

APPENDIX 10.4

ENVIRONMENTAL RESOURCE PERMIT

APPENDIX 10.4.1

JOINT ENVIRONMENTAL RESOURCE PERMIT/ SECTION 404 PERMIT APPLICATION

SECTION A

FOR AGENCY USE ONLY

ACOE Application #
Date Application Received
Proposed Project Lat.
Proposed Project Long.

DEP/WMD Application #
Date Application Received
Fee Received \$
Fee Receipt #

PART 1:

Are any of the activities described in this application proposed to occur in, on, or over wetlands or other surface waters?

☒ yes ☐ no

Is this application being filed by or on behalf of a government entity or drainage district? ☐ yes ☒ no

A. Type of Environmental Resource Permit Requested (check at least one). See Attachment 2 for thresholds and descriptions.

- ☐ Noticed General - include information requested in Section B.
- ☐ Standard General (Single Family Dwelling) - include information requested in Sections C and D.
- ☐ Standard General (all other Standard General projects) - include information requested in Sections C and E.
- ☐ Individual (Single Family Dwelling) - include information requested in Sections C and D.
- ☒ Individual (all other Individual projects) - include information requested in Sections C and E.
- ☐ Conceptual - include information requested in Sections C and E.
- ☐ Mitigation Bank Permit (construction) - include information requested in Sections C and F. (If the proposed mitigation bank involves the construction of a surface water management system requiring another permit defined above, check the appropriate box and submit the information requested by the applicable section.)
- ☐ Mitigation Bank (conceptual) - include information requested in Sections C and F.

B. Type of activity for which you are applying (check at least one)

- ☒ Construction or operation of a new system, other than a solid waste facility, including dredging or filling in, on or over wetlands and other surface waters.
- ☐ Construction, expansion or modification of a solid waste facility.
- ☐ Alteration or operation of an existing system which was not previously permitted by a WMD or DEP.
- ☐ Modification of a system previously permitted by a WMD or DEP.

Provide previous permit numbers: _____

- | | |
|--|--|
| ☐ Alteration of a system | ☐ Extension of permit duration |
| ☐ Abandonment of a system | ☐ Construction of additional phases of a system |
| ☐ Removal of a system | |

C. Are you requesting authorization to use Sovereign Submerged Lands?

☐ yes ☒ no

(See Section G and Attachment 5 for more information before answering this question.)

D. For activities in, on, or over wetlands or other surface waters, check type of federal dredge and fill permit requested:

- | | | |
|--|---|----------------------------------|
| ☐ Individual | ☐ Programmatic General | ☐ General |
| ☒ Nationwide | ☐ Not Applicable | |

E. Are you claiming to qualify for an exemption? ☐ yes ☒ no

If yes, provide rule number if known. _____

PART 3: A. OWNER(S) OF LAND	B. ENTITY TO RECEIVE PERMIT (IF OTHER THAN OWNER)
Name Mr. Robert E. Hunzinger	Name Mr. James S. Gordon
Title and Company General Manager; City of Gainesville, Florida, d/b/a Gainesville Regional Utilities	Title and Company Chief Executive Officer, Gainesville Renewable Energy Center, LLC
Address 301 Southeast 4th Avenue	Address 75 Arlington Street, 7th Floor
City, State, Zip Gainesville, Florida 32601	City, State, Zip Boston, MA 02116
Telephone and Fax (352) 393-1010 (phone) (352) 334-2277 (fax)	Telephone and Fax (617) 904-3100 (phone) (617) 904-3109 (fax)
C. AGENT AUTHORIZED TO SECURE PERMIT	D. CONSULTANT (IF DIFFERENT FROM AGENT)
Name Mr. Robert E. Donahoe	Name
Title and Company Vice President, American Renewables, LLC	Title and Company
Address 75 Arlington Street, 5th Floor	Address
City, State, Zip Boston, Massachusetts 02116	City, State, Zip
Telephone and Fax (617) 482-6150 (phone) / (617) 482-6159 (fax)	Telephone and Fax

PART 4: (Please provide metric equivalent for federally funded projects):

- A. Name of Project, including phase if applicable: **Gainesville Renewable Energy Center**
- B. Is this application for part of a multi-phase project?
☐yes ☒no
- C. Total applicant-owned area contiguous to the project?
131 ac.; **53.02** ha. **GREC LLC is leasing a 131-acre portion of the 1,146-acre tract of land owned by the City of Gainesville.**
- D. Total area served by the system: **145.34** ac.; **58.82** ha.
- E. Impervious area for which a permit is sought: **35.8** ac.; **14.5** ha.
- F. Volume of water that the system is capable of impounding:
71.5 ac. ft.; _____ m
- G. What is the total area of work in, on, or over wetlands or other surface waters?
0.455 acres; **0.184** hectare; **19,820** sq. ft.; **1,841.4** sq. meters.
- H. Total volume of material to be dredged: **Not applicable** yd; _____ m
- I. Number of new boat slips proposed: **Not applicable** wet slips; _____ dry slips

PART 5:

Project location (use additional sheets if needed):

County(ies) **Alachua**

Section(s) **27**

Township **08S**

Range **19E**

Section(s)

Township

Range

Section(s)

Township

Range

Land Grant name, if applicable: **Not applicable.**

Tax Parcel Identification Number: **05884-001-000**

Street Address/Road or other location: **10001 NW 13th Street**

City, Zip Code, if applicable: **Gainesville, Florida 32653**

PART 6: Describe in general terms the proposed project, system, or activity.

GREC LLC is proposing to construct the Gainesville Renewable Energy Center (GREC), a new 100-MW (net) woody biomass-fired electric generating facility that will be located on an approximately 131-acre Site within the existing Gainesville Regional Utilities Deerhaven Generating Station property. GREC facilities will occupy approximately 60.5 acres of the Site and will require permanent impacts to several small isolated nonforested wetlands and manmade swales, totaling approximately 0.44 acre, as well as temporary impacts to approximately 0.015 acre of nonforested manmade drainage ditch/swale wetlands for linear facility construction. GREC LLC is proposing to mitigate for wetland impacts by preserving 10.25 acres of forested wetlands and 12.33 acres of adjacent uplands. GREC will also entail construction of 35.8 acres of impervious surface and will be capable of impounding 71.5 acre-feet of water.

PART 7:

A. If there have been any pre-application meetings, including on-site meetings, with regulatory staff, please list the date(s), location(s), and names of key staff and project representatives.

November 17, 2009; GREC Site; Mark Garland (City of Gainesville), Connie Webel and Kristen Bell (FDEP Northeast District), Shannon White (U.S. Army Corps of Engineers, Gainesville Office) Lisa Ricker (Environmental Consulting & Technology, Inc.), and Robert Donahoe (GREC LLC)

B. Please identify by number any MSSW/Wetland Resource/ERP/ACOE Permits pending, issued or denied for projects at the location, and any related enforcement actions. **Not applicable.**

Agency	Date	No.\Type of Application	Action Taken
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

C. Note: The following information is required for projects proposed to occur in, on or over wetlands that need a federal dredge and fill permit or an authorization to use state owned submerged lands. Please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding application) and/or (for proprietary authorizations) is located within a 500 ft. radius of the applicant's land. Please attach a plan view showing the owner's names and adjoining property lines. Attach additional sheets if necessary.

See attached Figure A.7.C and Table A.7.C

1.	2.
3.	4.
5.	6.
7.	8.

PART 8:

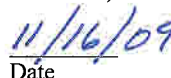
A. By signing this application form, I am applying, or I am applying on behalf of the applicant, for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto, does not relive me of any obligation for obtaining any other required federal, state, water management district or local permit prior to commencement of construction. I agree, or I agree on behalf of the applicant, to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a responsible operation entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Robert E. Donahoe

Typed/Printed Name of Applicant (If no Agent is used) or Agent (If one is so authorized below)



Signature of Applicant/Agent


Date

Vice President, American Renewables, LLC

(Corporate Title if applicable)

AN AGENT MAY SIGN ABOVE ONLY IF THE APPLICANT COMPLETES THE FOLLOWING:

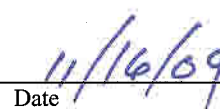
B. I hereby designate and authorize the agent listed above to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirements which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

James S. Gordon

Typed/Printed Name of Applicant



Signature of Applicant


Date

CEO, Gainesville Renewable Energy Center, LLC

(Corporate Title if applicable)

Please note: The applicant's original signature (not a copy) is required above.

PERSON AUTHORIZING ACCESS TO THE PROPERTY MUST COMPLETE THE FOLLOWING:

C. I either own the property described in this application or I have legal authority to allow access to the property, and I consent, after receiving prior notification, to any site visit on the property by agents or personnel from the Department of Environmental Protection, the Water Management District and the U.S. Army Corps of Engineers necessary for the review and inspection of the proposed project specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review and inspection. Further, I agree to provide entry to the project site for such agents or personnel to monitor permitted work if a permit is granted.

Robert E. Hunzinger

Typed/Printed Name of Applicant



Signature of Applicant


Date

General Manager; City of Gainesville, Florida, d/b/a Gainesville Regional Utilities

(Corporate Title if applicable)

SECTION C

Environmental Resource Permit Notice of Receipt of Application

Note: this form does not need to be submitted for noticed general permits.

This information is required in addition to that required in other sections of the application. Please submit five copies of this notice of receipt of application and all attachments with the other required information. Please submit all information on 8 1/2" x 11" paper.

Project Name **Gainesville Renewable Energy Center**
County **Alachua**
Owner **City of Gainesville (property owner); GREC LLC (project owner)**
Applicant: **Gainesville Renewable Energy Center, LLC**
Applicant's Address: **75 Arlington Street, 5th Floor, Boston, Massachusetts 02116**

1. Indicate the project boundaries on a USGS quadrangle map. Attach a location map showing the boundary of the proposed activity. The map should also contain a north arrow and a graphic scale; show Section(s), Township(s), and Range(s); and must be of sufficient detail to allow a person unfamiliar with the site to find it.

Site location map is presented in attached Figure C.1-1. USGS quadrangle map is presented in attached Figure C.1-2.

2. Provide the names of all wetlands, or other surface waters that would be dredged, filled, impounded, diverted, drained, or would receive discharge (either directly or indirectly), or would otherwise be impacted by the proposed activity, and specify if they are in an Outstanding Florida Water or Aquatic Preserve:

Wetlands E, F, G, J, Q, R, T, W, and an unnamed swale. See Section 5.4 of SCA Appendix 10.4.3 for detail. None of these waters are an Outstanding Florida Water or Aquatic Preserve.

3. Attach a depiction (plan and section views), which clearly shows the works or other facilities proposed to be constructed. Use multiple sheets, if necessary. Use a scale sufficient to show the location and type of works.

The proposed project plan is depicted in attached Figure C.3. Detailed plans and sections are presented in Appendix 10.4.2, Attachment G, of the SCA.

4. Briefly describe the proposed project (such as "construct dock with boat shelter", "replace two existing culverts", "construct surface water management system to serve 150 acre residential development"):

Construct a new 100-MW woody biomass-fired electrical power plant and associated facilities.

5. Specify the acreage of wetlands or other surface waters, if any, that are proposed to be filled, excavated, or otherwise disturbed or impacted by the proposed activity:

filled 0.36 ac.; 0.08 excavated ac.;

other impacts 0.015 ac. **(Temporary impacts for linear facility installation)**

6. Provide a brief statement describing any proposed mitigation for impacts to wetlands and other surface waters (attach additional sheets if necessary):

GREC LLC is proposing to compensate for the 0.44 acre of permanent wetland impact by preserving 10.25 acres of forested wetlands and 12.33 acres of adjacent forested uplands. The preservation area would be placed in a permanent conservation easement by the City of Gainesville. The proposed mitigation plan provides a functional gain of 2.061 UMAM units, which more than offsets the functional loss of 0.195 UMAM unit. See Section 7.0 of Appendix 10.4.3 of the SCA for details.

FOR AGENCY USE ONLY

Application Name:
Application Number:
Office where the application can be inspected:

Note to Notice recipient: The information in this notice has been submitted by the applicant, and has not been verified by the agency. It may be incorrect, incomplete or may be subject to change.

SECTION E

INFORMATION REQUESTED FOR STANDARD GENERAL, INDIVIDUAL AND CONCEPTUAL ENVIRONMENTAL RESOURCE PERMIT APPLICATIONS NOT RELATED TO A SINGLE FAMILY DWELLING UNIT

Please provide the information requested below if the proposed project requires either a standard general, individual, or conceptual approval environmental resource permit and is not related to an individual, single family dwelling unit, duplex or quadruplex. The information listed below represents the level of information that is usually required to evaluate an application. The level of information required for a specific project will vary depending on the nature and location of the site and the activity proposed. Conceptual approvals generally do not require the same level of detail as a construction permit. However, providing a greater level of detail will reduce the need to submit additional information at a later date. If an item does not apply to your project, proceed to the next item. Please submit all information that is required by the Department on either 8 1/2 in. X 11 in. paper or 11 in. X 17 in. paper. Larger drawings may be submitted to supplement but not replace these smaller drawings.

I. Site Information

- A. Provide a map(s) of the project area and vicinity delineating USDA/SCS soil types.

See attached Figure E.I.A.

- B. Provide recent aerials, legible for photo interpretation with a scale of 1" = 400 ft, or more detailed, with project boundaries delineated on the aerial.

See attached Figure E.I.B.

- C. Identify the seasonal high water or mean high tide elevation and normal pool or mean low tide elevation for each on site wetland or surface water, including receiving waters into which runoff will be discharged. Include dates, datum, and methods used to determine these elevations.

Seasonal high water levels at various wetlands were presented in Sections 3.4.1 through 3.6.8 of Appendix 10.4.3 of the SCA.

- D. Identify the wet season high water tables at the locations representative of the entire project site. Include dates, datum, and methods used to determine these elevations.

According to the geotechnical exploration report by GSE Engineering & Consulting, Inc., the normal seasonal high water table is expected to range from 0.5 to 3.5 feet below surface. For details, see SCA Appendix 10.4.2, Attachment A.

II. Environmental Considerations

- A. Provide results of any wildlife surveys that have been conducted on the site, and provide any comments pertaining to the project from the Florida Game and Fresh Water Fish Commission and the U.S. Fish and Wildlife Service.

See Section 3.3.6.1 of SCA.

- B. Provide a description of how water quantity, quality, hydroperiod, and habitat will be maintained in on-site wetlands and other surface waters that will be preserved or will remain undisturbed.

Onsite stormwater runoff will be detained/retained and treated by three wet detention basins and three dry retention basins to maintain water quality. Discharge from the stormwater basins will drain into wetlands to maintain hydroperiod. For details, see SCA Appendix 10.4.2.

- C. Provide a narrative description of any proposed mitigation plans, including purpose, maintenance, monitoring, and construction sequence and techniques, and estimated costs.

See Section 7.0 of SCA Appendix 10.4.3.

D. Describe how boundaries of wetlands or other surface waters were determined. If there has ever been a jurisdictional declaratory statement, a formal wetland determination, a formal determination, a validated informal determination, or a revalidated jurisdictional determination, provide the identifying number.

Wetland boundary surveys are shown in Sheets 1 to 3 of 8 in Attachment A of this appendix. Also see Section 3.0 of SCA Appendix 10.4.3. There is no existing jurisdictional determination for the Site.

E. Impact Summary Tables:

1. For all projects, complete Tables 1, 2 and 3 as applicable.
Tables 1 and 2 are attached. Table 3 is not applicable.
2. For docking facilities or other structures constructed over wetlands or other surface waters, provide the information requested in Table 4.
Not applicable.
3. For shoreline stabilization projects, provide the information requested in Table 5.
Not applicable.

III. Plans

Provide clear, detailed plans for the system including specifications, plan (overhead) views, cross sections (with the locations of the cross sections shown on the corresponding plan view), and profile (longitudinal) views of the proposed project. The plans must be signed and sealed by an appropriate registered professional as required by law. Plans must include a scale and a north arrow. These plans should show the following:

See Attachment G in Appendix 10.4.2 of the SCA.

A. Project area boundary and total land area, including distances and orientation from roads or other land marks;

Project area boundary is shown on attached Figures C.1-2 and E.I.B. The boundary survey maps are presented in Sheets 1 through 3 of 8 of Attachment A of this appendix.

B. Existing land use and land cover (acreage and percentages), and on-site natural communities, including wetlands and other surface waters, aquatic communities, and uplands. Use the Florida Land Use Cover & Classification System (FLUCCS)(Level 3) for projects proposed in the South Florida Water Management District, the St. Johns River Water Management District, and the Suwannee River Water Management District and use the National Wetlands Inventory (NWI) for projects proposed in the Southwest Florida Water Management District. Also identify each community with a unique identification number which must be consistent in all exhibits.

Existing land use and land cover are presented in attached Figure E.III.B.

C. The existing topography extending at least 100 feet off the project area, and including adjacent wetlands and other surface waters. All topography shall include the location and a description of known benchmarks, referenced to NGVD. For systems waterward of the mean high water (MHW) or seasonal high water lines, show water depths, referenced to mean low water (MLW) in tidal areas or seasonal low water in non-tidal areas, and list the range between MHW and MLW. For docking facilities, indicate the distance to, location of, and depths of the nearest navigational channel and access routes to the channel.

The existing topography of the project site, offsite construction laydown area, and linear facilities are presented in Sheets 4 through 8 of 8 in Attachment A of this appendix. The proposed project is not located waterward of the mean high water line of surface waters.

D. If the project is in the known flood plain of a stream or other water course, identify the following: 1) the flood plain boundary and approximate flooding elevations; and 2) the 100-year flood elevation and floodplain boundary of any lake, stream or other watercourse located on or adjacent to the site;

100-year floodplain map is shown in attached Figure E.III.D. Based on the stormwater analysis, the 100-year elevation in Wetlands A, B, C, and D are 176.6, 179.49, 174.87, and 174.96 ft-NGVD, respectively. For details, see Attachment C in Appendix 10.4.2 of the SCA.

E. The boundaries of wetlands and other surface waters within the project area. Distinguish those wetlands and other surface waters that have been delineated by any binding jurisdictional determination;

Onsite wetlands are shown in attached Figure E.III.E. Wetland boundary surveys are shown in Sheets 1 through 3 of 8 in Attachment A of this appendix. No binding jurisdictional determination has been made for these wetlands.

F. Proposed land use, land cover and natural communities (acreage and percentages), including wetlands and other surface waters, undisturbed uplands, aquatic communities, impervious surfaces, and water management areas. Use the same classification system and community identification number used in III (B) above.

Proposed land use and land cover are presented in attached Figure E.III.F.

G. Proposed impacts to wetlands and other surface waters, and any proposed connections/outfalls to other surface waters or wetlands;

See Section 5.0 of SCA Appendix 10.4.3.

H. Proposed buffer zones;

See Sheets C0.60 through C0.62 of Attachment G of Appendix 10.4.2 of the SCA.

I. Pre- and post-development drainage patterns and basin boundaries showing the direction of flows, including any off-site runoff being routed through or around the system; and connections between wetlands and other surface waters;

See Appendix 10.4.2, Attachment B.

J. Location of all water management areas with details of size, side slopes, and designed water depths;

See SCA Appendix 10.4.2, Attachment G, Sheets C2.40 through C2.46.

K. Location and details of all water control structures, control elevations, any seasonal water level regulation schedules; and the location and description of benchmarks (minimum of one benchmark per structure);

See SCA Appendix 10.4.2, Attachment G, Sheets C2.40 through C2.46.

L. Location, dimensions and elevations of all proposed structures, including docks, seawalls, utility lines, roads, and buildings;

The facility layout is shown on attached Figures E.III.F, E.III.L-1, and E.III.L-2. Also, see SCA Appendix 10.4.2, Attachment G, Sheets C2.20 through C6.08.

M. Location, size, and design capacity of the internal water management facilities;

See SCA Appendix 10.4.2, Attachments C, E, and G, Sheets C2.20 through C5.00.

N. Rights-of-way and easements for the system, including all on-site and off-site areas to be reserved for water management purposes, and rights-of-way and easements for the existing drainage system, if any;

Not applicable.

O. Receiving waters or surface water management systems into which runoff from the developed site will be discharged;

See SCA Appendix 10.4.2, Attachment B, Sheets C2.03 through C2.05.

P. Location and details of the erosion, sediment and turbidity control measures to be implemented during each phase of construction and all permanent control measures to be implemented in post-development conditions;

See SCA Appendix 10.4.2, Attachment F, SWPPP, and Attachment G, Sheets C2.20 through C6.08.

Q. Location, grading, design water levels, and planting details of all mitigation areas;

Not applicable.

R. Site grading details, including perimeter site grading;

See SCA Appendix 10.4.2, Attachment G, Sheets C2.40 through C2.46.

S. Disposal site for any excavated material, including temporary and permanent disposal sites;

Location of disposal sites will be determined after a contractor is selected.

T. Dewatering plan details;

Temporary dewatering effluent for initial site preparation and facility construction will be routed to four onsite construction sediment basins. For details, see Sections 5.1.1 and 5.3.1 of the SCA.

U. For marina facilities, locations of any sewage pumpout facilities, fueling facilities, boat repair and maintenance facilities, and fish cleaning stations;

Not applicable.

V. Location and description of any nearby existing offsite features which might be affected by the proposed construction or development such as stormwater management ponds, buildings or other structures, wetlands or other surface waters.

Nearby existing features off of the GREC Site on the GRU DGS property will be affected by the proposed project for development of the construction laydown area, natural gas and sewer pipelines, and GRU interconnection switchyard. For details, see Sections 3.0 and 5.0 and Appendix 10.4.3 of the SCA.

W. For phased projects, provide a master development plan.

Not applicable.

IV. Construction Schedule and Techniques

Provide a construction schedule, and a description of construction techniques, sequencing and equipment. This information should specifically include the following:

A. Method for installing any pilings or seawall slabs;

The GREC biomass-fired power plant and associated facilities will take approximately 34 months to construct and will involve various types of foundation systems, such as spread footings for shallow, medium load bearing structures, ring walls for tanks and piling/caissons for deep, heavy load-bearing equipment and apparatus. Final design of foundation systems will be prepared after detailed geotechnical investigations are concluded.

B. Schedule of implementation of temporary or permanent erosion and turbidity control measures;

See SCA Appendix 10.4.2, Attachment F (SWPPP) and Attachment G, Sheets C2.20 through C6.08.

C. For projects that involve dredging or excavation in wetlands or other surface waters, describe the method of excavation, and the type of material to be excavated;

The project will not involve dredging of the surface waters. Sand and organic soil material will be removed from an 0.08-acre wetland by backhoe.

D. For projects that involve fill in wetlands or other surface waters, describe the source and type of fill material to be used. For shoreline stabilization projects that involve the installation of riprap, state how these materials are to be placed, (i.e., individually or with heavy equipment) and whether the rocks will be underlain with filter cloth;

The proposed project will not involve filling of the surface waters. Clean construction fill material will be used to fill 0.36 acre of wetlands.

E. If dewatering is required, detail the dewatering proposal including the methods that are proposed to contain the discharge, methods of isolating dewatering areas, and indicate the period dewatering structures will be in place (Note: a consumptive use or water use permit may be required);

Temporary dewatering effluent for initial site preparation and facility construction will be routed to four onsite construction sediment basins. For details, see Sections 5.1.1 and 5.3.1 of the SCA.

F. Methods for transporting equipment and materials to and from the work site. If barges are required for access, provide the low water depths and draft of the fully loaded barge;

Equipment and material will be transported to and from the work site by trucks.

G. Demolition plan for any existing structures to be removed; and

Not applicable.

H. Identify the schedule and party responsible for completing monitoring, record drawings, and as-built certifications for the project when completed.

GREC LLC will be responsible for monitoring, record drawings, and as-built certifications following the completion of the construction.

V. Drainage Information

A. Provide pre-development and post-development drainage calculations, signed and sealed by an appropriate registered professional, as follows:

1. Runoff characteristics, including area, runoff curve number or runoff coefficient, and time of concentration for each drainage basin;

See SCA Appendix 10.4.2, Attachment C.

2. Water table elevations (normal and seasonal high) including aerial extent and magnitude of any proposed water table draw down;

According to the geotechnical exploration by GSE Engineering & Consulting, Inc., the groundwater table was approximately 1.5 to 6 feet below surface. The normal seasonal high water table is expected to range from 0.5 to 3.5 feet below surface. For details, see Attachment A in Appendix 10.4.2 of the SCA.

3. Receiving water elevations (normal, wet season, design storm);

See SCA Appendix 10.4.2, Attachment C.

4. Design storms used including rainfall depth, duration, frequency, and distribution;

See SCA Appendix 10.4.2, Attachments C and D.

5. Runoff hydrograph(s) for each drainage basin, for all required design storm event(s);

See SCA Appendix 10.4.2, Attachments C and D.

6. Stage-storage computations for any area such as a reservoir, close basin, detention area, or channel, used in storage routing;

See SCA Appendix 10.4.2, Attachments C and D.

7. Stage-discharge computations for any storage areas at a selected control point, such as control structure or natural restriction;

See SCA Appendix 10.4.2, Attachments C and D.

8. Flood routings through on-site conveyance and storage areas;

See SCA Appendix 10.4.2, Attachments C and D.

9. Water surface profiles in the primary drainage system for each required design storm event(s);

See SCA Appendix 10.4.2, Attachments C and D.

10. Runoff peak rates and volumes discharged from the system for each required design storm event(s);

See SCA Appendix 10.4.2, Attachments C and D.

11. Tail water history and justification (time and elevation); and

See SCA Appendix 10.4.2, Attachments C and D.

12. Pump specifications and operating curves for range of possible operating conditions (if used in system).

Not applicable.

B. Provide the results of any percolation tests, where appropriate, and soil borings that are representative of the actual site conditions;

See SCA Appendix 10.4.2, Attachment A.

C. Provide the acreage, and percentages of the total project, of the following:

Total drainage area = 145.34 acres. See Appendix 10.4.2, Attachments C and D.

1. Impervious surfaces, excluding wetlands;

35.8 acres (24.6 percent)

2. Pervious surfaces (green areas, not including wetlands);

73.59 acres (50.6 percent)

3. Lakes, canals, retention areas, other open water areas; and

18.86 acres (13.0 percent)

4. Wetlands.

17.09 acres (11.8 percent)

D. Provide an engineering analysis of floodplain storage and conveyance (if applicable), including:

1. Hydraulic calculations for all proposed traversing works;

See SCA Appendix 10.4.2, Attachments C and D.

2. Backwater water surface profiles showing upstream impact of traversing works;

See SCA Appendix 10.4.2, Attachments C and D.

3. Location and volume of encroachment within regulated floodplain(s); and

Based on the hydraulic analysis by Eng, Denman & Associates, Inc. (Appendix 10.4.2 of the SCA), floodplain areas will not be encroached upon by the proposed project.

4. Plan for compensating floodplain storage, if necessary, and calculations required for determining minimum building and road flood elevations.

Not applicable.

- E. Provide an analysis of the water quality treatment system including:

1. A description of the proposed stormwater treatment methodology that addresses the type of treatment, pollution abatement volumes, and recovery analysis; and

The proposed stormwater management system includes three wet detention basins, three dry retention basins, ditches, and swales. The proposed stormwater drainage system is designed to provide proper water quality treatment. The recovery analysis is presented in Appendix 10.4, Attachments C and D, of the SCA.

2. Construction plans and calculations that address stage-storage and design elevations, which demonstrate compliance with the appropriate water quality treatment criteria.

See SCA Appendix 10.4.2, Attachments C, D, and G.

- F. Provide a description of the engineering methodology, assumptions and references for the parameters listed above, and a copy of all such computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, a description of the program, input and output data, two diskette copies, if available, and justification for model selection.

See SCA Appendix 10.4.2. The stormwater computations were conducted by ICPR Model. The model input and output data are included in Appendix 10.4.2, Attachments C and D, of the SCA.

VI. Operation and Maintenance and Legal Documentation

- A. Describe the overall maintenance and operation schedule for the proposed system.

See SCA Appendix 10.4.2, Attachment G, Sheet C3.20.

- B. Identify the entity that will be responsible for operating and maintaining the system in perpetuity if different than the permittee, a draft document enumerating the enforceable affirmative obligations on the entity to properly operate and maintain the system for its expected life, and documentation of the entity's financial responsibility for long-term maintenance. If the proposed operation and maintenance entity is not a property owner's association, provide proof of the existence of an entity, or the future acceptance of the system by an entity which will operate and maintain the system. If a property owner's association is the proposed operation and maintenance entity, provide copies of the articles of incorporation for the association and copies of the declaration, restrictive covenants, deed restrictions, or other operational documents that assign responsibility for the operation and maintenance of the system. Provide information ensuring the continued adequate access to the system for maintenance purposes. Before transfer of the system to the operating entity will be approved, the permittee must document that the transferee will be bound by all terms and conditions of the permit.

GREC LLC will be responsible for operating and maintaining the system

- C. Provide copies of all proposed conservation easements, storm water management system easements, property owner's association documents, and plats for the property containing the proposed system.

A conservation easement on an approximately 22.6-acre area of wetlands and uplands on the Site will be provided by the City of Gainesville to mitigate for wetland impacts.

D. Provide indication of how water and wastewater service will be supplied. Letters of commitment from off-site suppliers must be included.

Sanitary waste streams generated by GREC facility will be routed to an existing sewer force main owned and operated by GRU. For details, see Section 4.5.2 of the SCA. Potable water for GREC will be provided by an onsite potable water supply system. For details, see Section 4.5.3 of the SCA.

E. Provide a copy of the boundary survey and/or legal description and acreage of the total land area of contiguous property owned/controlled by the applicant.

The boundary survey and legal description are presented in Sheets 1 through 3 of 8 in Attachment A of this appendix.

VII. Water Use

A. Will the surface water system be used for water supply, including landscape irrigation, or recreation.

Surface water will not be used for water supply.

B. If a Consumptive Use or Water Use permit has been issued for the project, state the permit number.

A water use approval from the Suwannee River Water Management District will be part of the SCA process.

C. If no Consumptive Use or Water Use permit has been issued for the project, indicate if such a permit will be required and when the application for a permit will be submitted.

A water use approval will be part of the SCA process.

D. Indicate how any existing wells located within the project site will be utilized or abandoned.

Not applicable.

TABLE 1
Project Impact Summary

WL & SW ID	WL & SW TYPE	WL & SW SIZE (ac.) ON SITE	WL & SW ACRES NOT IMPACTED	PERMANENT IMPACTS TO WL & SW		TEMPORARY IMPACTS TO WL & SW		MITIGATION ID
				IMPACT SIZE (acres)	IMPACT CODE	IMPACT SIZE (acres)	IMPACT CODE	
WL A	POF/621/630	10.25	10.25					
WL B	POF/621/630	7.63	7.63					
WL C	POF/630	3.25	3.25					
WL D	POF/641/626	1.77	1.77					
WL E	PEM/512	0.04	0	0.04	E			A
WL F	PSS/631	0.18	0	0.18	F			A
WL G	PSS/631	0.05	0	0.05	F			A
WL J	PEM/643	0.04	0	0.04	E			A
WL K	PEM/641	0.03	0.03					
WL M	PFO/631/630	0.023	0.023					
WL O	PEM/512	0.02	0.02					
WL P	PEM/512	0.04	0.04					
WL Q	PEM/641	0.03	0	0.03	F			A
WL R	PEM/641	0.08	0	0.08	F			A
WL S	PEM/512	0.289	0.289					
WL T	PEM/512	0.013	0.003			0.01	E	
WL U	PEM/512	0.08	0.08					
WL W	PEM/512	0.008	0.003			0.005		
Unnamed swale	PEM/512	0.02	0	0.02	F			
PROJECT TOTALS		23.843	23.397	0.44		0.015		

WL = Wetland; SW = Surface water; ID = Identification number, letter, etc.

Wetland Type: Use an established wetland classification system and, in the comments section below, indicate which classification system is being used.

Impact Code (Type): D = dredge; F = fill; H = change hydrology; S = shading; C = clearing; O = other. Indicate the final impact if more than one impact type is proposed in a given area. For example, show F only for an area that will first be demucked and then backfilled. E = Excavation

Note: Multiple entries per cell are not allowed, except in the "Mitigation ID" column. Any given acreage of wetland should be listed in one row only, such that the total of all rows equals the project total for a given category (column). For example, if Wetland No. 1 includes multiple wetland types and multiple impact codes are proposed in each type, then each proposed impact in each wetland type should be shown on a separate row, while the size of each wetland type found in Wetland No. 1 should be listed in only one row.

Comments: Wetland Type is both Cowardin (POF = Palustrine Forested, PSS = Palustrine Scrub Shrub, PEM = Palustrine Emergent) and FLUCFCS (512 = man-made swale, 621 = cypress, 626 = hydric pine plantation, 630= mixed forested wetland, 631 = shrub wetland, 641 = marsh, 643 = wet prairie)

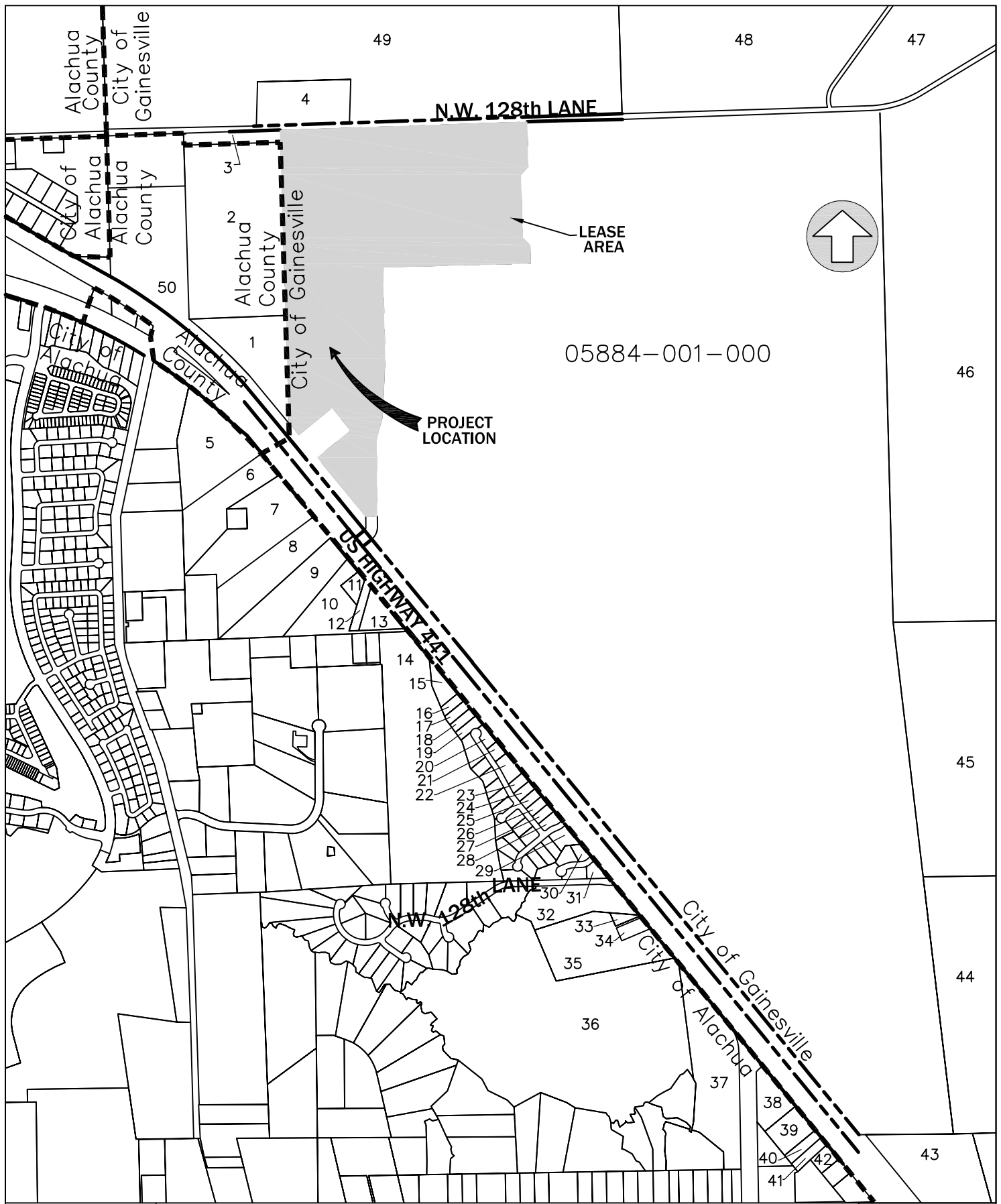
Mitigation ID A: = Preservation plan.

TABLE 2
ON-SITE MITIGATION SUMMARY

MITIGATION ID	CREATION		RESTORATION		ENHANCEMENT		WETLAND PRESERVE		UPLAND PRESERVE		OTHER	
	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE
A							2.85	621	12.33	434		
A							7.4	630				
PROJECT TOTALS:							10.25		12.33			

CODES (multiple entries per cell not allowed): Target Type or Type = target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

COMMENTS: Type is based on FLUCFCS (621 = Cypress, 630 = Mixed Forested Wetland, 434 = Mixed Hardwood and Conifer)



ENGINEERS SURVEYORS PLANNERS
2404 N.W. 43rd ST.
GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 373-3541
FAX. (352) 373-7249
E-MAIL: eda@atlantic.net

CORPORATE AUTHORIZATION NO.
EB 2389



Gainesville
Renewable Energy Center
An American Renewables Company

FIGURE A.7.C - PARCEL INFORMATION

Project
Phone:

STATE CERTIFICATION

Scale: N.T.S.	Date: NOV. 2009
Designed: CSV	Drawn: JVR
Project No: 09-194	

Table A.7.C. Adjoining Properties

Property Number (Figure A.7.C.)	Parcel ID	Property Owner	Address
1	05884-001-001	Alachua County	P.O. Box 2877 Gainesville, FL 32602
2	05890-001-000	Alachua County	12 SE 1 st St Gainesville, FL 32606
3	05884-001-004	City of Gainesville	PO Box 490 Gainesville, FL 32602
4	05868-099-000	City of Gainesville	PO Box 490 Gainesville, FL 32602
5	05885-010-006	Magnolia Park- Gainesville, LLC	5550 NW 111 th Blvd Gainesville, FL 32635
6	05885-010-005	Reserve Investors Trust E	4432 NW 23 rd Ave Gainesville, FL 32606
7	05885-010-004	Taymer Properties, LLC	PO Box 369 Archer, FL 32618
8	05885-010-003	Gainesville LLC Applied Investments	PO Box 357610 Gainesville, FL 32635
9	05885-010-002	Gainesville LLC Applied Investments	PO Box 357610 Gainesville, FL 32635
10	05885-010-010	Brighton Beach Holdings, LLC	2031 NW 5 th Ave Gainesville, FL 32603
11	05885-010-001	Brighton Beach Car Wash, LLC	2031 NW 5 th Ave Gainesville, FL 32603
12	05885-005-000	Martin Investments, LLC	21105 NW 70 th Ave Alachua, FL 32615
13	05885-002-000	Colon C Thompson	2509 W State Road 235 Brooker, FL 32622
14	05930-001-000	CL Trustee Johnson	PO Box 357133 Gainesville, FL 32635
15	05935-000-000	Association Staghorn Homeowners	4421 NW 39 th Ave Gainesville, FL 32605

Table A.7.C. Adjoining Properties (Continued, Page 2 of 4)

Property Number (Figure A.7.C.)	Parcel ID	Property Owner	Address
16	05935-001-000	CL Trustee Johnson	PO Box 357133 Gainesville, FL 32635
17	05935-002-000	CL Trustee Johnson	PO Box 357133 Gainesville, FL 32635
18	05935-003-000	CL Trustee Johnson	PO Box 357133 Gainesville, FL 32635
19	05935-004-000	Eric J Giambrone	10702 NW 47 th Ter Gainesville, FL 32653
20	05935-005-000	Donald J Lopez	10617 NW 47 th Ter Alachua, FL 32653
21	05935-006-000	Thomas E Busch	10603 NW 47 th Ter Gainesville, FL 32653
22	05935-007-000	Jerry Chisholm	10521 NW 47 th Ter Gainesville, FL 32653
23	05935-009-000	Abel & Massimillo	10505 NW 47 th Ter Gainesville, FL 32653
24	05935-010-000	Crandall & Lupton	10501 NW 47 th Ter Gainesville, FL 32653
25	05935-011-000	Stanley A Perry	10427 NW 47 th Ter Gainesville, FL 32653
26	05935-012-000	Amy Dawn Dyszczaowski	10411 NW 47 th Ter Gainesville, FL 32653
27	05935-013-000	Brenda G Phillips	10409 NW 47 th Ter Gainesville, FL 32653
28	05935-014-000	Bussard Management, LLC	10860 NW 198 th St Micanopy, FL 32667
29	05935-034-000 & 05935-035-000	Carlos Sr Campbell	4619 NW 104 th Ln Gainesville, FL 32653
30	05935-036-000	Fritz Frugoli	4609 NW 103 rd Ln Gainesville, FL 32653

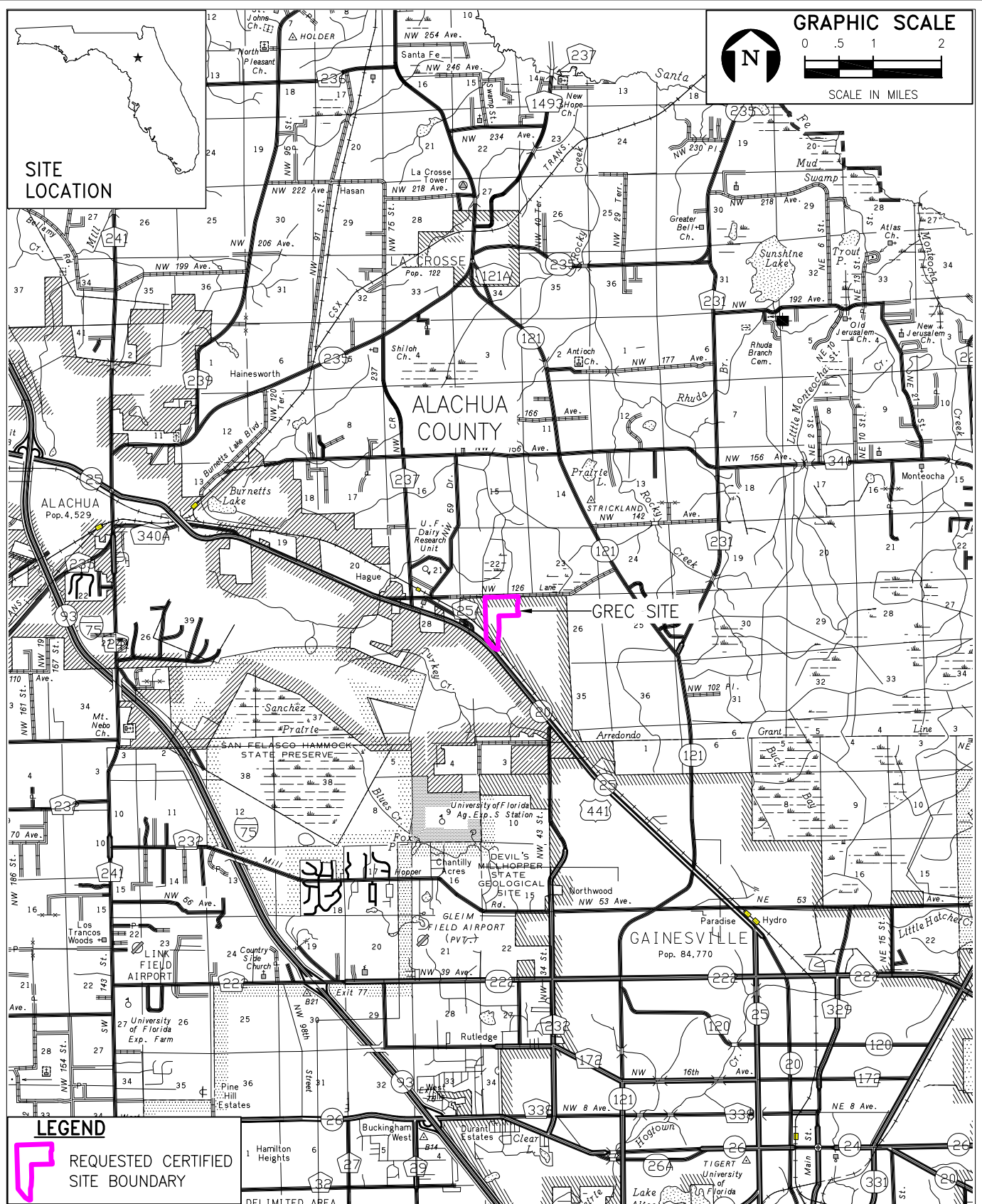
Table A.7.C. Adjoining Properties (Continued, Page 3 of 4)

Property Number (Figure A.7.C.)	Parcel ID	Property Owner	Address
31	05935-040-000	FL Frugoli	4609 NW 103 rd Ln Gainesville, FL 32653
32	05936-006-000	Mesa-Sand Realty, LLC	5725 N Scottsdale Rd, Ste C-195 Scottsdale, AZ 85250
33	05936-007-002	Harmony Gardens, Inc	10100 NW 13 th St Gainesville, FL 32653
34	05936-007-001		
35	05936-007-000	Jule E Trustee Schmidt	9900 NW 13 th St Gainesville, FL 32653
36	05936-001-000	Ann Schmidt	9900 NW US Hwy 441 Gainesville, FL 32653
37	05945-000-000	Ann Schmidt	9900 NW US Hwy 441 Gainesville, FL 32653
38	05975-008-000	Deerhaven, LLC	PO Box 1045 Gainesville, FL 32602
39	05975-007-000	McKinney Investments Ltd	9417 NW 43 rd St Gainesville, FL 32653
40	05975-006-001	Emery Randolph Lewis	PO Box 357067 Gainesville, FL 32635
41	05975-006-000	Rollins Automotive, Inc	9430 NW 13 th St Gainesville, FL 32653
42	05975-004-000	SSO LLP	PO Box 140366 Gainesville, FL 32614
43	05976-000-000	Griffis Lumber, Inc	9333 NW 13 th St Gainesville, FL 32653
44	05943-000-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
45	05943-001-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602

Table A.7.C. Adjoining Properties (Continued, Page 4 of 4)

Property Number (Figure A.7.C.)	Parcel ID	Property Owner	Address
46	05884-000-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
47	05869-001-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
48	05869-002-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
49	05868-001-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
50	05884-001-003	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602
Project Site	05884-001-000	City of Gainesville	PO Box 490 MS 58 Gainesville, FL 32602

Sources: Alachua County Tax Assessor, 2009.
EDA, 2009.



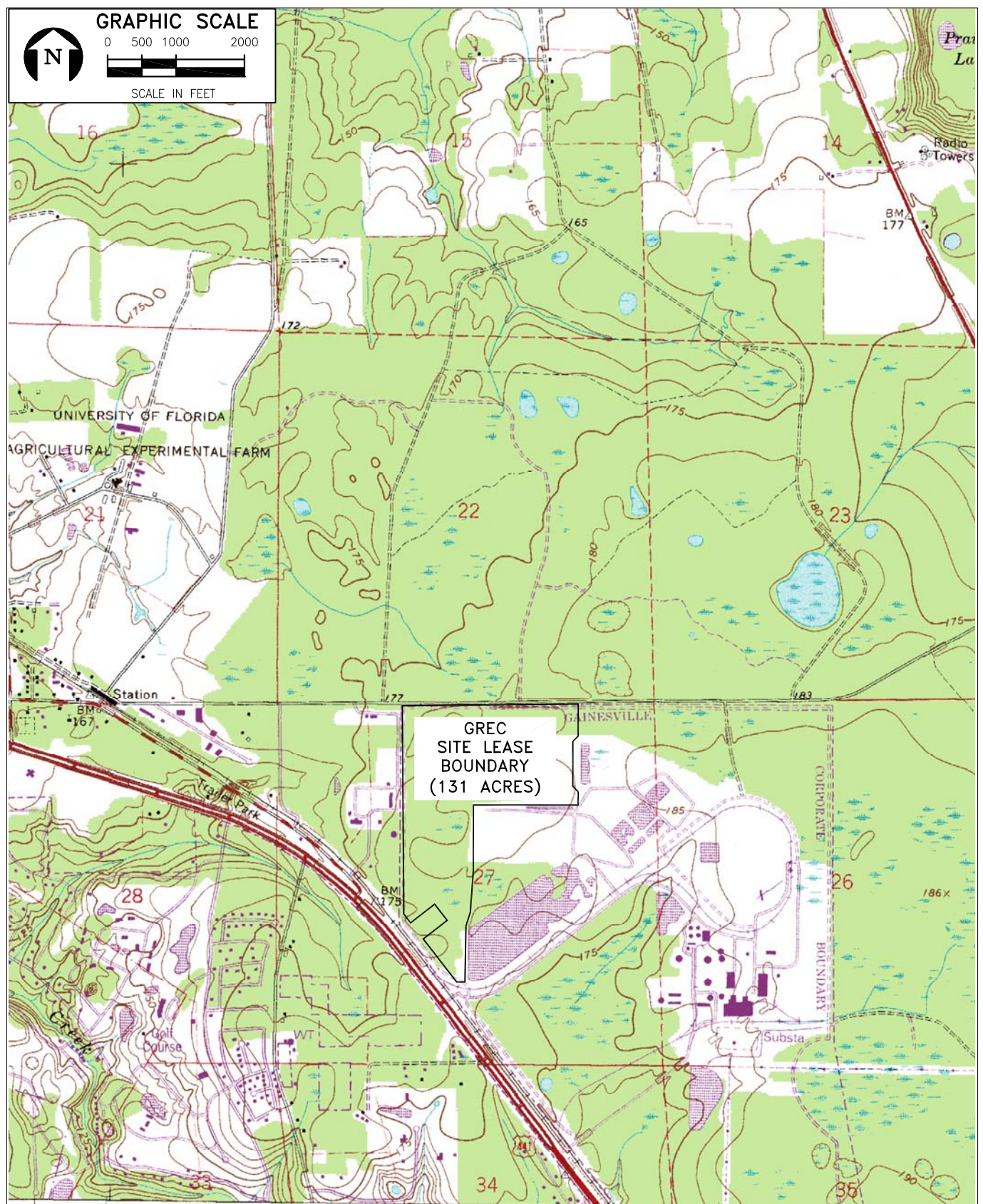
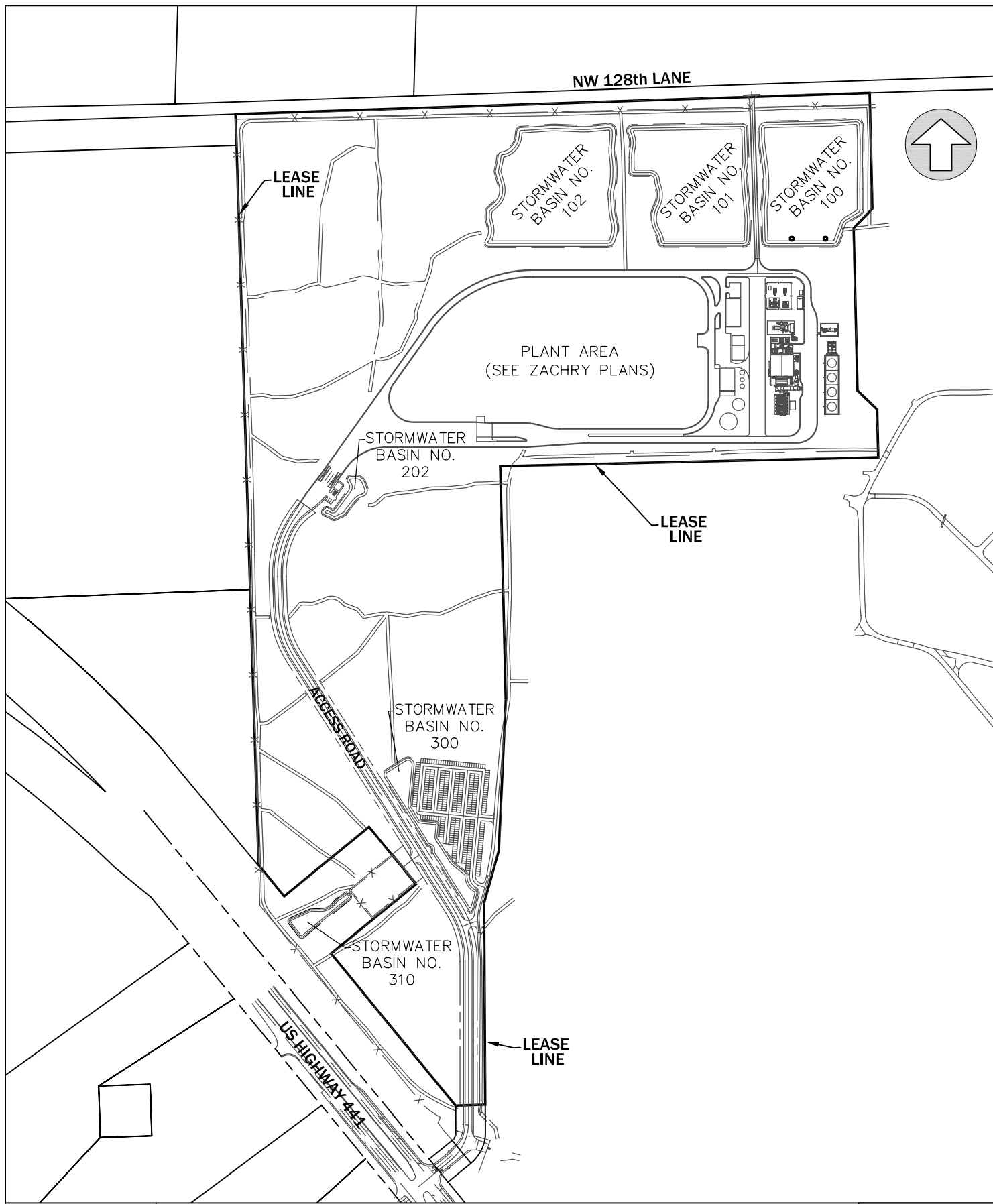


FIGURE C.1-2.

GREC SITE BOUNDARY AND USGS QUADANGLE MAP

Sources: USGS Quad, Alachau, FL, 1993; ECT, 2009.



ENGINEERS SURVEYORS PLANNERS
2404 N.W. 43rd ST.
GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 373-3541
FAX. (352) 373-7249
E-MAIL: eda@atlantic.net

CORPORATE AUTHORIZATION NO.
EB 2389



Gainesville
Renewable Energy Center
An American Renewables Company

FIGURE C.3 -DEPICTION OF WORKS

Project
Phase:

STATE CERTIFICATION

Scale: N.T.S.	Date: NOV. 2009
Designed: CSV	Drawn: JMR
Project No: 09-104	

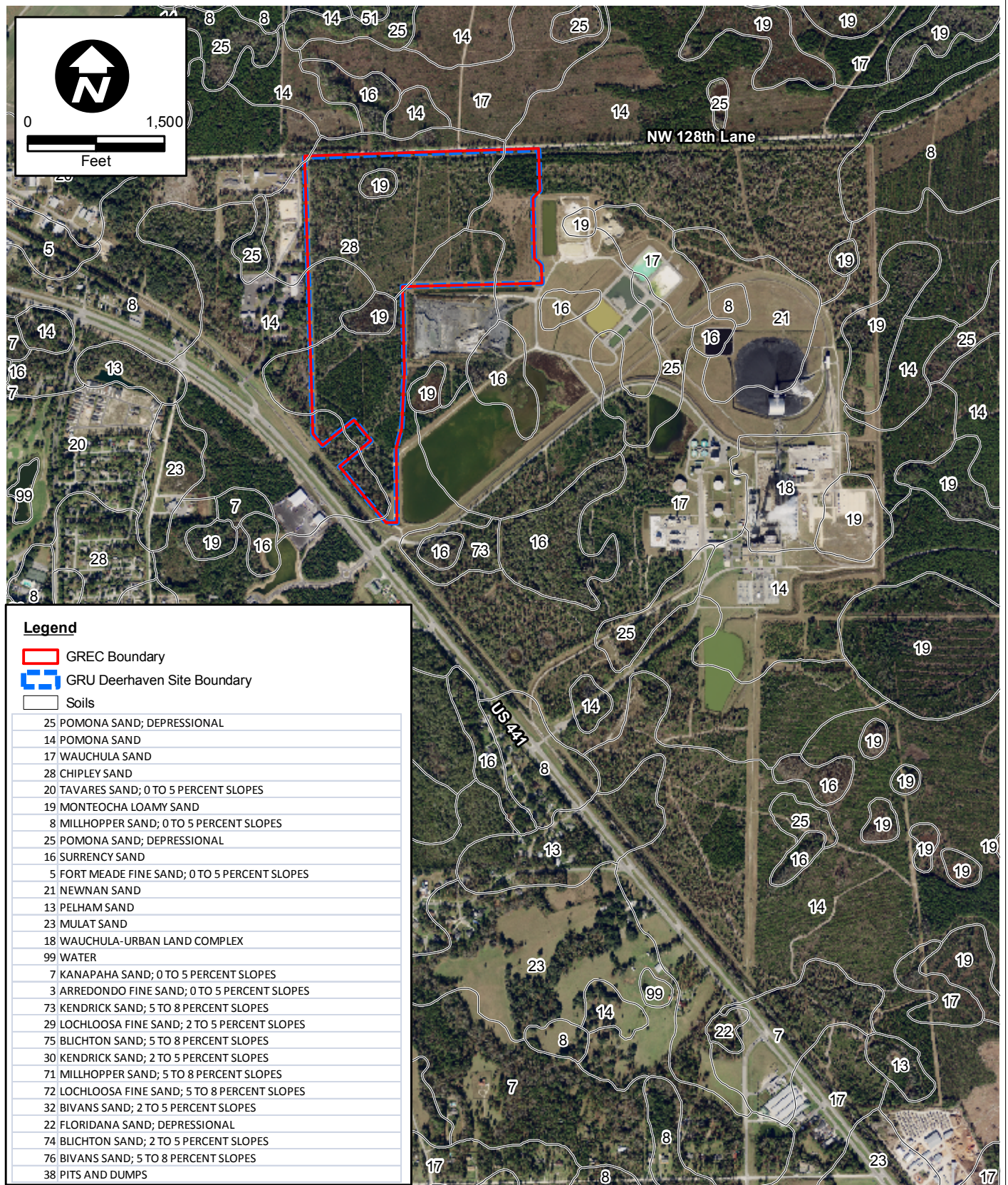


FIGURE E.I.A.

SOIL MAP

Sources: NRCS, 1990; FDOT, 2008; GREC, 2009; ECT, 2009.



FIGURE E.I.B.
AERIAL PHOTOGRAPH OF GREC SITE

Sources: GRU, 2009; FDOT, 2008; GENESIS, 2009; ECT, 2009.

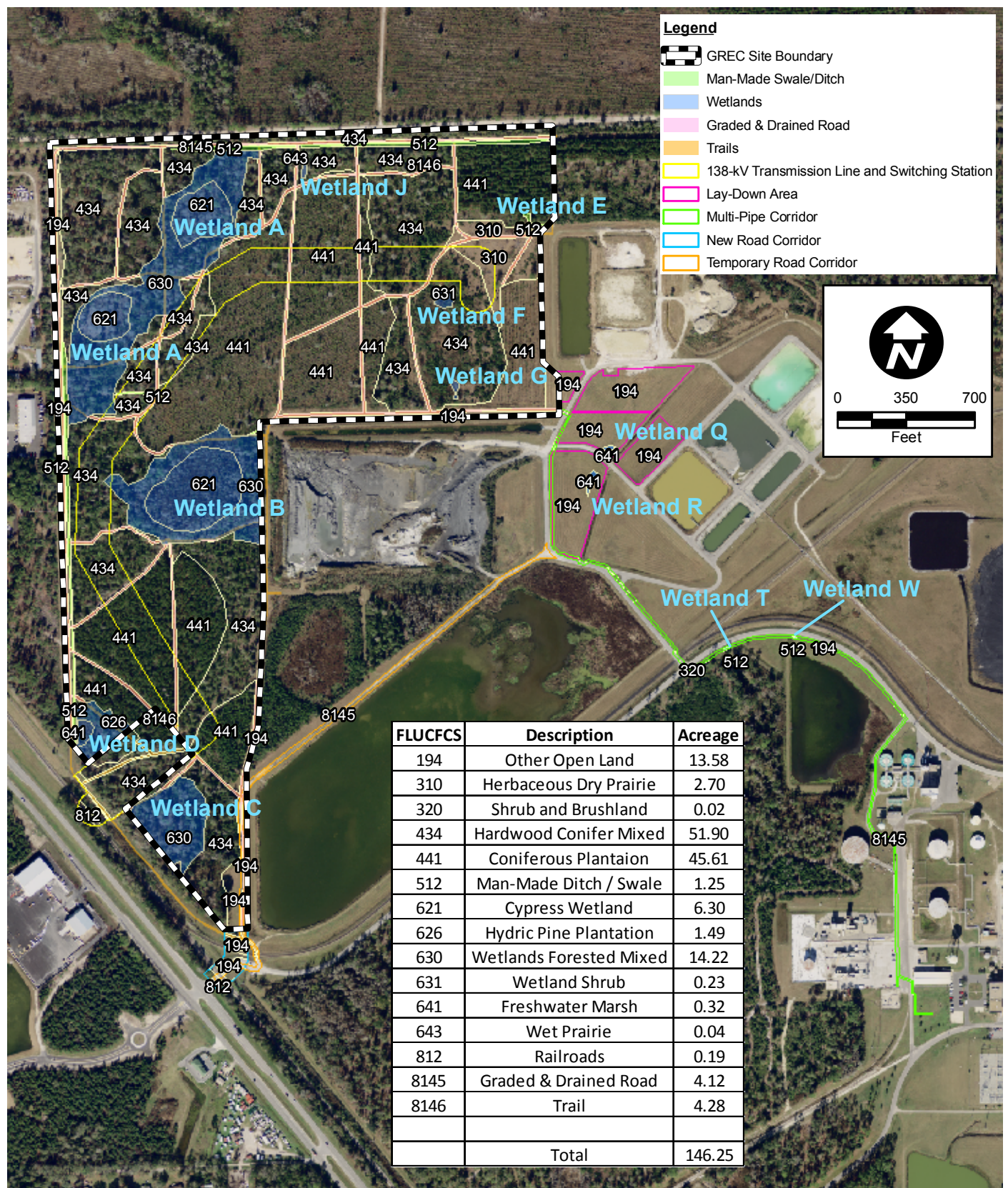


FIGURE E.III.B.

EXISTING LAND USE/COVER TYPES USING FLUCFCS

Sources: FDOT, 2009; Genesis, 2009; ECT, 2009.

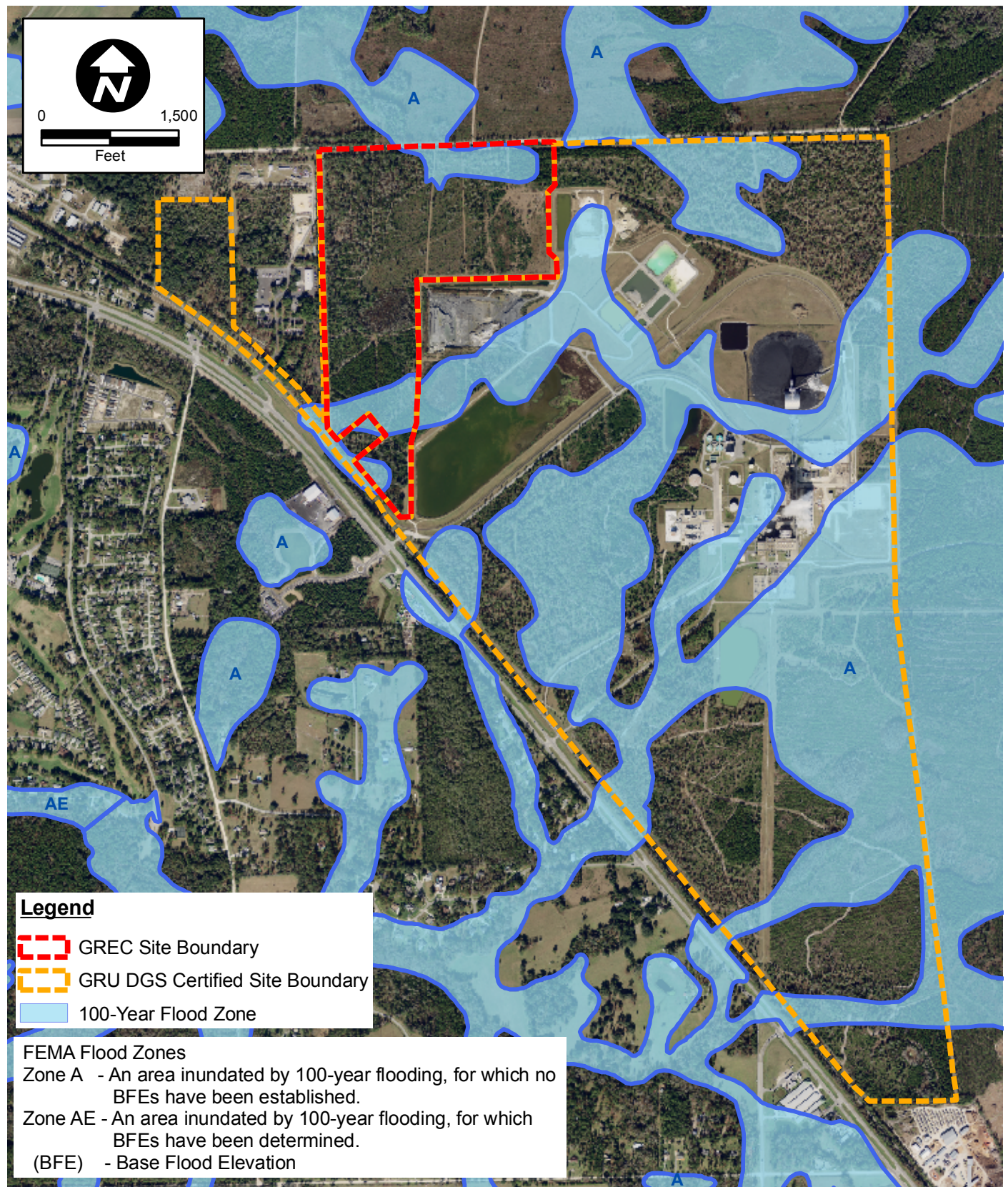


FIGURE E.III.D.

100-YEAR FLOOD ZONES

Sources: FEMA,2006; FDOT, 2008; GREC, 2009; ECT,2009.



FIGURE E.III.E.
EXISTING WETLANDS WITHIN GREC SITE AND OFFSITE AREAS

Sources: FDOT, 2008; Genesis, 2009; ECT, 2009.

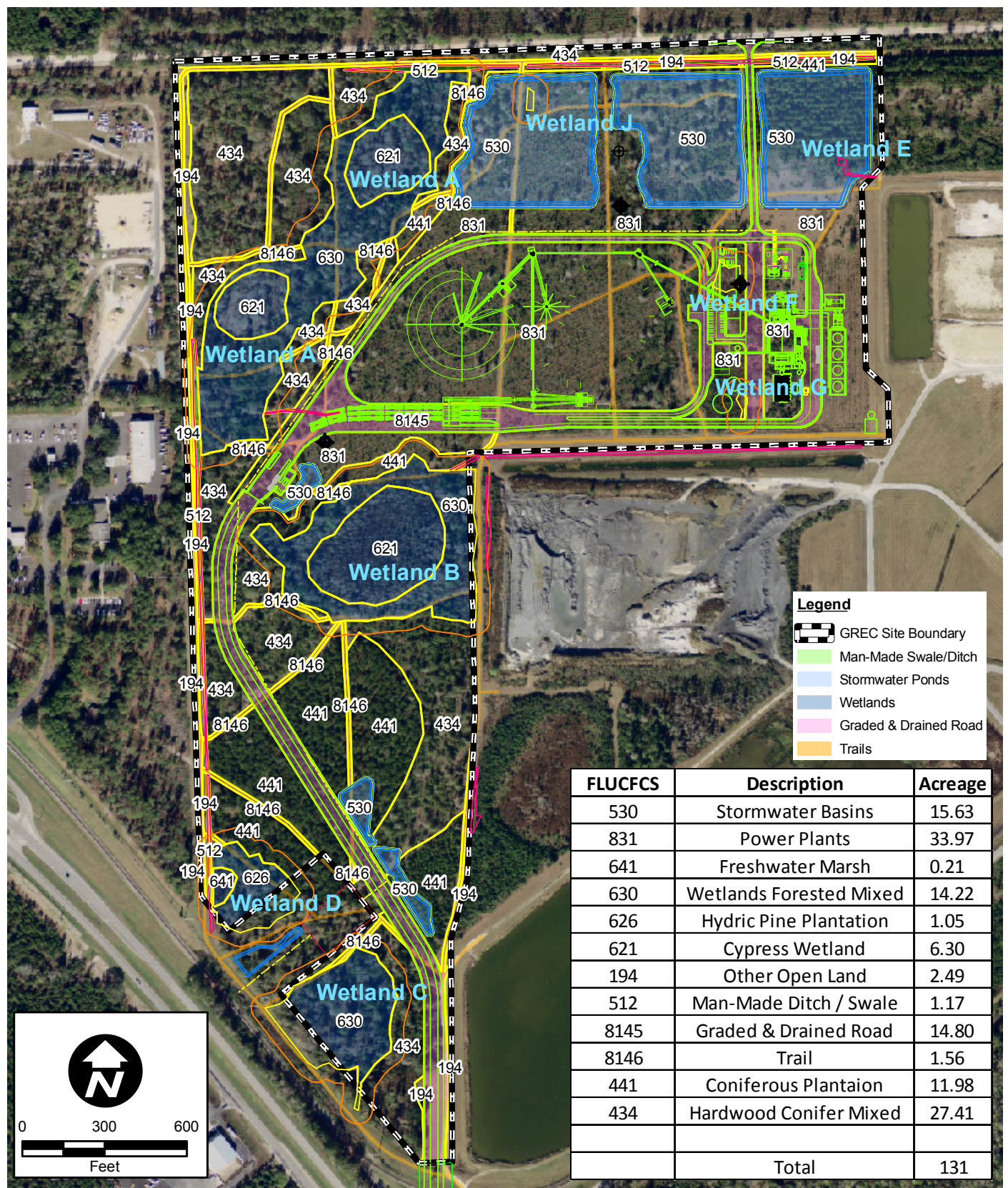


FIGURE E.III.F.

PROPOSED LAND USE/COVER TYPES USING FLUCFCS

Sources: FDOT, 2009; Genesis, 2009; ECT, 2009.

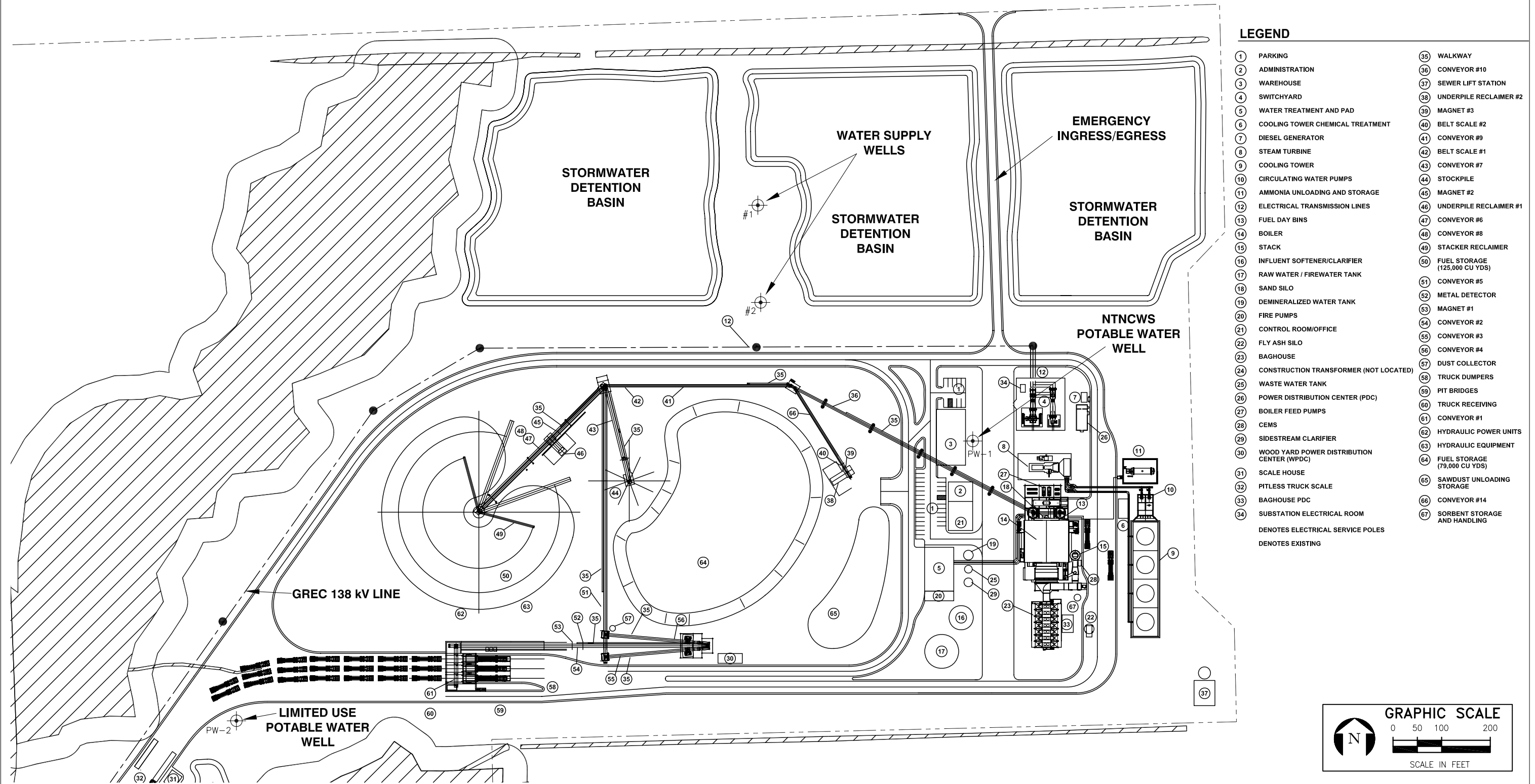


FIGURE E.III.L-1.

DETAILED FACILITY LAYOUT FOR GREC

Source: FDOT, 2008; Genesis, 2009; Zachary, 2009; EDA, 2009; ECT, 2009.

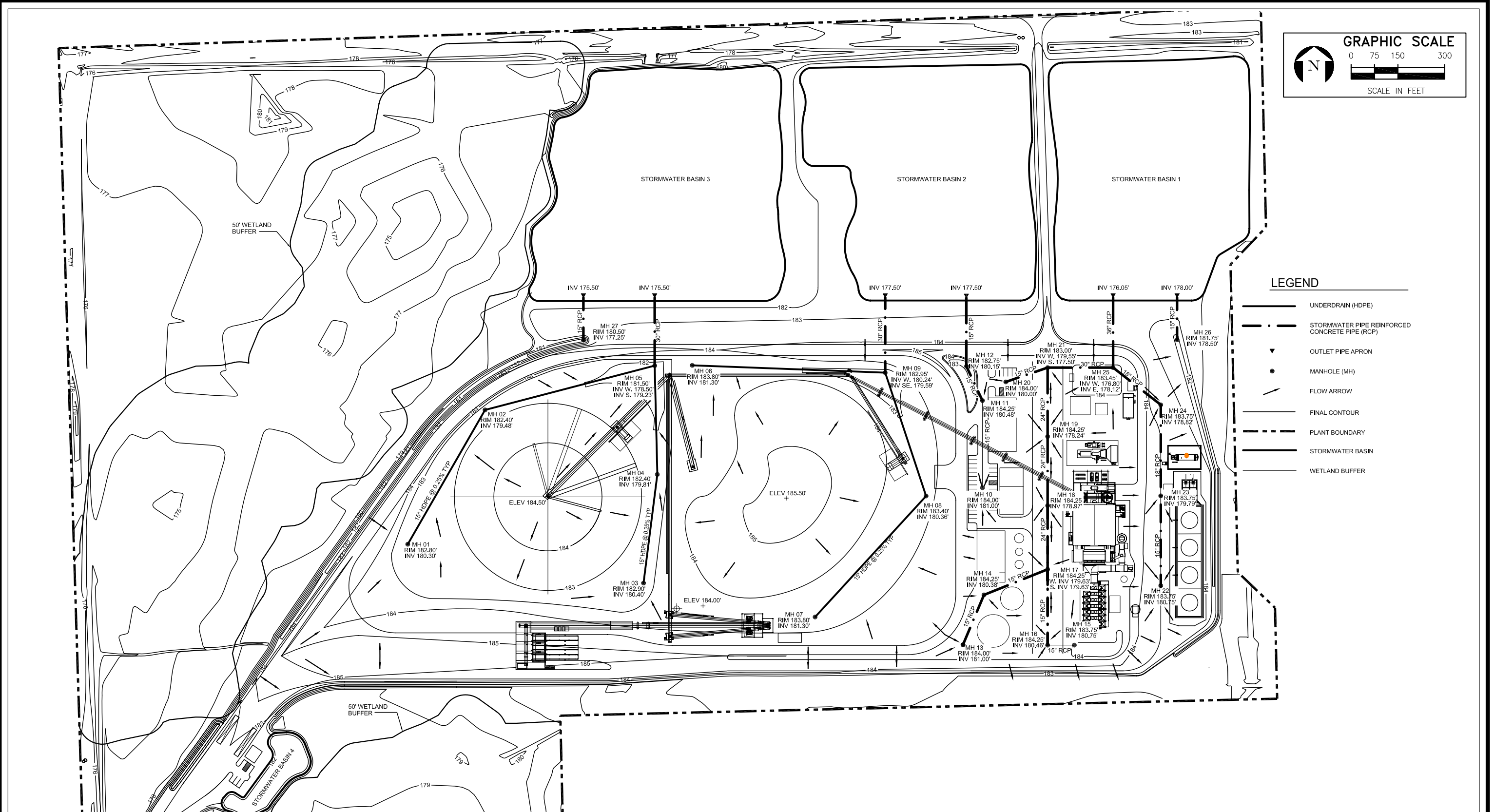


FIGURE E.III.L-2.

