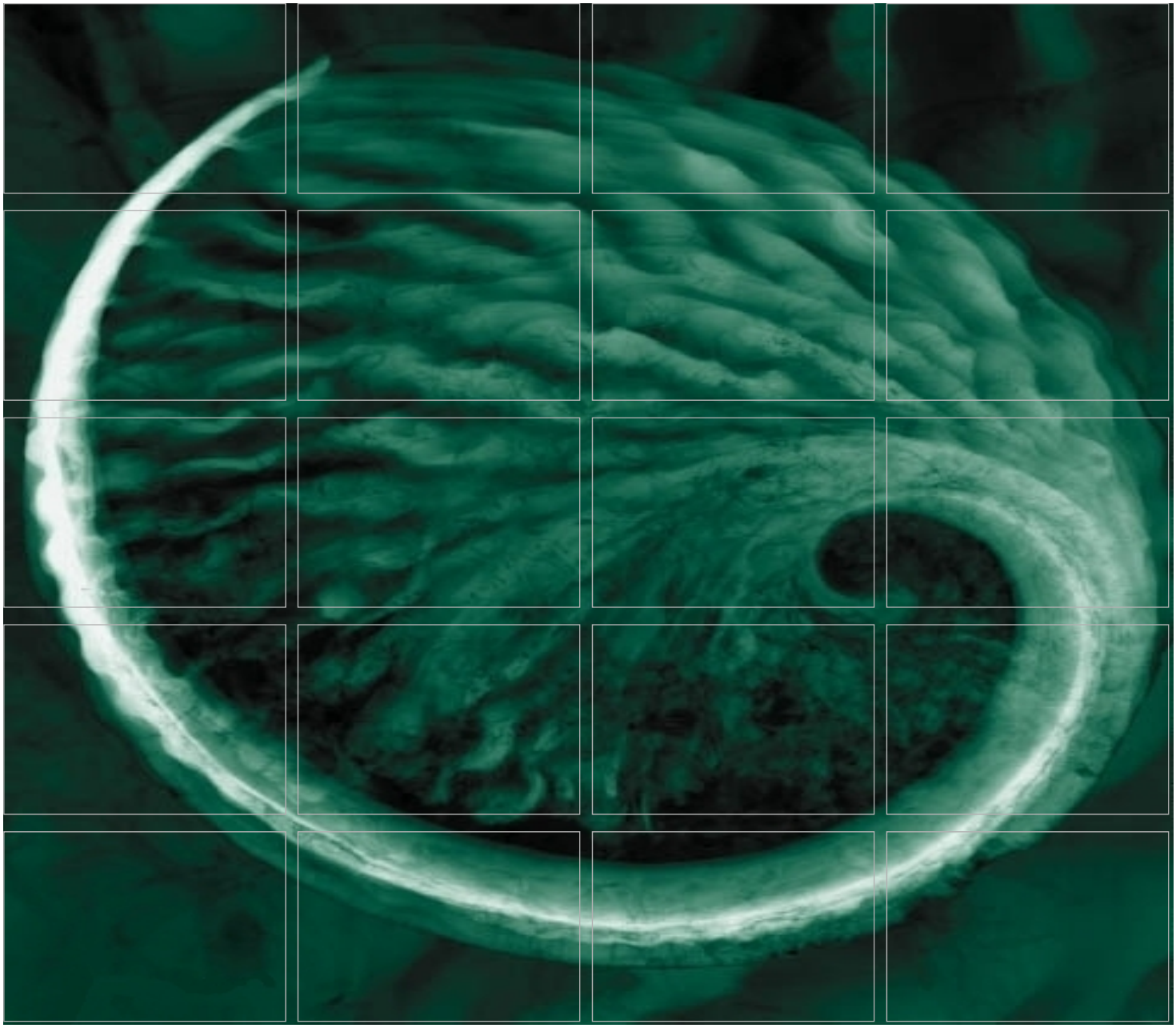

Picayune Strand Restoration Project
Restored Footprint Exotics Mapping and Control Coordination–*Annual Summary Effectiveness Assessment Report (June 2013)*

Prepared for:
South Florida Water Management District
Fort Myers Service Center
2301 McGregor Boulevard
Fort Myers, Florida 33901

Work Order No. 4600001953-WO3

June 15, 2013

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South Florida Water Management District

Picayune Strand Restoration Project Restored Footprint Exotics Mapping and Control Coordination

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1.0 INTRODUCTION

Environmental Resources Management-Southeast, Inc. (ERM) was retained by the South Florida Water Management District (SFWMD) to provide Biological/Ecological Monitoring, Assessments, Consultation, and Coordination Services under Contract No. 4600001953, dated June 30, 2010. Work Order No. 4600001953-WO3, between the SFWMD and ERM, was issued for Exotic and Nuisance Native Vegetation Control Coordination and Vegetation Monitoring for the Picayune Strand Restoration Project. At the request of the SFWMD, this work is being performed by ERM and our subcontractor, The Institute for Regional Conservation (IRC), which has been providing such services related to the Picayune Strand Restoration since 2008.

The scope of work included in the subject Work Order includes mapping exotic and nuisance vegetation within the footprint of the filled Prairie Canal, the cleared road and house demolition footprints east of Merritt Canal, and the soil inversion sites off of Miller Boulevard. The scope of work also included the coordination of exotic control efforts conducted by Applied Aquatic Management, Inc. (AAM), which is operating under separate contracts with the SFWMD and US Army Corps of Engineers (ACOE), and Earth Balance, Inc. (EB) which is operating under a separate contract with the SFWMD.

ERM's Work Order was executed by the SFWMD on March 1, 2011; however, the documentation of vegetation monitoring and exotic control efforts reported under the subject work order dates back to February 1, 2011. The Annual Summary Effectiveness Report for FY2012 documents project work from November 8, 2011 to September 7, 2012, which marked the completion of re-treatments of the demolition sites of the Prairie Canal phase. Because of a delay in the availability of funds from the SFMWD during the past fiscal year, FY2012 funds were utilized into FY2013, beginning with treatment of fall flowering grasses. This Annual Summary Effectiveness Report for FY 2013 differs from previous reports in that it covers through June 2013 only, a departure from previous reports.

This Annual Effectiveness Summary Report for FY 2013 documents the scope and effectiveness of control treatment efforts by the District's contractors. The report documents our assessment of exotic and invasive species cover data since the previous year treatments. Therefore, the coverage data presented in this report were collected in FY 2013 to detail the areas treated by the field crews; however, changes in conditions noted in the field and discussed herein are based upon comparison of the FY 2013 data vs. post-treatment conditions documented in FY 2012, as

summarized in the Annual Effectiveness Summary Report for FY 2012 (ERM 2012).

2.0 METHODS

ERM's subcontractor, IRC, surveyed and mapped exotics by vegetation type and provided the data directly to the exotic control contractors funded by the SFWMD and ACOE. Providing data directly to the contractor represented the most cost-effective method for data transfer. IRC also conducted follow-up surveys to assess effectiveness of treatments. Two geodatabases were utilized: one to record field data and the other to delineate exotic infestations by vegetation type and track treatment.

2.1 FIELD DATA COLLECTION AND GEODATABASE

Initial and subsequent annual field surveys were conducted of the contract area to determine invasive species cover at full recovery post-treatment (i.e., just prior to the next treatment). These surveys enabled the direction of new control efforts and evaluated the success of previous treatments. Ground-truthing methodology consisted primarily of vehicle (or bicycle) surveys along the removed road footprints, with foot surveys conducted in native vegetation types around old home sites and in areas adjacent to the footprints. Field ground-truthing focused heavily on known and suspected areas of exotic plant species infestations in the priority areas set by SFWMD. Remote sensing was utilized to determine areas of suspected exotic plant species infestations, based on similar aerial photograph signatures. These efforts followed general construction schedules for PSRP, relating mostly to time-since-construction/land clearing activities. Therefore, surveys are essentially based on stratified random sampling, covering as many signatures as possible in the field.

Field data were recorded in the IRC_Master_GDB.mdb geodatabase (ArcView 9.3 personal geodatabase), based on the FNAI Florida Invasive Plants Geodatabase project (http://fnai.org/invasivespecies.cfm), with modifications. Taxonomy for all plant species in the geodatabase follows Wunderlin and Hansen (2011). All Florida Exotic Pest Plant Council (FLEPPC) Category I and II species were recorded in the field, as they were in the FNAI methods (FLEPPC 2011) (http://www.fleppc.org/list/list.htm). Modifications included the expansion of the scope of species mapped, including native nuisance species and some non-FLEPPC-listed exotic species. Additional exotic species, not yet listed by FLEPPC, which have been noted to exhibit invasive behavior in Collier County, included West Indian Pennisetum (*Pennisetum umpolystachion*) and signal grass (*Urochloa arrecta*). Additionally, species that may or may not exhibit invasive behavior, such as smutgrass (*Sporobolus indicus* var. *pyramidalis*) and shrubby false

buttonweed (*Spermacoce verticillata*), among others, were mapped. These species, along with several other less common species, covered nearly all roadsides prior to clearing in the Picayune Strand project area. These species will be monitored to determine if they begin to become establish in the "undisturbed" adjacent areas in a manner that would be considered "invasive". Persistent landscape species at home sites were mapped, whether they were FLEPPC-listed or not, in the event these species become a problem in the future. Two native species, cattail (*Typha domingensis*) and common reed (*Phragmites australis*), that have the potential to become nuisance species were also mapped.

Another important departure from the FNAI methodology was the incorporation of survey track logs (polyline feature class) with percent cover of dominant exotic species along the track route to strengthen the data set for production of polygon maps. Lastly, additional vegetation type data and additional point data were collected beyond the original FNAI geodatabase scope.

Hand-held Trimble Geo-Explorer and Thales Mobile Mapper GPS units were utilized in the field for data collection. Both units have ArcPad software and were utilized primarily with one polyline feature class (discussed above) with custom designed data fields (drop-down menus for vegetation type and exotic plant species density/cover codes exported from the geodatabase (IRC_Master_GDB.mdb). Five point feature classes were utilized to further document other exotic species, rare plants, rare or exotic animals, other points of interest, and fixed point photographs. Both GPS units allow for the use of digital aerial photography while in the field to help ensure location of signatures in question.

Polyline data were collected by streaming data by distance (5m). When more precise vertices were needed (<5m) they were added to the polylines manually, while streaming. Each time a new vegetation type or the same vegetation type with distinctly different exotic species canopy coverage was entered in the field, a new line segment was initiated. Streaming continued until either vegetation type or exotic species canopy coverage changed, at which time the segment was ended. The fields of the associated database were populated accordingly. When more precision was needed, such as narrow (<5m wide), but distinct vegetation types, manual points (using the 30 point averaging feature) were taken to assist when digitizing. Besides vegetation type and canopy coverage of exotics, a comments field was utilized to describe co-dominants to assist in final habitat type determinations for the polygon map. These data were entered in the IRC_Master_GDB.mdb geodatabase in the "field_survey_tracklog" feature class.

While conducting initial surveys of road footprints within the Faka-union and Merritt phase and logging trams in Prairie Canal phase, a temporary feature class was created to add fields with drop-down menus to record data for exotics and vegetation types visible in areas immediately outside (adjacent) of the footprints. These data primarily consisted of vegetation type and Brazilian pepper (*Schinus terebinthifolius*) cover, depending on visibility from the trails in the center of the cleared road footprints. These data will be processed and added to the 'field_survey_tracklog' feature class, with adjacent habitat data converted to text in the comment field.

Exotic species with less extensive coverage were recorded into a point feature class closely following the FNAI methodology. For example, common species such as Brazilian pepper generally were recorded using the polyline method. Uncommon exotic species, incidental occurrences, and those without distinct patches (i.e., not evenly distributed within a vegetation type), were primarily recorded as points. These species included, but were not limited to cogongrass (*Imperata cylindrica*) and old world climbing fern (*Lygodium microphyllum*). All species noted in the field were incorporated into the polygon map following fieldwork.

Observations of threatened or endangered plant species were recorded using the GPS, as well as notes on abundance, phenology, and host plant (for epiphytes). State of Florida-listed orchids and bromeliads were the most commonly recorded species, none of which were Federally-listed species. Areas with a high probability of rare plant occurrence were not given preference for ground-truthing. Instead, rare plants were observed by chance, while focusing on the primary goal of traversing as many exotic plant species-infested habitat types as possible. These data were entered in the IRC_Master_GDB.mdb geodatabase in the "rare_plant_pts" feature class.

Occasionally, when near the center of a characteristic vegetation type, exotic plant species infestation, or other ecologically significant landscape feature, a fixed-point photograph location was established. These locations were not marked in the field; however, a GPS point was collected and stored in the "Photo_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

Photographs were taken in cardinal directions starting with the north, and then shooting adjacent areas in a clock-wise pattern. Any interesting plants or features were also photographed with a zoom lens. Most photographs were taken in portrait orientation due to the thick vegetation, and additional photographs of the canopy were taken occasionally. Photographs from each fixed point were stored in a separate directory and provided in digital format to the SFWMD.

An additional point feature class was maintained for observations of any other interesting landscape features. This included plant species not previously known from PSRP (but not considered rare in South Florida), as well as other features, such as abandoned camps, junk piles, etc. Vegetation type features needing more precision than streaming with the polyline were recorded into this feature class. The referenced point feature class averages 30 location coordinates, instead of simply the first location coordinates, as used in the polyline streaming method. This is often the case for small unique vegetation types in areas of poor GPS signal, such as dense canopy areas with high, multipath error. These data were recorded in the "Misc_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

Finally, animal signs or direct observations of rare or exotic animals were occasionally recorded as point data. These generally included visual observations of individuals, burrows, nests or signs of any significant finds within PSRP boundaries. These data were stored in the "rare_animal_pts" feature class in the IRC_Master_GDB.mdb geodatabase.

2.2 POLYGON GEODATABASE

A polygon geodatabase, PSRP_vegetation_GDB.mdb, was utilized to synthesize exotics survey data from the IRC_Master_GDB.mdb geodatabase in a final format. Annual updates of exotic species cover recorded in this geodatabase reflect full-recovery, post-treatment (i.e., immediately before next treatment) exotic species cover values. The polygon map was digitized manually, initially starting with existing data from Natural Resources Conservation Service (NRCS) vegetation map (Burch et al. 1997) and past maps done by Mike Barry, as a Division of Forestry employee in 2002-2004. These data were used as a base and were modified as ground-truthing progressed section by section. Existing and historical (1940) vegetation types were recorded along with exotics cover data, where possible.

The polygon geodatabase is an on-going work-in–progress, which can be updated over time with the addition of new ground-truthing data and editing the polygons. Ground-truthed areas can be viewed as "complete" data, while other areas remain in "draft" data format, until additional data are collected. "Draft" areas have been based on aerial photo-interpretation and extrapolation/interpolation of the closest ground-truthing data. For example, this fiscal year, data taken from road footprints was extrapolated to signatures between roads for the Merritt

phase. A 'Yes/No' field was included for all polygons, indicating if the polygon had been ground-truthed; however, it is important to note that only a portion of the larger polygons with 'Yes' values may have been actually ground-truthed. This is because the Yes/No field is populated after hand-digitizing polygons by selecting polygon records that intersect the field survey track log. If the track log enters a large area of similar signature, it was assumed to be the same, until shown differently with additional field data.

A variety of existing data resources went into the production of the polygon vegetation geodatabase. Aerial photography utilized for this project ranged from infrared to true color, from 1995 to 2012. Black and white photography from the 1940s was utilized for historical vegetation types. As mentioned above, actual GIS data from broader-scale mapping efforts done by NRCS (Burch et al. 1997), prior to the subject project, served as a base for the development of a more detailed, ground-truthed map. In addition, elevation data processed from 2007 LiDAR data were utilized to delineate polygons. These relatively recent elevation data have greatly increased the accuracy of the polygons. Finally, aerial sketch mapping data received from SFWMD in 2011 also were utilized to populate exotic cover fields.

All of the data in the ground-truthing feature classes (points and polyline) were incorporated manually into the polygon geo-database. Large polygons generated from existing NRCS layers and Florida Department of Forestry (FDOF) polygons formed the base layer. Subsequently, polygons in ground-truthed areas were further modified, following aerial photograph signatures identified by the field survey track log feature class. Multiple years of aerial photography were examined to assist with signature recognition. The 2007 LiDAR data also were utilized when digitizing polygons to discern differences where aerial signatures were ambiguous.

Fields in the attribute table of the polygon feature class were populated for vegetation types for (i) current conditions, (ii) 1940's or "pre-drainage" conditions, and (iii) percent cover of exotic species. Field notes from comment fields in the field geodatabase were entered into the polygon attribute table when applicable. All point feature classes were examined while digitizing to help identify and populate data fields.

Vegetation types followed the Comprehensive Everglades Restoration Plan (CERP) codes (Rutchey et al. 2006); see:

http://science.nature.nps.gov/im/units/sfcn/docs/Vegetation%20Classification%20-%20v6.15.09.xls.

Any vegetation types not found in the referenced report, but encountered in PSRP during field work, will be proposed for addition to the classification system. If acceptable to the SFWMD, the vegetation types will be entered into the system. Other vegetation classification systems were secondarily designated using crosswalks created for the purpose of automatically populating data fields from the CERP codes. FNAI natural communities were provided along with CERP habitat types for each habitat type polygon, following the FNAI natural communities' guidelines (see: http://www.fnai.org/NaturalCommGuide.cfm).

Florida Land Use Cover and Forms (FLUCFCS) were also utilized, based on FDOT definitions (FDOT 2009), but these general codes were not updated following recent evaluation of the system by Florida Fish and Wildlife Conservation Commission (Kawula 2009). NRCS (Burch et al. 1997) vegetation types were re-populated using the crosswalk. The NRCS crosswalk was utilized originally to populate general (Level 2 or 3) CERP fields in the base layer of the polygon geodatabase, but recent mapping efforts are at a much more detailed scale, even without ground-truthing data.

Existing ground-truthing data were incorporated into the polygon map for a specific area by hand digitizing polygons around signatures crossed and identified by polylines from the field survey track log feature class. Subsequent digitizing continued outward (extrapolation) from the ground-truthed areas. Therefore, the attribute table was populated with values based on aerial photograph signature interpretation and LiDAR data, according to similarity of the closest ground-truthed polygons. Exotic species coverage data were entered into the attribute table, according to general similarity and proximity to ground-truthed signatures.

