

PMLevyCOLPEm Resource

From: Wilkins, Tillie [tillie.wilkins@pgnmail.com]
Sent: Thursday, November 10, 2011 11:15 AM
To: 'osvaldo.collazo@usace.army.mil'; 'gordon.a.hambrick@usace.army.mil'; Bruner, Douglas; 'gagliano.paul@epa.gov'; 'DavidA Pritchett'
Cc: Snead, Paul
Subject: Progress Energy Response #5 to 6/23/11 USACE Letter
Attachments: NPD-MISC-2011-019 - LNP Resp 5 to USACE.pdf

Please see the attached file for Progress Energy's fifth set of responses to the June 23, 2011 letter from USACE concerning the Levy Nuclear Plant. This completes submittal of our responses to the 6/23/11 information requests.

Tillie Wilkins

Nuclear Plant Licensing

New Generation Programs & Projects

Progress Energy

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Options

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Serial: NPD-MISC-2011-019
November 10, 2011

Mr. Osvaldo Collazo
Chief, North Permits Branch
Department of the Army
Jacksonville District Corps of Engineers
Panama City Regulatory Office
1002 West 23rd Street, Suite 350
Panama City, Florida 32405-3648

Levy Nuclear Plant/PEF
SAJ-2008-00490 (IP-GAH)
Response #5 to Corps Position Letter dated June 23, 2011

- References:
1. Letter from Osvaldo Collazo (USACE) to John Elnitsky (PEF), dated June 23, 2011, Reference: SAJ-2008-00490 (IP-GAH)
 2. Letter from John Elnitsky (PEF) to Osvaldo Collazo (USACE), dated July 22, 2011, Reference: Levy Nuclear Plant/PEF, SAJ-2008-00490 (IP-GAH), Serial: NPD-MISC-2011-010
 3. Letter from Robert Kitchen (PEF) to Osvaldo Collazo (USACE), dated September 20, 2011, Reference: Levy Nuclear Plant/PEF, SAJ-2008-00490 (IP-GAH), Response #1 to Corps Position Letter dated June 23, 2011, Serial: NPD-MISC-2011-014
 4. Letter from Robert Kitchen (PEF) to Osvaldo Collazo (USACE), dated October 4, 2011, Reference: Levy Nuclear Plant/PEF, SAJ-2008-00490 (IP-GAH), Response #2 to Corps Position Letter dated June 23, 2011, Serial: NPD-MISC-2011-015
 5. Letter from Robert Kitchen (PEF) to Osvaldo Collazo (USACE), dated October 20, 2011, Reference: Levy Nuclear Plant/PEF, SAJ-2008-00490 (IP-GAH), Response #3 to Corps Position Letter dated June 23, 2011, Serial: NPD-MISC-2011-016
 6. Letter from Robert Kitchen (PEF) to Osvaldo Collazo (USACE), dated November 1, 2011, Reference: Levy Nuclear Plant/PEF, SAJ-2008-00490 (IP-GAH), Response #4 to Corps Position Letter dated June 23, 2011, Serial: NPD-MISC-2011-018

Dear Mr. Collazo:

The purpose of this letter is to provide the fifth set of responses to your letter dated June 23, 2011 (Reference 1) regarding positions, comments, and requests for information concerning a requested CWA § 404 permit associated with construction of the Progress Energy Florida (PEF) Levy Nuclear Plant (LNP) and various associated integral projects. As stated in our letter dated

July 22, 2011 (Reference 2), PEF has been working on responses to your requests, and as materials became available, we have provided them to you. Responses have been provided in letters dated July 22, 2011, September 20, 2011, October 4, 2011, October 20, 2011, and November 1, 2011 (References 2 through 6, respectively). Responses to the four remaining USACE requests (EPA #6, EPA#9, Other #3, and Other #5) regarding temporary impact restoration and invasive plant species management to support the LNP project, are addressed in the enclosure to this letter.

This completes submittal of the responses to your June 23, 2011 information requests (Reference 1) in accordance with our letter dated July 22, 2011 (Reference 2).

If you have any questions regarding this letter, or need additional information, please contact me at (919) 546-6992 or Paul Snead at (919) 546-2836.

Sincerely,



Robert Kitchen
Manager, Nuclear Plant Licensing
New Generation Programs & Projects

Enclosure / Attachments

cc: Gordon Donald Hambrick, USACE
Douglas Bruner, USNRC
David Pritchett, EPA
Paul Gagliano, EPA

Levy Nuclear Plant Units 1 and 2
Response #5 to Corps Position Letter for USACE-SAJ-2008-00490, dated June 23, 2011