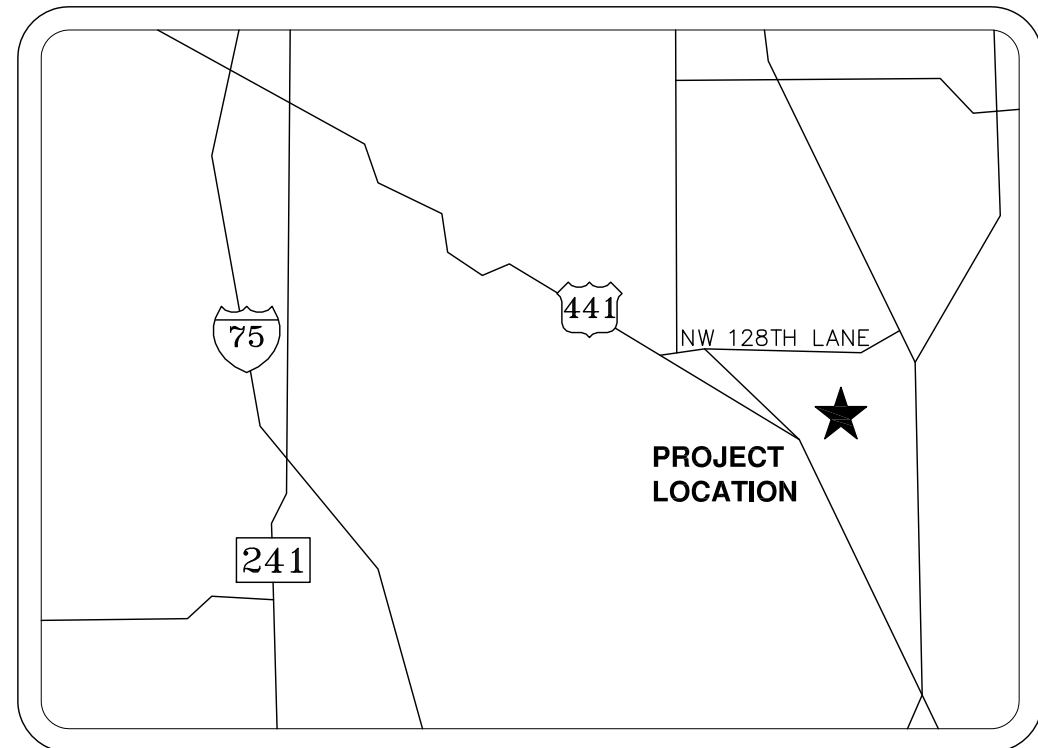
GREC FINAL GRADING PLAN FOR PLANT, FUEL YARD, AND SCALE HOUSE AREAS

Source: Zachery, 2009; EDA, 2009; ECT, 2007.

ATTACHMENT A

BOUNDARY AND TOPOGRAPHICAL SURVEY

BOUNDARY AND TOPOGRAPHIC SURVEY
OF
GAINESVILLE RENEWABLE ENERGY CENTER
IN
SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST
ALACHUA COUNTY, FLORIDA



LOCATION MAP
(NOT TO SCALE)

SURVEYOR'S NOTES:

- THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, BEING N 88°39'59" E, ESTABLISHED FROM FIELD TIES TO NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS A 143, A 145, AND A 117, NORTH AMERICAN DATUM OF 1983, 2007 ADJUSTMENT (NAD 83, 2007). NGS CONTROL STATIONS DESCRIBED AS FOLLOWS:
 - A 143: TO REACH THE STATION FROM THE POST OFFICE IN LINKWOOD, GO SOUTHEAST ON U.S. SALEM ROAD FOR 0.85 KM (0.55 MI) TO A SIDE ROAD RIGHT. TURN RIGHT AND GO SOUTH ON RAVENWOOD ROAD FOR 1.90 KM (1.20 MI) TO A SIDE ROAD LEFT. TURN LEFT AND GO EAST ON A DIRT DRIVEWAY FOR 0.42 KM (0.25 MI) TO THE MARK ON THE LEFT. THE MARK IS A CGS TRIANGULATION DISK SET IN THE TOP OF A 0.3 M (1.0 FT) SQUARE CONCRETE POST PROJECTING 0.13 M (0.4 FT) ABOVE THE TOP OF THE STATION. THE STATION IS LOCATED 15.7 M (51.5 FT) SOUTHWEST FROM THE SOUTHWEST EDGE OF A CULTIVATED FIELD, 8.1 M (26.6 FT) SOUTH-SOUTHEAST FROM A 0.25 M (0.8 FT) CHERRY TREE, 7.7 M (25.3 FT) NORTHEAST FROM THE NORTHEAST CORNER OF A TWO STORY HOUSE AND 7.0 M (23.0 FT) NORTH FROM THE NORTH CORNER OF A BLOCK BUILDING.
 - A 145: TO REACH THE STATION FROM THE INTERSECTION OF U.S. 441 AND ACR 237 IN HAGUE, GO NORTH FOR 0.2 KM (0.1 MI) ON ACR 237 TO ACR 25A, TURN RIGHT AND GO EAST FOR 0.3 KM (0.2 MI) ON ACR 25A TO NW 31, TURN LEFT AND GO NORTHEAST FOR 0.8 KM (0.5 MI) ON NW 31 TO A PAVED ROAD AT THE ENTRANCE TO THE UNIVERSITY OF FLORIDA DAIRY RESEARCH FARM, CONTINUE STRAIGHT AHEAD AND NORTHEAST FOR 1.1 KM (0.7 MI) ON NW 31 TO THE STATION ON THE LEFT. THE STATION IS WEST 11.3 METERS (37 FT) OF CENTERLINE, EAST 0.9 METERS (3 FT) OF A FENCE, AND EAST 6.4 METERS (21 FT) OF A POWER POLE.
 - A 117: TO REACH THE STATION FROM THE INTERSECTION OF U.S. 441 AND SR 121, GO NORTH FOR 5 KM (3.1 MI) ON SR 121 TO THE JUNCTION WITH ACR 231, GO NORTH FOR 3.4 KM (2.1 MI) ON ACR 231 TO THE INTERSECTION WITH NW 24 (A GRADED ROAD), GO WEST FOR 1 KM (0.6 MI) ON NW 24 TO THE STATION ON THE SOUTH SIDE OF THE ROAD AND NORTH OF A 1-STORY BRICK RESIDENCE. THE MARK IS WEST 53.8 METERS (176 FT) FROM A 12 IN LIVE OAK ON THE SOUTH OF NW 24, NORTHWEST 37.3 METERS (10.4 FT) FROM WESTERN 5 IN PINE OF A PAIR, EAST 37.3 METERS (122.5 FT) FROM A FENCE CORNER SOUTH OF NW 24, SOUTH 12.8 METERS (42 FT) FROM THE WEST END OF A 12 IN PVC CULVERT PIPE ON THE NORTH R/W OF NW 24.
- INFORMATION FROM THE FOLLOWING SOURCES WAS USED IN PREPERATION OF THIS SURVEY:
 - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION LAND BOUNDARY INFORMATION SYSTEMS (LABINS) WEBSITE.
 - NATIONAL GEODETIC SURVEY
 - DRAFT OF TITLE INSURANCE COMMITMENT PROVIDED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, TO BE ISSUED THROUGH ATTORNEY'S TITLE FUND SERVICES, LLC.
 - RECORDED DOCUMENTS OF THE PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA.
 - SURVEYS AND MAPS PROVIDED BY GAINESVILLE REGIONAL UTILITIES (GRU).
 - FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY MAPS FOR STATE ROAD 25, US 441.
- UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN HEREON ARE IN U.S. SURVEY FEET AND ARE BASED ON FIELD (SURVEY) MEASUREMENTS.
- ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), DERIVED FROM THE ORIGIN BENCHMARKS H 51 AND 175 H 1 DESCRIBED AS FOLLOWS:
 - H 51: 2.2 MILES SOUTHEAST ALONG THE ATLANTIC COAST LINE RAILROAD FROM THE STATION AT HAGUE, 100 YARDS EAST OF A FARMHOUSE, 59.5 FT. SOUTHWEST OF MILEPOST BB 732, 42 FT. SOUTHWEST OF THE SOUTHWEST RAIL, 49.5 FT. NORTHEAST OF THE CENTER LINE OF THE OLD HIGHWAY, 0.5 FT. NORTHEAST OF A STEEL WITNESS POST, SET IN THE TOP OF A CONCRETE POST. ELEVATION 143.75 FEET.
 - 175 H 1: 528 FT. 1.3 MILES ALONG U.S. ROUTE 441 AND 41 FROM THE INTERSECTION OF STATE ROUTE 237 AND U.S. 441 AND 41 AT HAGUE, IN MEDIAN OF U.S. 441 AND 41, 461 FEET WEST OF CENTERLINE OF U.S. 441 AND 41 NORTHBOUND LANE, 44.4 FEET EAST OF U.S. 441 AND 41 SOUTHBOUND LANE AND 117 FEET SOUTH OF A METAL POST WITH S-25A RIGHT LANE SIGN. A BRASS DISK SET IN SOUTHEAST CORNER OF CONCRETE HEADWALL FOR DOP INLET IN MEDIAN OF U.S. 441 AND SECTION 27, T 8 S, R 19 E. ELEVATION 174.67 FEET.
- SITE BENCHMARKS ARE AS SHOWN.
- THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON FIELD LOCATIONS OF THE UTILITIES MARKED BY THEIR RESPECTIVE OWNERS.
- THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER. ADDITIONS AND/OR DELETIONS TO THIS SURVEY BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

DESCRIPTION: INGRESS, EGRESS AND ACCESS EASEMENT

A PARCEL OF LAND LYING IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA; THENCE S 01°42'15" E, ALONG THE WEST LINE OF SAID SECTION 27, A DISTANCE OF 50.00 FEET, TO A CONCRETE MONUMENT FOUND STAMPED "GFI LB021" MARKING THE INTERSECTION WITH THE SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE OF NW 128TH LANE; THENCE RUN N 88°04'12" E, ALONG SAID SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE, A DISTANCE OF 1229.45 FEET TO THE INTERSECTION WITH THE NORTHERLY EXTENSION OF THE EAST LINE OF LANDS DESCRIBED IN OFFICIAL RECORDS BOOK 883, PAGE 502; THENCE S 01°45'52" E, ALONG SAID EAST LINE AND NORTHERLY AND SOUTHERLY EXTENSIONS THEREOF, A DISTANCE OF 3208.64 FEET TO A CONCRETE MONUMENT FOUND STAMPED "RLS 509", MARKING THE INTERSECTION WITH THE NORTHEASTERLY RIGHT-OF-WAY LINE OF A 120.0 FOOT WIDE CSX RAILROAD RIGHT-OF-WAY; THENCE S 39°18'09" E ALONG SAID NORTHEASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1223.34 FEET FOR A POINT OF BEGINNING; THENCE, CONTINUE S 39°18'09" E ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 120.00 FEET TO A POINT ON A CURVE WHOSE RADIUS POINT LIES N 39°18'09" W, A DISTANCE OF 161.11 FEET; THENCE RUN NORTHERLY ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 51°03'17", A DISTANCE OF 143.56 FEET TO THE PT OF SAID CURVE; THENCE N 02°21'26" W, A DISTANCE OF 112.06 FEET TO THE INTERSECTION WITH THE SOUTH BOUNDARY LINE OF THE GAINESVILLE RENEWABLE ENERGY CENTER; THENCE S 87°48'31" W ALONG SAID BOUNDARY LINE, A DISTANCE OF 120.06 FEET; THENCE S 00°21'26" E, A DISTANCE OF 108.22 FEET TO THE PC OF A CURVE CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 41.11 FEET; THENCE RUN S 87°48'31" W, PARALLEL WITH SAID BOUNDARY AND THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 796.96 FEET; THENCE N 50°41'51" E, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, A DISTANCE OF 300.00 FEET; THENCE S 50°41'51" W, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, PARALLEL WITH THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 163.09 FEET TO THE INTERSECTION WITH THE SOUTHERLY EXTENSION OF AFORESAID EAST LINE OF THAT CERTAIN PARCEL OF LAND AS DESCRIBED AND RECORDED IN OFFICIAL RECORDS BOOK 883, PAGE 502, PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA; FOR A POINT OF BEGINNING; THENCE, CONTINUE N 88°04'12" E, ALONG SAID SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE, A DISTANCE OF 2570.49 FEET; THENCE S 01°21'26" E, A DISTANCE OF 469.34 FEET; THENCE S 43°38'34" W, A DISTANCE OF 109.95 FEET; THENCE S 01°21'26" E, A DISTANCE OF 657.92 FEET; THENCE S 46°21'26" E, A DISTANCE OF 109.95 FEET; THENCE S 01°21'26" E, A DISTANCE OF 194.37 FEET; THENCE N 88°38'34" W, A DISTANCE OF 1532.22 FEET; THENCE S 01°21'26" E, A DISTANCE OF 946.22 FEET; THENCE S 02°38'34" W, A DISTANCE OF 613.09 FEET; THENCE S 15°38'34" W, A DISTANCE OF 221.07 FEET; THENCE S 00°21'26" E, A DISTANCE OF 815.82 FEET; THENCE S 87°48'31" W, A DISTANCE OF 120.06 FEET, TO A POINT LYING 100.0 FEET NORTHEASTERLY, AS MEASURED PERPENDICULAR, FROM THE NORTHEASTERLY RIGHT-OF-WAY LINE OF THE CSX RAILROAD RIGHT-OF-WAY; THENCE RUN S 87°48'31" W, PARALLEL WITH SAID BOUNDARY AND THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 796.96 FEET; THENCE N 50°41'51" E, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, A DISTANCE OF 300.00 FEET; THENCE S 50°41'51" W, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, PARALLEL WITH THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 163.09 FEET TO THE INTERSECTION WITH THE SOUTHERLY EXTENSION OF AFORESAID EAST LINE OF THAT CERTAIN PARCEL OF LAND AS DESCRIBED AND RECORDED IN OFFICIAL RECORDS BOOK 883, PAGE 502, PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA; THENCE, CONTINUE S 01°45'52" E, ALONG SAID EAST LINE AND NORTHERLY AND SOUTHERLY EXTENSIONS THEREOF, A DISTANCE OF 3044.51 FEET TO THE POINT OF BEGINNING; BEING AND LYING IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA.

DESCRIPTION: LEASE BOUNDARY OF GAINESVILLE RENEWABLE ENERGY CENTER

A PARCEL OF LAND IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA, LYING NORTH AND EAST OF THE CSX RAILROAD RIGHT-OF-WAY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA; THENCE S 01°42'15" E, ALONG THE WEST LINE OF SAID SECTION 27, A DISTANCE OF 50.00 FEET, TO A CONCRETE MONUMENT FOUND STAMPED "GFI LB021" MARKING THE INTERSECTION WITH THE SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE OF NW 128TH LANE; THENCE RUN N 88°04'12" E, ALONG SAID SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE, A DISTANCE OF 1229.45 FEET TO THE INTERSECTION WITH THE NORTHERLY EXTENSION OF THE EAST LINE OF THAT CERTAIN PARCEL OF LAND AS DESCRIBED AND RECORDED IN OFFICIAL RECORDS BOOK 883, PAGE 502, PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA; FOR A POINT OF BEGINNING; THENCE, CONTINUE N 88°04'12" E, ALONG SAID SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE, A DISTANCE OF 2570.49 FEET; THENCE S 01°21'26" E, A DISTANCE OF 469.34 FEET; THENCE S 43°38'34" W, A DISTANCE OF 109.95 FEET; THENCE S 01°21'26" E, A DISTANCE OF 657.92 FEET; THENCE S 46°21'26" E, A DISTANCE OF 109.95 FEET; THENCE S 01°21'26" E, A DISTANCE OF 194.37 FEET; THENCE N 88°38'34" W, A DISTANCE OF 1532.22 FEET; THENCE S 01°21'26" E, A DISTANCE OF 946.22 FEET; THENCE S 02°38'34" W, A DISTANCE OF 613.09 FEET; THENCE S 15°38'34" W, A DISTANCE OF 221.07 FEET; THENCE S 00°21'26" E, A DISTANCE OF 815.82 FEET; THENCE S 87°48'31" W, A DISTANCE OF 120.06 FEET, TO A POINT LYING 100.0 FEET NORTHEASTERLY, AS MEASURED PERPENDICULAR, FROM THE NORTHEASTERLY RIGHT-OF-WAY LINE OF THE CSX RAILROAD RIGHT-OF-WAY; THENCE RUN S 87°48'31" W, PARALLEL WITH SAID BOUNDARY AND THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 796.96 FEET; THENCE N 50°41'51" E, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, A DISTANCE OF 300.00 FEET; THENCE S 50°41'51" W, A DISTANCE OF 444.00 FEET; THENCE N 39°18'09" W, PARALLEL WITH THE RAILROAD RIGHT-OF-WAY LINE AND 100.0 FEET NORTHEASTERLY THEREFROM, A DISTANCE OF 163.09 FEET TO THE INTERSECTION WITH THE SOUTHERLY EXTENSION OF AFORESAID EAST LINE OF THAT CERTAIN PARCEL OF LAND AS DESCRIBED AND RECORDED IN OFFICIAL RECORDS BOOK 883, PAGE 502, PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA; THENCE, CONTINUE S 01°45'52" E, ALONG SAID EAST LINE AND NORTHERLY AND SOUTHERLY EXTENSIONS THEREOF, A DISTANCE OF 3044.51 FEET TO THE POINT OF BEGINNING; BEING AND LYING IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA.

CONTAINING 130.78 ACRES, MORE OR LESS.

W. LANIER MATHEWS, II
PROFESSIONAL SURVEYOR AND MAPPER
FLORIDA CERTIFICATE NUMBER 4783
FOR THE FIRM GGI, LLC dba GENESIS GROUP (LB6816)

DATE

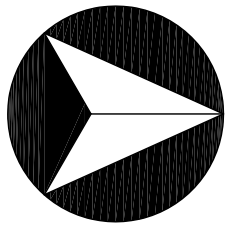
PROJECT NAME:
**GAINESVILLE RENEWABLE ENERGY CENTER
GAINESVILLE, FL**
SHEET TITLE:
BOUNDARY AND TOPOGRAPHIC SURVEY

PROJECT NUMBER:
8527-001
DRAWING DATE:
09/11/09
SHEET NUMBER:
1 OF 8

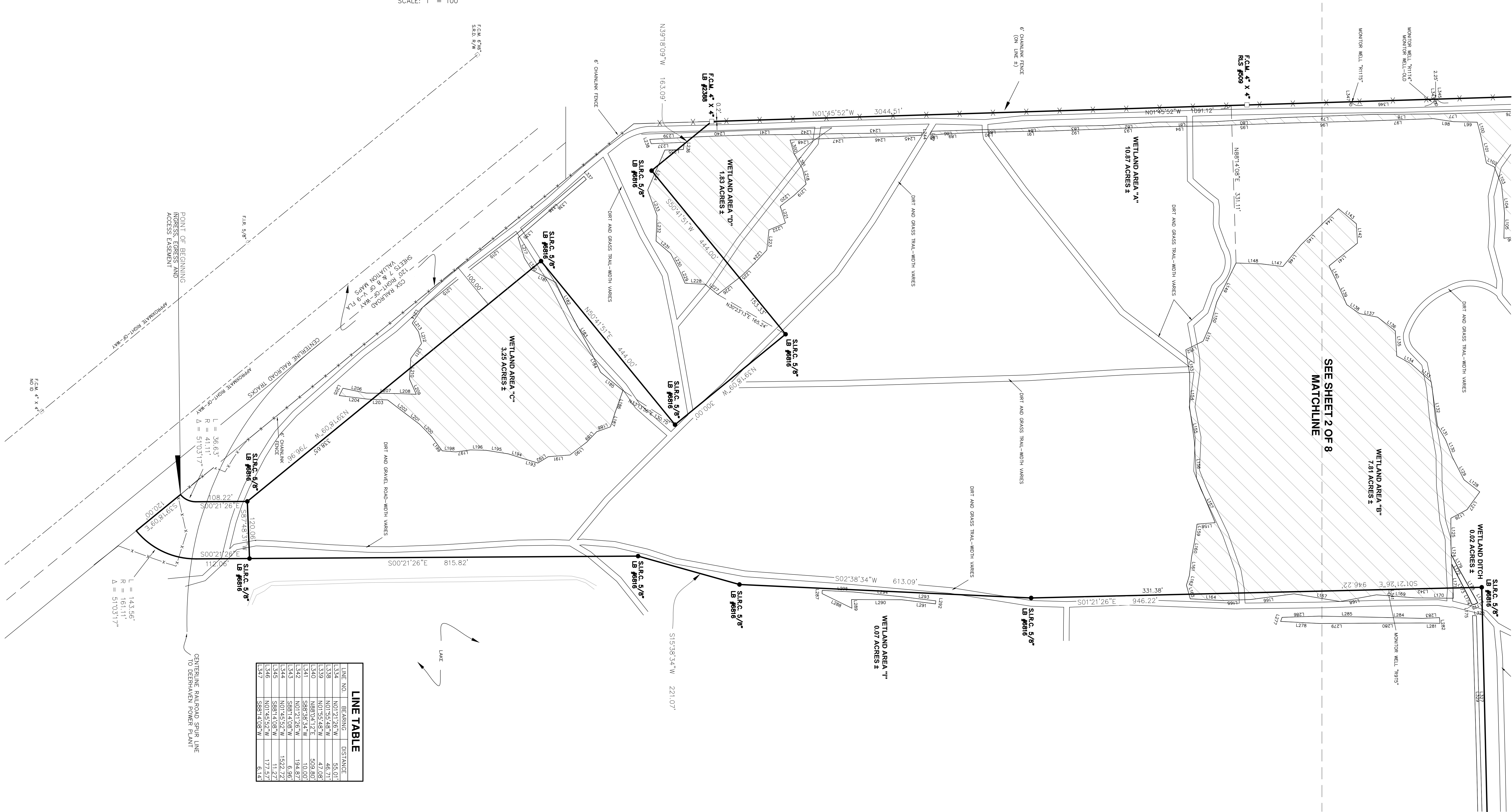
LINE NO.	BEARING	DISTANCE
L1	N14°47'43"E	54.03'
L2	N35°09'29"E	54.38'
L3	N33°04'22"E	43.63'
L4	N13°53'06"W	60.01'
L5	N33°21'27"E	69.40'
L6	N25°37'10"E	59.35'
L7	N85°50'25"E	51.93'
L8	N09°57'19"E	53.58'
L9	N41°17'12"E	47.78'
L10	N83°05'33"E	94.64'
L11	N37°54'00"E	42.76'
L12	N42°44'22"E	56.38'
L13	N37°05'05"W	50.86'
L14	N04°47'24"W	59.91'
L15	N70°28'47"E	59.00'
L16	N67°08'49"E	100.37'
L17	N43°39'48"E	73.39'
L18	N06°15'31"E	51.83'
L19	N27°09'50"E	50.93'
L20	N77°13'19"E	70.89'
L21	N13°05'52"W	46.70'
L22	N03°31'03"E	71.10'
L23	N47°32'24"E	69.52'
L24	N15°25'32"W	75.65'
L25	N11°38'15"E	58.01'
L26	N07°58'29"E	103.55'
L27	S81°31'10"E	61.60'
L28	N06°31'15"E	49.70'
L29	N81°02'46"E	79.68'
L30	S89°41'18"E	98.48'
L31	N00°46'32"E	7.59'
L32	N88°55'14"W	93.38'
L33	S89°40'49"W	161.81'
L34	N89°53'29"W	109.43'
L35	S87°18'59"W	90.38'
L36	S86°51'19"W	87.01'
L37	S85°01'55"E	95.22'
L38	S86°21'03"E	65.76'
L39	N89°12'38"E	95.83'
L40	S85°10'16"E	60.39'
L41	S00°05'35"W	15.00'
L42	S25°27'32"W	16.92'
L43	S46°54'08"W	51.56'
L44	S69°12'07"W	61.55'
L45	S10°53'25"W	80.83'
L46	S55°29'21"W	75.86'
L47	S71°16'12"W	38.80'
L48	S65°03'27"W	49.35'
L49	S07°22'14"W	61.87'
L50	S16°31'40"W	76.10'
L51	S36°52'01"E	40.72'
L52	S05°32'33"E	71.38'
L53	S30°55'05"W	28.78'
L54	S29°49'00"W	35.67'
L55	S47°14'57"W	47.15'
L56	S63°28'45"W	41.38'
L57	S22°09'43"W	43.19'
L58	S19°44'00"E	55.18'
L59	S78°09'32"W	44.60'
L60	N79°16'00"W	44.73'
L61	S77°21'30"W	35.12'
L62	S88°25'52"W	50.50'
L63	S72°15'02"W	50.28'
L64	S67°51'17"W	61.98'
L65	S40°45'06"W	78.66'
L66	S29°21'58"W	53.04'
L67	S14°49'20"W	54.99'
L68	S06°10'06"W	61.88'
L69	S07°39'58"W	62.82'
L70	S00°08'50"W	64.99'
L71	N53°20'06"W	18.89'
L72	N05°47'58"W	97.04'
L73	N80°42'58"W	10.76'
L74	S01°50'18"E	137.20'
L75	S01°03'37"E	130.74'
L76	S02°27'28"E	156.64'
L77	S01°38'16"E	81.81'
L78	S00°22'24"E	133.66'
L79	S02°03'41"E	190.03'
L80	S03°23'27"E	149.18'
L81	S00°18'41"E	113.02'
L82	S03°43'30"E	109.46'
L83	S00°55'07"E	114.41'
L84	S04°06'04"E	68.03'
L85	S01°37'15"E	100.90'
L86	S01°42'51"E	83.46'
L87	S79°40'46"E	8.29'
L88	N04°58'46"W	26.84'
L89	N02°50'13"W	52.25'
L90	N01°29'14"W	100.55'
L91	N02°55'56"W	73.49'
L92	N02°11'41"W	115.82'
L93	N02°15'54"W	105.62'
L94	N01°09'49"W	111.04'
L95	N02°01'01"W	159.94'
L96	N01°29'03"W	175.30'
L97	N02°06'17"E	135.10'
L98	N08°33'21"E	43.15'
L99	N01°18'08"E	49.67'
L100	N75°03'37"E	29.13'
L101	N78°21'14"E	58.89'
L102	N26°14'54"E	18.46'
L103	N68°19'03"E	41.03'
L104	N83°52'09"E	38.72'
L105	S88°29'7"E	52.71'
L106	N08°18'20"W	36.85'
L107	N12°20'50"W	53.73'
L108	N14°47'43"E	5.05'
L109	N87°18'42"E	16.93'
L110	N80°36'37"E	55.75'
L111	N88°04'59"E	38.72'
L112	S83°04'26"E	81.45'
L113	S75°54'39"E	18.79'
L114	S76°11'04"E	13.92'
L115	N80°36'34"E	51.07'
L116	S00°05'26"E	2.78'
L117	S78°45'37"W	51.32'
L118	N80°08'47"W	14.96'
L119	N74°41'51"W	20.60'
L120	N84°12'01"W	78.89'
L121	S89°18'55"W	36.65'
L122	S80°22'12"W	54.82'
L123	S86°51'21"W	21.03'

LINE NO.	BEARING	DISTANCE
L124	S87°12'27"W	22.42'
L125	N89°56'12"W	54.38'
L126	N28°11'20"W	38.68'
L127	N54°27'33"W	45.67'
L128	S37°34'28"W	41.58'
L129	S62°46'02"W	53.65'
L130	S68°42'55"W	38.91'
L131	S59°46'13"W	34.05'
L132	S81°49'28"W	93.41'
L133	S41°55'50"W	57.72'
L134	S28°19'27"W	33.26'
L135	S86°34'31"W	52.79'
L136	S37°47'33"W	47.00'
L137	S11°05'22"W	38.35'
L138	S44°49'41"W	32.93'
L139	S66°28'24"W	51.98'
L140	S63°57'46"W	37.48'
L141	N38°45'40"W	76.68'
L142	S86°34'34"W	40.62'
L143	S40°13'23"W	49.07'
L144	S42°55'51"E	43.45'
L145	S44°33'29"E	66.48'
L146	S50°16'01"E	58.74'
L147	S06°58'27"W	46.07'
L148	S01°53'01"W	52.70'
L149	S63°42'20"E	91.62'
L150	S74°47'06"E	45.73'
L151	S66°31'14"E	41.08'
L152	S01°08'56"E	40.91'
L153	N80°55'19"E	52.25'
L154	S89°48'38"E	69.25'
L155	N82°01'14"E	71.96'
L156	N86°43'01"E	77.41'
L157	N67°14'46"E	101.61'
L158	S04°48'04"E	38.18'
L159	S81°48'42"E	33.68'
L160	S79°21'45"E	36.63'
L161	S83°12'57"E	39.01'
L162	S73°10'15"E	21.09'
L163	N74°24'21"E	29.69'
L164	N03°01'19"E	68.25'
L165	N02°04'59"W	59.00'
L166	N07°29'07"W	91.52'
L167	N09°26'32"E	98.38'
L168	N10°30'49"W	77.29'
L169	N04°31'13"E	82.11'
L170	N00°30'30"E	79.91'
L171	S87°12'27"W	71.72'
L172	N84°30'56"E	11.11'
L173	N82°46'50"E	71.78'
L174	N68°11'25"E	11.05'
L175	N05°59'46"E	5.53'
L176	N25°04'40"W	7.92'
L177	S62°50'23"W	8.17'
L178	N60°43'47"W	79.02'
L179	S62°17'22"W	27.91'

WETLAND AREA "D"		
LINE NO.	BEARING	DISTANCE
L218	N76°53'55"E	32.57'
L219	S43°17'02"E	34.95'
L220	S37°56'02"E	36.81'
L221	N72°45'54"E	36.89'
L222	S22°51'45"E	37.49'
L223	S25°49'40"E	42.49'
L224	S46°59'59"E	39.49'
L225	S44°41'47"E	35.97'
L226	S37°59'45"E	63.95'
L227	S38°37'12"W	34.16'
L228	S02°55'36"E	41.99'
L229	S66°47'10"W	27.82'
L230	S62°30'20"W	41.50'
L231	S40°32'26"E	40.32'
L232	N85°19'02"W	53.89'
L233	S69°50'57"W	56.81'
L234	N66°45'23"W	91.36'
L235	N01°46'23"W	38.94'

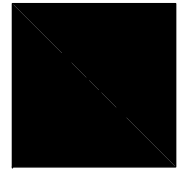


100' 50' 0 100' 200'
SCALE: 1" = 100'



LINE TABLE		
LINE NO.	BEARING	DISTANCE
L338	N01°45'52"W	38.21'
L339	N01°55'45"W	47.08'
L340	N89°04'17"E	509.80'
L341	S88°38'34"W	10.00'
L342	N01°21'26"W	194.87'
L343	N89°04'17"E	6.96'
L344	N01°45'52"W	151.12'
L345	S88°14'08"W	177.97'
L346	N01°45'52"W	6.14'
L347	S88°14'08"W	6.14'

NO.		DATE	DESCRIPTION	REVISIONS
1		11/03/09	ADDITIONAL TOPOGRAPHIC INFORMATION: US441, ALACHUA CO. PUBLIC WORKS WEST OF SITE, ADDITIONAL CROSS SECTIONS ON 128TH LANE, CONSTRUCTION LAYDOWN AREA EAST OF SITE, UTILITY CORRIDOR EAST OF SITE, GUARD HOUSE AREA. ADD SITE BENCHMARKS.	



GENESIS GROUP
FROM VISION TO REALITY

FL LC 26000202, FL LB 0006816, FL CA 00009660

GGI, LLC dba GENESIS GROUP
2507 CALLAWAY ROAD, SUITE 100
TALLAHASSEE, FLORIDA 32303
(850) 224-4400 (850) 681-3600 FAX

SURVEY DATE:	08/17/09
DRAWN BY:	J.L.E., S.A.Y.
CHECKED BY:	W.L.M.
SCALE:	1"=100'

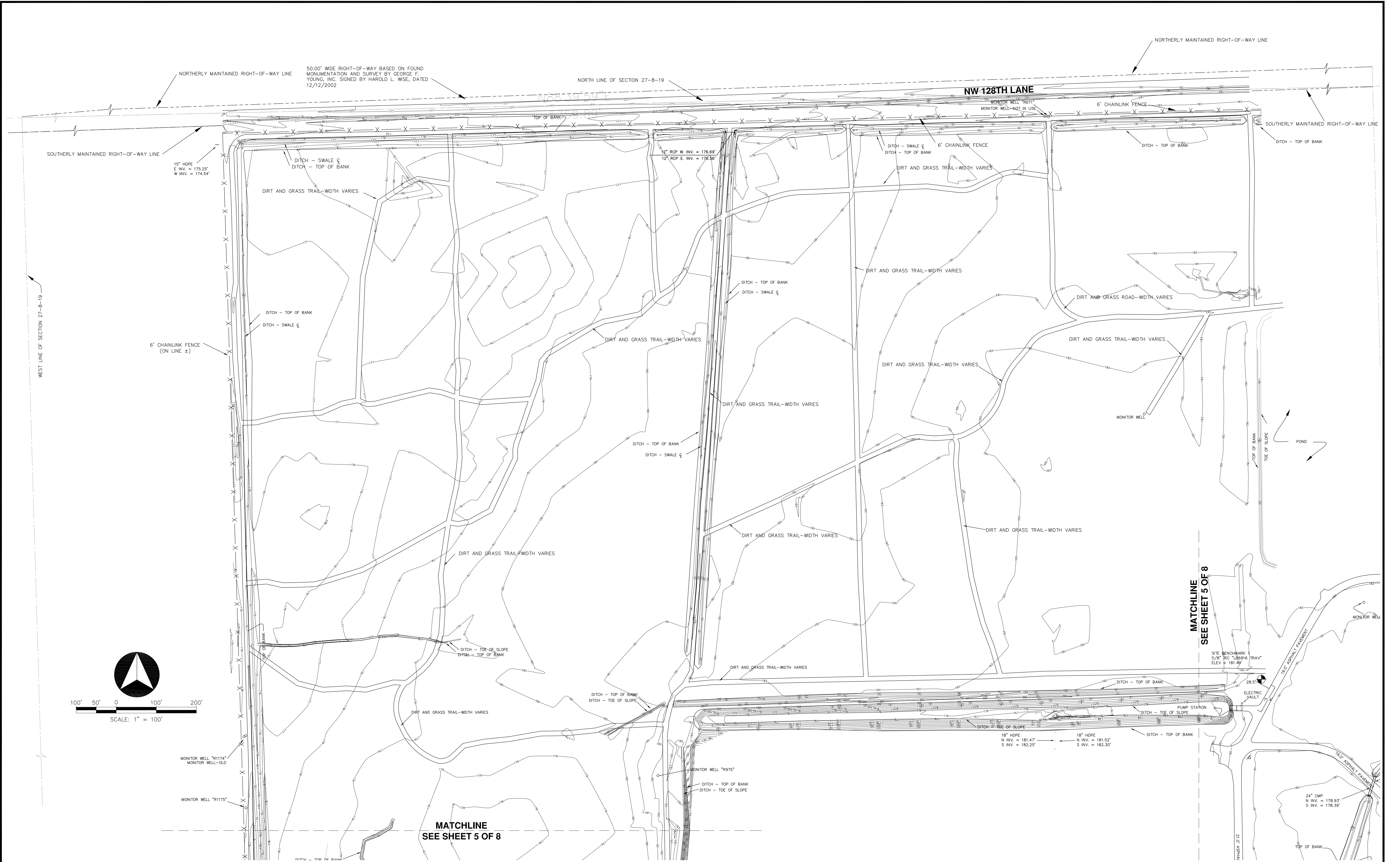
SURVEY DATE: 08/17/09
DRAWN BY: J.L.E., S.A.Y.
CHECKED BY: W.L.M.
SCALE: 1"=100'

PREPARED FOR:
AMERICAN RENEWABLES
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02166

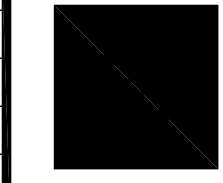
PROJECT NAME:
**GAINESVILLE RENEWABLE
ENERGY CENTER
GAINESVILLE, FL**

SHEET TITLE:
BOUNDARY AND TOPOGRAPHIC SURVEY

PROJECT NUMBER:	8527-001
DRAWING DATE:	09/11/09
SHEET NUMBER:	3 OF 8



NO.		DATE	DESCRIPTION	REVISIONS
1		11/03/09	ADDITIONAL TOPOGRAPHIC INFORMATION: US441, ALACHUA CO.	
			PUBLIC WORKS WEST OF SITE, ADDITIONAL CROSS SECTIONS ON	
			128TH LANE, CONSTRUCTION LAYDOWN AREA EAST OF SITE, UTILITY	
			CORRIDOR EAST OF SITE, GUARD HOUSE AREA. ADD SITE	
			BENCHMARKS.	



GENESIS GROUP
FROM VISION TO REALITY

FL LC 26000202, FL LB 0006816, FL CA 00009660

GGI, LLC dba GENESIS GROUP
2507 CALLAWAY ROAD, SUITE 100
TALLAHASSEE, FLORIDA 32303
(850) 224-4400 (850) 681-3600 FAX

SURVEY DATE:	08/17/09
DRAWN BY:	J.L.E., S.A.Y.
CHECKED BY:	W.L.M.
SCALE:	1"=100'

AMERICAN RENEWABLES
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02166

PROJECT NAME:	GAINESVILLE RENEWABLE ENERGY CENTER GAINESVILLE, FL
SHEET TITLE:	BOUNDARY AND TOPOGRAPHIC SURVEY

PROJECT NUMBER:	8527-001
DRAWING DATE:	09/11/09
SHEET NUMBER:	4 OF 8

November 11, 2009 (14:58:48 EST)
\\VAD\USP408\GENESIS\GRC\1103\GRC\ECT MOD_MBD.DWG

APPENDIX 10.4.2

STORMWATER MANAGEMENT PLAN



ENG, DENMAN & ASSOCIATES, INC.
ENGINEERS • SURVEYORS • PLANNERS



**Gainesville
Renewable Energy Center**
An American Renewables Company

GREC BIOMASS GENERATING FACILITY

APPENDIX 10.4.2

STORMWATER MANAGEMENT PLAN

City of Gainesville, Florida

November 13, 2009



Area of responsible charge excludes Geotechnical Reports,
Environmental Wetland Delineation and Analysis
and Topographic Survey.

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5.0 Drainage Description	3
6.0 Storm Routing	6
7.0 Conclusion	6
Attachment A	Soil Borings Report
Attachment B	Pre- and Post-Development Drainage Plans
Attachment C	Drainage Calculations
Attachment D	CD Routing Data - ICPR 3.1 and Ponds 3.2
Attachment E	Time of Concentration and Pipe Size Calculations
Attachment F	Stormwater Pollution Prevention Plan (SWPPP)
Attachment G	Detailed Construction Plans.

STORMWATER MANAGEMENT PLAN

1. INTRODUCTION

1.1 General Project Information

The proposed stormwater management plan will provide facilities to serve the proposed Biomass Electric Generating Facility for the City of Gainesville with associated paving, drainage and utility improvements. The master plan will include stormwater systems for areas utilized during construction of the Power Plant.

The proposed project will also include roadway improvements of US441, access roadway to the Power Plant, a switch yard area with associated paving and drainage improvements.

Gainesville Renewable Energy Center (GREC) an "American Renewables Company" will be the entity responsible for the construction, maintenance and operation in perpetuity of the Stormwater Management System.

1.2 Project Location

The proposed project is located on the northwest portion of the existing parcel of the GRU Deerhaven Power Plant (parcel No. 05884-001-000) and lies within the city limits of Gainesville in Alachua County. The project is located in Section 27, Township 8S and Range 19E; Latitude 29°46'7", Longitude 82°23'53". The total area served by the proposed stormwater system is approximately 134 acres with approximately 76 acres being disturbed by construction activities (see Attachment H – Cover Sheet - C0.00).

2. DESIGN CRITERIA

The proposed stormwater systems serving the project site shall meet the requirements from the following agencies: Florida Department of Environmental Protection (FDEP), Suwannee River Water Management District (SRWMD) and City of Gainesville.

2.1 FDEP AND SRWMD

Stormwater systems shall meet the requirement of Rules 62-343 and 40B-4, which require the following design criteria:

- Buildings and structures shall have finished slab elevation one foot above the 100-year flood elevation.
- Detention systems shall be designed to control post-development peak rate for the 100-year critical duration rainfall depth. Critical duration includes 1-hr, 2-hr, 4-hr, 8-hr, 24-hr, 3-d, 7-d and 10-d events.

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- Provide treatment volume for the first 2 inches of rainfall for projects within a stream-to-sink watershed.
 - Provide treatment volume within the 72 hours following the end of the design storm.
 - Systems shall not decrease the storage volume below the 100-yr floodplain elevation.
 - Stormwater systems shall provide the total storage volume within 30 days following the end of the design storm event.

2.2 City of Gainesville

Stormwater systems shall meet the requirement of the Land Development Code and their Design Manual, which require containing the 100-yr critical storm event and providing treatment volumes in accordance to the Water Management District

3. SITE SOILS INFORMATION

3.1 Soils Information

According to the NRCS Soil Survey for Alachua County the soils within the site are comprised of Pomona Sand (14) [Hydrologic Soil Group B/D], Wauchula Sand (17) [Hydrologic Soil Group B/D], Montecocha Loamy Sand (19) [Hydrologic Soil Group D] and Chipley Sand (28) [Hydrologic Soil Group D]. The soil type delineations have been superimposed on the site and are approximate (see Attachment H – Soils Map – C2.10). A detailed description of these soils is included in the Soils Report prepared by GSE which is included in Attachment A.

3.2 Subsurface Investigation

GSE Engineering & Consulting, Inc., conducted a subsurface investigation on the site and summarized their findings in the reports dated September 2009. A copy of the report is provided in Attachment A.

4. EXISTING SITE CONDITIONS

4.1 Existing Site Conditions

The project area is approximately 134 acres of undeveloped land with low slopes. The site consists of wooded land and natural vegetation surrounded by four wetlands. These wetlands will remain undisturbed and only portions of the 50-ft buffers will be disturbed and compensated for. According to the FEMA map, a portion of the site is located within the floodplain area and the proposed development will not decrease the storage volumes below the 100-yr floodplain. Since the FEMA maps do not have an established Floodplain elevation, our drainage analysis will establish floodplain elevation for existing conditions and post-development conditions.

The topographic survey was performed by Genesis Group - Boundary and Topographic Survey.

5. DRAINAGE DESCRIPTION

5.1 Pre-development Conditions

The project site lies within the Turkey Creek watershed basin. The County topographic maps, as shown in Attachment B – Drainage Map, clearly indicate there are not off-site drainage areas coming into the project site. The proposed site consists of three major drainage areas that drain into the on-site wetlands which discharge off-site into the Tributary of Turkey Creek. The drainage areas are described below and are shown in Attachment B – Pre-development Drainage Areas –C2.00 through C2.02.

- North Drainage Area: Although the water management district describes the northern area to be part of the Rocky Creek watershed, the existing topography demonstrates this area discharges into a swale along the north property line that discharges into Wetland A part of the Turkey Creek watershed. North drainage area includes on-site land that drains into Wetland A, which discharges off-site to the west and finally discharging into Turkey Creek. This area consists of sub-drainage areas 10 through 15.
- The center drainage area includes on-site land that drains into a ditch located at the south property line, which discharges into Wetland B. Wetland B will discharge at higher storm events to the west continuing to Turkey Creek. This area consists of sub-drainage areas 20 and 21.
- South drainage area includes on-site land that drains into Wetlands C and D, which discharge off-site to the west and finally discharging into Turkey Creek. This area consists of sub-drainage areas 30 through 32.

The construction of the power plant will utilize an area located to the east of the boundary for temporary lay-down. This area consists of 3 sub-drainage areas that discharge into an existing ditch. The ditch discharges downstream into the Master Stormwater Basin of the Deerhaven Plant.

Calculations of drainage areas, impervious areas, runoff coefficient, curve number and time of concentration are shown in Attachment C.

5.2 Post-development Conditions

At post-development conditions the site will maintain the three major drainage areas. The proposed stormwater systems will not increase flood hazards and will not cause adverse effect to the wetlands and natural resources. The post-development drainage areas are described below and are shown Attachment B – Post-development Drainage Areas – C2.03 through C2.06.

- North Drainage Area will consist of eight sub-drainage areas:
 - a.) Sub-drainage areas 100 through 102 consist of the proposed Power Plant, which discharges into three interconnected wet detention systems (Basins 100, 101 and 102). The detention basins will discharge into Wetland A.
 - b.) Sub-drainage areas 103 and 104 consist of existing roadside swales that discharge into Wetland A.
 - c.) Sub-drainage areas 105 and 106 consist of Wetland A, which discharges off-site to the west through a natural weir.
 - d.) Sub-drainage area 109 consists of swales for the proposed access roadway; and undisturbed area which discharges into Wetland A.
- Center drainage area will consist of three sub-drainage areas:
 - a.) Sub-drainage area 200 consists of an existing swale on the south property line that discharges into wetland B.

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- b.) Sub-drainage area 202 consists of a dry retention system that collects runoff from the scale house and then discharges into Wetland B.
 - c.) Sub-drainage area 201 consists of Wetland B, which discharges at higher storm events off-site into Wetland A.
 - South drainage area will consist of nine sub-drainage areas:
 - a.) Sub-drainage area 300 consists of a dry retention system that collects runoff from the craft parking area and then discharges into Wetland C.
 - b.) Sub-drainage areas 302, 305 and 308 consist of roadside swales for the proposed access road which discharges into Wetland C.
 - c.) Sub-drainage area 310 consists of a dry retention system that collects runoff from the Switch Yard area and then discharges into Wetland C.
 - d.) Sub-drainage area 301 consists of Wetland C, which discharges off-site to the west through a natural weir.
 - e.) Sub-drainage area 312 and 314 consists of roadside swales for the proposed access road which discharges into Wetland D.
 - f.) Sub-drainage area 309 consists of Wetland D, which discharges off-site to the west through a natural weir.
 - The temporary lay-down area will not propose any addition of impervious surface; therefore there will not be increase of runoff from these areas. The 3 sub-drainage areas will continue discharging into an existing ditch and downstream into the Master Stormwater Basin of the Deerhaven Plant. This area will be filled and stabilized to protect ground cover and will be provided with a swale to provide stormwater treatment and prevent any erosion into the existing ditches.

Calculations of drainage areas, impervious areas, runoff coefficient, curve number and time of concentration are shown in Attachment C.

5.3 Storage and Discharge Information

Attachment C includes the storage volumes of the existing and proposed stormwater systems. Information of the discharge structures for the existing and proposed stormwater systems is also included in this Attachment.

5.4 Soil Borings Information

The high season groundwater table (HSGWT) varies from 1 ft to 2 ft below existing ground elevation, as described in the Soils Report (see Attachment A). Attachment C includes a summary of the recommended percolation rates, high season groundwater table and confined layer elevations for each stormwater system.

Wet detention systems are required to operate above tailwater conditions. The proposed wet detention basins discharge into Wetland A, which has a maximum tailwater elevation of 176.00; this elevation is significantly lower than the elevation of the orifice at the wet basins.

Tailwater at the boundary of the drainage areas was estimated based on existing contours and downstream flowing patterns.

5.5 Stormwater Basins

Attachment C includes a summary of the geometry of the proposed stormwater basins. All the proposed stormwater basins will have side slopes ratio of 4:1 (horizontal to vertical) and will be stabilized with vegetation to prevent erosion. The outfall structures of the basins have been designed with skimmers to prevent oils and greases from exiting through any discharge structure and with spreader swales to mimic the release of water into the wetlands. Sequence of construction and erosion control management practices are included in Attachment F.

Storm pipes were designed for conveyance of the 3-yr 10-minute storm event and the results are shown in Attachment E. Construction details of the proposed stormwater systems are shown in Attachment H – Basin Drainage Details – C2.40 through C2.45 and Drainage Details – C3.20.

5.6 Water Quality

The required water quality volumes are calculated in accordance with the rules for the proposed system as follows:

- For stormwater systems that discharge into a stream-to-sink watershed, the minimum stormwater treatment volume shall the runoff from the first 2 inches of rainfall.
- For roadside swales, the criteria requires to percolate 80% of the runoff resulting from the 3-yr, 1-hr storm event.
- For the temporary lay-down area, the proposed swale will provide will provide percolation of the 80% of the runoff resulting from the 3-yr-1hr storm.

Attachment C includes the calculation of the required water quality volumes.

5.7 Wet Detention Basins

Wet detention basins shall be designed in accordance to the Handbook manual of the Water Management District, as follows:

- Size the orifice to provide recovery of one-half of the treatment volume between 24 to 30 hours after the storm event.
- Provide permanent pool volume for the wet season rainfall with a residence time of 21 days.
- Provide permanent pool volume with a mean depth between 2 ft to 8 ft.

Attachment C includes the calculations of the wet detention basins.

6. STORM ROUTING

6.1 Routing

The program Ponds 3.2 was used to analyze each individual drainage area and obtain an infiltration rate that takes into account the soil characteristics (see Attachment D). Infiltration rates were generated for each basin and for each storm to be imported into the program ICPR3.1. Because of the large size of the output data from the program Ponds, the infiltration rates are shown in electronic form as a PDF file.

The program ICPR3.1 was used to model the stormwater basins and swales being interconnected and determine the effects to the floodplain areas. The Input data and storm routing results are included in Attachment D.

6.2 Results

The results of the Pre and Post Comparison are shown in the summary included in Attachment C. Each stormwater system has been designed to meet the design storm requirements of SRWMD, FDEP and City of Gainesville. Recovery of the water quality treatment volume is included in the graphic results of Attachment D.

A summary of the wetlands stage and discharge rates are shown below:

Wetland	Storm Critical	Post-dev Stage	Pre-dev Stage	Post-dev. Flow (cfs)	Pre-dev. Flow (cfs)
A-1	100yr-10d	177.27	177.54		
A-2	100yr-8h	176.50	176.60	41.03	80.46
B	100yr-8h	179.42	179.49		
C	100yr-10d	174.84	174.87	3.91	3.98
D	100yr-8h	174.92	174.96	17.39	22.39

7. CONCLUSION

The drainage analysis demonstrates the floodplain elevations at Wetlands A, B, C and D are not increased by this development. The results show the wetlands hydraulic cycles are not being affected by the proposed development and the proposed stormwater systems control discharge rates for the critical storms. Therefore the proposed development will not increase flood hazards, will not cause excessive drainage or dewatering of the surficial aquifer and will not degrade the receiving water bodies complying with the water management rules from the FDEP, SRWMD and City of Gainesville.

Attachment A

Soil Borings Report





Engineering & Consulting, Inc.

**SUMMARY REPORT OF A
GEOTECHNICAL SITE EXPLORATION
DEERHAVEN BIOMASS GENERATION PLANT
ROADWAY AND STORMWATER IMPROVEMENTS
GAINESVILLE, ALACHUA COUNTY, FLORIDA**

GSE PROJECT No. 10509

Prepared For:

GAINESVILLE RENEWABLE ENERGY CENTER, LLC.

SEPTEMBER 2009

Certificate of Authorization No. 27430



Engineering & Consulting, Inc.

September 10, 2009

Mr. Robert E. Donahoe
Gainesville Renewable Energy Center, LLC.
75 Arlington Street, 5th Floor
Boston, Massachusetts 02116

Subject: Summary Report of a Geotechnical Site Exploration
**Deerhaven Biomass Power Generation Plant
Roadway and Stormwater Improvements**
Gainesville, Alachua County, Florida
GSE Project No. 10509

Dear Mr. Donahoe:

GSE Engineering & Consulting, Inc. (GSE) is pleased to submit this geotechnical site exploration report for the above referenced project.

Presented herein are the findings and conclusions of our exploration, including the geotechnical recommendations for the proposed stormwater management facilities, planned access service road, and plant roadways.

We appreciate this opportunity to have assisted you on this project. If you have any questions or comments concerning this report, please contact us.

Sincerely,

GSE Engineering & Consulting, Inc.

Joakim (Jay) B. Nordqvist, P.E.
Principal Engineer
Florida Registration Number 42681

Kenneth L. Hill, P.E.
Principal Engineer
Florida Registration Number 40146

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Improvements\10509.doc

Distribution: Addressee (1)
File (1)

GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
352-377-3233 Phone
352-377-0335 Fax
www.gseengineering.com
Certificate of Authorization No. 27430

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Figure

1. Project Site Location Map
2. Site Plan Showing Approximate Locations of Field Tests

1.0 INTRODUCTION

1.1 General

GSE Engineering & Consulting, Inc. (GSE) has completed this geotechnical exploration for the proposed stormwater management facilities, planned access service road, and plant roadways for the proposed Deerhaven Biomass Power Generation Plant located in Gainesville, Alachua County, Florida. Our exploration was performed in accordance to the mutually agreed Professional Services Agreement between Gainesville Renewable Energy Center, LLC. and GSE Engineering & Consulting, Inc. and work authorized for Geotechnical Services executed on August 10, 2009.

1.2 Project Description

We understand this project will consist of developing a biomass power generation facility. The site is located on the northwestern portion of the existing Gainesville Regional Utilities (GRU) Deerhaven Generation Station site located along the north side of US Highway 441 near Hague, Florida. Preliminary information related to planned site improvements was initially furnished in a preliminary site plan and during a meeting on June 9, 2009 with Messrs. Robert Donahoe and Paul Nist with American Renewables. We were provided a preliminary site plan of the proposed plant layout and alignment of the access roadway from Mr. Sergio Reyes, P.E. with Eng Denman & Associates, Inc. on July 31, 2009. An additional plan was provided on August 7, 2009 illustrating the proposed improvement areas.

Stormwater management will be required as part of planned site improvements. The location and size of the stormwater management areas have not been firmly established, but Mr. Reyes stated the stormwater areas are planned north of the plant improvements and will likely cover a 6 to 7 acre area. Mr. Reyes requested 2 borings per acre be performed for the stormwater management facilities. In addition, we were provided with the approximate location of a proposed temporary construction parking area and associated stormwater retention area. Two borings for stormwater related design were requested in this area.

A service access road will be constructed from U.S. Highway 441 to the area of the plant. This access road will be approximately 3,300 feet long and will have shallow swales to evacuate stormwater runoff. A roadway and parking lot will also be constructed around the perimeter and in the area of the plant. The pavements around the plant will be designed and incorporated into the plant design. It is anticipated that drainage from these roads and parking lots will be diverted into the planned stormwater management areas to the north.

There is a planned electrical switch yard along the roadway alignment. Stormwater management is planned for this area. Mr. Reyes requested four soil borings to evaluate drainage characteristics in this area.

1.3 Purpose

The purpose of this geotechnical exploration was to determine the general subsurface conditions, evaluate these conditions with respect to the proposed construction, and prepare geotechnical recommendations to assist in the designs of the stormwater management facilities, planned access service road, and plant roadways.

2.0 FIELD AND LABORATORY TESTS

2.1 General Description

The procedures used for field sampling and testing are in general accordance with industry standards of care and established geotechnical engineering practices for this geographic region. Our exploration consisted of performing fifty (50) auger borings to depths of 5 to 15 feet below land surface (bls). Twelve (12) auger borings (B-1 to B-11 and B-46) to a depth of 15 feet below land surface (bls) were performed along the access roadway alignment, sixteen (16) auger borings (B-12 to B-27) to depths of 5 to 10 feet bls were performed along the plant perimeter roadways, sixteen (16) auger borings (B-28 to B-43) to a depth of 15 feet bls were performed within the areas of the planned stormwater management facilities, two (2) auger borings (B-44 and B-45) to a depth of 15 feet bls were performed in the planned temporary parking stormwater management facility and four (4) auger borings (S-1 to S-4) to a depth of 15 feet bls were performed in the area of the planned electrical switch yard.

The soil borings were performed at the approximate locations as shown on Figure 2. We located the borings at the site using GSE established GPS coordinates based on the provided site plan and obvious site features as reference. You should consider the locations approximate. The soil borings were performed during the period of August 16 to August 31, 2009.

2.2 Auger Borings

The auger borings were performed in accordance with ASTM Specification D-1452. The borings were performed with flight auger equipment that was rotated into the ground in a manner that reduces soil disturbance. After penetrating to the required depth, the auger was retracted and the soils collected on the auger flights were field classified and placed in sealed containers. Representative samples of each stratum were retained from the auger boring. Results from the auger borings are provided in Section 5.1.

Upon completion of the sampling, the boreholes were abandoned in accordance with Water Management District regulations.

2.3 Soil Laboratory Tests

The soil samples recovered from the soil borings were returned to our laboratory, and examined to confirm the field descriptions. Representative samples were then selected for laboratory testing. The laboratory tests consisted of thirty-six (36) percent passing the No. 200 sieve determinations with natural moisture contents, three (3) Atterberg Limits tests, and nine (9) constant head permeability tests. These tests were performed in order to aid in classifying the soils and to further evaluate their engineering properties. The laboratory tests are provided in Section 5.2.

3.0 FINDINGS

3.1 Surface Conditions

The site is mostly overgrown natural areas. A series of grass covered trails traverse through the site. Portions of the site are planted in pine trees. Site topography is relatively level to gently sloping, and ground surface elevations range from about 159 to 177 feet¹. The lower elevations of the site are wetlands.

3.2 Subsurface Conditions

The locations of the soil borings are provided on Figure 2. Complete logs for the borings are provided in Sections 5.1. Descriptions for the soils encountered are accompanied by the Unified Soil Classification System symbol (SM, SP-SM, etc.) and are based on visual examination of the recovered soil samples and the laboratory tests performed. Stratification boundaries between the soil types should be considered approximate, as the actual transition between soil types may be gradual.

The auger borings indicate that soil conditions are relatively consistent with some small variations across the site.

The borings generally encountered four and one half (4.5) to fifteen (15) feet of sand with silt (SP-SM), silty sand (SM) and sand with clay (SP-SC) overlying clayey to very clayey sand (SC) and sandy clay and clay (CH). The surficial sand layer has an average thickness of about 9 feet. A thin stratum of clayey sand (SC) was sometimes embedded within the sand layer, such as at locations B-1, B-2, B-3, B-4, B-23, B-34, B-44 and S-4.

Groundwater was encountered in the auger borings at depths of 1.5 to 6 feet bls at the time of drilling. Groundwater was not detected in borings B-6 and B-38.

3.3 Review of Published Data

The Alachua County Growth Management topographic data and information indicates the ground surface elevations in the area of the site range from about 174 to 184 feet¹ NGVD. The majority of the site under development is near elevations 179 to 184 feet. The lower elevations are mostly wetland areas that will not be developed.

The Soil Conservation Service (SCS) Soil Survey for Alachua County² maps four soil series in the areas where the borings were conducted. The following soil descriptions are from the county Soil Survey.

¹ Alachua County Growth Management Web Site, GIS Online Map Atlas, Section 27, Township 8S, Range 19E.

² Soil Survey of Alachua County, Florida. Soil Conservation Service, U.S. Department of Agriculture.

Pomona sand - This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. The areas are irregular in shape and range from about 10 to 350 acres.

Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand to a depth of 16 inches. The upper 4 inches is gray, and the lower 7 inches is light gray. The upper 4 inches of the subsoil is very dark gray sand in which many sand grains are coated with organic material, and the next 4 inches is dark reddish brown sand. The next 8 inches is pale brown sand that has mottles, and the lower 11 inches is very pale brown sand. Below this a loamy subsoil extends to a depth of 69 inches. The upper 4 inches is light gray fine sandy loam, and the lower 22 inches is gray, mottled sandy clay loam. Between depths of 69 and 84 inches, the underlying material is light gray, mottled fine sandy loam.

Included with this soil in mapping are small areas of soils which are similar to Pomona soils but which have a brown, organically stained layer. Many of the sand grains are uncoated. Also included are small areas of soils which are similar to this Pomona soil but which have weakly cemented layers at a depth of 30 to 50 inches. Small areas of Myakka, Newnan, Pelham, Sparr, and Wauchula soils are in some areas. About 60 acres mapped as Pomona soil along the Santa Fe River is occasionally flooded. Total included areas are about 20 percent.

In this Pomona soil, the water table is within 10 inches of the surface for 1 to 3 months during most years. During dry seasons, the water table recedes to a depth of more than 40 inches. Surface runoff is slow. The available water capacity is low to medium in the surface and subsurface layers, and it ranges from low to high in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers, moderate to rapid in the upper part of the subsoil, and moderately slow to moderate in the lower part.

Wauchula sand - This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent. This soil is in small and large, irregularly shaped or meandering areas that range from about 20 to 800 acres.

Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is black, and the lower 3 inches is dark gray. The subsurface layer is light brownish gray sand about 6 inches thick. The upper part of the subsoil is 4 inches of dark reddish brown loamy sand, in which many sand grains have an organic coating, and 5 inches of dark brown sand. Below this is a leached layer of pale brown, mottled fine sand about 5 inches thick. The lower part of the subsoil is a loamy layer that extends to a depth of 62 inches. The upper 9 inches is gray, mottled fine sandy loam; the next 19 inches is light brownish gray, mottled loamy sand; and the lower 6 inches is light gray, mottled fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray, mottled sandy clay loam.

Included with this soil in mapping are small areas of Mulat, Newnan, Pelham, Pomona, Riviera, and Sparr soils. Also included are small areas of poorly drained soils that have a brownish stain in the subsurface layer. The sand grains are uncoated or only thinly coated. Total included areas are 15 percent or less.

The Wauchula soil has a water table that is at a depth of less than 10 inches for 1 to 4 months and is at a depth of 10 to 40 inches for about 6 months. During driest seasons, the water table recedes to a depth of more than 40 inches. The available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, low to high in the upper part of the subsoil, and medium to high in the lower part. Permeability is moderately rapid to rapid in the surface and subsurface layers, moderate to moderately rapid in the upper part of the subsoil, and slow to moderately slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the subsoil. Organic matter content is low.

Monteocha loamy sand. – This nearly level, very poorly drained soil is in wet ponds and shallow depressional areas in the flatwoods. Slopes are less than 2 percent. It is in relatively small areas that range from about 8 to 35 acres.

Typically, the surface layer is black loamy sand about 12 inches thick. The subsurface layer is light brownish gray sand to a depth of 18 inches. The upper part of the subsoil is brown sand to a depth of 48 inches. Below this a subsoil of fine sandy loam extends to a depth of 85 inches. The upper 11 inches is grayish brown, and the lower 26 inches is light brownish gray. Between 85 and 94 inches the underlying material is light gray sand.

Included with this soil in mapping are small areas of Placid, Samsula, and Surrency soils. Included are soils that have characteristics which are similar to Monteocha soils but which have the dark brown subsoil layer below a depth of 30 inches. In the center of some mapped areas there is a thin 1- to 5-inch covering of well decomposed organic material on the surface. Total included areas are 20 percent or less.

This Monteocha soil has a water table that is within 10 inches of the surface for more than 6 months during most years. Most areas are covered with water for more than 4 months. Available water capacity is high to very high in the surface layer and medium in the subsurface layer and subsoil. Permeability is rapid in the surface layer, moderately rapid to rapid in the subsurface layer and upper part of the subsoil, and moderately slow to moderate in the lower part. Natural fertility is medium in the surface layer and low in the subsurface layer and subsoil. Organic matter content is high to very high in the surface layer.

Chipley sand. This nearly level, somewhat poorly drained soil is in relatively small areas of the broad flatwoods and in both small and large areas on the transition between the broad flatwoods and rolling uplands. Slopes are nearly level to slightly concave and range from 0 to 2 percent. The areas are irregular in shape and range from about 15 to 150 acres.

Typically, the surface layer is sand about 12 inches thick. The upper 6 inches is very dark gray, and the lower 6 inches is dark grayish brown. The underlying layers are sand to a depth of more than 81 inches. In sequence from the top, the upper 13 inches is grayish brown; the next 24 inches is light gray and has yellowish red mottles; and the lower 32 inches is light gray but has no mottles.

Included with this soil in mapping are small areas of Myakka, Pompano, Tavares, and Zolfo soils. Also included are a few small areas of somewhat poorly drained and poorly drained soils

that have a very dark gray surface layer 10 to 16 inches thick over a grayish underlying layer. The underlying layer is sandy to a depth of 80 inches or more and has less than 5 percent silt and clay in the control section. About 15 acres mapped as Chipley soil along the Santa Fe River is occasionally flooded. Total included areas are about 15 percent.

This Chipley soil has a water table that is 20 to 40 inches below the surface for 2 to 4 months during most years. During extremely wet seasons, the water table rises to a depth of 15 to 20 inches for brief periods of less than 2 weeks. It recedes to a depth of more than 40 inches during dry periods. Surface runoff is slow. The available water capacity is low, and the permeability is rapid to a depth of more than 80 inches. Natural fertility is low, and organic matter content is moderate to moderately low in the surface layer.

3.4 Laboratory Soil Analysis

Selected soil samples recovered from the soil borings were analyzed for natural moisture content, the percent fines passing the No. 200 sieve, Atterberg Limits, and constant head permeability tests. Selected soil samples were collected from depths ranging from 1 to 15 feet bls. These tests were performed to confirm visual soil classification and evaluate their engineering properties. The complete laboratory report is provided in Section 5.3.

The laboratory tests indicate the tested near-surface soils generally consist of sand with silt (SP-SM) with about 6 to 11 percent soil fines passing the No. 200 sieve and silty sand (SM) with about 12 to 14 percent soil fines passing the No. 200 sieve. The tested underlying clayey sand to very clayey (SC) has approximately 13 to 44 percent soil fines passing the No. 200 sieve. The deeper sandy clay and clay (CH) has 63 to 92 percent soil fines passing the No. 200 sieve.

The Atterberg Limits tests indicate the tested sandy clay and clay (CH) have Liquid Limit (LL) values of 75 to 188, Plastic Limit (PL) values of 28 to 61, and Plasticity Index (PI) values of 47 to 127. This corresponds to a material with high ($LL \geq 60$ and $PI \geq 35$) potential for expansive behavior³. The very clayey sand (SC) had a LL value of 45, PL value of 22 and PI value of 23. This corresponds to a material with a low potential for expansive behavior ($LL < 50$ and $PI < 25$).

The constant head permeability tests results indicate the upper layer of sand with silt has vertical coefficients of permeability of 11 to 17 feet per day (3.85×10^{-3} cm/sec to 6.18×10^{-3} cm/sec). Permeability tests were not conducted on the deeper clayey sand soils due to the limitations of the test method on soils having moderate to high fines content, but these soils are expected to have permeability values of at least one order of magnitude less than the surficial sands and are considered confining soils.

³ U.S. Department of the Army USA, 1983, Foundations in Expansive Soils, TM 5-818-7, p. 4-1.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General

The soil borings indicate the soil conditions across the site are relatively consistent, with a sand layer overlying clayey sand and sandy clay. The depth of the sand layer ranged from 4.5 to 15 feet, but generally is on the order of 7 to 10 feet deep. Groundwater was encountered at depths of 1.5 to 6 feet bls at the time of drilling.

In this section of the report, we present our recommendations for pavement and stormwater management design, and general site preparation guidelines. The following recommendations are made based upon our understanding of the proposed construction, a review of the attached soil borings and laboratory test data, and experience with similar projects and subsurface conditions. If plans or the location of proposed construction change from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

4.2 Groundwater

Groundwater was encountered at depths of 1.5 to 6 feet bls in the borings at the time of our exploration. The normal seasonal high water table is expected to range from 0.5 to 3.5 feet bls at the boring locations. Our estimated seasonal high groundwater depths are indicated on the boring logs.

Temporary dewatering will likely be required during construction. Dewatering can likely be accomplished with well points or underdrain pipes connected to vacuum pumps. Localized dewatering can likely be accomplished with sumps placed just outside the construction areas.

4.3 Pavements

The soil conditions at this site are suitable for supporting conventional limerock base and asphalt wearing surface pavements. The largest constraint to successful pavement performance will be effects from the seasonal high water table. Groundwater that penetrates the stabilized subgrade or pavement base course can reduce the integrity of these materials, and cause pavement failure. To reduce the potential for pavement failure associated with the high water table at the site, we recommend the pavement grades be set such that the bottom of the roadway base course is a minimum of 2 feet above the estimated seasonal high groundwater table. If the roadway grading cannot accommodate this separation, underdrains should be constructed on each side of the roadway to artificially lower the seasonal high groundwater table to create this minimum recommended separation.

We understand that up to 150 truck loads per day with a gross weight of 80,000 pounds are anticipated for the entrance roadway. Our recommended preliminary pavement design considers this loading condition. Based upon this loading condition, using the FDOT Flexible Pavement

Design Manual, we estimate the entrance roadway pavement section will require a Structural Number (SN) of about 4 for a 15 year design life.

4.3.1 Stabilized Subgrade

The stabilized subgrade should have a minimum Limerock Bearing Ratio (LBR) of 40, with a minimum thickness of 12 inches. The stabilized subgrade can be imported material or a mix of imported material and surficial sands. It is not likely the native surficial sands will have an LBR value of 40, based upon our experience with these types of soils in this area. Crushed limerock is commonly mixed with the native materials to increase the LBR value. If a mix of materials is proposed, a mix design should be performed to determine the optimum mix proportions. The stabilized subgrade should be compacted to a minimum of 98 percent of the Modified Proctor maximum dry density (ASTM D-1557).

4.3.2 Base Course

The base course should consist of crushed limerock having a LBR of at least 100. Limerock should be obtained from a FDOT approved source, and should meet FDOT gradation requirements. The base course thickness should be a minimum of 9 inches. The base course should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D-1557).

4.3.3 Wearing Surface

The asphalt-wearing surface should consist of 3.5 inches of an FDOT Type SP mix. We recommend the initial structural asphalt layer consist of 2 inches of FDOT Type SP-19 mix. The wearing surface should consist of 1.5 inches of FDOT Type SP-12.5 mix. All asphalt mixes should comply with Traffic Level D. The asphalt should be compacted to at least 95 percent of the mix design density.

4.4 Utilities

We anticipate water and stormwater utilities will be buried 3 to 10 feet below land surface. You should expect the trench excavations to generally encounter sand with silt, silty sand and some clayey sand (SP-SM, SM, SC). The deeper excavations may encounter clayey sand (SC) and sandy clay (CL/CH).

We anticipate the majority of the near-surface sandy soils (SP-SM, SM) excavated from utility trenches will be suitable for reuse as backfill material. The majority of the excavated soils will be below the groundwater table, and will require drying before they can be used as fill. Sandy soils can be stockpiled, and the moisture will slowly seep out of the soils. Windrowing the soils and turning over the windrows a few times a day should assist in reducing the required drying time. During extended wet periods, it may be difficult to dry some of the sand.

The clayey sand soils (SP-SC, SC) will be more difficult to work and compact. These soils will also be excavated from below the groundwater table, and will require extensive drying times to

reduce the moisture content to a usable condition. Windrowing clay-rich soils is the only practical method of drying these soils. Very clayey sand and sandy clay (SC, CH) having more than about 30 percent soil fines passing the No. 200 sieve may be encountered randomly throughout the site, and these materials should not be reused as structural fill. Our recommendations for structural fill materials are provided in Section 4.9.

4.5 Stormwater Management Facilities

The soil conditions at the stormwater management facilities were relatively consistent initially penetrating 7.5 to 14 feet of sand with silt and silty sand (SP, SP-SM, SM) overlying clayey sand and sandy clay (SC, CH) to the explored depths of 15 feet bls.

The water table was encountered at depths of 2 to 3 feet bls in the northern main stormwater management facilities (borings B-28 to B-43), at depths of 3 to 4 feet bls within the planned switch yard (borings S-1 to S-4), and at depths of 5 to 6 feet bls in the temporary parking lot stormwater management facility (borings B-44 and B-45). Confining soils were encountered at depths of 7.5 to greater than the 15 foot boring depth.

The laboratory tests indicate the surficial sandy soils (SP-SM, SM) have vertical infiltration rates of 11 to 17 feet per day.

Based upon our findings and test results, our recommended soil parameters for the stormwater management facility designs are presented in the following Table 1. The recommended parameters consider the results of the permeability tests and wash 200 determinations, and our experience with these types of soils.

Table 1 – Stormwater Management Facility Design Parameters

Stormwater Management Facility	Average Depth to Seasonal High Groundwater Table (ft)	Average Depth to Seasonal Low Groundwater Table (ft)	Fillable Porosity (%)	Average Vertical Infiltration Rate (ft/day)	Average Horizontal Hydraulic Conductivity (ft/day)	Average Depth to Confining Layer (ft)
Northwest Main Basin (borings B-28 through B-33)	1	5	25	11	15	10
North Central Main Basin (borings B-34 through B-37)	1	5	25	15	20	9
Northeast Main Basin (borings B-38 through B-43)	1.5	5	25	15	20	11
Temporary Parking Lot Basin (Borings B-44 and B-45)	1	7	25	13	17	8
Switch Yard (Borings S-1 through S-4)	1	5	25	14	19	8

A factor of safety of 2 should be applied to the infiltration and hydraulic conductivity values provided.

4.6 Site Preparation

The soils at this site should be suitable for supporting the proposed construction using normal, good practice site preparation procedures. The following recommendations are our general guidelines for site preparation.

4.6.1 Stripping

Strip the construction limits and 10 feet beyond the perimeter of all surface vegetation, roots, topsoil and other deleterious materials. You should expect to strip to depths of 6 to 12 or more inches. Deeper stripping may be necessary if major root systems or near-surface organic rich soils are present and may have gone undetected as part of this investigation.

4.6.2 Dewatering

Temporary dewatering is not generally expected to be necessary for roadway and parking lot construction at this site. However, in some areas dewatering may be necessary and can likely be accomplished with sumps placed near the construction area, or with well points or underdrains connected to a vacuum pump. The site should always be graded to promote runoff and limit the amount of ponding. Localized ponding of stormwater is expected without proper grading during construction, and could render previously acceptable surfaces unacceptable. Groundwater should be maintained a minimum of 2 feet below surfaces to be compacted.

As an alternative to placing fill at or below the water table requiring dewatering, FDOT No. 57 gradation stone or recycled concrete may be placed in the bottom of the excavation to establish a firm and stable working surface. If fill soils will be placed on top of the No. 57 stone, the stone material should be covered by a geotextile fabric to assure the finer overlying sandy fill soils do not ravel into the inherent voids within the No. 57 stone, as this could result in long-term settlement of the overlying structure. The geotextile fabric should extend a minimum of 2 feet beyond the edges of the placed No. 57 stone.

4.6.3 Proof-Rolling

Proof-roll the subgrade with heavy rubber-tired equipment, such as a loaded front-end loader or dump truck, to identify any loose or soft zones not found by the soil borings. Undercut or otherwise treat these zones as recommended by the geotechnical engineer in this report.

4.6.4 Fill Placement

Imported fill placed to raise the site grades should consist of clean sand having less than 10 percent passing the No. 200 sieve. On site soils meeting the requirements of Section 4.7 may also be used as structural fill. The fill below the pavement section subgrade elevations should be placed in maximum 12 inch loose lifts that are compacted to at least 95 percent of the Modified Proctor maximum dry density. If lighter “walk-behind” compaction equipment is used, this may require lifts of 4 inches or less to achieve the required degree of compaction.

4.6.5 Testing

Perform compaction testing in the fill soils and pavement components. One test should be performed for each 10,000 square feet of pavement area per foot of fill, or a minimum of three tests, whichever is greater.

4.7 Existing On-Site Material Suitability

The upper layer of sandy soils (with exception of topsoil) excavated from the site (SP-SM) is considered suitable for use as structural fill, assuming it has less than 5 percent organic material and is free of roots and other deleterious debris. Much of these soils will be excavated from below the water table and will require stockpiling and drying before they can be reused as fill.

The silty sand (SM) is also considered a suitable fill material, but will likely require additional drying time and will be somewhat more difficult to work and compact. These soils are more moisture sensitive, and should be worked at or below optimum moisture content. These soils are less desirable for use during the wet season or prolonged wet periods, as drying activities sometimes cannot “keep up” with the frequent rain showers.

The underlying deeper clayey sand (SC) encountered is considered suitable for use as structural fill, but is also a less desirable source of fill, as these soils are even more moisture sensitive and can be difficult to compact unless they are worked at close to or below optimum moisture. Additionally, these soils may be difficult to work during prolonged wet periods as they may require extended time to “dry back” to a “workable” moisture content. Stockpiling of these soils in windrows will likely be required to dry these materials before they could be used as fill. For this reason, it is less desirable to use these soils during the wet season, as frequent rain showers will likely keep these soils in a moist condition that is above the optimum moisture content. If clay-rich soils are utilized, we recommend that they contain less than 30 percent fines (passing the No. 200 sieve) with a Plasticity Index less than 15 and Liquid Limit less than 45. Soils with 15 percent or greater fines content used as trench or other backfill should be compacted to 98 percent of the Standard Proctor maximum dry density (ASTM D698). Mixing of soils with higher fines content with those with less fines content may increase their overall workability.

Very clayey sand (SC) having more than 30 percent soil fines and sandy clay and clay (CH) are not considered suitable structural fill materials.

5.0 FIELD DATA

5.1 Auger Borings Logs



GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

CLIENT Gainesville Renewable Energy Center, LLC.

PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER B-1**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-2**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-3**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 5.0 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 3.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 4.5 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			(SM) Brown silty SAND	0			(SM) Brown silty SAND	0			(SM) Dark brown silty SAND
1.0		AU 1	▽	1.0		AU 1	▽	1.0		AU 1	▽
2.0			(SC) Gray and brown clayey SAND	2.0			(SP-SM) Light brown to tan SAND with silt	2.0			(SC) Brown, gray, and orange clayey SAND
2.5		AU 2		2.5		AU 2		2.5		AU 2	
3.0				3.0			(SC) Gray clayey SAND	3.0			
4.0				4.0			▼	4.0			
5.0				5.0				5.0		AU 2	▼
6.0		AU 3	(SP-SM) Light gray to brown SAND with silt	6.0		AU 3	(SP-SM) Light gray SAND with silt	6.0		AU 3	(SP-SM) Gray SAND with silt
7.5			(SC) Green and gray very clayey SAND	7.5			(SC) Gray, green, and orange very clayey SAND	7.5			
8.5		AU 4		8.5		AU 4		8.5		AU 4	(SC) Green to gray very clayey SAND
10.0				10.0				10.0			
11.0			(CH) Green and gray CLAY	11.0			(CH) Green and orange CLAY	11.0			
12.0		AU 5		12.0		AU 5		12.0		AU 5	(CH) Green and orange CLAY
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.

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AB 3 LANDSCAPE - GINT STD US.GDT - 9/11/09 13:16 - I:\SERVER\GENERAL\PROJECTS\10509 DEERHAVEN BIOMASS POWER GENERATION PLANT\10509 BORINGS\10509 BORINGS GP-J



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5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

CLIENT Gainesville Renewable Energy Center, LLC.

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PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER B-4**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-5**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-6**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

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▼ AT TIME OF DRILLING 5.0 ft CHECKED BY CAD

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▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			(SM) Brown silty SAND	0			(SM) Brown silty SAND	0			(SM) Brown silty SAND
1.0			▽	1.0			▽	1.0		AU 1	▽
2.0		AU 1	(SP-SM) Light brown to tan SAND with silt	2.0			(SP-SM) Light brown and orange SAND with silt	2.0		AU 2	(SP-SC) Light brown and orange SAND with clay
			(SC) Brown and orange clayey SAND								
5.0		AU 2		5.0		AU 1		5.0		AU 3	(SP-SM) Light brown SAND with silt
			▼ (SP-SM) Light brown to gray SAND with silt				▼ (SP-SM) Light brown SAND with silt				
		AU 3				AU 2				AU 4	(SP-SM) Gray SAND with silt
8.5				8.0			(SC) Gray to green very clayey SAND	8.5			
		AU 4	(SC) Green and gray very clayey SAND			AU 3				AU 5	(SC) Gray clayey SAND
10.0				10.0				10.0			
						AU 4					(CH) Green and gray sandy CLAY
12.5				12.5			(CH) Green and gray CLAY	12.5		AU 6	
		AU 5	(CH) Green and gray CLAY			AU 5					
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.

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GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

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PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway
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DATE PERFORMED 8/17/2009 **BORING NUMBER B-7**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

AT TIME OF DRILLING 5.0 ft CHECKED BY CAD

 ESTIMATED SEASONAL HIGH 1.5 ft

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DATE PERFORMED 8/17/2009 **BORING NUMBER B-8**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

 AT TIME OF DRILLING 3.0 ft CHECKED BY CAD

 ESTIMATED SEASONAL HIGH 2.0 ft

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DATE PERFORMED 8/17/2009 BORING NUMBER B-9

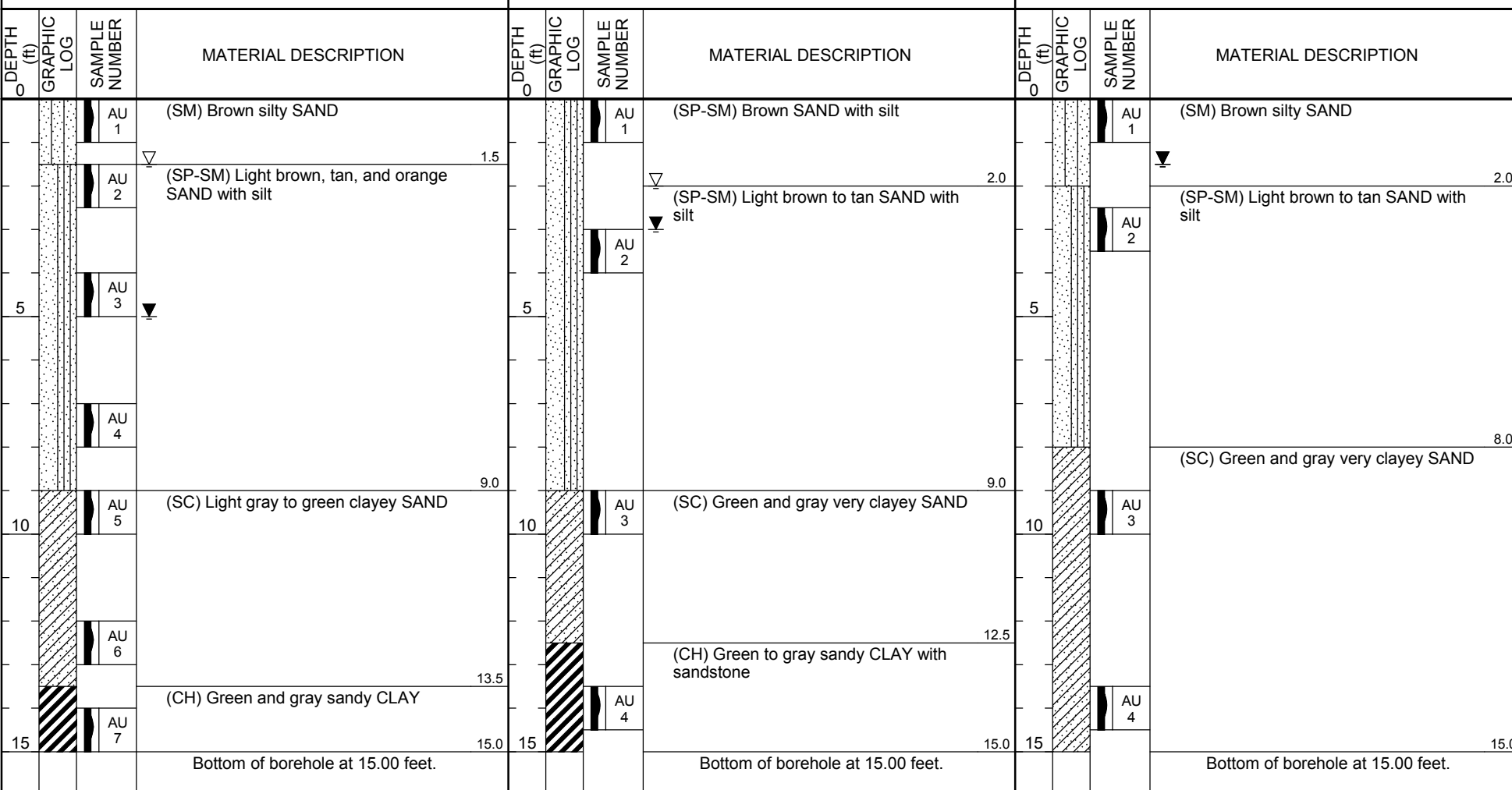
DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

AT TIME OF DRILLING 1.5 ft CHECKED BY CAD

 ESTIMATED SEASONAL HIGH 1.5 ft

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5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

CLIENT Gainesville Renewable Energy Center, LLC.

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PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER B-16**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-17**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-18**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

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▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
			(SP-SM) Light brown to tan SAND with silt				(SM) Brown silty SAND				(SM) Brown silty SAND
			▽				1.0				1.0
		AU 1	▼			AU 1	(SP-SM) Light brown to tan SAND with silt			AU 1	▼
							3.5				(SP-SM) Light brown to tan SAND with silt
			4.0				(SP-SM) Light brown SAND with silt			AU 2	5.0
5		AU 2	(SP-SM) Tan SAND with silt	5			5.0	5			Bottom of borehole at 5.00 feet.
			7.0								
		AU 3	(SP-SM) Dark brown SAND with silt								
10			10.0	10				10			
			Bottom of borehole at 10.00 feet.								
15				15				15			

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5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

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DATE PERFORMED 8/17/2009 **BORING NUMBER B-19**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

 AT TIME OF DRILLING 2.0 ft

 ESTIMATED SEASONAL HIGH 0.5 ft

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DATE PERFORMED 8/17/2009 **BORING NUMBER B-20**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

AT TIME OF DRILLING 3.5 ft CHECKED BY CAD

 ESTIMATED SEASONAL HIGH 1.0 ft

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DATE PERFORMED 8/17/2009 **BORING NUMBER B-21**DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

AT TIME OF DRILLING 3.0 ft CHECKED BY CAD

 ESTIMATED SEASONAL HIGH 1.5 ft

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5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

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PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER B-22**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-23**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-24**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

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▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

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▽ ESTIMATED SEASONAL HIGH 0.5 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0				0				0			
0.5		AU 1	▽ (SM) Dark brown silty SAND (SP-SM) Gray SAND with silt	0.5			▽ (SP-SM) Dark brown SAND with silt (SP-SM) Light brown SAND with silt	0.5			(SM) Brown silty SAND
2.0		AU 2	▼ (SP-SM) Light brown to tan SAND with silt	2.0		AU 1	▼	1.0		AU 1	▽ (SP-SM) Light brown to tan SAND with silt
4.0		AU 3	(SP-SM) Brown SAND with silt	4.0				4.0		AU 2	(SP-SM) Brown SAND with silt
5.0			Bottom of borehole at 5.00 feet.	5				5			Bottom of borehole at 5.00 feet.
				6.0		AU 2	(SC) Brown clayey SAND				
				8.5			(SP-SM) Brown SAND with silt				
10				10		AU 3	Bottom of borehole at 10.00 feet.	10			
15				15				15			

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GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

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CLIENT Gainesville Renewable Energy Center, LLC.

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PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER B-25**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-26**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-27**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

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▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 2.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 0.5 ft

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DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
			(SP-SM) Brown SAND with silt
		AU 1	▼
3.5			
			(SP-SM) Light brown SAND with silt
5		AU 2	5.0
			Bottom of borehole at 5.00 feet.
10			
15			

DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
		AU 1	(SM) Dark brown silty SAND
1.0			▼ (SM) Light brown silty SAND
		AU 2	▼
5		AU 3	5.0
			Bottom of borehole at 5.00 feet.
10			
15			

DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0.5			▽ (SP-SM) Dark brown SAND with silt
			(SP-SM) Light brown SAND with silt
		AU 1	▼
3.0			(SP-SM) Tan SAND with silt
5		AU 2	5.0
			Bottom of borehole at 5.00 feet.
10			
15			

(Continued Next Page)



GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

CLIENT Gainesville Renewable Energy Center, LLC.

PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/16/2009 **BORING NUMBER B-28**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-29**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-30**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.5 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			(SM) Brown silty SAND	0			(SM) Brown silty SAND	0			(SM) Brown silty SAND
1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.5			▽ (SP-SM) Light brown to tan SAND with silt
		AU 1				AU 1				AU 2	
5			(SP-SM) Brown SAND with silt	5			(SM) Brown silty SAND	5			(SP-SM) Gray SAND with silt
		AU 2				AU 2				AU 3	
8.5			(SM) Brown silty SAND	8.5						AU 4	
10			(SP-SM) Gray SAND with silt	10						AU 5	
		AU 3				AU 3				AU 6	
11.5			(CH) Green and gray sandy CLAY	11.5			(SC) Light brown clayey SAND	12.5			(SP-SM) White SAND with silt
13.0				13.0				13.5			(SC) Green to gray clayey SAND
		AU 4				AU 4		14.0			
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.
		AU 5				AU 4					

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PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/16/2009 **BORING NUMBER B-34**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-35**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-36**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			(SM) Brown silty SAND	0			(SM) Brown silty SAND	0			(SM) Brown silty SAND
1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.0			▽ (SP-SM) Light brown to tan SAND with silt	0.5			▽ (SP-SM) Light brown to tan SAND with silt
3.5		AU 1	(SC) Brown clayey SAND	4.5		AU 1	(SP-SM) Brown SAND with silt	4.0		AU 1	(SP-SM) Brown SAND with silt
5.0		AU 2	(SP-SM) Brown SAND with silt	5.0		AU 2	(SC) Green and gray very clayey SAND	11.0		AU 2	(SC) Gray clayey SAND
8.5		AU 3	(SC) Brown and gray clayey SAND	9.0		AU 3	(CH) Green and gray CLAY with trace of sand and sandstone	12.5		AU 3	(SC) Green and white very clayey SAND with sandstone
12.0		AU 4	(CH) Green and gray CLAY with trace of sand and sandstone	15.0		AU 4	Bottom of borehole at 15.00 feet.	15.0		AU 4	Bottom of borehole at 15.00 feet.
15.0		AU 5	Bottom of borehole at 15.00 feet.	15.0		AU 5	Bottom of borehole at 15.00 feet.	15.0		AU 5	Bottom of borehole at 15.00 feet.

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PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/16/2009 **BORING NUMBER B-40**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-41**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-42**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 3.0 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.5 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0				0				0			
		AU 1	(SM) Dark brown silty SAND				(SM) Brown silty SAND				(SM) Dark brown silty SAND
1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.5			▽ (SP-SM) Light brown to tan SAND with silt	0.5			▽ (SP-SM) Light brown to tan SAND with silt
		AU 2	▼			AU 1	▼			AU 1	▼
4.0			(SP-SM) Brown SAND with silt	4.5			(SP-SM) Brown SAND with silt	4.0			(SM) Dark brown silty SAND
5		AU 3		5		AU 2		5		AU 2	
9.0			(SC) Light brown and gray clayey SAND	8.5			(SP-SM) Light brown SAND with silt	10			(SC) Light brown and gray clayey SAND
10		AU 4		10		AU 3		10		AU 3	
14.0			(SC) Gray clayey SAND	12.5			(SC) Green and gray clayey SAND	13.5			(SP-SM) Light brown SAND with silt
15		AU 5		15		AU 4		15		AU 4	
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.

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PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/16/2009 **BORING NUMBER B-43**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-44**

DATE PERFORMED 8/17/2009 **BORING NUMBER B-45**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 6.0 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 5.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.5 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.5 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0				0				0			
		AU 1	(SM) Dark brown silty SAND			AU 1	(SM) Dark brown silty SAND			AU 1	(SM) Brown silty SAND
			▽ (SP-SM) Light brown to tan SAND with silt	1.0		AU 2	(SP-SM) Light brown to tan SAND with silt	1.0			▽ (SP-SM) Light brown SAND with silt
		AU 2		2.5			(SC) Brown and orange clayey SAND	2.5		AU 2	
			(SP-SM) Brown SAND with silt			AU 3					▼
5		AU 3		5				5		AU 3	
						AU 4	▼ (SP-SM) Gray SAND with silt				
				5.5				5.5			
						AU 5	(SC) Green to gray very clayey SAND	8.0		AU 4	(SC) Green and gray very clayey SAND
10		AU 4	(SP-SC) Light brown to tan SAND with clay	10				10			
				12.5			(CH) Green and gray CLAY	12.5		AU 5	(CH) Green and gray CLAY
						AU 6					
15		AU 5	(SP-SM) Gray clayey SAND with silt	15				15			
			Bottom of borehole at 15.00 feet.				Bottom of borehole at 15.00 feet.				Bottom of borehole at 15.00 feet.

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5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

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PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/31/2009 **BORING NUMBER B-46**

DATE PERFORMED 8/17/2009 **BORING NUMBER S-1**

DATE PERFORMED 8/17/2009 **BORING NUMBER S-2**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▽ AT TIME OF DRILLING 5.5 ft CHECKED BY CAD

▽ AT TIME OF DRILLING 4.0 ft CHECKED BY CAD

▽ AT TIME OF DRILLING 4.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 3.5 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			ASPHALT - 3", LIMEROCK - 7.5"	0			(SM) Brown silty SAND	0			(SM) Brown silty SAND
0.9				1.0				1.0			
		AU 1	(SM) Dark brown silty SAND			AU 1	(SP-SM) Light brown to tan SAND with silt			AU 1	(SP-SM) Light brown to tan SAND with silt
				2.5			(SC) Brown and orange clayey SAND	2.5			(SP-SC) Brown and orange SAND with clay
3.5											
		AU 2	(SP-SM) Light brown to tan SAND with silt	4.5		AU 2	(SP-SM) Light brown SAND with silt	5.0		AU 2	(SP-SM) Brown SAND with silt
4.5			(SC) Gray clayey SAND	5				5			
		AU 3				AU 3				AU 3	
				7.5			(SC) Green and gray very clayey SAND	7.5			
8.5			(SC) Gray to orange very clayey SAND	10		AU 4		10			
		AU 4									
11.0			(CH) Green to gray CLAY	12.5			(CH) Green and gray CLAY	12.5		AU 4	
		AU 5		15.0		AU 5		15			
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.

(Continued Next Page)



GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

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CLIENT Gainesville Renewable Energy Center, LLC.

PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/17/2009 **BORING NUMBER S-3**

DATE PERFORMED 8/17/2009 **BORING NUMBER S-4**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 3.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 3.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

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DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
			(SM) Brown silty SAND
1.0			▽ (SC) Light brown to tan clayey SAND
		AU 1	
3.5			▼ (SC) Brown clayey SAND
5		AU 2	
7.5		AU 3	(SP-SM) Light gray SAND with silt
8.5		AU 4	(SC) Green and gray very clayey SAND
10			
11.0			(CH) Green and orange CLAY
15		AU 5	
15.0			Bottom of borehole at 15.00 feet.

DEPTH 0 (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
			(SM) Brown silty SAND
1.0			▽ (SP-SM) Light brown to tan SAND with silt
2.5		AU 2	
5.0		AU 3	▼ (SC) Brown and orange SAND
8.5		AU 4	(SP-SM) Light brown to tan clayey SAND with silt
11.5		AU 5	(SC) Gray to green very clayey SAND
15.0		AU 6	(CH) Green and orange CLAY
15.0			Bottom of borehole at 15.00 feet.



GSE Engineering & Consulting, Inc.
5590 SW 64th Street, Suite B
Gainesville, Florida 32608
Telephone: 352-377-3233

Engineering & Consulting, Inc.

CLIENT American Renewables

PROJECT NAME Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements

PROJECT NUMBER 10509

PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 8/16/2009 **BORING NUMBER B-28**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-29**

DATE PERFORMED 8/16/2009 **BORING NUMBER B-30**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

GROUND WATER LEVELS: LOGGED BY GW

▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.5 ft CHECKED BY CAD

▼ AT TIME OF DRILLING 2.0 ft CHECKED BY CAD

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.0 ft

▽ ESTIMATED SEASONAL HIGH 1.5 ft

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DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION	DEPTH (ft)	GRAPHIC LOG	SAMPLE NUMBER	MATERIAL DESCRIPTION
0			(SM) Brown silty SAND	0			(SM) Brown silty SAND	0			(SM) Brown silty SAND
1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.0			▽ (SP-SM) Light brown to tan SAND with silt	1.5			▽ (SP-SM) Light brown to tan SAND with silt
1.0		AU 1		1.0		AU 1		1.5		AU 2	
4.0				4.0				4.0			
5.0			(SP-SM) Brown SAND with silt	5.0		AU 2	(SM) Brown silty SAND	5.0		AU 3	(SP-SM) Gray SAND with silt
8.5				8.5				8.5			
8.5		AU 3	(SM) Brown silty SAND	10.0		AU 3		10.0		AU 4	
11.5				11.5				11.5			
11.5		AU 4	(SP-SM) Gray SAND with silt	13.0				12.5		AU 5	(SP-SM) White SAND with silt
13.0				13.0				13.5			
13.0		AU 5	(CH) Green and gray sandy CLAY	13.5			(SC) Light brown clayey SAND	14.0		AU 6	(SC) Green to gray clayey SAND
15.0				15.0		AU 4		15.0			
15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.	15.0			Bottom of borehole at 15.00 feet.

(Continued Next Page)

5.2 Laboratory Results

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 10509

Project Name: Deerhaven Biomass Power Generation Plant
Roadway and Stormwater Management Improvements

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Unified Soil Classification
B-1	0 - 2	Brown Silty SAND	8.7				13		SM
B-2	9 - 10	Green, Gray and Orange Very Clayey SAND	21				37		SC
B-2	13 - 14	Green and Orange CLAY	69	188	61	127	92		CH
B-7	14 - 15	Green and Gray Sandy CLAY	35	75	28	47	69		CH
B-9	0 - 2	Brown Silty SAND	18				12		SM
B-11	11 - 12	Green Very Clayey SAND with rock fragments	25	45	22	23	44		SC
B-12	1 - 2	Light Brown Silty SAND	18				12		SM
B-13	9 - 10	Light Gray Clayey SAND	15				21		SC
B-15	1 - 2	Light Brown to Tan Silty SAND	12				12		SM
B-16	8 - 9	Dark Brown SAND with silt	22				5.8		SP-SM

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 10509

Project Name: Deerhaven Biomass Power Generation Plant
Roadway and Stormwater Management Improvements

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Unified Soil Classification
B-18	4 - 5	Light Brown to Tan SAND with silt	16				10		SP-SM
B-20	9 - 10	Dark Brown SAND with silt	22				9.4		SP-SM
B-21	0 - 1	Dark Brown Silty SAND	9.9				14		SM
B-23	7 - 8	Brown Clayey SAND	20				18		SC
B-26	4 - 5	Light Brown Silty SAND	23				12		SM
B-29	1-2.5	Light Brown to Tan SAND with silt	15				10		SP-SM
B-29	14- 15	Light Brown Clayey SAND	14				18		SC
B-30	14 - 15	Green to Gray Clayey SAND	15				26		SC
B-32	3 - 4	Light Brown to Tan SAND with silt	15				9.7		SP-SM
B-34	1-2.5	Light Brown to Tan SAND with silt	14				9.5		SP-SM

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 10509

Project Name: Deerhaven Biomass Power Generation Plant
Roadway and Stormwater Management Improvements

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Unified Soil Classification
B-34	4 - 5	Brown Clayey SAND	19				13		SC
B-36	13 - 14	Green and White Very Clayey SAND with sandstone	29				41		SC
B-37	1-2.5	Brown and Gray SAND with silt	12				11		SP-SM
B-37	5 - 6	Brown Clayey SAND	26				17		SC
B-37	14 - 15	Green and Gray Sandy CLAY	35				63		CH
B-39	9 - 10	Dark Brown SAND with silt	21				9.5		SP-SM
B-40	2-4	Light Brown to Tan SAND with silt	14				9.1		SP-SM
B-40	14 - 15	Gray Clayey SAND	15				17		SC
B-41	13 - 14	Green and Gray Clayey SAND	15				20		SC
B-44	2.5-4	Brown and Orange SAND with clay	7.5				11		SP-SM

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 10509

Project Name: Deerhaven Biomass Power Generation Plant
Roadway and Stormwater Management Improvements

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Unified Soil Classification
B-44	9 - 10	Green and Gray Very Clayey SAND	17				33		SC
B-45	1-2.5	Light Brown SAND with silt	6.6				11		SP-SM
S-1	3 - 4	Brown and Orange Clayey SAND	15				16		SC
S-3	5 - 6	Brown Clayey SAND	21				18		SC
S-3	1-2.5	Light Brown to Tan Clayey SAND	13				14		SC
S-4	1-2.5	Light Brown to Tan SAND with silt	14				10		SP-SM



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-29		
Sample Depth:	1-2.5		
Soil Description:	Light Brown to Tan SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1245.8	g
Mass of Unused Soil	326.6	g
Mass of Soil Specimen	919.2	g
Unit Weight of Soil Specimen (air dry)	100.63	lb/ft ³
Water Content	7.90	percent
Dry Unit Weight of Soil	93.26	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	76.3	9.8	66.5	46.54	30.0		3.90E-03
2	76.4	9.8	66.6	46.40	30.0		3.88E-03
3	76.4	9.8	66.6	45.72	30.0		3.82E-03
4	76.6	9.8	66.8	45.33	30.0		3.78E-03

Average Permeability = 3.85E-03 cm/sec

11 ft/day



Engineering & Consulting, Inc.

Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-32		
Sample Depth:	3-4 feet		
Soil Description:	Light Brown to Tan SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1254.1	g
Mass of Unused Soil	345.0	g
Mass of Soil Specimen	909.1	g
Unit Weight of Soil Specimen (air dry)	99.52	lb/ft ³
Water Content	5.80	percent
Dry Unit Weight of Soil	94.07	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	65.0	15.5	49.5	54.89	45.0		4.12E-03
2	65.3	15.7	49.6	55.10	45.0		4.13E-03
3	65.4	15.8	49.6	55.49	45.0		4.15E-03
4	65.6	15.9	49.7	55.12	45.0		4.12E-03

Average Permeability = 4.13E-03 cm/sec

12 ft/day



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-34		
Sample Depth:	1-2.5		
Soil Description:	Light Brown to Tan SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1249.0	g
Mass of Unused Soil	338.5	g
Mass of Soil Specimen	910.5	g
Unit Weight of Soil Specimen (air dry)	99.68	lb/ft ³
Water Content	5.90	percent
Dry Unit Weight of Soil	94.12	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	69.9	14.2	55.7	92.64	45.0		6.18E-03
2	69.9	14.2	55.7	92.69	45.0		6.18E-03
3	69.8	14.3	55.5	92.83	45.0		6.21E-03
4	69.9	14.3	55.6	92.41	45.0		6.17E-03

Average Permeability = 6.18E-03 cm/sec

17 ft/day



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-37		
Sample Depth:	1-2.5		
Soil Description:	Brown and Gray SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1116.0	g
Mass of Unused Soil	205.6	g
Mass of Soil Specimen	910.4	g
Unit Weight of Soil Specimen (air dry)	99.66	lb/ft ³
Water Content	5.90	percent
Dry Unit Weight of Soil	94.11	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	45.1	6.2	38.9	49.24	45.0		4.70E-03
2	45.2	6.2	39.0	49.14	45.0		4.68E-03
3	45.3	6.2	39.1	49.58	45.0		4.71E-03
4	45.2	6.1	39.1	50.59	45.0		4.80E-03

Average Permeability = 4.72E-03 cm/sec

13 ft/day



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-40		
Sample Depth:	2-4		
Soil Description:	Light Brown to Tan SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1131.4	g
Mass of Unused Soil	221.1	g
Mass of Soil Specimen	910.3	g
Unit Weight of Soil Specimen (air dry)	99.65	lb/ft ³
Water Content	5.90	percent
Dry Unit Weight of Soil	94.10	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	61.1	13.3	47.8	78.99	45.0		6.14E-03
2	61.1	13.3	47.8	79.22	45.0		6.15E-03
3	61.2	13.4	47.8	79.34	45.0		6.16E-03
4	61.3	13.4	47.9	79.27	45.0		6.15E-03

Average Permeability = 6.15E-03 cm/sec

17 ft/day



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Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	B-44		
Sample Depth:	2.5-4		
Soil Description:	Brown and Orange SAND with clay		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	14.7	cm
Volume of Specimen [$(h_2 - h_1) * A$]	556.32	cm ³
Mass of Air Dry Soil	1099.6	g
Mass of Unused Soil	166.4	g
Mass of Soil Specimen	933.2	g
Unit Weight of Soil Specimen (air dry)	104.67	lb/ft ³
Water Content	7.50	percent
Dry Unit Weight of Soil	97.37	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	57.8	7.6	50.2	52.99	45.0		3.92E-03
2	57.7	7.7	50.0	53.05	45.0		3.94E-03
3	57.8	7.8	50.0	53.13	45.0		3.95E-03
4	57.8	7.8	50.0	53.38	45.0		3.96E-03

Average Permeability = 3.94E-03 cm/sec

11 ft/day



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant	Tested By	CM / NB
	Roadway and Stormwater Management Improvements		
Boring No.:	B-45		
Sample Depth:	1-2.5		
Soil Description:	Light Brown SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	14.9	cm
Volume of Specimen [$(h_2 - h_1) * A$]	565.44	cm ³
Mass of Air Dry Soil	1103.7	g
Mass of Unused Soil	181.2	g
Mass of Soil Specimen	922.5	g
Unit Weight of Soil Specimen (air dry)	101.80	lb/ft ³
Water Content	6.60	percent
Dry Unit Weight of Soil	95.50	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	65.1	11.1	54.0	65.45	45.0		4.50E-03
2	65.2	11.4	53.8	65.65	45.0		4.53E-03
3	65.2	11.4	53.8	65.55	45.0		4.52E-03
4	65.2	11.5	53.7	65.26	45.0		4.51E-03

Average Permeability = 4.52E-03 cm/sec

13 ft/day



Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant	Tested By	CM / NB
	Roadway and Stormwater Management Improvements		
Boring No.:	S-3		
Sample Depth:	1-2.5		
Soil Description:	Light Brown to Tan Clayey SAND		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1155.7	g
Mass of Unused Soil	246.0	g
Mass of Soil Specimen	909.7	g
Unit Weight of Soil Specimen (air dry)	99.59	lb/ft ³
Water Content	5.30	percent
Dry Unit Weight of Soil	94.58	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	58.0	10.5	47.5	71.57	45.0		5.60E-03
2	58.0	10.5	47.5	71.49	45.0		5.59E-03
3	58.0	10.5	47.5	71.27	45.0		5.57E-03
4	57.9	10.6	47.3	71.42	45.0		5.61E-03

Average Permeability = 5.59E-03 cm/sec

16 ft/day



Engineering & Consulting, Inc.

Constant Head Permeability Test Results

Project:	10509	Test Date	9/4/2009
Project No.:	Deerhaven Biomass Power Generation Plant Roadway and Stormwater Management Improvements	Tested By	CM / NB
Boring No.:	S-4		
Sample Depth:	1-2.5		
Soil Description:	Light Brown to Tan SAND with silt		

Length Between Manometer Outlets	7.62	cm
Diameter of Soil Specimen	7.62	cm
Cross Section Area of Specimen (A)	45.60	cm
Bottom height of Specimen (h_1)	2.5	cm
Top height of Specimen (h_2)	15.0	cm
Volume of Specimen [$(h_2 - h_1) * A$]	570.00	cm ³
Mass of Air Dry Soil	1113.2	g
Mass of Unused Soil	205.6	g
Mass of Soil Specimen	907.6	g
Unit Weight of Soil Specimen (air dry)	99.36	lb/ft ³
Water Content	5.40	percent
Dry Unit Weight of Soil	94.27	lb/ft ³

Trial No.	Manometer Readings		Head	Q	Time (sec)	Temp	Permeability
	H ₁	H ₂					
1	61.2	14.0	47.2	55.40	45.0		4.36E-03
2	61.2	14.0	47.2	55.23	45.0		4.35E-03
3	61.4	14.1	47.3	55.36	45.0		4.35E-03
4	61.4	14.1	47.3	55.48	45.0		4.36E-03

Average Permeability = 4.35E-03 cm/sec

12 ft/day

5.3 Key to Soil Classifications

KEY TO SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
	HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

NO. OF BLOW, N		RELATIVE DENSITY	NO. OF BLOWS, N		CONSISTENCY
0 - 4		Very Loose	0 - 2		Very Soft
5 - 10		Loose	3 - 4		Soft
SANDS:	11 - 30	Medium dense	SILTS & CLAYS:	5 - 8	Firm
	31 - 50	Dense		9 - 15	Stiff
OVER 50		Very Dense		16 - 30	Very Stiff
				31 - 50	Hard
				OVER 50	Very Hard

PARTICLE SIZE IDENTIFICATION

BOULDERS:	Greater than 300 mm
COBBLES:	75 mm to 300 mm
GRAVEL:	Coarse - 19.0 mm to 75 mm
	Fine - 4.75 mm to 19.0 mm
SANDS:	Coarse - 2.00 mm to 4.75 mm
	Medium - 0.425 mm to 2.00 mm
	Fine - 0.075 mm to 0.425 mm
SILTS & CLAYS:	Less than 0.075 mm

SAMPLE LEGEND



Location of SPT sample



Location of Auger sample

6.0 LIMITATIONS

6.1 Warranty

This report has been prepared for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

6.2 Auger Borings

The determination of soil type and conditions was performed from the ground surface to the maximum depth of the borings, only. Any changes in subsurface conditions that occur between or below the borings would not have been detected or reflected in this report.

Soil classifications that were made in the field are based upon identifiable textural changes, color changes, changes in composition or changes in resistance to penetration in the intervals from which the samples were collected. Abrupt changes in soil type, as reflected in boring logs and/or cross sections may not actually occur, but instead, be transitional.

Depth to the water table is based upon observations made during the performance of the auger borings. This depth is an estimate and does not reflect the annual variations that would be expected in this area due to fluctuations in rainfall and rates of evapotranspiration.

6.3 Site Figures

The measurements used for the preparation of the figures in this report were made with a fiberglass tape and by estimating distances from existing structures and site features. Figures in this report were not prepared by a licensed land surveyor and should not be interpreted as such.

6.4 Unanticipated Soil Conditions

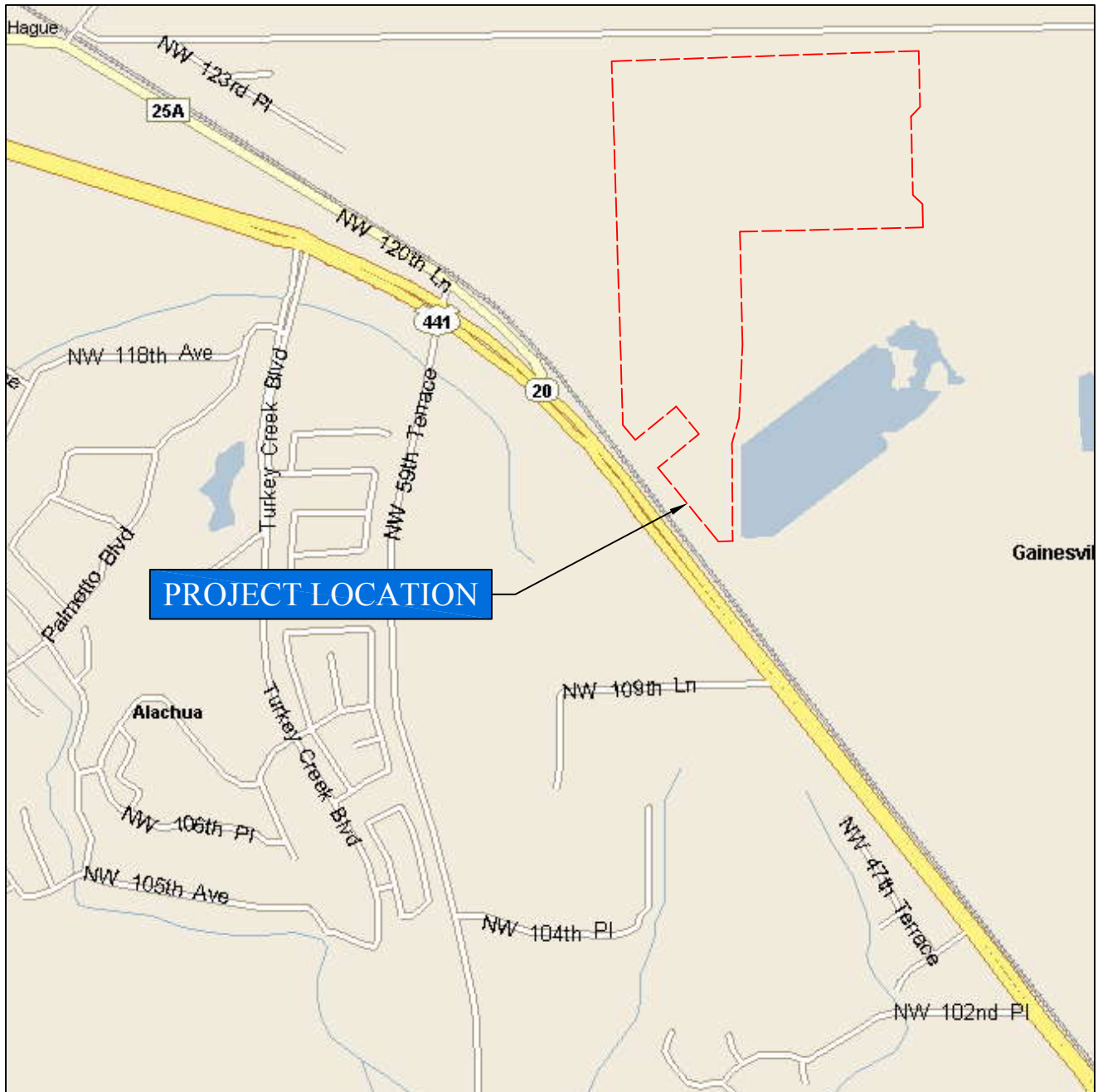
The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Site Plan. This report does not reflect any variations that may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

6.5 Misinterpretation of Soil Engineering Report

GSE Engineering & Consulting, Inc. is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If others make the conclusions or recommendations based upon the data presented, those conclusions or recommendations are not the responsibility of GSE.

FIGURES



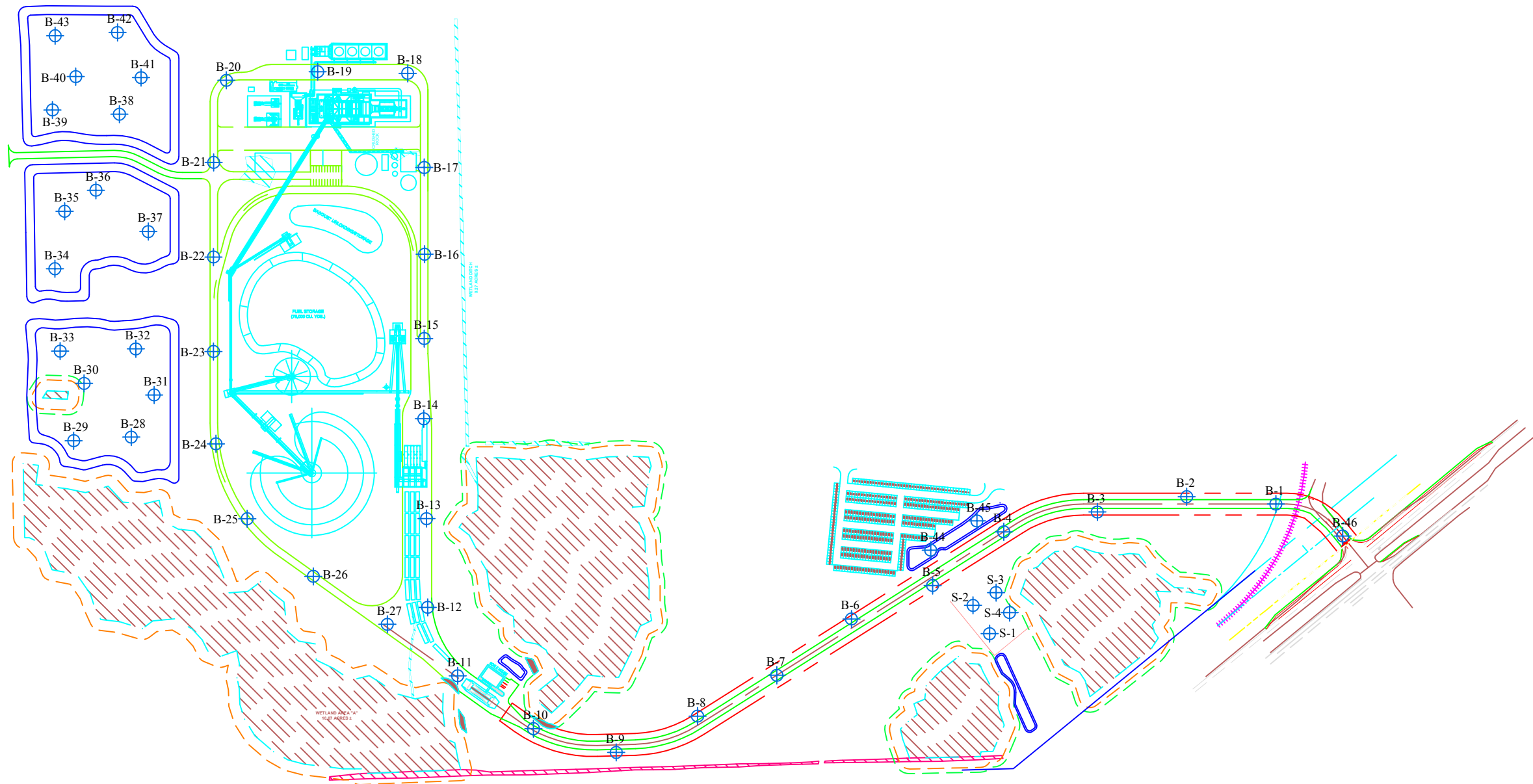
DEERHAVEN BIOMASS POWER GENERATION
PLANT
GAINESVILLE, ALACHUA COUNTY, FLORIDA
GSE PROJECT No. 10509

PROJECT SITE LOCATION MAP

DESIGNED BY : CAD
CHECKED BY : KLH
DRAWN BY : JJJ



FIGURE
1



LEGEND :

 AUGER BORING



SCALE: 1" = 400' APPROX.

SITE PLAN

DEERHAVEN BIOMASS POWER GENERATION PLANT
GAINESVILLE, ALACHUA COUNTY, FLORIDA
GSE PROJECT No. 10509

DESIGNED BY :
CHECKED BY :
DRAWN BY :

CAD
KLH
JJJ



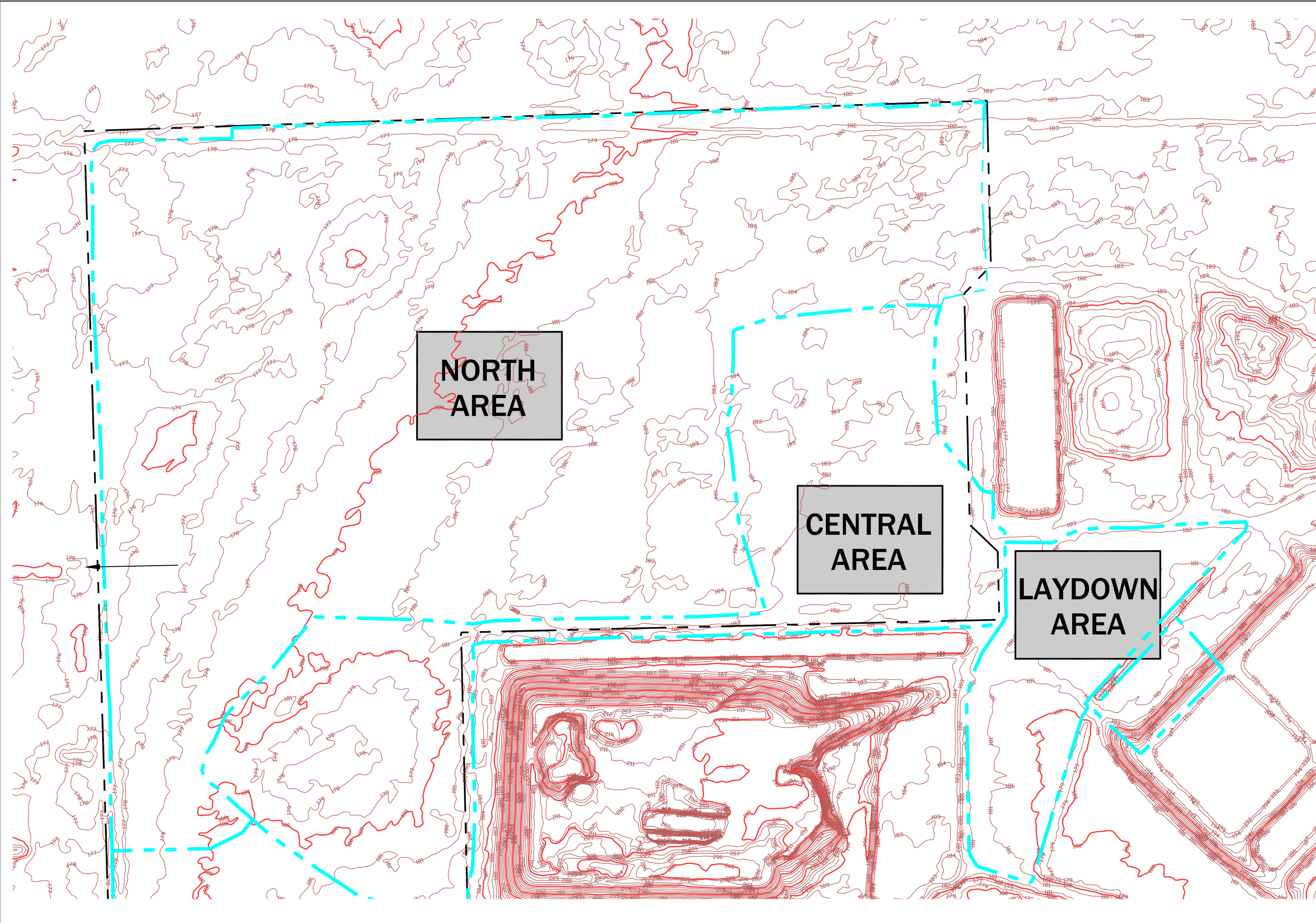
FIGURE
2

Attachment B

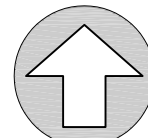
Pre- and Post-development Drainage Plans



Plotted Nov 10, 2009 - 08:16:14 - Jayne Rocks
\\Server3\engprojects\Gainesville Renewable Energy Center\County Information\Drainage.dwg - Layout2



ENG, DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
EB 2389
2404 N.W. 43rd ST, GAINESVILLE, FLORIDA 32606-6602
TEL: (352) 373-3541 FAX: (352) 373-7249
E-MAIL: eda@atlantic.net



NORTH

SCALE: N.T.S.

**GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA**

**DRAINAGE
MAP**

Project
Phase:

STATE CERTIFICATION

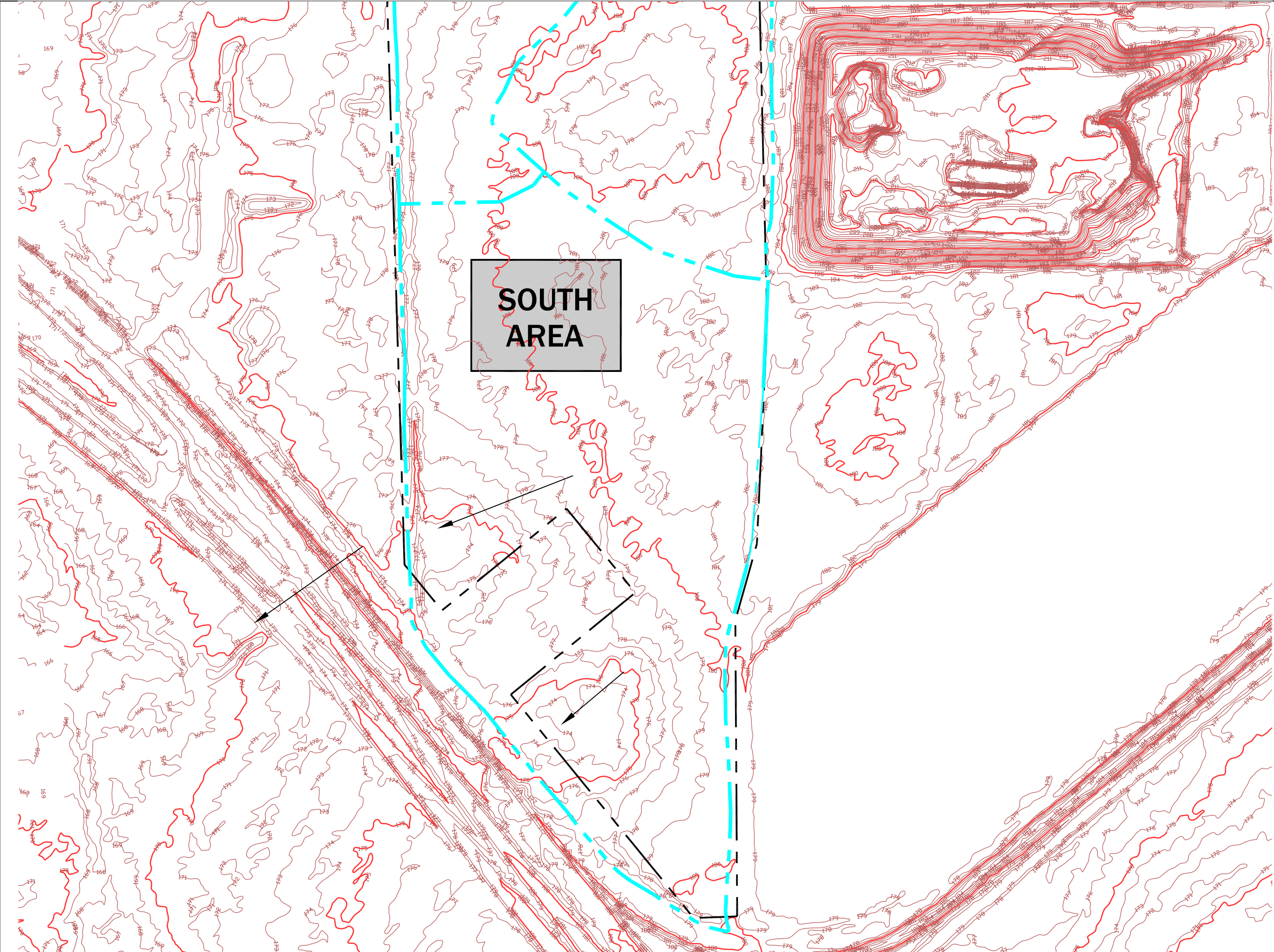
Professional Engineer of Record:

Claudia S. Vega, P.E. 51532
Engineer Florida P.E. no.

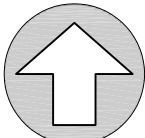
Scale: N.T.S. Date: OCT. 29, 2009

Designed: CSV Drawn: JVR

Project No: 09-194 Sheet No. 1 of 2



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ENGINEERS - SURVEYORS - PLANNERS
EB 2389
2404 N.W. 43rd ST, GAINESVILLE, FLORIDA 32606-6602
TEL: (352) 373-3541 FAX: (352) 373-7249
E-MAIL: eda@atlantic.net



NORTH

SCALE: N.T.S.

**GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA**

**DRAINAGE
MAP**

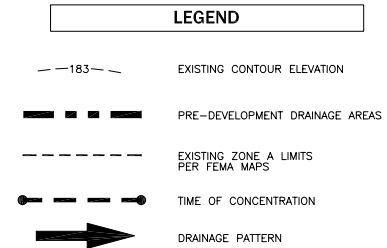
Project
Phase:

STATE CERTIFICATION

Professional Engineer of Record:

Claudia S. Vega, P.E., 51532
Engineer, Florida P.E. no.

Scale:	N.T.S.	Date:	OCT. 29, 2009
Designed:	CSV	Drawn:	JVR
Project No:	09-194	Sheet No.:	2 of 2



TIE TO C2.01 (SHEET 2 of 3)



PRE-DEVELOPMENT DRAINAGE AREAS
SHEET 1 of 3

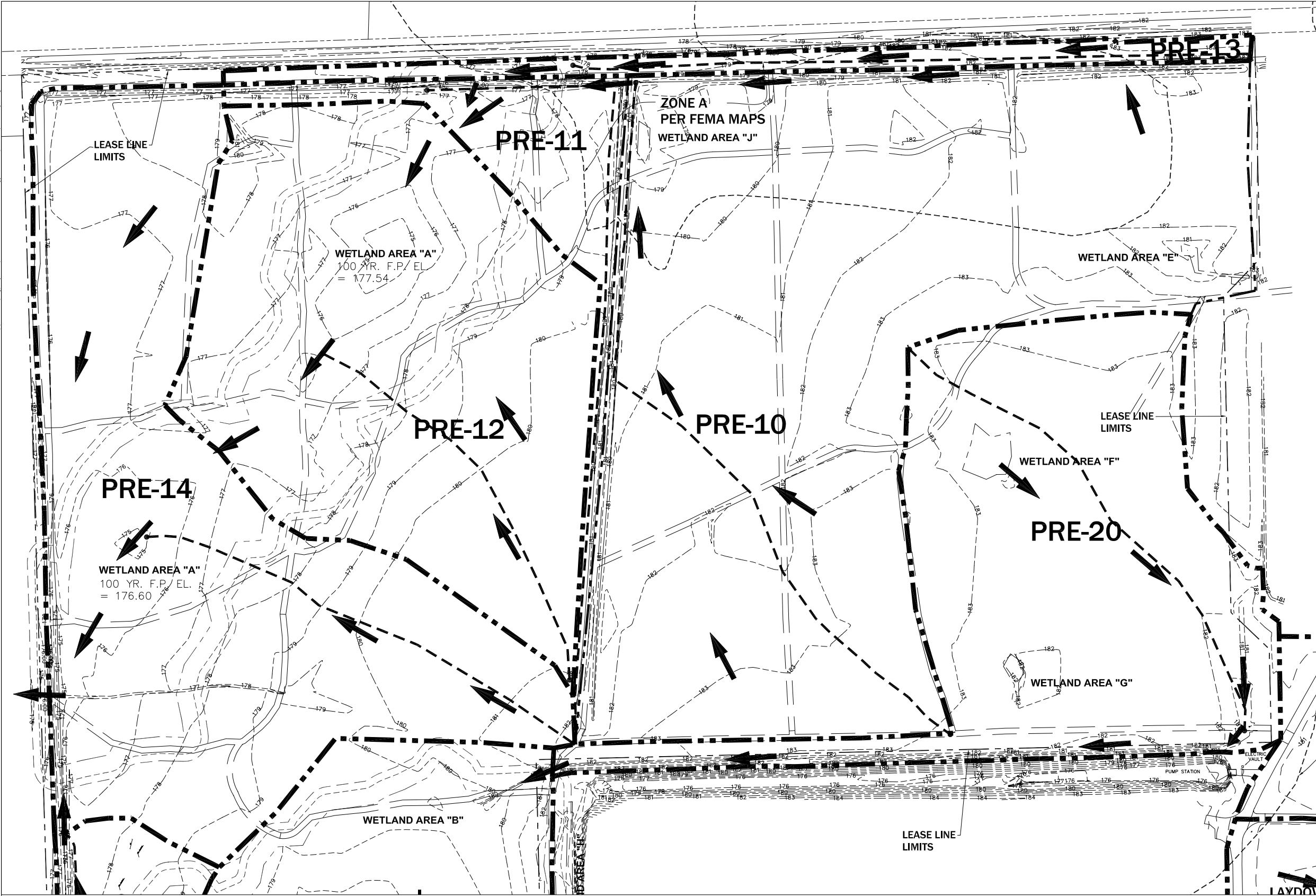
Project phase:	STATE CERTIFICATION		Project:
	Designed: CSV/CAP	Drawn: JWR	
	Project No: 09-194	Date: NOV. 13, 2009	
Professional Engineer of Record:			Sheet title
Claudia S. Vega P.E. Engineer			Certificate No. 51532

C2.00

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Plotted Nov 13, 2009 - 08:06:58 - Joyce Rocks



TIE TO C2.02 (SHEET 3 of 3)

TIE TO C2.00 (SHEET 1 of 3)

LEGEND

- 183 --- EXISTING CONTOUR ELEVATION
- PRE-DEVELOPMENT DRAINAGE AREAS
- EXISTING ZONE A LIMITS PER FEMA MAPS
- TIME OF CONCENTRATION
- DRAINAGE PATTERN

Project phase: STATE CERTIFICATION		Project: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Designed: CSV/CAP	Drawn: JVR	Sheet title: PRE-DEVELOPMENT DRAINAGE AREAS SHEET 2 of 3	
Project No: 09-194	Date: NOV. 13, 2009	Professional Engineer of Record:	
Professional Engineer of Record:		Professional Engineer of Record:	
Claudia S. Vega, P.E. Engineer		51332 Certificate No.	
Sheet No.:		C2.01	
		No. Date Comment	

WETLAND AREA F

WETLAND AREA G

PRE-20

LEASE LINE LIMITS

PUMP STATION

ELECTRIC VAULT

LEASE LINE LIMITS

ZONE A PER FEMA MAPS

LAYDOWN AREA PRE-1

LAYDOWN AREA PRE-2

LAYDOWN AREA PRE-3

Project phase:

STATE CERTIFICATION

Designed: CSV/CAP

Drawn: JVR

Project No: 08-194

Date: NOV. 13, 2009

Professional Engineer of Record:

Claudia S. Vega P.E.

Engineer

51532

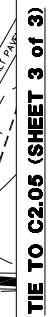
Certificate No.

C2.02



PRE-DEVELOPMENT DRAINAGE AREAS
SHEET 3 of 3

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LEGEND	
	EXISTING CONTOUR ELEVATION
	POST-DEVELOPMENT DRAINAGE AREAS
	EXISTING ZONE A LIMITS PER FEMA MAPS
	TIME OF CONCENTRATION
	DRAINAGE PATTERN



EDA

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS

FL 7349
2404 N.W. 43RD ST. GAINESVILLE, FLORIDA 32609-4602
TEL. (352) 373-3541 FAX. (352) 373-7249
E-MAIL: eda@edainc.net

POST-DEVELOPMENT DRAINAGE AREAS
SHEET 2 of 3

C2.04

POST-100

LEASE LINE LIMITS

POST-200

PUMP STATION

ELECTRIC VALVE

LAYDOWN AREA POST-1

LAYDOWN AREA POST-2

ZONE A PER FEMA MAPS

LAYDOWN AREA POST-3

21' ASPHALT PAVEMENT

21.5' ASPHALT PAVEMENT

23' ASPHALT PAVEMENT

CENTERLINE RAILROAD SPUR LINES

Project phase:		STATE CERTIFICATION		Project:		GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Designed: CSV/CAP		Drawn: JWR		Sheet title:		POST-DEVELOPMENT DRAINAGE AREAS SHEET 3 of 3	
Project No: 09-194		Date: NOV. 13, 2009		Professional Engineer of Record:			
				Claudia S. Vega P.E. Engineer		515332 Certificate No.	
Sheet No.:		C2.05		No.		Date	
						Comment	

Attachment C

Drainage Calculations



DRAINAGE CALCULATIONS

Pre-development Drainage Areas

Time of concentration was calculated using TR-55 and the summary is included in Attachment F

Pre-development - Area 10					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	458,959	10.536	0.35	55.0	
Open -Soil 17 (B)	271,807	6.240	0.35	55.0	
Open -Soil 28 (C)	447,035	10.263	0.50	70.0	
Existing Impervious	78,294	1.797	0.90	98.0	
Wetlands	13,347	0.306	1.00	100.0	
Totals	1,269,442	29.142	0.44	63.4	60

Pre-development - Area 11					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 28 (C)	114,396	2.626	0.50	70.0	
Existing Impervious	16,326	0.375	0.90	98.0	
Wetland	18,924	0.434	1.00	100.0	
Totals	149,646	3.435	0.61	76.8	16

Pre-development - Area 12					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 28 (C)	409,387	9.398	0.50	70.0	
Existing Impervious	32,800	0.753	0.90	98.0	
Wetland WET-A1	273,364	6.276	1.00	100.0	
Totals	715,551	16.427	0.71	82.7	40

Pre-development - Area 13					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	69,408	1.593	0.35	55.0	
Ditch	18,347	0.421	1.00	100.0	
Totals	87,755	2.015	0.49	64.4	23

<i>Pre-development - Area 14</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	257,721	5.916	0.35	55.0	
Open -Soil 28 (C)	399,528	9.172	0.50	70.0	
Existing Impervious	35,709	0.820	0.90	98.0	
Wetland WET-A2	169,627	3.894	1.00	100.0	
Totals	862,585	19.802	0.57	72.6	49

<i>Pre-development - Area 15</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	138,888	3.188	0.35	55.0	
Ditch	9,165	0.210	1.00	100.0	
Totals	148,053	3.399	0.39	57.8	31

<i>Pre-development - Area 20</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	396,218	9.096	0.35	55.0	
Open -Soil 17 (B)	210,083	4.823	0.35	55.0	
Ditch	23,949	0.550	1.00	100.0	
Totals	630,250	14.469	0.37	56.7	55

<i>Pre-development - Area 21</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	355,404	8.159	0.35	55.0	
Existing Impervious	7,068	0.162	0.90	98.0	
Wetland-WET-B	134,159	3.080	1.00	100.0	
Totals	496,631	11.401	0.53	67.8	31

<i>Pre-development - Area 30</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	286,197	6.570	0.35	55.0	
Existing Impervious	13,545	0.311	0.90	98.0	
Ditch	17,716	0.407	1.00	100.0	
Totals	317,458	7.288	0.41	59.3	42

<i>Pre-development - Area 31</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	673,735	15.467	0.35	55.0	
Existing Impervious	12,456	0.286	0.90	98.0	
Wetlands - WET-D	67,306	1.545	1.00	100.0	
Totals	753,497	17.298	0.42	59.7	40

<i>Pre-development - Area 32</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	288,497	6.623	0.35	55.0	
Existing Impervious	12,252	0.281	0.90	98.0	
Wetlands - WET-C	99,786	2.291	1.00	100.0	
Totals	400,535	9.195	0.53	67.5	18

Post-development Drainage Areas

<i>Total Post-development Areas</i>		
Description	Area (sf)	Area (Acres)
Total Impervious	1,559,607	35.804
Open Areas	3,535,119	81.155
Stormwater Systems	821,510	18.859
Totals	5,916,236	135.818

Time of concentration was calculated using TR-55 and the summary is included in Attachment E

<i>Post-development Area 100</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	121,938	2.799	0.35	55.0	
Proposed Impervious	351,414	8.067	0.90	98.0	
Basin 100	196,436	4.510	1.00	100.0	
Totals	669,788	15.376	0.83	90.8	20

<i>Post-development - Area 101</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	48,427	1.112	0.35	55.0	
Open -Soil 28 (C)	65,032	1.493	0.50	70.0	
Proposed Impervious	419,191	9.623	0.90	98.0	
Basin 101	199,853	4.588	1.00	100.0	
Totals	732,503	16.816	0.83	89.6	18

<i>Post-development - Area 102</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	54,062	1.241	0.35	55.0	
Open -Soil 28 (C)	98,629	2.264	0.50	70.0	
Proposed Impervious	432,521	9.929	0.90	98.0	
Basin 102	230,026	5.281	1.00	100.0	
Totals	815,238	18.715	0.84	92.3	18

<i>Post-development - Area 103</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 28 (C)	33,832	0.777	0.50	70.0	
Open -Soil 14 (B)	20,746	0.476	0.35	55.0	
Impervious (stabilized)	12,684	0.291	0.90	98.0	
Ditch	17,315	0.397	1.00	100.0	
Totals	84,577	1.942	0.63	76.7	23

<i>Post-development - Area 104</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	69,408	1.593	0.35	55.0	
Ditch	18,347	0.421	1.00	100.0	
Totals	87,755	2.015	0.49	64.4	23

<i>Post-development - Area 105</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 28 (C)	204,609	4.697	0.50	70.0	
Existing Impervious	32,800	0.753	0.90	98.0	
Wetlands - WET-A1	273,364	6.276	1.00	100.0	
Totals	510,773	11.726	0.79	87.9	36

<i>Post-development - Area 106</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	128,860	2.958	0.35	55.0	
Open -Soil 28 (C)	252,107	5.788	0.50	70.0	
Existing Impervious	35,709	0.820	0.90	98.0	
Wetlands - WET-A2	169,627	3.894	1.00	100.0	
Totals	586,303	13.460	0.64	77.1	41

<i>Post-development - Area 108</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	78,076	1.792	0.35	55.0	
Proposed Impervious	19,376	0.445	0.90	98.0	
Swale	7,750	0.178	1.00	100.0	
Totals	105,202	2.415	0.50	66.2	34

<i>Pre-development - Area 110</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	33,375	0.766	0.35	55.0	
Ditch	9,165	0.210	1.00	100.0	
Totals	42,540	0.977	0.49	64.7	28

<i>Post-development - Area 200</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	138,283	3.175	0.35	55.0	
Open -Soil 14 (B)	81,116	1.862	0.35	55.0	
Ditch	23,949	0.550	1.00	100.0	
Totals	243,348	5.587	0.41	59.4	10

<i>Post-development - Area 201</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	380,412	8.733	0.35	55.0	
Impervious	7,068	0.162	0.90	98.0	
Wetland WET-B	134,159	3.080	1.00	100.0	
Totals	521,639	11.975	0.52	67.2	31

<i>Post-development - Area 202 - Scale House</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14(B)	11,629	0.267	0.35	55.0	
Impervious	21,342	0.490	0.90	98.0	
Basin 202	12,073	0.277	1.00	100.0	
Totals	45,044	1.034	0.78	87.4	13

<i>Post-development - Area 300 - Craft Parking</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17 (B)	69,233	1.589	0.35	55.0	
Impervious	95,654	2.196	0.70	85.0	
Basin 300	37,544	0.862	1.00	100.0	
Totals	202,431	4.647	0.64	77.5	38

<i>Post-development - Area 301</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	139,375	3.200	0.35	55.0	
Impervious	15,360	0.353	0.90	98.0	
Swale	11,520	0.264	1.00	100.0	
Totals	166,255	3.817	0.45	62.1	48

<i>Post-development - Area 302</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	166,142	3.814	0.35	55.0	
Impervious	13,920	0.320	0.90	98.0	
Swale	11,100	0.255	1.00	100.0	
Totals	191,162	4.388	0.43	60.7	43

<i>Post-development - Area 305</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14(B)	75,364	1.730	0.35	55.0	
Existing Impervious	2,400	0.055	0.70	85.0	
Ditch	9,215	0.212	1.00	100.0	
Totals	86,979	1.997	0.43	60.6	29

<i>Post-development - Area 308</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14(B)	6,748	0.155	0.35	55.0	
Impervious	19,320	0.444	0.70	85.0	
Swale	7,728	0.177	1.00	100.0	
Totals	33,796	0.776	0.70	82.4	10

<i>Post-development - Area 310 - Switch Yard</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14 (B)	9,646	0.221	0.35	55.0	
Stabilized area	31,500	0.723	0.70	85.0	
Basin 310	16,849	0.387	1.00	100.0	
Totals	57,995	1.331	0.73	84.4	14

<i>Post-development - Area 311</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	232,030	5.327	0.35	55.0	
Existing Impervious	12,456	0.286	0.70	85.0	
Wetland D	67,306	1.545	1.00	100.0	
Totals	311,792	7.158	0.50	65.9	40

<i>Post-development - Area 312</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 17(B)	10,217	0.235	0.35	55.0	
Impervious	8,480	0.195	0.90	98.0	
Swale	3,872	0.089	1.00	100.0	
Totals	22,569	0.518	0.67	78.9	10

<i>Post-development - Area 314</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14(B)	7,662	0.176	0.35	55.0	
Impervious	21,920	0.503	0.90	98.0	
Swale	8,768	0.201	1.00	100.0	
Totals	38,350	0.880	0.81	89.9	10

<i>Post-development - Area 319</i>					
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN	Tc (min)
Open -Soil 14(B)	253,919	5.829	0.35	55.0	
Impervious	6,492	0.149	0.90	98.0	
Wetland C	99,786	2.291	1.00	100.0	
Totals	360,197	8.269	0.54	68.2	42

<i>Post-development - Laydown area 1</i>				
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN
Open -Soil 14(B)	65,271	1.498	0.35	55.0
Open -Soil 16(D)	63,786	1.464	0.50	70.0
Existing roadway	9,000	0.207	1.00	100.0
Totals	138,057	3.169	0.46	64.9

<i>Post-development - Laydown area 2</i>				
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN
Open -Soil 14(B)	177,844	4.083	0.35	55.0
Open -Soil 16(D)	24,809	0.570	0.50	70.0
Existing roadway	6,600	0.152	1.00	100.0
Totals	209,253	4.804	0.39	58.2

<i>Post-development - Laydown area 3</i>				
Description	Area (sf)	Area (Acres)	Runoff (C)	Curve CN
Open -Soil 14(B)	4,922	0.113	0.35	55.0
Open -Soil 16(D)	58,538	1.344	0.50	70.0
Existing roadway	4,200	0.096	1.00	100.0
Totals	67,660	1.553	0.52	70.8

Discharge Data

Description	Exis. Pipe & weir 10	Existing weir 13	Existing weir 12	Existing weir 14	Existing Ditch 20
Pipe (in)	15				24
Pipe Elevation (msl)	176.32				179.58
Pipe Downstream El (msl)	176.22				179.07
Pipe length (ft)	35.00				31.00
Weir length (ft)	84.00	324.00	30.00	315.00	29.00
Weir elevation (msl)	178.34	177.52	176.65	176.25	182.00
Weir rise (ft)	0.66	0.50	0.50	0.50	0.28

Description	Existing weir Wet-B	Existing Ditch 30	Existing Weir 31	Existing Weir 32
Pipe (in)		12	12	12
Pipe Upstream El (msl)		174.60	173.12	173.19
Pipe Downstream El (msl)		174.60	173.11	172.75
Pipe length (ft)		29.00	42.00	25.00
Weir length (ft)	115.00	160.00	99.00	93.00
Weir elevation (msl)	179.26	177.41	174.70	175.00
Weir rise (ft)	0.40	0.59	0.30	0.40

Description	Prop. Weir & orifice 100	Prop. Weir & orifice 101	Prop. Weir & orifice 102	Existing weir 104	Existing weir 105
Orifice (in)	3.50	3.50	3.75		
number of orifices	3	3	3		
Orifice Elevation (msl)	180.75	180.25	178.00		
Weir length (ft)	1.17	2.50	3.00	324.00	30.00
Weir elevation (msl)	182.25	181.58	179.58	177.52	176.65
Weir rise (ft)	1.00	1.17	1.17	0.50	0.50

Description	Existing weir 106	Proposed weir 108	Existing weir 200	Existing weir WET-B	Proposed weir 202
Pipe (in)			24		
Pipe Elevation (msl)			179.58		
Pipe Downstream El (msl)			179.07		
Pipe length (ft)			31.00		
Weir length (ft)	315.00	1.00	29.00	115.00	1.50
Weir elevation (msl)	176.25	179.50	182.00	179.23	181.50
Weir rise (ft)	0.50	1.00	0.25	0.40	0.50

Description	Proposed Weir 300	Proposed Weir 301	Proposed Weir 302	Existing Ditch 305	Proposed Weir 308
Pipe (in)				12	
Pipe Upstream El (msl)				174.60	
Pipe Downstream El (msl)				174.60	
Pipe length (ft)				29.00	
Weir length (ft)	2.50	5.00	5.00	149.00	5.00
Weir elevation (msl)	181.95	179.46	179.62	177.41	179.36
Weir rise (ft)	0.75	1.00	1.00	0.59	1.00

Description	Existing Weir 310	Existing Weir 311	Existing Weir 312	Existing Weir 314	Existing Weir 319
Pipe (in)		12			12
Pipe Upstream El (msl)		173.12			173.19
Pipe Downstream El (msl)		173.11			172.75
Pipe length (ft)		42.00			25.00
Weir length (ft)	1.00	99.00	5.00	5.00	93.00
Weir elevation (msl)	177.60	174.70	180.16	179.55	175.00
Weir rise (ft)	0.40	0.30	1.00	1.00	0.40

Basin Storage Data

<i>Existing Ditch 10</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
176.32	50	0.00	0.00
177.00	150	0.00	0.00
178.00	5,555	0.13	0.07
179.00	30,422	0.70	0.48

<i>Existing Ditch 13</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
177.00	1,517	0.035	-
177.52	9,467	0.217	0.066
178.00	16,809	0.386	0.210

<i>Existing Ditch 15</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	545	0.013	-
176.00	4,565	0.105	0.059
177.00	9,165	0.210	0.216

<i>Existing Wetland WET-A1 (Area 12)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	11,441	0.263	-
176.00	53,230	1.222	0.742
176.75	131,215	3.012	2.330
177.00	216,777	4.977	3.329
177.40	277,056	6.360	5.596

<i>Existing Wetland WET-A2 (Area 14)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	7,383	0.169	-
176.00	101,600	2.332	1.251
176.75	252,765	5.803	4.302

<i>Existing Wetland WET-B</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
178.00	35,955	0.825	-
179.00	134,159	3.080	1.953
179.63	217,196	4.986	4.493

<i>Existing Ditch 20</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
180.00	4,532	0.104	-
181.00	13,450	0.309	0.206
182.00	23,949	0.550	0.636
182.25	25,855	0.594	0.779

<i>Existing Ditch 30</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	584	0.013	-
176.00	4,632	0.106	0.060
177.00	9,215	0.212	0.219
177.41	11,415	0.262	0.316

<i>Existing Wetland WET-C</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
173.50	32,118	0.737	-
174.00	49,810	1.143	0.470
175.00	99,786	2.291	2.187

<i>Existing Wetland WET-D</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
173.00	5,758	0.132	-
174.00	23,537	0.540	0.336
175.00	67,306	1.545	1.379

Volume V1 is the volume available for the permanent pool and Volume V2 is the storage volume available to route the storm.