A Yes/No field in the geodatabase identifies which polygons intersect with ground-truthing point or polyline data. As noted earlier, not all areas of all polygons were ground-truthed; therefore, when interpreting areas actually ground-truthed, the line data should be viewed overlaying the polygon map. Some signatures in areas not ground-truthed (i.e., extrapolated areas) also may have employed lower precision habitat type classifications of the South Florida vegetation classification system, if signatures were less than obvious. As a result, these areas should be identified as important for future ground-truthing efforts when resources are available. Finally, when digitizing and populating the fields of the attribute table in areas not yet ground-truthed, areas with signatures that were difficult to discern, often included comments such as "Needs

Ground-truthing" or may mention alternative classification system values that may be applicable.

2.3 COORDINATION OF EXOTIC CONTROL CONTRACTORS

IRC was available for onsite orientation of the exotic control contractor upon the initiation of each control effort. IRC was also available as needed for interpretation of maps, plant identification, discussion of priorities, or adjustment of control methodologies during treatments. Survey data in the form of maps and point data were loaded into the contractor's Garmin GPS units to ensure the treatment of all known locations of invasive exotics.

Contractor's progress was tracked by collecting GPS units utilized by the contractor. Any new locations of invasive exotics found by the contractors were also added to the geodatabases. Using the crew's weekly GPS track logs also allowed IRC to go directly to known infestations that lacked track data to determine if the locations had been overlooked, the location simply lacked signal, or if crew members without GPS units had performed the treatment. Spot assessments were conducted in the field randomly throughout the year to ensure ongoing treatments did not miss such areas, while the treatment crews were mobilized. Fieldwork by IRC for spot assessments included taking GPS track logs into the 50-foot buffer areas around the cleared areas to verify the distance treatment had extended into the buffer area and to assess how much was missed or re-sprouting. Emphasis was placed on identifying areas missed by the contractor to allow additional treatment, before they demobilized from the area.

2.4 ASSESMENT OF EFFECTIVENESS OF TREATMENTS

Bimonthly Status Reports, including status maps, noting exotic and nuisance vegetation treatment areas have been submitted to the SFWMD. Problems encountered during treatments were discussed, as well as justifications for priorities or actions taken in the field. Lists of exotic and nuisance, vascular, plant species observed within the footprints were prepared using taxonomy following Wunderlin & Hansen (2011). At the end of the fiscal year, final reports have been prepared to summarize treatments and to assess effectiveness of the previous year's treatments.

Annual field surveys were conducted of the contract area to determine invasive species cover at full recovery post-treatment (i.e., just prior to the next treatment) to direct new control efforts and evaluate the success of

previous treatments. As much as possible, the field teams re-visited the areas treated in the previous fiscal year. Most of the survey data are typically collected from February to July; however, starting in fiscal year 2011, initial survey work for new areas also occurred in the fall and winter months. Initial surveys are more time consuming than annual re-visits, making the earlier start necessary.

Re-surveys for this report are as yet incomplete due to the change in timing of this report in June, as some of the logging trams in the Prairie Canal phase have not been surveyed, as yet. These will be completed in the next month, prior to re-treatment, which also has not occurred. Therefore, some of the data in the tables provided herein may change when data for the entire fiscal year is presented again in September 2013.

New data were "cleaned-up" in the geodatabase (IRC_Master_GDB.mdb) and then utilized to update the polygon geodatabase (PSRP_vegetation_GDB.mdb, see section 2.2). Exotics cover values for each year have been maintained in the referenced geodatabase. As treatments have continued over multiple years, values have varied less, as target species typically remain at the same low cover values (i.e., maintenance levels). However, lower priority species, which have not been targeted, often require more adjustments.

Comparisons were made and maps produced showing cover by all exotic species combined, by FLEPPC category and by groups of species targeted by control efforts. Combined exotic species cover estimates were made by summing the median values of cover classes (i.e. <1% = 0.5, 1-5% = 3, etc.) for each polygon by the designated group in an external table linked by the OBJECTID field in the PSRP_Vegetation_GDB.mdb geodatabase. In this manner, maps can be generated by using the OBJECTID field in ArcView, and queries using Access can be utilized for summarizing the extent of infestations by other fields in the geodatabase, such as phase, footprint, and habitat type.

As discussed in past reports, using the groups of summed data can result in misrepresentations. Therefore, individual species data should be consulted when questions arise. Using total invasive species cover would result in an overestimate, if for example; one or more exotic species was growing beneath another exotic species. If only one or two individuals (<1%) of multiple species are found in a large polygon, the program would default to the next one or two cover classes (1-5% or 5-25%), thereby generating an overestimate. In general, the more invasive species found in a polygon, the higher the probability of overlapping cover, which could result in an overestimation. This is especially the case where both

woody and herbaceous species are present, with each group occupying different strata of the same patch of ground.

To develop a summary of the study area, cover class median values (i.e., <1% = 0.5, 1-5% = 3, etc.) are multiplied by acreages and tallied by the groupings for subsequent analysis. It should be noted that these coverage estimates are based on many independent locations, or records in the geodatabase. The final sums for acreage by cover class have been compared to previous years. If target species values increased, an effort was made to understand why, and recommendations have been made to correct the problem. In some cases, this leads to management decisions to discontinue treatment of specific targets, as current methods were not working, or no alternative methods were possible, given budgetary or other factors.

3.0 RESULTS AND RECOMENDATIONS

This report summarizes work completed by ERM and IRC under ERM's contract with the SFWMD and the exotic and native nuisance vegetation control efforts of Applied Aquatic Management, Inc. in Fiscal Year 2013 through June 1, 2013. This report is not timed with the completion of all treatments planned for this fiscal year because the District's multi-year contract with ERM terminates on June 30, 2013. In previous years, the Annual Summary Effectiveness Report has summarized work completed under the budget for the full fiscal year. As a result, the manner in which work and field conditions have been documented in this report departs from the approach in prior years.

SFWMD-funded treatments discussed in this report begin with utilization of FY 2012 funds from SFWMD in Merritt Canal phase demolition sites because acquisition of funding was delayed last fiscal year (ERM 2012). Next, work began on the ACOE-funded treatment of jaraguá. Subsequently, FY 2013 funds were utilized for the re-treatment of Prairie Canal and Merritt phase road, canal, and logging tram footprints, and demolition sites. No work in the Faka-union Canal phase has been completed to date.

Assessment of overall coverage by exotic and nuisance species was performed by comparing 2013 cover to data for the previous year. In general, FLEPPC-listed exotic and nuisance species have been maintained at or below maintenance levels in the Prairie Canal phase footprints and demolition sites, Merritt phase cleared footprints, and some headway has been made in the Merritt phase demolition sites. The cover values presented herein represent pre-treatment levels, or full recovery, since the treatments completed during the last fiscal year.

3.1 WEATHER AND WATER LEVELS

Typically at the end of the fiscal year we report annual statistics of temperature, precipitation, and water levels. However, due to the timing of the report, we will defer such details to the report to be prepared in September 2013. This is specifically due to the rainy season having just begun and not knowing what the hydrologic period will be like, especially for the Prairie Canal phase, which may influence cover assessed in the next fiscal year. The previous Annual Effectiveness Summary Report discussed how lack of rainfall influenced vegetation (ERM 2012). Water levels remained low for the most part (October 2012 being an exception)

throughout the period reported herein and, thus, were not a factor in treatments or in limiting upland species cover.

However, brief mention of the most important variables affecting treatments is warranted. A frost occurred on December 22, 2012, but the damage appeared to be light and only in the very open areas. The most significant impact of the freeze was making treatment of lantana more difficult with foliar spraying. Eventually, this species will be treated using Garlon IV when Brazilian pepper treatments are conducted again.

3.2 INITIAL GARLON TREATMENTS WITHIN MERRITT CANAL PHASE DEMOLITION SITES (Continued from FY 2012)

Upon completion of the exotics re-treatments for the Prairie Canal footprint and demolition sites, for fiscal year 2012, ending on September 7, 2012, crews shifted over to the Merritt Phase Demolition sites. These treatments of Brazilian pepper were conducted between September 10, 2012 and October 29, 2012. Crews could continue to work at this location, as water levels had not yet risen due to the intact drainage system. Crew efforts began where they previously left off with initial treatments at the end of 64th Ave SE west of Merritt in the unblocked section, moving southward covering approximately 549 acres (Table 1, Figure 1). This acreage included several areas of lead tree, Brazilian pepper infestations, and miscellaneous exotic hardwoods associated with former home sites. Lead tree was treated with 30% Garlon IV. Crews worked the areas around the home sites, using abandoned roads and trails as boundaries, to treat all disturbed areas associated with the home sites and the surrounding impacted natural areas. The original plan was to treat exotic grasses, especially cogongrass, at these locations; however, due to the rainy weather that occurred during this time period, crews switched to treating Brazilian pepper and other hardwoods using Garlon IV, which is less likely to be washed off by afternoon rains.

3.3 INITIAL FOLIAR TREATMENTS WITHIN MERRITT CANAL PHASE DEMOLITION SITES (Continued from FY2012)

Approximately 292 acres were covered by crews the week of November 1, 2012 and from November 12 to November 21, 2012 at the demolition sites of the Merritt Phase (Table 2, Figure 2). Crews primarily targeted cogongrass. These areas included disturbed areas in and around multiple abandoned home sites, including at least two large patches of cogongrass, which was partially treated last year. Hand crews carefully and systematically treated areas around these larger sites, so as to target any

smaller patches. Additionally, using ACOE funds, the field crews treated 102 acres at the demolition sites in the unblocked areas just south of 69th Ave SE.

Just prior to foliar treatments, crews had completed initial treatment of Brazilian pepper and other hardwoods. While crews swept the area for Brazilian pepper and hardwoods, they also recorded locations of cogongrass using the GPS units. These locations were loaded into the geodatabase and used to generate maps showing the locations of cogongrass for the crews to eradicate. Additional ground-truthing was conducted in these areas to delineate the larger patches.

3.4 FOLIAR RE-TREATMENTS OF JARAGUÁ WITHIN MERRITT CANAL PHASE AND PRAIRIE CANAL PHASE FOOTPRINTS (Continued from FY 2012)

Approximately 761 acres were traversed using a swamp buggy the week of November 8, 2012 searching for jaraguá (Table 3). Targeting jaraguá in the fall, during the flowering peak, makes it easiest to locate. All of the previously known infestations north of 80th Ave SE in the Prairie Canal Phase and north of 69th Ave SE in the Merritt Phase were treated prior to seed maturation (Figure 3). Because of time constraints and high water during this time period, neither the few small infestations in the southern portions of the Prairie Canal Phase, nor infestations in the southern Merritt Phase (primarily centered on the roads just north and south of Stewart), were treated. However, additional jaraguá infestations were treated in subsequent weeks, while crews targeted other species.

In general, the infestations in the Prairie Canal Phase had not changed appreciably since the last treatments in 2011. These infestations remain small, but persist, with newly seeded individuals around the previously logged points. In the Merritt Phase, jaraguá has expanded substantially, which is not surprising, since areas treated last year had not become fully vegetated. These areas included the cleared road footprints and the roads in the vicinity of the first recorded and largest patch of jaraguá in the PSRP. These observations appeared to suggest that a seed bank may exist, but if we are consistent with treating these areas, we could maintain the presently observed low coverage by this species.

Rigorous treatment of this species is planned again in the fall of 2013. However, because crews are becoming more familiar with this species in its sterile condition, sporadic treatment of this species when found in green condition did occur in subsequent re-treatments, within both Merritt and Prairie Canal phases conducted through June 2013.

3.5 FOLIAR RE-TREATMENTS WITHIN MERRITT CANAL PHASE ROAD AND LOGGING TRAM FOOTPRINT BUFFERS (HAND CREW)

Approximately 1082 acres were covered by a hand crew during the period starting the week of November 29, 2012 and ending April 8, 2013 (Table 4). Emphasis was placed on the re-treatment of large patches of cogongrass (now largely bare ground) and surrounding areas with light and scattered cogongrass (Figures 4 and 5).

A frost occurred on December 22, 2012, but the damage appeared to be light and only in the very open areas. Therefore, frost damage did not influence the re-treatments.

Roughly 226 acres were covered between 58th and 64th Ave SE, west of Merritt Phase where cogongrass infestations are scattered between the roads. Of this, 168 acres were treated between 50th Ave SE and 58th Ave SE, primarily east of the Merritt Phase and especially in the block near the pump station. Last year, the team had treated several large cogongrass patches. Additionally, 102 acres were treated at the demolition sites, in the unblocked areas just south of 69th Ave SE.

One block, between 60th and 62nd West of Merritt, was covered to complete a large, but generally scattered (<25% cover) patch, which had been left unfinished. This was accomplished on a day the crews could not continue planned work due to a controlled burn that escaped (briefly) to the east of the Merritt Canal, making it unsafe to continue working in that area. The extra clean-up of this block will assist significantly with keeping the nearby footprints clean.

A large area was covered along the western edge of the Merritt Canal. Last fiscal year, several large patches of cogongrass were treated using a swamp buggy, but the species persisted in densely vegetated edges. Crews swept these areas, hitting the widely scattered individuals in the woods. Because crews kept finding more cogongrass to spray and were keeping the crew leader busy mixing and filling backpack sprayers, the laborers did get a little carried away in terms of distance from the canal. Though not planned, this will assist in controlling cogongrass in the footprints nearby.

Crews continued south of the unblocked areas working around previously treated patches on the road buffers. They especially focused around 104th to 108th west of DeSoto where several large infestations occurred. The crew completed the initial treatments on patches farther away from the canal. These blocks included some areas of scattered higher ground, so it is important to control cogongrass, as it is unlikely

restoration will flood out the cogongrass in such areas. Hand crews found several new infestations, including several large (around 1-2 acre) patches. These areas have been treated, and we have GPS location data for future re-treatments efforts.

Finally, crews swept portions of the actual cleared footprint where torpedograss (*Panicum repens*) had been noted during initial treatments. This was done to improve control, as torpedograss is difficult to locate in dense vegetation where hand coverage is preferred. Crews were knowledgeable and sprayed a variety of other exotic grass species while sweeping for torpedograss, including Burma reed (*Neyraudia reynaudiana*), vaseygrass (*Paspalum urvillei*), guineagrass (*Panicum maximum*), pennisetum (*Pennisetum purpureum* and *P. polystachion*), and common reed (*Phragmites australis*).

3.6 FOLIAR RE-TREATMENTS WITHIN PRAIRIE CANAL PHASE ROAD AND CANAL FOOTPRINTS AND BUFFERS

Approximately 3,038 acres were covered by an EB crew, funded by SFWMD during this reporting period, starting January 28, 2013 through April 26, 2013 (Table 5). This was a new crew with two licensed applicators and two laborers, utilizing two swamp buggies to re-treat the footprints in the Prairie Canal Phase (Figures 6 and 7).

Percent cover for treatments of most species, especially the highest priority species, such as cogongrass and torpedograss, has been low. However, there were many fairly dense patches of lower priority species, which were not treated last year due to budget constraints. The crews carefully covered the entire footprint and systematically sprayed some of these medium priority species as well.

Specifically, crews have expanded treatments to include thalia lovegrass (*Eragrostis atrovirens*), which had been slowly expanding in previous years. The crews were already familiar with this species from work in Charlotte County. They are also making every effort to hit natalgrass and Bermudagrass in the footprints. Bermudagrass had expanded substantially, as it was not treated last season. Vaseygrass was also targeted, but due to the time of year, we suspect a certain amount will be missed, at least in the southern section. Regardless, crews have demonstrated good abilities to recognize this grass, even prior to flowering.

This new crew was qualified for this effort and has demonstrated good identification skills and sound methodology for systematically covering

the area. They have repeatedly located new cogongrass infestations in the buffer area, showing they are covering the edges, as well.

Work began near 126th and Patterson, moving northward and focusing first on the road and canal footprints (Figures 6 and 7). Then the crew began re-treating the highest priority areas of the demolition sites in the Broken Wing Ranch area, starting north of the tie-back and working towards 79th. At the demolition sites, crews navigated to known points with the swamp buggy, but then got off the buggy to cover the area around these former (primarily cogongrass) patches thoroughly by hand.

Approximately 5.9 acres of Brazilian pepper also was treated at the demolition site at the end of 66th East of Patterson (Table 6). This was treated because a significant amount was missed in earlier re-treatments, largely due to the tangled mess from the dead Brazilian pepper and large amounts of debris and downed fencing remaining at the old home sites.

Re-treatment of portions of the soil remediation sites (only torpedograss) also was initiated April 29th, 2013, which will be reported in the next reporting period. Crews did not attempt a full treatment of the soil sites, only focusing on the most important, known areas of torpedograss infestation.

3.7 MELALEUCA RE-TREATMENTS IN PSRP

Approximately 3,880 acres were covered by an AAM hand crew, funded by FWC, during this reporting period, from February 6 through March 26, 2013 (Table 7) (Figures 8 and 9). The goal was to re-treat areas previously treated in fiscal year 2011. Treatment coverage was accomplished primarily by mobilizing a small hand crew to known locations of infestations, using a swamp buggy. This large area was not 100% traversed using this method, although the crew leader is experienced using this method and does well in locating most infestations. It is understood that some melaleuca may remain hidden in some of the tree islands.

Work began in the Miller extension area where crews previously re-treated dense patches of melaleuca. Crews found modest numbers of re-seeded saplings at most locations. In Bad Luck Prairie, saplings were found at almost all locations. Because this area is so extensive, the crew also encountered and treated several previously missed patches and/or individual larger trees. One such patch was visible from U.S. 41 across the ditch, which the contractor had wanted to spray for almost two years, while traveling that route almost weekly.

After completing the areas south of the canals and Lynch, the crews finished retreating the first block and partially completed the second block, between Everglades and the Miller Canal. Then they moved to the west of the Miller canal and have been working their way northward. They have been treating saplings at almost all locations. While the overall densities of melaleuca have been low, the crew occasionally found small dense patches missed in previous treatments.

Between March 4, 2013 and March 26, 2013, much of the re-treatments had been completed, so most of the time was spent furthering initial treatments in the long blocks between 62nd and 68th (both sides) west of Miller (Figure 9). Treatment coverage in these initial treatment areas was accomplished by mobilizing a small hand crew and walking systematic transects through the blocks. These blocks were 100% traversed using this method, although some dense areas of melaleuca less than one or two meters in height were left when the time to treat them was insufficient. These areas were mapped and will be re-visited. All mature trees and most of the areas with the smaller trees were treated. Work in these dense areas was tedious and slow.