<u>RAI #</u>	<u>PEF RAI #</u>	<u>Progress Energy Response</u>
EPA #1	L-0960	Sept 20, 2011; Serial NPD-MISC-2011-014
EPA #2	L-0961	Sept 20, 2011; Serial NPD-MISC-2011-014
EPA #3	L-0962	Sept 20, 2011; Serial NPD-MISC-2011-014
EPA #4	L-0976	Oct 20, 2011; Serial NPD-MISC-2011-016
EPA #5	L-0975	Oct 20, 2011; Serial NPD-MISC-2011-016
EPA #6	L-0980	Response enclosed – see following pages
EPA #7	L-0978	Oct 20, 2011; Serial NPD-MISC-2011-016
EPA #8	L-0968	Oct 4, 2011; Serial NPD-MISC-2011-015
EPA #9	L-0981	Response enclosed – see following pages
EPA #10	L-0963	Sept 20, 2011; Serial NPD-MISC-2011-014
EPA #11	L-0969	Oct 4, 2011; Serial NPD-MISC-2011-015
EPA #12	L-0984	Nov 1, 2011; Serial NPD-MISC-2011-018
EPA #13	L-0979	Oct 20, 2011; Serial NPD-MISC-2011-016
NMFS EFH #1/Corps NMFS #1	L-0970	Oct 4, 2011; Serial NPD-MISC-2011-015
NMFS EFH #2/Corps NMFS #1	L-0971	Oct 4, 2011; Serial NPD-MISC-2011-015
NMFS EFH #3/Corps NMFS #2	L-0972	Oct 4, 2011; Serial NPD-MISC-2011-015
NMFS EFH #4/Corps NMFS #3	L-0973	Oct 4, 2011; Serial NPD-MISC-2011-015
NMFS EFH #5	L-0974	Oct 4, 2011; Serial NPD-MISC-2011-015
LEDPA – CORPS #1	L-0964	Sept 20, 2011; Serial NPD-MISC-2011-014
LEDPA – CORPS #2	L-0985	Pending USACE resolution of GW modeling
LEDPA – CORPS #3	L-0965	Sept 20, 2011; Serial NPD-MISC-2011-014
LEDPA – CORPS #4	L-0966	Sept 20, 2011; Serial NPD-MISC-2011-014
CORPS – OTHER #1	L-0967	Oct 20, 2011; Serial NPD-MISC-2011-016
CORPS – OTHER #2	L-0977	Oct 20, 2011; Serial NPD-MISC-2011-016
CORPS – OTHER #3	L-0982	Response enclosed – see following pages
CORPS – OTHER #4	L-0952	July 22, 2011; Serial NPD-MISC-2011-010
CORPS – OTHER #5	L-0983	Response enclosed – see following pages

**Levy Nuclear Plant Units 1 and 2
Response #4 to Corps Position Letter for USACE-SAJ-2008-00490, dated June 23, 2011
Cumulative List of Attachments Provided**

Attachment	Progress Energy Submittal
July 14, 2011 Meeting Attendees	July 22, 2011; Serial NPD-MISC-2011-010
Proposed Conditions for USACE Approval of Levy as the LEDPA Site	July 22, 2011; Serial NPD-MISC-2011-010
Technical Memorandum 338884-TMEM-129, Rev. 2, Evaluation and Management of Materials Dredged from the Cross Florida Barge Canal for the Construction of Barge Slip, Intake Structure, and Pipeline Facilities Associated with the Levy Nuclear Plant, Florida (on attached CD)	September 20, 2011; Serial NPD-MISC-2011-014
Technical Memorandum 338884-TMEM-130, Rev. 1, Functional Evaluation of Wetlands for the Alternative Sites, Levy Nuclear Plant, Florida (on attached CD)	September 20, 2011; Serial NPD-MISC-2011-014
Technical Memorandum 338884-TMEM-131, Rev. 1, Effects of Temporary Dewatering on Wetlands for the Construction of the Levy Nuclear Plant, Levy County, Florida (on attached CD)	September 20, 2011; Serial NPD-MISC-2011-014
Figure: Site Location Map, showing proposed blowdown pipeline route	October 4, 2011; Serial NPD-MISC-2011-015
Levy Nuclear Plant and Associated Transmission Lines Wetland Mitigation Plan, Comprehensive Design Document, September 2011 (on attached CD)	October 4, 2011; Serial NPD-MISC-2011-015
Technical Memorandum 338884-TMEM-127, Rev. 0, Summary of Available Depth Data for the Cross Florida Barge Canal and Nearshore Environments for the Levy Nuclear Plant, Florida	October 4, 2011; Serial NPD-MISC-2011-015
Levy Nuclear Plant – Transmission Lines, Alternatives Analysis and Avoidance and Minimization (October 2011)	October 20, 2011; Serial NPD-MISC-2011-016
Figure 1 – Preliminary Conceptual Geology, LNP Site	October 20, 2011; Serial NPD-MISC-2011-016

Attachment	Progress Energy Submittal
LNP Preliminary Construction Drawings	October 20, 2011; Serial NPD-MISC-2011-016
LNP Transmission Preliminary Construction Drawings	October 20, 2011; Serial NPD-MISC-2011-016
338884-TMEM-132, Rev. 1, Avoidance and Minimization Analysis for the Levy Nuclear Plant	October 20, 2011; Serial NPD-MISC-2011-016
LNP Fresh Water Alternatives Analysis, WorleyParsons, Revision 0, October 26, 2011	November 1, 2011; Serial NPD-MISC-2011-018
Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011	November 10, 2011; Serial NPD-MISC-2011-019
Levy Nuclear Plant Project, Invasive and Exotic Species Management Plan, November 2011	November 10, 2011; Serial NPD-MISC-2011-019

USACE Letter No.: Corps Position Letter USACE-SAJ-2008-00490(IP-GAH)

USACE Letter Date: June 23, 2011

USACE RAI #: EPA-6

Text of USACE RAI:

The DEIS states that approximately 150 acres on the site would be disturbed for temporary facilities and are proposed to become open grassy areas after use of such facilities are completed. This would be a permanent conversion from pine plantations, forested wetlands, and mixed forested areas. These areas should be restored back to forested and mixed forested wetland systems, if there are no safety or other serious operational reasons that would require these areas to be open grassy areas.

See Corps's specific comments in paragraph #3 on page 20 below in regard to this EPA comment.

PGN RAI ID #: L-0980

PGN Response to USACE RAI: Temporarily impacted wetlands will be restored as described in the Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011.

Attachment: Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011

USACE Letter No.: Corps Position Letter USACE-SAJ-2008-00490(IP-GAH)

USACE Letter Date: June 23, 2011

USACE RAI #: EPA-9

Text of USACE RAI:

The DEIS states that impacts will temporarily occur to 149.6 acres of wetlands that will later be allowed to regenerate naturally from the existing wetland seed bank. These wetland impacts will likely become permanent if the forested systems are not replanted and restored to their original condition. The forested wetland systems should be replanted in order to insure impacts are temporary only.

See Corps's specific comments in paragraph #3 on page 20 below in regard to this concern.

