	55	2%	68.75	2.75	Backpack Sprayer
RX081018 _2	HQ Housing Buffer	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	60	2%	75.00	3	Backpack Sprayer
RX081318	UMES Veg Buffer	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	260	2%	325.00	13	Backpack Sprayer
RX102717	ASIS HQ, SE border	Cirsium arvense	Foliar	Rodeo	6271 9- 324	Glyphosate	120	2%	120.00	6	Backpack Sprayer
RX102717	ASIS HQ, SE corner	Cirsium arvense	Foliar	Garlon 3A	6271 9-37	Triclopyr	200	3%	70.00	10	Backpack Sprayer
RX051018 _2	State park west of Nature Center	Eleaegnus umbellata	Foliar	Rodeo	6271 9- 324	Glyphosate	40	2%	24.00	2	Backpack Sprayer
RX062918 _1	CNWR Crab Deck	Elusine indica	Foliar	Polaris	228- 534	Imazapyr	560	2%	700.00	28	Backpack Sprayer
RX081618	HQ Bike Path, Housing, Parking lots	Elusine indica	Foliar	Polaris	228- 534	Imazapyr	600	2%	750.00	30	Backpack Sprayer
RX051518 _3	Bayberry Dr, west side, starting at ASIS sign	Eragrostis curvula	Foliar	Rodeo	6271 9- 324	Glyphosate	10	2%	5.00	0.5	Backpack Sprayer
RX081418	Bayberry Drive	Eragrostis curvula	Foliar	Polaris	228- 534	Imazapyr	40	2%	50.00	2	Backpack Sprayer
RX060118 _2	UMES buffer	Glechoma hederaceae	Foliar	Rodeo	6271 9- 324	Glyphosate	5	2%	6.25	0.25	Backpack Sprayer

RX060418 _1	UMES buffer	Glechoma hederaceae	Foliar	Rodeo	6271 9- 324	Glyphosate	179	2%	223.75	8.95	Backpack Sprayer
RX081318	UMES Veg Buffer	Glechoma hederaceae	Foliar	Rodeo	6271 9- 324	Glyphosate	54	2%	67.50	2.7	Backpack Sprayer
RX081018 _2	HQ Housing Buffer	Hedera helix	Foliar	Rodeo	6271 9- 324	Glyphosate	30	2%	37.50	1.5	Backpack Sprayer
RX080918 _3	North end inlet forest	Lagerstroemia spp	Cut Stump	Polaris	228- 534	Imazapyr	5	50%	4.00	0.005	Backpack Sprayer
RX081018 _1	Sinepuxent Veg Buffer	Lezpedeza cuneata	Foliar	Rodeo	6271 9- 324	Glyphosate	60	2%	75.00	3	Backpack Sprayer
RX081418	Bayberry Drive	Lezpedeza cuneata	Foliar	Polaris	228- 534	Imazapyr	95	2%	118.75	4.75	Backpack Sprayer
RX051018 _1	Dev area, Bayberry at north boundary	Lonicera japonica	Foliar	Rodeo	6271 9- 324	Glyphosate	500	2%	450.00	25	40 gal sprayer
RX051518 _2	Bayberry Dr, west side, starting at ASIS sign	Lonicera japonica	Foliar	Rodeo	6271 9- 324	Glyphosate	50	2%	25.00	2.5	Backpack Sprayer
RX060118 _2	UMES buffer	Lonicera japonica	Foliar	Rodeo	6271 9- 324	Glyphosate	25	2%	31.25	1.25	Backpack Sprayer
RX060418 _1	UMES buffer	Lonicera japonica	Foliar	Rodeo	6271 9- 324	Glyphosate	10	2%	12.50	0.5	Backpack Sprayer

RX060818 _2	Valentines Rd, west of LZ (north side of road)	Lonicera japonica	Foliar	Rodeo	6271 9-324	Glyphosate	100	2%	600.00	5	ATV pump
RX081018 _1	Sinepuxent Veg Buffer	Microstegium viminium	Foliar	Rodeo	6271 9-324	Glyphosate	150	2%	187.50	7.5	Backpack Sprayer
RX092718 _2	Ferry Landing Road North Side	Microstegium viminium	Foliar	Polaris	228-534	Imazapyr	120	2%	3844.52	6	Backpack Sprayer
RX092718 _3	Ferry Landing Road South Side	Microstegium viminium	Foliar	Polaris	228-534	Imazapyr	120	2%	3844.52	6	Backpack Sprayer
RX080918 _1	North end inlet forest	Miscanthus sinensis	Foliar	Polaris	228-534	Imazapyr	160	2%	200.00	8	Backpack Sprayer
RX053118 _1	HQ	Nuisance Weeds	Foliar	Rodeo	6271 9-324	Glyphosate	700	2%	875.00	35	Backpack Sprayer
RX060118 _1	VC	Nuisance Weeds	Foliar	Rodeo	6271 9-324	Glyphosate	500	2%	625.00	25	Backpack Sprayer
RX062118	VA Maint. Yard	Nuisance Weeds	Foliar	Polaris	228-534	Imazapyr	2680	2%	9262.00	134	Backpack Sprayer
RX081318	UMES Veg Buffer	Pennisetum alopecuroides	Foliar	Rodeo	6271 9-324	Glyphosate	4	2%	5.00	0.2	Backpack Sprayer
RX102717	ASIS HQ, S/E border	Pennisetum alopecuroides	Foliar	Rodeo	6271 9-324	Glyphosate	80	2%	80.00	4	Backpack Sprayer
RX060518 _1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	850	2%	4249.20	42.5	Backpack Sprayer
RX060618 _1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1070	2%	4168.27	53.5	Backpack Sprayer