3.8 FOLIAR RE-TREATMENTS WITHIN MERRITT CANAL PHASE ROAD AND LOGGING TRAM FOOTPRINT BUFFERS

Approximately 1,778 acres were covered by a crew of consisting of one licensed applicator and one laborer (AAM), using a swamp buggy (Table 8). This work funded by ACOE during this reporting period. Work started April 9, 2013 and ended May 27, 2013. Emphasis was placed on the re-treatment of the road footprints, differing from the treatments in the Merritt phase discussed earlier in the report (Section 3.5).

Percent cover by exotic grasses, primarily cogongrass were generally low, but crews did encounter additional dense patches never before treated. During this re-treatment crews have expanded targeted species to include natalgrass (*Melinis repens*) and a few other lower priority species, as the control of high priority species has been fairly successful thus far.

The crew began at the southern end of the Merritt phase at the T-canal (Figure 10). They continued northward up to the unblocked area, then worked the cleared area of spoil along the Merritt Canal, checking the large treated patches along the canal. Once north of the unblocked areas, they continued treating the road footprints (Figure 11). Work north of the unblocked areas went much slower due to higher cover by exotics, especially natalgrass, which had not been systematically treated to date.

This AAM crew continues to do exemplary work in the Picayune, working diligently to cover areas thoroughly.

3.9 OVERALL EXOTIC AND NUISANCE SPECIES COVER

It is important to track percent cover of invasive exotic species from year to year to assess the effectiveness of exotic control efforts. Total cover presented in this report represents sampling and pre-treatment cover for fiscal year 2013 and is compared to pre-treatment cover from 2012. The pre-treatment cover for 2013, thus, represents the exotics cover to be treated, and re-treated (what remains alive of the total cover following first treatments) this fiscal year. These data are provided directly to the exotic control contractor, often with commentary on what seems to have been missed or had not been effective the prior year at the specific location to be treated. The direction of change since 2012, as analyzed in more detail in this report, will give additional insight to the overall effectiveness of treatments conducted in 2012 and outlined in the Annual Effectiveness Summary for FY2012 (ERM 2012).

Because of the change in reporting schedule this year (to June), not all footprint surveys or re-treatments for this fiscal year have been completed at the time of this report. Therefore, some of these analyses may be premature, and some of the numbers may change before the report that will be issued in September.

Field Data Collected Fiscal Year 2013

This fiscal year a total of 301 km of polyline data with habitat type and invasive exotic cover were collected and loaded into the field_survey_tracklog feature class of the IRC_Master_GDB.mdb (see Section 2.1) (Table 9). This is less than, but similar to the 464 km of polyline data collected during fiscal year 2012 (ERM 2012).

These data include re-assessment of a majority of the previously treated road footprints, recently cleared logging tram footprints, and sampling of demolition sites in the Prairie Canal and Merritt phases. In the Faka-union phase, a portion of the recently cleared roads and logging tram footprints were sampled for the first time, including habitat and exotic cover data for the adjacent buffer areas outside the cleared footprints. The road and most of logging tram footprints from I-75 south on Everglades to just north of 80th Ave SE were surveyed. Additional surveys may be conducted over the summer, depending on weather conditions and treatment schedules.

While assessing exotics cover, other data were incorporated into the polygon map. Maps with notes taken in the field were sometimes utilized when GPS units malfunctioned or, in some cases, when areas were visited briefly for other tasks, such as field crew coordination meetings. Additionally, new GPS data from exotic control contractors and notes/discussion with the contractor were utilized. Finally, aerial sketch mapping completed in Fiscal Year 2011 also was utilized in map production.

Many additional locations of invasive exotic species were recorded, totaling 889 new points in FY 2013, out of the existing Picayune Strand State Forest total of 8,503 points (Table 10). These points were taken during the field surveys and by exotic control crews, using Garmin GPS units. Data from these units were downloaded weekly.

A total of 60 invasive exotic species and two native nuisance species were mapped using points, polylines, and polygons in areas treated as a part of PSRP (mostly in Prairie Canal and Merritt phases). Over 100 species have been recorded thus far and incorporated into the geodatabase for the entire State Forest. No additional species were added to the geodatabase for Picayune Strand State Forest from the work completed to date in FY 2013, which is not surprising given that most of the demolition sites have already been surveyed. The demolition sites have been the most diverse sources of invasive exotics in PSRP. IRC and herbicide crews will continue to be vigilant for new invasive species, especially as we continue to conduct initial surveys within the Faka-union phase.

We are also tracking several additional non-invasive species. A list from the Merritt demolition sites was presented in the FY 2010 report (Barry 2010). A few, including a spiny legume, have not been positively identified, as yet, but treatments have thus far been effective on this non-native species. Mike Barry currently has a live potted specimen at his residence for identification purposes; it is healthy, but has not flowered.

As noted in Section 2.2 above, these additional field data were incorporated into hand-digitized polygons in the geodatabase. As discussed in Section 2.4 above, comparisons of exotic species cover were made between fiscal years, with this year's report focusing on trends observed since FY 2011 only. As discussed above and in previous reports, consideration of the data must be based on a clear understanding of the potential biases in data groupings.

Prairie Canal Cleared Footprints

Total infested acreage coverage by all exotic and nuisance species

combined in the cleared footprints of Prairie Canal phase in 2013 was 1,764, which is roughly the same as the 1,758 acres recorded in 2012, out of a total 1,768 acres analyzed (Table 11) (Figure 12). Actual acreage covered by invasive exotic species, by summing acreage multiplied by canopy cover (see Section 2.4), was estimated to be 239 acres in 2012 and has risen to 397 acres in 2013 (Table 12). Total percent cover was estimated at 13.5% in 2012 and has risen to 22.4% estimated in 2013.

Total infested acreage by FLEPPC I species has changed little from 1,762 in 2012 to 1,757 in 2013 (Table 11) (Figure 13). However, an increase is observed when actual aerial coverage is calculated, with 47 acres (2.7%) in 2012 and up to 72 acres (4.1%) in 2013 (Table 12). Cogongrass and torpedograss, the only species systematically targeted in last year's treatment due to budget constraints (ERM 2012) did not show an increase. This increase is largely attributable to other species, especially Brazilian pepper and Lantana, which in certain road footprints have become very evident. Also, Burma reed has regenerated at low cover values in many areas, including where they flooded out in 2008. This year EB crews systematically targeted all FLEPPC I species, except Brazilian pepper, which will require work by hand crews on many of the road footprints next fiscal year.

In the cleared footprints, total FLEPPC II species have changed little, reflecting largely that we have not yet targeted all of these species systematically (Tables 11 and 12) (Figure 14). Total cover of FLEPPC II species was 67 acres (3.8% of the site) in 2012 and 66 acres (3.7%) in 2013. Some species, such as caesar weed, have been largely ignored in treatments. Because much of the caesar weed distribution is patchy in larger areas of the footprints, the survey methodology is insufficient to detect subtle changes.

Total infested acres of non-FLEPCC listed Species increased from 1,736 acres in 2012 to 1,748 acres in 2013. Again, this is out of 1,768 total acres, illustrating that nearly all of the cleared footprints have some cover by these non-native species (Table 11) (Figure15). Actual cover has increased from 136 acres (7.7%) in 2012 to 261 acres (14.7%) in 2013 (Table 12). The values for 2012 reported herein are actually lower than those reported last year (ERM 2012). An error in the actual 2012 field survey data collected for 98th Ave SE, which was transferred to the polygon, was discovered, which was corrected following the submittal of the report. Also, although not as dramatic, an increase was observed from 2010 to 2011 and from 2011 to 2012 (ERM 2011, ERM 2012). This illustrates that, in general, we have made headway on more aggressive, targeted, invasive exotic species, such as cogongrass, while the lower priority species continue to spread, since we have not been treating them.

Several species have been targeted and their treatment stepped up (starting in 2011) after noticing their increased cover in the field (ERM 2011, 2012). However, due to budget limitations and what seemed to be low treatment success, many of these species were not treated in the previous fiscal year, most notably Bermudagrass. This year a substantial increase was observed with 327 infested acres in 2012 to 441 acres in 2013, with the actual cover rising from 6.8 (0.4%) to 15.9 acres (0.9%). EB crews resumed treatment of all Bermudagrass in the footprints this fiscal year.

Smutgrass and shrubby false buttonweed have also continued to increase in cover primarily in areas where it has been known to be present (Tables 11 and 12). Although following a few consecutive dry years, the cover by these species may be beginning to actually expand along Patterson south of 88th and especially south of Stewart. Shrubby false buttonweed cover was previous recorded in the 1-5% category over most road footprints, but cover dramatically increased this year to the 5-25% category. Neither of these species are currently being treated. There remains a need to discuss a long-term strategy for this species, as it is possible much of the cleared footprint acreage may remain dominated by this exotic. However, when the Merritt canal is filled these upland species may be eliminated from many areas.

Other species, such as tanglehead (*Heteropogon contortus*), pitted bluestem (*Bothriochloa pertusa)*, and a handful of other species seem to have remained largely unchanged or slightly increasing. All of these species were prevalent in the roads prior to clearing, much like smutgrass.

Thalialove grass (*Eragrostis atrovirens*) has been showing up at an increasing number of locations, including wet areas, such as the Prairie Canal footprint. Also, it has increased in cover since 2012. Although this species does not appear to be invading adjacent natural areas, the increase of this species was enough to warrant action and EB crews treated this species this year.

<u>Prairie Canal Demolition Sites and Their Buffers</u>

Total infested acreage, when combining exotic species from the demolition sites and their buffers in the Prairie Canal phase (largely refers to the Broken Wing Ranch area) was 1,761 in 2012 and 2013, out of the total 1,786 acres mapped and analyzed (Table 13) (Figure 12). Actual coverage has changed little from 87 acres (4.9%) in 2012 to 91 acres (5.1%) in 2013 (Table 14). This suggests that the trend of declining observations since treatments first begin in 2009 (ERM 2011, 2012) may have leveled off.

FLEPPC I species also appear to be leveling off at the Prairie Canal demolition sites, with the total infested acreage remaining high at 1,758 acres out of 1,786 acres analyzed (Table 13) (Figure 13). Actual coverage was 51 acres (2.8%) in 2012 and 49.8 acres (2.8%) in 2013 (Table 14). The decreasing trend has continued from 2009 to 2012 (ERM 2012).

Cogongrass has continued to be the most important target at the demolition sites and their buffers in the Prairie Canal phase, with 373 infested acres in 2012 and 374 acres in 2013, out of the total 1,786 acres covered (Table 13). Actual coverage dropped slightly from 4.4 acres (0.2%) in 2012 to 2.3 acres (0.1%) in 2012 (Table 14). Other species not previously targeted, such as natalgrass, were sprayed this year, which if successful should show a decrease in overall cover of FLEPPC I species. Brazilian pepper was not re-treated this fiscal year.

Total infested acres of FLEPPC II species at the demolition sites and the buffers changed little, being 407 acres for 2012 and 2013 (Table 13) (Figure 14). Actual coverage remained at 13 acres (0.7%) in 2012 and 2013 (Table 14). Coverage by caesar weed has changed little this past year, as most of the effects of the Cobalt wildfire have lessened.

Total acres infested by non-listed invasive exotics had increased from 115 acres in 2012 to 215 acres in 2013 (Table 13) (Figure 15). This increasing trend was also observed and discussed last year (ERM 2012). The increase is probably due to increased light availability at the actual demolition sites where we have treated Brazilian pepper (ERM 2011), as well as increased space available where other more aggressive grasses have been treated. Actual cover was 15 acres (0.9%) in 2012 and 21 acres (1.2%) in 2013 (Table 14). The majority of this cover, as mentioned in previous reports (ERM 2012), is smutgrass. Cover by this exotic was largely restricted to the old home sites, although it is also scattered around trails throughout the demolition site buffers.

Merritt Demolition Sites and Their Buffers

This year, similar to last year, we are lumping the 441 acres of initial treatments (which began in 2010) into the total 5,260 acres of the entire unblocked area in Merritt phase. This includes some areas treated initially in 2012 and 2013, as well as large areas we have not treated and/or ground-truthed. The Merritt phase has demolition sites scattered throughout with abandoned trails, borrow pits, camps, trash piles, corrals, and disturbed areas connecting the actual home sites. We have continued mapping these sites this fiscal year and will continue to treat them, as funds are available. Therefore, following discussion reflects a work in progress.

We currently estimate the total infested acres to be 3,952 out of the 5,258 total acres (Table 15). Actual cover of combined exotic and nuisance species mapped thus far totaled 623 acres (11.9%) in 2012 and 610 (11.6%) in 2013 (Table 16) (Figures 16). Much of the infested acreage mapped to date consists of FLEPPC I species that covered 368 acres (7%) of the area in both 2012 and 2013 (Table 16) (Figure 17).

Thus far, cogongrass treatments are the only treatments from last fiscal year that will be reflected in cover values. Cogongrass was estimated to cover 65 acres (1.2%) in 2012 and 46 acres (0.9%) in 2013 (Table 16). Many large patches of cogongrass have been mapped, the largest of which covered 8 acres. Additional patches were located this year and more indicated by sketch mapping and aerial photograph signatures remain to be ground-truthed and digitized. Therefore, the statistics noted remain preliminary. Nearly all of the large patches are obviously associated with trails or disturbed areas around or linking old home sites.

Total infested cover by FLEPPC II species was 366 acres in 2012 and 377 acres in 2013 (Table 15) with 44 acres (0.8%) and 41 acres (0.8%) of actual coverage in 2012 and 2013, respectively (Table 16) (Figure 18). Non-listed species cover included 661 and 668 acres, respectively. In 2012, actual cover was estimated to be 197 acres (3.7%) and 200 acres (3.8%) (Tables 11 and 12) (Figure 19). Smutgrass is the primary non-listed species mapped. It is important to note that the home sites and their surrounding disturbed areas represent the largest expanses of smutgrass in areas not previously cleared in PSRP, which is likely due to past cattle grazing in this area. Cattle grazing is known to promote smutgrass colonization. These unblocked areas were the most recent areas where active cattle grazing occurred and at least one cow has occasionally been seen this year.

Merritt Cleared Footprints

In 2012 and 2013, respectively, a total of 1,697and 1,701 infested acres out of 1,709 total acres of all exotic and nuisance species combined were mapped in the recently cleared road, logging tram, and some canal edge footprints in the Merritt phase (Table 17) (Figure 16). Actual coverage by exotics was relatively low at 330 acres (19.3%) in 2012, which has increased to 537 acres at present (31.4%) (Table 18).

FLEPPC I species included 1,507 infested acres in 2012, which has increased to 1,647 acres in 2013 (Table 17) (Figures 17). Actual cover was estimated at 71 acres (4.1%) in 2012, which increased to 111 acres in 2013 (6.5%) (Table 18). Despite this measured increase, the primary targets of last fiscal year's treatments showed a decrease. Cogongrass consisted of 153 infested acres in 2012 and 241 in 2013; however actual cover was

estimated at 2.6 acres (0.1%) and 1.8 acres in 2013 (0.1%), respectively. Torpedograss included 37 infested acres in 2012 and 38 acres in 2013, with actual cover estimated at 0.3 acres (<1%) for both years, illustrating that crews have been able to maintain the cover of this exotic to a small area. Burma reed coverage was also successfully reduced, with 275 infested acres in 2012 and 438 acres in 2013. Actual cover went from 6.9 acres (0.4%) in 2012 to 6.0 acres (0.35%) in 2013. The increase in cover by FLEPPC I species is largely due to other species such as Brazilian pepper, lantana, and especially natalgrass. Natalgrass was estimated at 499 infested acres in 2012 and 602 infested acres in 2013, with actual cover increasing from 6 acres (0.36%) in 2012 to 27 acres (1.6%) in 2013. Natalgrass and lantana were systematically targeted this fiscal year.

FLEPPC II species included 1,172 infested acres in 2012 and 1,190 acres in 2013 (Table 17) (Figure 18). Actual cover was 119 acres (7%) in 2012 and 104 acres (6%) in 2013 (Table 18). Caesar weed in some of the logging trams actually decreased in cover without treatment; however, after surveying the areas seedlings began popping up in some areas. As a result, AAM crews begin treating this species in some areas, especially north of the unblocked section.

Non-listed species included roughly 1,596 infested acres in 2012, which increased to 1,628 acres in 2013 (Table 17) (Figure 19), out of a total 1,709 acres, illustrating the widespread distribution of these species. This widespread presence is understandable, since the species were present on nearly all the roads prior to clearing. Actual cover increased from 173 acres (10%) in 2012 to 360 acres (21%) in 2013 (Table 18). As discussed in last year's report (ERM 2012), smutgrass was the most significant species mapped in this group, with smutgrass cover scattered throughout much of the project area. Smutgrass has begun to dominate many areas of the footprints north of the unblocked sections. Tanglehead also now dominates many footprint areas in nearly solid expanses, including the T-canal areas and the northern-most road footprints. These species have not been treated systematically due to budget constraints and owing to the potential they eventually will be controlled in low-lying areas by a longer hydroperiod.

3.9 RECOMMENDATIONS

Typically treatment priorities are discussed in preparation for the next fiscal year. However, because of the earlier date of this report, work continues based on priorities discussed in the last report (ERM 2012). Furthermore, as of yet, some areas have not been re-surveyed this fiscal year. Therefore, priorities will be established at a later date and

documented in the report generated at in September 2013. Nevertheless, at this juncture, a certain priority for the next fiscal year will be treatments of Brazilian pepper in certain areas of logging trams and Prairie Canal footprints where cover has exceeded 5%.