PGN RAI ID #: L-0981

PGN Response to USACE RAI: Temporary impacts were included in the acreages Progress Energy plans to mitigate per the Wetland Mitigation Plan. Temporarily impacted wetlands will be restored as described in the Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011.

Attachment: Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011

USACE Letter No.: Corps Position Letter USACE-SAJ-2008-00490(IP-GAH)

USACE Letter Date: June 23, 2011

USACE RAI #: Other #3

Text of USACE RAI:

All temporary work/fill/excavation areas in wetlands and other waters should be minimized. Temporarily impacted wetlands should be restored at a minimum to their pre-impact condition. Provide a wetland restoration plan for all temporarily impacted wetlands, which would be restored. The plan should have drawings and be sufficiently detailed to show and describe type of wetlands to be temporarily impacted, the goals of the restoration, timing of restoration, etc. The plan should be similar to a wetland mitigation plan. Explain in detail justification for any temporary wetland impact areas that PEF proposes not to restore to prior wetland conditions.

PGN RAI ID #: L-0982

PGN Response to USACE RAI: Work in wetlands and other waters has been avoided and minimized as described previously in response to USACE RAI Other #2 submitted via letter Serial: NPD-MISC-2011-016. Temporarily impacted wetlands will be restored as described in the attached Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011.

Attachment: Levy Nuclear Plant Project, Temporary Impact Restoration Plan, November 2011

USACE Letter No.: Corps Position Letter USACE-SAJ-2008-00490(IP-GAH)

USACE Letter Date: June 23, 2011

USACE RAI #: Other #5

Text of USACE RAI:

Construction of the proposed plant facility, and its ancillary components, including transmission lines and sub-stations in wetlands and surrounding uplands, will result in substantial land disturbance, which in Florida, often leads to the colonization of those disturbed areas by exotic and invasive plant species. In addition, substantial disturbance to plant communities in wetlands and adjacent uplands will be ongoing during the multiple-decade lifespan of the proposed project for the maintenance of the facility and ancillary components, particularly the maintenance of transmission line corridors, thus affording additional opportunity for impacts by invasive and exotic plant species. Please provide an enforceable exotic and invasive plant control plan, which will effectively monitor and control invasive and exotic species within areas to be impacted or otherwise disturbed by the proposed project.

PGN RAI ID #: L-0983

PGN Response to USACE RAI: Exotic and invasive plants will be controlled as described in the attached Levy Nuclear Plant Project, Invasive and Exotic Species Management Plan, November 2011.

Attachment: Levy Nuclear Plant Project, Invasive and Exotic Species Management Plan, November 2011

Attachment to Serial: NPD-MISC-2011-019

**LEVY NUCLEAR PLANT PROJECT
TEMPORARY IMPACT RESTORATION PLAN**

**LEVY NUCLEAR PLANT PROJECT
TEMPORARY IMPACT RESTORATION PLAN**

LEVY COUNTY, FLORIDA

November 2011

FOR

**Progress Energy Florida, Inc.
299 First Avenue N.
PEF 903
St. Petersburg, Florida 33733**

REPORT BY

**Environmental Services, Inc.
7220 Financial Way, Suite 100
Jacksonville, Florida 32256**

Progress Energy Florida (PEF) is proposing to construct the Levy Nuclear Plant project (LNP) consisting of the development of the power plant site, access roads, barge slip, pipelines and approximately 180 miles of transmission lines. The project proposes permanent and temporary impacts to wetlands. A detailed project wetland mitigation plan has been submitted to offset the unavoidable project wetland impacts. The mitigation proposed in the mitigation plan includes both permanent and temporary impacts. A regional watershed approach has been used to develop the mitigation plan. The mitigation will be done on the LNP site and on several offsite parcels located within the watershed where the impacts occur. Approximately 66.89 acres (1.39 acres isolated wetlands) of wetlands are proposed to be temporarily impacted on the plant site during construction. Impacts along the transmission line rights of way are permanent and include the filling of forested and herbaceous wetlands for access roads and structure pads and the conversion of forested wetlands to herbaceous within the rights of way.

In addition to the wetland mitigation plan, the U.S. Army Corps of Engineers (ACOE) has requested a restoration plan for the temporary impact areas. This plan was prepared in response to that request. The temporary impacts can be categorized by both location within the project and by their associated Florida Land Use, Cover and Forms Classification System (FLUCFCS) vegetative community classification. Some of the proposed temporary impacts will consist of just clearing the existing vegetation, while others will include clearing the existing vegetation and placing temporary fill. The clearing only impacts will occur throughout the project site and will include areas along roadways, stormwater ponds, and the diversion ditch. Impacts that will include clearing existing vegetation and placing temporary fill will be at the training center, within building and warehouse footprints and along the pipeline rights-of-way (ROW). Please see the attached Figure 1 that details the temporary impacts on the LNP project site. The restoration of these proposed temporary impact areas will be based on the FLUCFCS code for the area being impacted and the activity that the impact is for. These community types are further discussed below.

Community Types

Mixed Wetland Hardwoods (FLUCFCS 617). The proposed temporary impacts will affect mixed wetland hardwood communities, some of which have been previously logged. Species found within this community type typically consist of an ill-defined mixture of red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*) and blackgum (*Nyssa sylvatica* var. *biflora*). Because some of these areas have already been logged most of the canopy trees within these areas have been removed and are dominated by sub-canopy and seedling size vegetation.

Cypress (FLUCFCS 621). This community type is characterized by a dominance of either bald cypress (*Taxodium distichum*) or pond cypress (*Taxodium ascendens*). Portions of this community are also dominated by sub-canopy and seedling size species within the logged areas due to the removal of many canopy species from the logging activities.

Wet Planted Pine (FLUCFCS 629 (441W)). Wet planted pine refers to areas that are planted under silvicultural practices for the purpose of commercial harvesting that are considered jurisdictional wetlands. These community types are generally considered as low quality wetlands that offer little diversity. These areas are dominated by a canopy of slash pine (*Pinus elliottii*).