<i>Proposed Wet Detention Basin 100</i>				
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft	Vol. V2 Ac-ft
178.00	161,282	3.703	-	
179.25	169,495	3.891	4.746	
179.50	171,137	3.929	5.723	
179.75	172,780	3.966	6.710	
180.00	174,422	4.004	7.707	
180.50	177,707	4.080	9.728	
180.75	179,350	4.117	10.752	0.000
181.00	181,059	4.157	11.787	1.034
181.37	183,555	4.214	13.315	2.563
182.00	187,893	4.313	16.021	5.269
182.50	191,310	4.392	18.198	7.446
183.00	194,727	4.470	20.413	9.661
183.25	196,436	4.510	21.536	10.784

<i>Proposed Wet Detention Basin 101</i>				
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft	Vol. V2 Ac-ft
177.50	163,060	3.743	-	
177.75	164,710	3.781	0.941	
178.00	166,359	3.819	1.891	
178.50	169,658	3.895	3.819	
179.00	172,957	3.971	5.785	
179.50	176,256	4.046	7.790	
180.25	181,205	4.160	10.867	0.000
180.50	183,070	4.203	11.912	1.045
180.91	186,164	4.274	13.670	2.803
181.00	186,799	4.288	14.035	3.168
181.25	188,664	4.331	15.112	4.246
181.50	190,529	4.374	16.201	5.334
182.00	194,259	4.460	18.409	7.542
182.75	199,853	4.588	21.802	10.935

<i>Proposed Wet Detention Basin 102</i>				
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft	Vol. V2 Ac-ft
175.50	178,152	4.090	-	
176.00	184,366	4.232	2.081	
177.00	196,793	4.518	6.456	
177.75	206,113	4.732	9.924	
178.00	209,220	4.803	11.116	0.000
178.67	213,889	4.910	14.386	3.270
179.00	216,155	4.962	15.999	4.883
179.50	219,623	5.042	18.500	7.384
179.75	221,357	5.082	19.765	8.649
180.00	223,091	5.121	21.041	9.924
180.25	224,825	5.161	22.326	11.210
181.00	230,026	5.281	26.242	15.126

<i>Existing Ditch 103</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
176.32	50	0.001	-
177.00	150	0.003	0.002
178.00	5,555	0.128	0.067
179.00	30,422	0.698	0.480

<i>Existing Ditch 104</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
177.00	1,517	0.035	-
177.52	9,467	0.217	0.066
178.00	16,809	0.386	0.210

<i>Existing Wetland WET-A1 (Area 105)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	11,441	0.263	-
176.00	53,230	1.222	0.742
176.75	131,215	3.012	2.330
177.00	216,777	4.977	3.329
177.40	277,056	6.360	5.596

<i>Existing Wetland WET-A2 (Area 106)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	7,383	0.169	-
176.00	101,600	2.332	1.251
176.75	252,765	5.803	4.302

<i>Proposed Road Swale 108</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
177.36	968	0.022	-
178.00	5,308	0.122	0.046
178.36	7,750	0.178	0.100
179.00	12,090	0.278	0.246
179.36	14,532	0.334	0.356

<i>Existing Ditch 200</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
180.00	4,532	0.104	-
181.00	13,450	0.309	0.206
182.00	23,949	0.550	0.636
182.25	25,855	0.594	0.779

<i>Existing Wetland WET-B (Area 201)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
178.00	35,955	0.825	-
179.00	134,159	3.080	1.953
179.63	217,196	4.986	4.493

<i>Proposed Dry Retention Basin 202- Scale House</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
180.00	6,309	0.145	-
180.50	7,750	0.178	0.081
181.00	9,191	0.211	0.178
181.50	10,632	0.244	0.292
182.00	12,073	0.277	0.422

<i>Proposed Dry Retention Basin 300 Craft Parking</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
180.50	30,080	0.691	-
181.00	31,946	0.733	0.356
181.50	33,812	0.776	0.733
182.00	35,678	0.819	1.132
182.50	37,544	0.862	1.552

<i>Proposed Road Swale 301</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
178.46	768	0.018	-
179.00	3,671	0.084	0.028
179.46	6,144	0.141	0.079
180.00	9,047	0.208	0.173
180.46	11,520	0.264	0.282

<i>Proposed Road Swale 302</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
178.62	740	0.017	-
179.00	2,708	0.062	0.015
179.62	5,920	0.136	0.076
180.00	7,888	0.181	0.137
180.62	11,100	0.255	0.272

<i>Existing Ditch 305</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
175.00	584	0.013	-
176.00	4,632	0.106	0.060
177.00	9,215	0.212	0.219
177.41	11,415	0.262	0.316

<i>Proposed Road Swale 308</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
178.36	966	0.022	-
179.00	5,294	0.122	0.046
179.36	7,728	0.177	0.100
180.00	12,056	0.277	0.245
180.36	14,490	0.333	0.355

<i>Proposed Dry Retention Basin 310- Switch Yard</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
176.50	13,174	0.302	-
176.75	13,787	0.316	0.077
177.00	14,399	0.331	0.158
177.50	15,624	0.359	0.331
178.00	16,849	0.387	0.517

<i>Existing Wetland WET-D (Area 311)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
173.00	5,758	0.132	-
174.00	23,537	0.540	0.336
175.00	67,306	1.545	1.379

<i>Proposed Road Swale 312</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
179.16	484	0.011	-
180.00	3,330	0.076	0.037
180.16	3,872	0.089	0.050
181.00	6,718	0.154	0.152
181.16	7,260	0.167	0.178

<i>Proposed Road Swale 314</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
178.55	1,096	0.025	-
179.00	4,548	0.104	0.029
179.55	8,768	0.201	0.113
180.00	12,220	0.281	0.222
180.55	16,440	0.377	0.403

<i>Existing Wetland WET-C (Area 319)</i>			
Stage (msl)	Area sf	Area Ac	Vol. V2 Ac-ft
173.50	32,118	0.737	-
174.00	49,810	1.143	0.470
175.00	99,786	2.291	2.187
175.45	120,528	2.767	3.325

<i>Proposed Basin Laydown Area 1</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
179.50	6,132	0.141	-
179.75	7,239	0.166	0.038
180.00	8,346	0.192	0.083
180.50	10,561	0.242	0.192
181.00	12,775	0.293	0.326

<i>Proposed Basin Laydown Area 2</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
180.00	8,960	0.206	-
180.75	11,760	0.270	0.178
181.00	12,693	0.291	0.249
181.25	13,627	0.313	0.324
181.50	14,560	0.334	0.405

<i>Proposed Basin Laydown Area 3</i>			
Stage (msl)	Area sf	Area Ac	Vol. V1 Ac-ft
180.00	4,160	0.096	-
180.75	4,680	0.107	0.076
181.00	4,853	0.111	0.103
181.25	5,027	0.115	0.132
181.50	5,200	0.119	0.161

Soil Borings Information

Description	Basin 100	Basin 101	Basin 102	Basin 202	Lay-down 1
Soil Borings	38 - 43	34 -37	28 - 33	10,11	
Average ground elevation	182.25	181.25	179.00	179.00	179.50
High season Water table (ft)	1.5	1	1	1	1
High season Water elevation	180.75	180.25	178.00	178.00	178.50
Depth to confined layer	11	9	10	7	8
Confined layer Elev.	171.25	172.25	169.00	172.00	171.50
Fillable Porosity (%)	25	25	25	25	25
Vertical Infiltration (ft/d)	15	15	11	11	11
Horizontal hyd. Con (ft/d)	20	20	15	15	15
Safety factor	2	2	2	2	2
Vertical Infiltration (ft/d)	7.5	7.5	5.5	5.5	5.5
Horizontal hyd. Con (ft/d)	10	10	7.5	7.5	7.5

Description	Basin 300	Basin310	Swale 108	Swale 302	Lay-down 2
Soil Borings	6, 44, 45	1,2, 3, 4	9,10	8	
Average ground elevation	179.75	176.00	178.30	179.00	180.00
High season Water table (ft)	1	1	1.5	2	1
High season Water elevation	178.75	175.00	176.80	177.00	179.00
Depth to confined layer	8	2.5	10	9	8
Confined layer Elev.	171.75	173.50	168.30	170.00	172.00
Fillable Porosity (%)	25	25	25	25	25
Vertical Infiltration (ft/d)	13	11	11	11	11
Horizontal hyd. Con (ft/d)	17	22	15	15	15
Safety factor	2	2	2	2	2
Vertical Infiltration (ft/d)	6.5	5.5	5.5	5.5	5.5
Horizontal hyd. Con (ft/d)	8.5	11	7.5	7.5	7.5

Description	Swale 301	Swale 308	Swale 312	Swale 314	Lay-down 3
Soil Borings	7	5,6	4	2,3	
Average ground elevation	179.25	179.00	179.50	178.75	180.00
High season Water table (ft)	1.5	1	1	1	1
High season Water elevation	177.75	178.00	178.50	177.75	179.00
Depth to confined layer	9	8	10	2.75	8
Confined layer Elev.	170.25	171.00	169.50	176.00	172.00
Fillable Porosity (%)	25	25	25	25	25
Vertical Infiltration (ft/d)	11	11	11	11	11
Horizontal hyd. Con (ft/d)	15	15	15	15	15
Safety factor	2	2	2	2	2
Vertical Infiltration (ft/d)	5.5	5.5	5.5	5.5	5.5
Horizontal hyd. Con (ft/d)	7.5	7.5	7.5	7.5	7.5

Basin Geometry

Description	Basin 100	Basin 101	Basin 102	Basin 202
Basin side slope ratio	4:1	4:1	4:1	4:1
Fence Required	no	no	no	no
Max. Unsaturated Area (sf)	N/A	N/A	N/A	9,191
Equivalent pond length (ft)	N/A	N/A	N/A	219
Equivalent pond width (ft)	N/A	N/A	N/A	42
Width of Maint. Path	5	5	5	5

Description	Basin 300	Basin310	Swale 108	Swale 302
Basin side slope ratio	4:1	4:1	4:1	4:1
Fence Required	no	no	no	no
Max. Unsaturated Area (sf)	33,812	15,012	7750	5920
Equivalent pond length (ft)	520	275	482	370
Equivalent pond width (ft)	65	55	16	16
Width of Maint. Path	5	5	N/A	N/A

Description	Swale 301	Swale 308	Swale 312	Swale 314
Basin side slope ratio	4:1	4:1	4:1	4:1
Fence Required	no	no	no	no
Max. Unsaturated Area (sf)	6,144	7,728	3872	8768
Equivalent pond length (ft)	384	483	242	548
Equivalent pond width (ft)	16	16	16	16
Width of Maint. Path	N/A	N/A	N/A	N/A

Water Quality

Wet Detention Basins: Volume V1 = 2.00 inches over the total area, or
 Volume V2 = 2.50 inches over the impervious area

Basin	V1 (Ac-ft)	V2 (Ac-ft)	Treatm. Vol. (ac-ft)	Stage (ft)	Treatm. Vol. (cf)
Basin 100	2.563	1.681	2.563	181.37	111,631
Basin 101	2.803	2.005	2.803	180.91	122,084
Basin 102	3.119	2.069	3.119	178.67	135,873

Dry Retention Basins: Volume V1 = 2.00 inches over the total area, or
 Volume V2 = 2.50 inches over the impervious area

Basin	V1 (Ac-ft)	V2 (Ac-ft)	Treatm. Vol. (ac-ft)	Stage (ft)	Treatm. Vol. (cf)
Basin 202	0.172	0.102	0.172	181.00	7,507
Basin 300	0.775	0.457	0.775	182.00	33,739
Basin 310	0.222	0.151	0.222	182.50	9,666

Swales: Intensity for 3yr- 1 hr storm - I (inches) 2.6
 Peak flow for water quality - $Q_p = C_{post} * I * A$
 Volume of Runoff - $V_r = Q_p * \text{Duration of storm}$

Swale	Drainage Area (sf)	Drainage Area (ac)	Peak Flow Qp (cfs)	Volume runoff Vr (cf)	Treatm. Vol. (cf)
Swale 108	105,202	2.415	3.135	11,284	9,027
Swale 302	191,162	4.388	4.881	17,572	14058
Swale 301	166,255	3.817	4.424	15,928	12742
Swale 308	33,796	0.776	1.409	5,074	4059
Swale 312	22,569	0.518	0.900	3,240	2592
Swale 314	38,350	0.880	1.861	6,699	5359
Laydown 1	138,057	3.169	3.804	13,696	10957
Laydown 2	209,253	4.804	4.850	17,459	13967
Laydown 3	67,660	1.553	2.101	7,562	6049

Wet Detention Basins

Orifice Design

Description	Basin1	Basin 2	Basin 3
Orifice Elevation (msl)	180.75	180.25	178.00
Treatment volume (Ac-ft)	2.56	2.80	3.12
Stage of treatment volume (msl)	181.37	180.91	178.67
One-half of treat. volume (Ac-ft)	1.28	1.40	1.56
Stage half of volume (msl)	181.06	180.58	178.34
Number of orifices	3	3	3
Diameter of the orifice (in)	3.50	3.50	3.75
Flow line elevation (msl)	180.90	180.40	178.16
h1 (ft)	0.47	0.52	0.52
h2 (ft)	0.16	0.19	0.18
Average depth (ft)	0.32	0.35	0.35
Area of the orifice (sf)	0.07	0.07	0.08
Orifice Coefficient	0.60	0.60	0.60
Flow rate (cfs)	0.54	0.57	0.65
Recovery time (hours)	28.60	29.58	28.85

Permanent Pool Volume

Description	Basin1	Basin 2	Basin 3
Total drainage area -DA (acres)	15.376	16.816	18.715
Runoff Coefficient - C	0.83	0.83	0.84
Wet season Rainfall depth - R (in)	30.00	30.00	30.00
Residence time - RT (days)	21.00	21.00	21.00
Length of wet season -WS (days)	153.00	153.00	153.00
Volume of permanent pool (Ac-ft)	4.37	4.80	5.42
Proposed volume of pool (ac-ft)	10.75	10.87	11.12
	OK	OK	OK

Mean depth of Basin

Description	Basin1	Basin 2	Basin 3
Volume of permanent pool (Ac-ft)	10.752	10.867	11.116
Pond area at orifice elevation (Ac)	4.117	4.160	4.803
Mean depth of pond (ft)	2.61	2.61	2.31
Mean depth between 2 ft to 8 ft	OK	OK	OK

Routing Results

Discharge Results						
Storm Event	Pre-devel WET-A2 (cfs)	Post-dev WET-A2 (cfs)	Pre-devel WET-C (cfs)	Post-dev WET-C (cfs)	Pre-devel WET-D (cfs)	Post-dev WET-D (cfs)
100yr-1hr	28.56	9.12	3.57	3.46	8.10	3.38
100yr-2hr	42.80	17.78	4.22	3.84	13.20	6.05
100yr-4hr	69.36	34.06	5.10	4.81	21.35	14.82
100yr-8hr	80.46	41.03	5.31	5.10	22.39	17.39
100yr-24hr	61.88	33.99	4.82	4.78	14.27	11.64
100yr-3d	58.41	41.66	4.49	4.41	13.89	13.82
100yr-7d	43.90	35.46	3.37	3.30	10.34	10.36
100yr-10d	57.35	43.73	3.98	3.91	13.45	13.60

Stage Results				
Storm Event	Pre-devel Wet-A1	Post-dev Wet A1	Pre-devel Wet-A2	Post-dev Wet A2
100yr-1hr	177.22	176.95	176.46	176.37
100yr-2hr	177.33	177.04	176.51	176.42
100yr-4hr	177.50	177.15	176.57	176.47
100yr-8hr	177.54	177.18	176.60	176.50
100yr-24hr	177.38	177.19	176.56	176.48
100yr-3d	177.34	177.23	176.55	176.50
100yr-7d	177.25	177.22	176.51	176.48
100yr-10d	177.34	177.27	176.55	176.51

Stage Results						
Storm Event	Existing Ditch 10	Existing Ditch 13	Proposed Ditch 104	Proposed Basin 100	Proposed Basin 101	Proposed Basin 102
100yr-1hr	178.63	177.58	177.58	181.74	181.30	179.12
100yr-2hr	178.65	177.58	177.58	181.94	181.51	179.32
100yr-4hr	178.71	177.59	177.59	182.28	181.86	179.72
100yr-8hr	178.73	177.59	177.59	182.58	182.11	180.08
100yr-24hr	178.56	177.56	177.56	182.87	182.31	180.45
100yr-3d	178.59	177.56	177.56	183.23	182.62	180.84
100yr-7d	178.53	177.56	177.56	183.17	182.56	180.75
100yr-10d	178.58	177.56	177.56	183.10	182.61	180.87

Stage Results					
Storm Event	Existing Ditch 20	Proposed Ditch 200	Basin 200	Existing WET-B	Proposed WET-B
100yr-1hr	180.82	180.51	181.36	179.11	178.92
100yr-2hr	180.93	180.69	181.39	179.31	179.14
100yr-4hr	181.29	180.88	181.59	179.46	179.38
100yr-8hr	181.36	180.97	181.63	179.49	179.42
100yr-24hr	180.77	180.38	181.65	179.49	179.42
100yr-3d	181.00	180.42	181.75	179.49.3	179.43
100yr-7d	180.79	180.29	181.71	179.46	179.40
100yr-10d	180.99	180.41	181.75	179.49	179.43

Stage Results					
Storm Event	Existing Ditch 30	Proposed Basin 300	Proposed Ditch301	Proposed Ditch 302	Proposed Ditch 305
100yr-1hr	176.45	181.08	179.95	179.91	176.01
100yr-2hr	176.53	181.32	180.01	179.93	176.15
100yr-4hr	177.09	181.80	180.09	180.02	176.60
100yr-8hr	177.21	182.14	180.15	180.03	176.69
100yr-24hr	176.42	182.32	180.02	179.93	176.09
100yr-3d	176.41	182.43	180.14	179.91	176.09
100yr-7d	176.08	182.35	179.97	179.86	175.85
100yr-10d	176.38	182.43	180.01	179.90	176.06

Stage Results				
Storm Event	Proposed Ditch 308	Proposed Basin 310	Existing WET-D	Proposed WET-D
100yr-1hr	179.47	177.15	174.82	174.61
100yr-2hr	179.45	177.19	174.88	174.79
100yr-4hr	179.52	177.53	174.95	174.90
100yr-8hr	179.53	177.68	174.96	174.92
100yr-24hr	179.62	177.90	174.89	174.87
100yr-3d	179.69	177.89	174.89	174.89
100yr-7d	179.64	177.82	174.85	174.85
100yr-10d	179.70	177.89	174.89	174.89

Stage Results				
Storm Event	Proposed Ditch 312	Proposed Basin 314	Existing WET-C	Proposed WET-C
100yr-1hr	180.27	179.76	174.22	174.19
100yr-2hr	180.26	179.73	174.39	174.29
100yr-4hr	180.29	179.75	174.66	174.56
100yr-8hr	180.31	179.78	174.73	174.66
100yr-24hr	180.25	179.69	174.57	174.55
100yr-3d	180.23	179.66	174.47	174.44
100yr-7d	180.22	179.64	174.58	174.55
100yr-10d	180.23	179.65	174.87	174.84

Attachment D

CD – Routing Data

ICPR3.1 and Ponds 3.2

(Copies of the ICPR3.1 and Ponds 3.2 model input and output files are provided only in electronic format on the compact disc provided in the front of Volume 1 of this SCA.)



Attachment E

Time of Concentration and
Pipe Size Calculations



Time of Concentration - Pre-development

Area	Overland (ft)	Slope (ft/ft)	Shallow Conce (ft)	Slope (ft/ft)	Shallow Conce (ft)	Slope (ft/ft)	Ditch (ft)	Slope (ft/ft)	Tc (hr)	Tc (min)
10	100	0.004	906	0.0022	0		616	0.006	0.994	60
11	15	0.0080	100	0.0100	0		1,670	0.0024	0.267	16
12	100	0.0045	452	0.0012	404	0.0099	0		0.659	40
13	12	0.0250	1,389	0.0043	0		0		0.375	23
14	100	0.0039	459	0.0041	413	0.0097	0		0.814	49
15	100	0.0110	185	0.0054	310	0.0032			0.520	31
20	100	0.0045	676	0.0015	317	0.0060			0.918	55
21	100	0.0080	457	0.0088	0				0.519	31
30	100	0.0080	863	0.0046	174	0.0057			0.694	42
31	100	0.0070	364	0.0025	603	0.0100			0.664	40
32	100	0.0085			207	0.0193	0		0.308	18

Time of Concentration - Post-development										
Area	Overland (ft)	Slope (ft/ft)	Shallow Conce (ft)	Slope (ft/ft)	Shallow Conce (ft)	Slope (ft/ft)	Ditch (ft)	Slope (ft/ft)	Tc (hr)	Tc (min)
100										20
101										18
102										18
103	12	0.0250	1,395	0.0028					0.375	23
104	12	0.0250	1,389	0.0043					0.375	23
105	100	0.0050	122	0.0164	105	0.0190			0.597	36
106	100	0.0080	480	0.0033	390	0.0041			0.684	41
107	100	0.0045	75	0.0073					0.563	34
108	14	0.0200	380	0.0040					0.160	10
109	14	0.0200	380	0.0040					0.160	10
110	100	0.0070	30	0.0050					0.466	28
200	20	0.0200	349	0.0022					0.160	10
201	100	0.0080	457	0.0088					0.519	31
202	45	0.0200	74	0.0100					0.210	13
300	100	0.005	281	0.0018	0				0.639	38
301	100	0.0028	389	0.0051	135	0.0037			0.795	48
302	100	0.0055	748	0.0037					0.718	43
303	14	0.0200	190	0.0036					0.161	10
304	14	0.0200	190	0.0036					0.161	10
305	100	0.0075	185	0.0054					0.490	29
306	12	0.0200	212	0.0040					0.160	10
307	12	0.0200	212	0.0040					0.160	10
308	12	0.0200	358	0.0036					0.160	10
309	12	0.0200	358	0.0036					0.160	10
310	100	0.0040	342	0.0029					0.231	14
311	100	0.0050	195	0.0087	136	0.0147			0.664	40
312	12	0.0200	232	0.0040					0.160	10
313	12	0.0200	232	0.0040					0.160	10
314	12	0.0200	280	0.0040					0.160	10
315	12	0.0200	280	0.0040					0.160	10
316	12	0.0200	100	0.0040					0.160	10
317	12	0.0200	100	0.0040					0.160	10
319	100	0.0029	105	0.0057	214	0.0187			0.704	42

PIPE SIZE CALCULATIONS

3 YR, 10 MIN DESIGN EVENT

Gainesville Renewable Energy Center

Location		Drainage Area		Runoff Coeffi. C	Time of Concen. min.	Intensity I in/hr.	Runoff Q des. CFS	n	Required Pipe Size				Proposed Pipe Size			
									Slope %	Pipe (in)	Q CFS	V ft/sec	Slope %	Pipe (in)	Q CFS	V ft/sec
S-1A	S-1						1.47	0.012	0.30	15	3.84	3.13	0.30	15	3.84	3.13
S-2A	S-2						2.93	0.012	0.30	15	3.84	3.13	0.30	15	3.84	3.13
S-3	S-4						4.40	0.012	0.40	15	4.44	3.62	1.14	15	7.49	6.11
S-5A	S-5						3.21	0.012	0.30	15	3.84	3.13	0.30	15	3.84	3.13
S-6A	S-6						6.42	0.012	0.30	30	24.40	4.97	0.30	30	24.40	4.97
S-7	S-8						9.63	0.012	2.00	15	9.92	8.09	2.63	15	11.38	9.27
S-9A	S-9						13.31	0.012	0.30	30	24.40	4.97	0.30	30	24.40	4.97
S-10A	S-10						2.15	0.012	0.30	15	3.84	3.13	0.30	15	3.84	3.13
S-11	S-12						15.46	0.012	2.00	18	16.14	9.13	3.03	18	19.86	11.24
S-15	S-16						0.60	0.012	0.30	15	3.84	3.13	2.27	15	10.57	8.61

PIPE SIZE CALCULATIONS

3 YR, 10 MIN DESIGN EVENT

Gainesville Renewable Energy Center

Location		Drainage Area		Runoff Coeffi.	Time of Concen.	Intensity I	Runoff Q des.	n	Required Pipe Size				Proposed Pipe Size			
									Slope %	Pipe (in)	Q CFS	V ft/sec	Slope %	Pipe (in)	Q CFS	V ft/sec
From	To	No	Acres	C	min.	in/hr.	CFS									
S-17	S-18						2.68	0.012	0.30	15	3.84	3.13	2.17	15	10.34	8.42
S-19	S-20						1.21	0.012	0.30	15	3.84	3.13	3.12	15	12.39	10.10
S-27	S-28						6.29	0.012	0.35	18	6.75	3.82	0.50	18	8.07	4.57
S-29	S-30						1.72	0.012	0.30	15	3.84	3.13	0.50	15	4.96	4.04
S-31	S-32						0.92	0.012	0.30	15	3.84	3.13	0.50	15	4.96	4.04
S-33	S-34						3.13	0.012	0.30	15	3.84	3.13	0.50	15	4.96	4.04
S-35	S-36						3.55	0.012	0.30	18	6.25	3.54	0.50	18	8.07	4.57
S-37	S-38						4.22	0.012	0.30	18	6.25	3.54	0.50	18	8.07	4.57
S-39	S-40						1.58	0.012	0.30	18	6.25	3.54	0.50	18	8.07	4.57

Attachment F

Stormwater Pollution Prevention Plan (SWPPP)



STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MAY BE MODIFIED AND UPDATED DURING CONSTRUCTION AS A RESULT OF WEATHER, UNPREDICTABLE EVENTS AND SITE INSPECTIONS.

THIS DOCUMENT WAS PREPARED IN ORDER TO BE IN COMPLIANCE WITH CHAPTER 62-621.300 (4) OF THE FLORIDA ADMINISTRATIVE CODE, WHICH PERTAINS TO THE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES. THE ADMINISTRATIVE CODE GRANTS THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) THE AUTHORITY TO REGULATE POINT SOURCE DISCHARGES OF STORM-WATER FROM CONSTRUCTION SITES. THIS DOCUMENT ESTABLISHES A STORMWATER POLLUTION PREVENTION PLAN FOR THE SITE AND IS ORGANIZED TO CORRESPOND TO PART V OF DEP DOCUMENT No. 62-621.300 (4) (A) FDEP FORM 62-261.300 (4) (B) IS TO BE SUBMITTED IN CONJUNCTION WITH THIS DOCUMENT.

I. PROJECT INFORMATION:

PROJECT: GAINESVILLE RENEWABLE ENERGY CENTER (GREC)
BIOMASS GENERATING FACILITY
COUNTY: ALACHUA
SECTION/TOWNSHIP/RANGE: S 27 , T 8 SOUTH, R 19 EAST
COUNTY PARCEL NO.: A PORTION OF 05884-001-000
LATITUDE AND LONGITUDE: 29°46'07", 82°23'53"
STREET ADDRESS: 10001 N.W. 13th STREET
PROJECT AREA: 134 Ac.
APPROXIMATE AREA TO BE DISTURBED BY CONSTRUCTION: 76 Ac.

II. SITE DESCRIPTION:

1. THE PROJECT INCLUDES THE CONSTRUCTION OF A BIOMASS ELECTRIC GENERATING FACILITY IN CONJUNCTION WITH GAINESVILLE REGIONAL UTILITIES WITH ASSOCIATED PAVING, DRAINAGE AND UTILITY IMPROVEMENTS.

THE PROPOSED STORMWATER SYSTEM PROVIDES WATER QUALITY, AND FLOOD CONTROL.

2. THE SOIL CONDITIONS WERE INVESTIGATED AND SUMMARIZED IN THE SOILS REPORT PREPARED BY GSE. THE PROPOSED DRAINAGE PLAN WILL CONSIST OF 3 MAJOR DRAINAGE AREAS.
3. EXISTING AND FUTURE DRAINAGE PATTERNS ARE SHOWN ON THE DRAINAGE PLAN FOR PRE-DEVELOPMENT CONDITIONS AND POST-DEVELOPMENT CONDITIONS. OUTFALLS, AND STORMWATER BASINS ARE SHOWN IN THE DRAINAGE PLAN AND THE DETAIL PLAN.

4. SEQUENCE OF CONSTRUCTION:

A. PRIOR TO CONSTRUCTION, SILT FENCING AND TREE PROTECTION BARRICADES SHALL BE INSTALLED AND ALL EXISTING DRAINAGE STRUCTURES SHALL BE PROTECTED IN ACCORDANCE WITH FDOT INDEX #102.

- B. THE CONSTRUCTION ENTRANCE WILL BE STABILIZED TO MINIMIZE THE CREATION OF DUST AND OFF SITE TRACKING OF SEDIMENTS.
- C. THE SITE SHALL BE CLEARED AND GRUBBED OF UNDESIRABLE VEGETATION.
- D. THE UNDERGROUND UTILITIES AND STORMWATER PIPING WILL BE INSTALLED AND CONNECTED TO EXISTING STRUCTURES, WHERE APPLICABLE.
- E. THE SITE WILL BE ROUGHLY GRADED. IF SUITABLE, THE EXCAVATED MATERIAL MAY BE USED AS FILL FOR ON-SITE GRADING. THE ROADWAYS SHALL BE GRADED.
- F. THE STORMWATER BASINS SHALL BE CONSTRUCTED AS FOLLOWS:
 - 1. INITIALLY CONSTRUCT THE WET DETENTION AND DRY RETENTION BASINS TO ROUGH GRADE BY UNDER-EXCAVATING THE BASIN BOTTOM AND SIDES BY APPROXIMATELY 12 INCHES.
 - 2. AFTER THE ROADWAY AND SIDE SWALES HAVE BEEN GRADED, THE INTERIOR SIDE SLOPES AND BASIN BOTTOM SHALL BE EXCAVATED TO FINAL DESIGN SPECIFICATIONS. THE EXCESS SOIL AND UNDESIRABLE MATERIAL MUST BE CAREFULLY EXCAVATED AND REMOVED FROM THE BASINS SO THAT ALL ACCUMULATED SILTS, CLAYS, ORGANICS, AND OTHER FINE SEDIMENT MATERIAL HAS BEEN REMOVED FROM THE BASIN AREA. THE EXCAVATED UNSUITABLE MATERIAL SHALL BE DISPOSED OF AND TAKEN OFF-SITE.
 - 3. ONCE THE BASINS HAVE BEEN EXCAVATED TO FINAL GRADE, THE ENTIRE BASIN BOTTOM MUST BE DEEP RAKED AND LOOSENEED FOR OPTIMAL INFILTRATION.
 - 4. THE BASINS SHALL BE SODDED AND STABILIZED ACCORDING TO THE PLANS.
- G. ROADWAYS AND PARKING LOTS WILL BE COMPACTED AND A LIMEROCK BASE WILL BE ESTABLISHED FOLLOWED BY AN OVERLAY OF ASPHALTIC CONCRETE. BUILDINGS SHALL BE CONSTRUCTED.
- H. UPON SIGNIFICANT COMPLETION OF CONSTRUCTION, THE STORMWATER SYSTEM SHALL BE FLUSHED OUT TO REMOVE ACCUMULATED DEBRIS AND SEDIMENT.
- I. STORMWATER BASINS WILL BE SCRAPED CLEAN OF ACCUMULATED SEDIMENT.
- J. ALL DISTURBED AREAS WITHIN THE CONSTRUCTION AREA SHALL BE COMPLETELY GRASSED AND/OR LANDSCAPED. EVIDENCE OF GROWTH MUST BE PRESENT PRIOR TO REMOVAL OF SILT FENCING AND OTHER EROSION CONTROL APPLICATIONS.

III. CONTROLS:

THE CONTROLS SHALL BE IMPLEMENTED AND MAINTAINED DURING THE ENTIRE CONSTRUCTION OF THE PROJECT. IF SITE CONDITIONS ARE SUCH THAT ADDITIONAL CONTROL MEASURES ARE REQUIRED THAN WHAT IS SPECIFIED IN THE EROSION AND SEDIMENTATION CONTROL PLAN, THEN THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL BEST MANAGEMENT PRACTICES NECESSARY.

- 1. THE CONSTRUCTION ACCESS SHALL BE STABILIZED WITH GRAVEL AND TEMPORARY VEGETATION TO PREVENT SILT LEAVING THE SITE.

2. TREE BARRICADES SHALL BE IMPLEMENTED BEFORE CLEARING AND GRUBBING OF ANY OF THE WORK AREAS.
3. BEFORE CLEARING, SILT FENCES SHALL BE INSTALLED AROUND THE PERIMETER OF THE CONSTRUCTION AND AROUND THE WETLAND(S) AND/OR BASIN(S) AS SHOWN IN THE PLANS. ALL EXISTING STORM DRAINAGE SWALES AND INLETS SHALL BE PROTECTED PER FDOT INDEX 102.
4. AFTER CLEARING BUT BEFORE EXCAVATION AND GRADING, TEMPORARY BERMS AND SWALES SHALL BE CONSTRUCTED AS REQUIRED TO DIVERT THE FLOW INTO THE CORRESPONDING STORMWATER BASIN.
5. ALL BASIN AREAS SHALL BE PROTECTED AS INDICATED ON THE PLANS.
6. THE STORMWATER BASINS SHALL BE ROUGH GRADED TO WITHIN 6" OF THE DESIGNED BASIN BOTTOM. THE BASIN SIDE SLOPES SHALL BE STABILIZED AS SHOWN IN THE PLANS BY SEEDING, MULCHING AND/OR SODDING TO PREVENT EXCESSIVE EROSION.
7. DURING CONSTRUCTION OF PAVING AND BUILDINGS, EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED AS REQUIRED.
8. ALL DISTURBED AREAS WITHIN THE CONSTRUCTION SITE SHALL BE COMPLETELY LANDSCAPED AND/OR GRASSED. FINAL STABILIZATION INCLUDING SEEDING, MULCHING, SODDING OR RIPRAP SHALL BE INSTALLED AS REQUIRED. GRASS SEEDING RATES AND MIXTURES SHALL BE PER FDOT INDEX 104. EVIDENCE OF GROWTH MUST BE PRESENT PRIOR TO REMOVAL OF SILT FENCING AND OTHER EROSION CONTROL APPLICATIONS AND PRIOR TO FINAL RELEASE.

IV. EROSION AND SEDIMENTATION CONTROLS:

STABILIZATION PRACTICES.

1. ALL ENTRANCES TO THE SITE SHALL BE STABILIZED BEFORE CONSTRUCTION AND FURTHER DISTURBANCE BEGINS. GRAVEL PAD SHALL PROVIDE STABILIZATION AND MINIMIZE THE AMOUNT OF SEDIMENT LEAVING THE SITE. MAINTENANCE OF THE ENTRANCE SHALL INCLUDE SWEEPING OF THE AREA ADJACENT TO THE ENTRANCE. STONE AND GRAVEL MIGHT NEED TO BE PERIODICALLY ADDED TO MAINTAIN THE EFFECTIVENESS OF THE ENTRANCE(S).
2. TREE BARRICADES SHALL BE INSTALLED AROUND THE TREES AS SHOWN IN THE DETAIL PLAN TO PROTECT THE EXISTING VEGETATION.
3. MULCH SHALL BE PLACED IN THE AREAS REQUIRED TO PREVENT EROSION FROM STORMWATER RUNOFF AND THE AREAS SHOWN ON THE PLANS. MULCH SHALL BE ANCHORED TO RESIST WIND DISPLACEMENT AND SHALL BE INSPECTED AFTER EVERY RAINSTORM TO IDENTIFY AREAS WHERE MULCH HAS BEEN WASHED OUT OR LOOSENED. THESE AREAS SHALL HAVE MULCH COVER REPLACEMENT.
4. SEEDING SHALL BE STARTED AFTER GRADING HAS BEEN FINISHED ON THE AREAS SHOWN IN THE PLANS. SEEDED AREAS SHOULD BE INSPECTED FOR FAILURE TO ESTABLISH, AND NECESSARY REPAIRS AND RESEEDING SHOULD BE MADE AS SOON AS POSSIBLE. ADDITIONAL SEEDING AND MULCH MAY BE REQUIRED AS NECESSARY TO PREVENT EROSION DURING OR AFTER CONSTRUCTION HAS FINISHED.



5. SOD SHALL BE INSTALLED IN THE AREAS SHOWN IN THE PLANS. SOD SHALL BE PEGGED IF INSTALLED ON SLOPES GREATER THAN 3:1. SODDED AREAS SHALL BE MAINTAINED AND INSPECTED TO ENSURE SUCCESSFUL ESTABLISHMENT.

SEDIMENTATION PRACTICES.

1. SILT FENCES SHALL BE INSTALLED IN THE AREAS SHOWN IN THE PLANS AND AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION AREA. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL EVENT TO ENSURE THAT THERE ARE NO GAPS OR TEARS. IF GAPS OR TEARS ARE FOUND THE FABRIC SHOULD BE REPAIRED OR REPLACED. SEDIMENT REMOVAL SHALL BE PART OF THE REGULAR MAINTENANCE. SILT FENCES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION HAS FINISHED AND DISTURBED AREAS ARE PERMANENTLY STABILIZED.
2. DIVERSION SWALES, IF REQUIRED, SHALL BE CONSTRUCTED BEFORE MAJOR LAND DISTURBANCE OF THE RECEIVING BASIN. DIVERSION SWALES SHALL BE STABILIZED AFTER CONSTRUCTION TO MAINTAIN ITS EFFICIENCY.
3. INLETS SHOULD BE TEMPORARILY PROTECTED TO PREVENT SEDIMENT ENTERING THE INLET. BARRIERS WILL CATCH SOIL, DEBRIS AND SEDIMENT AT THE ENTRANCE OF THE INLET.
4. OUTFALL STRUCTURES SHALL HAVE SILT FENCES TO PREVENT SILT FROM ENTERING THE STORMWATER BASINS AND SHALL BE STABILIZED AS REQUIRED TO PREVENT EROSION FROM WASHOUTS.

V. STORMWATER MANAGEMENT:

1. THE PROPOSED PROJECT OBTAINED AN ENVIRONMENTAL RESOURCE PERMIT FROM SUWANNEE RIVER WATER MANAGEMENT DISTRICT (SRWMD) FOR THE CONSTRUCTION AND OPERATION OF A STORMWATER TREATMENT SYSTEM AND CONTROLS. THE PROPOSED SYSTEM (AS SHOWN ON THE PLANS) INCLUDED THE USE OF THE BEST MANAGEMENT PRACTICES (BMP) CONSISTENT WITH THE APPLICABLE REQUIREMENTS OF RULE 40B-4 OF THE DISTRICT. THE OWNER AND/OR THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER TREATMENT SYSTEM AND CONTROLS UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETED AND FINAL STABILIZATION HAS BEEN ACCOMPLISHED. HOWEVER, THE OWNER AND/OR AN ENTITY SIMILAR TO A HOMEOWNERS ASSOCIATION SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER SYSTEM IN PERPETUITY, IN ACCORDANCE WITH THE REQUIREMENTS OF THE ENVIRONMENTAL RESOURCE PERMIT.
2. TO TREAT AND CONTROL THE STORMWATER PRODUCED BY THE PROPOSED DEVELOPMENT, THE PROJECT REQUIRES THE INSTALLATION AND CONSTRUCTION OF THE FOLLOWING BMP'S: 3 DRY RETENTION BASINS AND 3 WET DETENTION BASINS WITH ALL GRADING ASSOCIATED WITH THE CONSTRUCTION. THE BASINS HAVE BEEN DESIGNED TO CONTAIN AND ATTENUATE THE STORMS AND DISCHARGE AT PRE-DEVELOPMENT CONDITIONS, WHILE PROVIDING TREATMENT TO THE RUNOFF AS REQUIRED BY THE DISTRICT AND STATE RULES USING THE GUIDELINES CONTAINED IN THE SRWMD HANDBOOK.

VI. CONTROLS FOR OTHER POTENTIAL POLLUTANTS:

1. WASTE DISPOSAL: NO SOLID MATERIALS, INCLUDING CONSTRUCTION MATERIALS, SHALL BE DISCHARGED TO SURFACE WATERS AND ARE NOT AUTHORIZED UNDER THE ISSUED ENVIRONMENTAL RESOURCE PERMIT.

2. THE USE OF GRAVEL AND CONTINUING SWEEPING ACTIVITIES AT THE ENTRANCE OF THE SITE WILL CONTROL THE TRACKING OF SEDIMENT AND DUST LEAVING THE SITE.
3. THE PROPOSED DEVELOPMENT WILL PROVIDE WATER AND SEWER SYSTEM BY CONNECTING INTO THE CENTRAL MUNICIPAL SYSTEM OF GAINESVILLE REGIONAL UTILITIES.
4. ANY APPLICATION OF FERTILIZERS AND PESTICIDES NECESSARY TO ESTABLISH AND MAINTENANCE OF VEGETATION DURING CONSTRUCTION AND THROUGH PERPETUITY MAINTENANCE SHALL FOLLOW THE MANUFACTURERS RECOMMENDATIONS AND THE APPLICABLE RULES OF THE STATE OF FLORIDA.
5. ANY TOXIC MATERIALS REQUIRED DURING CONSTRUCTION SHALL BE PROPERLY STORED, DISPOSED OF AND CONTRACTOR AND/OR OWNER SHALL PROVIDE THE APPROPRIATE PERMITS FROM THE LOCAL OR STATE AGENCIES.

VII. APPROVED STATE OR LOCAL PLANS:

1. ALL THE SEDIMENT AND EROSION CONTROLS THAT ARE LISTED IN THE SITE PLAN AS APPROVED BY THE SRWMD ARE INCLUDED IN THIS STORMWATER POLLUTION PREVENTION PLAN (SEE ITEM III AND IV).
2. THIS STORMWATER POLLUTION PREVENTION PLAN SHALL BE AMENDED IF REQUIRED BY ANY LOCAL OR STATE AGENCY OR AS REQUIRED BY UNFORESEEABLE CONDITIONS AND THE OWNER SHALL SUBMIT A RE-CERTIFICATION TO THE NPDES STATE OFFICE THAT THE PLAN HAS BEEN AMENDED TO ADDRESS THOSE CHANGES.

VIII. MAINTENANCE:

THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE, INSPECTION SCHEDULE, AND REPAIRS OUTLINED IN THIS PLAN. MAINTENANCE SHALL CONTINUE THROUGHOUT THE PROJECT UNTIL WORK IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

IN ADDITION TO THE ITEMS MENTIONED IN THE PREVIOUS SECTIONS, THE CONTRACTOR SHALL INITIATE ANY REPAIRS WITHIN 24 HOURS OF BEING REPORTED. IN THE EVENT THAT THE BASINS DO NOT PERFORM PROPERLY OR IF A SINKHOLE DEVELOPS, THE PROJECT ENGINEER SHALL BE NOTIFIED TO ASSIST IN COORDINATING REMEDIAL ACTION.

1. MAINTENANCE WOULD BE DIVIDED IN ROUTINE MAINTENANCE AND REPAIR MAINTENANCE. ALL STORMWATER BMP'S SHOULD BE INSPECTED FOR CONTINUED EFFECTIVENESS AND STRUCTURAL INTEGRITY ON A REGULAR BASIS. THE SYSTEMS SHOULD BE CHECKED AFTER EACH STORM EVENT IN ADDITION TO REGULARLY SCHEDULED INSPECTIONS.
2. ROUTINE MAINTENANCE REQUIREMENTS SHOULD BE INCLUDED IN THE INSPECTOR CHECKLIST TO AID THE INSPECTOR IN DETERMINING WHETHER A BMP'S MAINTENANCE IS ADEQUATE OR NEEDS A REVISION. INSPECTORS SHALL KEEP RECORD OF MAINTENANCE, ROUTINE OR REPAIR, TO PROVIDE EVIDENCE OF AN EFFICIENT INSPECTION AND MAINTENANCE.

3. SIDE ENTRANCES: MAINTENANCE SHALL INCLUDE REPLACEMENT OF GRAVEL AND CLEANING THE SOIL THAT IS TRACKED OFFSITE FOR PROPER DISPOSAL.
4. TREE BARRICADES: MAINTENANCE SHALL INCLUDE INSPECTION OF MESH AND POSTS AND REPAIR OR REPLACEMENT OF DAMAGED VEGETATION.
5. SILT FENCES: MAINTENANCE SHALL INCLUDE SEDIMENT REMOVAL AND INSPECTION TO ENSURE PROPER ANCHORING AND THAT NO TEARING OR GAPS HAVE OCCURRED. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF SILT FENCE.
6. DIVERSION SWALES: MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY RAINFALL EVENT AND ONCE EVERY TWO WEEKS BEFORE FINAL STABILIZATION. THEY SHOULD BE CLEARED OF SEDIMENT AND MAINTAIN VEGETATIVE COVER.
7. TEMPORARY BERMS: MAINTENANCE SHALL INCLUDE REMOVAL OF DEBRIS, TRASH SEDIMENT AND LEAVES. SIDES OF THE BERM SHALL BE INSPECTED FOR EROSION AFTER EACH STORM EVENT.
8. MULCHING: ROUTINE MAINTENANCE SHALL INCLUDE REPLACEMENT PERIODICALLY.
9. SEEDING: ROUTINE MAINTENANCE SHALL INCLUDE RESEEDING OF AREAS THAT FAILED TO ESTABLISH.
10. SODDING: ROUTINE MAINTENANCE SHALL INCLUDE WATERING AND MOWING. REPLACEMENT OF GRASS MAY BE NECESSARY IF COVER IS NOT FULLY ESTABLISHED.
11. INLETS: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT AND MIGHT INCLUDE REMOVAL OF ACCUMULATED SEDIMENT.
12. OUTFALL STRUCTURES: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT TO ASSURE NO EROSION OR SCOUR HAS OCCURRED.
13. DRY RETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.
14. WET DETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.

IX. INSPECTIONS:

1. THE OWNER AND /OR CONTRACTOR SHALL PROVIDE QUALIFIED PERSONNEL TO INSPECT ALL POINTS OF POTENTIAL DISCHARGE FROM THE PROJECT SITE FOR DISTURBED AREAS, THE EROSION AND SEDIMENTATION CONTROLS AND BMP'S AS LISTED IN THIS PLAN. THE INSPECTION SHALL BE PERFORMED DURING CONSTRUCTION AND BEFORE FINAL STABILIZATION, ONCE EVERY SEVEN-CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS GREATER THAN 0.50 INCHES. AFTER FINAL STABILIZATION AND BEFORE FINISH OF CONSTRUCTION THE INSPECTION SHALL BE CONDUCTED ONCE EVERY MONTH.

2. THE CONTRACTOR SHALL INSTALL A RAIN GAUGE AT THE SITE TO MONITOR AND DOCUMENT RAINFALL EVENTS IN EXCESS OF 0.50 INCHES.
3. ALL DISTURBED AREAS AND AREAS USED FOR MATERIALS STORAGE SHALL BE INSPECTED FOR POLLUTANTS ENTERING THE STORMWATER SYSTEM. THE STORMWATER MANAGEMENT SYSTEM AND EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE INSPECTED TO ENSURE THEY ARE OPERATING CORRECTLY. LOCATIONS WHERE VEHICLES ENTER AND LEAVE THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.
4. REPAIR OR MAINTENANCE NEEDED TO ASSURE PROPER OPERATION OF THE STORMWATER POLLUTION PREVENTION PLAN SHALL BE DONE IN A TIMELY MANNER BUT NO LATER THAN 7 CALENDAR DAYS FOLLOWING THE INSPECTION.
5. A REPORT SHALL BE KEPT OF EACH INSPECTION FOR THREE YEARS AFTER FINAL STABILIZATION AND SHALL INCLUDE THE DATES OF EACH INSPECTION, THE SCOPE OF THE INSPECTION, MAJOR OBSERVATIONS, ANY REPAIR AND/OR MAINTENANCE REQUIRED AND ANY INCIDENT OF NON-COMPLIANCE. IF THE REPORT DOES NOT CONTAIN ANY INCIDENTS OF NON-COMPLIANCE, THE REPORT SHALL CONTAIN A CERTIFICATION THAT THE FACILITY HAS BEEN IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN AND THE NPDES PERMIT. THE REPORT SHALL INCLUDE THE NAME AND QUALIFICATIONS OF THE INSPECTOR AND SHALL BE SIGNED IN ACCORDANCE TO FDEP RULE 62-621.300, PART VII.C. A COPY OF THE CONSTRUCTION INSPECTION FORM IS INCLUDED ON THIS STORMWATER POLLUTION PREVENTION PLAN SHEET. A COPY SHALL BE RETAINED AT THE CONSTRUCTION SITE FROM THE DATE OF PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION.

X. NON-STORMWATER DISCHARGES:

1. THE FOLLOWING NON-STORMWATER DISCHARGES MIGHT BE COMBINED WITH STORMWATER AND WOULD BE AUTHORIZED AS PART OF THIS PERMIT: FIRE HYDRANT FLUSHING, CONTROL OF DUST, POTABLE WATER FLUSHING AND IRRIGATION DRAINAGE. BECAUSE OF THE NATURE OF THESE DISCHARGES, THE EROSION, STABILIZATION AND TREATMENT SYSTEMS TO BE IMPLEMENTED, AS PART OF THIS PLAN WOULD BE APPROPRIATE TO PREVENT AND TREAT ANY POLLUTION RELATED TO THESE NON-STORMWATER DISCHARGES.

XI. CONTRACTORS:

1. ALL CONTRACTORS AND/OR SUBCONTRACTORS RESPONSIBLE FOR IMPLEMENTING THE PLAN SHALL SIGN THE CERTIFICATION STATEMENT BEFORE STARTING CONSTRUCTION ACTIVITIES OF THE PROJECT. THE CERTIFICATION MUST INCLUDE THE NAME AND TITLE OF THE PERSON PROVIDING THE SIGNATURE, THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE CONTRACTING FIRM, THE ADDRESS OF THE SITE AND THE DATE THE CERTIFICATION IS MADE. THE OWNER SHALL KEEP THESE CERTIFICATIONS AS PART OF THIS POLLUTION PLAN. MULTIPLE COPIES OF THE CERTIFICATION STATEMENT MAY BE NECESSARY DEPENDING UPON THE NUMBER OF SUBCONTRACTORS ASSOCIATED WITH THE PROJECT.

CERTIFICATION STATEMENT

"I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND AND SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES AND THIS STORMWATER POLLUTION PREVENTION PLAN PREPARED THEREUNDER."

CONTRACTING FIRM:

ADDRESS:

CITY, STATE, ZIP CODE:

TELEPHONE: _____

FAX: _____

PROJECT NAME:

PROJECT ADDRESS:

PROJECT ADDRESS:

CITY, STATE, ZIP CODE:

NAME: _____

SIGNATURE: _____

DATE: _____

STORMWATER POLLUTION PREVENTION PLAN INSPECTION REPORT FORM

Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater.

PROJECT NAME: GAINESVILLE RENEWABLE ENERGY CENTER (GREC)
BIOMASS GENERATING FACILITY

FDEP NPDES STORMWATER IDENTIFICATION NO.: FLR10

OWNER: _____

CONTRACTOR:

CONSTRUCTION MANAGER:

[illegible]**CONDITION CODE:**

G = Good

C = Needs to be cleaned

M = Marginal, needs maintenance or replacement soon

P = Poor, needs immediate maintenance or replacement

0 = Other

CONTROL TYPE CODES

1. Silt Fence	10. Storm drain inlet protection	19. Reinforced soil retaining system	28. Tree protection
2. Earth dikes	11. Vegetative buffer strip	20. Gabion	29. Detention pond
3. Structural diversion	12. Vegetative preservation area	21. Sediment Basin	30. Retention pond
4. Swale	13. Retention Pond	22. Temporary seed / sod	31. Waste disposal / housekeeping
5. Sediment Trap	14. Construction entrance stabilization	23. Permanent seed / sod	32. Dam
6. Check dam	15. Perimeter ditch	24. Mulch	33. Sand Bag
7. Subsurface drain	16. Curb and gutter	25. Hay Bales	34. Other
8. Pipe slope drain	17. Paved road surface	26. Geotextile	
9. Level spreaders	18. Rock outlet protection	27. Rip-rap	

INSPECTOR INFORMATION:

Name _____

Qualification

Date _____

The above signature also shall certify that this facility is in compliance with the Stormwater Pollution Prevention Plan and the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities if there are not any incidents of non-compliance identified above.

* * * * *

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Attachment G

Detailed Construction Plans

(Copies of the detailed construction plan files are provided in electronic format on the compact disc provided in the front of Volume 1 of this SCA as 36 x 24 drawings if higher resolution is desired.)

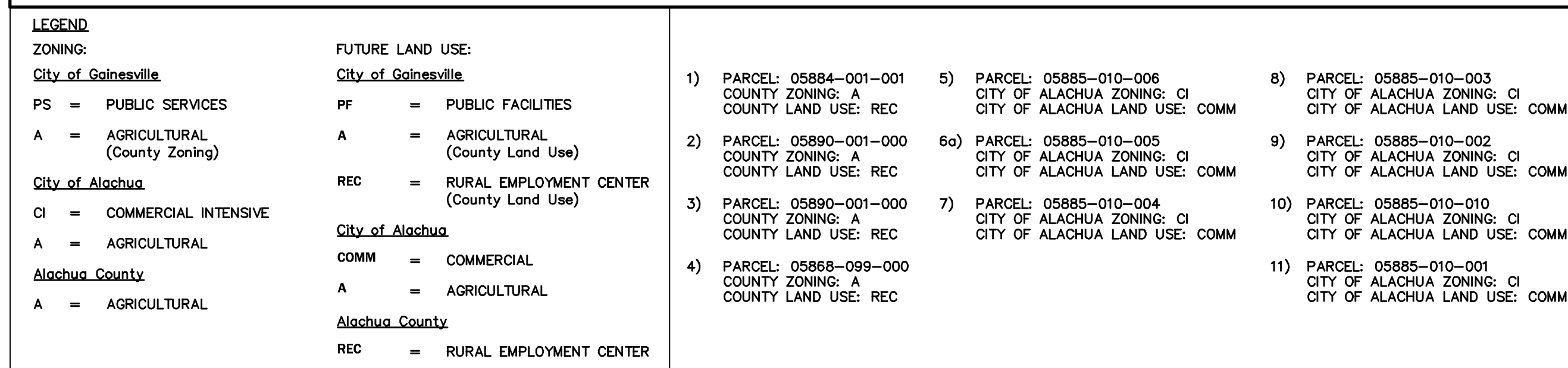




An American Renewables Company

BIOMASS GENERATING FACILITY

CITY OF GAINESVILLE, FLORIDA



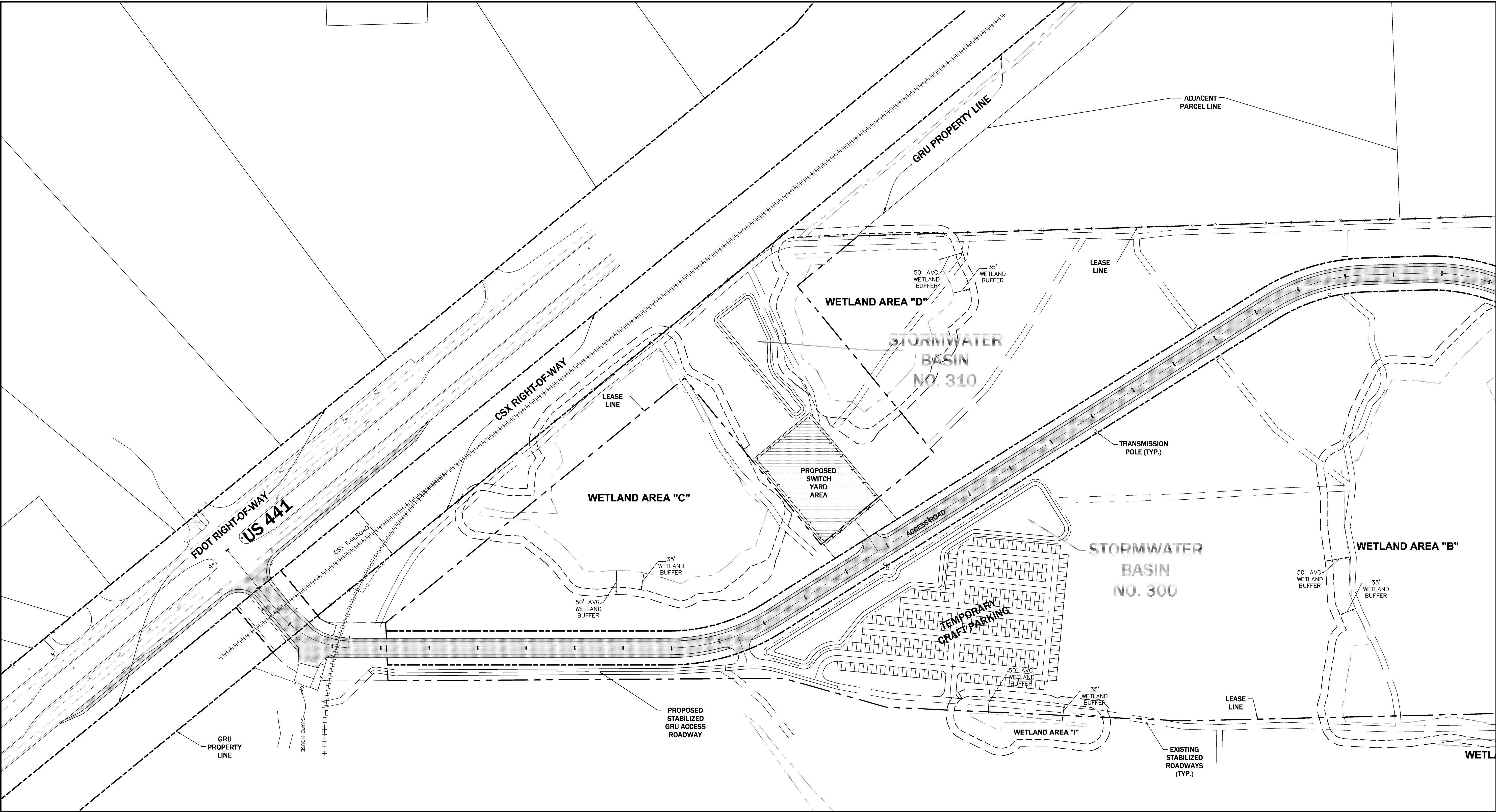
DEVELOPMENT INFORMATION:

1.	PROPERTY OWNER:	GAINESVILLE P.O. BOX 490 MS 58 GAINESVILLE, FL 32602
2.	PROJECT APPLICANT:	GAINESVILLE RENEWABLE ENERGY CENTER, LLC 75 ARLINGTON STREET, 5TH FLOOR BOSTON, MA 02116 (617)482-6150
3.	NAME OF PROJECT:	GAINESVILLE RENEWABLE ENERGY CENTER (GREC) – BIOMASS GENERATING FACILITY
4.	PROJECT DESCRIPTION:	THE PROJECT INCLUDES THE CONSTRUCTION OF A BIOMASS ELECTRIC GENERATING FACILITY IN CONJUNCTION WITH GAINESVILLE REGIONAL UTILITIES.
5.	PROJECT ADDRESS:	10001 N.W. 13th STREET GAINESVILLE, FLORIDA
6.	TAX PARCEL NUMBER:	A PORTION OF 05884-001-00
7.	SECTION/TOWNSHIP/RANGE:	SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST
8.	ZONING:	PUBLIC SERVICES (PS)
9.	FUTURE LAND DESIGNATION:	PUBLIC FACILITIES (PF)

DRAWING INDEX	
SHEET NUMBER	DRAWING TITLE
C0.00	COVER SHEET
C0.50 — C0.52	OVERALL LAYOUT
C0.60 — C0.61	WETLAND BUFFER IMPACTED & COMPENSATED AREAS
C2.00 — C2.02	PRE—DEVELOPMENT DRAINAGE AREAS
C2.03 — C2.05	POST—DEVELOPMENT DRAINAGE AREAS
C2.10	SOILS MAP
C2.20 — 2.22	PAVING, GRADING & DRAINAGE PLANS
C2.40 — C2.45	STORMWATER BASINS, DETAILS AND CROSS SECTIONS
C2.46	LAYDOWN AREA TYPICAL CROSS—SECTIONS
C3.00	STORMWATER POLLUTION PREVENTION PLAN
C3.10 — C3.16	MASTER EROSION AND SEDIMENTATION CONTROL PLAN
C3.20	DRAINAGE DETAILS & NOTES
C5.00	ROADWAY DETAILS, NOTES AND TYPICAL CROSS—SECTION

Plotted Nov. 13, 2009 - 08:06:58 - Joyce Rocks

\\Server3\engprojects\Gainesville Renewable Energy_Center\11-09\091841.dwg - OVERALL



LEGEND

PROPOSED ROADWAY

PROPOSED SWITCH YARD AREA

SEE SHEET C0.51 (SHEET 2 of 3)
A - A

NORTH

SCALE: 1" = 100'

100500100

GRAPHIC SCALE

EDA

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18000 E. 11th Avenue, Suite 100
Gainesville, FL 32609
TEL: (352) 373-5341 FAX: (352) 373-7288
E-MAIL: eda@denmaninc.com

Project Phase: STATE CERTIFICATION

Designed: CSV/CAP

Drawn: JVR

Project No: 09-194

Date: NOV. 13, 2009

Professional Engineer of Record:

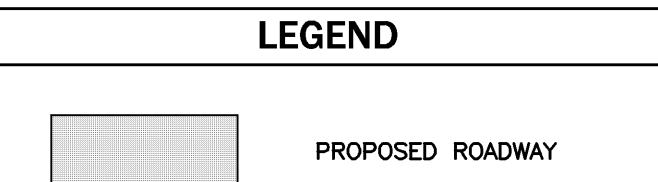
Project: GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet title:
OVERALL LAYOUT
SHEET 1 of 3

Sheet No.: C0.50

Claudia S. Vega P.E.
Engineer

51332
Certificate No.



SEE SHEET C0.52 (SHEET 3 of 3)
R - R



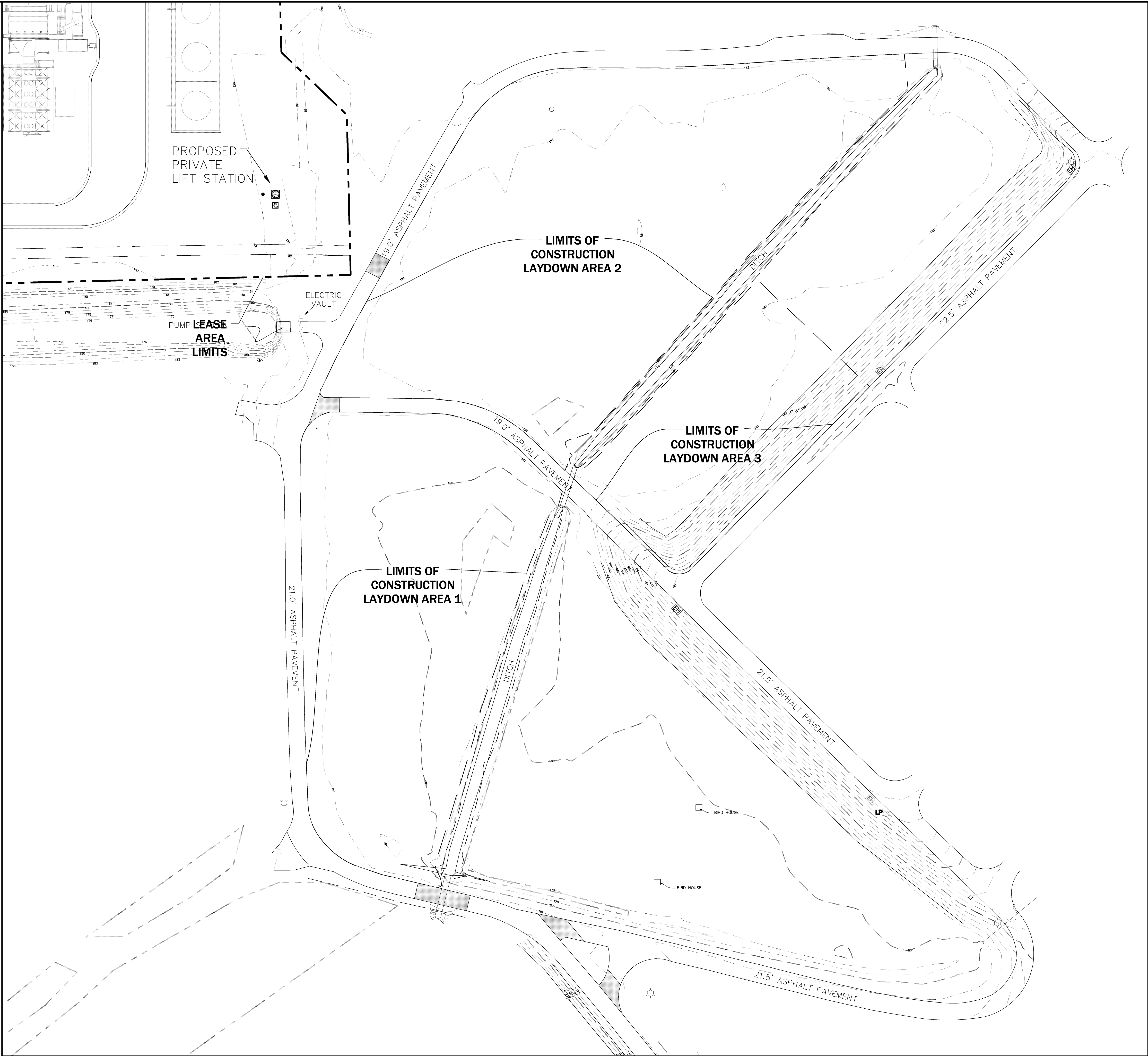
OVERALL LAYOUT
SHEET 2 of 3

C0.51

Plotted Nov. 13, 2009 - 08:06:58 - Joyce Rocks

\\Server3\engprojects\Gainesville Renewable Energy_Center\11-09\009194\J.dwg - OVERALL3

SEE SHEET C0.51 (SHEET 2 of 3)
B - B



LEGEND

EXISTING PAVEMENT AREA
CUT & REPAIR LIMITS

Project Phase: STATE CERTIFICATION		Project: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Designed: CSV/OAP	Drawn: JVR	Sheet title: OVERALL LAYOUT SHEET 3 of 3	
Project No: 09-194	Date: NOV. 13, 2009	Professional Engineer of Record:	
Professional Engineer of Record:		Certificate No. 51332	
Claudia S. Vega P.E. Engineer			

NORTH

SCALE: 1" = 60'

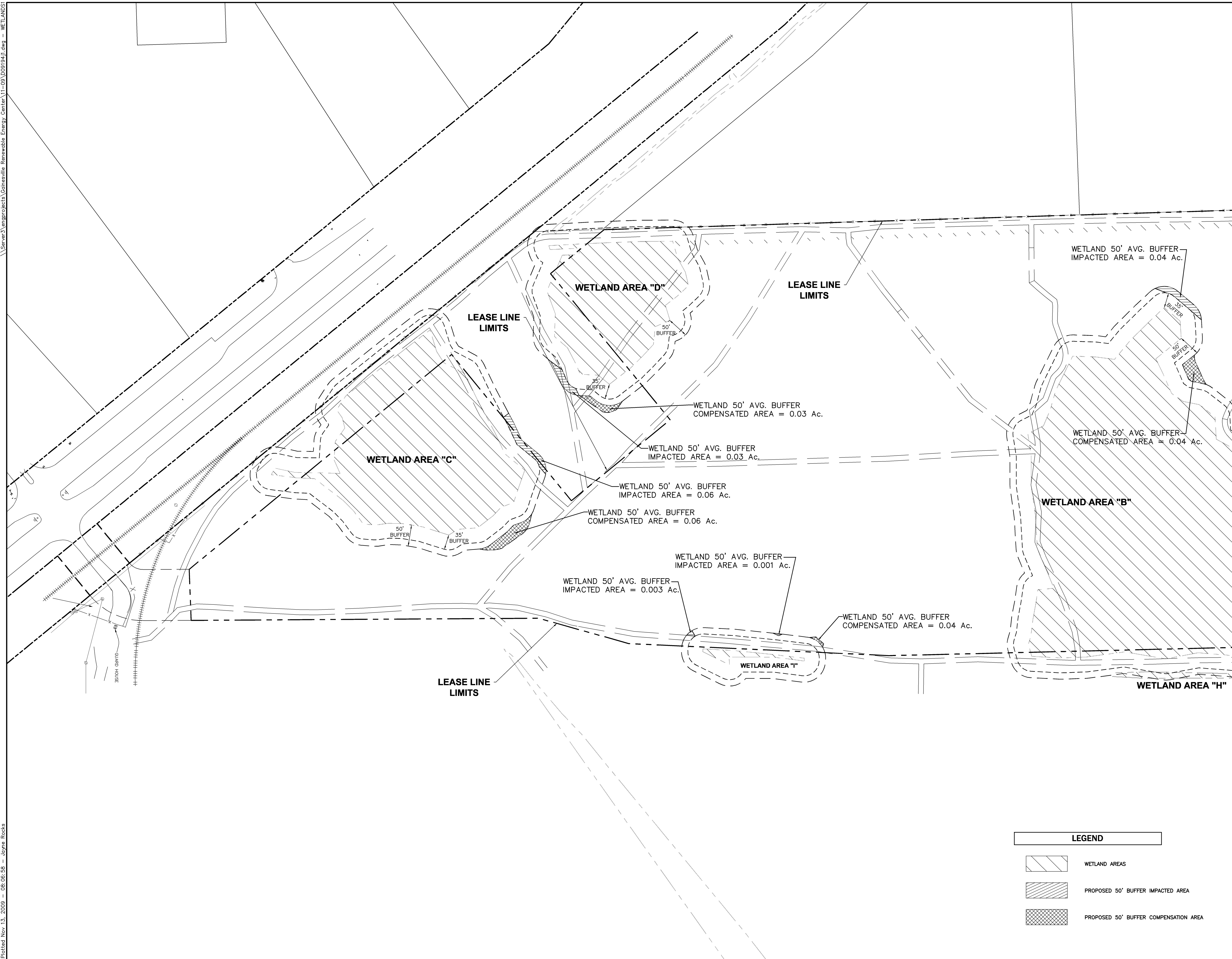
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GRAPHIC SCALE

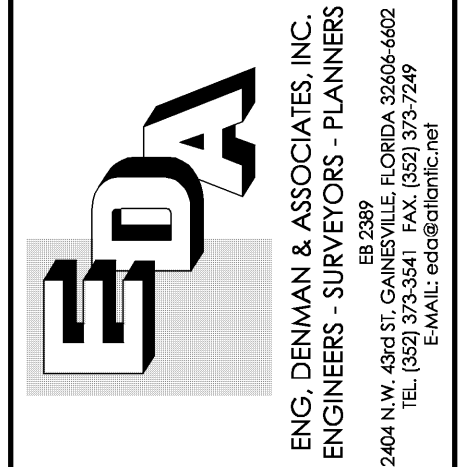
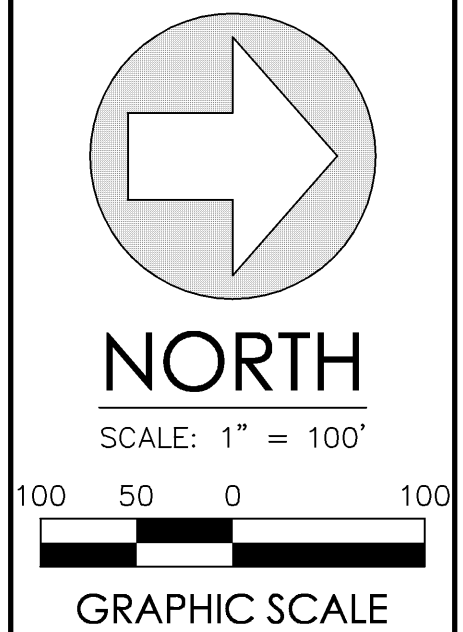
EDA

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
1892066 FLORIDA 5906-602
2404 N.W. 42nd ST., GAINESVILLE, FL 32608
TEL: (352) 373-5341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

C0.52



TIE TO C0.61 (SHEET 2 of 3)



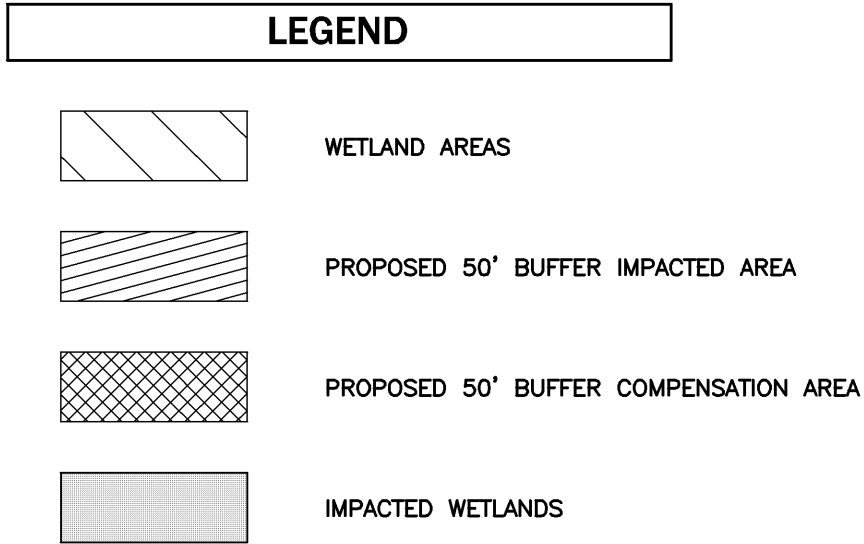
Project: GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet title: WETLAND BUFFER IMPACTED & COMPENSATED AREAS
SHEET 1 of 3

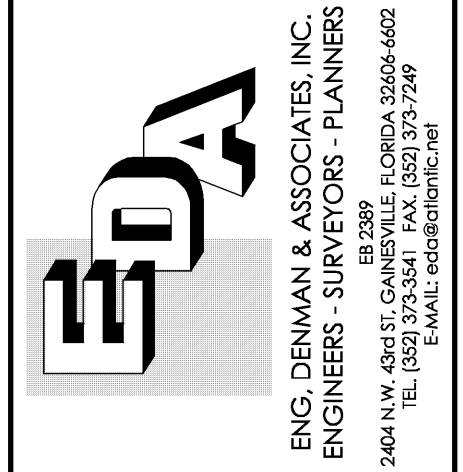
Project phase:	
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer 51532 Certificate No.	

C0.60

[illegible]



TIE TO CO.62 (SHEET 3 of 3)



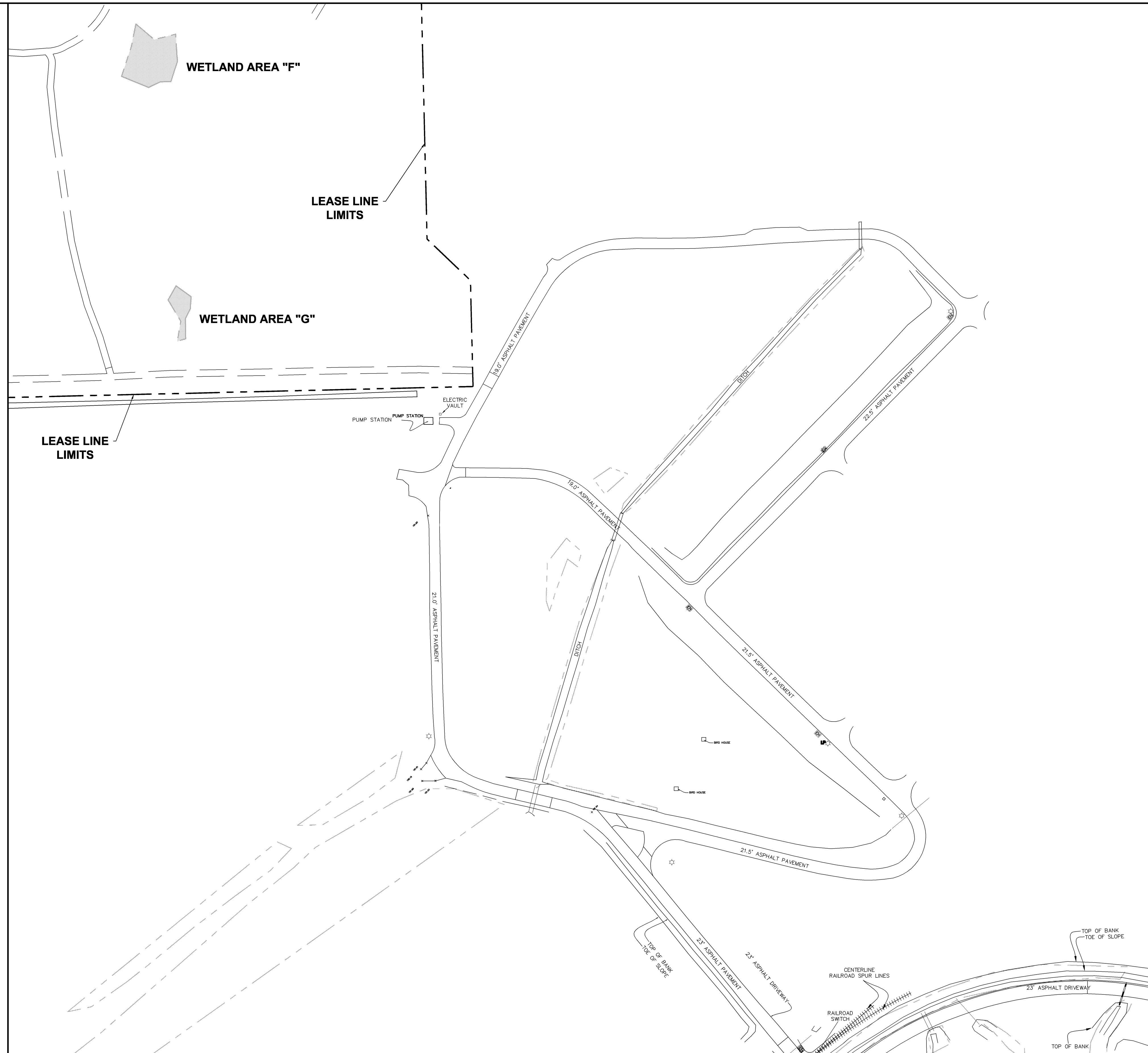
title: **WETLAND BUFFER IMPACTED & COMPENSATED AREAS**
SHEET 2 of 3

Project phase:	
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer 51532 Certificate No.	

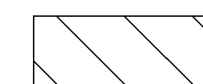
C0.61

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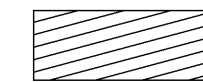
TIE TO C0.61 (SHEET 2 of 3)



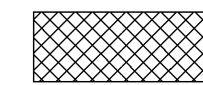
LEGEND



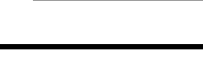
WETLAND AREAS

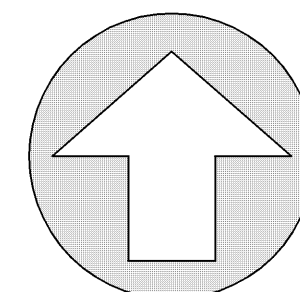


PROPOSED 50' BUFFER IMPACTED AREA



IMPACTED WETLANDS



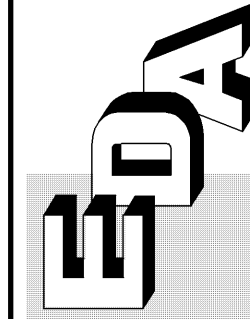


NORTH

SCALE: 1" = 100



GRAPHIC SCALE



ENG, DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
EB 2369
2404 N.W. 43RD ST. GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 373-3541 FAX. (352) 373-7249

GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet title:
WETLAND BUFFER IMPACTED & COMPENSATED AREAS
SHEET 3 of 3

Project:

Sheet title:

phase:

STATE CERTIFICATION

Drawn:	JVR
--------	-----

Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	

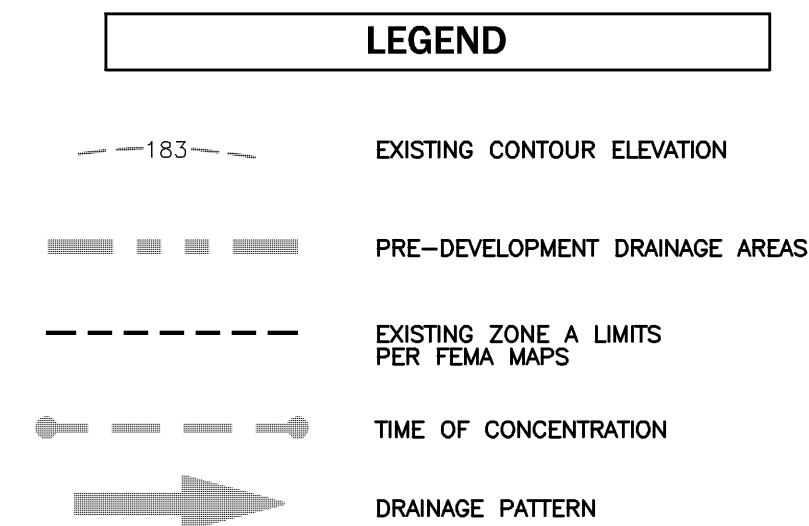
Professional Engineer of Record: Claudia S. Vega P.E. 51532

Sheet No.:

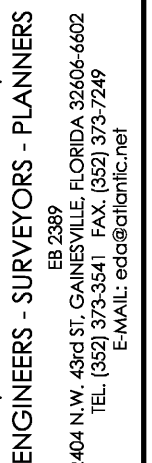
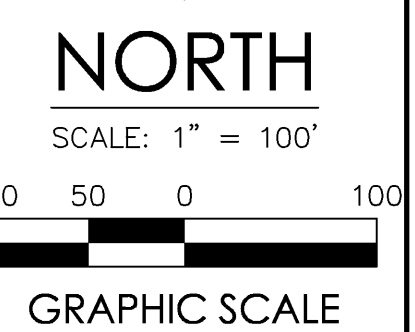
C0.62

51532
Certificate No.

Comment



TIE TO C2.01 (SHEET 2 of 3)



GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

PRE-DEVELOPMENT DRAINAGE AREAS
SHEET 1 of 3

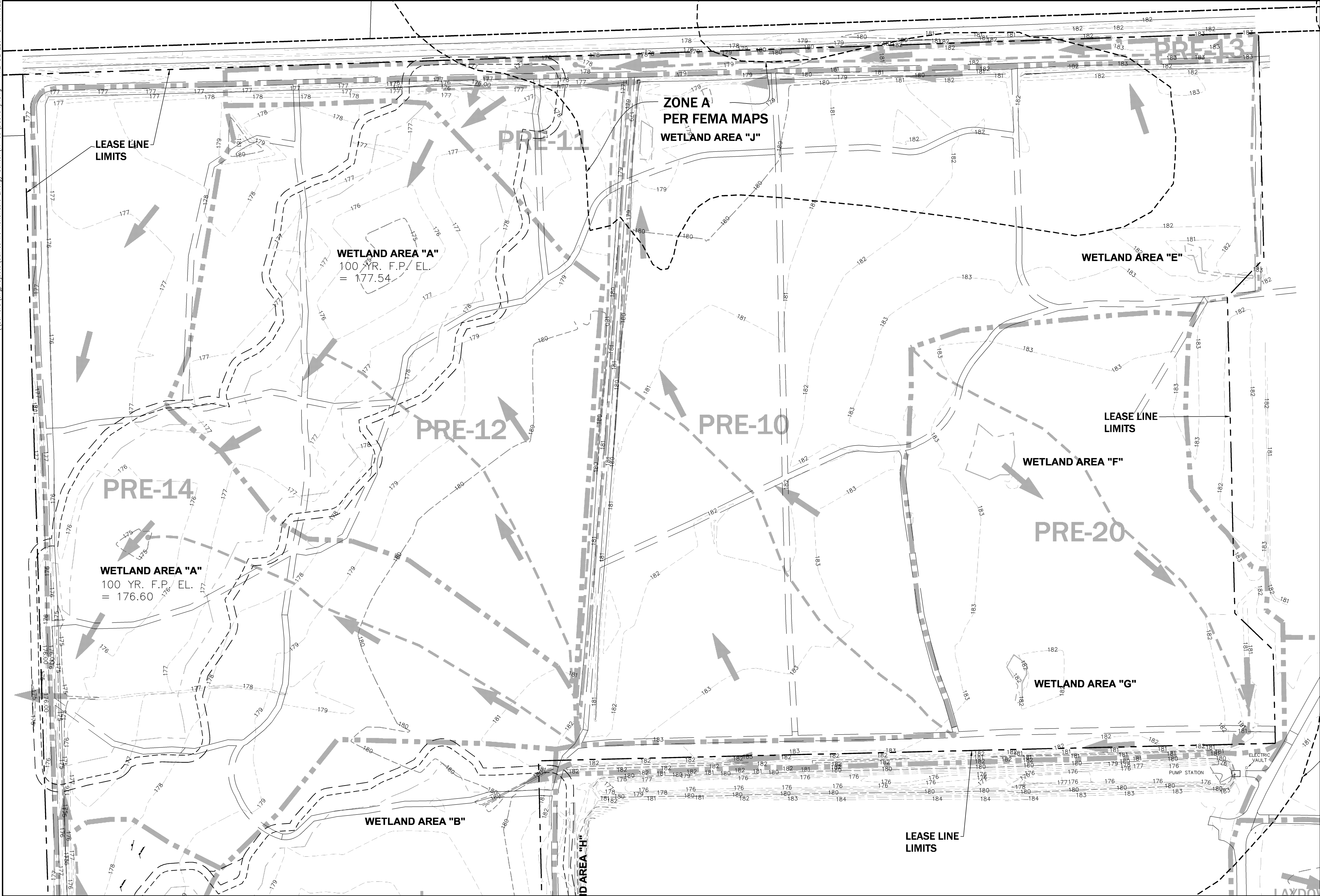
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR

Claudia S. Vega P.E. 51532
Engineer Certificate No.