4.0 ACKNOWLEDGEMENTS

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Tables

Table 1: Acres Covered by Treatment of Brazilian pepper* at PSRP, end of FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal	9/7/2012	Inside Footprint		15.7							15.7
Merritt Canal (SFWMD)	9/7/2012 to 11/29/2012	Demolition Site	9.5	1.3	14.4	0.5	2.6				28.3
		Demolition Site Buffer	347.9	35.0	83.9	23.4	0.1				490.4
		Adjacent to Footprint	0.8	0.4	6.0						7.3
		Inside Footprint	0.3	7.2							7.5
		TOTAL:	358.6	59.7	104.2	23.9	2.7	0.0	0.0		549.1

**** Species Targeted included Brazilian pepper and Lantana, but only Brazilian pepper cover is shown (primary target)***

Table 2: Acres Covered by Foliar Treatment of Cogongrass at Merritt Canal Homesites, PSRP, end of FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal (SFWMD)	11/1/2012 to 11/29/2012	Demolition Site	3.5	7.4	2.2						13.1
		Demolition Site Buffer	45.1	217.0	8.3			0.1	1.2		271.6
		Inside Footprint	6.5	1.5							8.0
		TOTAL:	55.1	225.9	10.4	0.0	0.0	0.1	1.2		292.7
**** Species Targeted included primarily Cogongrass, but other invasives were sporadically treated***											

Table 3: Acres Covered by Foliar Re-Treatment of Jaraguá at PSRP, FY 2012											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal Footprints and Demolition Sites Re-Treatment	Week of 11/8/2012	Inside Footprint	170.0	109.5	70.2						349.6
		50' outside footprint	12.1	0.1							12.1
		Demolition Site	13.1	2.3							15.4
		Demolition Site Buffer	33.4	0.2	0.5						34.1
Merritt Canal Footprints and Demolition Sites Re-Treatment	Week of 11/8/2012	Inside Footprint	262.5	54.7	3.5						320.7
		Inside Logging Tram Footprint	1.4								1.4
		Demolition Site	16.1	1.5				0.5			18.2
		Demolition Site Buffer	6.3	3.1	0.2						9.6
		TOTAL:	514.8	171.4	74.4	0.0	0.0	0.5	0.0	0.0	761.1

Table 4: Acres Covered by First Foliar Treatment of Priority Species* (ACOE) at PSRP, FY 2013											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal Footprints Initial Treatment (ACOE)	11/29/2012 to 4/8/2013	Inside Footprint	21.4	39.6	126.1	45.6	6.3				239.0
		Adjacent to Footprint	230.5	165.2	12.2	9.5		1.6	2.7		421.6
		Inside Logging Tram Footprint	4.2	1.2		0.6					6.0
		Merritt Demolition Site	3.0	0.3	8.2	1.2					12.7
		Merritt Demolition Site Buffer	134.0	133.9	120.2	8.8	1.4	2.3	2.5		403.1
		TOTAL:	393.1	340.3	266.7	65.7	7.7	3.8	5.2		1082.4

**** Species Targeted in FY 2013 incuded in these cover estimates are: Cynodact, Eragatro, Impecyli, Lantcama, Panirepe, Neyrreyn, Panimaxi, Paspurvi, Penepurp, Pennpoly, Phraaust, Melirepe, Typhdomi, and Urocmuti***

Table 5: Acres Covered by First Foliar Re-Treatment (SFWMD) of Prairie Canal Footprints and Demolition Sites and Merritt Canal Demolition Sites at PSRP, FY 2013											
Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Prairie Canal Footprints and Demolition Sites Re-Treatment	**1/28/2013 to 4/26/2013**	**Inside Footprint**	129.2	268.7	985.8	276.7	21.1	5.8			1687.3
		Adjacent to Footprint	605.6	85.0	35.6	8.7	0.2	0.0			735.1
		Inside Logging Tram Footprint	2.5	0.3	0.4						3.3
		Demolition Site	12.8	12.6	2.6	14.6	9.4				52.0
		Demolition Site Buffer	122.6	146.2	11.8	0.7		0.1	0.2		281.6
Merritt Canal Demolition Sites Re-Treatment with some Initial Treatment	**4/22/2013 to 5/17/2013**	**Demolition Site**	10.0	35.4	67.6	2.2					115.1
		Demolition Site Buffer	24.0	33.4	24.6	7.9	2.0	1.3	4.1		97.2
Miller Canal Phase Demolition Site and Soil Remediation Sites Re-Treatment	**5/1/2013 to 5/8/2013**	**Demolition Site**	0.0		0.4	8.4	0.1	0.1			9.0
		Soil Remediation	0.2	1.4	14.3	30.6	8.7	2.4			57.5
		TOTAL:	906.9	583.0	1143.1	349.7	41.4	9.8	4.3	0.0	3038.2

Table 6: Acres Covered by Treatment of Brazilian Pepper (SFWMD) at PSRP, FY 2013											
Treatment	Location	Dates	0%	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Cut Stump and Basal Bark	Prairie Canal Demolition Sites	4/8/2013 to 4/9/2013	0.0	2.7	1.8	0.2	1.2	0.0	0.0	0.0	5.9
		TOTALS	0.0	2.7	1.8	0.2	1.2	0.0	0.0	0.0	5.9

Table 7: Acres Covered by Cut-Stump Treatment of Melaleuca at PSRP, FY 2013											
Treatment	Location	Dates	0%	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Cut Stump	Bad Luck Prairie, Miller Extension up to 66th, West of Miller	2/6/2013 to 3/26/2013	712.1	2,935.6	155.9	37.4	8.1	15.1	15.5	0.0	3,879.9
		TOTALS	712.1	2,935.6	155.9	37.4	8.1	15.1	15.5	0.0	3,879.9

Table 8: Acres Covered by Second Foliar Re-Treatment (ACOE) of Priority Species* at PSRP, FY 2013

Treatment	Dates	Location	0	0-<1%	1-5%	5-25%	25-50%	50-75%	75-95%	>95%	Total Acres
Merritt Canal Footprints Initial Treatment (ACOE)	4/9/2013 to 5/27/2013	Inside Footprint	234.9	379.8	644.6	223.9	25.7				1508.8
		Adjacent to Footprint	18.3	7.6	1.5	0.3		0.5			28.2
		Inside Logging Tram Footprint	45.8	26.7	5.9	4.1					82.5
		Merritt Demolition Site	5.0	3.7	13.6	0.5					22.8
		Merritt Demolition Site Buffer	108.8	16.0	9.7	1.0		0.3			135.9
		TOTAL:	412.9	433.9	675.3	229.7	25.7	0.8	0.0		1778.2

Species Targeted in FY 2013 incuded in these cover estimates are: Cynodact, Eragatro, Impecyli, Lantcama, Panirepe, Neyrreyn, Panimaxi, Paspurvi, Penepurp, Pennpoly, Phraaust, Melirepe, Typhdomi, and Urocmuti

Table 9: Total Distance Surveyed Using GPS with ArcPAD, FY2013		
Method	Meters	Kilometers
ATV	3543.9	3.5
Bicycle	160,571.9	160.6
On Foot	56,558.8	56.6
Standard Vehicle	80,071.6	80.1
	Totals	300.7

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
I	*Abrus precatorius*	Rosary-pea, Crab-eyes	1	5
I	*Acacia auriculiformis*	Earleaf acacia		57
I	*Albizia lebbeck*	Woman's tongue, Rattlepod		12
	Allamanda cathartica	Yellow allamanda, Golden trumpet		1
	Alpinia zerumbet	Shellflower, Shell ginger		1
	Arundo donax	Giant reed		1
	Bambusa vulgaris	Common bamboo		11
I	*Bauhinia variegata*	Mountain ebony, orchidtree		5
I	*Bischofia javanica*	Javanese bishopwood		3
	Bothriochloa pertusa	Pitted bluestem, Pitted beardgrass		9
II	*Casuarina cunninghamiana*	Beefwood, River sheoak		3
I	*Casuarina equisetifolia*	Australian-pine, Horsetail casuarina		15
	Catharanthus roseus	Madagascar-periwinkle	1	1
	Cortaderia selloana	Pampas grass		1
	Crotalaria pallida var. *obovata*	Smooth rattlebox		1
	Crotalaria spectabilis	Showy rattlebox		1
I	*Cupaniopsis anacardioides*	Carrotwood		1
	Cynodon dactylon	Bermuda grass	29	63
	Dactyloctenium aegyptium	Crow's-foot grass, Durban crowfootgrass		3
II	*Dalbergia sissoo*	Indian rosewood	1	5
I	*Dioscorea alata*	White yam		2
I	*Dioscorea bulbifera*	Common air-potato	3	28
I	*Eichhornia crassipes*	Common Water hyacinth		18
	Epiphyllum phyllanthus var. *hookeri*	Orchid cactus		1
	Eragrostis atrovirens	Thalia love grass	7	25
	Eucalyptus degulpta	Eucalyptus		2
	Eulophia graminea	Orchid	1	37
I	*Ficus microcarpa*	Laurel fig, Indian laurel		2
	Furcraea selloa			1
II	*Hemarthria altissima*	Limpograss		4
	Heteropogon contortus	Tanglehead	20	49
	Hibiscus sabdariffa	Roselle		1
I	*Hydrilla verticillata*	Water-thyme		2
I	*Hymenachne amplexicaulis*	Trompetilla		69
	Hyparrhenia rufa	Jaraguá	14	142
	Hyptis pectinata	Comb bushmint		2
I	*Imperata cylindrica*	Cogongrass	397	1693
	Ipomoea quamoclit	Cypressvine		2
	Kalanchoe daigremontiana	Devil's-backbone		2
II	*Koelreuteria elegans* subsp. *formosana*	Flamegold		1
	Lagerstroemia indica	Crapemyrtle		2
I	*Lantana camara*	Shrubverbena	8	123
II	*Leucaena leucocephala*	White leadtree	4	32
	Litchi chinensis	Litchee		1
	Ludwigia peruviana	Peruvian primrosewillow	4	6
I	*Lygodium japonicum*	Japanese climbing fern	3	9
I	*Lygodium microphyllum*	Small-leaf climbing fern	2	136
	Mangifera indica	Mango		1
I	*Manilkara zapota*	Sapodilla		1
I	*Melaleuca quinquenervia*	Punktree	126	1335
I	*Nephrolepis cordifolia*	Tuberous sword fern		13
I	*Nephrolepis multiflora*	Asian sword fern		25

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
I	*Neyraudia reynaudiana*	Burmareed, Silkreed	64	350
	Oeceoclades maculata	African ground orchid, Monk orchid		2
II	*Panicum maximum*	Guineagrass	6	29
I	*Panicum repens*	Torpedo grass	30	194
	Paspalum notatum	Bahia grass	8	24
	Paspalum urvillei	Vasey grass	96	155
	Pennisetum polystachion	West Indian pennisetum, Missiongrass	8	30
I	*Pennisetum purpureum*	Napier grass, Elephantgrass	4	40
	Philodendron sp.			2
II	*Phoenix reclinata*	Senegal date palm		1
	Phragmites australis	Common reed	5	51
	Phyllanthus acidus	Tahitian gooseberry tree		1
	Phyllostachys aurea	Golden Bamboo		2
I	*Pistia stratiotes*	Water-lettuce		1
	Pongamia pinnata	Karum tree, Poonga-oil tree		1
I	*Psidium cattleianum*	Strawberry guava		1
I	*Psidium guajava*	Guava		1
II	*Pteris vittata*	China brake		17
I	*Rhodomyrtus tomentosa*	Downy myrtle, Rose myrtle		242
I	*Melinis repens*	Rose Natalgrass	15	106
II	*Ricinus communis*	Castor-bean		1
	Rottboellia cochinchinensis	Itch grass		2
I	*Schinus terebinthifolius*	Brazilian-pepper	1	1445
	Selenicereus pteranthus	Snake cactus, Princess-of-the-night		1
	Senna alata	Candlestick plant		2
I	*Senna pendula* var. *glabrata*	Valamuerto		9
	Sesbania herbacea	Danglepod		2
II	*Sesbania punicea*	False-rattlebox		1
	Sorghum arundinaceum	Broomcorn	1	2
	Sorghum halepense	Johnson grass	2	3
	Sporobolus indicus var. *pyramidalis*	West Indian dropseed	2	35
	Stenotaphrum secundatum	St. Augustine grass		10
II	*Syagrus romanzoffiana*	Queen palm		1
I	*Syngonium podophyllum*	Nephthytis, American evergreen	1	2
I	*Syzygium cumini*	Jambolan-plum, Java-plum		30
II	*Syzygium jambos*	Rose-apple, Malabar-plum		13
	Tabebuia aurea	Caribbean trumpettree		2
II	*Terminalia catappa*	Tropical-almond, West Indian-almond		1
I	*Thespesia populnea*	Portiatree		1
I	*Tradescantia spathacea*	Oysterplant, Moses-in-the-cradle, Boatlily	1	4
	Tradescantia zebrina	Wandering-jew, Inchplant		1
	Triplaris melaenodendron	Long John		1
	Typha domingensis	Southern cat-tail	16	125
II	*Urena lobata*	Caesarweed	1	1468
I	*Urochloa mutica*	Paragrass	1	14
II	*Vitex trifolia*	Simpleleaf chastetree		1
II	*Wedelia trilobata*	Creeping wedelia, Creeping oxeye	1	6
II	*Xanthosoma sagittifolium*	Arrowleaf elephantear		2
	Zamia furfuracea	Cardboard-palm		1
	Ziziphus mauritiana	Indian jujube		8
	Unknown ARALIACEAE			1
	Unknown BRASSICACEAE			1

Table 10: List of Invasive Exotic Species Logged as Waypoints by GPS into Geodatabase				
EPPC	Full Taxonomic Name	Common Names	2013	Total
	Unknown FABACEAE			5
	Unknown *Ficus* sp.	3 veined Ficus sp., un-identified;		2
	Nephrolepis sp.			5
	Unknown POACEAE			2
	UNKNOWN		5	76
	UNKNOWNS	Miscellaneous landscape plants listed in comments of database, no FLEPPC listed species		1
		TOTAL:	889	8503

Table 11: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Cleared Footprints

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres**
Total Exotics	Spring 2012	5.4	1762.3	239.0	14.9	660.5	922.3	101.8	51.4	4.6	6.7	1767.7
	Spring 2013	3.6	1764.1	396.8	5.4	163.5	1148.4	312.6	71.3	28.0	34.9	1767.7
Total FLEPPC I	Spring 2012	5.5	1762.2	47.1	728.0	939.7	92.5	0.6	0.3	1.1		1767.7
	Spring 2013	10.8	1756.9	71.8	385.6	1172.2	180.2	17.5	0.3	1.1		1767.7
Total FLEPPC II	Spring 2012	156.0	1611.7	66.6	652.5	752.5	182.7	6.7	17.3			1767.7
	Spring 2013	147.8	1619.9	65.1	616.4	826.9	148.2	11.1	17.3			1767.7
Non-Listed	Spring 2012	31.6	1736.1	136.2	15.5	1119.0	553.4	42.3	5.8			1767.7
	Spring 2013	19.9	1747.8	260.5	4.9	675.9	782.0	236.8	30.7	17.6		1767.7
Foliar Targets	Spring 2012	333.5	1434.2	51.6	383.7	923.3	120.8	0.6	5.8			1767.7
	Spring 2013	141.2	1626.5	86.2	283.0	1035.5	281.2	21.1	5.8			1767.7
Imperata cylindrica	Spring 2012	1583.1	184.6	1.0	181.0	3.6						1767.7
	Spring 2013	1507.5	260.2	1.5	253.2	6.8		0.2				1767.7
Panicum repens	Spring 2012	1555.7	212.0	4.0	120.3	86.5	5.1					1767.7
	Spring 2013	1604.8	162.9	1.1	151.1	11.7	0.1					1767.7
Neyraudia reynaudiana	Spring 2012	1536.5	231.2	1.2	229.7	1.5						1767.7
	Spring 2013	1338.9	428.8	4.6	375.0	44.7	9.1					1767.7
Melinis repens	Spring 2012	1372.7	395.0	10.4	239.7	118.7	36.0	0.6				1767.7
	Spring 2013	1330.2	437.6	11.6	245.2	153.8	38.6	0.0				1767.7
Schinus terebinthifolius	Spring 2012	17.6	1750.1	10.8	1713.0	32.4	3.3	0.3	1.1			1767.7
	Spring 2013	15.7	1752.0	20.9	1423.9	300.6	26.1	0.3	1.1			1767.7
Lantana camara	Spring 2012	1200.3	567.4	6.4	450.8	111.4	5.2					1767.7
	Spring 2013	902.7	865.0	12.8	743.2	76.8	45.0					1767.7
Cynodon dactylon	Spring 2012	1441.0	326.7	6.8	257.6	40.6	28.6					1767.7
	Spring 2013	1326.4	441.3	15.9	283.8	76.0	81.4					1767.7
Spermacoce verticillata	Spring 2012	61.8	1705.9	46.4	735.8	857.0	113.1					1767.7
	Spring 2013	35.8	1731.9	110.8	224.9	970.2	536.9					1767.7
Sporobolus indicus var. pyramidale	Spring 2012	137.4	1630.3	44.9	942.2	550.5	124.2	13.4				1767.7
	Spring 2013	32.1	1735.6	71.6	882.3	548.9	281.8	22.6				1767.7

***Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category**

****Total Acreage considered inside footprint is less than 2011 because some areas re-disturbed prior to re-survey were not included in calculations this year**

Table 12: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase Cleared Footprints					
Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	239.0	13.5%	396.8	22.4%	1767.7
Total FLEPPC I	47.08	2.7%	71.82	4.1%	1767.7
Total FLEPPC II	66.58	3.8%	65.09	3.7%	1767.7
Non-Listed	136.16	7.7%	260.52	14.7%	1767.7
FY 2013 Foliar Targets	51.58	2.9%	86.19	4.9%	1767.7
Imperata cylindrica	1.01	0.1%	1.53	0.1%	1767.7
Panicum repens	3.96	0.2%	1.12	0.1%	1767.7
Neyraudia reynaudiana	1.19	0.1%	4.58	0.3%	1767.7
Melinis repens	10.38	0.6%	11.63	0.7%	1767.7
Schinus terebinthifolius	10.85	0.6%	20.88	1.2%	1767.7
Lantana camara	6.37	0.4%	12.77	0.7%	1767.7
Cynodon dactylon	6.79	0.4%	15.91	0.9%	1767.7
Spermacoce verticillata	46.35	2.6%	110.76	6.3%	1767.7
Sporobolus indicus var. pyramidale	44.87	2.5%	71.62	4.1%	1767.7
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					

Table 13: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Prairie Canal Phase at Demolition Sites and Buffers												
Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	24.7	1760.9	87.3	712.8	746.9	260.3	15.5	22.7	2.7		1785.6
	Spring 2013	24.6	1760.9	90.8	679.0	771.0	267.1	15.8	24.9	3.2		1785.6
Total FLEPPC I	Spring 2012	27.3	1758.3	50.7	858.0	779.0	105.1	13.6	0.2	2.4		1785.6
	Spring 2013	27.3	1758.3	49.8	853.7	794.5	93.7	12.8	1.3	2.4		1785.6
Total FLEPPC II	Spring 2012	1379.1	406.5	12.7	94.0	291.6	19.7	0.8	0.4			1785.6
	Spring 2013	1379.1	406.5	12.5	94.0	292.5	18.8	1.2				1785.6
Non-Listed	Spring 2012	1670.4	115.2	15.2	33.3	19.3	40.9	21.1	0.2	0.3		1785.6
	Spring 2013	1570.3	215.3	20.9	41.1	95.4	54.2	22.9	1.4	0.3		1785.6
FY 2012 Foliar Targets	Spring 2012	1396.7	388.9	11.1	297.0	56.7	24.8	9.7	0.2	0.5		1785.6
	Spring 2013	1393.0	392.6	9.1	331.3	35.4	15.8	9.4	0.1	0.5		1785.6
Imperata cylindrica	Spring 2012	1412.8	372.7	4.4	331.7	31.1	9.3	0.3	0.2	0.2		1785.6
	Spring 2013	1411.3	374.2	2.3	365.2	8.7	0.0		0.1	0.2		1785.6
Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category												