Wetland Forested Mixed (FLUCFCS 630). This community is similar in species composition to the Mixed Wetland Hardwoods (FLUCFCS 617) community, but is further characterized by a mixture of both hardwoods and conifers where neither type achieves a 66 percent dominance in the crown canopy composition. Some of the proposed impact areas have been logged and are now dominated by sub-canopy and seedling size species.

Freshwater Marshes (FLUCFCS 641). The freshwater marsh community is characterized by a dominance of freshwater herbaceous species. Species commonly found in this community are arrowhead (*Sagittaria* sp.), Maidencane (*Panicum hemitomon*), buttonbush (*Cephalanthus occidentalis*), Bulrush (*Scirpus* sp.), needlerush (*Juncus effusus*) and cordgrass (*Spartina bakeri*).

Wet Prairies (FLUCFCS 643). Wet prairie habitat is very similar to the freshwater marsh community, but typically contains less water and is dominated by more herbaceous species such as maidencane, cordgrasses, St. Johns wort (*Hypericum* spp.) and yellow-eyed grass (*Xyris* spp.).

Initial Assessment

Each of the temporary impact areas will be assessed on an individual basis to determine the current condition and to confirm the type of vegetative community to be restored. This initial assessment of each impact will be conducted within 30 days of the initial impact. The purpose of this assessment will be to confirm the different community types that were affected by the temporary impacts and to determine the necessary actions to take in order to restore the areas to the target community. The above community descriptions provide a guideline for general restoration activities.

This baseline field assessment will consist of assessing the current condition of each impacted area and will include a listing of vegetation present, the potential for re-vegetation, hydrologic conditions, photographs to document progress and any other important observations. The results of this assessment will be compiled into a report and submitted to ACOE within 60 days of completion of the field survey.

As previously mentioned, these temporary impacts will consist of clearing the existing vegetation in order to allow for equipment access to certain areas and to allow for certain construction activities such as dewatering and equipment placement. Within all community types, any impacts involving temporary clearing of existing vegetation will be allowed to re-

establish for a time period of one full growing season (as different impacts will occur at different times of year) in order to determine if supplemental planting will be required in order to successfully restore the area. In addition to clearing existing vegetation, some of these impacts will also require the use of temporary fill such as stockpiling of excavated material or placement of equipment and supplies. In these areas, the fill material will be removed and the pre-impact ground elevation will be restored and allowed to re-vegetate naturally. The elevation within any adjacent similar, un-impacted wetland system will serve as a benchmark to determine the proper restoration elevation within the temporary impact area. This elevation will vary within each impact area and will need to be assessed individually to determine the best restoration elevation.

A few of the community types, such as Wet Planted Pine (FLUCFCS 629) community, will be restored back to a higher quality wetland. These communities are characterized by a relatively low diversity and generally low quality wetlands. Instead of restoring back with planted pines, the area will see an increase in diversity by restoring with a mixture of hard wood species, increasing plant diversity and wildlife utilization of these areas.

In addition, other impact areas have special considerations aside from just restoring back to natural conditions. The temporary impact areas adjacent to the stormwater ponds are required to have a 25' herbaceous buffer around the base of the berm. In this case, the existing community temporarily impacted would not be restored to its original community type, but would instead be restored to wet prairie and/or freshwater marsh communities.

First Year Monitoring

The restoration process will be documented through annual monitoring for one year after the initial assessment. The temporary impact areas will be restored by allowing the areas to re-vegetate naturally for one year. After the natural re-vegetation period, the areas will be monitored to determine the percent coverage of desirable native wetland species. In order to be considered successfully restored, the impacted area must repopulate with at least 80 percent coverage of desirable, native wetland species that are appropriate for the corresponding community type. The findings of the first year monitoring event will be detailed in a report which will be submitted to ACOE and will include an assessment of the species present, any invasive/exotic species present and any proposed treatment methods, as well as permanent photo stations to document progress. Any supplemental planting needs will be identified after this first year and the specific species and number of plants will be provided for each impact area. If 80 percent coverage of desirable species is achieved during this first year, then monitoring of that particular impact area will no longer be required.

Supplemental Planting

In the event the areas do not reestablish with 80 percent coverage of desirable species, the temporary impact areas will be planted with native wetland species as described below:

The forested communities will be planted with 3-gallon size containerized native Florida trees at a density of 200 stems/acre. The herbaceous communities will be planted with bare-root size native Florida herbaceous material at a density of 4,840 stems/acre. Following is the list of species that will be installed in each of the vegetative communities that may require supplemental planting. Specific species and composition will be based on commercial availability at the time of planting.

Mixed Wetland Hardwoods (FLUCFCS 617). Species to be utilized will include red maple, sweet gum, water oak, blackgum, pop ash (*Fraxinus carolinana*), sweet bay (*Magnolia virginiana*) and laurel oak (*Quercus laurifolia*).

Cypress (FLUCFCS 621). These areas will be planted with either bald or pond cypress.

Wet Planted Pine (FLUCFCS 629). Due to the low quality of planted pine wetlands, the areas will be restored using hardwood species. This will increase the diversity within these impact areas and restoration will include bald cypress, red maple, blackgum, pop ash or water oak.

Wetland Forested Mixed (FLUCFCS 630). These impact areas will be planted with a mixture of red maple, sweet gum and water oak, in addition to pop ash, sweet bay (*Magnolia virginiana*) and laurel oak (*Quercus laurifolia*).

Freshwater Marshes (FLUCFCS 641). Supplemental planting of herbaceous species of the freshwater marsh communities will include arrowhead, maidencane, button bush, bulrush, needlerush, cordgrasses, pickerelweed (*Pontedaria cordata*), canna lily (*Canna* spp.), blue-flag iris (*Iris* spp.) and fire-flag (*Thalia geniculata*). These areas are less likely to require any additional planting however as they typically repopulate quickly due to the fast growing nature of herbaceous species.