Sheet No.:

C2.00

Plotted Nov. 13, 2009 -- 08:06:58 -- Joyce Rocks
\\Server3\engprojects\Gainesville Renewable Energy Center\11-09\0091943.dwg -- PRE-DEVELOP DRAINAGE2



TIE TO C2.02 (SHEET 3 of 3)

TIE TO C2.00 (SHEET 1 of 3)

LEGEND

183

EXISTING CONTOUR ELEVATION

PRE-DEVELOPMENT DRAINAGE AREAS

EXISTING ZONE A LIMITS
PER FEMA MAPS

TIME OF CONCENTRATION

DRAINAGE PATTERN

Project Phase:

STATE CERTIFICATION

Designed:

CSV/CAP

Project No.:

09-194

Drawn:

JVR

Date:

NOV. 13, 2009

Professional Engineer of Record:

Project:

GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet No.:

C2.01

Sheet Title:

PRE-DEVELOPMENT DRAINAGE AREAS
SHEET 2 of 3

Claudia S. Vega P.E.
Engineer

51332
Certificate No.

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. 42ND ST. GAINESVILLE, FLORIDA 32608-4602
TEL: (352) 373-5341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

NORTH

SCALE: 1" = 100'

100 50 0 100

GRAPHIC SCALE

EDA

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. 42ND ST. GAINESVILLE, FLORIDA 32608-4602
TEL: (352) 373-5341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

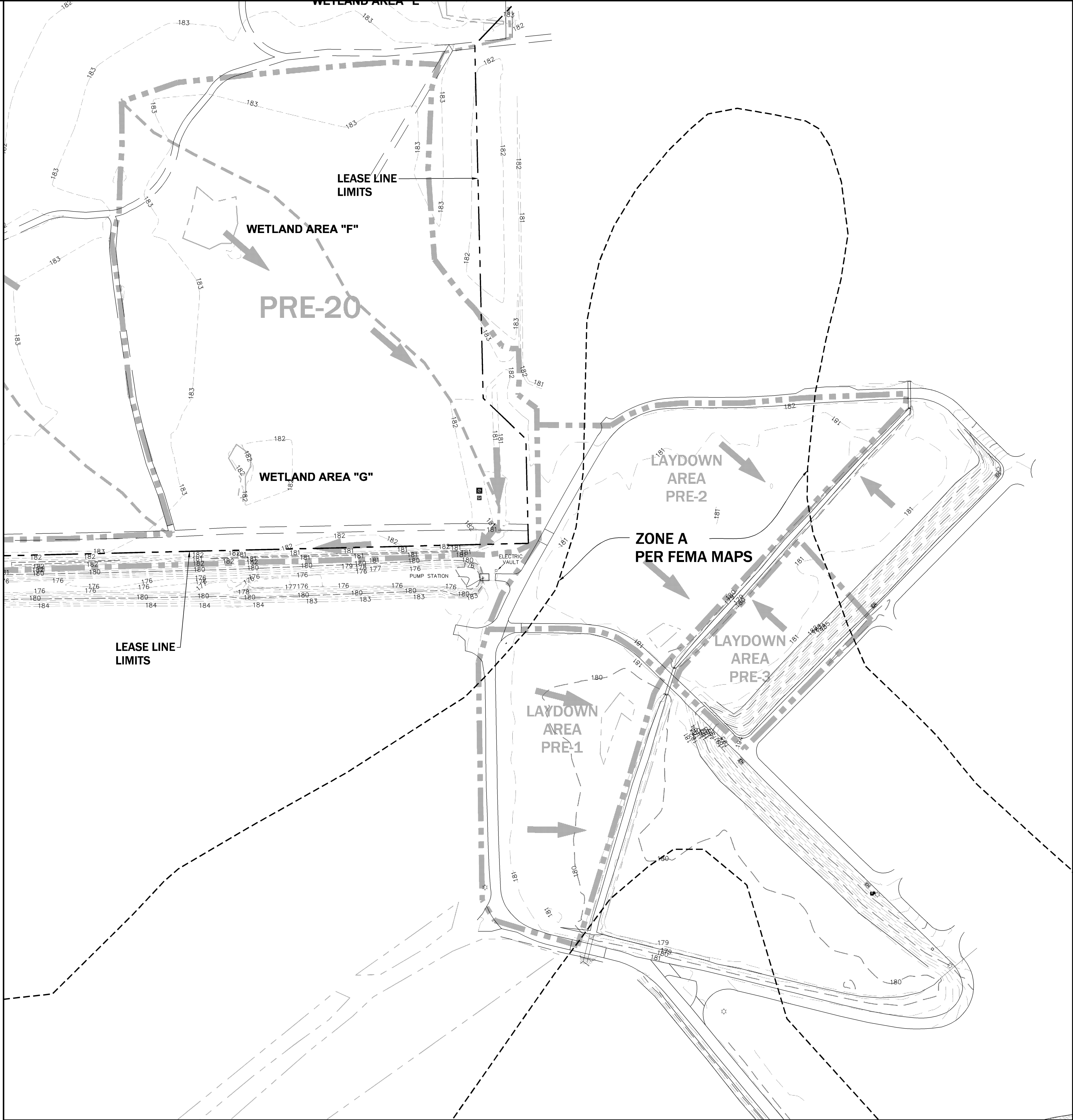
No

Date

Comment

Plotted Nov. 13, 2009 -- 08:06:58 -- Joyce Rocks
\\Server3\engprojects\Gainesville Renewable Energy Center\11-09\0091941.dwg -- PRE-DEVELOP DRAINAGE3

TIE TO C2.01 (SHEET 2 of 3)



EXISTING CONTOUR ELEVATION

PRE-DEVELOPMENT DRAINAGE AREAS

EXISTING ZONE A LIMITS PER FEMA MAPS

TIME OF CONCENTRATION

DRAINAGE PATTERN

NORTH

SCALE: 1" = 100'

100 50 0 100

GRAPHIC SCALE

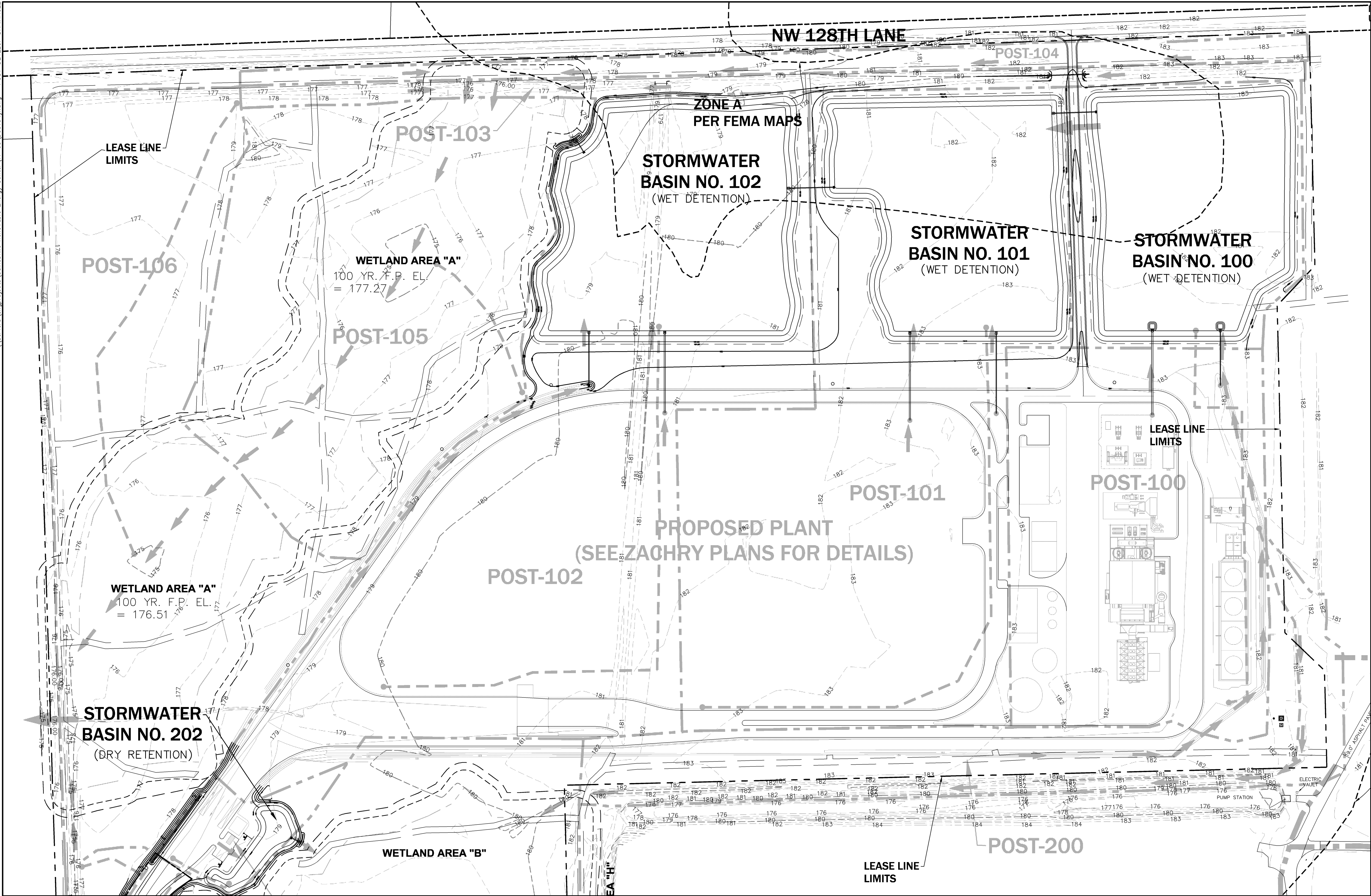
ENG. DENHAM & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. 15th Avenue, Suite 100
Gainesville, FL 32608
TEL: (352) 373-3341 FAX: (352) 373-7248
E-MAIL: eda@denhaminc.com

Project Phase: STATE CERTIFICATION	Project title: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
	Designed: CSV/CAP	Drawn: JVR
	Project No. 09-194	Date: NOV. 13, 2009
Professional Engineer of Record: Claudia S. Vega P.E. Engineer		
Sheet No.:	Certificate No. 51332	

C2.02

\\Server3\engprojects\Gainesville Renewable Energy Center\11-09\091941.dwg - POST-DEVELOP DRAINAGE2

Plotted Nov. 13, 2009 - 08:06:58 - Joyce Rocks



TIE TO C2.03 (SHEET 1 of 3)

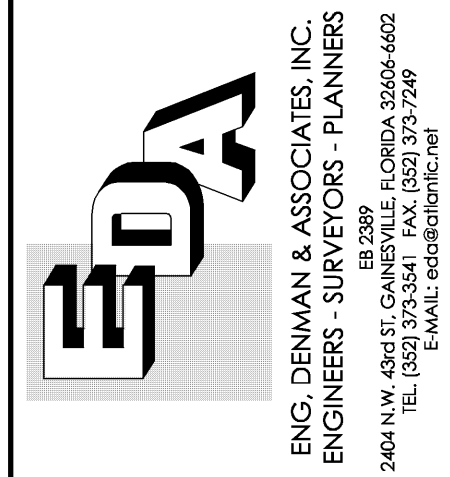
TIE TO C2.05 (SHEET 3 of 3)

LEGEND

- 183 — EXISTING CONTOUR ELEVATION
- POST-DEVELOPMENT DRAINAGE AREAS
- - - - - EXISTING ZONE A LIMITS PER FEMA MAPS
- - - - - TIME OF CONCENTRATION
- ➔ DRAINAGE PATTERN

Project Phase: STATE CERTIFICATION		Project No.: 09-194		Date: NOV. 13, 2009	
Designed: CSV/CAP		Drawn: JVR		Professional Engineer of Record:	
Sheet No.:		C2.04		Certificate No. 51332	
Project:		GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA			
Sheet title:		POST-DEVELOPMENT DRAINAGE AREAS SHEET 2 of 3			
EOD		ENG. DENHAM & ASSOCIATES, INC. ENGINEERS - SURVEYORS - PLANNERS 18206 E. FLORIDA AVE., SUITE 400 GAINESVILLE, FLORIDA 32608-4002 TEL: (352) 373-5341 FAX: (352) 373-7248 E-MAIL: edad@denhaminc.com			
NORTH		SCALE: 1" = 100'			
100 50 0 100		GRAPHIC SCALE			
No		Date		Comment	

	EXISTING CONTOUR ELEVATION
	POST-DEVELOPMENT DRAINAGE AREAS
	EXISTING ZONE A LIMITS PER FEMA MAPS
	TIME OF CONCENTRATION
	DRAINAGE PATTERN



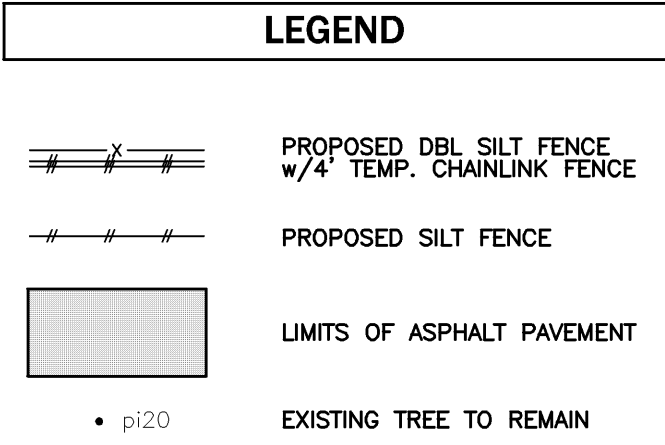
POST-DEVELOPMENT DRAINAGE AREAS
SHEET 3 of 3

Project phase:	
STATE CERTIFICATION	
Designed: CSW/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer 51532 Certificate No.	

C2.05

[illegible]



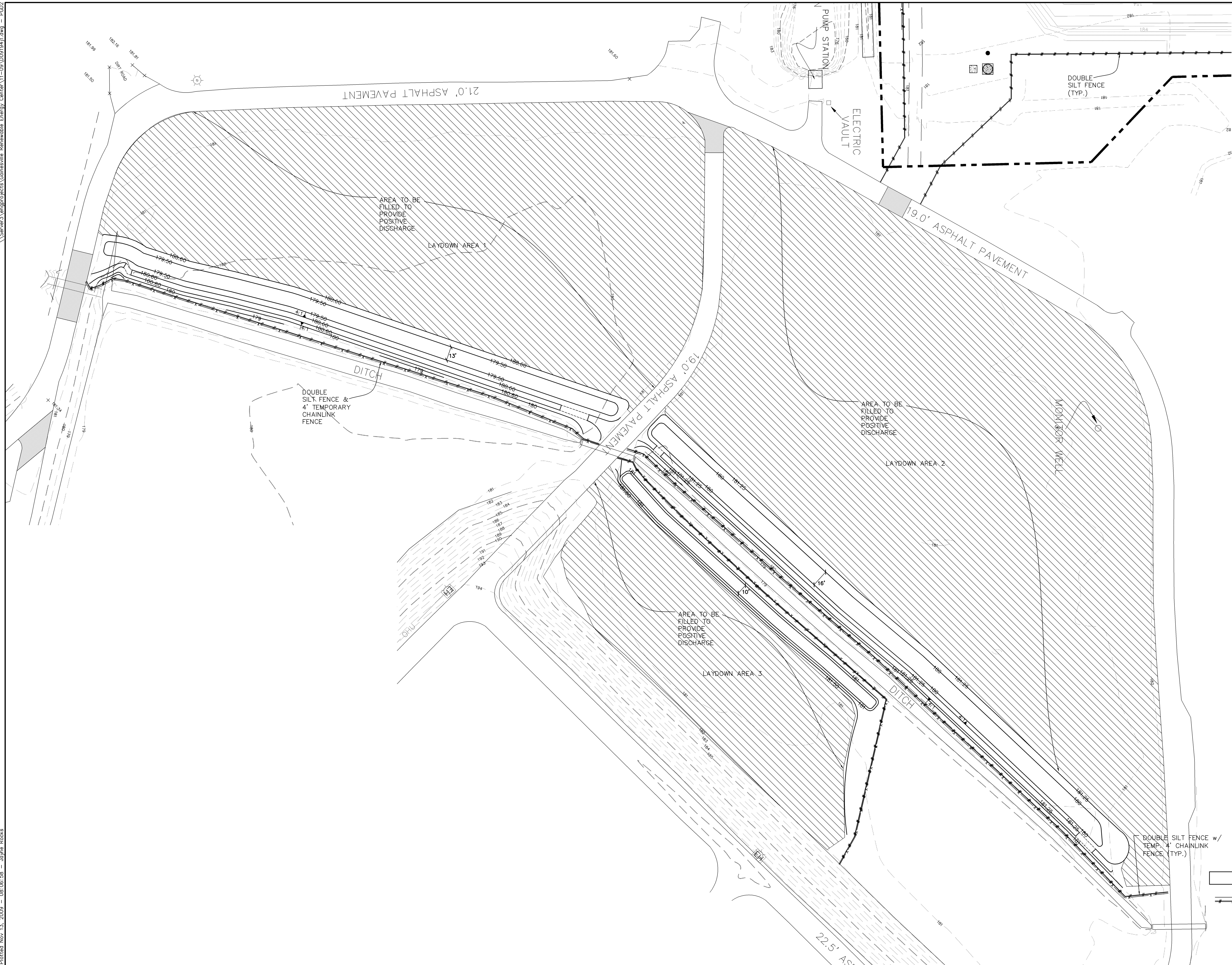


ENG. DENSMAN & ASSOCIATES, INC.
ENGINERS - SURVIVORS - PLANNERS
 2404 N.W. 43rd St. Gainesville, Florida 32604-6602
 Tel. (352) 373-3341 Fax. (352) 373-7249
 E-Mail: eda@atlantic.net

TEMPORARY CRAFT PARKING PAVING, GRADING AND DRAINAGE PLAN

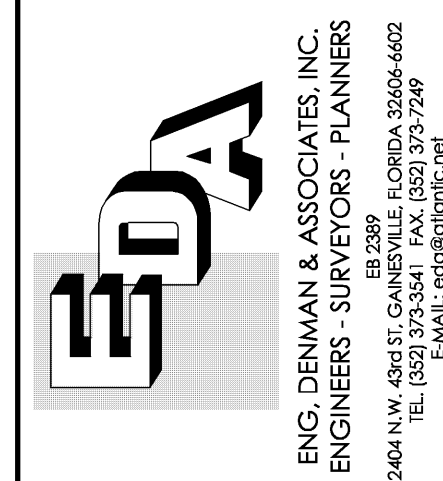
C2.20

[illegible]




NORTH
SCALE: 1" = 40'

GRAPHIC SCALE



**GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA**

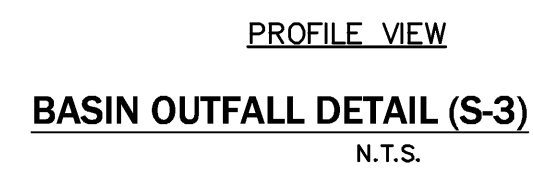
LAYDOWN AREA PAVING, GRADING AND DRAINAGE PLAN

Project phase:	
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E.	51532
Engineer	Certificate No.

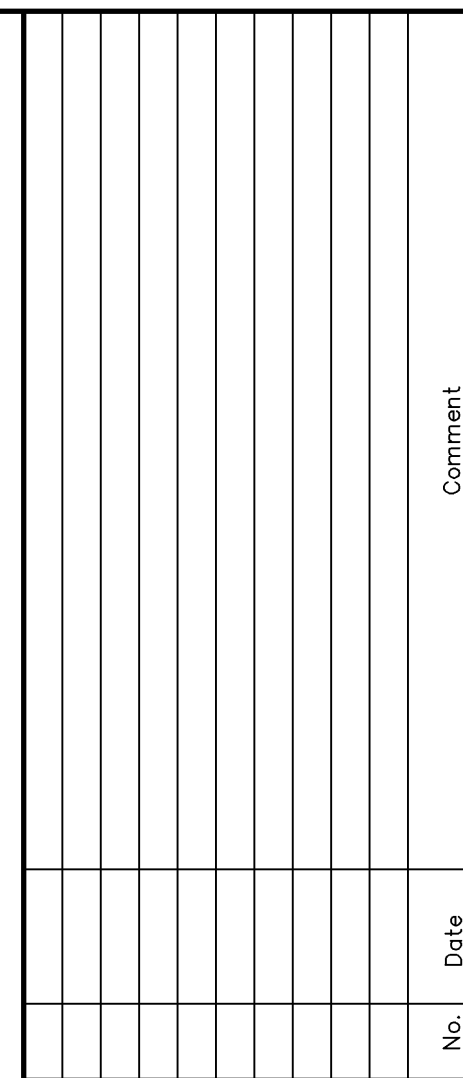
Sheet No.:

C2.21

[illegible]



S-1	S-3
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 178.00	INV. EL. = 180.00
S-2	S-4
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 176.05	INV. EL. = 180.20
S-3	
TYPE C INLET	
FDOT INDEX 232	
TOP EL. = 183.25	
WEIR EL. = 182.25	
3.50" ORIFICE EL. = 180.75	
INV. EL. = 178.50	
S-4	
MITERED END SECTION	
FDOT INDEX 272	
INV. EL. = 177.50	



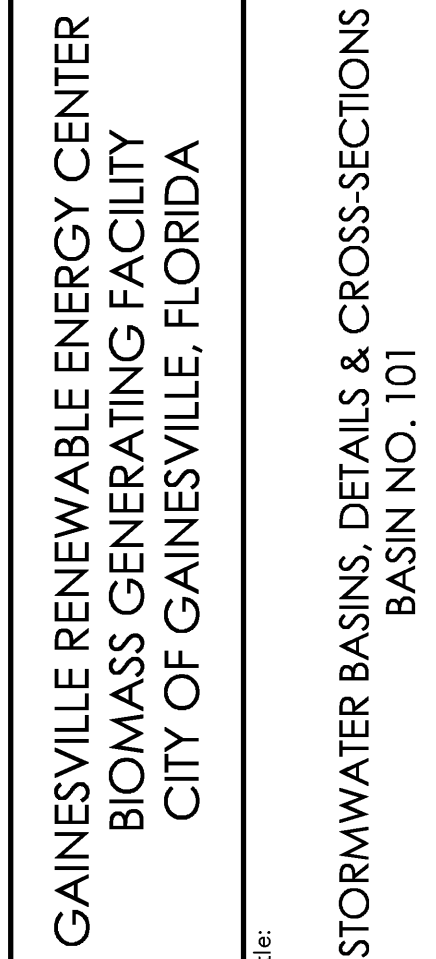
STORMWATER BASINS, DETAILS & CROSS-SECTIONS
BASIN NO. 100

Sheet No.:

C2.40

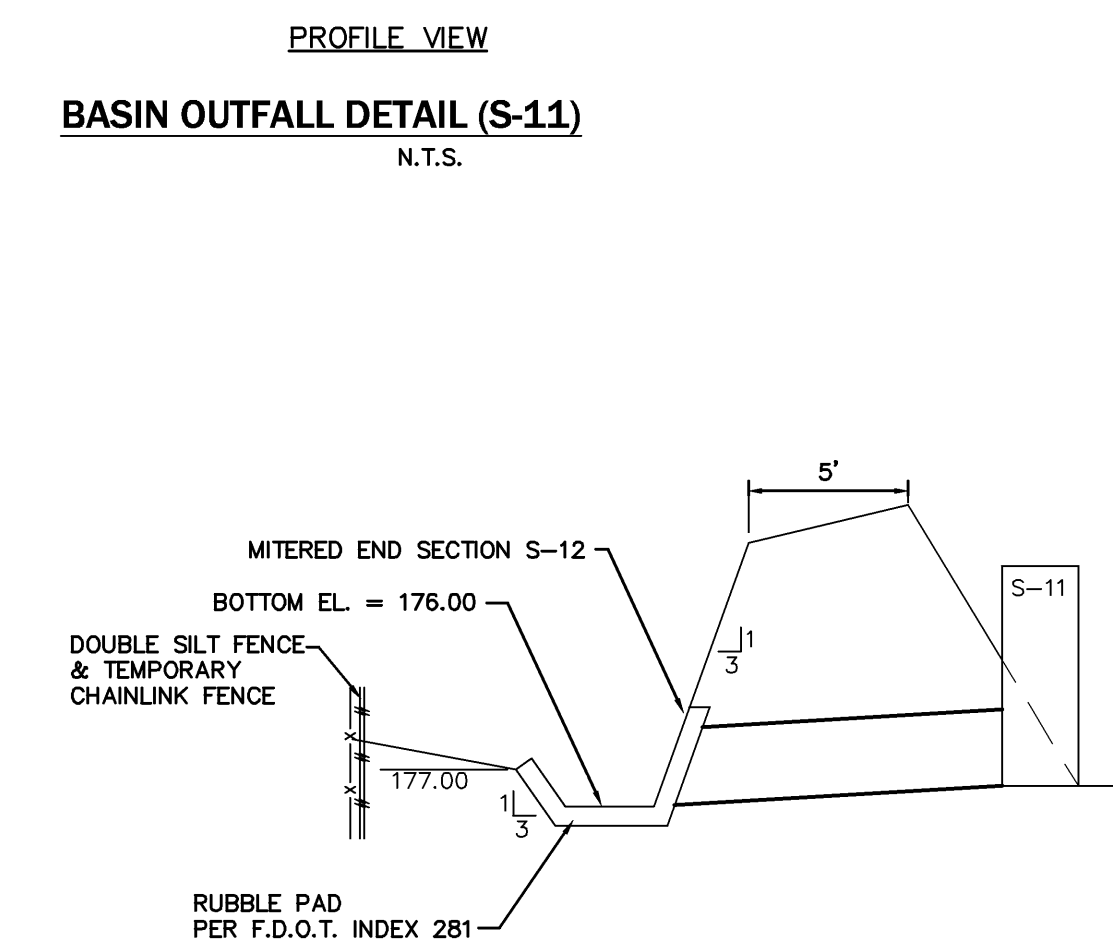
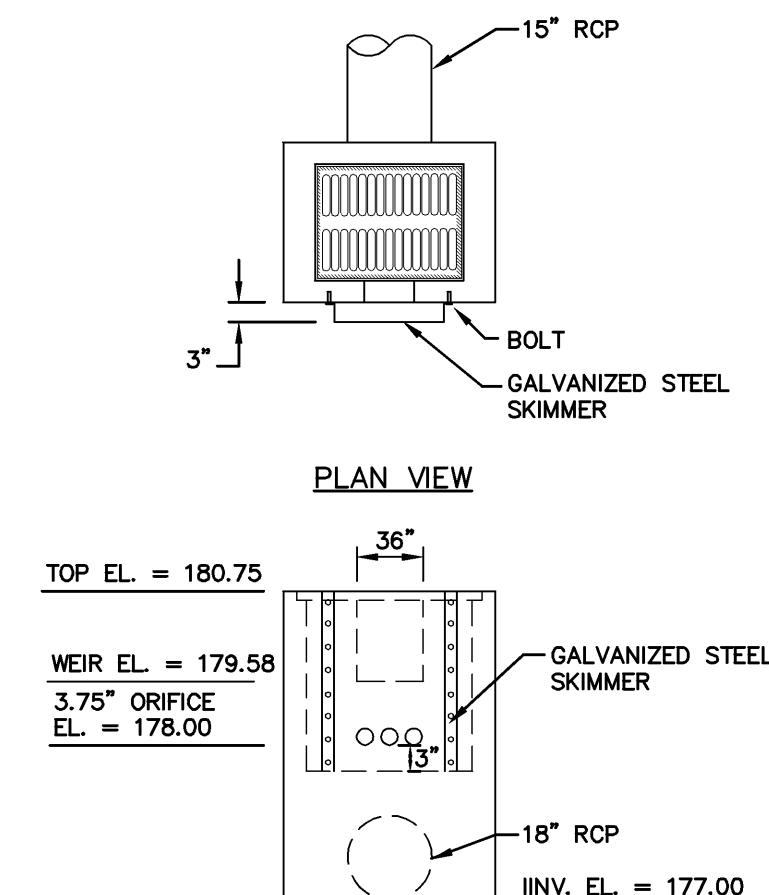
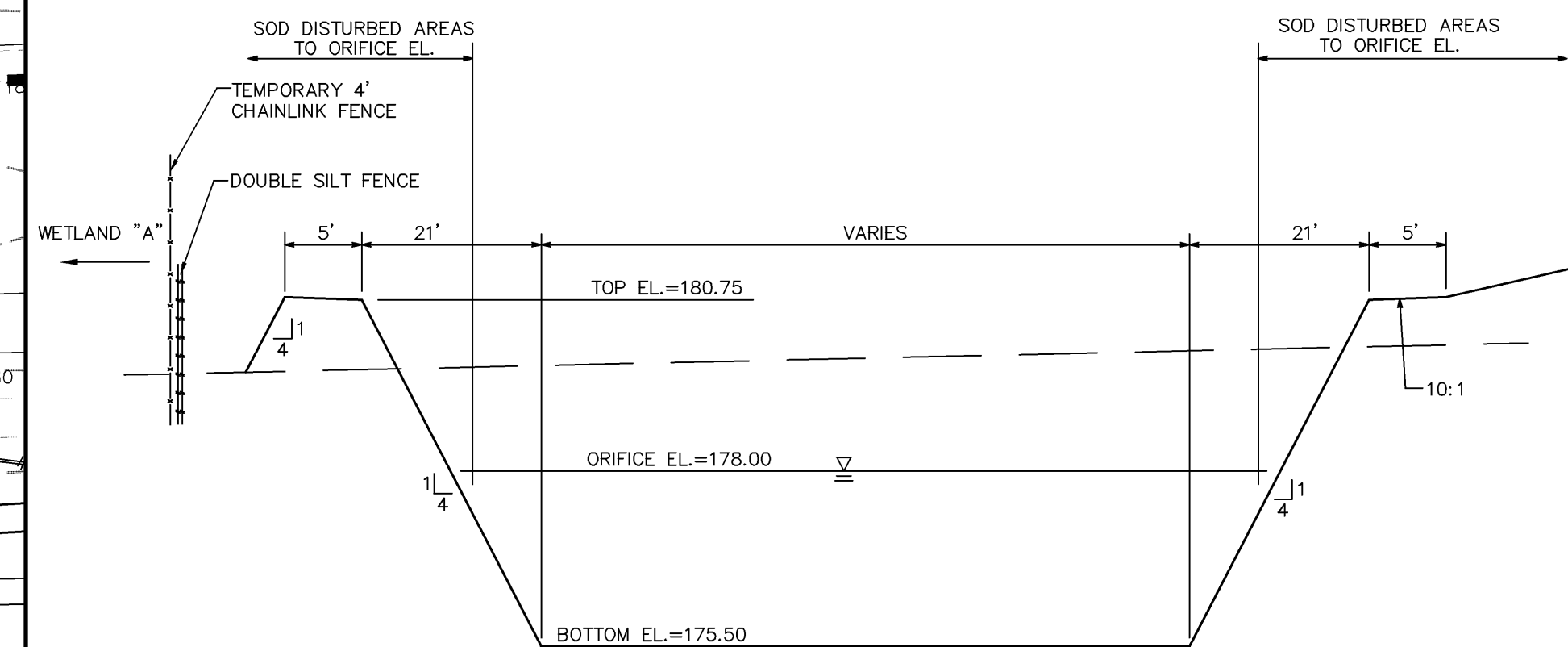
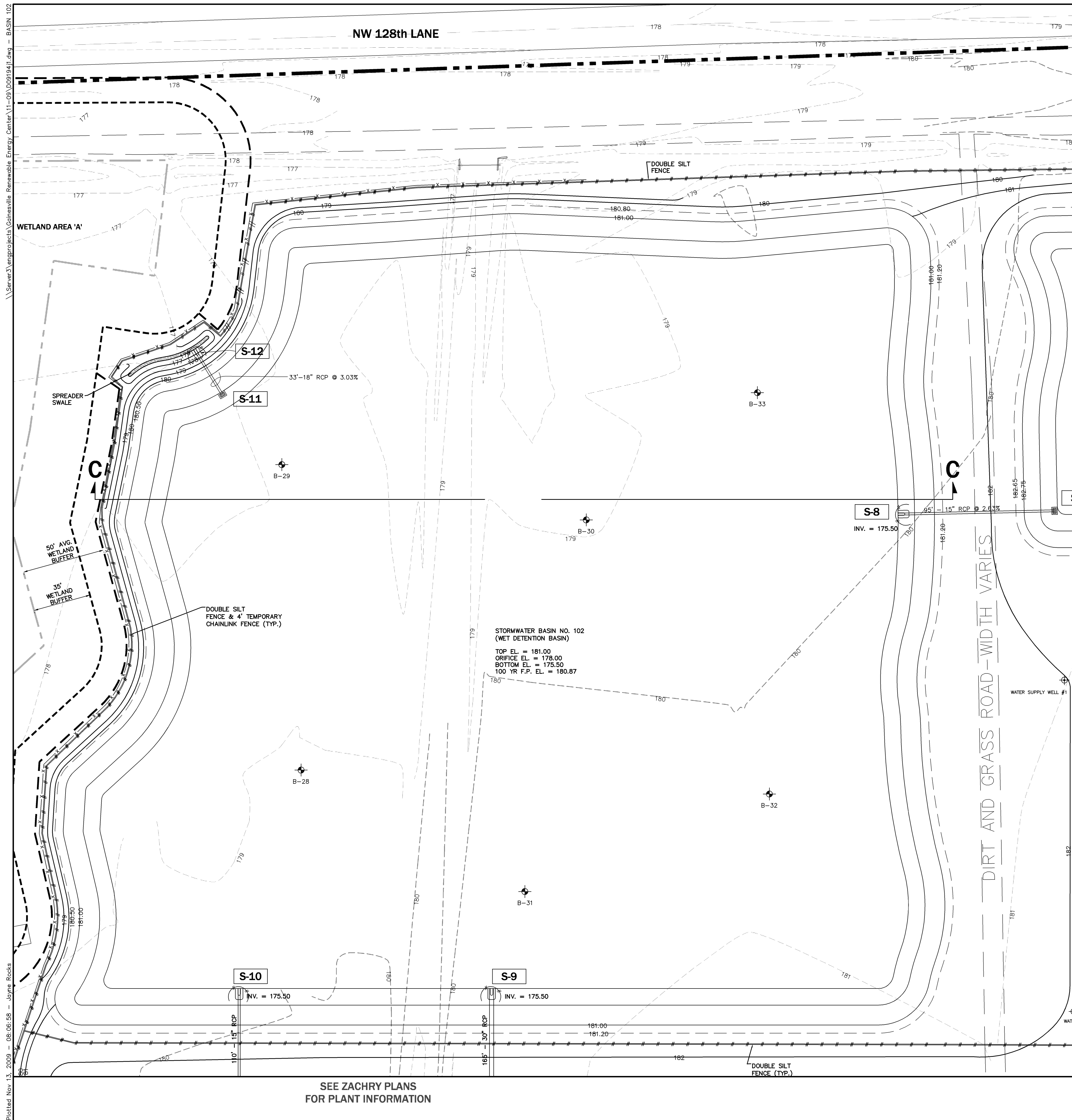


S=3	S=7
TYPE C INLET	TYPE C INLET
FDOT INDEX 232	FDOT INDEX 232
TOP EL. = 183.75	TOP EL. = 182.75
WEIR EL. = 182.25	WEIR EL. = 181.58
3.50" ORIFICE EL. = 180.75	3.25" ORIFICE EL. = 180.25
INV. EL. = 178.50	INV. EL. = 178.00
S=4	S=8
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 177.50	INV. EL. = 175.50
S=5	S=13
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 177.50	INV. EL. = 180.00
S=6	S=14
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 177.50	INV. EL. = 180.20

C2.41

Project phase:	
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer 51532 Certificate No.	

[illegible]



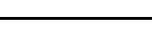
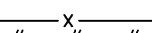
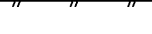
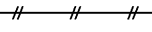
STORMWATER STRUCTURE SCHEDULE

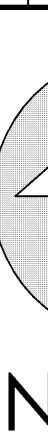
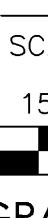
S-7	S-11
TYPE C INLET	TYPE C INLET
FDOT INDEX 232	FDOT INDEX 232
TOP EL. = 182.75	TOP EL. = 180.75
WEIR EL. = 181.58	WEIR EL. = 179.58
3.25" ORIFICE EL. = 180.25	3.75" ORIFICE EL. = 178.00
INV. EL. = 178.00	INV. EL. = 177.50

S-8	S-12
MITERED END SECTION	MITERED END SECTION
FDOT INDEX 272	FDOT INDEX 272
INV. EL. = 175.50	INV. EL. = 176.00

S-9
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 175.50

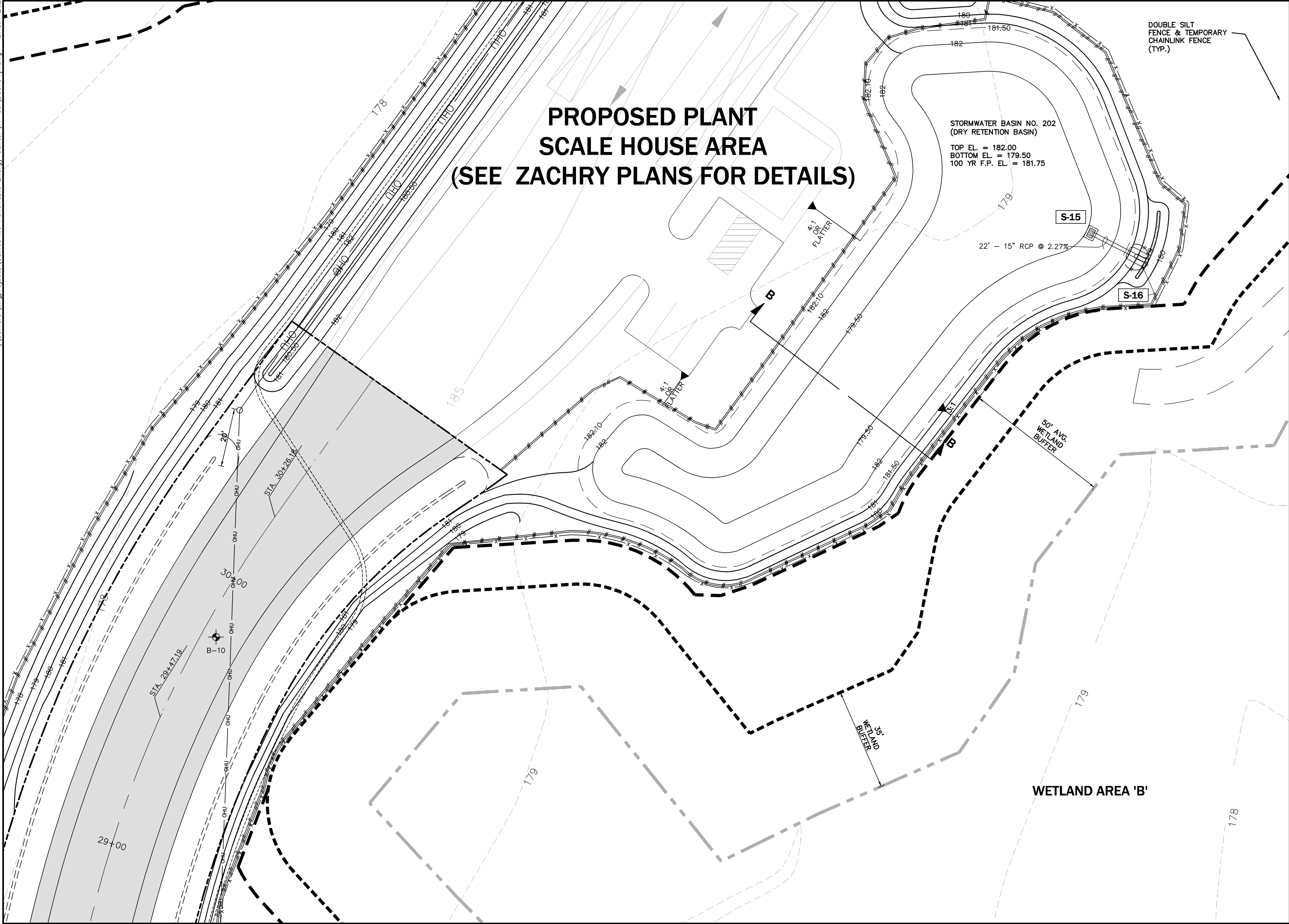
S-10
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 175.50

LEGEND	
	PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
	PROPOSED SILT FENCE
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION
	SOIL TESTING BORING LOCATION

C2.42	Sheet No.:	Project phase: STATE CERTIFICATION		Project:	GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA STORMWATER BASINS; DETAILS & CROSS-SECTIONS BASIN NO. 102	 ENG. BERKMAN & ASSOCIATES, INC. 3000 UNIVERSITY BLVD., SUITE 100 GAINESVILLE, FLORIDA 32608-6602 TEL: (352) 336-7744 E-MAIL: dberkman@eda.net	 NORTH SCALE: 1" = 30'  GRAPHIC SCALE	<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Comment</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	No.	Date	Comment																											
	No.	Date	Comment																																			
Designed: GSV/CAP	Drawn: JWR	Project No.: 09-194 Date: NOV. 13, 2009 Professional Engineer of Record: Claudia S. Vega, P.E. Engineer 51532 Certificate No.																																				
Project No.: 09-194																																						
Date: NOV. 13, 2009																																						
Project No.: 09-194 Date: NOV. 13, 2009																																						

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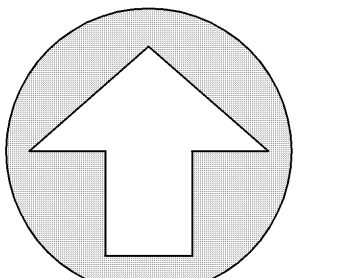
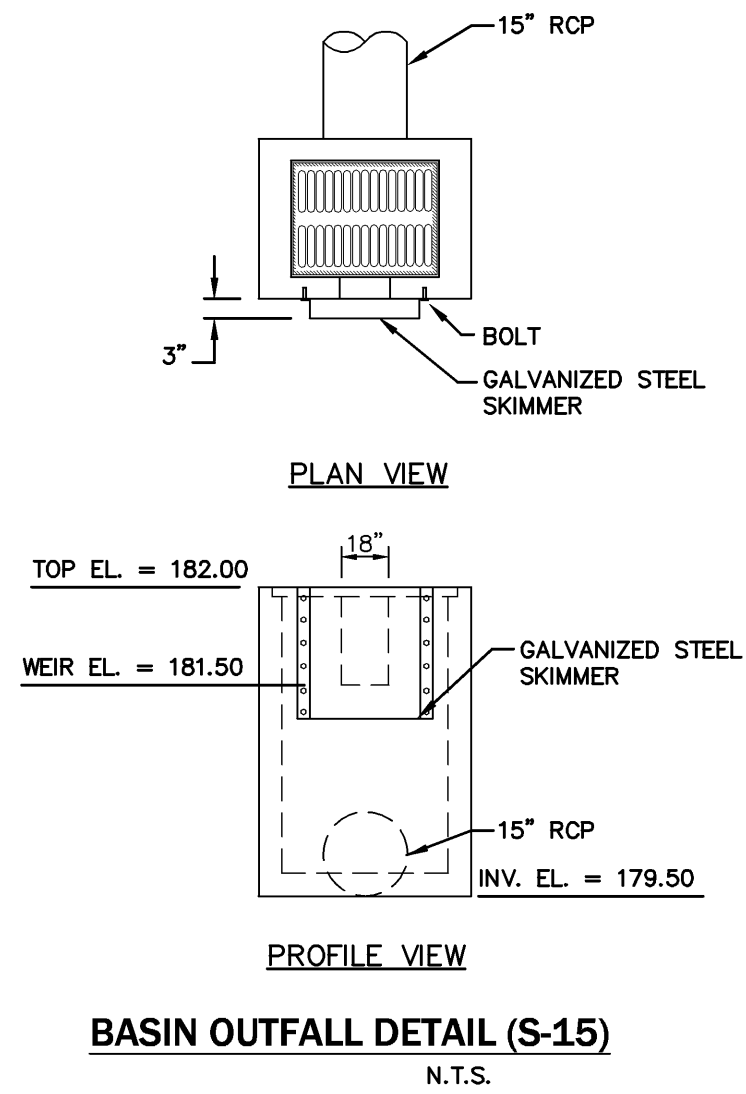
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STORMWATER STRUCTURE SCHEDULE

S-15
TYPE C INLET
FDOT INDEX 232
TOP EL. = 182.00
WEIR EL. = 181.50
INV. EL. = 179.50

S-16
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 179.00

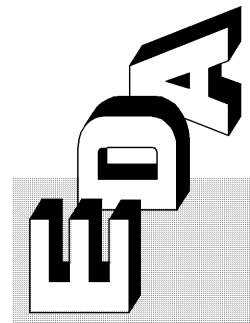


NORTH

SCALE: 1" = 20'

20 10 0 20

GRAPHIC SCALE



ENG. DENHAM & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. FLORIDA AVE., SUITE 400
TAMPA, FL 33613
TEL: (813) 973-3341 FAX: (813) 973-7248
E-MAIL: eda@denhaminc.com

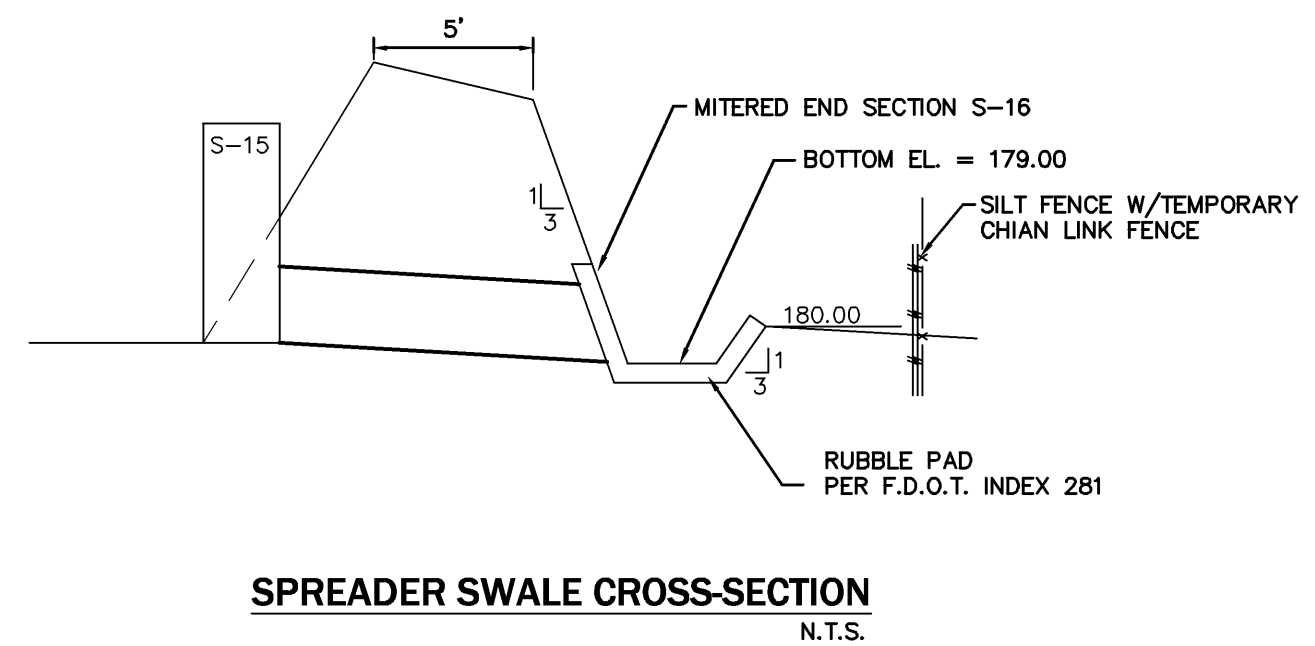
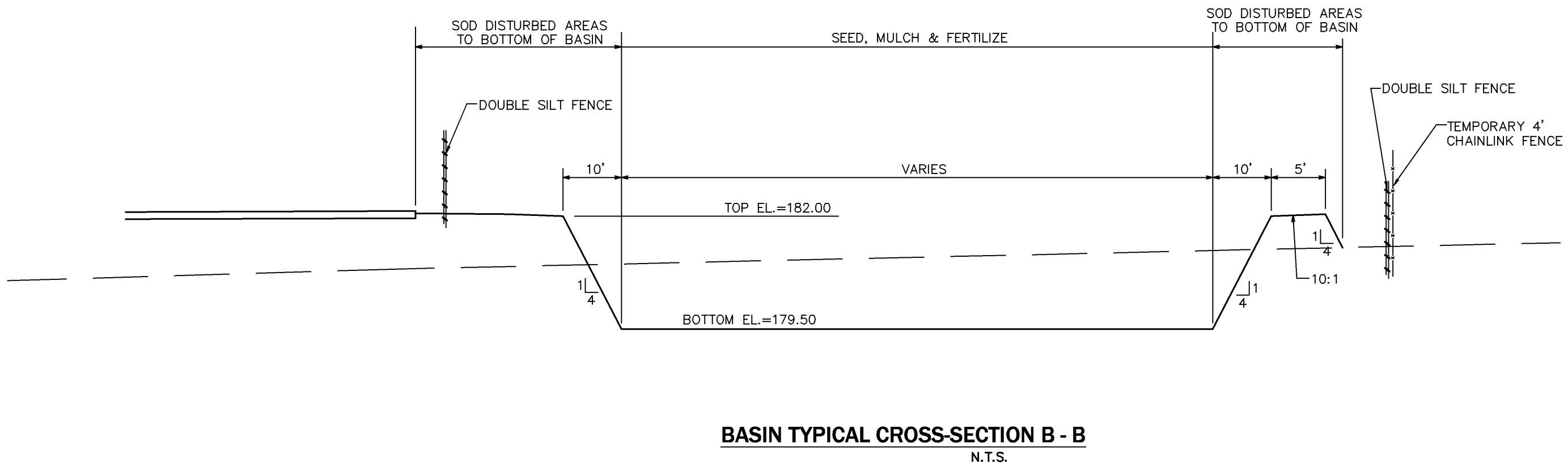
Project: **GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA**

Sheet title: **STORMWATER BASINS, DETAILS & CROSS-SECTIONS
BASIN NO. 202**

Project Phase: STATE CERTIFICATION	Designed: CSV/CAP	Drawn: JVR	Date: NOV. 13, 2009
Project No. 09-194	Professional Engineer of Record:		
Claudia S. Vega P.E. Engineer			51332 Certificate No.

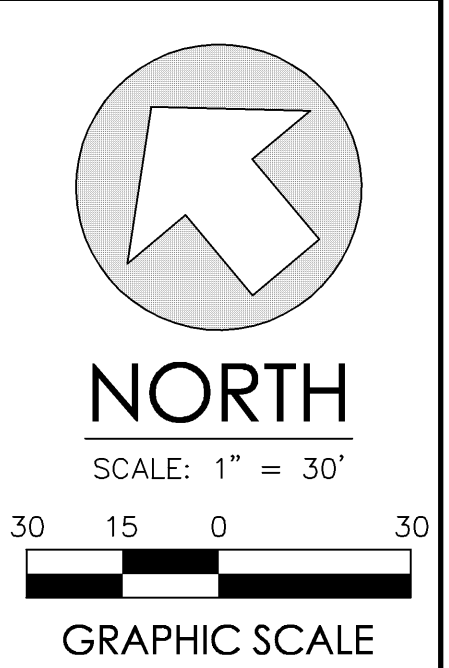
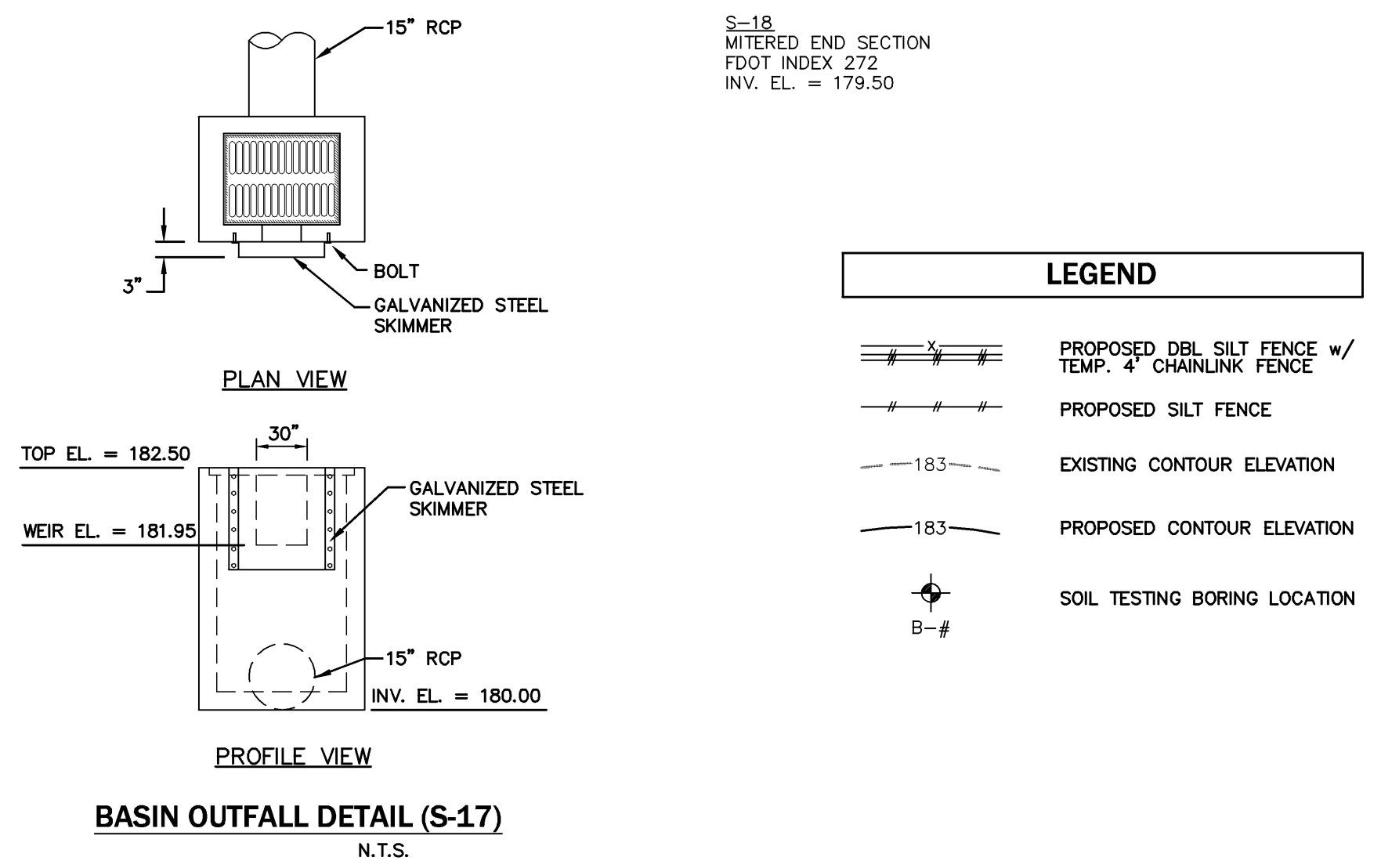
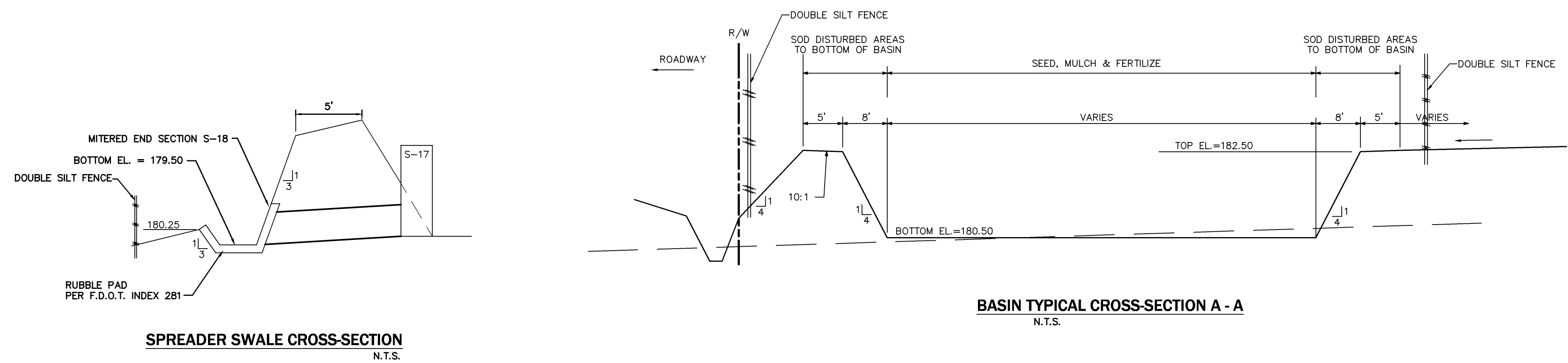
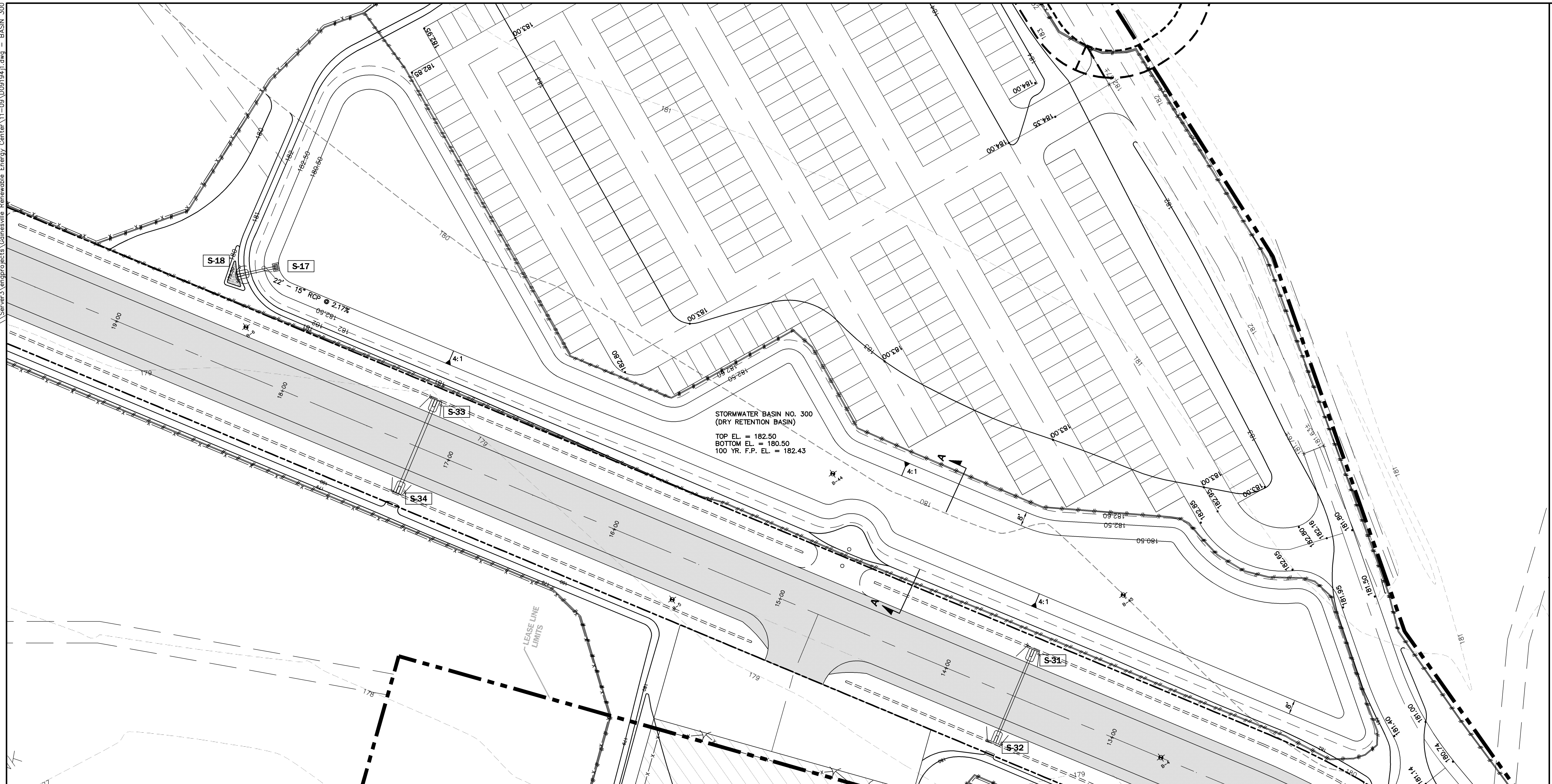
Sheet No.:

C2.43



LEGEND

- PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
- PROPOSED SILT FENCE
- EXISTING CONTOUR ELEVATION
- PROPOSED CONTOUR ELEVATION
- SOIL TESTING BORING LOCATION



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS

EA 2089
 4004 N.W. 43rd ST., GAINESVILLE, FLORIDA 32606-6602
 TEL. (352) 334-4444 FAX (352) 373-7249
 E-MAIL: eda@edainc.net

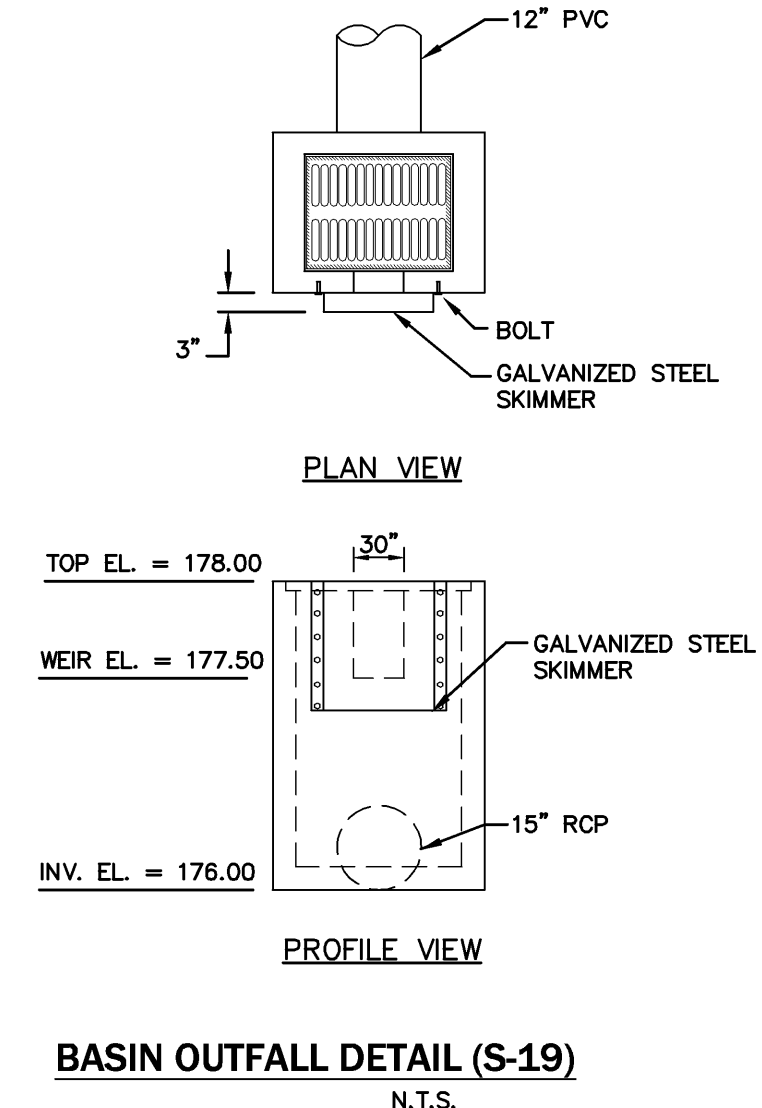
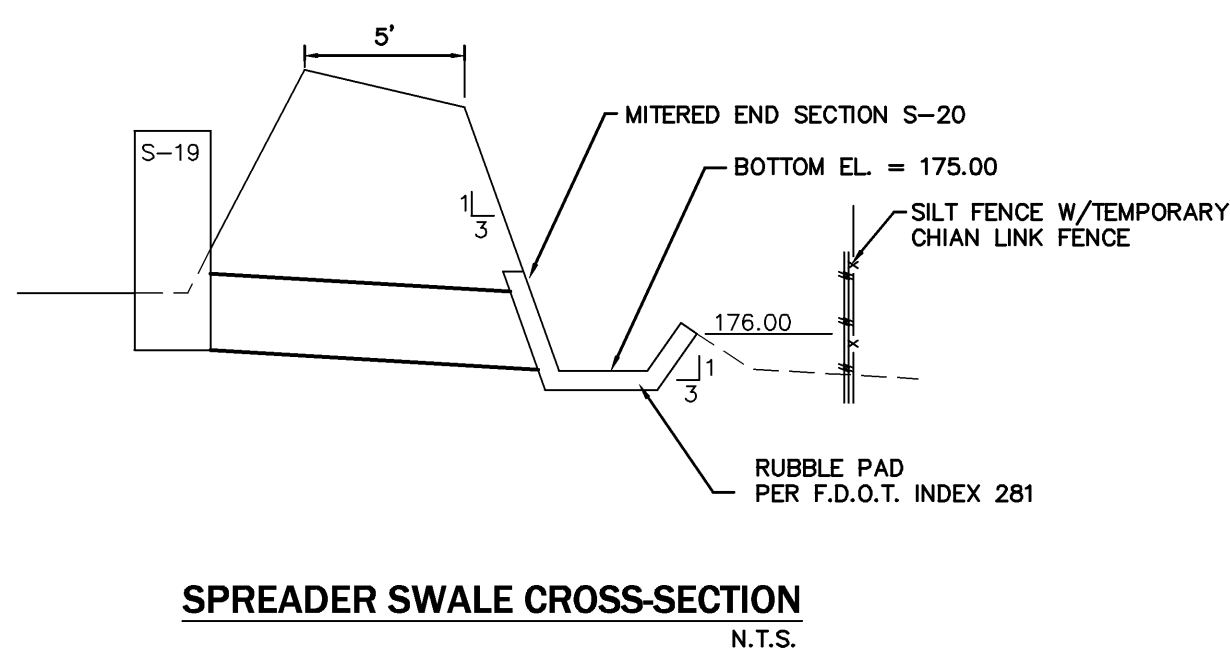
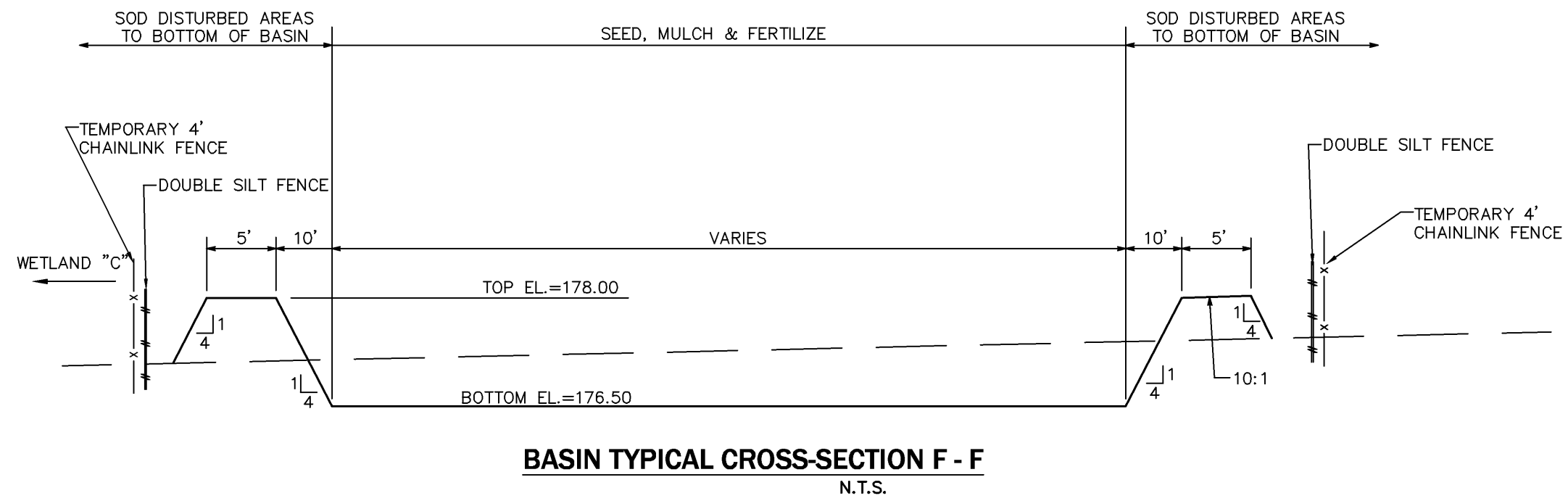
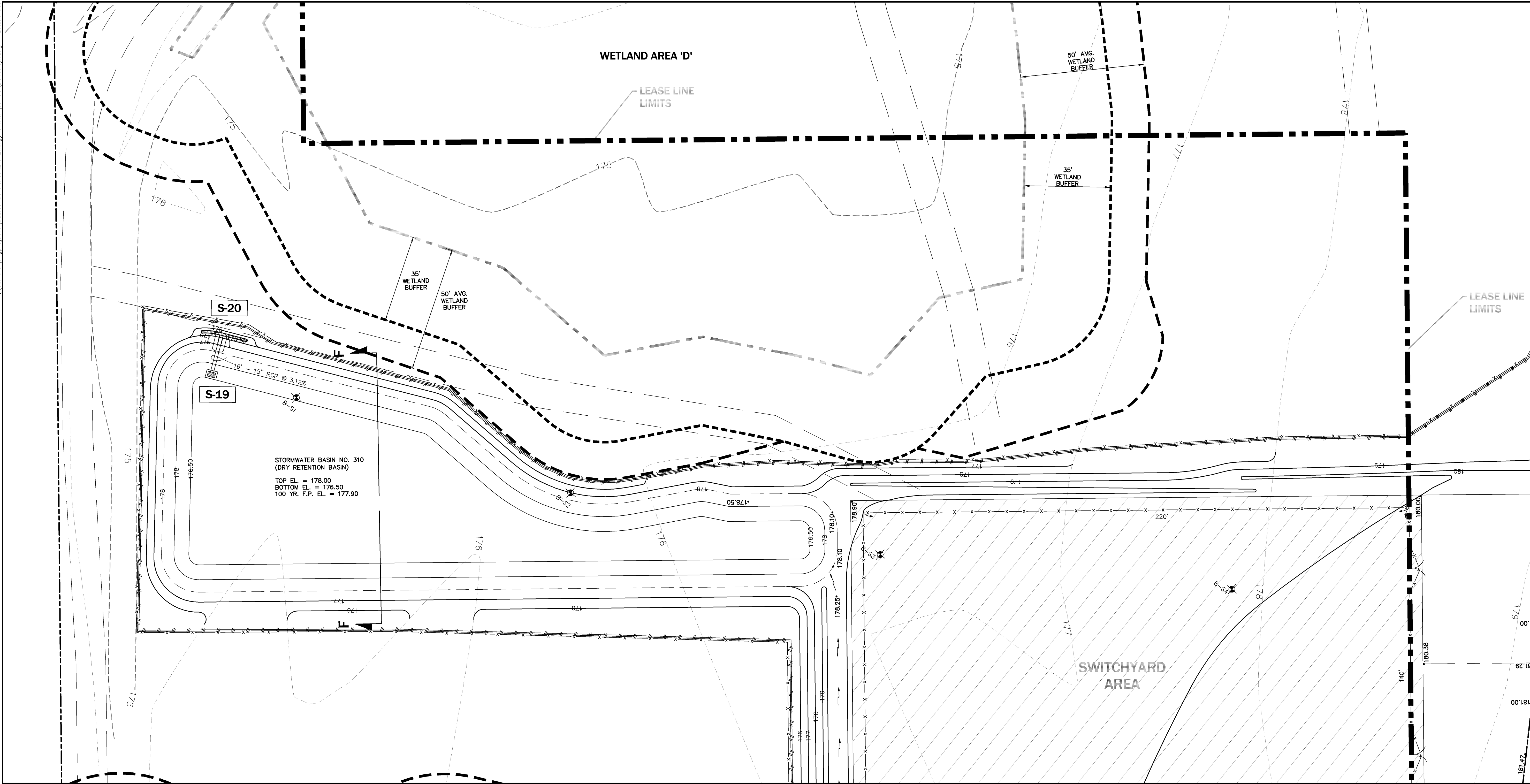
GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

e: STORMWATER BASINS, DETAILS & CROSS-SECTIONS
BASIN NO. 300

Project phase:	
STATE CERTIFICATION	
Designed: CSV/CAP	Drawn: JVR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
<u>Claudia S. Vega P.E.</u>	<u>51532</u>
Engineer	Certificate No.