Table 14: Summary of Actual Area Covered by Invasive Exotics in Prairie Canal Phase at Demolition Sites and Buffers

Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	87.3	4.9%	90.8	5.1%	1785.6
Total FLEPPC I	50.7	2.8%	49.8	2.8%	1785.6
Total FLEPPC II	12.7	0.7%	12.5	0.7%	1785.6
Non-Listed	15.2	0.9%	20.9	1.2%	1785.6
FY 2012 Foliar Target	11.1	0.6%	9.1	0.5%	1785.6
Impecyli	4.4	0.2%	2.3	0.1%	1785.6

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 15: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Merritt Canal Phase at Demolition Sites and Buffers

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	1306.0	3951.7	623.2	1021.7	1352.6	716.0	433.5	264.1	137.1	26.6	5257.7
	Spring 2013	1305.5	3952.2	610.0	875.8	1506.8	721.7	456.1	244.4	122.5	24.8	5257.7
Total FLEPPC I	Spring 2012	1343.6	3914.2	368.6	1151.1	1619.2	845.3	72.8	142.4	80.5	2.9	5257.7
	Spring 2013	1343.6	3914.2	368.6	1151.1	1619.2	845.3	72.8	142.4	80.5	2.9	5257.7
Total FLEPPC II	Spring 2012	4891.4	366.3	43.6	21.6	71.3	272.8	0.2	0.5			5257.7
	Spring 2013	4880.3	377.4	40.8	47.9	75.7	253.2		0.5			5257.7
Non-Listed	Spring 2012	4597.3	660.5	196.9	17.5	139.0	210.3	138.8	100.4	54.2	0.3	5257.7
	Spring 2013	4589.5	668.2	199.9	17.5	139.3	213.1	140.4	103.5	54.2	0.3	5257.7
FY 2012 Foliar Targets	Spring 2012	3037.4	2220.3	78.4	1710.7	357.6	86.0	11.2	20.6	34.3		5257.7
	Spring 2013	2680.1	2577.6	66.9	1884.1	589.3	56.7	11.0	17.4	19.2		5257.7
Imperata cylindrica	Spring 2012	3271.9	1985.8	64.9	1786.4	85.5	47.9	11.2	20.7	34.2		5257.7
	Spring 2013	3261.1	1996.6	46.2	1825.5	100.7	25.9	7.9	17.4	19.2		5257.7

Sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 16: Summary of Actual Area Covered by Invasive Exotics in Merritt Canal Phase at Demolition Sites and Buffers					
Category	Spring 2012		Spring 2013		Total Acres**
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	623.2	11.9%	610.0	11.6%	5257.7
Total FLEPPC I	368.6	7.0%	368.6	7.0%	5257.7
Total FLEPPC II	43.6	0.8%	40.8	0.8%	5257.7
Non-Listed	196.9	3.7%	199.9	3.8%	5257.7
FY 2012 Foliar Targets	78.4	1.5%	66.9	1.3%	5257.7
Impecyli	64.9	1.2%	46.2	0.9%	5257.7
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					
***** total acres includes all of the unblocked areas in Merritt Phase but mapping is still incomplete at this time***					

Table 17: Total Infested Acres by Cover Class and Actual Area Covered by Invasive Exotics in Merritt Phase Footprints (Road, Logging Tram, and Some Canal Edge Footprints Combined)

Category	Period	0% (No Infestation)	Total Infested Acres	Actual Coverage*	<1%	1-5%	5-25%	25-50%	50-75%	75-95%	95-100%	Total Acres
Total Exotics	Spring 2012	12.1	1697.0	330.2	99.9	699.3	540.7	122.3	113.4	59.5	61.8	1709.2
	Spring 2013	8.0	1701.2	536.8	42.8	177.6	778.2	317.9	201.5	74.5	108.8	1709.2
Total FLEPPC I	Spring 2012	202.3	1506.9	70.6	612.6	735.0	116.9	1.4	33.2	7.5	0.2	1709.2
	Spring 2013	61.9	1647.3	111.3	434.6	848.2	287.5	36.6	33.2	6.9	0.2	1709.2
Total FLEPPC II	Spring 2012	537.7	1171.5	119.3	441.6	350.9	252.6	56.8	54.0	12.3	3.3	1709.2
	Spring 2013	519.0	1190.2	104.4	418.8	419.4	260.0	47.6	23.4	17.7	3.3	1709.2
Non-Listed	Spring 2012	113.2	1595.9	172.6	215.7	964.3	270.1	42.9	25.0	44.8	33.1	1709.2
	Spring 2013	81.6	1627.6	360.0	66.4	308.2	825.7	261.0	80.4	41.9	43.9	1709.2
FY 2012 foliar targets	Spring 2012	488.3	1220.9	39.7	557.5	535.8	124.4	0.9	0.9	1.4		1709.2
	Spring 2013	328.8	1380.3	68.7	441.1	668.1	245.3	25.8				1709.2
Imperata cylindrica	Spring 2012	1555.9	153.3	2.5	112.9	38.7	0.5	0.6		0.6		1709.2
	Spring 2013	1468.0	241.2	1.8	217.6	23.5						1709.2
Panicum repens	Spring 2012	1672.0	37.1	0.3	36.3		0.8					1709.2
	Spring 2013	1671.4	37.8	0.3	36.9		0.8					1709.2
Neyraudia reynaudiana	Spring 2012	1434.4	274.8	6.9	193.1	53.1	28.2	0.3				1709.2
	Spring 2013	1270.8	438.3	6.0	390.3	26.1	21.9					1709.2
Melinis repens	Spring 2012	1210.4	498.8	6.2	428.5	53.9	16.4					1709.2
	Spring 2013	1107.4	601.7	27.3	295.1	209.1	75.5	22.0				1709.2
Schinus terebinthifolius	Spring 2012	433.2	1275.9	36.5	1100.3	134.6	0.7		33.2	6.9	0.2	1709.2
	Spring 2013	107.9	1601.3	47.7	1349.5	148.7	62.0	0.9	33.2	6.9	0.2	1709.2
Lantana camara	Spring 2012	1383.2	326.0	3.0	271.5	54.4						1709.2
	Spring 2013	1124.3	584.9	15.8	324.3	207.8	52.8					1709.2

sum of infested acres for each cover class multiplied by the midpoint of the percent cover category

Table 18: Summary of Actual Area Covered by Invasive Exotics in Merritt Canal Phase Cleared Footprints					
Category	Spring 2012		Spring 2013		Total Acres
	Actual Coverage*	Percent of Site	Actual Coverage*	Percent of Site	
Total Exotics	330.2	19.3%	536.8	31.4%	1709.2
Total FLEPPC I	70.6	4.1%	111.3	6.5%	1709.2
Total FLEPPC II	119.3	7.0%	104.4	6.1%	1709.2
Non-Listed	172.6	10.1%	360.0	21.1%	1709.2
FY 2013 Foliar Targets	39.7	2.3%	68.7	4.0%	1709.2
Imperata cylindrica	2.5	0.1%	1.8	0.1%	1709.2
Panicum repens	0.31	0.02%	0.31	0.02%	1709.2
Neyraudia reynaudiana	6.9	0.4%	6.03	0.35%	1709.2
Melinis repens	6.2	0.4%	27.3	1.6%	1709.2
Schinus terebinthifolius	36.5	2.1%	47.7	2.8%	1709.2
Lantana camara	3.0	0.2%	15.8	0.9%	1709.2
sum of infested acres for each cover class multiplied by the midpoint of the percent cover category					

Figures

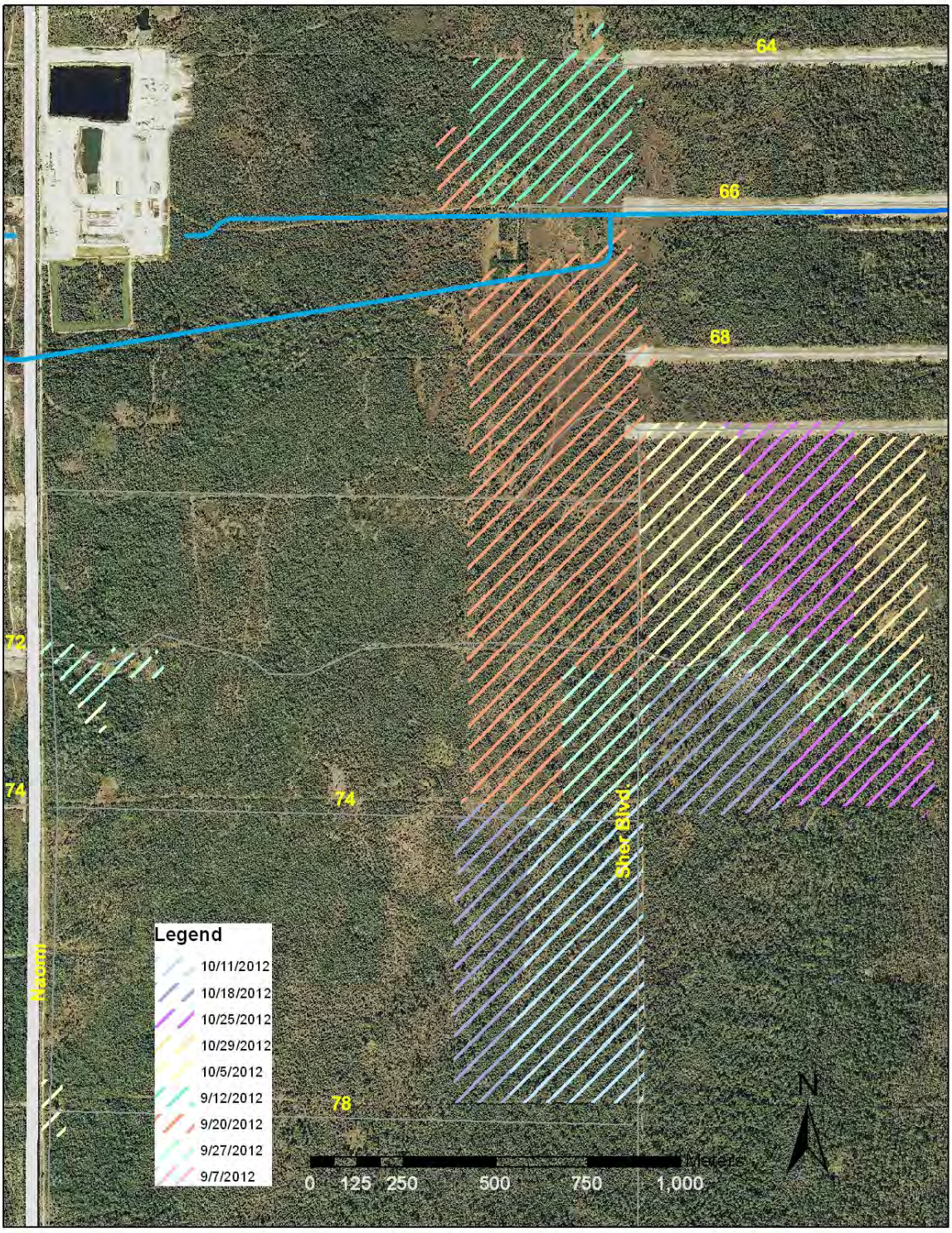

Figure 1: Area Covered by Treatment of Brazilian pepper at Merritt Canal Demolition Sites (SFWMD) at PSRP, end of FY 2012

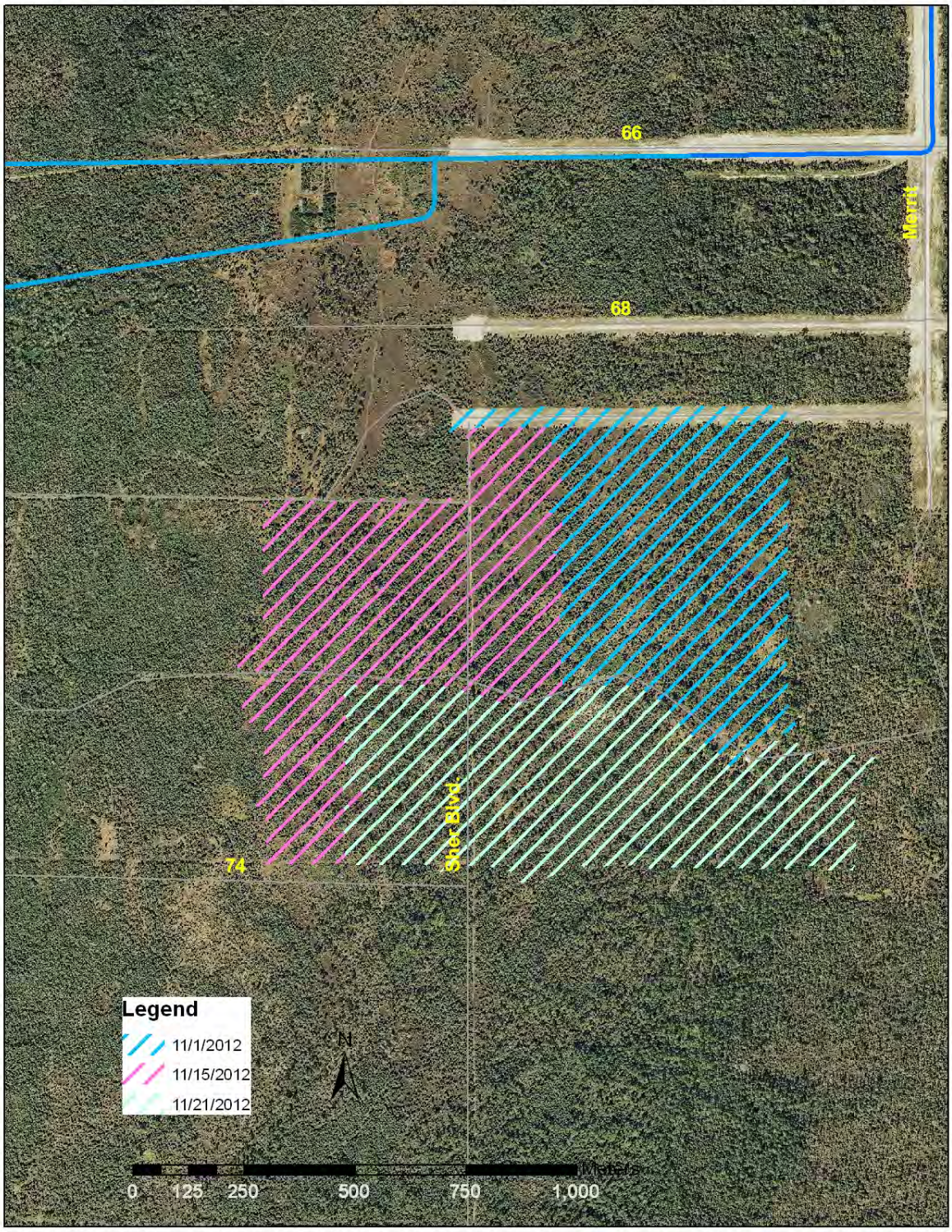

Figure 2: Area Covered by Foliar Treatment of Cogongrass at Merritt Canal Demolition Sites (SFWMD) at PSRP, end of FY 2012