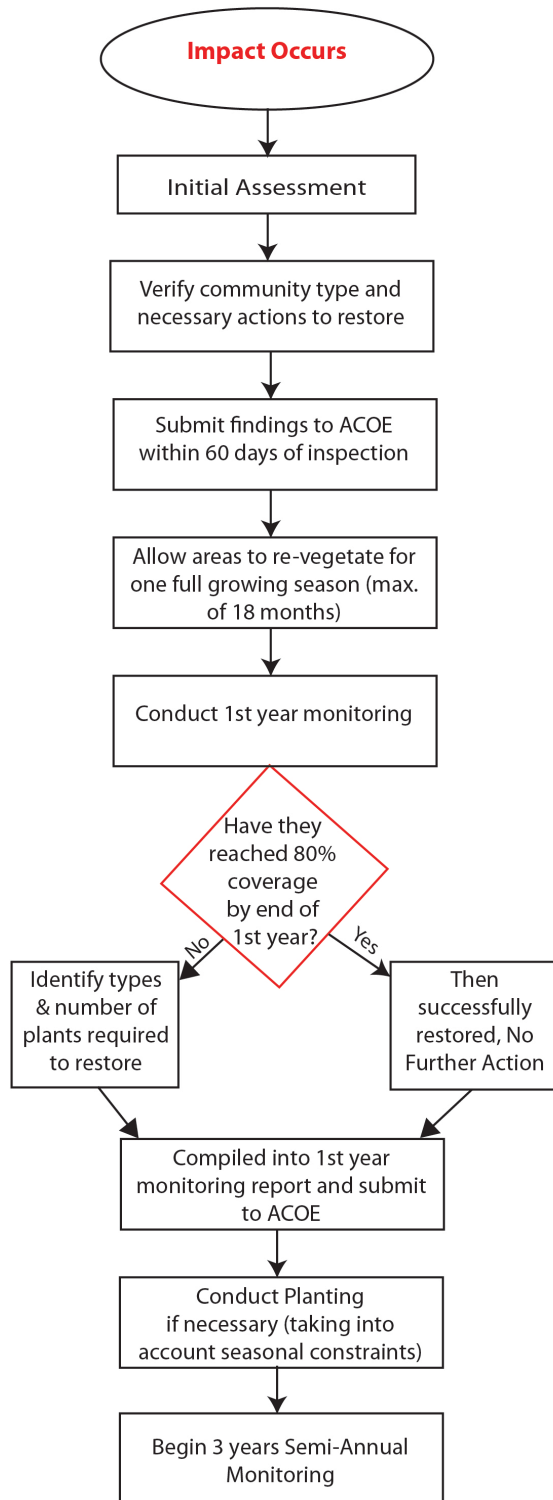
Wet Prairies (FLUCFCS 643). This community type is similar to the freshwater marsh community in that it is characterized by low growing, herbaceous species. It also generally repopulates quickly so supplemental planting may not be required in these community types. If supplemental planting is required, species such as maidencane, cordgrasses, St. johns wort and yellow-eyed grass in addition to other herbaceous species including soft rush (*Juncus effusus*), wire grasses (*Aristida* spp.), hatpins (*Eriocaulon* spp.) and panicum grasses.

Semi-Annual Monitoring

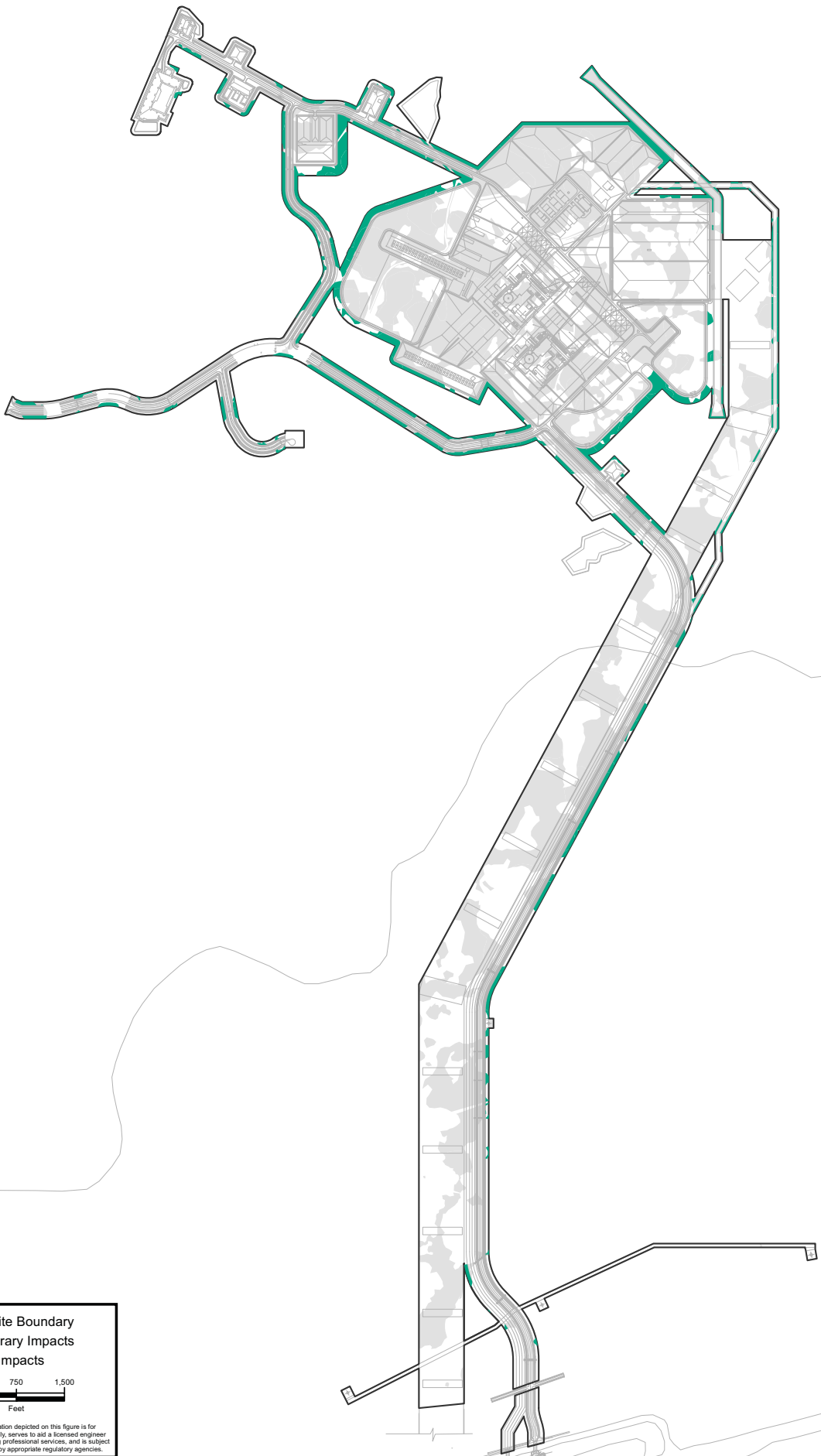
The supplemental planting areas will be monitored on a semi-annual basis to determine survivorship and percent coverage of desirable species in the impact areas for a period of three years. The spring monitoring event will be conducted during the month of April and the fall event will take place in the month of September. The results of the semi-annual events will be detailed in annual reports submitted to ACOE in November of each year. The reports will