RX060718	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	760	2%	6798.72	38	Backpack Sprayer
RX060818_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	880	2%	5503.73	44	Backpack Sprayer
RX061218_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	2160	2%	15418.54	108	Backpack Sprayer
RX061318_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	620	2%	3884.99	31	Backpack Sprayer
RX061818_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	2240	2%	7689.03	112	Backpack Sprayer
RX061918	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1000	2%	5544.20	50	Backpack Sprayer
RX062018	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1390	2%	14366.35	69.5	Backpack Sprayer
RX062518_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	2120	2%	7122.47	106	Backpack Sprayer
RX062618	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1720	2%	5665.60	86	Backpack Sprayer
RX062718_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	900	2%	2905.65	45	Backpack Sprayer
RX062718_2	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	600	2%	2638.55	30	Backpack Sprayer
RX062918_2	CNWR Crab Deck North	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	120	2%	80.00	6	Backpack Sprayer
RX070218	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	700	2%	1780.62	35	Backpack Sprayer
RX070318	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1350	2%	3561.24	67.5	Backpack Sprayer
RX070518_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	660	2%	6839.19	33	Backpack Sprayer
RX070518_2	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	420	2%	4694.36	21	Backpack Sprayer

RX070618	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1530	2%	8822.15	76.5	Backpack Sprayer
RX070918	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	2110	2%	8741.22	105.5	Backpack Sprayer
RX071018	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1800	2%	9672.00	90	Backpack Sprayer
RX071118	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	1300	2%	22986.16	65	Backpack Sprayer
RX071318_1	Valentines Road, east of bridge	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	580	2%	2063.90	29	Backpack Sprayer
RX071318_2	Valentines Road, east of bridge	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	260	2%	1537.81	13	Backpack Sprayer
RX071318_3	Valentines Road, east of bridge	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	40	2%	121.41	2	Backpack Sprayer
RX072018_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	710	2%	9186.37	35.5	Backpack Sprayer
RX092518_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	120	2%	20234	60	Backpack Sprayer
RX092618_1	Burn Unit 8	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	3600	2%	60702.8	180	Backpack Sprayer
RX092718_4	Burn Unit 2 and Life of Forest North of Trail	Phragmites australis	Foliar	Polaris	228-534	Imazapyr	160	2%	10926.5	8	Backpack Sprayer
RX072618	High Winds	Pinus thunbergii	Cut Stump	N/A	N/A	N/A	N/A	N/A	405.00	N/A	Hand Saw
RX051018_2	State park west of Nature Center	Rosa multiflora	Foliar	Rodeo	62719-324	Glyphosate	5	2%	4.00	0.25	Backpack Sprayer

RX051518 _4	MD VC Sinepuxent, veg buffer	Rosa multiflora	Foliar	Rodeo	6271 9- 324	Glyphosate	5	2%	4.00	0.25	Backpack Sprayer
RX060118 _2	UMES buffer	Rosa wichuraina	Foliar	Rodeo	6271 9- 324	Glyphosate	25	2%	31.25	1.25	Backpack Sprayer
RX081318	UMES Veg Buffer	Rosa wichuraina	Foliar	Rodeo	6271 9- 324	Glyphosate	46	2%	57.50	2.3	Backpack Sprayer
RX070518 _3	Pope Bay Campsite Entrance Gate Posts	Toxicodendro n radicans	Foliar	Polaris	228- 534	Imazapyr	10	2%	8.00	0.5	Backpack Sprayer
RX082218 _1	Tingles Campground	Toxicodendro n radicans	Foliar	Rodeo	6271 9- 324	Glyphosate	40	2%	20.00	2	Backpack Sprayer
RX082218 _2	Pinetree Campground	Toxicodendro n radicans	Foliar	Rodeo	6271 9- 324	Glyphosate	20	2%	15.00	1	Backpack Sprayer
RX082218 _3	Green Run Campsite	Toxicodendro n radicans	Foliar	Rodeo	6271 9- 324	Glyphosate	30	2%	15.00	1.5	Backpack Sprayer
RX082218 _4	State Line Campground	Toxicodendro n radicans	Foliar	Rodeo	6271 9- 324	Glyphosate	10	2%	5.00	0.5	Backpack Sprayer
RX082218 _5	Pope Bay Campground	Toxicodendro n radicans	Foliar	Rodeo	6271 9- 324	Glyphosate	30	2%	15.00	1.5	Backpack Sprayer