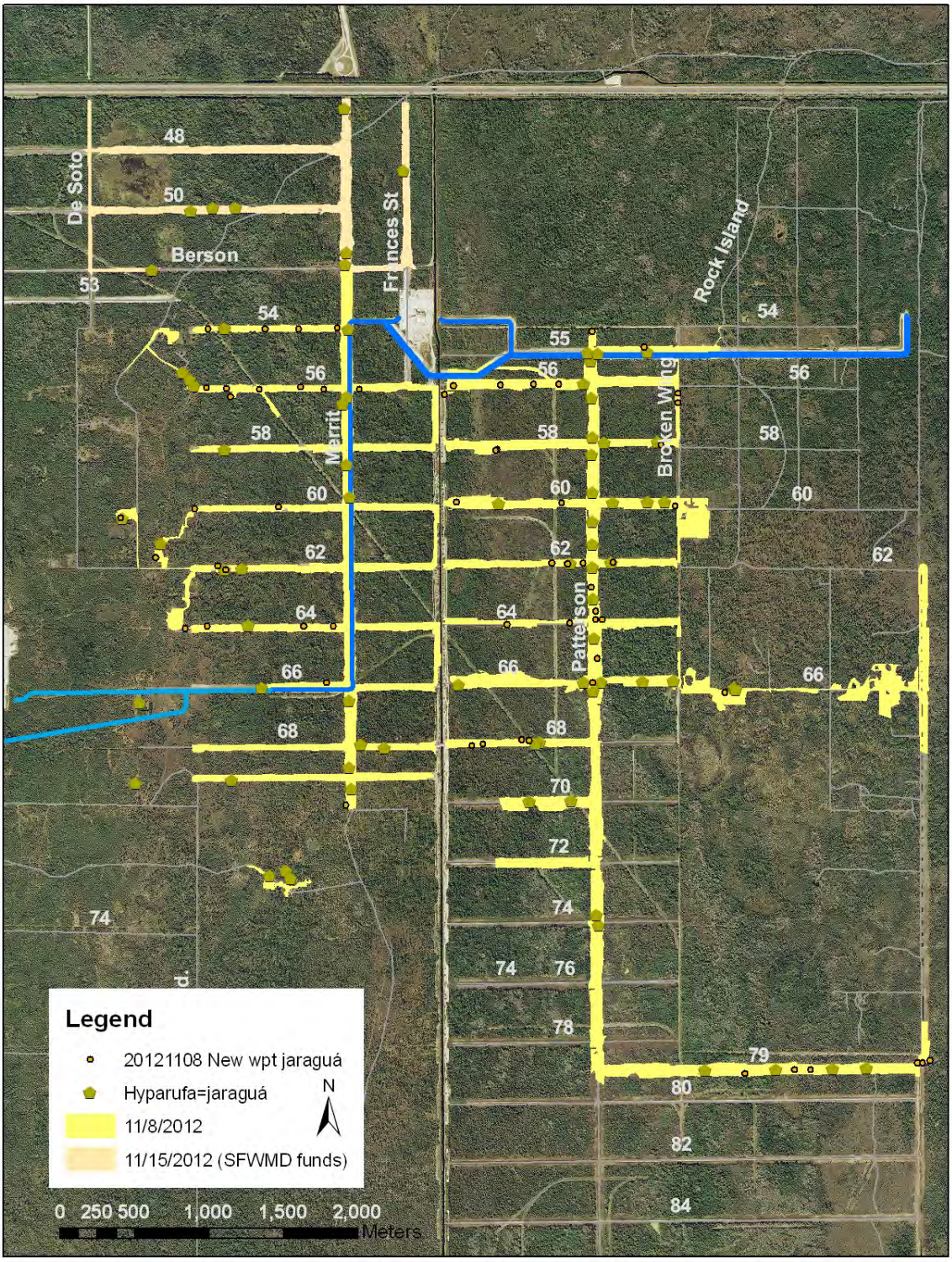

Figure 3: Area Covered by Foliar Re-Treatment of Jaraguá at PSRP (ACOE), FY 2012

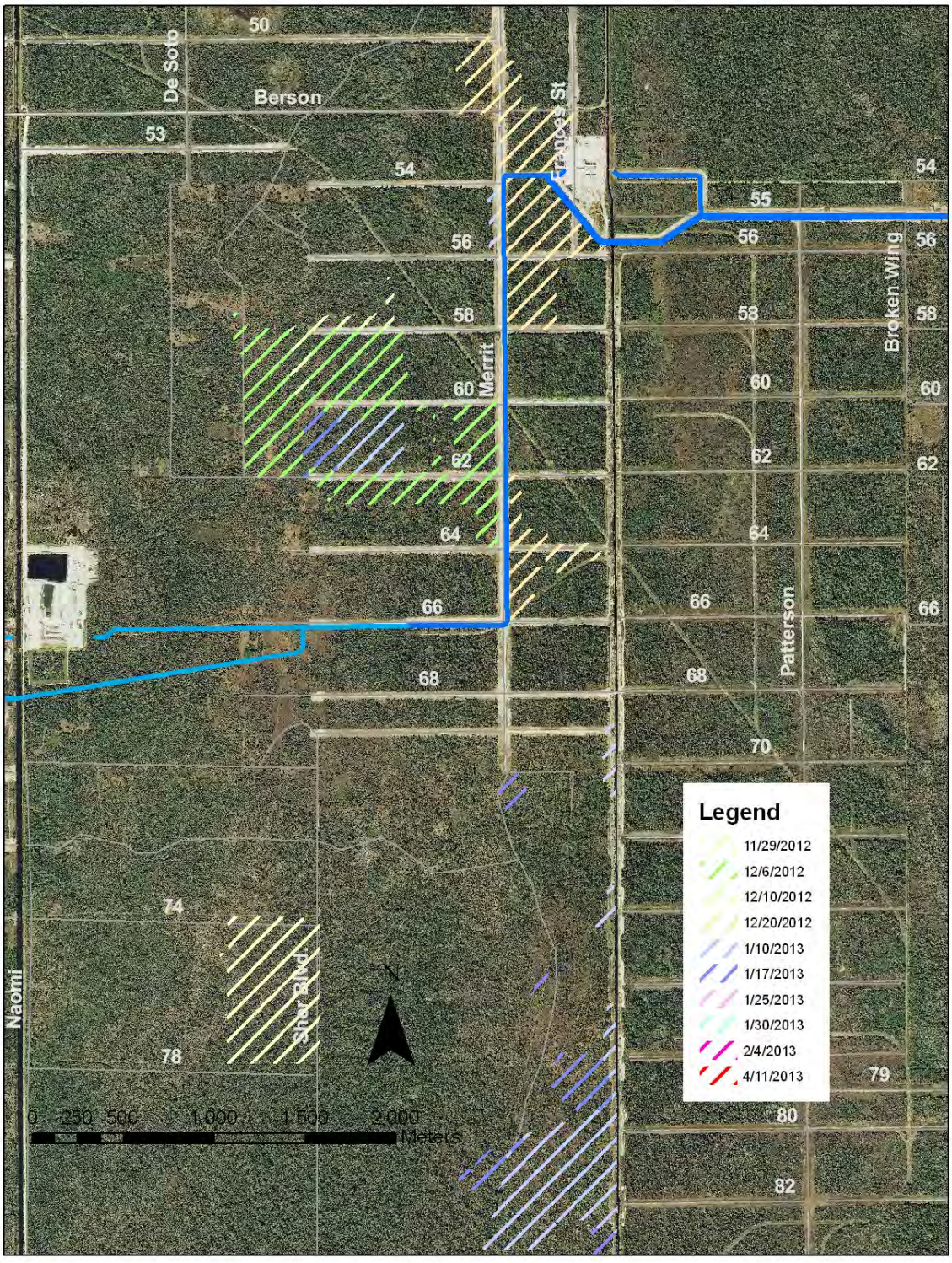

Figure 4: Area Covered by First Foliar Treatment of Priority Species (ACOE) at PSRP, FY 2013 (North of 82nd Ave SE)

Figure 5: Area Covered by First Foliar Treatment of Priority Species (ACOE) at PSRP, FY 2013 (South of 82nd Ave SE)

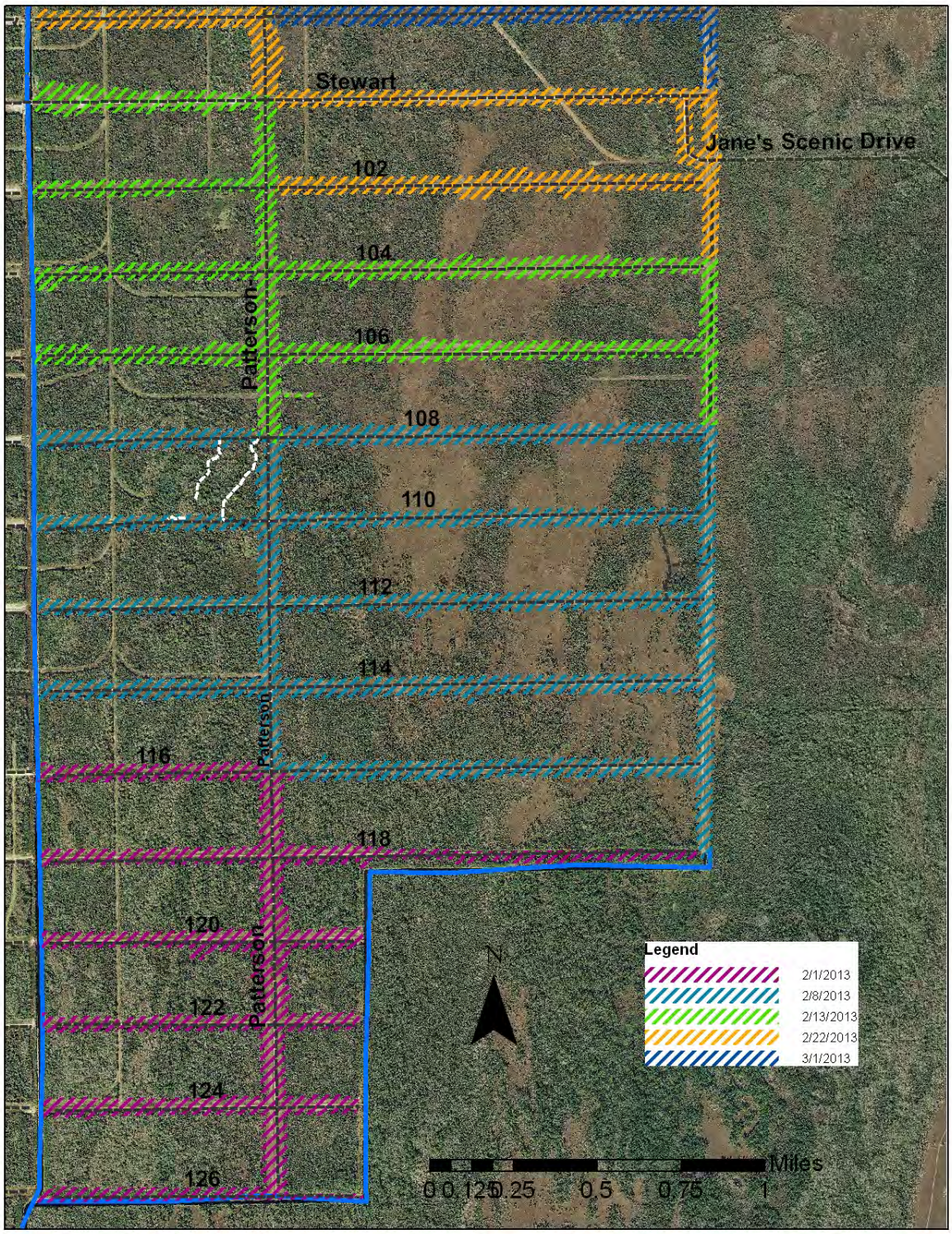

Figure 6: Area Covered by First Foliar Re-Treatment (SFWMD) of Prairie Canal Footprints and Demolition Sites and Merritt Canal Demolition Sites at PSRP, FY 2013 (South of 98th Ave SE)

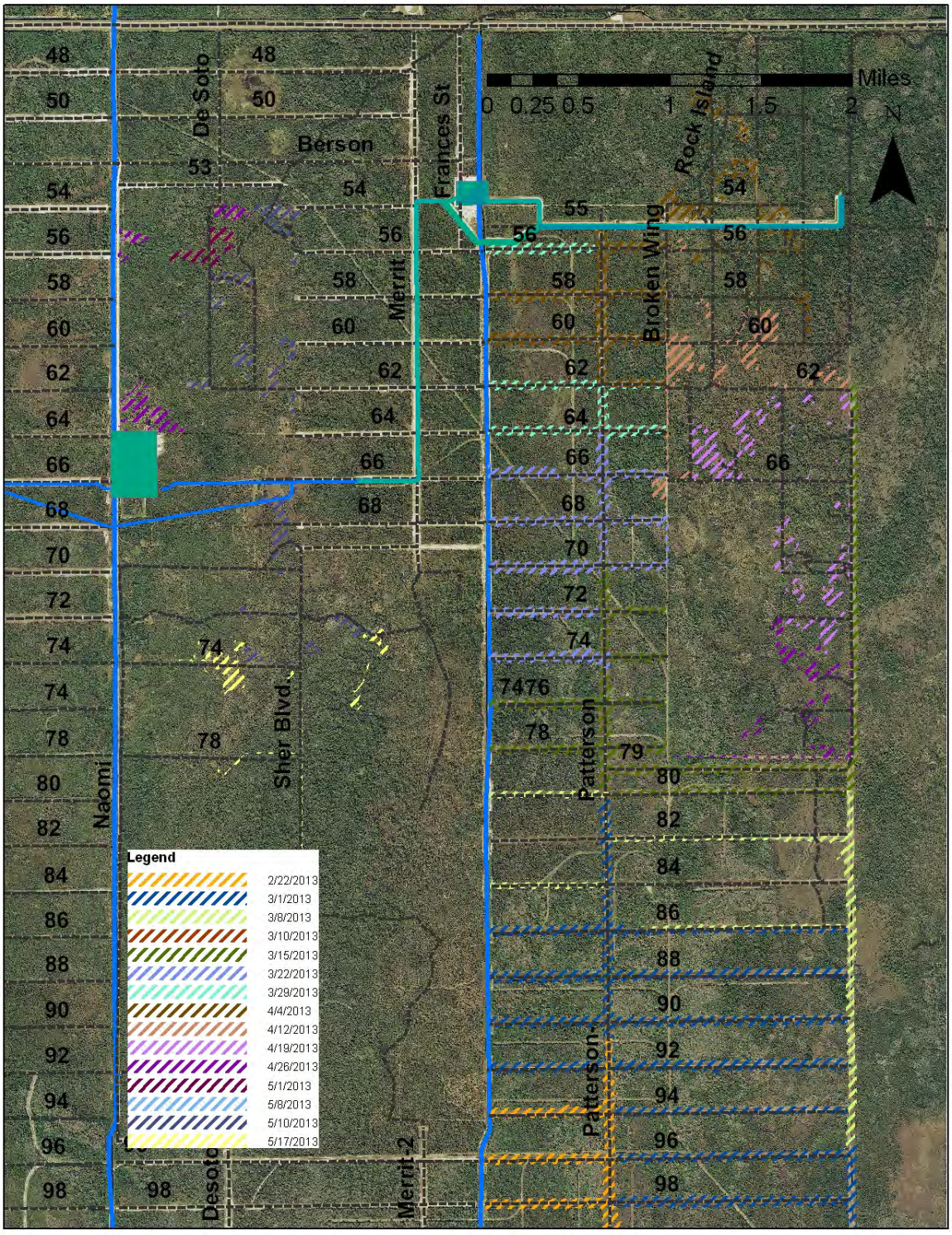

Figure 7: Area Covered by First Foliar Re-Treatment (SFWMD) of Prairie Canal Footprints and Demolition Sites and Merritt Canal Demolition Sites at PSRP, FY 2013 (North of 98th Ave SE)

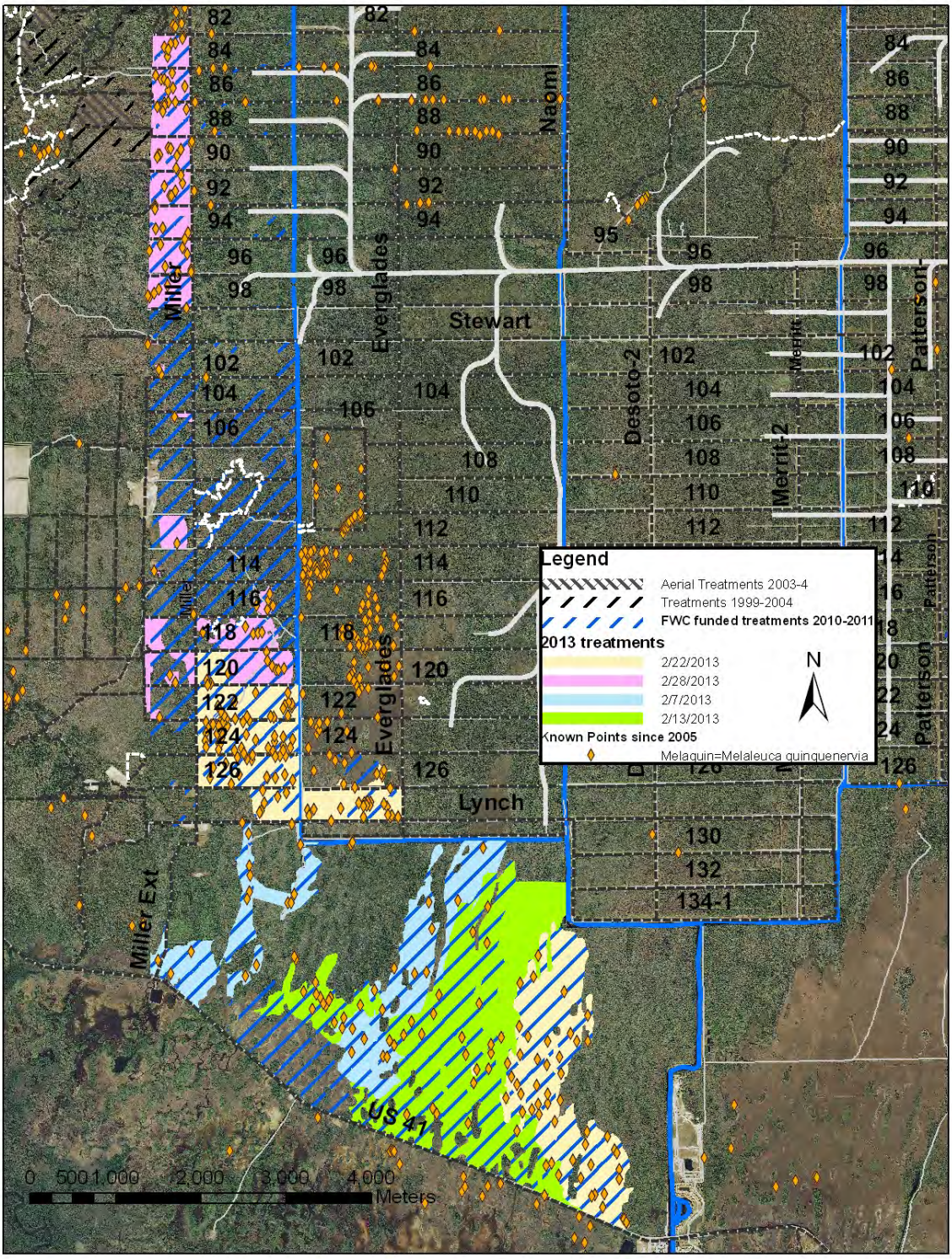

Figure 8: Area Covered by Cut-Stump Treatment of Melaleuca at PSRP, FY 2013 (South of 82nd Ave SE)