include an assessment of the survivorship of planted species, any newly recruited species present, any invasive/exotic species present and the associated proposed treatment methods, as well as permanent photo stations that will document progress. The impact areas that require supplemental planting will be monitored for the three years or until the temporary impact areas reach the 80 percent coverage success criteria.

Please see the following page for a flow chart that details the proposed restoration and monitoring plan for the LNP project.



GKH/smc/EJ11021.LNPtemporaryimpactrestorationplan.doc
 S:pf092311f



□ LNP Site Boundary
■ Temporary Impacts
■ Other Impacts

0 750 1,500
Feet

Disclaimer: The information depicted on this figure is for conceptual purposes only, serves to aid a licensed engineer or geologist in rendering professional services, and is subject to review and approval by appropriate regulatory agencies.

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Temporary Impacts
Levy Nuclear Plant Project Temporary Impact Restoration Plan
Levy County, Florida

Project:	EJ11021.01
Date:	Nov. 2011
Drwn/Chkd:	JRN/RRT
Figure:	1

Attachment to Serial: NPD-MISC-2011-019

**LEVY NUCLEAR PLANT PROJECT
INVASIVE AND EXOTIC SPECIES MANAGEMENT PLAN**

**LEVY NUCLEAR PLANT PROJECT
INVASIVE AND EXOTIC SPECIES MANAGEMENT PLAN**

LEVY COUNTY, FLORIDA

November 2011

FOR

**Progress Energy Florida, Inc.
299 First Avenue N.
PEF 903
St. Petersburg, Florida 33733**

REPORT BY

**Environmental Services, Inc.
7220 Financial Way, Suite 100
Jacksonville, Florida 32256**

Natural landscapes are a vital part of Florida's unique history and provide the basis for the some of the State's most important economic industries such as tourism and agriculture. As such, it is important to protect these landscapes from both human and natural impacts. One major impact that has become increasingly difficult to manage is the presence of invasive and exotic species occurring within natural Florida landscapes. As the population of Florida has increased in recent years, so has the presence of many invasive and exotic species throughout the State. These species can be found in almost all parts of Florida and in many different habitats ranging from agricultural crop land to the Florida Everglades. The increased presence of invasive and exotic species has led to both State and Federal requirements for the removal and control of these species. If left uncontrolled, many of these species could ultimately overtake entire habitats and lead to less diverse and less functional ecosystems.

The Florida Exotic Pest Plant Council (FLEPPC) defines these species as the following: Exotic-a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida; Naturalized exotic-an exotic that sustains itself outside cultivation, i.e., it is still exotic and has not become native; Invasive exotic-a exotic that has not only naturalized, but is expanding on its own in Florida native plant communities. These species have been further categorized as Category I or Category II, based on the documented ecological damage that has occurred.

Progress Energy Florida, Inc. (PEF) is proposing a new nuclear facility in Levy County, FL, referred to as the Levy Nuclear Plant (LNP). This project includes impacts to jurisdictional wetlands from the plant site and from the installation of new transmission lines throughout the State. These construction activities can result in the temporary clearing or filling of existing jurisdictional wetlands, which can lead to conditions for the establishment of invasive and exotic species within these disturbed areas. This plan will detail the invasive/exotic species that could potential populate within the proposed plant site and new transmission line impact areas. The plan will also discuss the most appropriate and effective treatment methodology(ies) for each species.

In addition, a separate temporary impact restoration plan has been compiled to address the necessary steps to successfully restore these temporary impacts. The restoration plan details all areas within the plant site that are to be restored and includes invasive/exotic species control in the temporary impact areas. This invasive/exotic species management plan will apply to any other natural or disturbed areas within the plant site and transmission line areas that may require vegetative management such as stormwater ponds, open grass areas such as right-of-ways and roadway shoulders and any other areas within the LNP project footprint.

Below is a list of the common invasive and exotic species potentially found within the proposed plant site and transmission line areas, as well as recommended treatment methodologies, preventative measures and monitoring criteria.