Plotted Nov. 13, 2009 - 08:06:58 - Joyce Rocks

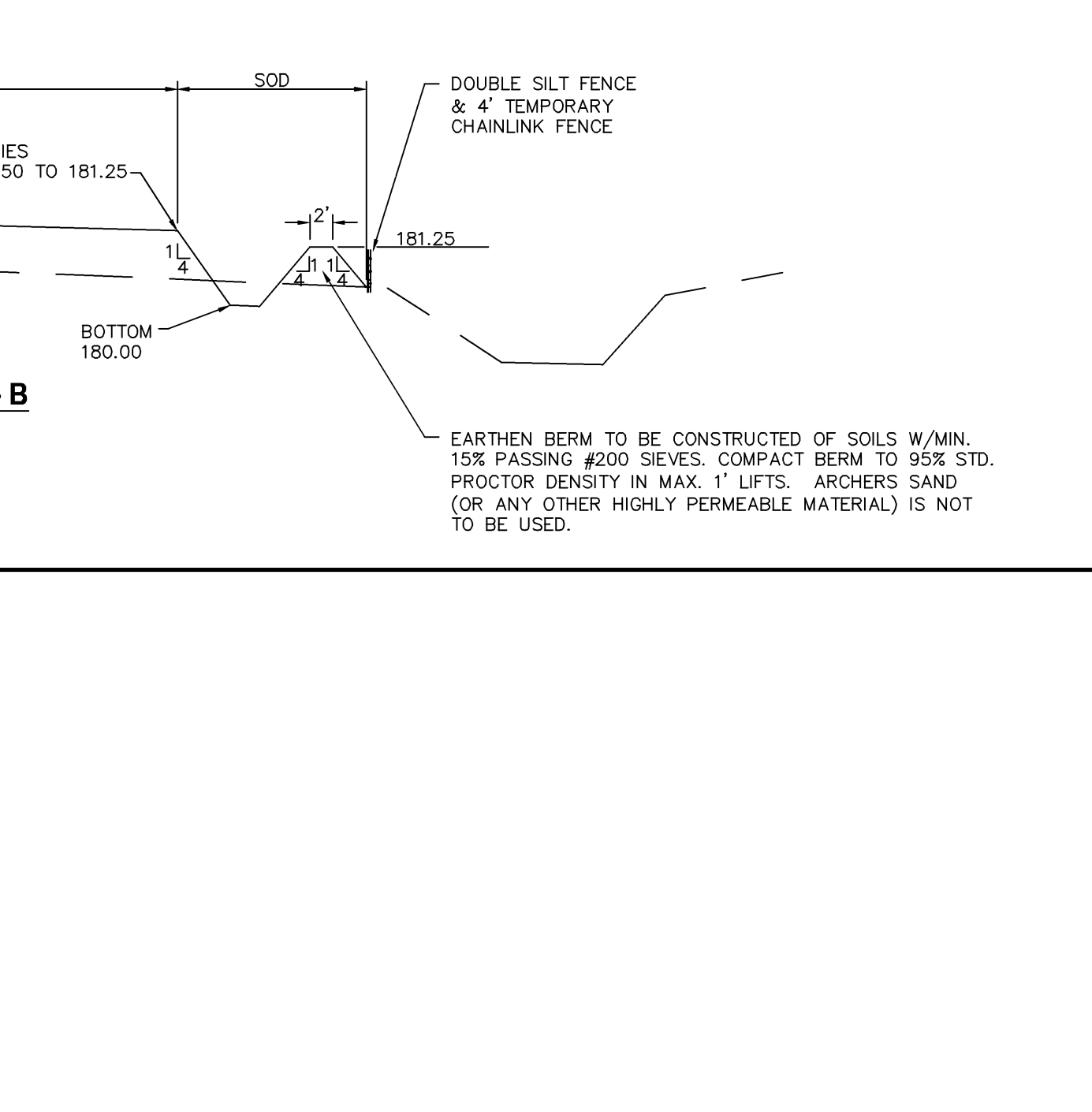
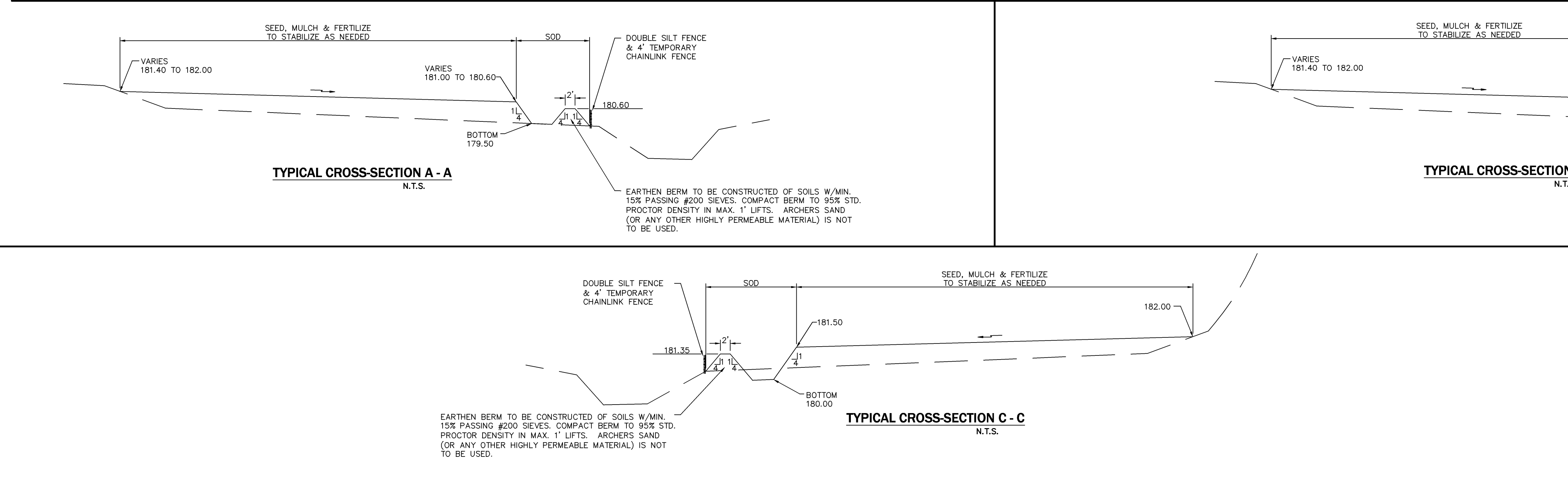
\\Server3\enr\projects\Gainesville Renewable Energy Center\11-09\009194\1.dwg - BASIN 310

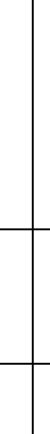


STORMWATER STRUCTURE SCHEDULE	
S-19	TYPE C INLET
FDOT INDEX	232
TOP EL.	= 178.00
WEIR EL.	= 177.50
INV. EL.	= 176.00
S-20	MITERED END SECTION
FDOT INDEX	272
INV. EL.	= 175.50

LEGEND	
	PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
	PROPOSED SILT FENCE
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION
	SOIL TESTING BORING LOCATION

Project Phase:		Project:		Sheet Title:	
STATE CERTIFICATION		GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA		STORMWATER BASINS, DETAILS & CROSS-SECTIONS BASIN NO. 310	
Designed: CSJ/CAP	Drawn: JVR	Project No. 09-194		Date: NOV. 13, 2009	
Professional Engineer of Record:		Professional Engineer of Record:		Professional Engineer of Record:	
Claudia S. Vega P.E.		Claudia S. Vega P.E.		Claudia S. Vega P.E.	
Engineer		Engineer		Engineer	
Certificate No. 51332		Certificate No. 51332		Certificate No. 51332	
Sheet No.:		Sheet No.:		Sheet No.:	
C2.45		C2.45		C2.45	



C2.46	Project phase:		Project:		 NORTH SCALE: 1" = 50'  GRAPHIC SCALE	 ENG. DENMAN & ASSOCIATES, INC. ENGINEERS - SURVEYORS - PLANNERS 2604 H.W. 301 SUITE 100 GAINESVILLE, FL 32608-6602 TEL: (352) 373-5441 FAX: (352) 373-3249 E-MAIL: eda@denmaninc.net	No.	Date	Comment
	STATE CERTIFICATION		GAINESVILLE RENEWABLE ENERGY CENTER						
	Designed: CSV/CAP Drawn: JVR		BIOMASS GENERATING FACILITY						
	Project No: 09-194 Date: NOV. 13, 2009		CITY OF GAINESVILLE, FLORIDA						
	Professional Engineer of Record:		Sheet title:						
Sheet No.:		Professional Engineer of Record:		LAYDOWN AREA		51532			
		Claudia S. Vega P.E.		TYPICAL CROSS-SECTIONS					
		Engineer							
		Certificate No.							

THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MAY BE MODIFIED AND UPDATED DURING CONSTRUCTION AS A RESULT OF WEATHER, UNPREDICTABLE EVENTS AND SITE INSPECTIONS.

THIS DOCUMENT WAS PREPARED IN ORDER TO BE IN COMPLIANCE WITH CHAPTER 62-621.300 (4) OF THE FLORIDA ADMINISTRATIVE CODE, WHICH PERTAINS TO THE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES. THE ADMINISTRATIVE CODE GRANTS THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) THE AUTHORITY TO REGULATE POINT SOURCE DISCHARGES OF STORM-WATER FROM CONSTRUCTION SITES. THIS DOCUMENT ESTABLISHES A STORMWATER POLLUTION PREVENTION PLAN FOR THE SITE AND IS ORGANIZED TO CORRESPOND TO PART V OF DEP DOCUMENT NO. 62-621.300 (4) (A) FDEP FORM 62-621.300 (4) (B) IS TO BE SUBMITTED IN CONJUNCTION WITH THIS DOCUMENT.

I. PROJECT INFORMATION:

PROJECT: GAINESVILLE RENEWABLE ENERGY CENTER (GREC)
BIOMASS GENERATING FACILITY
COUNTY: ALACHUA
SECTION/TOWNSHIP/RANGE: S 27, T 8 SOUTH, R 19 EAST
COUNTY PARCEL NO.: A PORTION OF 05884-001-000
LATITUDE AND LONGITUDE: 29°46'07", 82°23'53"
STREET ADDRESS: 10001 N.W. 13th STREET
PROJECT AREA: 134 Ac.
APPROXIMATE AREA TO BE DISTURBED BY CONSTRUCTION: 76 Ac.

II. SITE DESCRIPTION:

1. THE PROJECT INCLUDES THE CONSTRUCTION OF A BIOMASS ELECTRIC GENERATING FACILITY IN CONJUNCTION WITH GAINESVILLE REGIONAL UTILITIES WITH ASSOCIATED PAVING, DRAINAGE AND UTILITY IMPROVEMENTS.
- THE PROPOSED STORMWATER SYSTEM PROVIDES WATER QUALITY, AND FLOOD CONTROL.
2. THE SOIL CONDITIONS WERE INVESTIGATED AND SUMMARIZED IN THE SOILS REPORT PREPARED BY GSE. THE PROPOSED DRAINAGE PLAN WILL CONSIST OF 3 MAJOR DRAINAGE AREAS.
3. EXISTING AND FUTURE DRAINAGE PATTERNS ARE SHOWN ON THE DRAINAGE PLAN FOR PRE-DEVELOPMENT CONDITIONS AND POST-DEVELOPMENT CONDITIONS. OUTFALLS, AND STORMWATER BASINS ARE SHOWN IN THE DRAINAGE PLAN AND THE DETAIL PLAN.
4. SEQUENCE OF CONSTRUCTION:
- A. PRIOR TO CONSTRUCTION, SILT FENCING AND TREE PROTECTION BARRICADES SHALL BE INSTALLED AND ALL EXISTING DRAINAGE STRUCTURES SHALL BE PROTECTED IN ACCORDANCE WITH FDOT INDEX #102.
- B. THE CONSTRUCTION ENTRANCE WILL BE STABILIZED TO MINIMIZE THE CREATION OF DUST AND OFF SITE TRACKING OF SEDIMENTS.
- C. THE SITE SHALL BE CLEARED AND GRUBBED OF UNDESIRABLE VEGETATION.
- D. THE UNDERGROUND UTILITIES AND STORMWATER PIPING WILL BE INSTALLED AND CONNECTED TO EXISTING STRUCTURES, WHERE APPLICABLE.
- E. THE SITE WILL BE ROUGHLY GRADED, IF SUITABLE, THE EXCAVATED MATERIAL MAY BE USED AS FILL FOR ON-SITE GRADING, THE ROADWAYS SHALL BE GRADED.
- F. THE STORMWATER BASINS SHALL BE CONSTRUCTED AS FOLLOWS:
1. INITIALLY CONSTRUCT THE WET DETENTION AND DRY RETENTION BASINS TO ROUGH GRADE BY UNDER-EXCAVATING THE BASIN BOTTOM AND SIDES BY APPROXIMATELY 12 INCHES.
2. AFTER THE ROADWAY AND SIDE SWALES HAVE BEEN GRADED, THE INTERIOR SIDE SLOPES AND BASIN BOTTOM SHALL BE EXCAVATED TO FINAL DESIGN SPECIFICATIONS. THE EXCESS SOIL AND UNDESIRABLE MATERIAL MUST BE CAREFULLY EXCAVATED AND REMOVED FROM THE BASINS SO THAT ALL ACCUMULATED SILTS, CLAYS, ORGANICS, AND OTHER FINE SEDIMENT MATERIAL HAS BEEN REMOVED FROM THE BASIN AREA. THE EXCAVATED UNSUITABLE MATERIAL SHALL BE DISPOSED OF AND TAKEN OFF-SITE.
3. ONCE THE BASINS HAVE BEEN EXCAVATED TO FINAL GRADE, THE ENTIRE BASIN BOTTOM MUST BE DEEP RAKED AND LOOSENED FOR OPTIMAL INFILTRATION.
4. THE BASINS SHALL BE SODDED AND STABILIZED ACCORDING TO THE PLANS.
- G. ROADWAYS AND PARKING LOTS WILL BE COMPACTED AND A LIMEROCK BASE WILL BE ESTABLISHED FOLLOWED BY AN OVERLAY OF ASPHALTIC CONCRETE. BUILDINGS SHALL BE CONSTRUCTED.
- H. UPON SIGNIFICANT COMPLETION OF CONSTRUCTION, THE STORMWATER SYSTEM SHALL BE FLUSHED OUT TO REMOVE ACCUMULATED DEBRIS AND SEDIMENT.
- I. STORMWATER BASINS WILL BE SCRAPED CLEAN OF ACCUMULATED SEDIMENT.
- J. ALL DISTURBED AREAS WITHIN THE CONSTRUCTION AREA SHALL BE COMPLETELY GRASSED AND/OR LANDSCAPED. EVIDENCE OF EROSION MUST BE PRESENT PRIOR TO REMOVAL OF SILT FENCING AND OTHER GROWTH CONTROL APPLICATIONS.

III. CONTROLS:

- THE CONTROLS SHALL BE IMPLEMENTED AND MAINTAINED DURING THE ENTIRE CONSTRUCTION OF THE PROJECT. IF SITE CONDITIONS ARE SUCH THAT ADDITIONAL CONTROL MEASURES ARE REQUIRED THAN WHAT IS SPECIFIED IN THE EROSION AND SEDIMENTATION CONTROL PLAN, THEN THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL BEST MANAGEMENT PRACTICES NECESSARY.
1. THE CONSTRUCTION ACCESS SHALL BE STABILIZED WITH GRAVEL AND TEMPORARY VEGETATION TO PREVENT SILT LEAVING THE SITE.
2. TREE BARRICADES SHALL BE IMPLEMENTED BEFORE CLEARING AND GRUBBING OF ANY OF THE WORK AREAS.
3. BEFORE CLEARING, SILT FENCES SHALL BE INSTALLED AROUND THE PERIMETER OF THE CONSTRUCTION AND AROUND THE WETLAND(S) AND/OR BASIN(S) AS SHOWN IN THE PLANS. ALL EXISTING STORM DRAINAGE SWALES AND INLETS SHALL BE PROTECTED PER FDOT INDEX 102.
4. AFTER CLEARING BUT BEFORE EXCAVATION AND GRADING, TEMPORARY BERMS AND SWALES SHALL BE CONSTRUCTED AS REQUIRED TO DIVERT THE FLOW INTO THE CORRESPONDING STORMWATER BASIN.
5. ALL BASIN AREAS SHALL BE PROTECTED AS INDICATED ON THE PLANS.
6. THE STORMWATER BASINS SHALL BE ROUGH GRADED TO WITHIN 6" OF THE DESIGNED BASIN BOTTOM. THE BASIN SIDE SLOPES SHALL BE STABILIZED AS SHOWN IN THE PLANS BY SEEDING, MULCHING AND/OR SODDING TO PREVENT EXCESSIVE EROSION.
7. DURING CONSTRUCTION OF PAVING AND BUILDINGS, EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED AS REQUIRED.
8. ALL DISTURBED AREAS WITHIN THE CONSTRUCTION SITE SHALL BE COMPLETELY LANDSCAPED AND/OR GRASSED. FINAL STABILIZATION INCLUDING SEEDING, MULCHING, SODDING OR RIPRAP SHALL BE INSTALLED AS REQUIRED. GRASS SEEDING RATES AND MIXTURES SHALL BE PER FDOT INDEX 104. EVIDENCE OF GROWTH MUST BE PRESENT PRIOR TO REMOVAL OF SILT FENCING AND OTHER EROSION CONTROL APPLICATIONS AND PRIOR TO FINAL RELEASE.

IV. EROSION AND SEDIMENTATION CONTROLS:

STABILIZATION PRACTICES:

1. ALL ENTRANCES TO THE SITE SHALL BE STABILIZED BEFORE CONSTRUCTION AND FURTHER DISTURBANCE BEGINS. GRAVEL PAD SHALL PROVIDE STABILIZATION AND MINIMIZE THE AMOUNT OF SEDIMENT LEAVING THE SITE. MAINTENANCE OF THE ENTRANCE SHALL INCLUDE SWEEPING OF THE AREA ADJACENT TO THE ENTRANCE. STONE AND GRAVEL MIGHT NEED TO BE PERIODICALLY ADDED TO MAINTAIN THE EFFECTIVENESS OF THE ENTRANCE(S).
2. TREE BARRICADES SHALL BE INSTALLED AROUND THE TREES AS SHOWN IN THE DETAIL PLAN TO PROTECT THE EXISTING VEGETATION.
3. MULCH SHALL BE PLACED IN THE AREAS REQUIRED TO PREVENT EROSION FROM STORMWATER RUNOFF AND THE AREAS SHOWN ON THE PLANS. MULCH SHALL BE ANCHORED TO RESIST WIND DISPLACEMENT AND SHALL BE INSPECTED AFTER EVERY RAINSTORM TO IDENTIFY AREAS WHERE MULCH HAS BEEN WASHED OUT OR LOOSENED. THESE AREAS SHALL HAVE MULCH COVER REPLACEMENT.
4. SEEDING SHALL BE STARTED AFTER GRADING HAS BEEN FINISHED ON THE AREAS SHOWN IN THE PLANS. SEEDED AREAS SHOULD BE INSPECTED FOR FAILURE TO ESTABLISH, AND NECESSARY REPAIRS AND RESEEDING SHOULD BE MADE AS SOON AS POSSIBLE. ADDITIONAL SEEDING AND MULCH MAY BE REQUIRED AS NECESSARY TO PREVENT EROSION DURING OR AFTER CONSTRUCTION HAS FINISHED.
5. SOD SHALL BE INSTALLED IN THE AREAS SHOWN IN THE PLANS. SOD SHALL BE PEGGED IF INSTALLED ON SLOPES GREATER THAN 3:1. SODDED AREAS SHALL BE MAINTAINED AND INSPECTED TO ENSURE SUCCESSFUL ESTABLISHMENT.

SEDIMENTATION PRACTICES:

1. SILT FENCES SHALL BE INSTALLED IN THE AREAS SHOWN IN THE PLANS AND AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION AREA. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL EVENT TO ENSURE THAT THERE ARE NO GAPS OR TEARS. IF GAPS OR TEARS ARE FOUND THE FABRIC SHOULD BE REPAIRED OR REPLACED. SEDIMENT REMOVAL SHALL BE PART OF THE REGULAR MAINTENANCE. SILT FENCES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION HAS FINISHED AND DISTURBED AREAS ARE PERMANENTLY STABILIZED.
2. DIVERSION SWALES, IF REQUIRED, SHALL BE CONSTRUCTED BEFORE MAJOR LAND DISTURBANCE OF THE RECEIVING BASIN. DIVERSION SWALES SHALL BE STABILIZED AFTER CONSTRUCTION TO MAINTAIN ITS EFFICIENCY.
3. INLETS SHOULD BE TEMPORARILY PROTECTED TO PREVENT SEDIMENT ENTERING THE INLET. BARRIERS WILL CATCH SOIL, DEBRIS AND SEDIMENT AT THE ENTRANCE OF THE INLET.
4. OUTFALL STRUCTURES SHALL HAVE SILT FENCES TO PREVENT SILT FROM ENTERING THE STORMWATER BASINS AND SHALL BE STABILIZED AS REQUIRED TO PREVENT EROSION FROM WASHOUTS.

V. STORMWATER MANAGEMENT:

1. THE PROPOSED PROJECT OBTAINED AN ENVIRONMENTAL RESOURCE PERMIT FROM SUWANNEE RIVER WATER MANAGEMENT DISTRICT (SRWMD) FOR THE CONSTRUCTION AND OPERATION OF A STORMWATER TREATMENT SYSTEM AND CONTROLS. THE PROPOSED SYSTEM (AS SHOWN ON THE PLANS) INCLUDED THE USE OF THE BEST MANAGEMENT PRACTICES (BMP) CONSISTENT WITH THE APPLICABLE REQUIREMENTS OF RULE 40B-4 OF THE DISTRICT. THE OWNER AND/OR THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER TREATMENT SYSTEM AND CONTROLS UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETED AND FINAL STABILIZATION HAS BEEN ACCOMPLISHED. HOWEVER, THE OWNER AND/OR AN ENTITY SIMILAR TO A HOMEOWNERS ASSOCIATION SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER SYSTEM IN PERPETUITY, IN ACCORDANCE WITH THE REQUIREMENTS OF THE ENVIRONMENTAL RESOURCE PERMIT.
2. TO TREAT AND CONTROL THE STORMWATER PRODUCED BY THE PROPOSED DEVELOPMENT, THE PROJECT REQUIRES THE INSTALLATION AND CONSTRUCTION OF THE FOLLOWING BMP'S: 3 DRY RETENTION BASINS AND 3 WET DETENTION BASINS WITH ALL GRADING ASSOCIATED WITH THE CONSTRUCTION. THE BASINS HAVE BEEN DESIGNED TO CONTAIN AND ATTENUATE THE STORMS AND DISCHARGE AT PRE-DEVELOPMENT CONDITIONS, WHILE PROVIDING TREATMENT TO THE RUNOFF AS REQUIRED BY THE DISTRICT AND STATE RULES USING THE GUIDELINES CONTAINED IN THE SRWMD HANDBOOK.

VI. CONTROLS FOR OTHER POTENTIAL POLLUTANTS:

1. WASTE DISPOSAL: NO SOLID MATERIALS, INCLUDING CONSTRUCTION MATERIALS, SHALL BE DISCHARGED TO SURFACE WATERS AND ARE NOT AUTHORIZED UNDER THE ISSUED ENVIRONMENTAL RESOURCE PERMIT.
2. THE USE OF GRAVEL AND CONTINUING SWEEPING ACTIVITIES AT THE ENTRANCE OF THE SITE WILL CONTROL THE TRACKING OF SEDIMENT AND DUST LEAVING THE SITE.
3. THE PROPOSED DEVELOPMENT WILL PROVIDE WATER AND SEWER SYSTEM BY CONNECTING INTO THE CENTRAL MUNICIPAL SYSTEM OF GAINESVILLE REGIONAL UTILITIES.
4. ANY APPLICATION OF FERTILIZERS AND PESTICIDES NECESSARY TO ESTABLISH AND MAINTENANCE OF VEGETATION DURING CONSTRUCTION AND THROUGH PERPETUITY MAINTENANCE SHALL FOLLOW THE MANUFACTURERS RECOMMENDATIONS AND THE APPLICABLE RULES OF THE STATE OF FLORIDA.
5. ANY TOXIC MATERIALS REQUIRED DURING CONSTRUCTION SHALL BE PROPERLY STORED, DISPOSED OF AND CONTRACTOR AND/OR OWNER SHALL PROVIDE THE APPROPRIATE PERMITS FROM THE LOCAL OR STATE AGENCIES.

VII. APPROVED STATE OR LOCAL PLANS:

1. ALL THE SEDIMENT AND EROSION CONTROLS THAT ARE LISTED IN THE SITE PLAN AS APPROVED BY THE SRWMD ARE INCLUDED IN THIS STORMWATER POLLUTION PREVENTION PLAN (SEE ITEM III AND IV).
2. THIS STORMWATER POLLUTION PREVENTION PLAN SHALL BE AMENDED IF REQUIRED BY ANY LOCAL OR STATE AGENCY OR AS REQUIRED BY UNFORESEEABLE CONDITIONS AND THE OWNER SHALL SUBMIT A RE-CERTIFICATION TO THE NPDES STATE OFFICE THAT THE PLAN HAS BEEN AMENDED TO ADDRESS THOSE CHANGES.

VIII. MAINTENANCE:

THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE, INSPECTION SCHEDULE, AND REPAIRS OUTLINED IN THIS PLAN. MAINTENANCE SHALL CONTINUE THROUGHOUT THE PROJECT UNTIL WORK IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER CONSTRUCTION IS COMPLETE.

IN ADDITION TO THE ITEMS MENTIONED IN THE PREVIOUS SECTIONS, THE CONTRACTOR SHALL INITIATE ANY REPAIRS WITHIN 24 HOURS OF BEING REPORTED. IN THE EVENT THAT THE BASINS DO NOT PERFORM PROPERLY OR IF A SINKHOLE DEVELOPS, THE PROJECT ENGINEER SHALL BE NOTIFIED TO ASSIST IN COORDINATING REMEDIAL ACTION.

1. MAINTENANCE WOULD BE DIVIDED IN ROUTINE MAINTENANCE AND REPAIR MAINTENANCE. ALL STORMWATER BMP'S SHOULD BE INSPECTED FOR CONTINUED EFFECTIVENESS AND STRUCTURAL INTEGRITY ON A REGULAR BASIS. THE SYSTEMS SHOULD BE CHECKED AFTER EACH STORM EVENT IN ADDITION TO REGULARLY SCHEDULED INSPECTIONS.
2. ROUTINE MAINTENANCE REQUIREMENTS SHOULD BE INCLUDED IN THE INSPECTOR CHECKLIST TO AID THE INSPECTOR IN DETERMINING WHETHER A BMP'S MAINTENANCE IS ADEQUATE OR NEEDS A REVISION. INSPECTORS SHALL KEEP RECORD OF MAINTENANCE, ROUTINE OR REPAIR, TO PROVIDE EVIDENCE OF AN EFFICIENT INSPECTION AND MAINTENANCE.
3. SIDE ENTRANCES: MAINTENANCE SHALL INCLUDE REPLACEMENT OF GRAVEL AND CLEANING THE SOIL THAT IS TRACKED OFFSITE FOR PROPER DISPOSAL.
4. TREE BARRICADES: MAINTENANCE SHALL INCLUDE INSPECTION OF MESH AND POSTS AND REPAIR OR REPLACEMENT OF DAMAGED VEGETATION.
5. SILT FENCES: MAINTENANCE SHALL INCLUDE SEDIMENT REMOVAL AND INSPECTION TO ENSURE PROPER ANCHORING AND THAT NO TEARING OR GAPS HAVE OCCURRED. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF SILT FENCE.
6. DIVERSION SWALES: MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY RAINFALL EVENT AND ONCE EVERY TWO WEEKS BEFORE FINAL STABILIZATION. THEY SHOULD BE CLEARED OF SEDIMENT AND MAINTAIN VEGETATIVE COVER.
7. TEMPORARY BERMS: MAINTENANCE SHALL INCLUDE REMOVAL OF DEBRIS, TRASH SEDIMENT AND LEAVES. SIDES OF THE BERM SHALL BE INSPECTED FOR EROSION AFTER EACH STORM EVENT.
8. MULCHING: ROUTINE MAINTENANCE SHALL INCLUDE REPLACEMENT PERIODICALLY.
9. SEEDING: ROUTINE MAINTENANCE SHALL INCLUDE RESEEDING OF AREAS THAT FAILED TO ESTABLISH.
10. SODDING: ROUTINE MAINTENANCE SHALL INCLUDE WATERING AND MOWING. REPLACEMENT OF GRASS MAY BE NECESSARY IF COVER IS NOT FULLY ESTABLISHED.
11. INLETS: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT AND MIGHT INCLUDE REMOVAL OF ACCUMULATED SEDIMENT.
12. OUTFALL STRUCTURES: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT TO ASSURE NO EROSION OR SCOUR HAS OCCURRED.
13. DRY RETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.
14. WET DETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.

IX. INSPECTIONS:

1. THE OWNER AND /OR CONTRACTOR SHALL PROVIDE QUALIFIED PERSONNEL TO INSPECT ALL POINTS OF POTENTIAL DISCHARGE FROM THE PROJECT SITE FOR DISTURBED AREAS. THE EROSION AND SEDIMENTATION CONTROLS AND BMP'S AS LISTED IN THIS PLAN, THE INSPECTION SHALL BE PERFORMED DURING CONSTRUCTION AND BEFORE FINAL STABILIZATION, ONCE EVERY SEVEN-CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS GREATER THAN 0.50 INCHES. AFTER FINAL STABILIZATION AND BEFORE FINISH OF CONSTRUCTION THE INSPECTION SHALL BE CONDUCTED ONCE EVERY MONTH.
2. THE CONTRACTOR SHALL INSTALL A RAIN GAUGE AT THE SITE TO MONITOR AND DOCUMENT RAINFALL EVENTS IN EXCESS OF 0.50 INCHES.
3. ALL DISTURBED AREAS AND AREAS USED FOR MATERIALS STORAGE SHALL BE INSPECTED FOR POLLUTANTS ENTERING THE STORMWATER SYSTEM. THE STORMWATER MANAGEMENT SYSTEM AND EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE INSPECTED TO ENSURE THEY ARE OPERATING CORRECTLY. LOCATIONS WHERE VEHICLES ENTER AND LEAVE THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.
4. REPAIR OR MAINTENANCE NEEDED TO ASSURE PROPER OPERATION OF THE STORMWATER POLLUTION PREVENTION PLAN SHALL BE DONE IN A TIMELY MANNER BUT NO LATER THAN 7 CALENDAR DAYS FOLLOWING THE INSPECTION.
5. A REPORT SHALL BE KEPT OF EACH INSPECTION FOR THREE YEARS AFTER FINAL STABILIZATION AND SHALL INCLUDE THE DATES OF EACH INSPECTION, THE SCOPE OF THE INSPECTION, MAJOR OBSERVATIONS, ANY REPAIR AND/OR MAINTENANCE REQUIRED AND ANY INCIDENT OF NON-COMPLIANCE. IF THE REPORT DOES NOT CONTAIN ANY INCIDENTS OF NON-COMPLIANCE, THE REPORT SHALL CONTAIN A CERTIFICATION THAT THE FACILITY HAS BEEN IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN AND THE NPDES PERMIT. THE REPORT SHALL INCLUDE THE NAME AND QUALIFICATIONS OF THE INSPECTOR AND SHALL BE SIGNED IN ACCORDANCE TO FDEP RULE 62-621.300, PART VI.C. A COPY OF THE CONSTRUCTION INSPECTION FORM IS INCLUDED ON THIS STORMWATER POLLUTION PREVENTION PLAN SHEET. A COPY SHALL BE RETAINED AT THE CONSTRUCTION SITE FROM THE DATE OF PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION.

X. NON-STORMWATER DISCHARGES:

1. THE FOLLOWING NON-STORMWATER DISCHARGES MIGHT BE COMBINED WITH STORMWATER AND WOULD BE AUTHORIZED AS PART OF THIS PERMIT: FIRE HYDRANT FLUSHING, CONTROL OF DUST, POTABLE WATER FLUSHING AND IRRIGATION DRAINAGE. BECAUSE OF THE NATURE OF THESE DISCHARGES, THE EROSION, STABILIZATION AND TREATMENT SYSTEMS TO BE IMPLEMENTED, AS PART OF THIS PLAN WOULD BE APPROPRIATE TO PREVENT AND TREAT ANY POLLUTION RELATED TO THESE NON-STORMWATER DISCHARGES.

XI. CONTRACTORS:

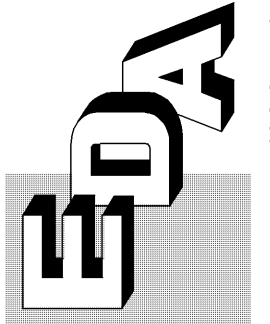
1. ALL CONTRACTORS AND/OR SUBCONTRACTORS RESPONSIBLE FOR IMPLEMENTING THE PLAN SHALL SIGN THE CERTIFICATION STATEMENT BEFORE STARTING CONSTRUCTION ACTIVITIES OF THE PROJECT. THE CERTIFICATION MUST INCLUDE THE NAME AND TITLE OF THE PERSON PROVIDING THE SIGNATURE, THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE CONTRACTING FIRM, THE ADDRESS OF THE SITE AND THE DATE THE CERTIFICATION IS MADE. THE OWNER SHALL KEEP THESE CERTIFICATIONS AS PART OF THIS POLLUTION PLAN. MULTIPLE COPIES OF THE CERTIFICATION STATEMENT MAY BE NECESSARY DEPENDING UPON THE NUMBER OF SUBCONTRACTORS ASSOCIATED WITH THE PROJECT.

CERTIFICATION STATEMENT

"I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND AND SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES AND THIS STORMWATER POLLUTION PREVENTION PLAN PREPARED THEREUNDER."

CONTRACTING FIRM: _____
ADDRESS: _____
CITY, STATE, ZIP CODE: _____
TELEPHONE: _____
FAX: _____
PROJECT NAME: GAINESVILLE RENEWABLE ENERGY CENTER (GREC)
BIOMASS GENERATING FACILITY
PROJECT ADDRESS: _____
PROJECT ADDRESS: _____
CITY, STATE, ZIP CODE: _____, FLORIDA.
NAME: _____ SIGNATURE: _____
DATE: _____

SCALES:
AS SHOWN



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020E
2404 N.W. 40th ST. - GAINESVILLE, FLORIDA 32608-4602
TEL: (352) 373-5241 FAX: (352) 373-7248
E-MAIL: esda@denmaninc.com

GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

STORMWATER POLLUTION PREVENTION PLAN

Project Phase: STATE CERTIFICATION
Designed: CSV/JAP Drawn: JVR
Project No. 09-194 Date: Nov. 13, 2009
Professional Engineer of Record:
Claudia S. Vega P.E.
51332
Certificate No.

Sheet No.:

C3.00

STORMWATER POLLUTION PREVENTION PLAN INSPECTION REPORT FORM

Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater.

PROJECT NAME: GAINESVILLE RENEWABLE ENERY CENTER (GREC) FDEP NPDES STORMWATER IDENTIFICATION NO.: FLR10
BIOMASS GENERATING FACILITY

OWNER: CONTRACTOR:

CONSTRUCTION MANAGER:

Date of Inspection	Location	Rain data	Type of control (see below)	Date installed / modified	Current Condition (see below)	Observations or Corrective Action / Other Remarks	Inspected By

CONDITION CODE: G = Good M = Marginal, needs maintenance or replacement soon O = Other
C = Needs to be cleaned P = Poor, needs immediate maintenance or replacement

CONTROL TYPE CODES

1. Silt Fence	10. Storm drain inlet protection	19. Reinforced soil retaining system	28. Tree protection
2. Earth dikes	11. Vegetative buffer strip	20. Gabion	29. Detention pond
3. Structural diversion	12. Vegetative preservation area	21. Sediment Basin	30. Retention pond
4. Swale	13. Retention Pond	22. Temporary seed / sod	31. Waste disposal / housekeeping
5. Sediment Trap	14. Construction entrance stabilization	23. Permanent seed / sod	32. Dam
6. Check dam	15. Perimeter ditch	24. Mulch	33. Sand Bag
7. Subsurface drain	16. Curb and gutter	25. Hay Bales	34. Other
8. Pipe slope drain	17. Paved road surface	26. Geotextile	
9. Level spreaders	18. Rock outlet protection	27. Rip-rap	

INSPECTOR INFORMATION:

Name _____ Qualification _____ Date _____
The above signature also shall certify that this facility is in compliance with the Stormwater Pollution Prevention Plan and the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities if there are not any incidents of non compliance identified above.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



1. TEMPORARY SEEDING WILL TAKE PLACE IN ALL FILL AREAS.
2. INSTALLATION OF EROSION CONTROL SHALL BE IN ACCORDANCE WITH DETAILS AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
3. STOCK PILING AND/OR STORAGE OF MATERIAL DURING CONSTRUCTION SHALL NOT IMPEDE STORMWATER FLOW AND SHALL NOT CAUSE EROSION.
4. AREAS USED FOR CONSTRUCTION SHALL BE STABILIZED AFTER REMOVAL AS REQUIRED PER SWPPP.
5. SILT FENCING AND/OR STAKED HAYBALES SHALL BE CONSTRUCTED WHERE SHOWN ON THE DRAWINGS PRIOR TO STARTING CONSTRUCTION.
6. THE STORMPIPE SYSTEM SHALL BE FLUSHED OUT TO REMOVE ALL ACCUMULATED DEBRIS AND SEDIMENT UPON COMPLETION OF CONSTRUCTION.
7. THE DRAINAGE BASIN BOTTOM SHALL BE SCRAPED CLEAN OF ALL ACCUMULATED SEDIMENT UPON COMPLETION OF CONSTRUCTION AFTER THE STORMDRAIN SYSTEM IS COMPLETELY FLUSHED OUT.
8. ALL DISTURBED AREAS IN THE CONSTRUCTION AREA SHALL BE COMPLETELY GRASSED BY COMPLETION OF CONSTRUCTION. EVIDENCE OF GROWTH MUST BE PRESENT PRIOR TO FINAL RELEASE. SEASONAL GRASSES (I.E. WINTER RYE, SUMMER MILLET) SHALL BE USED IS NECESSARY.

	LIMITS OF PROPOSED ROADWAY
	LIMITS OF PROPOSED GRAVEL AREA (SWITCH YARD)
	LIMITS OF PROPOSED STABILIZED AREA
	LIMITS OF PROPOSED TEMPORARY SEED, MULCH & FERTILIZER
	LIMITS OF PROPOSED SOD
	LIMITS OF PROPOSED CONSTRUCTION ENTRANCE
	PROPOSED DBL SILT FENCE w/ TEMP. 4" CHAINLINK FENCE
	PROPOSED SILT FENCE
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION

— STORMWATER
BASIN NO. 310

WETLAND AREA "C"

SWITCH
YARD
AREA

STORMWATER
BASIN NO. 30

TEMPORARY
CRAFT PARKING
AREA

NORTH

SCALE: 1" = 50'

0 25 0

GRAPHIC SCALE



GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

title: MASTER EROSION & SEDIMENTATION CONTROL PLAN
SHEET 1 of 7

SHEET 1 of 7

Project:

STATE CERTIFICATION

Drawn:	JVR
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Set No: 09-194	Date: NOV. 13, 2009
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Professional Engineer of Record:

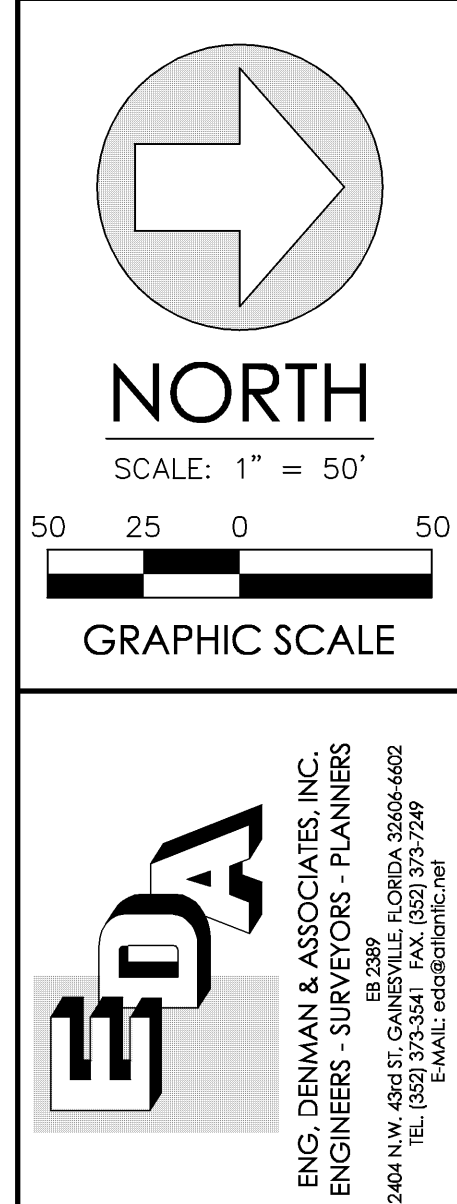
Claudia S. Vega P.E.

1132
Certificate No.

Sheet No.:

C3.10

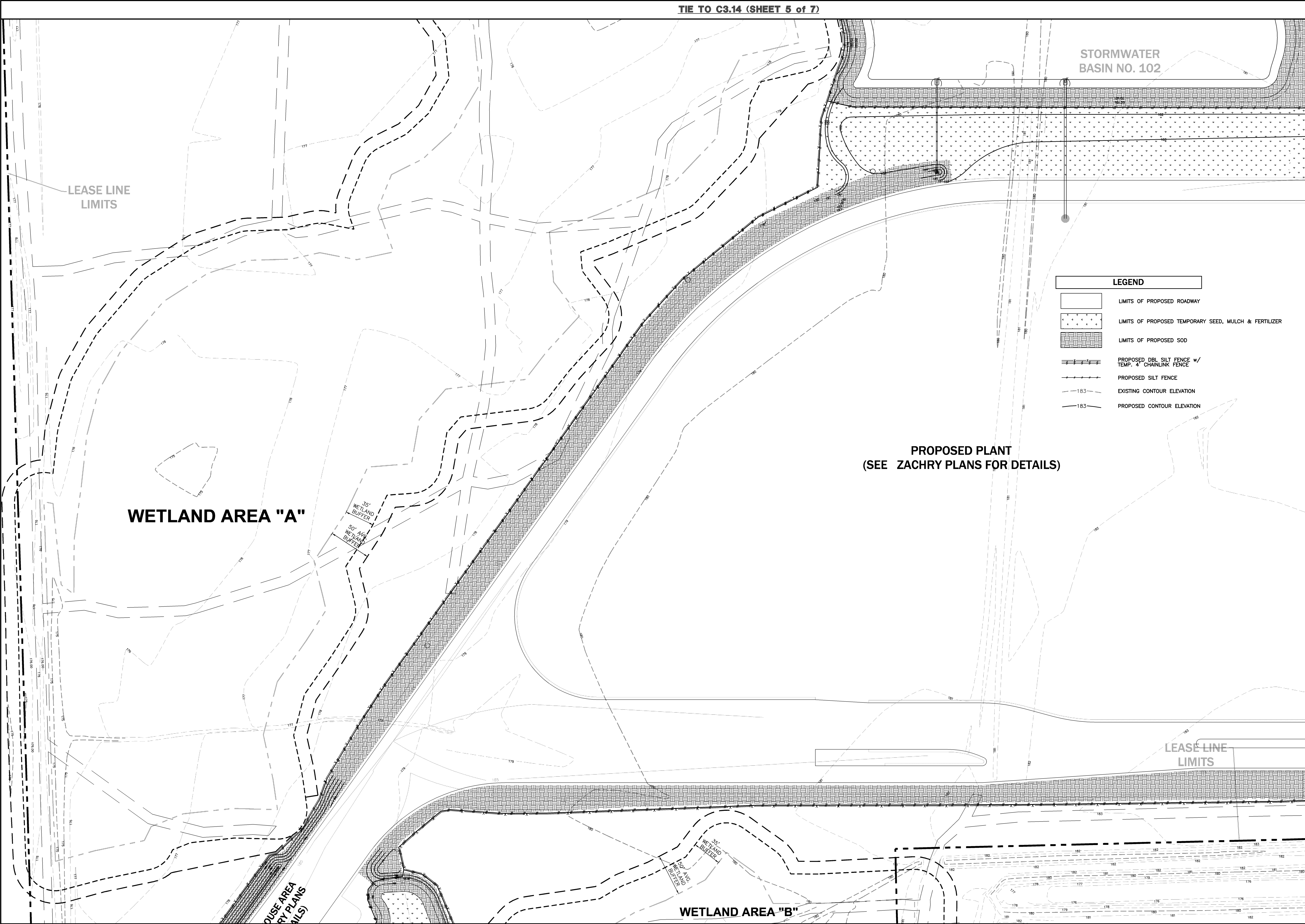
TIE TO C3.12 (SHEET 3 of 7)



Project phase:	Project:	
STATE CERTIFICATION	GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Designed: CSV/CAP	Drawn: JWR	
Project No: 09-194	Date: NOV. 13, 2009	
Professional Engineer of Record:		Sheet title: MASTER EROSION & SEDIMENTATION CONTROL PLAN SHEET 2 of 7
Claudia S. Vega P.E. Engineer		
51532 Certificate No.		

C3.11

Plotted Nov. 12, 2009 -- 16:48:23 -- Joyce Rocks
\\Server3\engprojects\Gainesville Renewable Energy_Center\11-09\091941.dwg -- EROSION3



Project Phase: STATE CERTIFICATION		Project Title: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Designed: CSJ/OAP	Drawn: JVR	Sheet title: MASTER EROSION & SEDIMENTATION CONTROL PLAN SHEET 3 of 7	
Project No. 09-194		Professional Engineer of Record:	
Date: NOV. 13, 2009		Claudia S. Vega P.E. Engineer	
Certificate No. 51332		Date	
No		Comment	

NORTH
SCALE: 1" = 50'

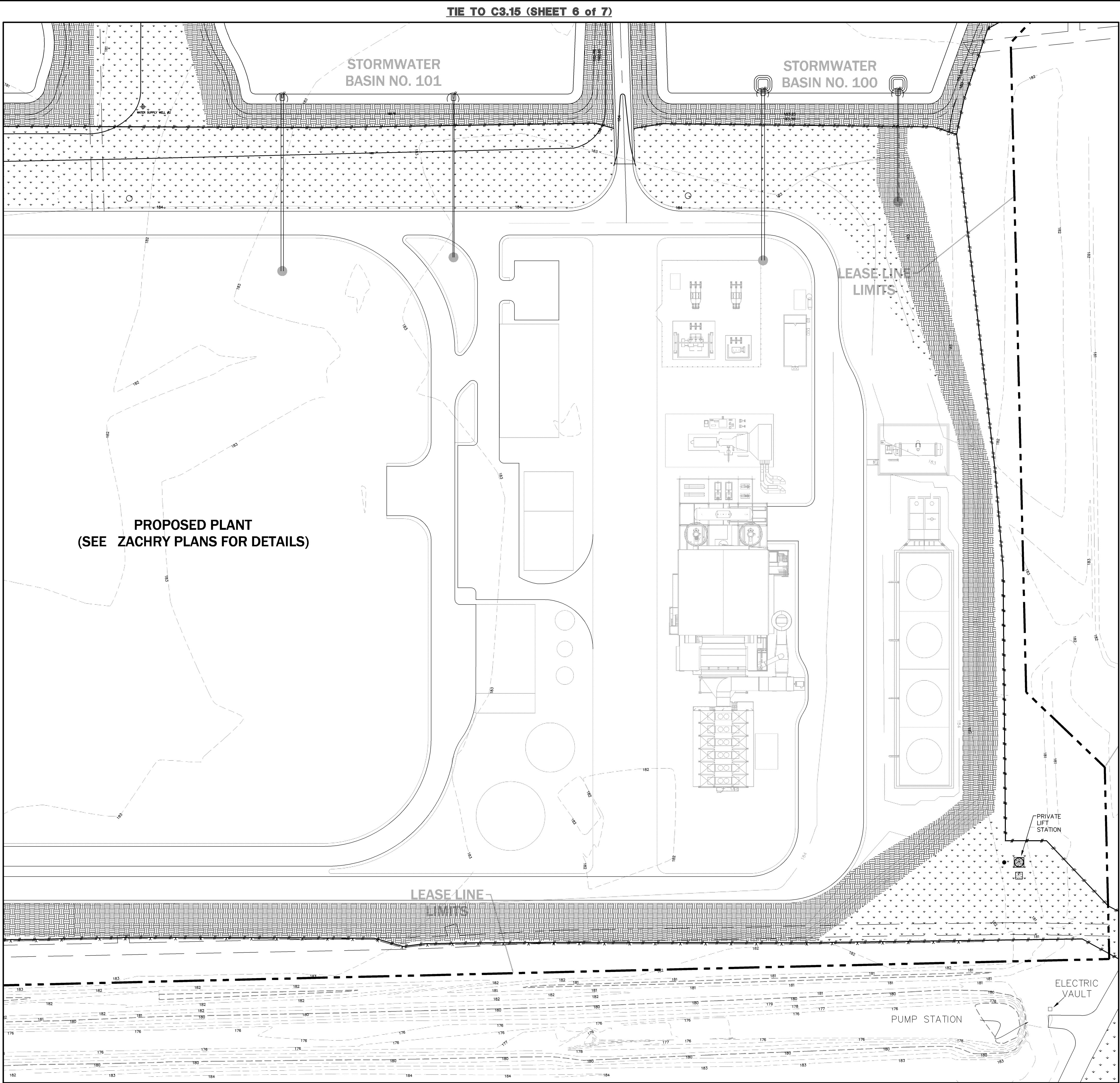
GRAPHIC SCALE

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
2404 N.W. 42nd St., Gainesville, FL 32608
TEL: (352) 373-5341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

C3.12

Plotted Nov. 12, 2009 -- 16:48:23 -- Joyce Rocks
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TIE TO C3.12 (SHEET 3 of 7)



PROPOSED PLANT
(SEE ZACHRY PLANS FOR DETAILS)

STORMWATER
BASIN NO. 101

STORMWATER
BASIN NO. 100

LEASE LINE
LIMITS

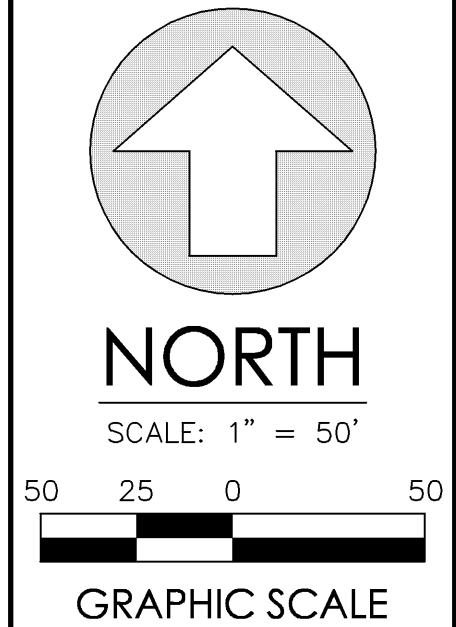
LEASE LINE

ELECTRIC
VAULT

PUMP STATION

PRIVATE
LIFT
STATION

LEGEND	
	LIMITS OF PROPOSED ROADWAY
	LIMITS OF PROPOSED TEMPORARY SEED, MULCH & FERTILIZER
	LIMITS OF PROPOSED SOD
	PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
	PROPOSED SILT FENCE
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION



EDA

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. 11TH AVE., SUITE 100
DENVER, CO 80231
TEL: (303) 733-3341 FAX: (303) 733-7248
E-MAIL: eda@denmaninc.com

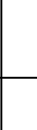
Project: GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet title: MASTER EROSION & SEDIMENTATION CONTROL PLAN
SHEET 4 of 7

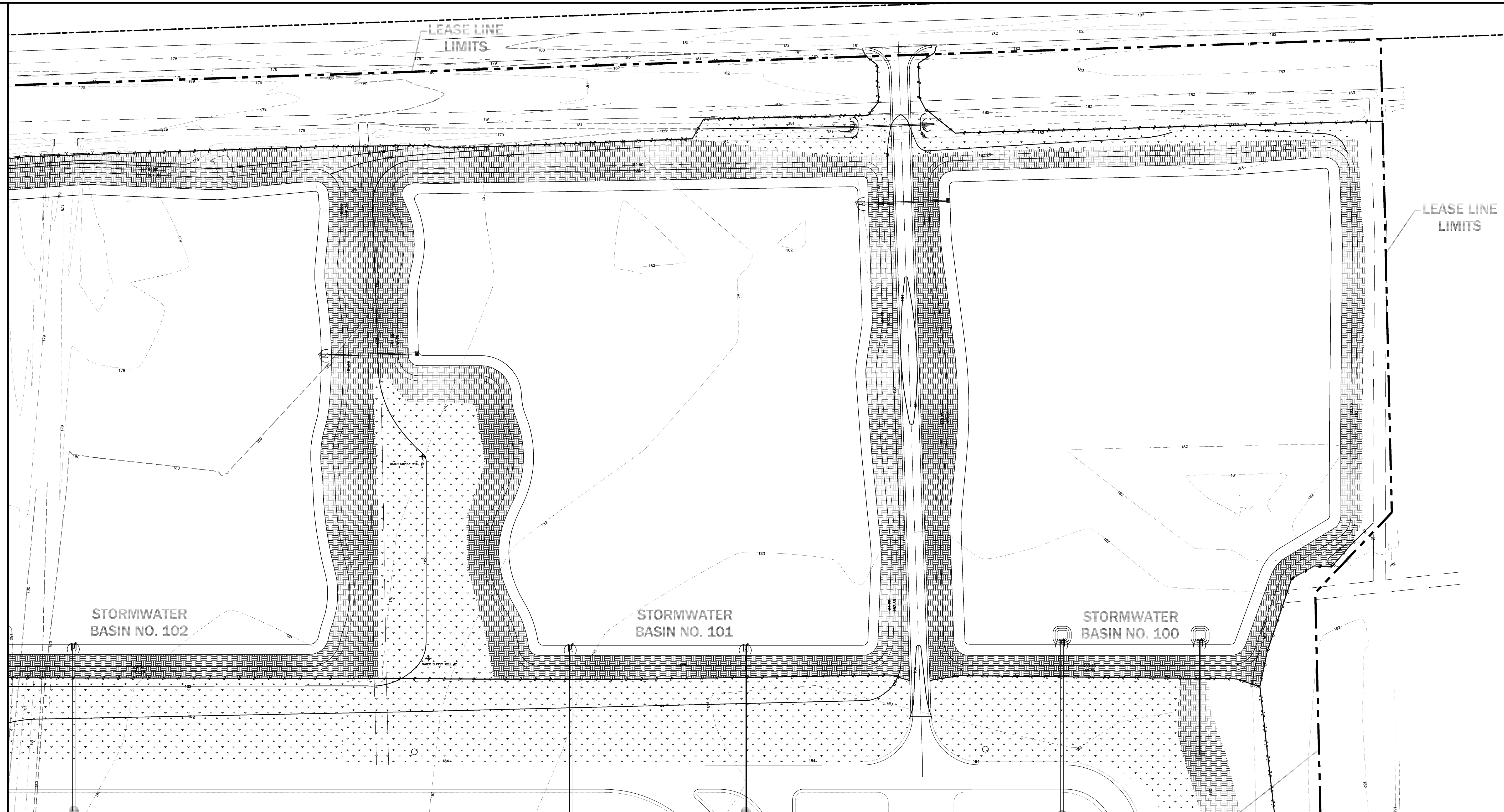
Project phase: STATE CERTIFICATION	Drawn: JVR	Date: NOV. 13, 2009
Designed: CSJ/OAP	Project No: 09-194	Professional Engineer of Record:
Claudia S. Vega P.E. Engineer		51332 Certificate No.

Sheet No.: C3.13



C3.14	Project phase:	STATE CERTIFICATION		Project No.: 09-134	Drawn: JWR	Date: NOV. 13, 2009	Project title: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	Project:	 NORTH SCALE: 1" = 50'  GRAPHIC SCALE	 ENG. DENHAM & ASSOCIATES, INC. ENGINEERS - SURVEYORS - PLANNERS E3 2389 2404 HWY. 26 BOX 57 GAINESVILLE, FLORIDA 32609-6602 TEL: 352/375-1100 FAX: 352/375-1104 E-MAIL: eda@denhaminc.net	No. Date Comment
	Sheet No.:	Professional Engineer of Record:									

TIE TO C3.13 (SHEET 4 of 7)



	LIMITS OF PROPOSED ROADWAY
	LIMITS OF PROPOSED TEMPORARY SEED, MULCH & FERTILIZER
	LIMITS OF PROPOSED SOD
	PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
	PROPOSED SILT FENCE
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION


NORTH
SCALE: 1" = 50'

50 25 0 25 50


GRAPHIC SCALE

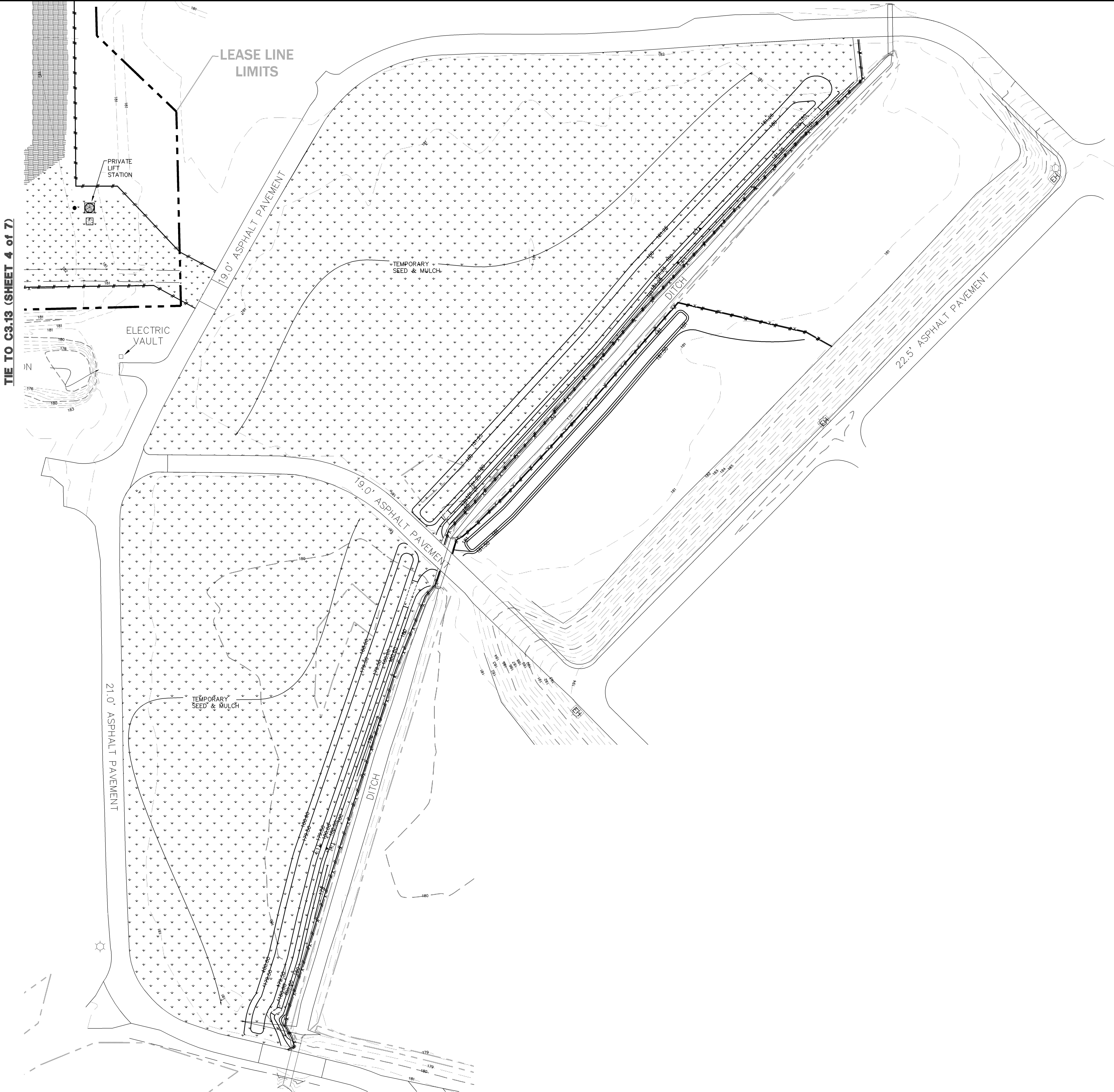


ING. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
2404 N.W. 4803 ST., GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 329-7247
E-MAIL: info@denmaninc.com

C3.15	Sheet No.:		
	Project phase:	STATE CERTIFICATION	
	Designed: GSV/GAP	Drawn: JVR	
	Project No: 09-194	Date: NOV. 13, 2009	
	Professional Engineer of Record:		
Claudia S. Vega P.E. Engineer		51532	
Project:		GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA	
Sheet title:		MASTER EROSION & SEDIMENTATION CONTROL PLAN SHEET 6 of 7	

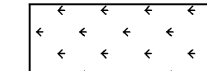
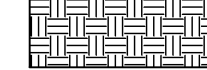
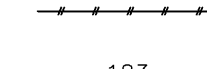
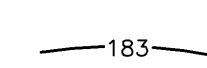
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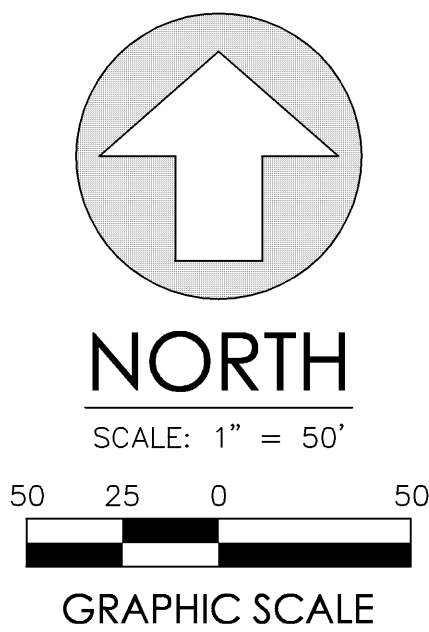
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TIE TO C3.13 (SHEET 4 of 7)

LEGEND

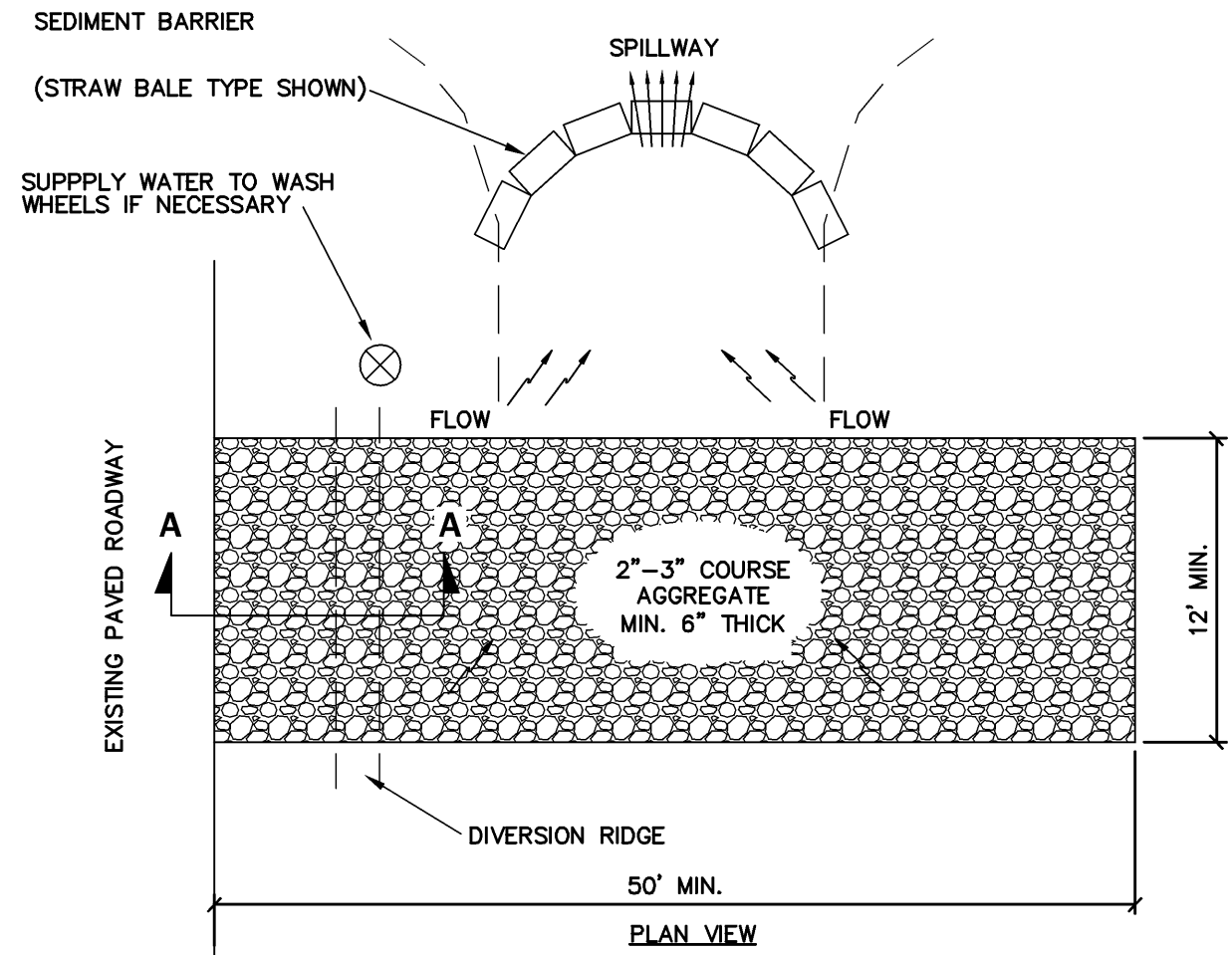
-  LIMITS OF PROPOSED TEMPORARY SEED, MULCH & FERTILIZER
-  LIMITS OF PROPOSED SOD
-  PROPOSED DBL SILT FENCE w/ TEMP. 4' CHAINLINK FENCE
-  PROPOSED SILT FENCE
-  EXISTING CONTOUR ELEVATION
-  PROPOSED CONTOUR ELEVATION



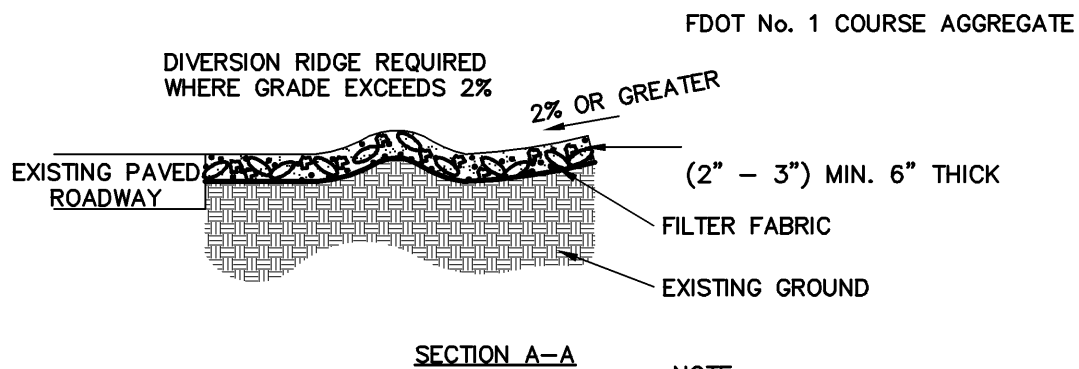
EDA
ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18920 E. 20th AVE., SUITE 200
DENVER, CO 80231
TEL: (303) 753-5541 FAX: (303) 753-7248
E-MAIL: eda@denmaninc.com

Project: GAINESVILLE RENEWABLE ENERGY CENTER BIOMASS GENERATING FACILITY CITY OF GAINESVILLE, FLORIDA		Sheet title: MASTER EROSION & SEDIMENTATION CONTROL PLAN SHEET 7 of 7	
Project phase: STATE CERTIFICATION	Designed: CSV/CAP	Drawn: JVR	
Project No.: 09-194	Date: NOV. 13, 2009	Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer		31532	Certificate No.

C3.16

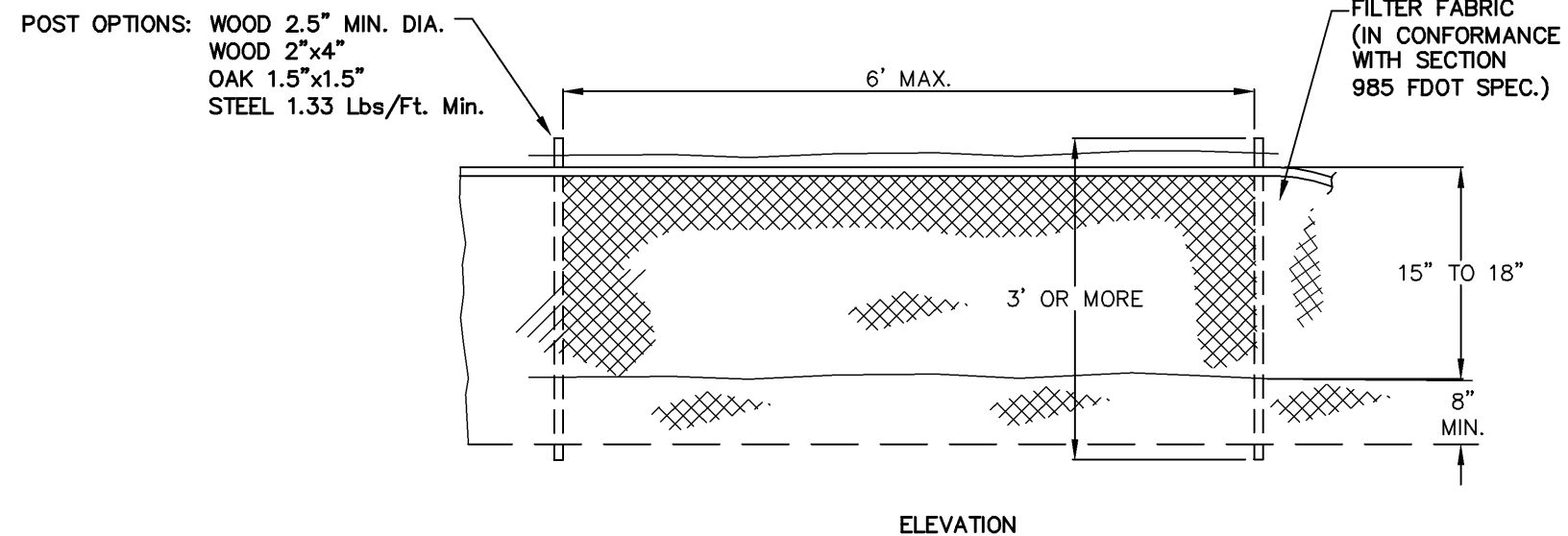


TYPICAL GRAVEL CONSTRUCTION ENTRANCE



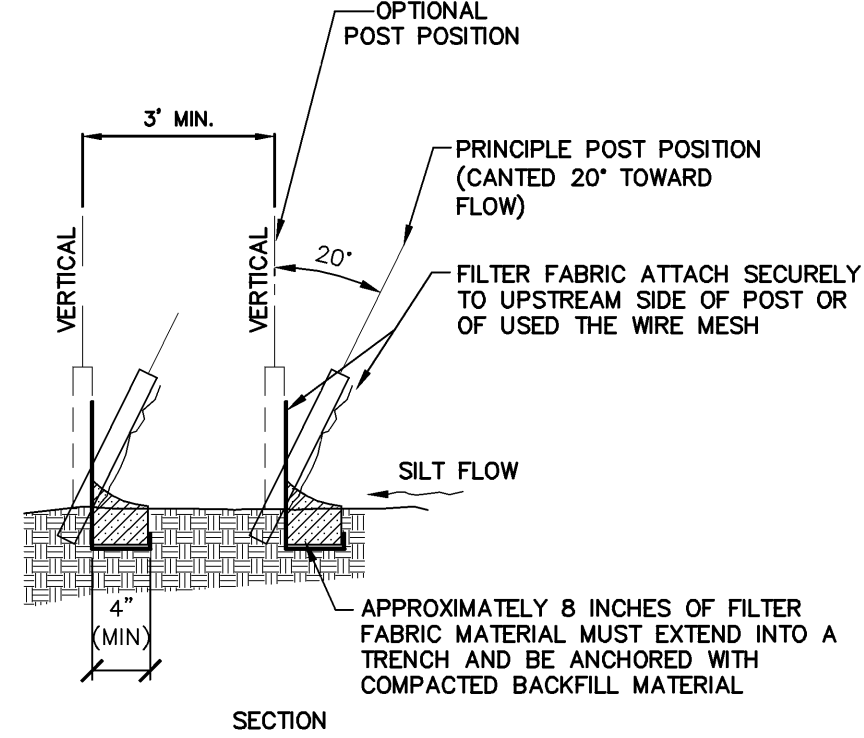
- NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

N.T.S.



TYPE III SILT FENCE DETAIL

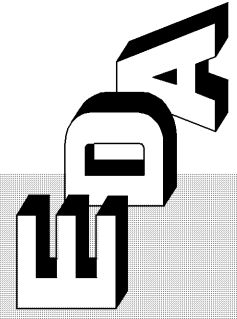
N.T.S.



MAINTENANCE NOTES

1. **MAINTENANCE RESPONSIBILITY:**
GAINESVILLE RENEWABLE ENERGY CENTER, LLC, AN AMERICAN RENEWABLES COMPANY WILL BE THE ENTITY RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM IN PERPETUITY.
2. **MAINTENANCE PLAN:**
 - A. BASINS SHALL BE MOWED REGULARLY TO AVOID EXCESSIVE VEGETATIVE GROWTH. MOWING SCHEDULE SHOULD BE MONTHLY DURING WINTER MONTHS AND MORE FREQUENTLY (BIWEEKLY) DURING SUMMER MONTHS.
 - B. BASINS SHALL BE CLEANED OUT ANNUALLY OF ANY ACCUMULATED SEDIMENTATION BUILDUP. IF THE BASINS ARE SHOWING EXCESSIVE SEDIMENTATION ACCUMULATION AT THE AS IN BOTTOM, THE BASIN BOTTOM SHALL BE SCRAPPED CLEAN MORE OFTEN AS THE CONDITION DICTATES.
 - C. BASINS SIDE SLOPES SHALL BE MAINTAINED WITH A GOOD STAND OF GRASS. SEASONAL GRASSES SHALL BE PLANTED TO AVOID EROSION (WINTER RYE, SUMMER MILLET).
 - D. BASINS THAT DO NOT DRAWDOWN PROPERLY AND MAINTAIN STANDING WATER FOR AN EXTENDED PERIOD OF TIME MAY REQUIRE REMEDIAL ACTION. THE ENGINEER SHALL BE NOTIFIED TO HELP COORDINATE REMEDIAL ACTION IN THE EVENT THIS OCCURS.
 - E. THE REQUIRED LANDSCAPING SHALL BE MAINTAINED IN A SOUND CONDITION AT ALL TIMES. ANY DEAD LANDSCAPING MATERIALS SHALL BE REPLACED IMMEDIATELY TO ASSURE PUBLIC SAFETY.
 - F. SWALES: MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY RAINFALL EVENT AND ONCE EVERY TWO WEEKS BEFORE FINAL STABILIZATION. THEY SHOULD BE CLEARED OF SEDIMENT AND MAINTAIN VEGETATIVE COVER.
 - G. INLETS: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT AND MIGHT INCLUDE REMOVAL OF ACCUMULATED SEDIMENT.
 - H. OUTFALL STRUCTURES: ROUTINE MAINTENANCE SHALL INCLUDE INSPECTION AFTER EVERY STORM EVENT TO ASSURE NO EROSION OR SCOUR HAS OCCURRED.
 - I. DRY RETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.
 - J. WET DETENTION BASINS: ROUTINE MAINTENANCE SHALL INCLUDE MONITORING FOR SEDIMENT ACCUMULATION, CLEAN AND REMOVE DEBRIS FROM INLETS AND OUTLETS, MOW SIDE SLOPES AND INSPECT FOR DAMAGE OF BERMS AND REPAIR UNDERCUT OR ERODED AREAS AS NECESSARY.

SCALES:
AS SHOWN



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
180206
2604 N.W. 42nd ST. GAINESVILLE, FLORIDA 32605-4602
TEL: (352) 373-3341 FAX: (352) 373-7288
E-MAIL: eda@denmaninc.com

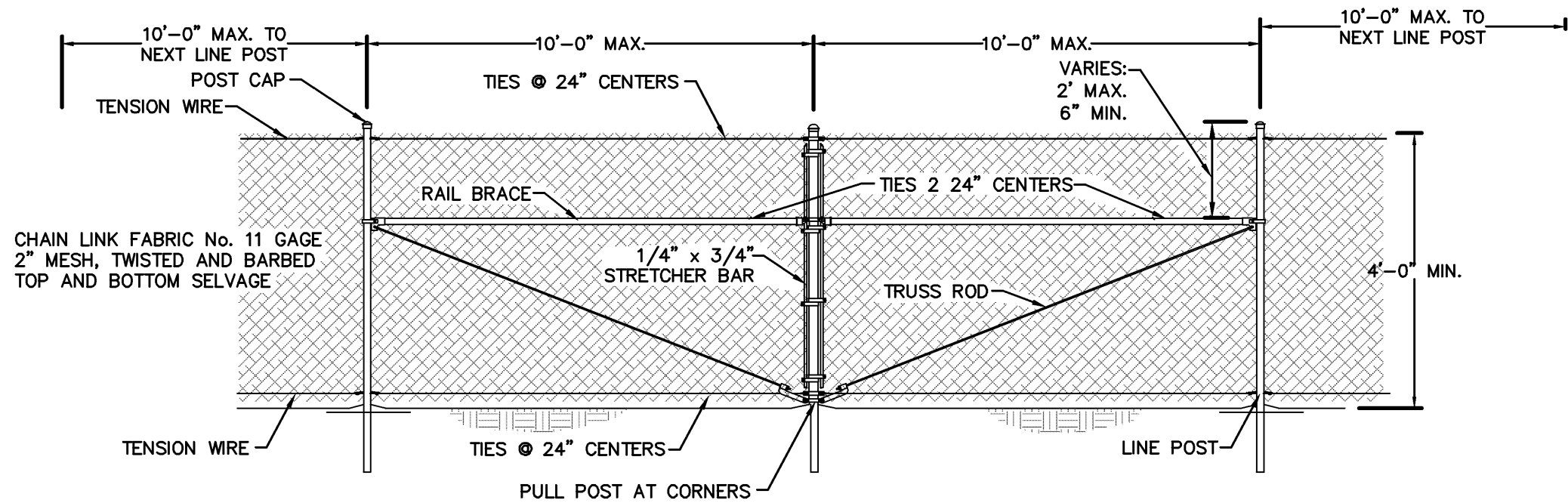
Project: GAINESVILLE RENEWABLE ENERGY CENTER
BIOMASS GENERATING FACILITY
CITY OF GAINESVILLE, FLORIDA

Sheet title: DRAINAGE DETAILS & NOTES

Project Phase: STATE CERTIFICATION	Drawn: JVR	Date: NOV. 13, 2009
Designed: CSJ/OAP	Project No: 09-194	Professional Engineer of Record:
Claudia S. Vega P.E. Engineer		
51332 Certificate No.		