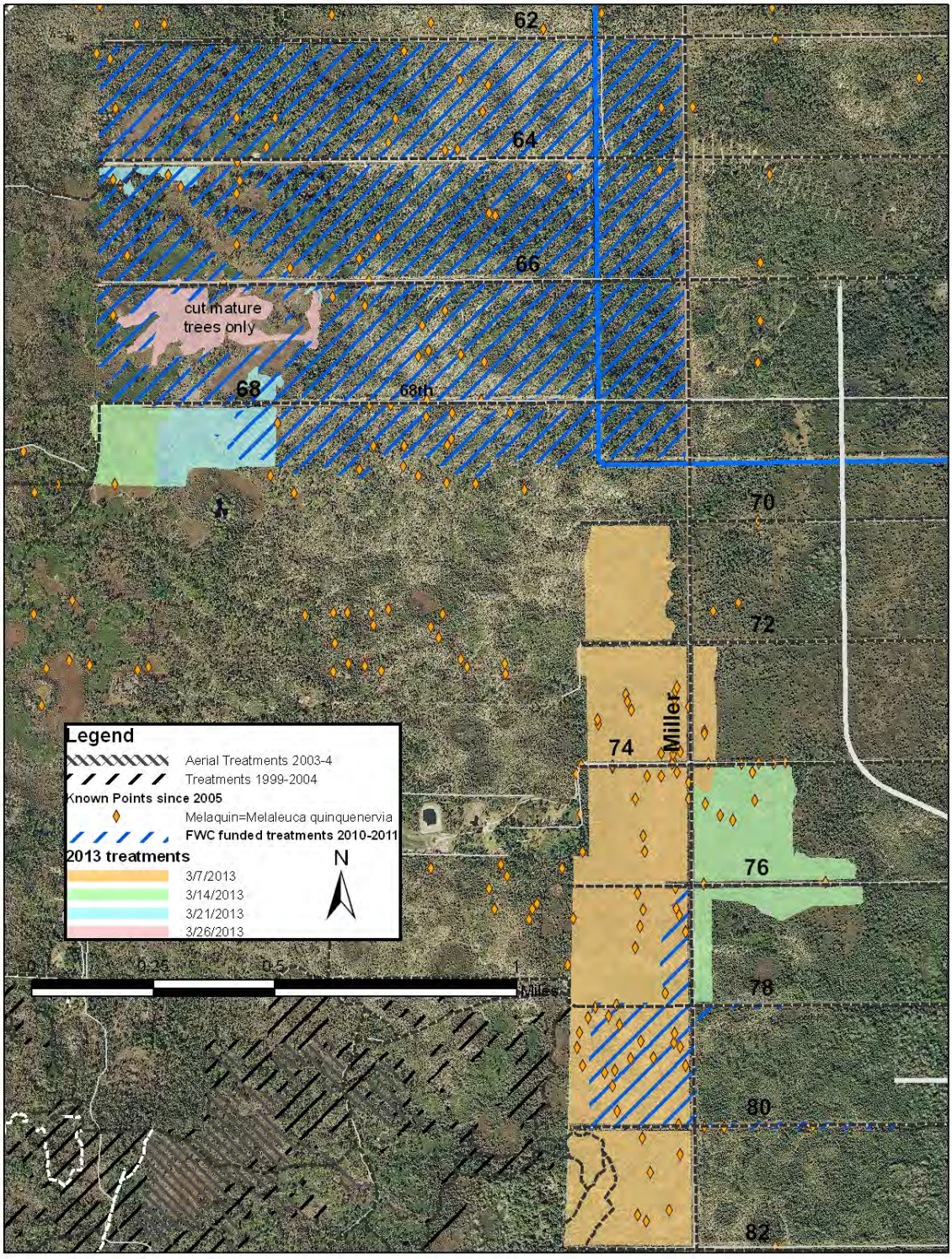

Figure 9: Area Covered by Cut-Stump Treatment of Melaleuca at PSRP, FY 2013 (North of 82nd Ave SE)

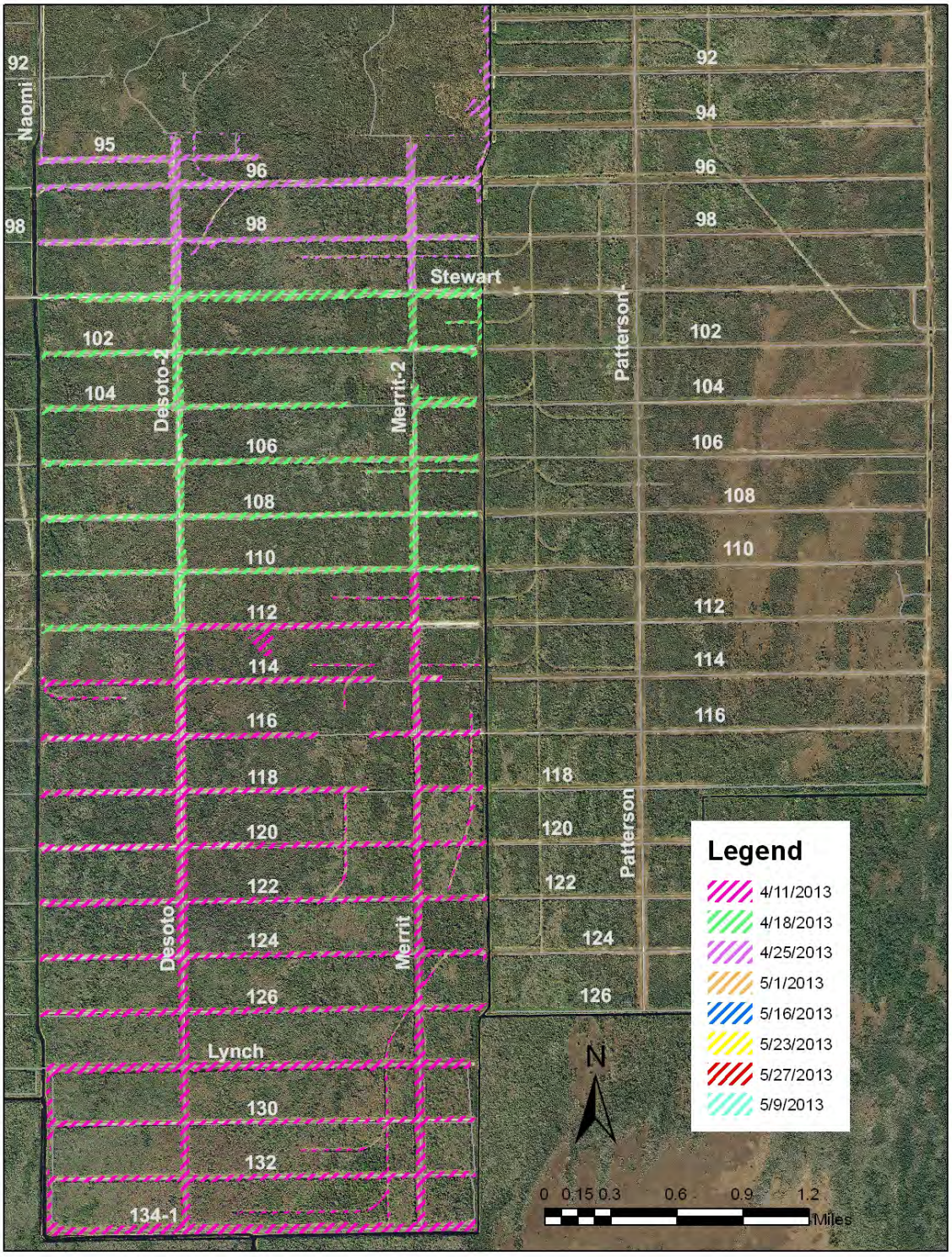

Figure 10: Acres Covered by Second Foliar Re-Treatment (ACOE) of Priority Species at PSRP, FY 2013 (South of 90th Ave SE)

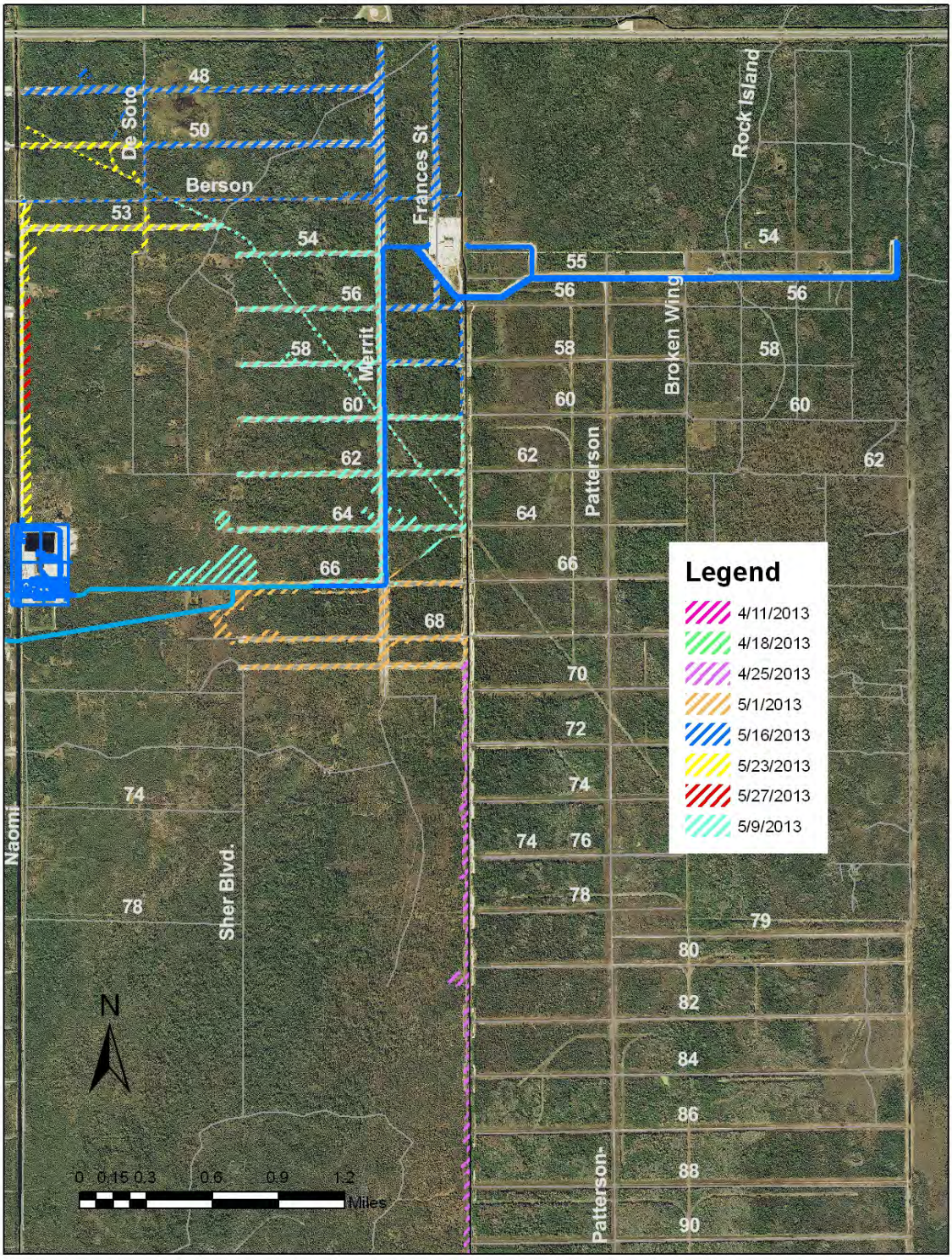

Figure 11: Acres Covered by Second Foliar Re-Treatment (ACOE) of Priority Species at PSRP, FY 2013 (North of 90th Ave SE)

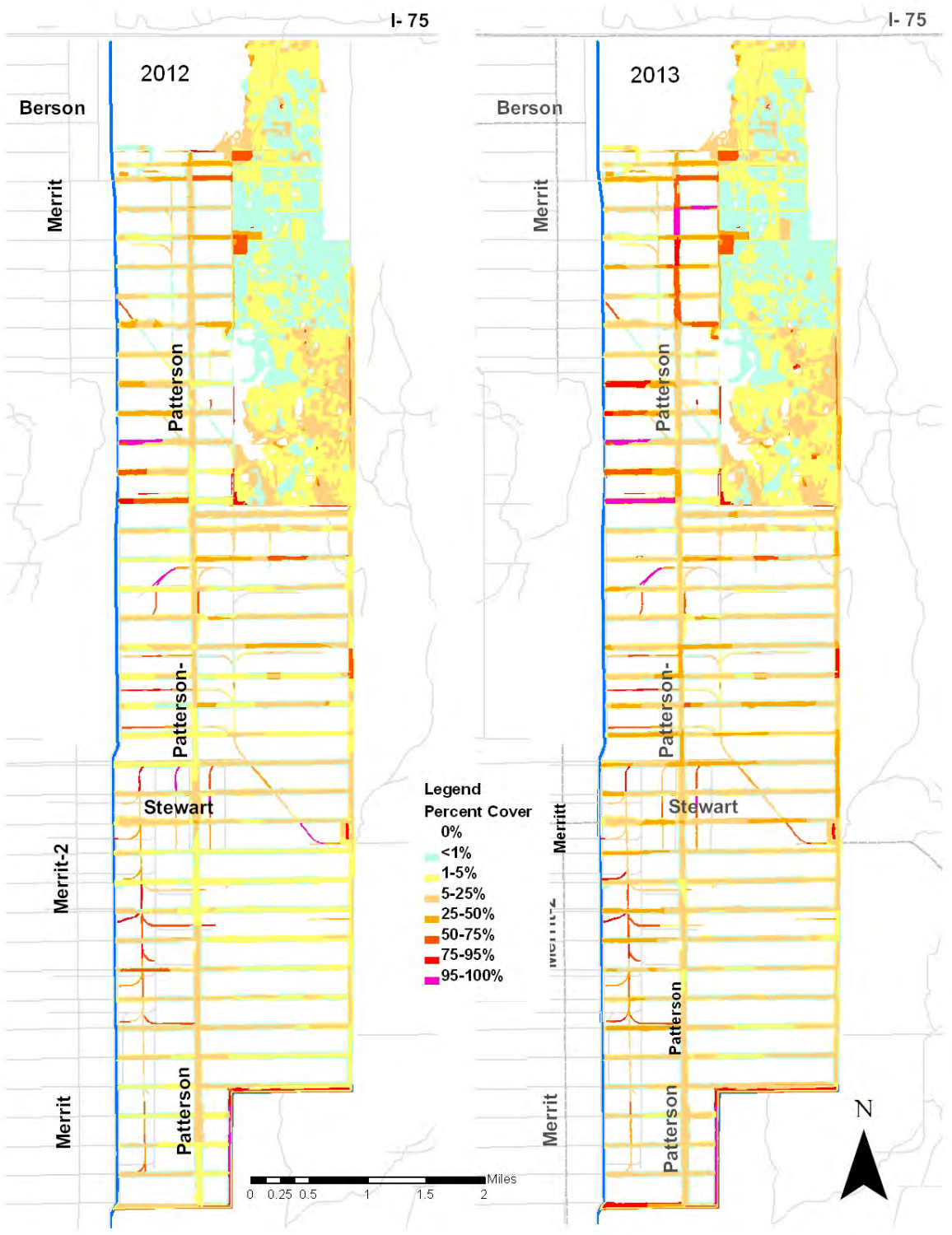

Figure 12: Total Cover by Exotic and Nuisance Species in Prairie Canal Phase Footprints and Demolition Sites (2012-2013)

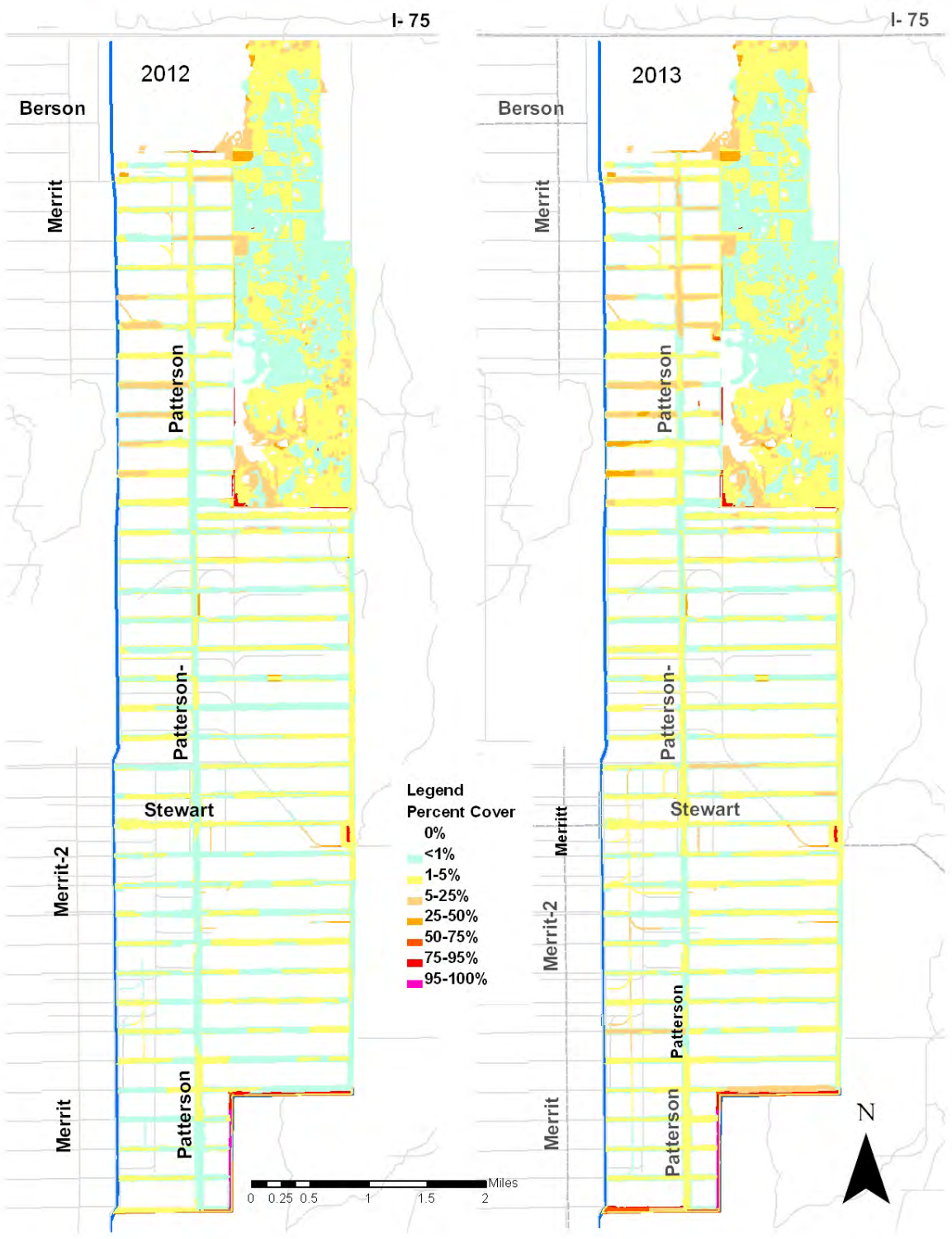

Figure 13: Total Cover by FLEPPC I Exotic and Nuisance Species in Prairie Canal Phase Footprints and Demolition Sites (2012-2013)