Upland Species List

Cogon grass (*Imperata cylindrica*). This is a grass species that typically grows in disturbed upland areas such as roadway edges and recently timbered sites. This plant contains rhizomes and in order to successfully eradicate, the rhizomes must be fully destroyed. The cogon grass seed is typically spread through wind or wildlife movement and is very difficult to contain.

Recommended Treatment: Mechanical removal or regular foliar application of herbicide.

Chinaberry (*Melia azedarach*). Chinaberry is a tree that can grow up to 50 ft. tall and is commonly found in disturbed areas mostly in uplands, but can be found within wetlands. It often forms thickets and can reproduce quickly by spreading numerous seeds through bird and other wildlife movement. Due to the woody nature of the stem, chemical treatments are the most effective.

Recommended Treatment: Mechanical cutting and cut stump application of herbicide.

Camphor tree (*Cinamomum camphora*). The camphor tree can reach heights of 65 feet and produce an abundance of seeds on a regular basis. These seeds are spread quickly by wildlife and are quick to mature. Camphor tree is typically found within drier disturbed sites, but can eventually populate within natural areas.

Recommended Treatment: Mechanical cutting and cut stump application of herbicide for mature species, foliar application of herbicide for juveniles.

Wetland Species List

Chinese tallow (*Sapium sebiferum*). Chinese tallow tree can grow as tall as 50 feet and often has multi-stemmed trunks that can quickly shade out competing species. It is typically found in wetter, disturbed areas but can also thrive in well drained upland areas in addition to fresh and saline soil types. The species can quickly overtake a habitat due to its broad leaf coverage, shading and high seed output. The young juvenile species can be easy to treat and prevent from spreading, but once the species matures, it becomes very difficult to fully eradicate. Physical removal of juvenile species is sometimes an option, but can be costly and time consuming.

Recommended Treatment: Foliar application of herbicide for juveniles, frill girdle and cut stump application of herbicide for mature individuals

Peruvian primrose willow (*Ludwigia peruviana*). This species of *Ludwigia* typically grows into a large shrub approximately 6-8 feet high. It typically grows on pond edges or other areas of shallow standing water. It is also very advantageous and will populate quickly

in disturbed areas. The plant blooms all year, so it generates very quickly and if left uncontrolled, can quickly overtake an area and shade out desirable wetland groundcover and other emergent plants.

Recommended Treatment: Foliar application of herbicide

Brazilian pepper (*Schinus terebinthifolius*). Brazilian pepper is a highly invasive, destructive species that can grow as tall as 40 feet and typically has numerous trunks and branches that form tangled masses as they mature. These masses ultimately shade out desirable wetland groundcover species as well as juvenile shrub and tree species. It also has very high seed output and quickly spreads in disturbed areas and road edges, as well as undisturbed natural areas. The plant also produces allelopathic agents which suppress other competing plants from growing. Once established, mature species are very difficult to eradicate.

Recommended Treatment: Foliar application of herbicide for juveniles, frill girdle and cut stump application of herbicide for mature individuals.

Torpedo grass (*Panicum repens*). Torpedo grass is a low growing, aquatic grass that can reach as high as 3 feet. This species will establish in or near shallow waters and quickly form a monoculture that will displace native vegetation. The plant reproduces through rhizome extension and fragmentation, so mowing, cutting or disking is not effective and often makes the problem worse. Regular foliar application that eventually kills the rhizome is the most effective treatment method.

Recommended Treatment: Foliar application of herbicide.

Japanese climbing fern (*Lygodium japonicum*). The Japanese climbing fern is a vine that can grow up to 90 feet long. It is typically found in both sunny and shady disturbed areas such as yards and roadsides, but can also be found along less disturbed edges of swamps and marshes. The vine grows quickly and forms tangled masses over groundcover and shrub and juvenile tree species which smothers seedlings and prevents further forest growth. Physical removal may be applicable in some cases, so as not to harm the desirable species that are present, but this option is only viable for small populations.

Recommended Treatment: Foliar application of herbicide.

Old World climbing fern (*Lygodium microphyllum*). The Old World climbing fern is very similar to the Japanese climbing fern and has the same growth, production and habitat characteristics. The treatment for both species uses the same approach and regular foliar treatment is usually the best option. Physical removal may be applicable in some cases, so as not to harm the desirable species that are present, but this option is only viable for small populations.

Recommended Treatment: Foliar application of herbicide.

Nuisance Species of Concern

Cattails (*Typha* spp.). Cattails are not listed as Category I or II invasive/exotic species, however, in the warmer southern climates where the species is not regulated by annual freezes, it can quickly establish a monoculture in disturbed wetland areas. Due to its aggressive spreading nature through rhizome establishment and wind and water transport of the seed, the species is often treated as an invasive species. While it does provide some beneficial wetland habitat, it often ends up out competing other desirable herbaceous species. The most effective treatment for cattails is foliar application before the plant begins to seed.

Recommended Treatment: Mechanical removal or foliar application of herbicide.

Willow (*Salix* spp.). Much like cattails, willow is not listed as a Category I or II invasive/exotic species. However, it too can exhibit similar qualities and can establish a monoculture in disturbed wetland areas. Most will species are trees that can grow very quickly and contain large, thickly vegetated limbs. These limbs spread out from the main trunk and often end up shading other desirable species.

Recommended Treatment: Mechanical cutting, frill girdle and cut stump application of herbicide

Treatment Methodologies

Mechanical: Mechanical treatment includes the use of heavy machinery such as a bulldozer or back hoe, small machinery such as a bushhog or tractor and hand tools such as weed eaters and pruning tools. This methodology is best utilized when access to the treatment area is not an issue and will not cause further damage. In addition, species such as cogon grass and torpedo grass often have shallow root systems that a bulldozer or backhoe can completely remove. Other species such as the Chinese tallow are often not suited to mechanical removal due to their deep root system as established trees and high incidence of seeds within the surrounding soil. Mechanical removal can be very effective under the right conditions, but can often be expensive and time consuming due to disposal of removed material.