Sheet No.:

C3.20

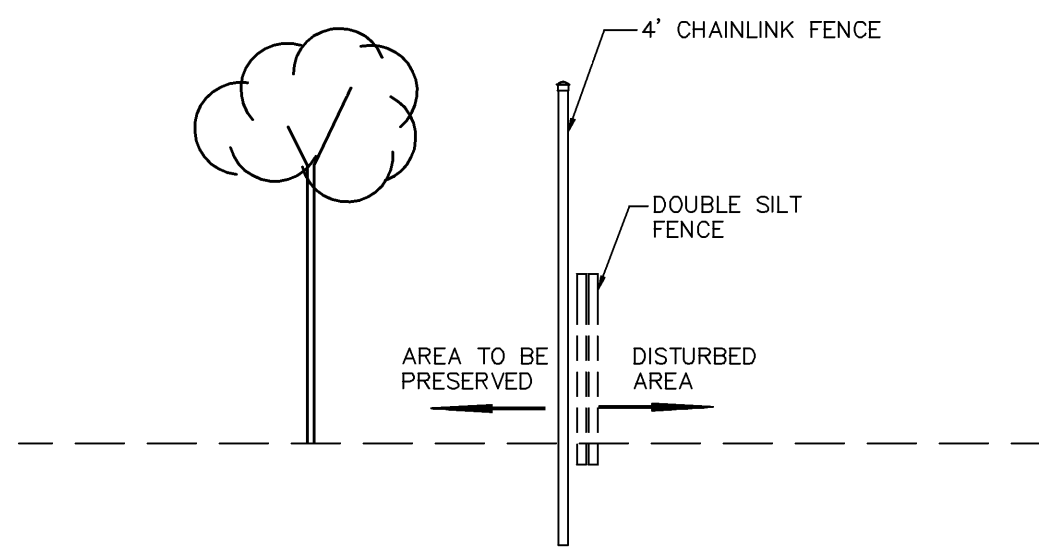


4' TEMPORARY CHAINLINK FENCE DETAIL

N.T.S.

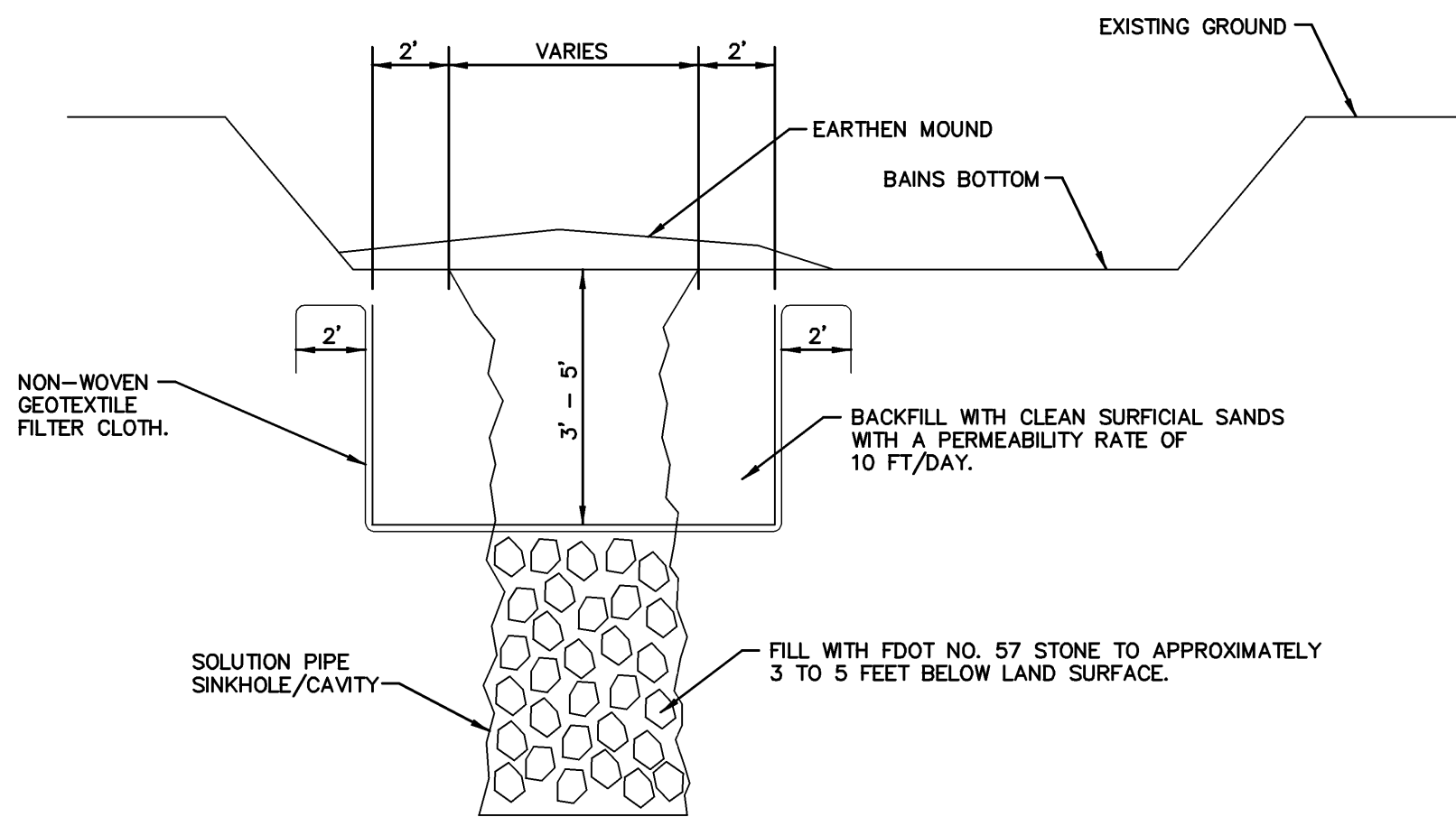
NOTE:

1. CHAIN LINK FENCE IS NOT TO BE USED AS A PERMANENT FENCE



DETAIL OF TEMPORARY CHAINLINK FENCE & TYPE III SILT FENCE

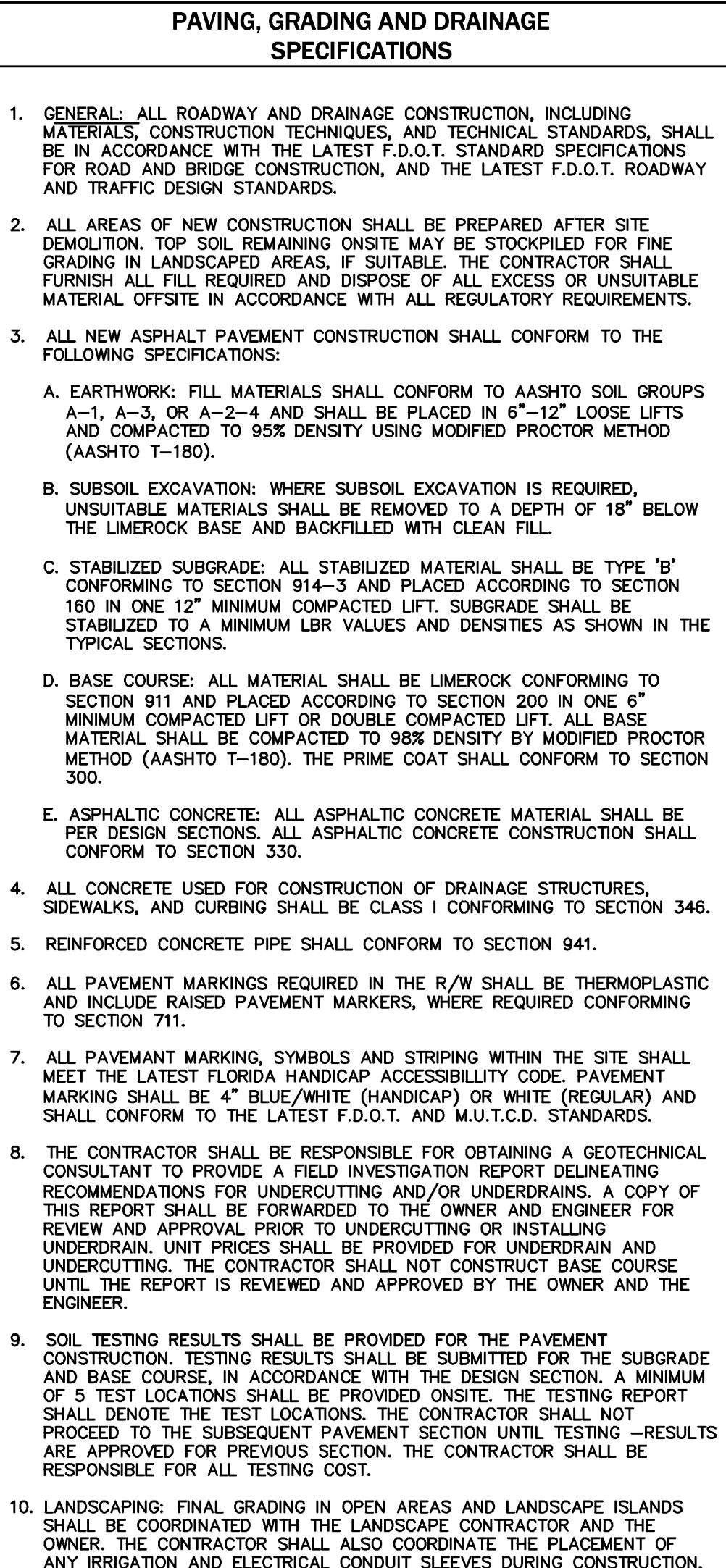
N.T.S.



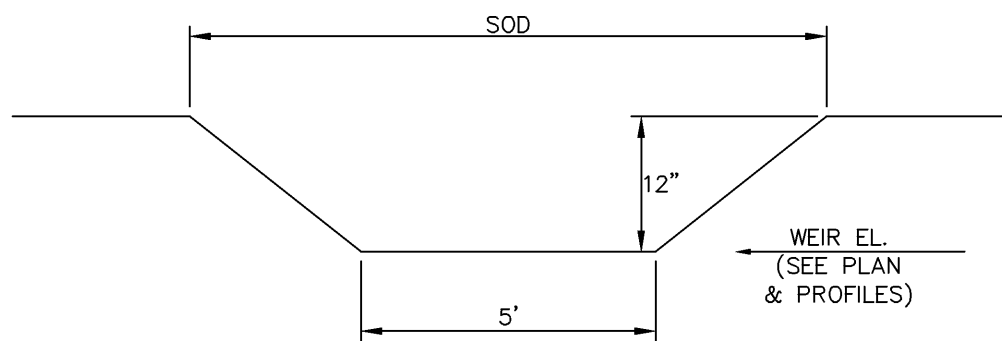
SOLUTION PIPE/CHIMNEY REPAIR DETAIL

N.T.S.

1. IF A SOLUTION PIPE SINKHOLE DOES FORM IN THE STORMWATER BASIN THEN THE SINKHOLE SHALL BE REPAIRED BY BACKFILLING WITH NO. 57 STONE TO APPROXIMATELY 3 TO 5 FEET BELOW LAND SURFACE. AN AREA AT LEAST 6' BEYOND THE EDGES OF THE CHIMNEY SHOULD BE EXCAVATED TO THE TOP OF THE GRAVEL. A NON-WOVEN GEOTEXTILE FILTER CLOTH SHOULD BE PLACED AT THE BOTTOM OF THE EXCAVATION AND THE EXCAVATION SHOULD BE BACKFILLED WITH CLEAN SAND HAVING A VERTICAL COEFFICIENT OF PERMEABILITY OF 10 FEET PER DAY. THE MATERIAL SHALL BE COMPACTED AND THE SINKHOLE REPAIR SHOULD BRING THE SURFACE BACK TO AN ELEVATION WHICH IS SLIGHTLY ABOVE THE ORIGINAL BOTTOM, CREATING A SMALL MOUND.



N.T.S.

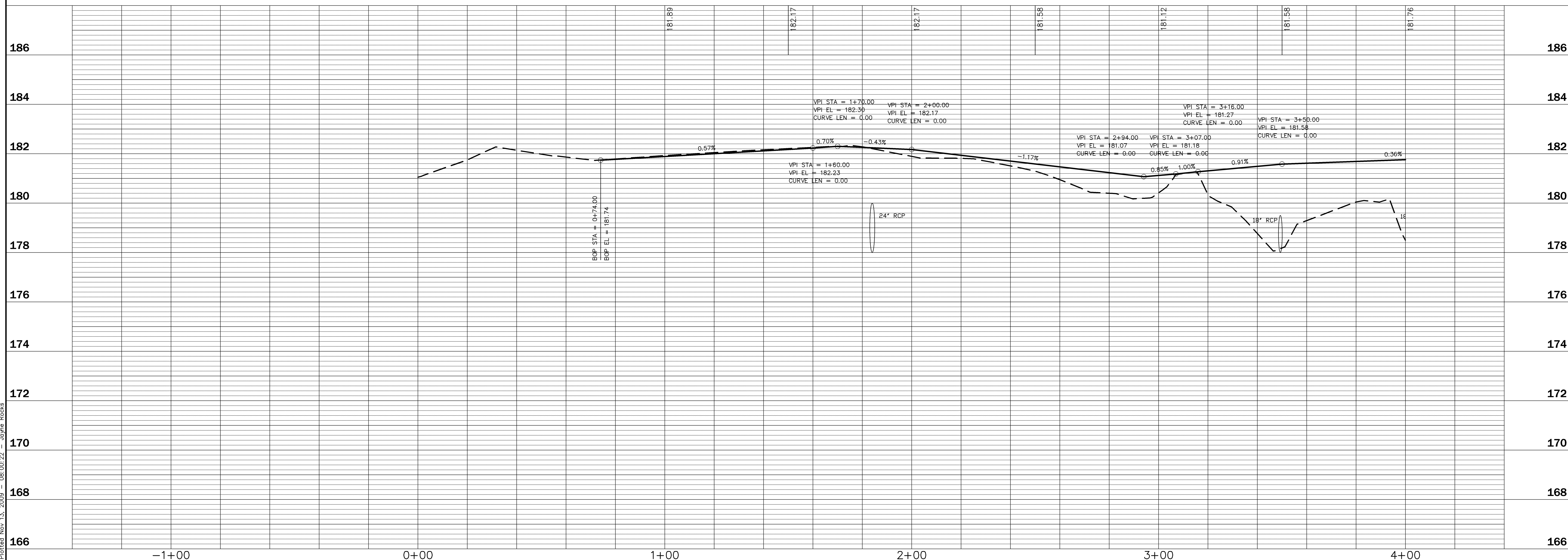
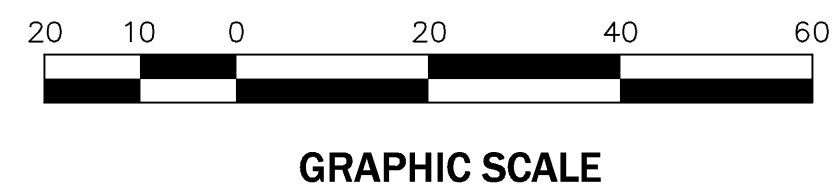


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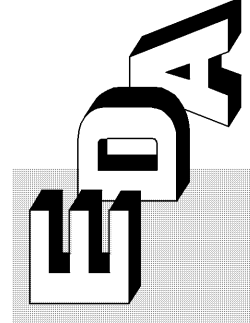
Project phase:		STATE CERTIFICATION	
Designed:	CSV/CAP	Drawn:	JWR
Project No: 09-194		Date:	NOV. 13, 2009
Professional Engineer of Record:			
Claudia S. Vega P.E. Engineer		51532 Certificate No.	

C5.00

[illegible]



SCALES:
HORIZONTAL: 1"=20'
VERTICAL: 1" = 2'



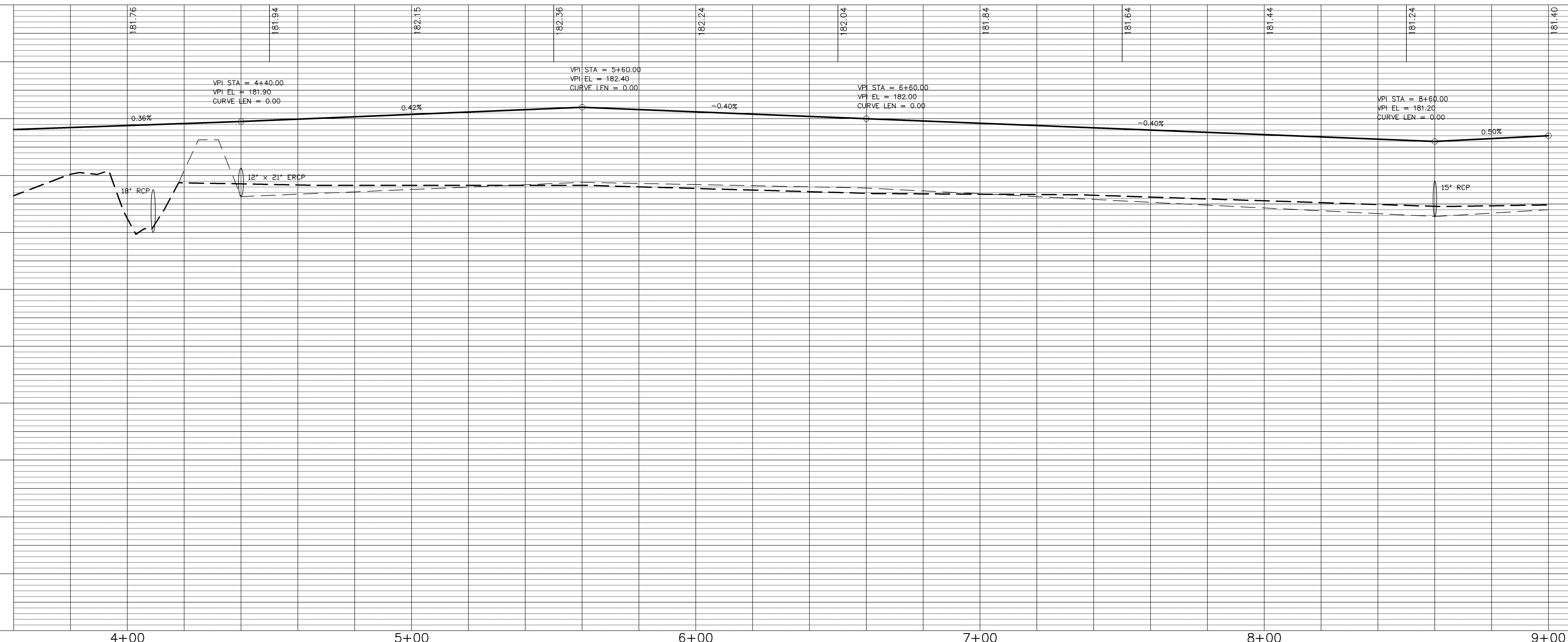
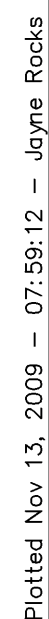
ENG, DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
EB 2389
2404 N.W. 43rd ST. GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 373-3541 FAX. (352) 373-7249

GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

ROADWAY PLAN & PROFILES
ACCESS ROAD
SHEET 1 of 7

Project phase:		STATE CERTIFICATION	
Designed:	CSV	Drawn:	JVR
Project No:	09-194	Date:	NOV. 13, 2009
Professional Engineer of Record:			
Claudia S. Vega P.E.		51532	

C6.00



S-27
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 179.26

S-28
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 179.26

S-29
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.55

S-30
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.56



SCALES:
HORIZONTAL: 1"=20'
VERTICAL: 1" = 2'



GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

ROADWAY PLAN & PROFILES
ACCESS ROAD
SHEET 2 of 7

Sheet title:

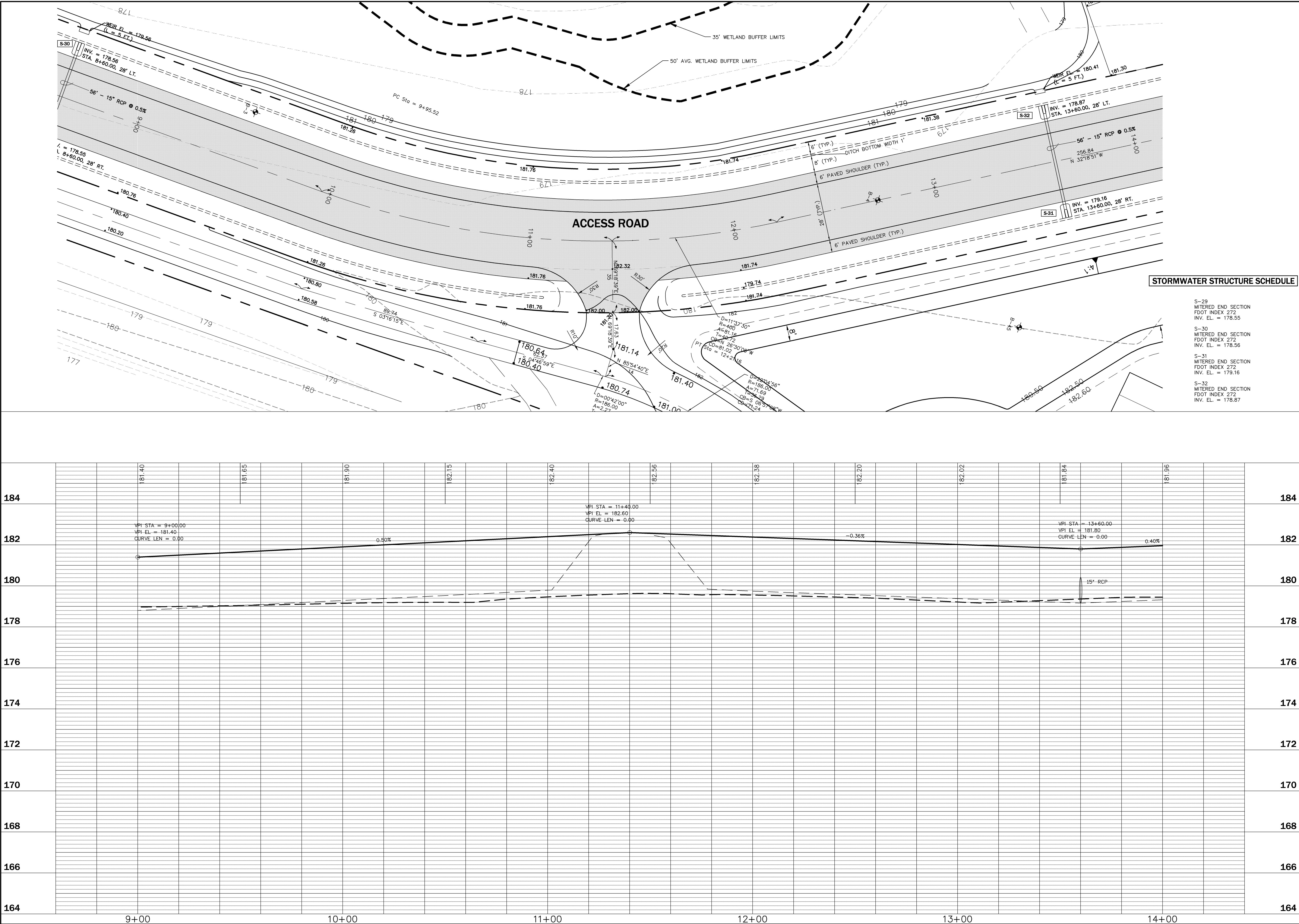
Project phase:	
STATE CERTIFICATION	
Designed:	CSV
Drawn:	JWR
Project No: 09-194	Date: NOV. 13, 2009
Professional Engineer of Record:	
Claudia S. Vega P.E. Engineer	51532 Certificate No.

Sheet No.:

C6.01

[illegible]

Plotted Nov. 13, 2009 - 07:57:04 - Joyce Rocks
\\Server3\engprojects\Gainesville Renewable Energy Center\11-09\RCp03100.dwg - Layout1



Project Phase: STATE CERTIFICATION		Project No: 09-194		Date: NOV. 13, 2009	
Designed: CSV		Drawn: JVR		Professional Engineer of Record:	
Sheet No.:		51332		Certificate No.	
Project:		GAINESVILLE RENEWABLE ENERGY CENTER		CITY OF GAINESVILLE, FLORIDA	
Sheet title:		ROADWAY PLAN & PROFILES		ACCESS ROAD	
Sheet 3 of 7					

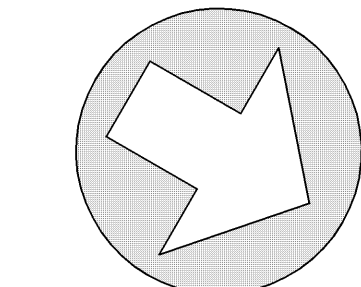
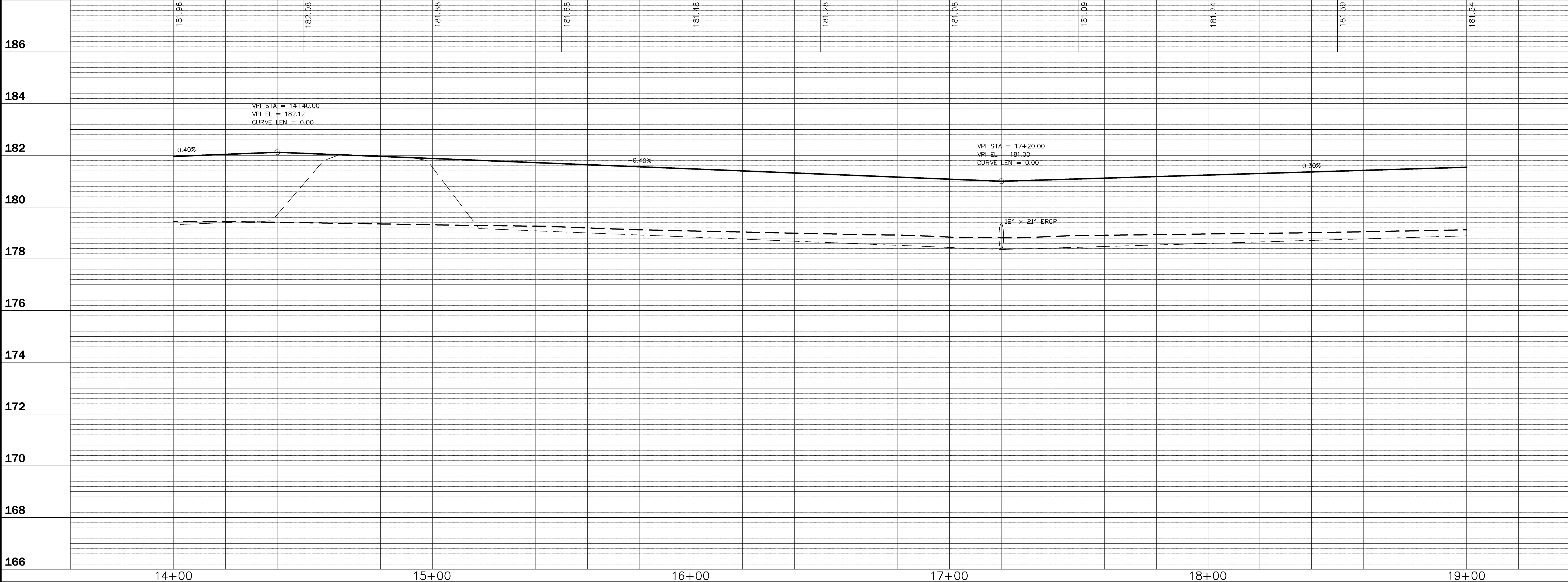
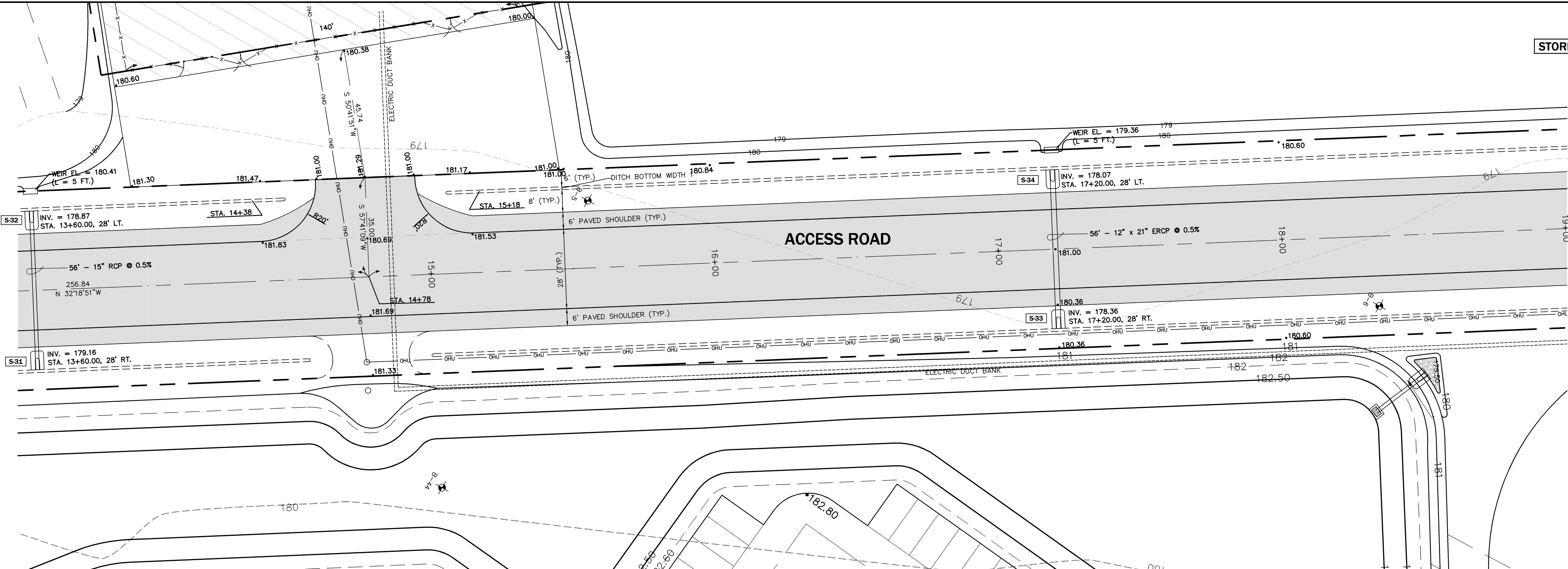
NORTH

SCALES:
HORIZONTAL: 1"=20'
VERTICAL: 1"= 2'

ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
2604 N.W. 42nd ST. GAINESVILLE, FLORIDA 32609-4602
TEL. (352) 373-5341 FAX (352) 373-7248
E-MAIL: eda@denmaninc.com

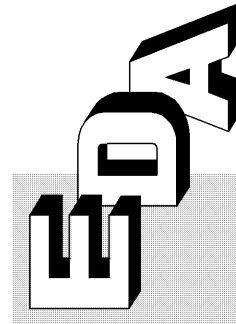
C6.02

\\Server\proj\projects\Gainesville Renewable Energy Center\11-09\16\04100.dwg - Layout1



NORTH

SCALES:
HORIZONTAL: 1" = 20'
VERTICAL: 1" = 2'



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
1800 N. 40th St., Suite 100, Gainesville, FL 32609
TEL: (352) 373-5341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

Project: GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

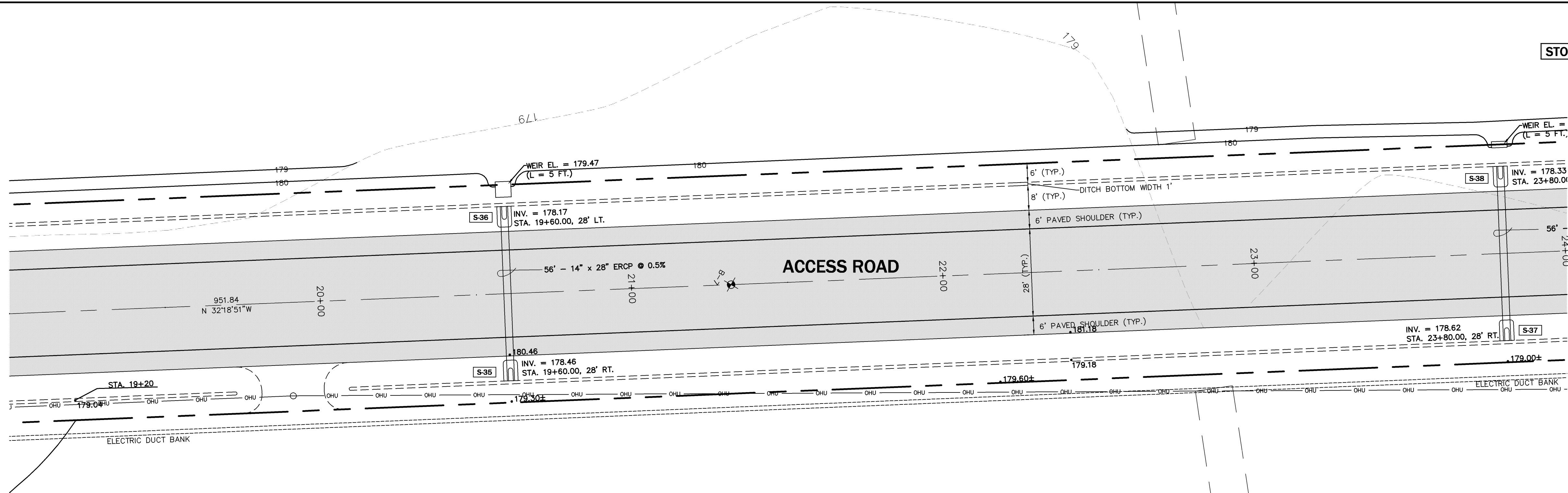
Sheet title:
ROADWAY PLAN & PROFILES
ACCESS ROAD
SHEET 4 of 7

Project Phase: STATE CERTIFICATION
Designed: CSV Drawn: JVR
Project No: 09-194 Date: NOV. 13, 2009
Professional Engineer of Record:
Claudia S. Vega P.E.
Engineer
51332
Certificate No.

C6.03

\\Server\engprojects\Gainesville Renewable Energy Center\11-09\RC05100.dwg - Layout1

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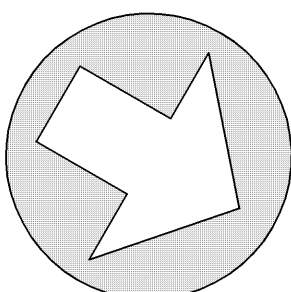
STORMWATER STRUCTURE SCHEDULE

S-35
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.46

S-36
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.17

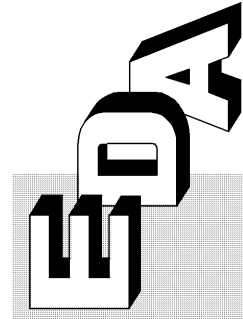
S-37
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.62

S-38
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.33

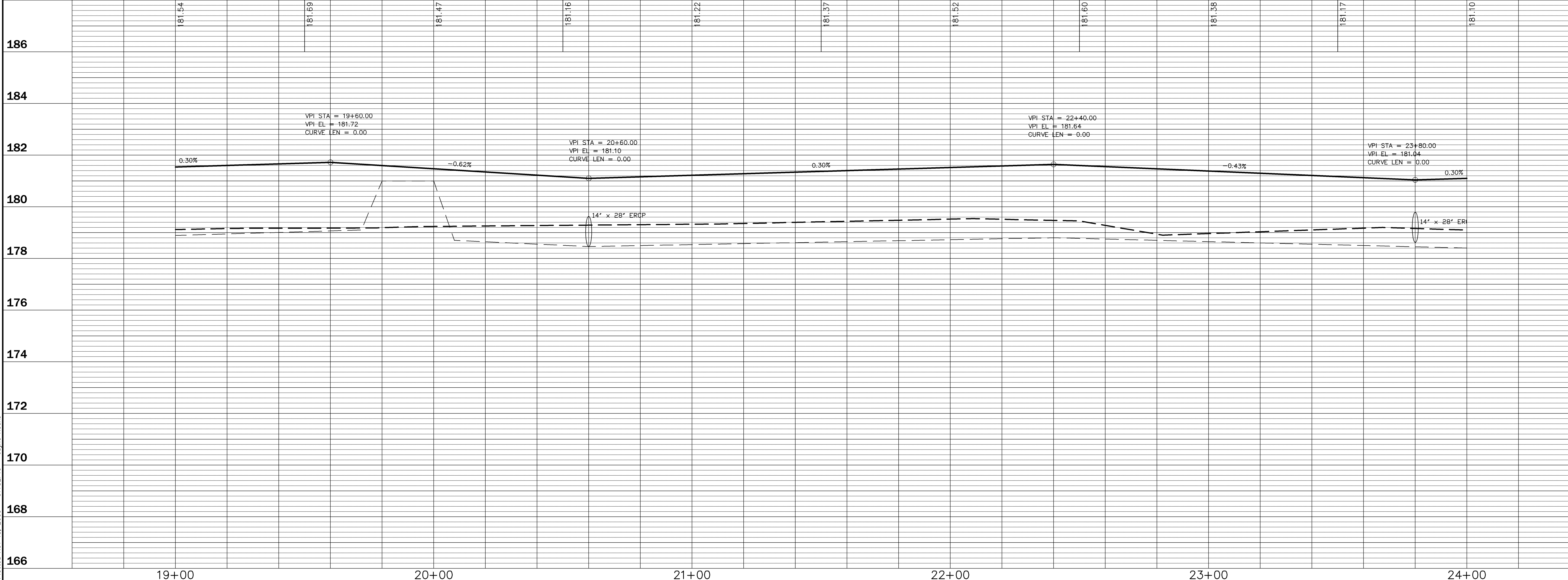


NORTH

SCALES:
HORIZONTAL: 1"=20'
VERTICAL: 1"=2'



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
18020 E. 20th Ave., Suite 100, Gainesville, FL 32609
TEL: (352) 373-5341 FAX: (352) 373-7248
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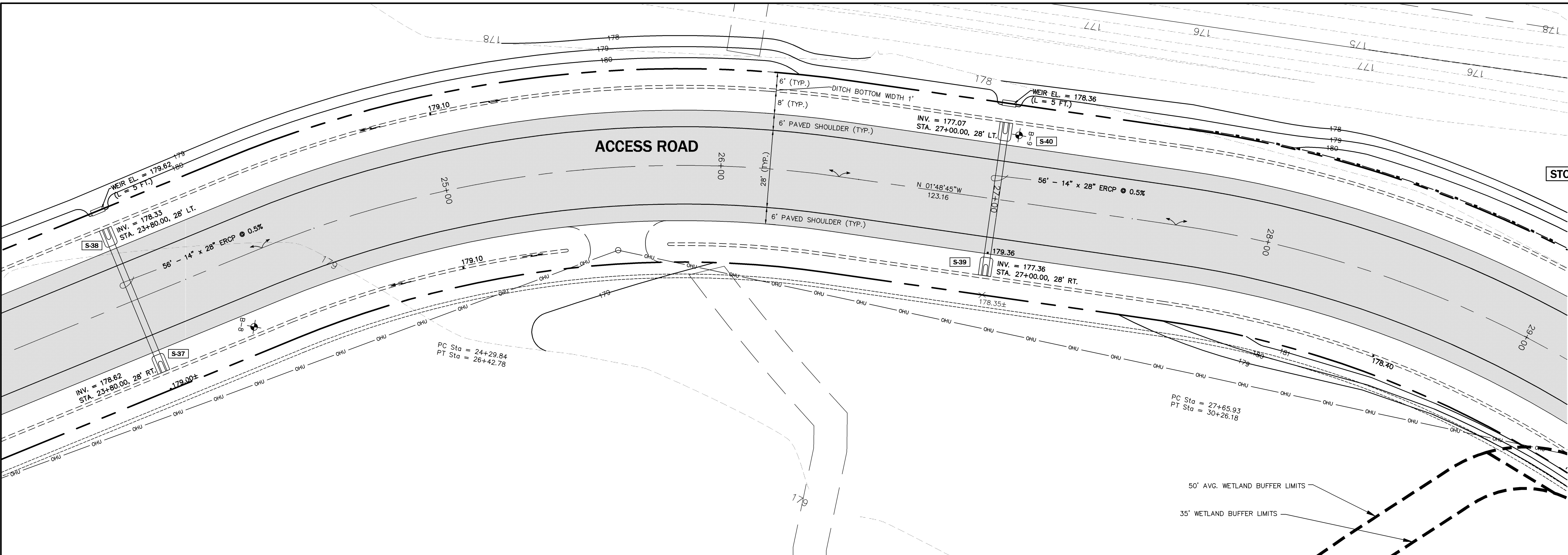
GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

ROADWAY PLAN & PROFILES
ACCESS ROAD
SHEET 5 of 7

Project Phase: STATE CERTIFICATION
Designed: CSV Drawn: JVR
Project No: 09-194 Date: NOV. 13, 2009
Professional Engineer of Record:
Claudia S. Vega P.E.
Engineer
51532
Certificate No.

C6.04

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Plotted Nov. 13, 2009 - 07:50:31 - Joyce Rocks



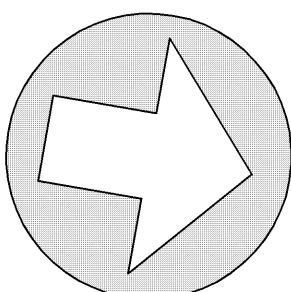
STORMWATER STRUCTURE SCHEDULE

S-37
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.62

S-38
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 178.33

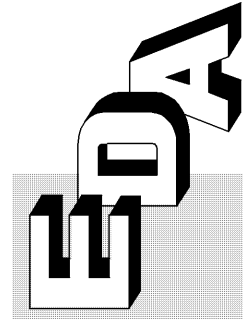
S-39
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 177.36

S-40
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 177.07

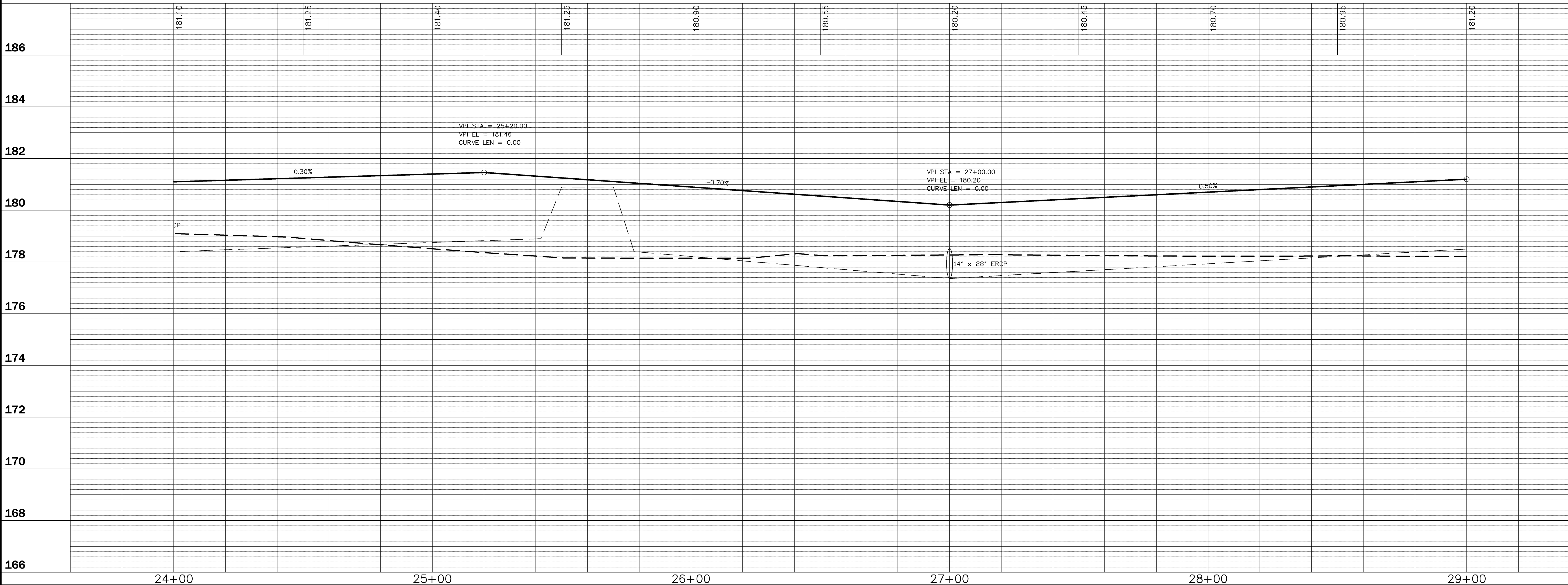


NORTH

SCALES:
HORIZONTAL: 1" = 20'
VERTICAL: 1" = 2'



ENG. DENMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
2404 N.W. 42nd St., Gainesville, FL 32608
TEL: (352) 373-3341 FAX: (352) 373-7248
E-MAIL: eda@denmaninc.com

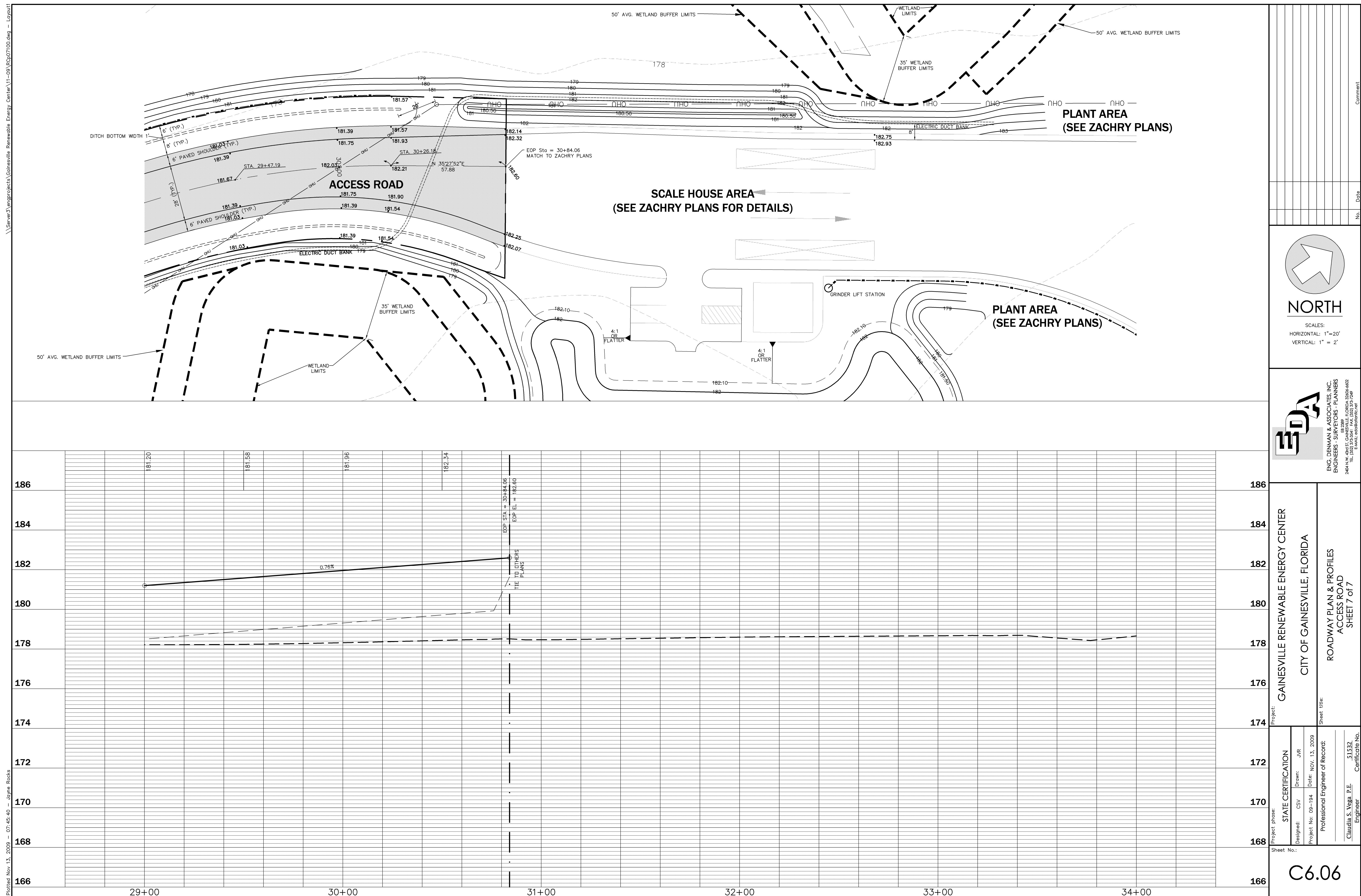


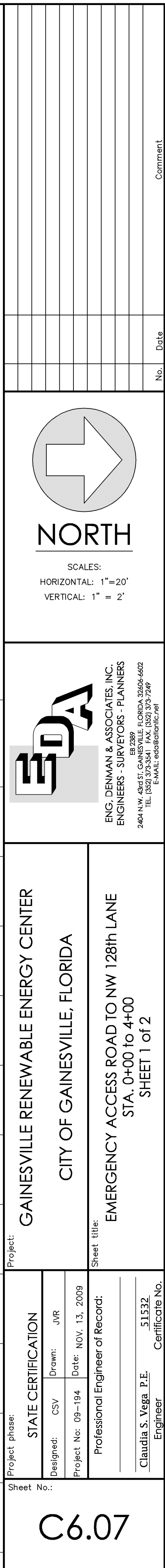
Project: GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

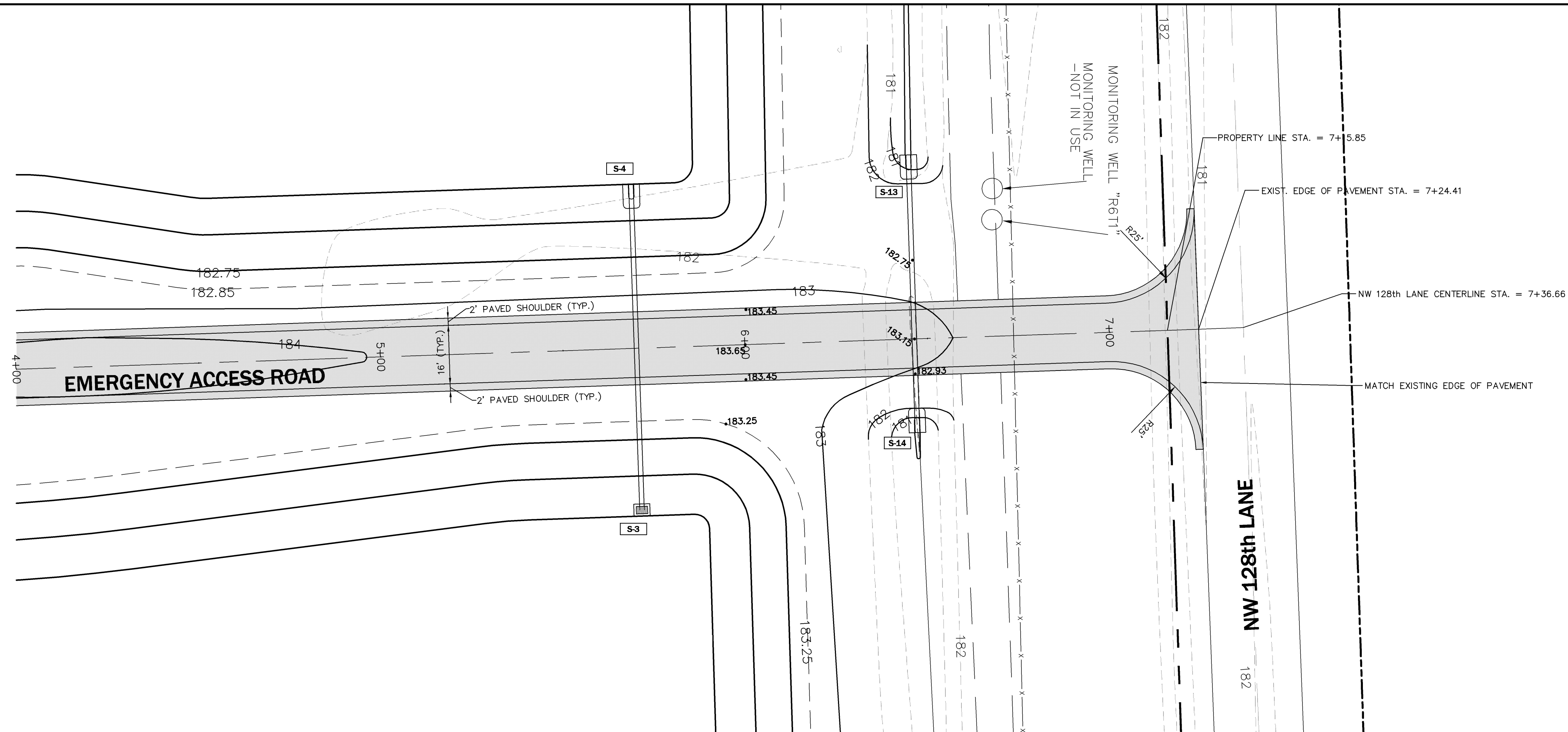
Sheet title:
ROADWAY PLAN & PROFILES
ACCESS ROAD
SHEET 6 of 7

Project Phase: STATE CERTIFICATION
Designed: CSV Drawn: JVR
Project No: 09-194 Date: NOV. 13, 2009
Professional Engineer of Record:
Claudia S. Vega P.E.
Engineer
51532
Certificate No.

C6.05







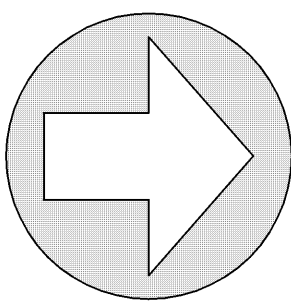
STORMWATER STRUCTURE SCHEDULE

S-3
TYPE C INLET
FDOT INDEX 232
TOP EL. = 183.25
WEIR EL. = 182.25
3.5" ORIFICE EL. = 180.75
INV. EL. = 178.50

S-4
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 177.50

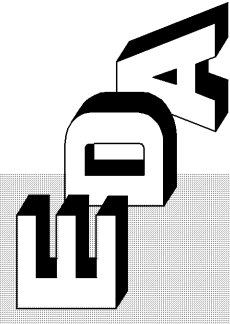
S-13
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 180.00

S-14
MITERED END SECTION
FDOT INDEX 272
INV. EL. = 180.20

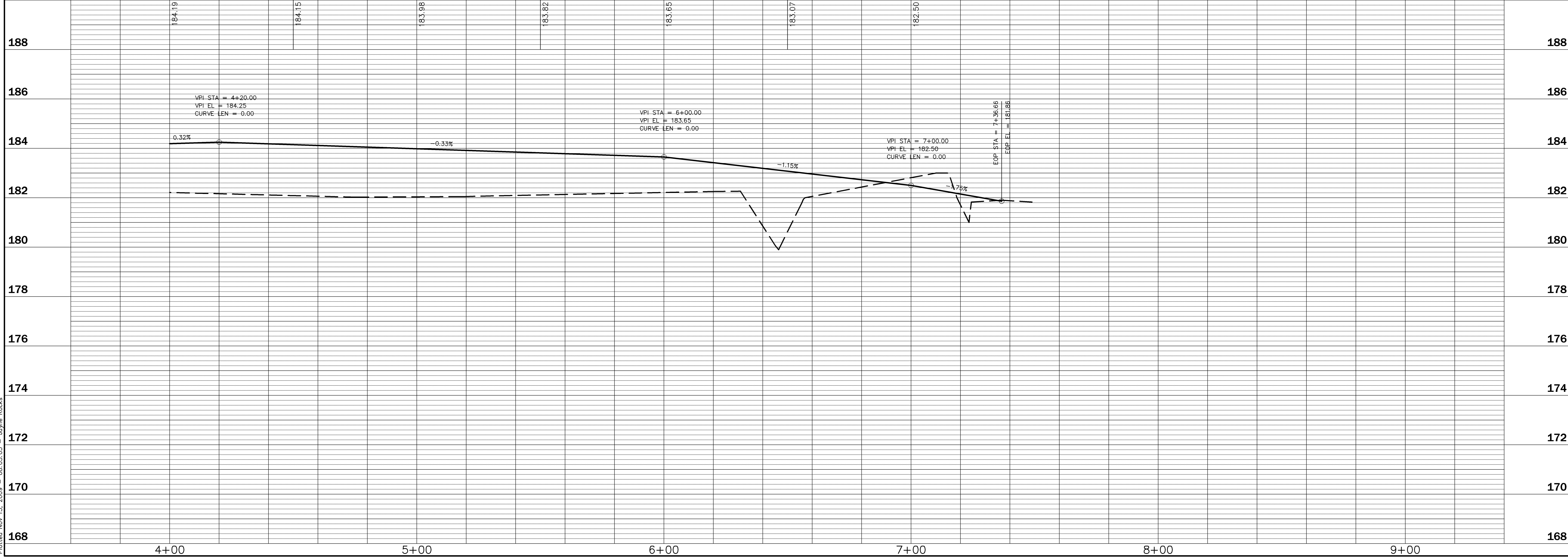


NORTH

SCALES:
HORIZONTAL: 1"=20'
VERTICAL: 1" = 2'



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EB 2389
2404 N.W. 43RD ST. GAINESVILLE, FLORIDA 32606-6602
TEL. (352) 373-3541 FAX. (352) 373-7249



GAINESVILLE RENEWABLE ENERGY CENTER
CITY OF GAINESVILLE, FLORIDA

EMERGENCY ACCESS ROAD TO NW 128th LANE
STA. 4+00 to 7+36.66
SHEET 2 of 2

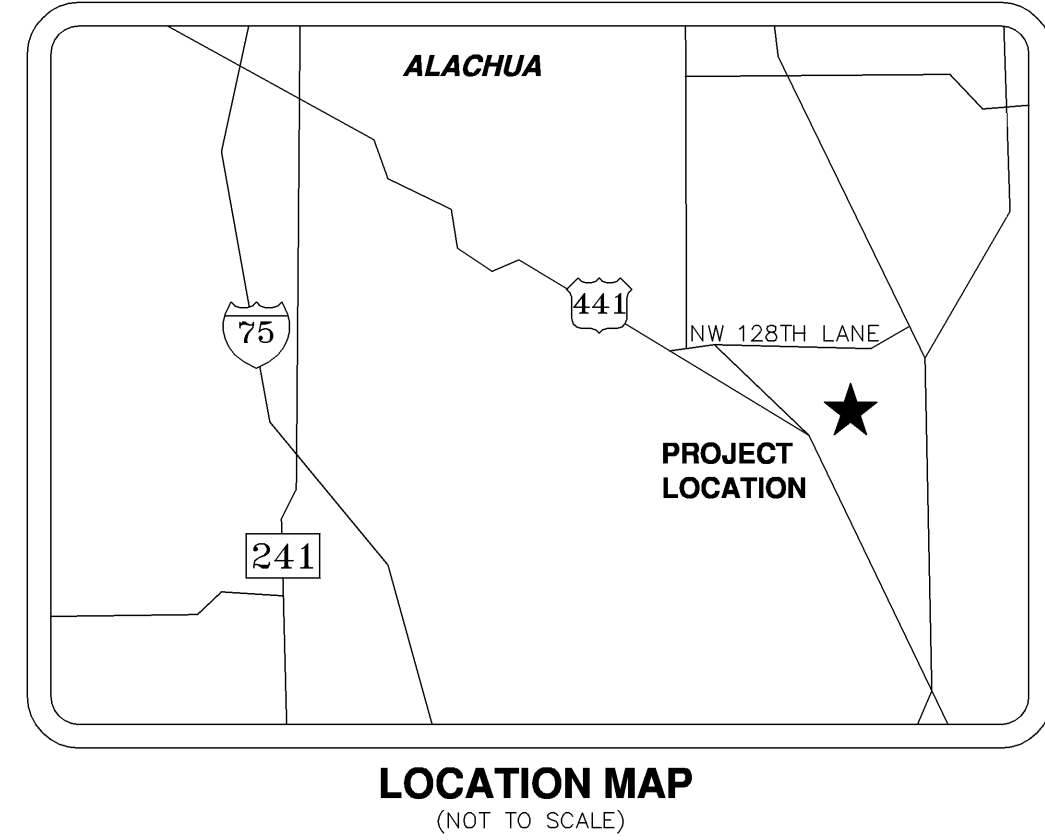
Project phase:	STATE CERTIFICATION		
Designed:	CSV	Drawn:	JVR
Project No:	09-194	Date:	NOV. 13, 2009
Professional Engineer of Record:			
Claudia S. Vega P.E. Engineer		51532 Certificate No.	

C6.08

Certificate No.

Comment

BOUNDARY AND TOPOGRAPHIC SURVEY
OF
GAINESVILLE RENEWABLE ENERGY CENTER
IN
SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST
ALACHUA COUNTY, FLORIDA



SURVEYOR'S NOTES:

- THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, BEING N 88°39'59" E, ESTABLISHED FROM FIELD TIES TO NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS A 143, A 145, AND A 117, NORTH AMERICAN DATUM OF 1983, 2007 ADJUSTMENT (NAD 83, 2007). NGS CONTROL STATIONS DESCRIBED AS FOLLOWS:
 - A 143: TO REACH THE STATION FROM THE POST OFFICE IN UNKWOOD, GO SOUTHEAST ON U.S. SALEM ROAD FOR 0.85 KM (0.55 MI) TO A SIDE ROAD RIGHT. TURN RIGHT AND GO SOUTH ON RAVENWOOD ROAD FOR 1.90 KM (1.20 MI) TO A SIDE ROAD LEFT. TURN LEFT AND GO EAST ON A DIRT DRIVEWAY FOR 0.42 KM (0.25 MI) TO THE MARK ON THE LEFT. THE MARK IS A CCS TRIANGULATION DISK SET IN THE TOP OF A 0.3 M (1.0 FT) SQUARE CONCRETE POST PROJECTING 0.13 M (0.4 FT) ABOVE THE GROUND. THE STATION IS LOCATED 15.7 M (51.5 FT) SOUTHWEST FROM THE SOUTHWEST EDGE OF A CULTIVATED FIELD, 8.1 M (26.6 FT) SOUTH-SOUTHEAST FROM A 0.25 M (0.8 FT) CHERRY TREE, 7.7 M (25.3 FT) NORTHEAST FROM THE NORTHEAST CORNER OF A TWO STORY HOUSE AND 7.0 M (23.0 FT) NORTH FROM THE NORTH CORNER OF A BLOCK BUILDING.
 - A 145: TO REACH THE STATION FROM THE INTERSECTION OF U.S. 441 AND ACR 237 IN HAGUE, GO NORTH FOR 0.2 KM (0.1 MI) ON ACR 237 TO ACR 25A, TURN RIGHT AND GO EAST FOR 0.3 KM (0.2 MI) ON ACR 25A TO NW 31, TURN LEFT AND GO NORTHEAST FOR 0.8 KM (0.5 MI) ON NW 31 TO A PAVED ROAD AT THE ENTRANCE TO THE UNIVERSITY OF FLORIDA DAIRY RESEARCH FARM, CONTINUE STRAIGHT AHEAD AND NORTHEAST FOR 1.1 KM (0.7 MI) ON NW 31 TO THE STATION ON THE LEFT. THE STATION IS WEST 11.3 METERS (37 FT) OF CENTERLINE, EAST 0.9 METERS (3 FT) OF A FENCE, AND EAST 4 METERS (13 FT) OF A POWER POLE.
 - A 117: TO REACH THE STATION FROM THE INTERSECTION OF U.S. 441 AND SR 121, GO NORTH FOR 5 KM (3.1 MI) ON SR 121 TO THE JUNCTION WITH ACR 231, GO NORTH FOR 3.4 KM (2.1 MI) ON ACR 231 TO THE INTERSECTION WITH NW 24 (A GRADED ROAD), GO WEST FOR 1 KM (0.6 MI) ON NW 24 TO THE STATION ON THE SOUTH SIDE OF THE ROAD AND NORTH OF A 1-STORY BRICK RESIDENCE. THE MARK IS WEST 5.36 METERS (176 FT) FROM A 12 IN LIVE OAK ON THE SOUTH OF NW 24, NORTHWEST 37.3 METERS (104 FT) FROM WESTERN IN PINE OF A PAIR, EAST 37.3 METERS (122.5 FT) FROM A FENCE CORNER SOUTH OF NW 24, SOUTH 12.8 METERS (42 FT) FROM THE WEST END OF A 12 IN PVC CULVERT PIPE ON THE NORTH R/W OF NW 24.
- INFORMATION FROM THE FOLLOWING SOURCES WAS USED IN PREPARATION OF THIS SURVEY:
 - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION LAND BOUNDARY INFORMATION SYSTEMS (LABINS) WEBSITE.
 - NATIONAL GEODETIC SURVEY.
 - DRAFT OF TITLE INSURANCE COMMITMENT PROVIDED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, TO BE ISSUED THROUGH ATTORNEY'S TITLE FUND SERVICES, LLC.
 - RECORDED DOCUMENTS OF THE PUBLIC RECORDS OF ALACHUA COUNTY, FLORIDA.
 - SURVEYS AND MAPS PROVIDED BY GAINESVILLE REGIONAL UTILITIES (GRU).
 - FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY MAPS FOR STATE ROAD 25, US 441.
- UNLESS OTHERWISE NOTED, ALL DIMENSIONS SHOWN HEREON ARE IN U.S. SURVEY FEET AND ARE BASED ON FIELD (SURVEY) MEASUREMENTS.
- ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), DERIVED FROM THE ORIGIN BENCHMARKS H 51 AND 175 H 1 DESCRIBED AS FOLLOWS:
 - H 51: 2.2 MILES SOUTHEAST ALONG THE ATLANTIC COAST LINE RAILROAD FROM THE STATION AT HAGUE, 100 YARDS EAST OF THE MAIN POST, RB 732, 42 FT. SOUTHWEST OF RB 732, 42 FT. SOUTHWEST OF THE SOUTHWEST RAIL, 49.5 FT. NORTHEAST OF THE CENTER LINE OF THE OLD HIGHWAY, 0.5 FT. NORTHEAST OF A STEEL WITNESS POST, SET IN THE TOP OF A CONCRETE POST. ELEVATION 143.75 FEET.
 - 175 H 1: ABOUT 1.3 MILES SOUTHEAST ALONG U.S. ROUTE 441 AND 41 FROM THE INTERSECTION OF STATE ROUTE 237 AND U.S. 441 AND 41. H 41: IN THE MIDDLE OF U.S. 441 AND 41, 36 FEET WEST OF CENTERLINE OF U.S. 441 AND 41, NORTHBOUND LANE, 44.4 FEET EAST OF U.S. 441 AND 41 SOUTHBOUND LANE AND 117 FEET SOUTH OF A METAL POST WITH S-25A RIGHT LANE SIGN. A BRASS DISK SET IN SOUTHEAST CORNER OF CONCRETE HEADWALL FOR DROP INLET IN MEDIAN OF U.S. 441 AND 41, SECTION 27, T 8 S, R 19 E. ELEVATION 174.67 FEET.
- SITE BENCHMARKS ARE AS SHOWN.
- THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON FIELD LOCATIONS OF THE UTILITIES MARKED BY THEIR RESPECTIVE OWNERS.
- THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER. ADDITIONS AND/OR DELETIONS TO THIS SURVEY BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

DESCRIPTION: LEASE BOUNDARY OF GAINESVILLE RENEWABLE ENERGY CENTER

A PARCEL OF LAND IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA, LYING NORTH AND EAST OF THE CSX RAILROAD RIGHT-OF-WAY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA; THENCE S 01°42'15" E, ALONG THE WEST LINE OF SAID SECTION 27, A DISTANCE OF 50.00 FEET, TO A CONCRETE MONUMENT FOUND STAMPED "GY LB021" MARKING THE INTERSECTION WITH THE SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE OF NW 128TH LANE; THENCE RUN N 88°04'12" E, ALONG SAID SOUTHERLY MAINTAINED RIGHT-OF-WAY LINE, A DISTANCE OF 1799.45 FEET TO THE INTERSECTION WITH THE NORTHERLY EXTENSION OF THE EAST LINE OF LANDS DESCRIBED IN OFFICIAL RECORDS BOOK 883, PAGE 502; THENCE S 01°45'52" E, ALONG SAID EAST LINE AND NORTHERLY AND SOUTHERLY EXTENSIONS THEREOF, A DISTANCE OF 3208.64 FEET TO A CONCRETE MONUMENT FOUND STAMPED "RLS 809", MARKING THE INTERSECTION WITH THE NORTHEASTERLY RIGHT-OF-WAY LINE OF A 120.0 FOOT WIDE CSX RAILROAD RIGHT-OF-WAY; THENCE S 39°18'09" E, ALONG SAID NORTHEASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1229.34 FEET FOR A POINT OF BEGINNING; THENCE, CONTINUE S 39°18'09" E, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 120.00 FEET TO A POINT ON A CURVE WHOSE RADIUS POINT LIES N 39°18'09" W, A DISTANCE OF 161.11 FEET; THENCE RUN NORTHERLY ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 51°03'17", A DISTANCE OF 143.56 FEET TO THE PT OF SAID CURVE; THENCE N 00°21'26" W, A DISTANCE OF 112.06 FEET TO THE INTERSECTION WITH THE SOUTH BOUNDARY LINE OF THE GAINESVILLE RENEWABLE ENERGY CENTER; THENCE S 87°48'31" W, ALONG SAID BOUNDARY LINE, A DISTANCE OF 120.06 FEET; THENCE S 00°21'26" E, A DISTANCE OF 108.22 FEET TO THE PC OF A CURVE CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 41.11 FEET; THENCE RUN SOUTHERLY ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 51°03'17", A DISTANCE OF 36.63 FEET TO THE PT OF SAID CURVE, AND THE POINT OF BEGINNING; BEING AND LYING IN SECTION 27, TOWNSHIP 8 SOUTH, RANGE 19 EAST, ALACHUA COUNTY, FLORIDA.

CONTAINING 130.78 ACRES, MORE OR LESS.