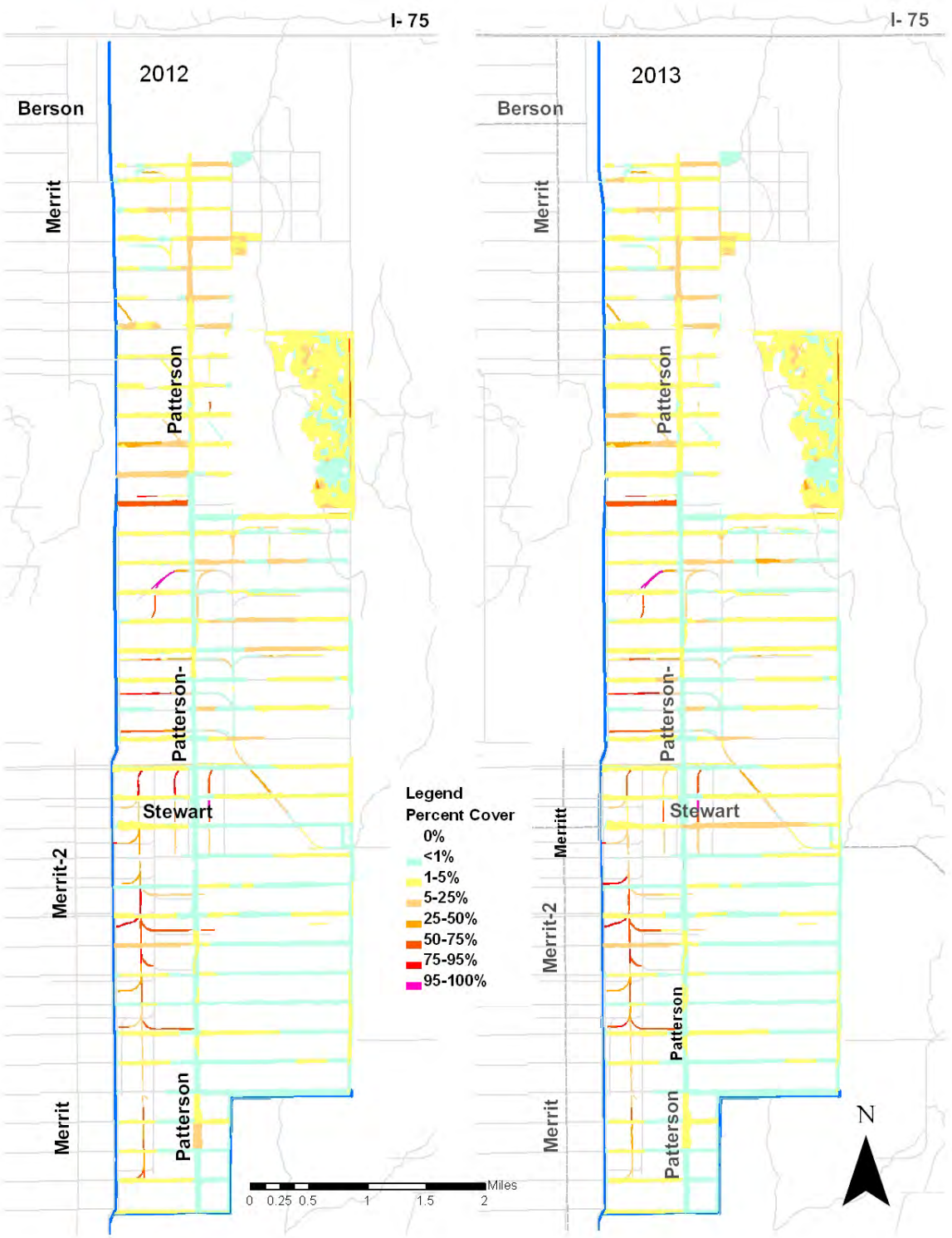

Figure 14: Total Cover by FLEPPC II Exotic and Nuisance Species in Prairie Canal Phase Footprints and Demolition Sites (2011-2012)

Figure 15: Total Cover by Non-FLEPPC Exotic and Nuisance Species in Prairie Canal Phase Footprints and Demolition Sites (2011-2012)

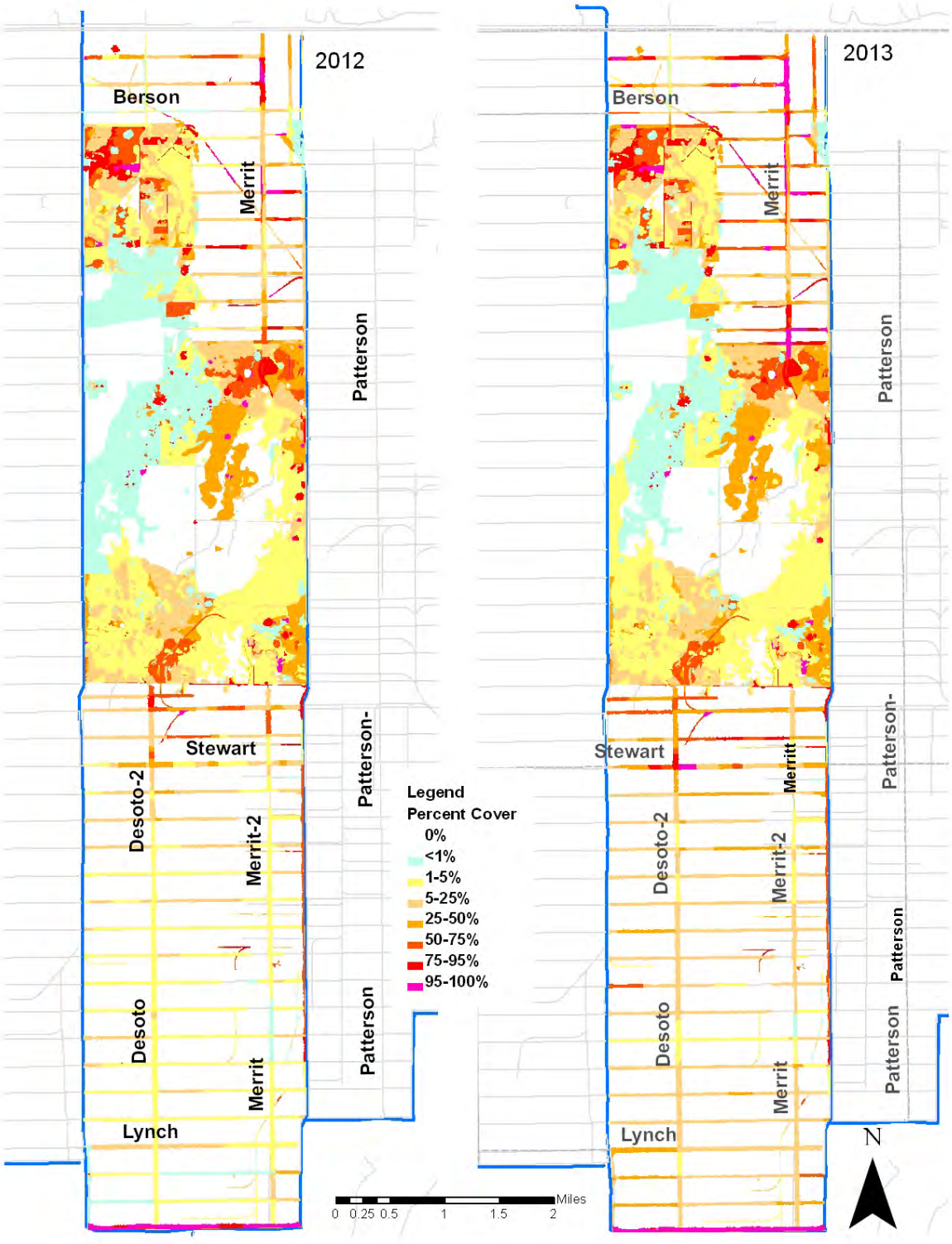

Figure 16: Total Cover by Exotic and Nuisance Species in Merritt Canal Phase Footprints and Demolition Sites (2012-2013)

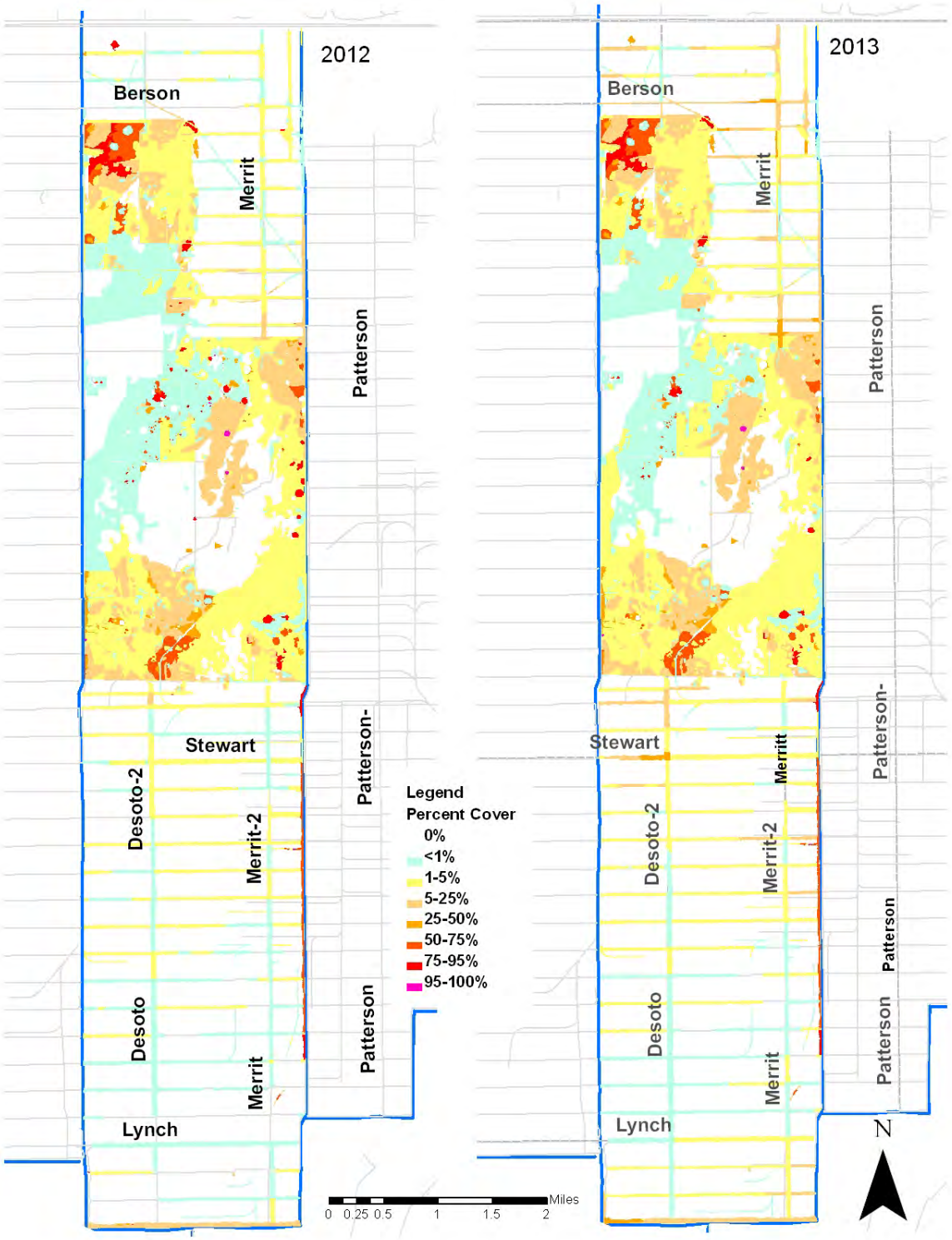

Figure 17: Total Cover by FLEPPC I Exotic and Nuisance Species in Merritt Canal Phase Footprints and Demolition Sites (2012-2013)

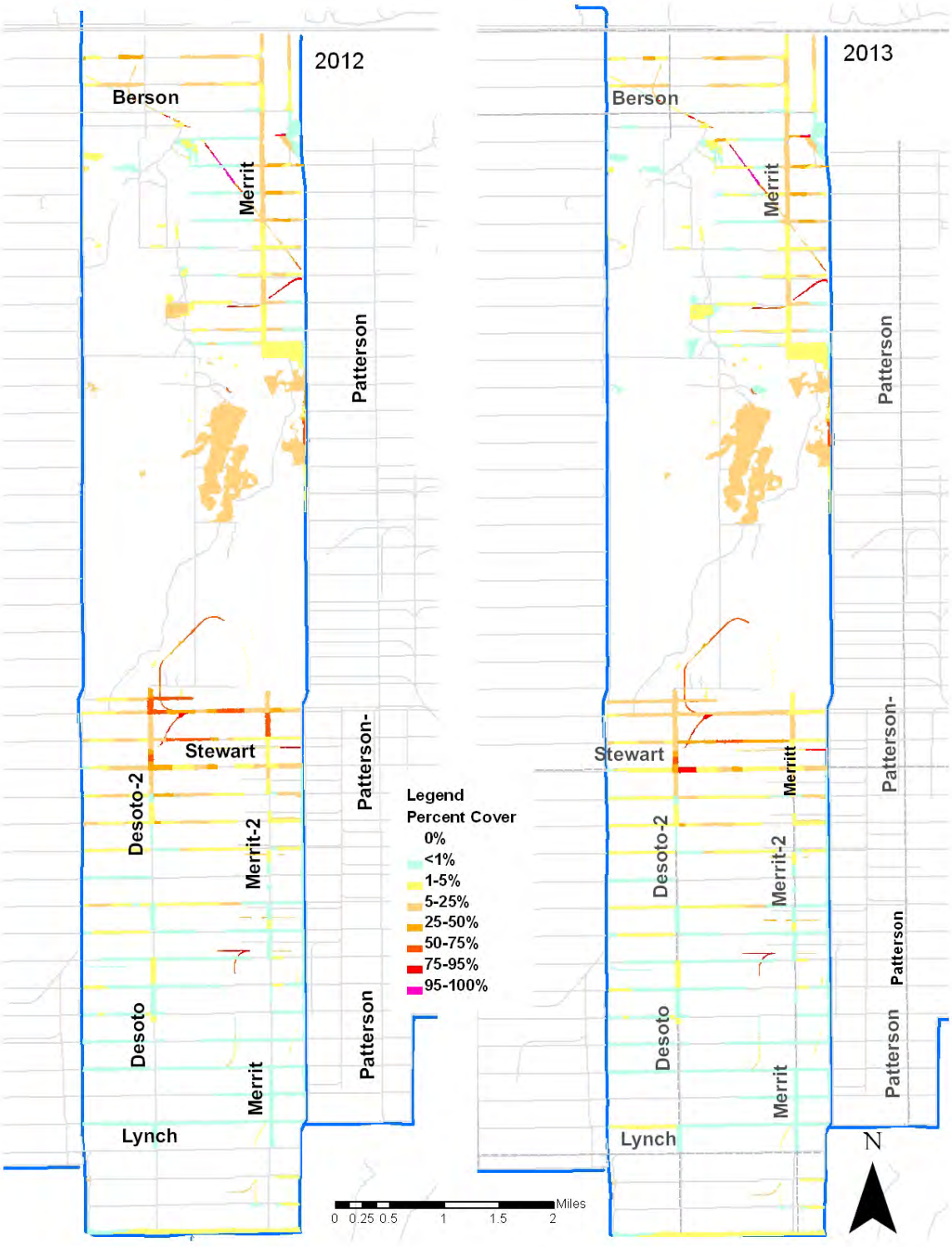

Figure 18: Total Cover by FLEPPC II Exotic and Nuisance Species in Merritt Canal Phase Footprints and Demolition Sites (2011-2012)

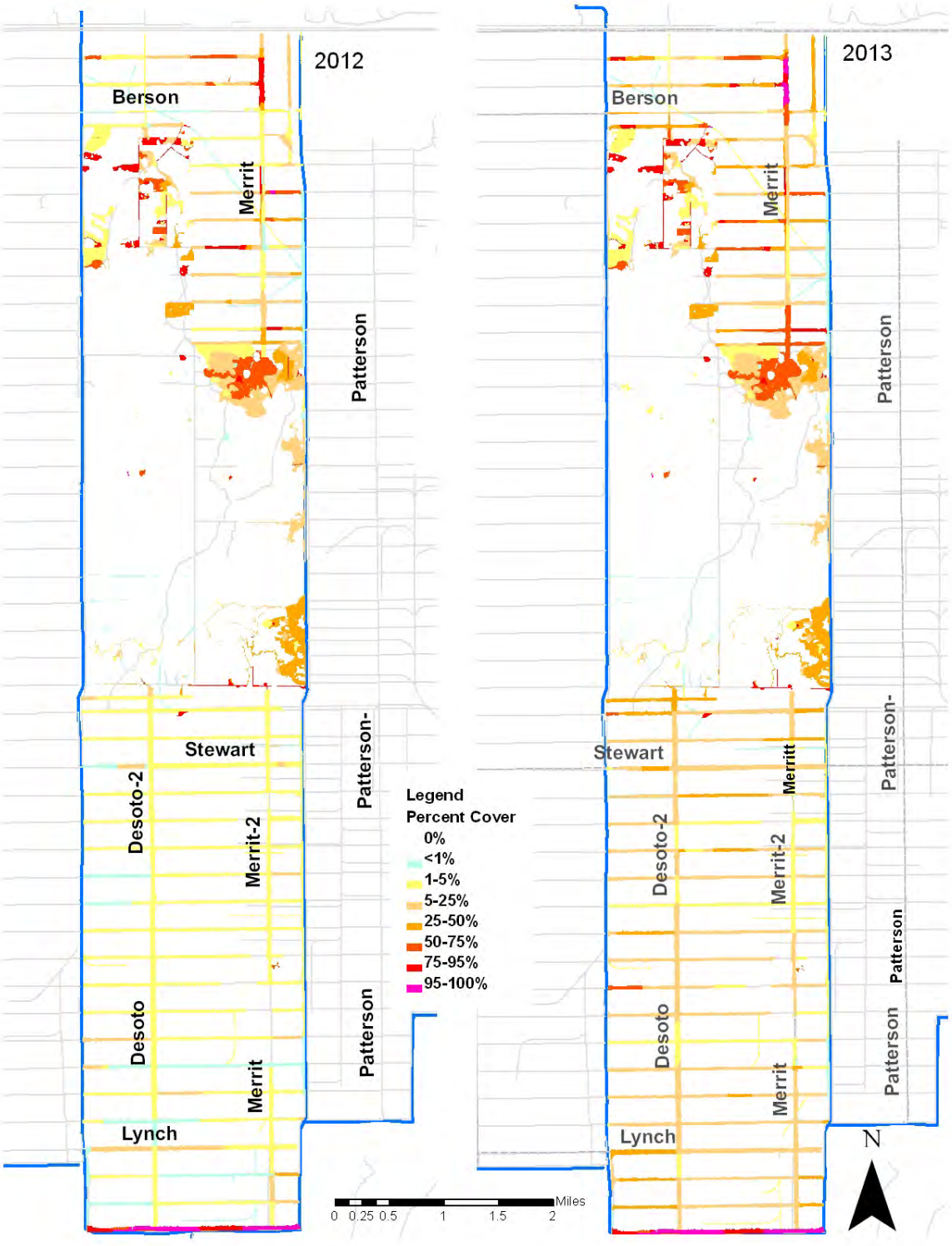

Figure 19: Total Cover by Non-FLEPPC Exotic and Nuisance Species in Merritt Canal Phase Footprints and Demolition Sites (2011-2012)