Manual: Manual treatment is often the most labor intensive and least productive treatment method. It involves physically removing the invasive species and is only applicable for certain species.

Chemical: Chemical treatment involves applying approved herbicides directly to the target plant through a variety of application techniques. Specific herbicides are

produced that disrupt the growth process of the plant and ultimately kill it. Different herbicides are designed to target specific plant types and it's important to use the proper herbicide on the correct plant in order to yield the best results. Herbicide application methodologies include three different techniques: Foliar, frill girdle and cut stump. Foliar application involves diluting the herbicide with water and applying the mixture directly to the plant's leaves and stems. Frill girdle application (also known as hack-and-squirt) is primarily used on tree species and involves cutting several notches in the base of the tree and injecting an herbicide directly into the interior of the tree. The tree's natural process then distributes the herbicide throughout, which ultimately kills the tree. Cut stump application is also used primarily on tree species and involves cutting down the target tree and "painting" the cut stump with an herbicide mixture to prevent the stump from re-sprouting.

The use of any herbicides will be conducted by a Florida Department of Agriculture licensed pesticide applicator, who is certified for herbicide application in the categories of "Natural Areas Weed Management" and "Aquatic Pest Control". In addition, during the use of any herbicide, all application rates and handling will be conducted in strict accordance with the associated product label to achieve the best results and remain in compliance with Florida law.

Preventative Measures

Once the clearing of the transmission lines occurs, PEF will introduce preventative measures where possible to help curb the establishment or spreading of any invasive or exotic species. These measures will be determined on-site as the clearing and impacts occur. In some cases, preventative measures may not be available or practical.

When possible preventative measures that may include planting, seeding or hydro-mulching will be applied to help control the establishment of invasive/exotic species. Each area will be assessed prior to and immediately after any clearing activities to determine the extent of the clearing that occurred and any potential invasive/exotic species that may be present or nearby that could result in contamination.

In some instances, it may be appropriate to plant herbaceous species such as pickerelweed (*Pontedaria cordata*) and maidencane (*Panicum hemitomon*) in recently disturbed areas, as these are fast, low growing species that can quickly cover an area and prevent invasive or exotic species from populating.

If appropriate hydrology is not present that would be conducive to planting herbaceous material, it may be appropriate to mulch an area to prevent the establishment of invasive or exotic species. The vegetation that is cleared within the impact area will be mulched on-site using a variety of heavy machinery (i.e. GyroTrac). This mulch will be applied approximately 4-6' thick and cover all exposed/disturbed areas within the wetland impact areas. The existing

vegetation to be cleared will be carefully inspected prior to the mulching to ensure that there are no invasive/exotic species present, as this would essentially spread the species further.

In some cases, mulching or planting of the disturbed areas may not be viable. In these instances, additional erosion control measures such as hydro-mulching or geohay will be used. However, heavy machinery is typically used during the application of these products, so access and site conditions will be limiting factors. Each impact area will be assessed on a case-by-case basis to determine the best available preventative measure.

Another important management aspect is the presence of invasive/exotic species on adjacent or neighboring properties that could potentially serve as a seed source. Often times in areas such as narrow transmission line corridors, invasive/exotic species may be present within wetland areas that have been cleared for the new transmission line. When this occurs, PEF will attempt to control the species within the impact area, but cannot be expected to actively treat any species within adjacent or neighboring properties.

Monitoring

Monitoring is an important aspect of controlling invasive and exotic species as it ensures that the on-going maintenance efforts are effective and achieving the desired results. Many treatment methodologies require numerous follow up events in order to successfully eradicate the target species. A regular monitoring plan allows for documentation of the maintenance efforts and provides for a way to determine how effective the efforts have been. Due to the on-going nature of the transmission line installation for the LNP project, a detailed monitoring plan is important to ensure that the maintenance efforts are successful.

The new transmission line rights of way will be cleared of existing vegetation during the construction process. These disturbed areas will provide for potential habitat for the establishment of invasive and exotic species. These areas will be inspected both before and during the clearing and installation process to determine the presence and extent of any existing populations of listed species. During this time, if any invasive and exotic species are identified a treatment event prior to disturbance may be conducted in order to help prevent further spread of the species. Once the transmission lines are installed, each right of way will be inspected on a semi-annual basis in order document any changes or need for additional treatment events. This documentation will include the recording of the location and prevalence of any listed species observed, any potential alternative treatment options and photo documentation. These semi-annual inspections will occur until native species re-vegetate approximately 80 percent coverage of each impact areas and each area contains five percent or less total coverage of invasive/exotic species within a three year period. If particular areas do not have sufficient coverage of native species or have an excess of five percent coverage of invasive/exotic species, then an additional management plan will be provided to remedy the situation.

Specific monitoring stations will be established along each transmission line once the installation plan is finalized. The location of these monitoring stations will be determined in the field based on the areas that supported invasive and exotic species and/or require the most treatment. In some cases, it may be appropriate to establish monitoring plots within a particular treatment area depending on the size of the area. Each area will be assessed for what type of species is present, the recommended treatment method, success of any previous treatments and any other conditions worth noting. A baseline habitat map will be established for each treatment area that will detail the existing populations of both desirable and invasive/exotic species prior to the impacts occurring. This habitat map will be updated after each treatment event to determine any changes from the previous event.

Annual reports of these maintenance and monitoring plan will be submitted to ACOE during November of each year during the three (3) year monitoring period. Each report will include the dates of each maintenance and monitoring event, results, photographic documentation, maps and recommendations. If any of the areas do not reach the vegetative cover criteria stated above within this period remediation plans for these areas will be developed and submitted to ACOE for approval.

Please see the following page for a flow chart that details the proposed inspection, treatment and monitoring plan for the LNP project.

Invasive/Exotic Species Management Plan