W. LANIER MATTHEWS, II
PROFESSIONAL SURVEYOR AND MAPPER
FLORIDA CERTIFICATE NUMBER 4783
FOR THE FIRM GGI, LLC dba GENESIS GROUP (LB6816)

DATE

PROJECT NAME:

**GAINESVILLE RENEWABLE
ENERGY CENTER
GAINESVILLE, FL**

SHEET TITLE:

BOUNDARY AND TOPOGRAPHIC SURVEY

PROJECT NUMBER:

8527-001

DRAWING DATE:

09/11/09

SHEET NUMBER:

1 OF 5

WETLAND AREA "A"		
LINE NO.	BEARING	DISTANCE
L1	N14°47'43"E	54.03'
L2	N35°09'29"E	59.36'
L3	N33°04'22"E	43.61'
L4	N13°53'06"W	60.01'
L5	N33°21'27"E	69.40'
L6	N25°37'10"E	59.35'
L7	N85°50'25"E	51.93'
L8	N09°57'19"E	53.58'
L9	N41°17'12"E	47.78'
L10	N83°05'33"E	94.64'
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L12	N42°44'22"E	56.38'
L13	N37°05'05"W	50.86'
L14	N04°47'24"W	59.91'
L15	N70°28'47"E	59.00'
L16	N67°08'49"E	100.37'
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L19	N27°09'50"E	50.93'
L20	N77°13'19"E	70.89'
L21	N13°05'52"W	46.70'
L22	N03°31'03"E	71.10'
L23	N47°32'24"E	69.52'
L24	N15°25'32"W	78.65'
L25	N11°38'15"E	58.01'
L26	N07°58'29"E	103.55'
L27	S81°31'10"E	61.60'
L28	N06°31'15"E	49.70'
L29	N81°22'46"E	79.68'
L30	S69°41'18"E	98.48'
L31	N00°46'32"E	7.59'
L32	N88°55'14"W	93.38'
L33	S89°40'49"W	161.81'
L34	N89°53'29"W	109.43'
L35	S87°18'59"W	90.38'
L36	S86°51'19"W	87.01'
L37	S85°01'55"W	95.22'
L38	S86°21'03"E	65.76'
L39	N89°12'36"E	95.83'
L40	S85°10'16"E	60.39'
L41	S00°05'35"W	15.00'
L42	S25°27'32"W	16.92'
L43	S46°34'08"W	51.56'
L44	S69°12'07"W	61.59'
L45	S10°53'25"W	80.83'
L46	S55°29'21"W	75.86'
L47	S71°16'12"W	38.80'
L48	S65°03'27"W	49.35'
L49	S07°22'14"W	61.87'
L50	S16°31'40"W	76.10'
L51	S36°42'01"E	40.72'
L52	S05°32'33"E	71.38'
L53	S30°55'05"W	28.78'
L54	S29°49'00"W	35.67'
L55	S47°14'57"W	47.15'
L56	S63°28'45"W	41.38'
L57	S22°09'43"W	43.19'
L58	S19°44'00"E	55.18'
L59	S78°09'32"W	44.60'
L60	N79°16'00"W	44.73'
L61	S77°21'30"W	35.12'
L62	S88°25'52"W	50.50'
L63	S72°15'02"W	50.28'
L64	S67°31'17"W	61.98'
L65	S40°45'06"W	78.66'
L66	S29°21'58"W	53.04'
L67	S14°49'20"W	54.99'
L68	S06°10'06"W	61.88'
L69	S07°39'58"W	62.82'
L70	S00°09'56"W	64.99'
L71	N53°20'06"W	18.89'
L72	N05°47'58"W	97.04'
L73	N80°42'58"W	10.76'
L74	S01°50'18"E	137.20'
L75	S01°03'37"E	130.74'
L76	S02°27'26"E	156.64'
L77	S01°38'16"E	81.81'
L78	S00°22'24"E	133.66'
L79	S02°03'41"E	190.03'
L80	S03°23'27"E	149.18'
L81	S00°18'41"E	113.02'
L82	S03°43'30"E	109.46'
L83	S00°55'07"E	114.41'
L84	S04°06'06"E	68.03'
L85	S01°32'15"E	100.90'
L86	S01°42'51"E	83.46'
L87	S79°40'46"E	8.29'
L88	N04°58'46"W	26.84'
L89	N02°50'13"W	52.25'
L90	N01°29'14"W	100.55'
L91	N00°55'56"W	73.49'
L92	N02°11'41"W	115.82'
L93	N02°15'54"W	105.62'
L94	N01°09'49"W	111.04'
L95	N02°01'01"W	159.94'
L96	N01°29'03"W	175.30'
L97	N02°06'21"W	135.10'
L98	N08°33'21"E	43.15'
L99	N01°18'08"E	49.67'
L100	N75°03'37"E	29.13'
L101	N78°21'14"E	58.89'
L102	N26°14'54"E	18.46'
L103	N68°19'03"E	41.03'
L104	N83°52'09"E	59.40'
L105	S89°29'17"E	59.40'
L106	N08°18'20"W	36.85'
L107	N12°20'50"W	53.73'
L108	N14°47'43"E	5.05'
L109	N87°18'42"E	16.93'
L110	N80°36'37"E	55.75'
L111	N88°04'59"E	38.72'
L112	S83°04'28"E	81.45'
L113	S75°54'39"E	18.79'
L114	S76°11'04"E	13.92'
L115	N80°36'34"E	51.07'
L116	S00°05'26"E	2.78'
L117	S78°45'57"W	51.32'
L118	N80°08'47"W	14.96'
L119	N74°41'51"W	20.60'
L120	N84°12'01"W	78.89'
L121	S89°18'55"W	36.65'
L122	S80°22'12"W	54.82'
L123	S86°51'21"W	21.03'

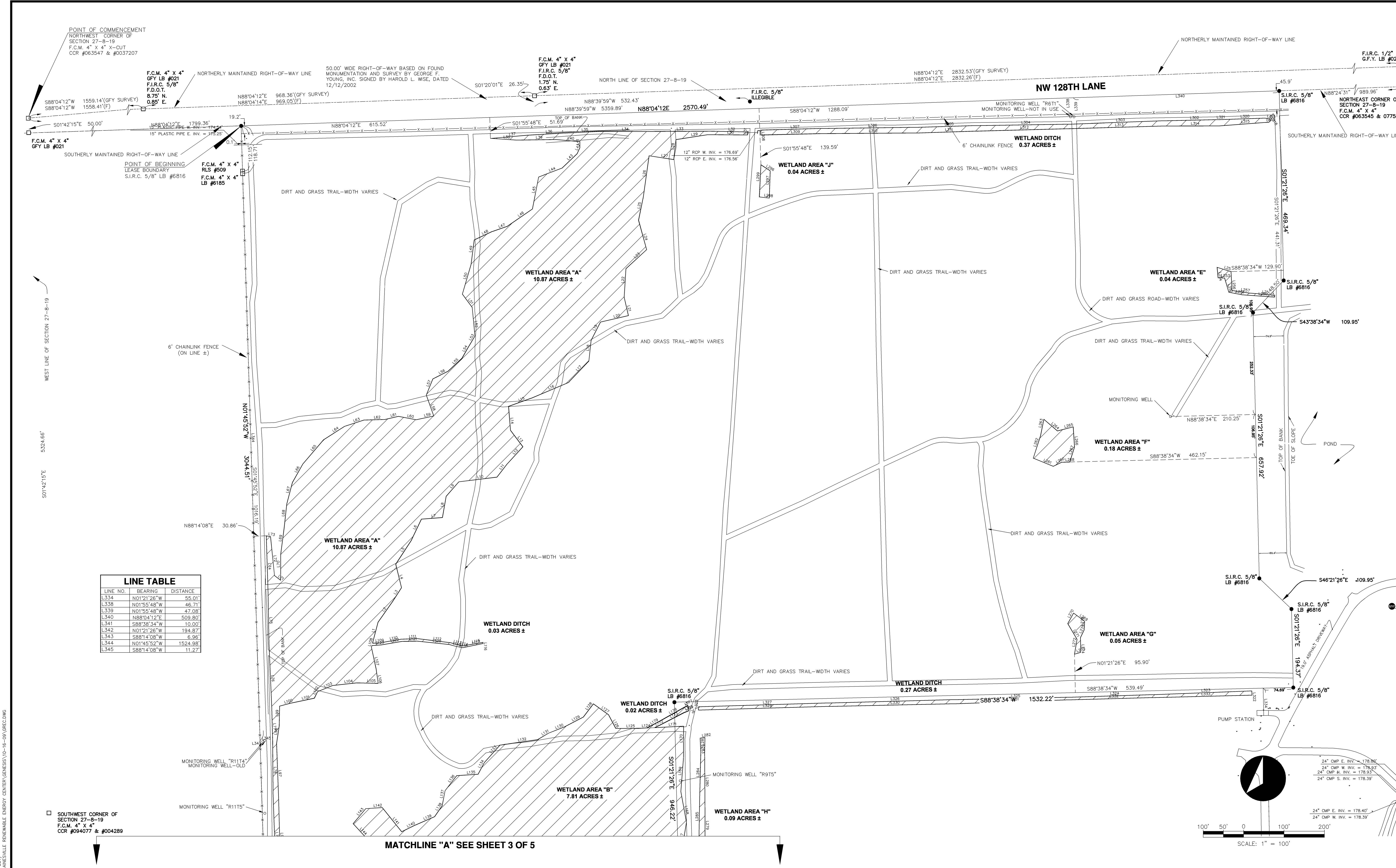
WETLAND AREA "B"		
LINE NO.	BEARING	DISTANCE
L124	S87°12'27"W	22.42'
L125	N89°56'12"W	54.38'
L126	N28°11'20"W	38.68'
L127	N54°27'33"W	45.67'
L128	S37°34'28"W	41.58'
L129	S62°46'02"W	53.65'
L130	S68°42'55"W	38.91'
L131	S59°46'13"W	34.05'
L132	S81°49'26"W	93.41'
L133	S41°15'50"W	57.72'
L134	S28°19'27"W	33.26'
L135	S86°34'31"W	52.79'
L136	S37°47'33"W	47.00'
L137	S11°05'22"W	38.35'
L138	S34°49'41"W	32.93'
L139	S66°28'24"W	51.98'
L140	S63°57'46"W	37.48'
L141	N38°45'40"W	76.68'
L142	S86°34'34"W	40.62'
L143	S40°13'23"W	49.07'
L144	S42°55'51"E	43.45'
L145	S44°53'29"E	66.48'
L146	S50°16'01"E	52.25'
L147	S08°58'27"W	46.07'
L148	S01°53'01"W	52.70'
L149	S63°42'20"E	91.62'
L150	S74°47'06"E	45.73'
L151	S66°31'14"E	41.08'
L152	S26°34'52"E	40.91'
L153	N80°51'19"E	92.28'
L154	S89°48'38"E	69.25'
L155	N82°01'14"E	71.96'
L156	N86°43'01"E	77.41'
L157	N67°14'46"E	101.61'
L158	S04°48'04"E	38.18'
L159	S81°48'42"E	33.68'
L160	S79°21'45"E	36.63'
L161	S83°12'57"E	39.01'
L162	S73°10'15"E	21.09'
L163	N74°24'21"E	29.69'
L164	N03°01'19"E	68.25'
L165	N02°04'59"W	59.00'
L166	N07°29'07"W	91.52'
L167	N09°28'32"E	98.38'
L168	N10°39'49"W	77.29'
L169	N04°31'13"E	82.11'
L170	N00°30'30"E	79.91'
L171	N87°12'27"W	71.72'
L172	N64°30'56"E	11.11'
L173	N62°46'50"E	71.78'
L174	N68°11'25"E	11.05'
L175	N05°59'46"E	5.53'
L176	N25°04'40"W	7.92'
L177	S62°50'23"W	8.17'
L178	S60°43'47"W	79.02'
L179	S62°17'22"W	27.91'

WETLAND AREA "D"		
LINE NO.	BEARING	DISTANCE
L218	N76°53'55"E	32.57'
L219	S43°17'02"E	34.75'
L220	S37°06'02"E	36.81'
L221	N72°45'54"E	36.89'
L222	S22°51'45"E	37.49'
L223	S83°49'40"E	42.49'
L224	S46°59'59"E	39.49'
L225	S44°41'47"E	35.97'
L226	S37°39'45"E	63.95'
L227	S38°37'12"E	34.18'
L228	S02°55'36"W	41.99'
L229	S66°47'10"W	27.82'
L230	S62°30'20"W	41.50'
L231	S40°32'26"W	40.32'
L232	N87°52'50"W	53.89'
L233	S69°50'57"W	58.81'
L234	N66°45'24"W	91.36'
L235	N01°48'23"W	38.94'
L236	N83°13'30"W	15.19'
L237	S02°29'22"E	69.48'
L238	S71°20'00"W	9.59'
L239	N03°05'32"W	100.57'
L240	N02°12'19"W	106.53'
L241	N00°27'40"W	87.86'
L242	N01°02'22"W	106.11'
L243	N00°39'31"W	171.48'
L244	S72°22'20"E	5.63'
L245	S03°13'34"E	49.09'
L246	S01°08'56"E	80.00'
L247	S02°09'34"E	89.60'
L248	S02°12'43"E	48.55'
L249	NOT USED	
L300	N73°18'31"E	31.27'
L301	N60°37'52"E	35.51'

WETLAND AREA "E"		
LINE NO.	BEARING	DISTANCE
L250	N86°01'57"W	78.57'
L251	N79°32'18"W	35.54'
L252	N16°34'52"W	36.89'
L253	N88°26'43"W	16.02'
L254	N05°16'22"W	26.06'
L255	S72°50'41"E	35.82'
L256	S03°05'44"E	46.82'
L257	S81°48'10"E	49.74'
L258	S85°37'22"E	60.61'
L259	S02°09'23"W	5.17'

WETLAND AREA "F"		
LINE NO.	BEARING	DISTANCE
L260	S64°41'42"W	23.55'
L261	N67°58'28"W	53.48'
L262	N18°05'13"E	58.06'
L263	N11°30'01"E	41.73'
L264	S149°59'26"E	44.05'
L265	N76°06'43"E	40.28'
L266	S03°40'42"E	49.94'
L267	S10°40'04"W	38.88'
L268	S89°01'50"W	19.55'

WETLAND AREA "G"		
LINE NO.	BEARING	DISTANCE
L269	N54°06'11"W	33.77'
L270	S29°21'06"W	29.65'
L271	S30°46'07"E	45.26'
L272	S09°51'10"W	37.25'
L273	N73°47'39"E	16.00'
L274	N00°54'02"W	36.66'
L275	N26°15'28"E	20.72'
L276	N03°00'56"E	21.96'



LINE TABLE		
LINE NO.	BEARING	DISTANCE
L334	N01°21'26"W	55.01'
L338	N01°55'48"W	46.71'
L339	N01°55'48"W	47.08'
L340	N88°04'12"E	509.80'
L341	S88°38'34"W	10.00'
L342	N01°21'26"E	194.87'
L343	S88°14'08"W	6.96'
L344	N01°45'52"W	1524.98'
L345	S88°14'08"W	11.27'

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NO.	DATE	DESCRIPTION	REVISIONS



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FL LC 26000202, FL LB 0006816, FL CA 00009660

GGI, LLC dba GENESIS GROUP
2507 CALLAWAY ROAD, SUITE 100
TALLAHASSEE, FLORIDA 32303
(850) 224-4400 (850) 681-3600 FAX

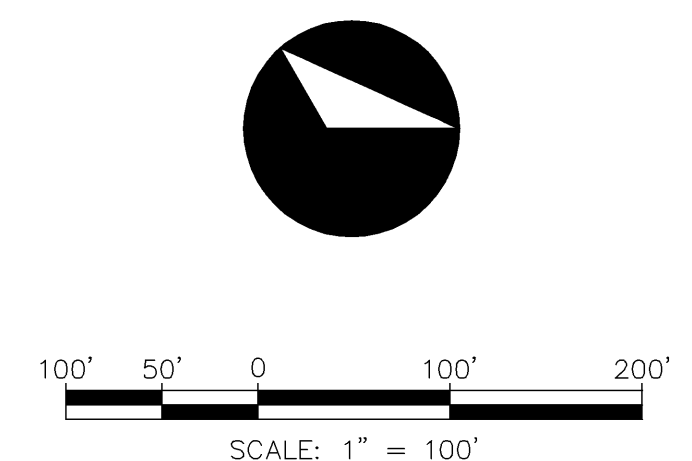
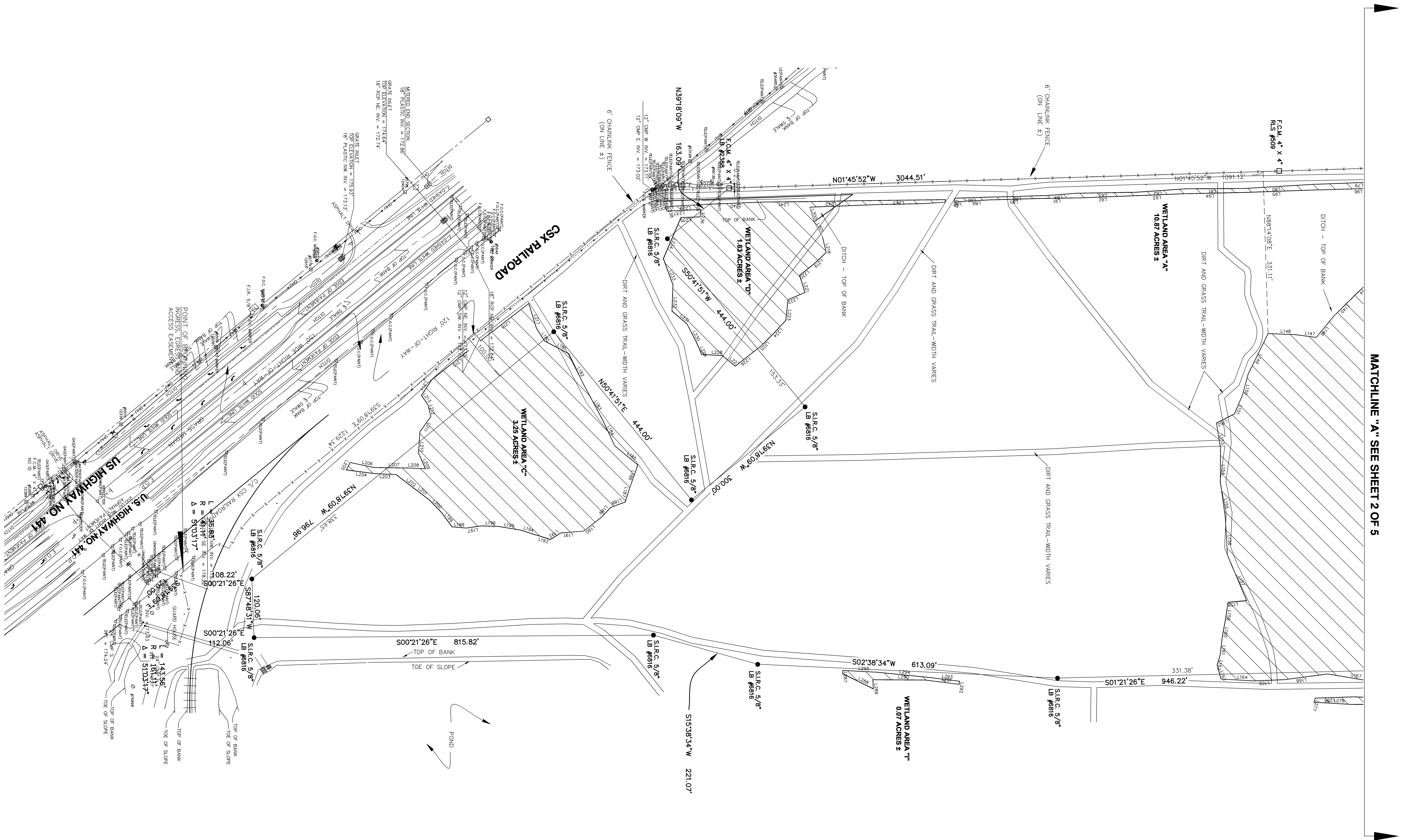
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DRAWN BY: **J.L.E., S.A.Y.**
CHECKED BY: **W.L.M.**
SCALE: **1"=100'**

PREPARED FOR:
AMERICAN RENEWABLES
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02166

PROJECT NUMBER:
8527-001
DRAWING DATE:
09/11/09
SHEET NUMBER:
2 OF 5

PROJECT NAME:
GAINESVILLE RENEWABLE ENERGY CENTER
GAINESVILLE, FL

SHEET TITLE:
BOUNDARY AND TOPOGRAPHIC SURVEY



NO.	DATE	DESCRIPTION	REVISIONS



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GGI, LLC dba GENESIS GROUP
2507 CALLAWAY ROAD, SUITE 100
TALLAHASSEE, FLORIDA 32303
(850) 224-4400 (850) 681-3600 FAX

SURVEY DATE: 08/17/09
DRAWN BY: J.L.E., S.A.Y.
CHECKED BY: W.L.M.
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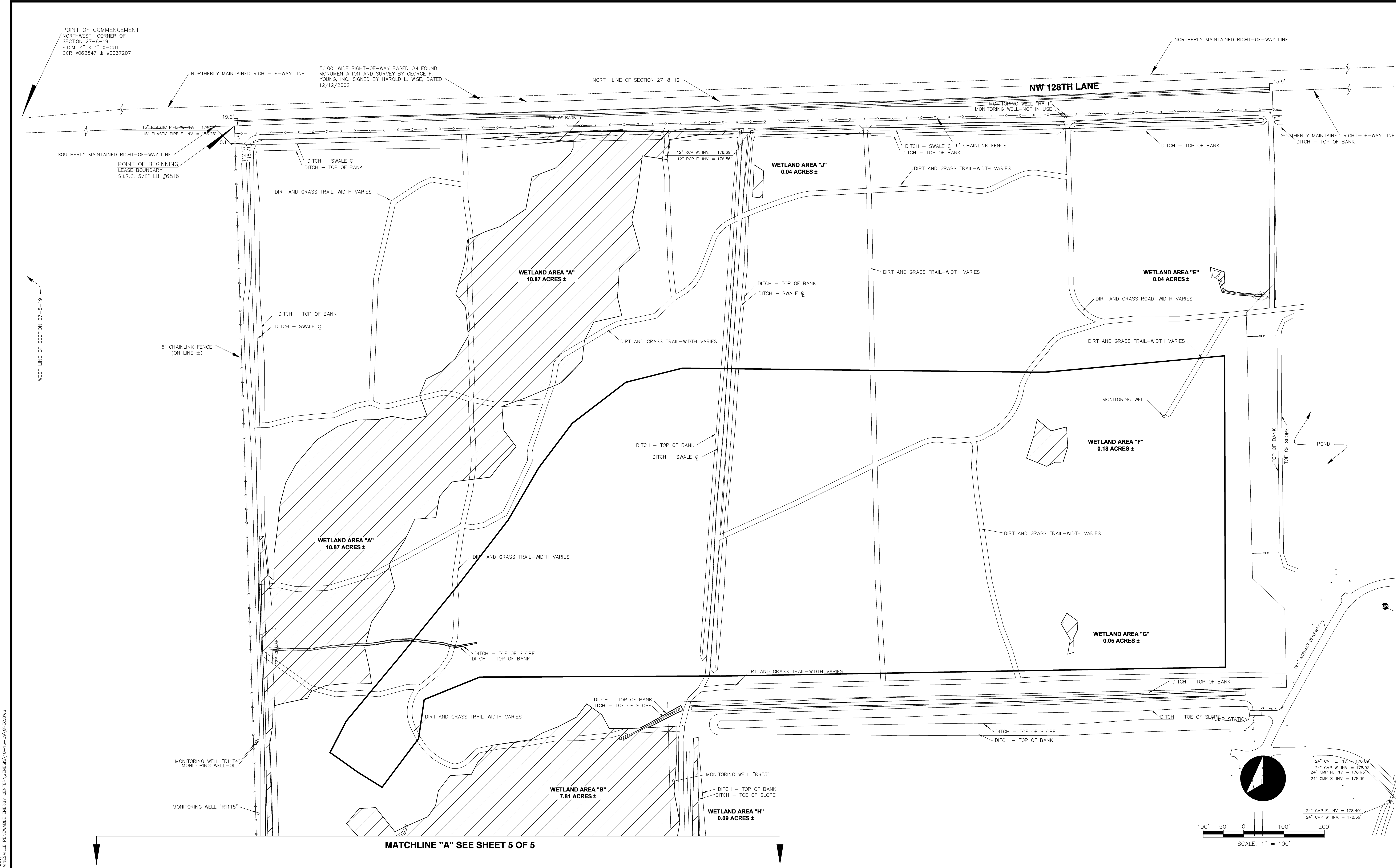
PREPARED FOR:
AMERICAN RENEWABLES
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02166

PROJECT NUMBER: 8527-001
DRAWING DATE: 09/11/09
SHEET NUMBER: 3 OF 5

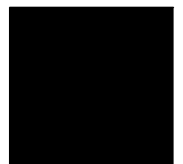
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GAINESVILLE, FL

SHEET TITLE: BOUNDARY AND TOPOGRAPHIC SURVEY

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FL LC 26000202, FL LB 0006816, FL CA 00009660

GGI, LLC dba GENESIS GROUP
2507 CALLAWAY ROAD, SUITE 100
TALLAHASSEE, FLORIDA 32303
(850) 224-4400 (850) 681-3600 FAX

SURVEY DATE: 08/17/09
DRAWN BY: J.L.E., S.A.Y.
CHECKED BY: W.L.M.
SCALE: 1"=100'

PREPARED FOR:
AMERICAN RENEWABLES
75 ARLINGTON STREET, SUITE 704
BOSTON, MA 02166

PROJECT NUMBER:
8527-001
DRAWING DATE:
09/11/09
SHEET NUMBER:
4 OF 5

PROJECT NAME:
**GAINESVILLE RENEWABLE ENERGY CENTER
GAINESVILLE, FL**
SHEET TITLE:
BOUNDARY AND TOPOGRAPHIC SURVEY

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APPENDIX 10.4.3

WETLAND DELINEATION AND MITIGATION PLAN

WETLAND DELINEATION AND MITIGATION PLAN

Prepared for:



Prepared by:



ECT No. 090408-0100

November 2009

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1.0 INTRODUCTION

Gainesville Renewable Energy Center, LLC (GREC LLC), is proposing to construct the Gainesville Renewable Energy Center (GREC), a 100-megawatt (MW) woody, biomass-fired, electrical power plant and associated facilities in Gainesville, Alachua County, Florida. GREC is located on a parcel of land within the existing Gainesville Regional Utilities (GRU) Deerhaven Generating Station (DGS) property, which is owned and operated by the City of Gainesville, Florida. The GREC Site will be leased from the City. The Site is bordered by Northwest 128th Lane on the north, the existing GRU DGS facilities on the east, U.S. Highway 441 (U.S. 441) on the south, and the Alachua County Public Works Department Complex on the west. Figure 1 provides a site location map, and Figure 2 shows the GREC Site boundaries overlain on a U.S. Geological Survey (USGS) quadrangle map.

GREC includes the power block, fuel storage areas, stormwater management facilities, and associated infrastructure, such as roads, parking, and utilities, that are located onsite. Offsite associated facilities include a switchyard, temporary construction laydown areas, and ancillary infrastructure, such as water, sewer, and natural gas pipelines. These offsite facilities are located within the GRU DGS property. GREC is leasing a 131-acre parcel from the City of Gainesville for GREC. The Site is presently undeveloped. Historically, it has been used for agriculture and silviculture. Current land use and vegetation types at the Site consist of primarily forested communities, including pine plantations, mixed pine and hardwoods, and several wetland types. Nonforested communities include manmade swales, trails/roads, open land, and herbaceous dry prairie. Most of the Site is actively managed for timber production and has been altered by land preparation (furrowing) and periodic harvesting of timber. The Site is transected by numerous unpaved roads/trails and is surrounded by manmade swales/ditches.

Environmental Consulting & Technology, Inc. (ECT), conducted an environmental assessment of the Site during summer 2008 and spring and summer 2009. The evaluation consisted of a wetland delineation and wetland functional assessment using the uniform

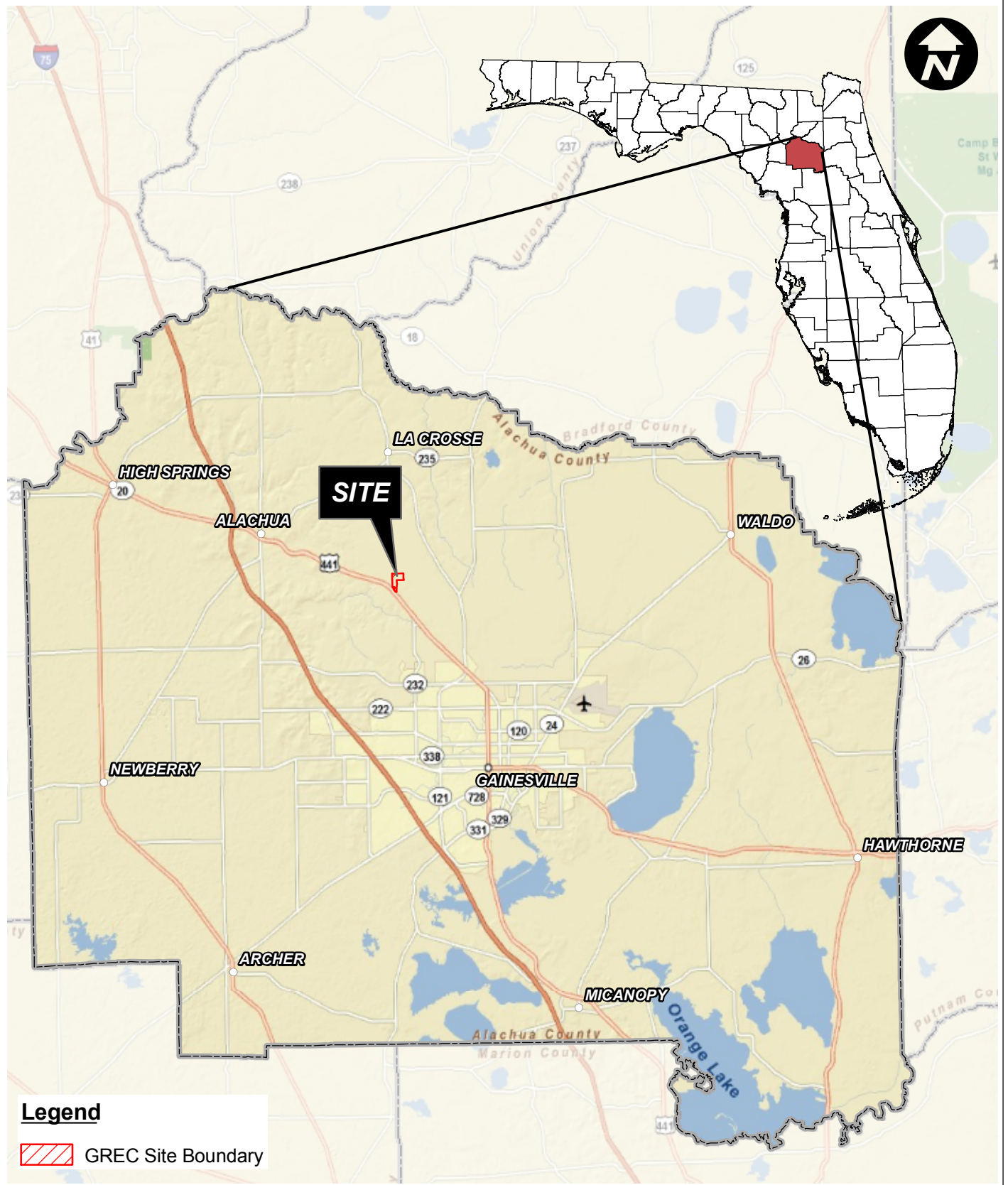


FIGURE 1.
SITE LOCATION MAP

Sources: ERSI, 2009; US Census, 2000; ECT, 2009.

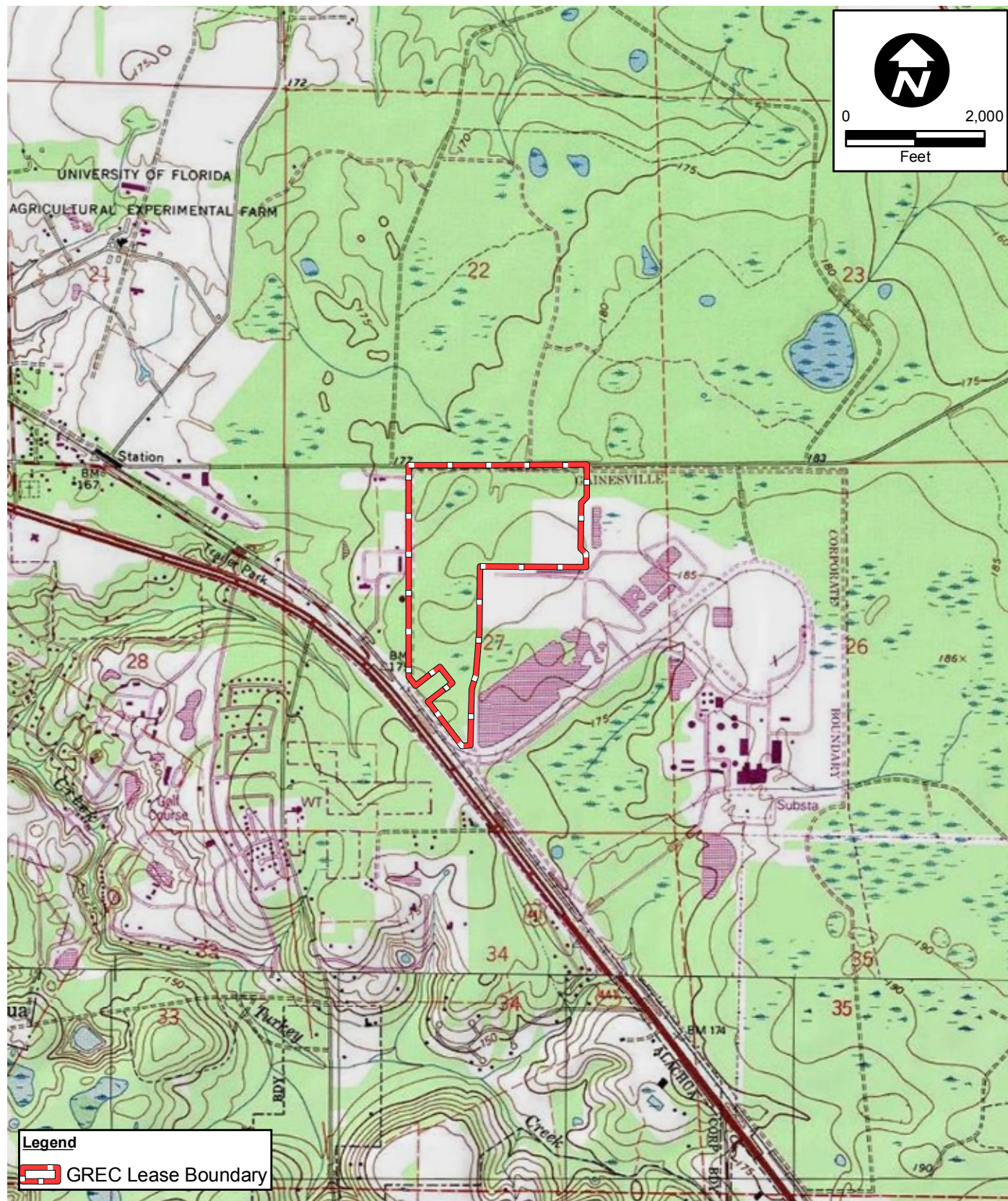


FIGURE 2.

USGS QUADRANGLE MAP

Source: USGS, 1997; NRCS, 2007; GREC, 2009; ECT, 2009.

mitigation assessment method. ECT also mapped vegetation communities/land uses and conducted a wildlife and listed plant and wildlife species survey. This report summarizes the results of the fieldwork, discusses proposed impacts to wetlands, and presents avoidance and minimization techniques and a proposed wetland mitigation plan. Results of the land use mapping and wildlife and listed species surveys are presented in the GREC Site Certification Application (SCA), to which this report and an environmental resource permit (ERP) application are appended.

2.0 PROJECT DESCRIPTION

GREC consists of a 100-MW woody, biomass-fired, electrical power plant and associated facilities, including the power block, fuel storage areas, stormwater management facilities, and associated infrastructure, such as roads, parking, and utilities, that are located onsite. Offsite associated facilities include a switchyard, a short transmission line, temporary construction laydown areas, and ancillary infrastructure, such as sewer and natural gas pipelines. These offsite facilities are located within the GRU DGS property. Figure 3 shows the overall layout of the proposed GREC facilities on the GREC Site and within the DGS property.

GREC LLC evaluated a number of alternative site locations and site designs to minimize environmental impacts. Chapter 9.0 of the SCA provides detailed descriptions of the linear facilities routes. A summary description of the proposed project is provided in the following subsections. The ERP application provides plans depicting the proposed project area.

2.1 ONSITE FACILITIES

As shown in Figure 3, the power block, fuel storage, and scale house areas consist of approximately 38 acres and are located in the northern part of the Site in an area that has been disturbed through silviculture practices. These facilities were sited in this location to minimize impacts to higher quality ecosystems elsewhere onsite. Chapter 4.0 of the SCA includes a detailed description of the power plant facilities.

The stormwater management facilities include three large detention basins covering approximately 19 acres located to the north of the power block and fuel storage areas. A fourth smaller stormwater detention basin is located in the scale house area.

Access to GREC from U.S. 441 is proposed via a new access road that traverses north-south through the GREC Site. As shown in Figure 3, the road was routed between two



FIGURE 3.
OVERALL LAYOUT OF PROPOSED GREC FACILITIES

Source: FDOT, 2008; Zachary, 2009; EDA, 2009; Genesis, 2009; ECT, 2009.

wetlands to avoid wetland impacts. An approximately 4.6-acre temporary construction worker parking area is situated adjacent to the access road in the southern part of the Site.

A transmission line will be routed between the offsite switchyard and the power generation facility along the site access road. The transmission line is approximately 4,100 feet (ft) long. Similar to the site access road, the transmission line was routed to avoid wetland impacts.

2.2 OFFSITE FACILITIES

The offsite switchyard and transmission line will occupy less than 1 acre and are located near the southwest boundary of the GREC Site. As shown in Figure 3, the switchyard was situated to avoid direct wetland impacts.

GREC requires natural gas and sewer service, which it will receive by interconnecting with the existing utility lines at the DGS. The gas and sewer pipelines are routed within the same corridor, which follows along existing roadways through the DGS Site to GREC. The sewer pipeline is approximately 4,900 ft long; whereas, the gas pipeline originates slightly closer to GREC and is approximately 4,800 ft long. The width of their corridor is approximately 14 ft wide. The linear facilities traverse several swales or stormwater management facilities as described in Section 3.0.

As shown in Figure 3, an approximately 8-acre construction laydown area is situated to the east of the GREC Site on the DGS property in cleared fields. The laydown areas will be used to store materials during the construction process. Temporary access to the construction laydown area and the eastern side of the Site will be via an existing roadway on the DGS property.

3.0 EXISTING WETLANDS AND SURFACE WATERS

In the state of Florida, wetlands are regulated at both the federal and state levels. The U.S. Army Corps of Engineers (USACE) regulates wetlands under the authority of Section 404 of the Clean Water Act (CWA), and the Florida Department of Environmental Protection (FDEP) regulates wetlands under Florida Statutes (F.S.) Chapter 373, Section 373.019. In addition, the City of Gainesville's land ordinance has regulations pertaining to the development in wetlands and mitigation of unavoidable wetland impacts.

3.1 WETLAND DELINEATION

For GREC, wetlands were identified using a combination of existing data, map reviews, and a field wetland delineation survey. Prior to conducting the field survey, available maps and literature were collected and reviewed to determine the approximate extent of jurisdictional wetlands and waters within the project limits. ECT then conducted wetland delineations for all portions of the Site and offsite linear facility corridors and construction laydown areas. The delineations were done in the field in accordance with the methodologies outlined in the 1987 USACE Wetland Delineation Manual (Environmental Laboratory, 1987), the Interim Regional Supplement to the USACE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (USACE, 2007), and the Florida wetland rule in Chapter 62-340, Florida Administrative Code (F.A.C.), Delineation of the Landward Extent of Wetlands and Surface Waters. These methodologies evaluate the presence of hydrophytic (wetland) vegetation, hydric soil indicators, and wetland hydrology. Areas determined to be jurisdictional wetlands or other waters were flagged in the field using pink tape labeled "Wetland Delineation." The flags were sequentially numbered using a letter/number code. Wetland flag locations were surveyed by Genesis Land Group and/or by ECT using a global positioning system (GPS) with submeter accuracy.

3.2 UNIFORM MITIGATION ASSESSMENT METHOD

Each wetland, except for manmade swales and stormwater management facilities, was assessed using Florida's Uniform Mitigation Assessment Method (UMAM). UMAM is a type of ecosystem functional assessment that was designed to assess any type of impact

and mitigation, including the preservation, enhancement, restoration, and creation of wetlands, as well as the evaluation and use of mitigation banks. Each wetland or potential mitigation site was broken down into assessment areas, which were then evaluated based on their location/landscape support, water environment, and community structure. Assessments were made based on a combination of map and aerial photograph review, as well as field reconnaissance. Swales and stormwater management facilities were not assessed using UMAM since these manmade features typically do not require mitigation.

3.3 EXISTING WETLAND RESOURCES

The following subsections provide a summary of the wetlands and other surface waters occurring within the GREC limits by project location. The wetlands are classified by Florida Land Use Cover and Forms Classification System (FLUCFCS) and the Cowardin System (Cowardin *et al.*, 1979), which is based on physical wetland attributes (i.e., vegetation, soils, and water regime). There are no natural streams within the GREC limits. Figure 4 provides a land use map based on FLUCFCS system, Figure 5 presents a soils map, Figure 6 provides a National Wetland Inventory map, Figure 7 identifies wetlands delineated within the GREC limits, and Figure 8 presents photographs of those wetland systems. UMAM data sheets are provided in Attachment A, and USACE wetland and upland data sheets are provided in Attachment B. Table 1 identifies acreage of each wetland type within the project limits.

3.4 GREC SITE WITHIN THE LEASE BOUNDARY

3.4.1 WETLAND A

Wetland A is a 10.25-acre palustrine forested wetland located in the northwest corner of the Site. This wetland is a complex of two cypress domes (621)* surrounded by mixed wetland forest (630). The mixed wetland forest has been subject to silviculture activities over the last several decades and is currently a mix of planted and regeneration pine and mixed hardwoods. The cypress domes were not part of the silviculture activities and are in good condition. The dominant canopy species in the cypress portions of the wetland are pond cypress (*Taxodium ascendens*), with a scattered mix of swamp tupelo (*Nyssa*

*Numbers in parentheses represent the FLUCFCS code for the type of vegetative community.

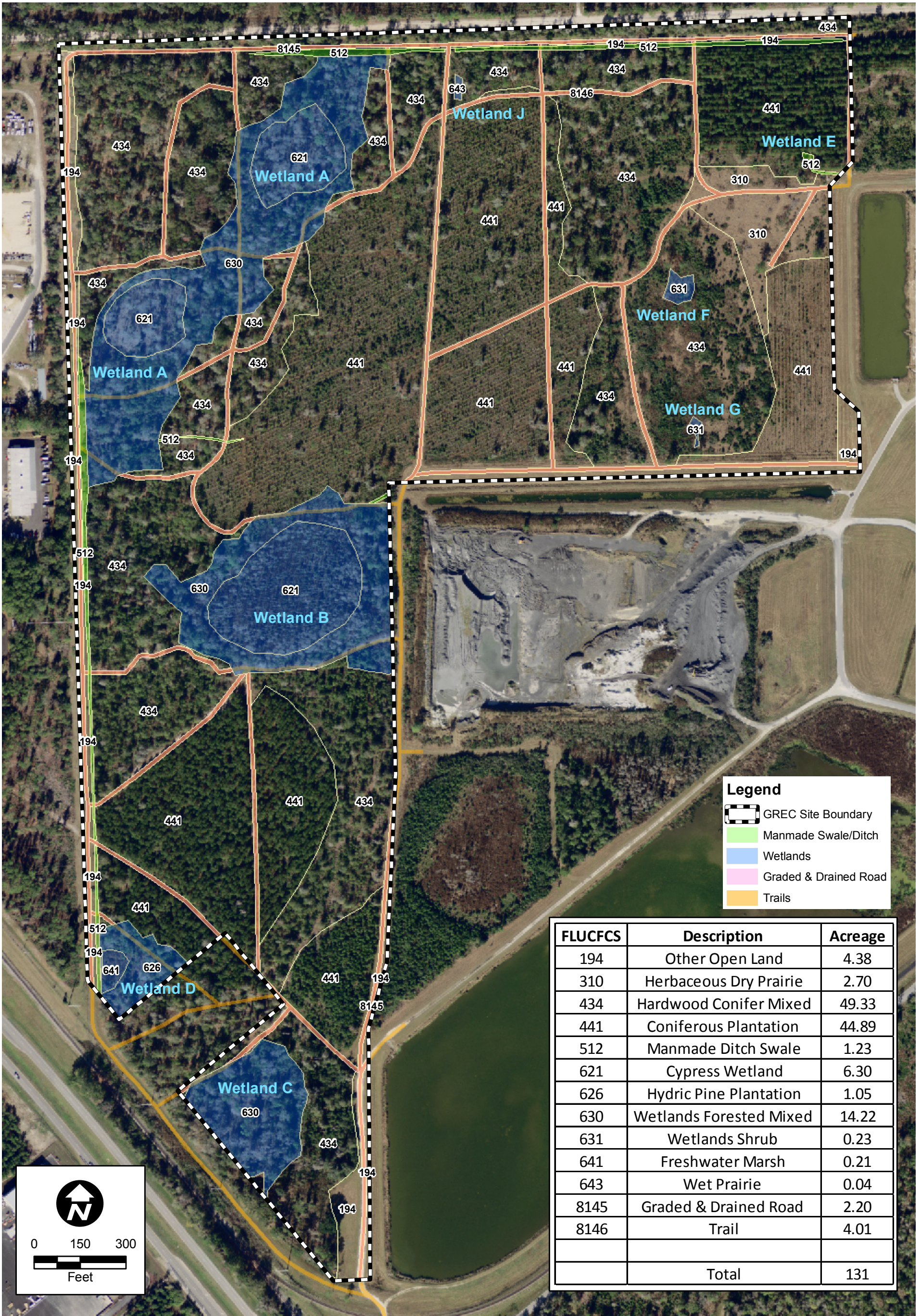


FIGURE 4.
LAND USE MAP

Sources: FDOT,2008; Genesis, 2009; ECT, 2009.

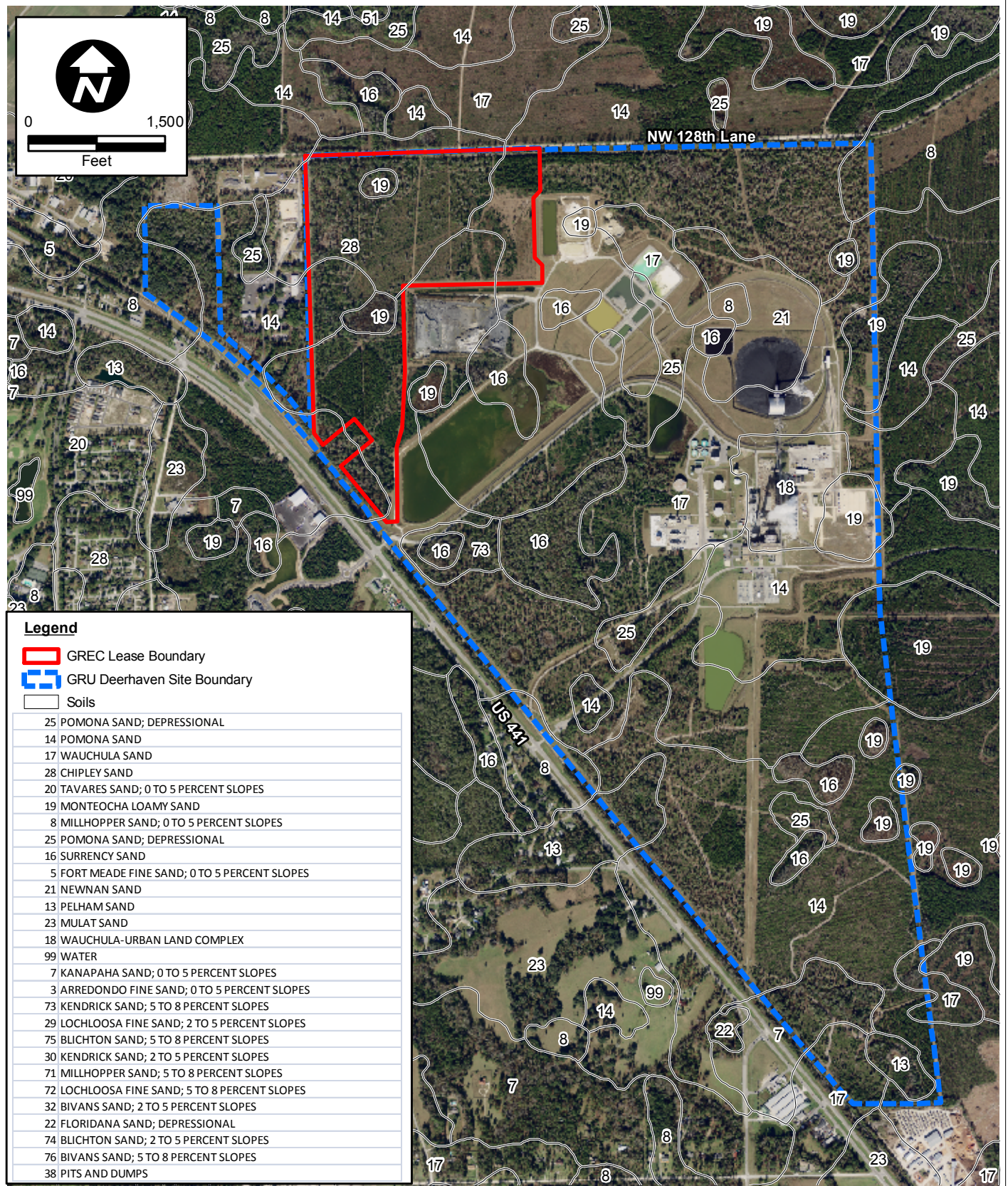


FIGURE 5.

SOILS MAP

Sources: NRCS, 1990; FDOT, 2008; GREC, 2009; ECT, 2009.

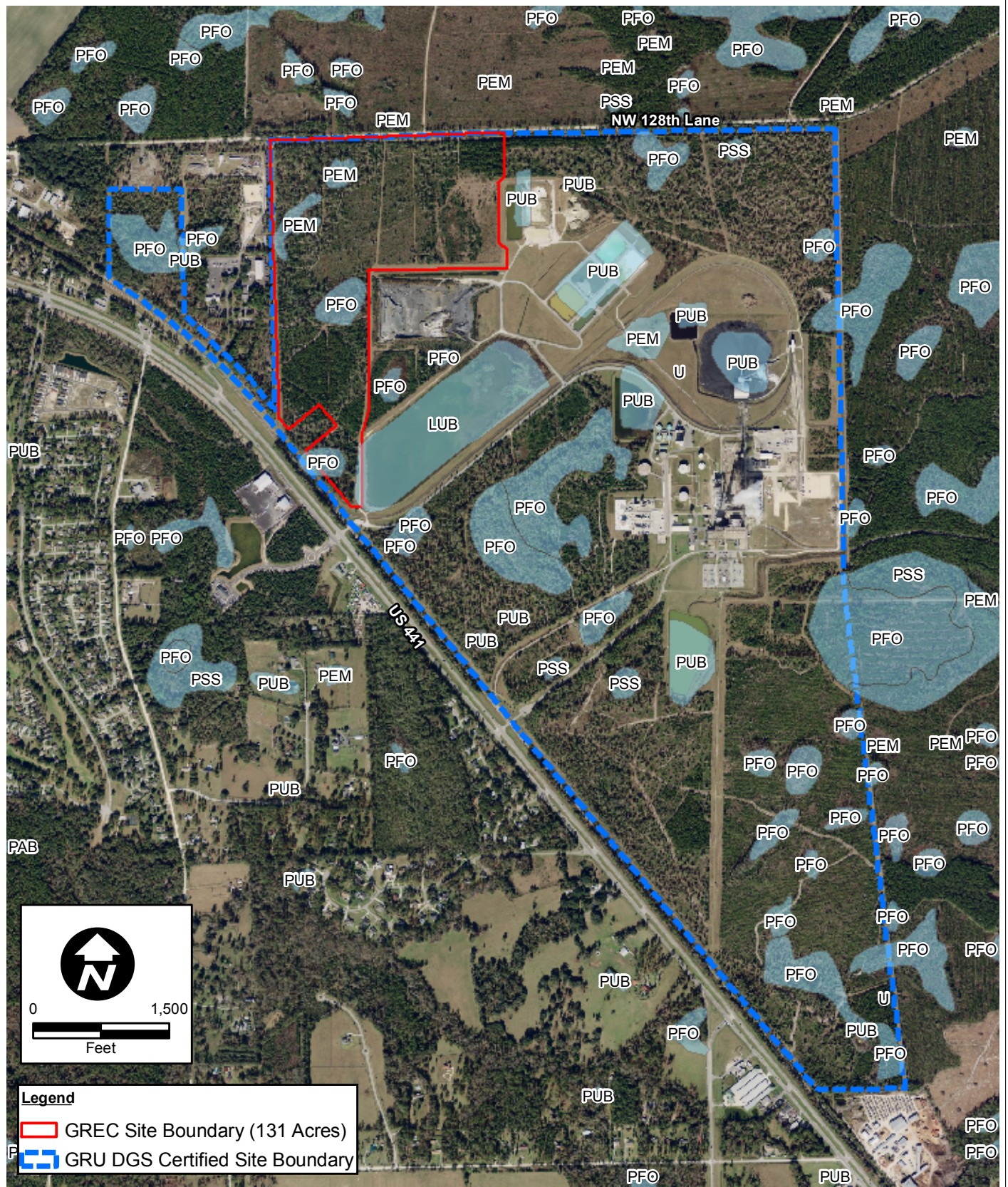


FIGURE 6.

NATIONAL WETLANDS INVENTORY MAP

Sources: GRU, 2009; FDOT, 2008; GENESIS, 2009; ECT, 2009.

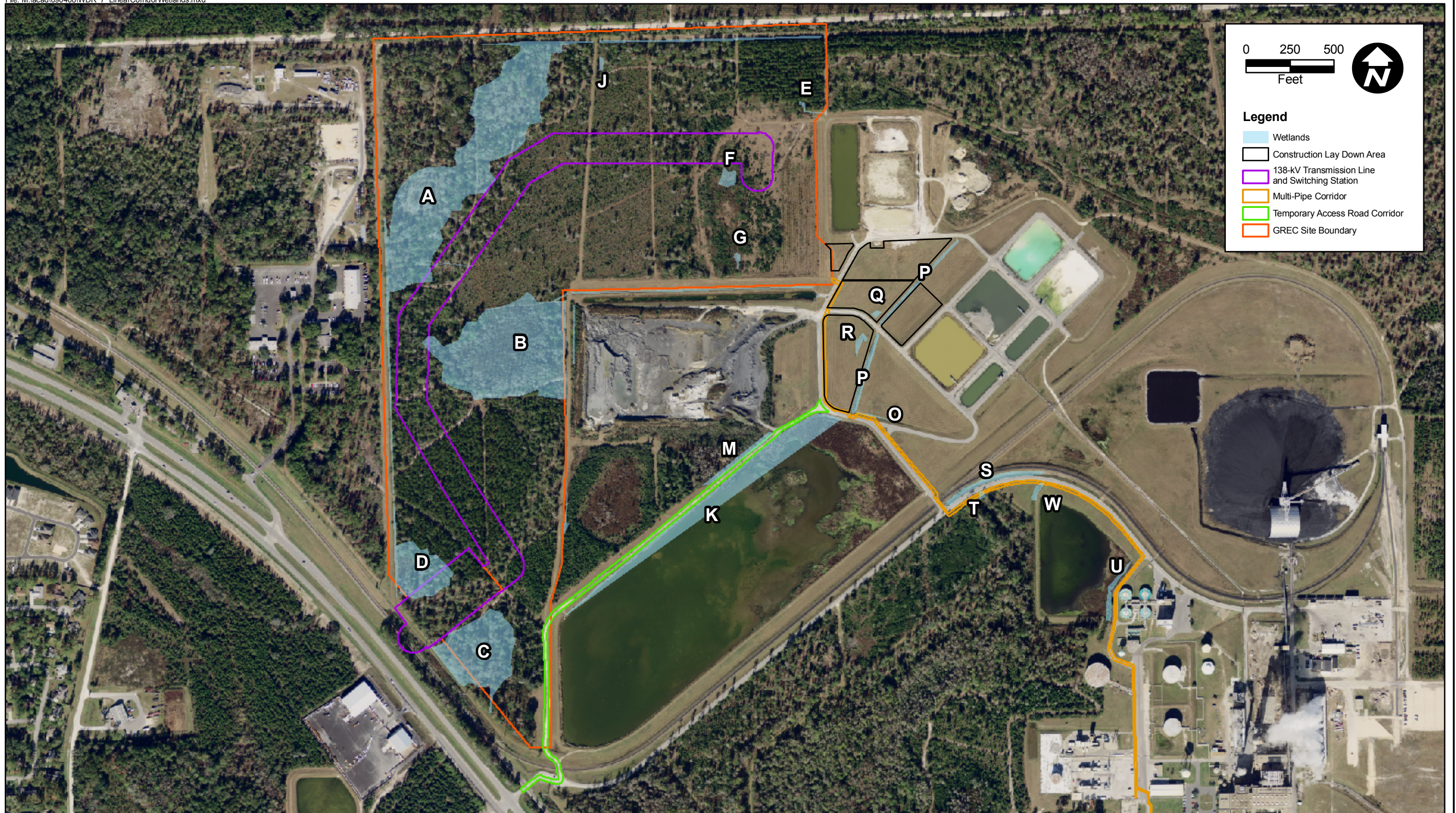


FIGURE 7.
WETLANDS WITHIN GREC LIMITS

Sources: FDOT, 2008; Genesis, 2009; ECT, 2009.



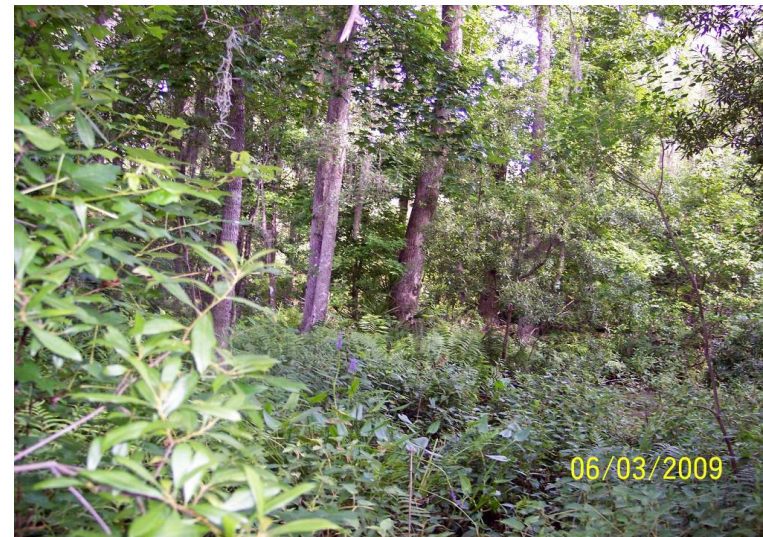
Wetland A (621)—Cypress Wetland



Wetland A (630)—Mixed Forested Wetland



Wetland B (621)—Interior of Cypress Wetland



Wetland C (630)—Mixed Forested Wetland

FIGURE 8. (Sheet 1 of 3)

WETLAND SYSTEM PHOTOGRAPHS

Source: ECT, 2009.



Wetland D (641 and 626)—Freshwater Marsh and Hydric Pine Plantation



Wetland E (512)—Manmade Swale/Borrow Pond



Wetland F (631)—Shrub Wetland



Wetland G (631)—Shrub Wetland

FIGURE 8. (Sheet 2 of 3)

WETLAND SYSTEM PHOTOGRAPHS

Source: ECT, 2009.



Wetland Q (641)—Hydric Depression in Field



Wetland R (641)—Hydric Depression in Field



Wetland T (512)—Swale



Wetland W (512)—Swale

FIGURE 8. (Sheet 3 of 3)

WETLAND SYSTEM PHOTOGRAPHS

Source: ECT, 2009.

Table 1. Existing Wetland Resources within GREC Limits

Wetland ID	Wetland Type (acres)							Total
	Swale	Marsh		Shrub Swamp	Forested Wetland			
	512*	641*	643*	631*	621*	626*	630*	
<u>Plant site</u>								
A					2.85		7.4	10.25
B					3.49		4.14	7.63
C							3.25	3.25
D		0.21				1.56		1.77
E	0.04							0.04
F				0.18				0.18
G				0.05				0.05
J			0.04					0.04
Unnamed	0.02							0.02
Subtotal	0.06	0.21	0.04	0.23	6.34	1.56	14.79	23.23
<u>Offsite construction laydown</u>								
Q		0.03						0.03
R		0.08						0.08
Subtotal	0	0.11	0	0	0	0	0	0.11
<u>Offsite linear facilities†</u>								
K		0.03						0.030
M							0.023	0.023
O	0.002							0.002
P	0.004							0.004
S	0.289							0.289
T	0.013							0.013
U				0.08				0.080
W	0.008							0.008
Subtotal	0.316	0.03	0	0.08	0	0	0.023	0.396
TOTAL	0.376	0.35	0.04	0.31	6.34	1.56	14.813	23.736

*FLUCFCS vegetative community code.

†Acres reflect only wetland area within the potential linear facility corridor, not the acreages of the total wetland area.

Source: ECT, 2009

biflora), sweet gum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*). Typical shrub species include wax myrtle (*Myrica cerifera*), buttonbush (*Cephalanthus occidentalis*), Virginia willow (*Itea virginica*), and highbush blueberry (*Vaccinium corymbosum*). Common herbaceous species include maidencane (*Panicum hemitomon*), Virginia chain fern (*Woodwardia virginiana*), caric sedges (*Carex* spp.), and sawgrass (*Cladium jamaicense*).

The hydrology in Wetland A appears to be relatively unaffected by nearby ditching. The seasonal high water elevation in the cypress-dominated portions of the wetlands appears to be approximately 48 inches above ground surface. During the 2009 surveys, which were conducted in the early part of the wet season, water levels were approximately 24 to 30 inches above the ground surface. The seasonal high water elevation in the mixed forested wetlands is likely to be several inches below to several inches above the ground surface elevation. Hydric soil indicators in these wetlands included mucky surface, dark surface, and stripping.

Wetland A is the highest quality wetland on the GREC Site. The UMAM score for the cypress domes is 0.76†. UMAM score for the mixed forested wetland is a bit lower at 0.66.

3.4.2 WETLAND B

Similar to Wetland A, Wetland B is a 7.63-acre palustrine forested wetland comprised of a cypress dome (621) surrounded by mixed forested wetland (630). There are a significant number of dead cypress trees in the center of this wetland caused by drought conditions that have created gaps in the canopy. Duckweed (*Lemna* sp.) is prolific in the ponded portions of the wetlands, and the invasive Chinese tallow (*Sapium sebiferum*) is becoming established. The mixed forested portion is relatively dense in most places and overgrown with weedy species and vines. Common species include pond cypress, red maple, slash pine (*Pinus elliottii*), salt bush (*Baccharis halimifolia*), wax myrtle, soft rush (*Juncus effuses*), dog fennel (*Eupatorium capillifolium*), smartweed (*Polygonum* spp.),

†UMAM scores can vary from 0.0 (lowest overall quality) to 1.0 (highest overall quality).

Virginia chain fern, grape vine (*Vitis rotundifolia*), and poison ivy (*Toxicodendron radicans*). The seasonal high water table in the cypress portion of the wetland is approximately 24 to 36 inches above the ground surface, whereas the seasonal high in the mixed forested wetlands is several inches below to several inches above the ground surface elevation. Hydric soil indicators in these wetlands included mucky surface, dark surface, and stripping.

Wetland B is average to low quality, with an overall UMAM score of 0.56.

3.4.3 WETLAND C

Wetland C is a 3.325-acre mixed forested palustrine wetland (630) located in the southern part of GREC Site. Dominant canopy species include pond cypress, black gum, sweetgum, and water oak (*Quercus nigra*). Subcanopy and shrub species include swamp red bay (*Persea palustris*), Carolina willow (*Salix caroliniana*), wax myrtle, groundsel tree, gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), highbush blueberry, St. Johns wort (*Hypericum* sp.), and buttonbush. Herbaceous species include Virginia chain fern, cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), beak rushes (*Rhynchospora* spp.), lizards tail (*Saururus cernuus*), pickerel weed (*Pontedaria chordata*), caric sedges, and sawgrass. The seasonal high water elevation in the center part of the wetland is approximately 36+ inches above ground surface. Hydric soil indicators in these wetlands included mucky surface, dark surface, and stripping.

Wetland C is an average to good quality wetland, with a UMAM score of 0.66.

3.4.4 WETLAND D

Wetland D is a 1.77-acre wetland located along the southwestern boundary of the Site. It is comprised of a palustrine freshwater marsh (641) surrounded by hydric pine plantation (626). Dominant plant species in the marsh portion of the wetland include Virginia chain fern, maidencane, soft rush, and saw grass. Other species present include dog fennel, smartweed, creeping primrose (*Ludwigia repens*), pickerel weed, pennywort (*Hydrocotyle umbellata*), woolgrass (*Scirpus cyperinus*), frogfruit (*Phyla nodiflora*), arrowheads

(*Sagittaria* spp.), and scattered buttonbush. The canopy of the forested part of the wetland is planted slash pine. Shrub species include wax myrtle, fetterbush, highbush blueberry, gallberry, water oak, and St. Johns wort. The herbaceous layer is sparse and consists primarily of Virginia chain fern.

Wetland D is an average to good quality wetland, with a UMAM score of 0.63.

3.4.5 WETLAND E

Wetland E is a manmade swale and small borrow pit. Vegetation species in wet locations include creeping primrose willow, smart weed, vasey grass (*Paspalum urvellii*), and goldenrod (*Solidago* sp.). A UMAM assessment was not done for Wetland E because it is a swale. It is unlikely to be regulated at the federal level as it lacks a significant nexus to a traditional navigable waterway.

3.4.6 WETLAND F

Wetland F is a 0.18-acre palustrine scrub-shrub wetland (631) in the northern part of the Site. It is a transitional wetland occurring in an area that appears to have been previously upland, but has been disturbed by logging practices to the point that it holds water for a sufficient duration to allow for the establishment of wetland indicators. It is isolated from other wetlands, highly furrowed, and dominated by weedy vegetation. It is unlikely to be regulated at the federal level as it lacks a significant nexus to a traditional navigable waterway. The dominant vegetation species include Carolina willow, wax myrtle, groundsel tree, Chinese tallow, wool grass, soft rush, sand blackberry (*Rubus cundeifolius*), creeping primrose willow, thistle (*Cirsium nutalli*), dog fennel, vasey grass, and golden rod. Seasonal high water table is within the upper 6 inches of the soil surface. This wetland does not appear to pond water for any significant duration.

Wetland F is an average to low quality wetland, with a UMAM score of 0.53.

3.4.7 WETLAND G

Wetland G is a 0.05-acre palustrine scrub-shrub wetland (631) in the northeastern part of the Site. It is a transitional wetland occurring in an area that appears to have been previously upland, but has been disturbed by logging practices to the point that it holds water for a sufficient duration to allow for the establishment of wetland indicators. It is isolated from other wetlands, highly furrowed, and dominated by weedy vegetation. It is unlikely to be regulated at the federal level as it lacks a significant nexus to a traditional navigable waterway. The dominant vegetation species include Carolina willow, wax myrtle, groundsel tree, Chinese tallow, wool grass, soft rush, sand blackberry, creeping primrose willow, thistle, dog fennel, vasey grass, and golden rod. Seasonal high water table is within the upper 6 inches of the soil surface. This wetland does not appear to pond water for any significant duration.

Wetland G is an average to low quality wetland, with a UMAM score of 0.56.

3.4.8 WETLAND J

Wetland J is a small 0.2-acre palustrine emergent wetland, best classified as a wet prairie (643) using the FLUCFCS classification system. It is located in the northern part of the Site. Similar to Wetlands F and G, it occurs within portions of the Site used for silviculture activities and appears to be manmade, likely incidental to silviculture activities in previously upland areas. Dominant vegetation species include Virginia chain fern, St. Johns wort, sand blackberry, broomsedge (*Andropogon virginicus*), beak rushes, goldenrod, spade leaf (*Centalla asiatica*), and Virginia buttonweed (*Diodia virginiana*). The seasonal high water table appears to be several inches below the ground surface. Hydric soil indicators include a dark soil surface and stripping.

Wetland J is of average to good quality, with an overall UMAM score of 0.7.

3.5 OFFSITE CONSTRUCTION LAYDOWN AREAS

3.5.1 WETLAND Q

Wetland Q is a small (0.03-acre) isolated depression in the middle of a grassed field. It is classified as a palustrine emergent wetland or freshwater marsh (641). It is unlikely to be regulated at the federal level as it lacks a significant nexus to a traditional navigable waterway. Dominant vegetation species include Bermuda grass (*Cynodon dactylon*), bahia grass (*Paspalum notatum*), pennywort, creeping primrose willow, vasey grass, star grass (*Dichromena colorata*), and pinebarrens flatsedge (*Cyperus retrorsus*). Hydric soil indicators include thick dark surface. Seasonal high water table is approximately at or just above the ground surface.

It is a low-quality wetland, with an overall UMAM score of 0.4.

3.5.2 WETLAND R

Wetland R is also a small (0.08-acre) isolated depression (641) in the middle of a grassed field. It is unlikely to be regulated at the federal level as it lacks a significant nexus to a traditional navigable waterway. Dominant vegetation species include alligator weed (*Alternanthera philoxeroides*), torpedo grass (*Panicum repens*), bahia grass, creeping primrose willow, vasey grass, star grass, smartweed, and flatsedges. Hydric soil indicators include dark surface and stripped E horizon. Seasonal high water table is approximately at or just above the ground surface.

It is a low-quality wetland, with an overall UMAM score of 0.4.

3.6 OFFSITE LINEAR FACILITIES CORRIDORS

3.6.1 WETLAND K

Wetland K is a large stormwater management basin and emergent wetland (641) south of the proposed construction access road. Dominant vegetation species include cattail (*Typha latifolia*), water spangles (*Salvinia minima*), dangle pod (*Sesbania herbacea*), torpedo grass, and pennywort. The basin holds several feet of water for most of the year.

3.6.2 WETLAND M

Wetland M is located just north of the temporary construction access road. It is a cypress dome (621) surrounded by mixed wetland forest (630). Its characteristics are similar to those described for Wetland B.

3.6.3 WETLAND O

Wetland O is a shallow roadside swale that ties into Wetland P, a larger swale that drains the temporary construction/laydown fields into the existing GRU DGS stormwater management pond.

3.6.4 WETLAND P

Wetland P is a swale that drains the laydown fields into the existing GRU DGS stormwater management pond. Dominant vegetation species include cattail, dangle pod, star grass, pennywort, alligator weed, Bermuda grass, smartweed, torpedo grass, and dock (*Rumex sp.*).

3.6.5 WETLAND S

Wetland S is a swale that runs along the southside of the existing railroad track. Dominant vegetation species include vasey grass, golden rod, flatsedges, creeping primrose willow, and Indian joint vetch (*Aeschynomene indica*).

3.6.6 WETLAND T

Wetland T is a swale that drains into a forested wetland. Vegetation species include creeping primrose willow, flat sedges, cattail, beak rushes, smartweed, vasey grass, alligator weed, penny wort, and a few scattered lizard tails.

3.6.7 WETLAND U

Wetland U is a shrub (631) wetland along the north side of a stormwater management basin. Dominant vegetation species include red maple, wax myrtle, salt bush, dangle pod, primrose willow (*Ludwigia peruviana*), and giant plume grass (*Erianthus gigantea*).

3.6.8 WETLAND W

Wetland W is a swale that drains into a forested wetland. Dominant vegetation species include barnyard grass (*Echinochola crusgalli*), fox tail (*Setaria geniculata*), vasey grass, frog fruit, pennywort, smartweed, flat sedges, golden rod, and Indian joint vetch.

4.0 JURISDICTIONAL DETERMINATION

GREC LLC is requesting an isolated wetland determination from USACE for wetlands proposed to be impacted by GREC. GREC LLC is not requesting a formal jurisdictional determination from FDEP. USACE, the City of Gainesville, and FDEP met onsite on November 17, 2009, to verify the wetland limits.

5.0 WETLAND AND SURFACE WATER IMPACTS

Construction of GREC has the potential to cause direct, secondary, and cumulative impacts to wetlands and waterways. Direct impacts are those that occur within the wetland itself such as filling, grading, removal of vegetation, building construction, and changes in water levels and drainage patterns. Secondary or indirect impacts are those that result from disturbances that occur in areas outside the wetland, such as uplands, other wetlands, or waterways. Common secondary impacts include impacts to water quality by an influx of surface water or sediments, habitat fragmentation, loss of wetland recharge area, or changes in local drainage patterns. Cumulative impacts are those impacts resulting from combined direct and indirect impacts to the wetland over time from the proposed activity and related facilities, as well as other existing or reasonably foreseeable future activities within the same watershed.

5.1 DIRECT IMPACTS

Direct impacts from GREC include the permanent fill of 0.11 acre of herbaceous wetland for construction laydown, 0.23 acre of shrub wetland and 0.02 acre of an unnamed swale for construction of the power block, and permanent excavation of 0.04 acre of herbaceous wetland and 0.04 acre of swale for construction of the stormwater management facilities. Table 2 provides a summary of wetland impacts by project location and vegetation type. The total direct, permanent impacts of GREC on wetlands will be 0.44 acre. In addition, several limited areas (i.e., 0.015 acre) of manmade swales, which typically do not require mitigation, may be temporarily excavated for construction of linear facilities. GREC will not impact any of the higher quality wetlands on and in the vicinity of the Site.

Construction of the power plant facility will require permanent fill of Wetlands F and G using clean suitable material. Wetlands F and G are small, isolated shrub wetlands of average quality. Both are believed to have been created incidentally to silviculture activities. GREC will compensate for the lost functions and values provided by these two wetlands using onsite mitigation described in the following paragraphs.

Table 2. GREC Direct Wetland Impacts

Wetland ID	Impact Type (acres)			Total (acres)
	Permanent Fill for Plant and Construction Laydown	Permanent Excavation for Stormwater Management Basins	Temporary Excavation for Linear Facilities	
<u>Forested</u>				
A				0
B				0
C				0
D				0
M				0
Subtotal	0	0	0	0
<u>Shrub</u>				
F	0.18			0.18
G	0.05			0.05
U				0
Subtotal	0.23	0	0	0.23
<u>Herbaceous</u>				
J		0.04		0.04
K				0
Q	0.03			0.03
R	0.08			0.08
Subtotal	0.11	0.04	0	0.15
<u>Swale/ditch</u>				
Unnamed swale	0.02			0.02
E		0.04		0.04
O				0
P				0
S				0
T			0.01*	0.01
W			0.005*	0.005
Subtotal	0.02	0.04	0	0.06
TOTAL	0.36	0.08	0.015*	0.455

*A limited area of the swale/ditch may be potentially impacted due to temporary excavation for construction of linear facilities. These manmade features typically do not require mitigation.

Source: ECT, 2009.

Wetlands E and J will be excavated as part of construction of the stormwater management facilities. Wetland E is a small manmade swale/borrow pit. Wetland J is a small herbaceous wet prairie. GREC will compensate for the lost functions and values provided by Wetland J using onsite mitigation described in the following paragraphs.

Wetlands Q and R will be filled for construction laydown and parking purposes. These wetlands are small, poor-quality, isolated wet spots within a bahia grass field. GREC will compensate for the minor temporary loss of functions and values provided by these two wetlands using onsite mitigation described in the following paragraphs.

Wetlands that may be temporarily impacted by construction of the linear facilities include Wetlands T and W. These are all roadside or stormwater management swales. Impacts would include temporary excavation, placement of pipe and backfill of wetland to original grade and contour. Existing culverts may need to be replaced depending on their condition at the time of construction. Wetlands will be allowed to naturally revegetate with wetland species. At present, these wetlands are all surrounded by bahia grass fields and vegetated by herbaceous wetland species. No mitigation is proposed for the short-term loss of function in these swales during construction.

Table 3 summarizes the relative functional loss of those wetlands with permanent impacts.

5.2 SECONDARY IMPACTS

GREC will not cause significant secondary or indirect impacts to wetlands or other surface waters. The project will not fragment wetland habitats, as it was designed to avoid the larger, high-quality wetland systems onsite. In addition, because it is being constructed primarily on and adjacent to areas of previous disturbance, impacts to wildlife access and movement should be minor. Minor wetland buffer encroachments will be compensated for by increasing the buffer width in adjacent areas. As such, there will be no significant alteration of functions or values provided by adjacent 25- to 50-ft upland buffers. During construction, potential water quality impacts will be minimized through

Table 3. Wetland Functional Loss from Permanent Impacts of GREC

Wetland ID	Impact Acreage	Delta (UMAM Score)	Relative Functional Loss
F	0.18	0.53	0.095
G	0.05	0.56	0.028
J	0.04	0.7	0.028
Q	0.03	0.4	0.012
R	0.08	0.4	0.032
E (swale)	0.04	Not applicable	Not applicable
Unnamed swale	0.02	Not applicable	Not applicable
Total	0.44		0.195

Source: ECT 2009

the installation of silt fence or hay bales to restrict the transport of sediment to adjacent wetland or open water areas.

5.3 CUMULATIVE IMPACTS

Since mitigation is proposed to compensate for all permanent wetland impacts, GREC is not expected to result in any cumulative impacts to wetlands or surface waters.

6.0 IMPACT AVOIDANCE AND MINIMIZATION

GREC has been designed to avoid and minimize impacts to wetlands and other surface waters, to the extent possible, as follows:

- Conducting an extensive alternatives analysis to identify a site with minimal environmental impact.
- Locating the power plant facilities in the portion of the Site with the most contiguous upland and least wetland area.
- Avoiding impacts to all forested wetlands.
- Avoiding impacts to larger, high-quality wetlands onsite.
- Locating most pipeline corridors within and adjacent to previously disturbed areas (e.g., road rights-of-way and fields) as much as practicable.
- Locating pipelines beneath roadways rather than below wetlands, where possible.
- Locating temporary construction laydown areas in cleared grassed areas.
- Restricting traffic flow on construction access road to avoid filling Wetland M.
- Implementing effective soil erosion control measures (e.g., silt fence/hay bales), including routine inspections during construction and until soil stabilization has occurred.
- Returning temporarily impacted wetlands to their preconstruction contours to maintain hydrologic characteristics.
- Otherwise complying with FDEP ERP and USACE 404 permit conditions.

7.0 WETLAND MITIGATION PLAN

GREC LLC proposes to mitigate for unavoidable wetland impacts and functional loss of 0.195 UMAM units by preserving onsite wetlands and a significantly expanded upland buffer in an area with reasonable potential for future development pressure. The preserved wetlands and uplands will be placed in a permanent conservation easement that will restrict future development. The proposed wetland mitigation plan for preservation is shown on Figure 9 and described in the following paragraphs. The preserved wetlands and uplands are located within the same drainage basin as the proposed impacts, which is the strong preference of both the City of Gainesville and FDEP.

The proposed mitigation plan provides significantly more potential function gain than is required to offset the functional loss associated with GREC. Most of the functional gain comes from eliminating existing disturbances associated with silviculture activities that occur within the uplands and from removing development potential in uplands. It is assumed that development pressure in wetlands and their adjacent 50-ft buffer is non-existent due to stringent permitting requirements. However, development pressure in upland areas near the power plant Site is assumed to be relatively high, given the potential need for expansions, upgrades, retrofits, storage, etc. The relative benefit to the wetland would not be realized without preservation of the adjoining upland.

Wetland A is the largest highest quality wetland on the GREC Site. It is a complex system of two cypress domes surrounded by mixed forested wetland. The mixed forested wetlands are subject to silviculture activities and have areas of planted pine as well as areas of mixed hardwood and pine. Preservation of this wetland and an expanded upland buffer would eliminate silviculture activities and allow the logging roads to revert to natural habitat. As shown on Figure 9, there is an approximately 10-acre tract of upland on the west side of Wetland A that provides an important upland buffer to Wetland A for wildlife habitat, foraging opportunities, access, and water quality buffering. When GREC is completed, the upland buffer on the east side of Wetland A will be relatively narrow; therefore, the buffer to the west will be critical to supporting wildlife using Wetland A.

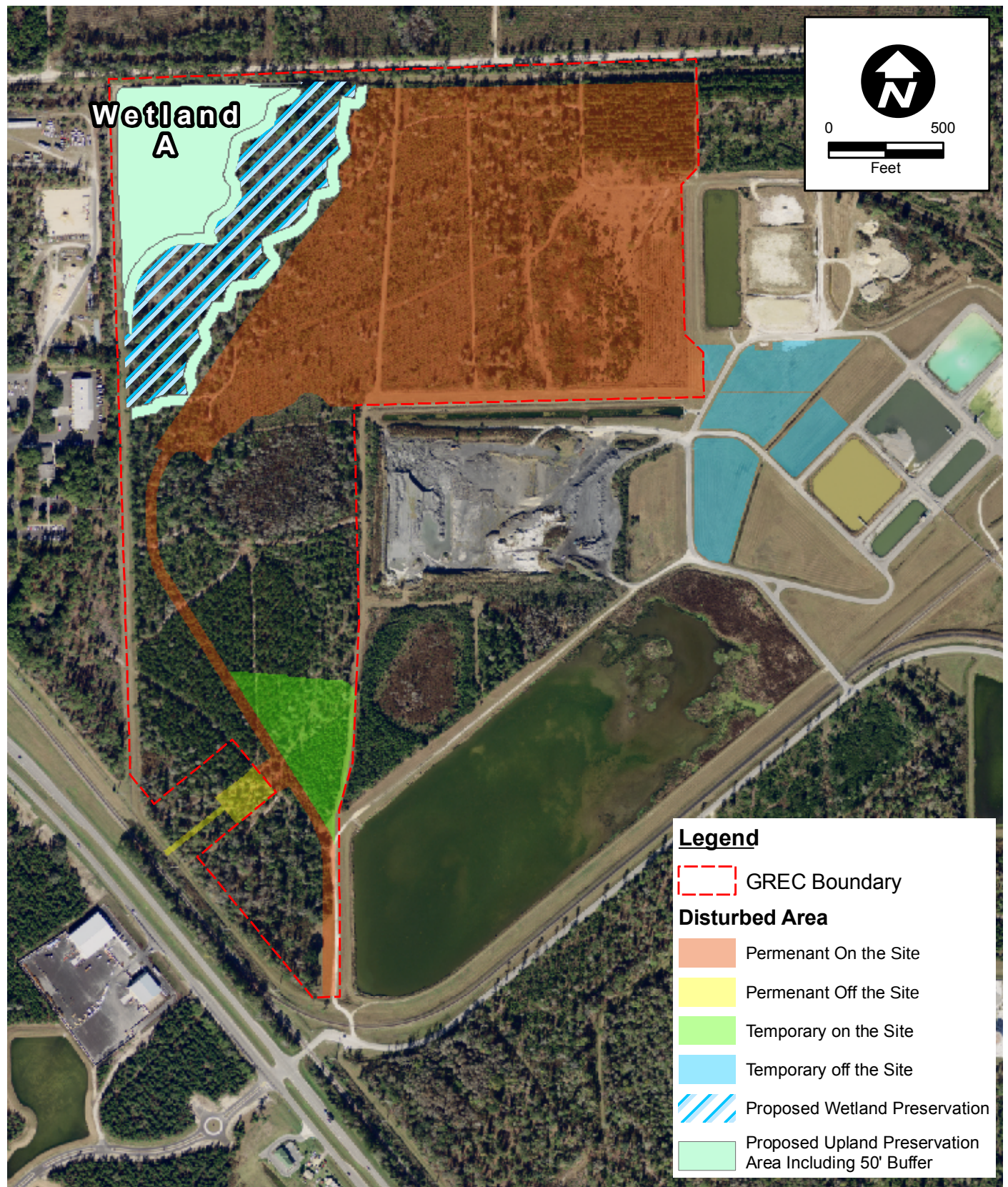


FIGURE 9.
GREC PROPOSED
WETLAND MITIGATION PLAN

Sources: FDOT, 2008; GREC, 2009; EDA, 2009; ECT, 2009.

There is a reasonable expectation that this piece of upland could be a desired development location for use to support GREC, since it is connected to the GREC power block area by an existing maintained access road within the GREC lease boundary. Since this piece of upland is important to the functions of Wetland A, there is value in preserving it. Of the 12.33 acres of preserved upland, 4.08 acres is within the average 50-ft-wide buffer required by the City of Gainesville; the remaining 8.25 acres would be additional upland buffer not required under regulation. Table 4 provides a breakdown of relative functional gain by wetland, upland buffer, and expanded upland buffer for the proposed Wetland A mitigation plan.

The total functional gain of 2.061 UMAM units far exceeds the functional loss of 0.195 units; therefore, this proposed mitigation plan is expected to be adequate to compensate for the proposed loss. Under the proposed mitigation plan, the preserved wetlands and upland buffers will be placed in a permanent conservation easement that will restrict future development of these areas.

Table 4. Relative Functional Gain of Proposed Wetland Mitigation Plan

Preservation Type	Delta	Preservation Factor	Relative Functional Gain	Acreage	Total Functional Gain
Wetland A (630)	0.07	0.3	0.021	7.4	0.155
Wetland A (621)	0.06	0.3	0.018	2.85	0.051
50-ft upland buffer	0.1	0.3	0.03	4.08	0.122
Expanded upland buffer (west side)	0.7	0.3	0.21	8.25	1.733
Total				22.58	2.061

Source: ECT, 2009.

ATTACHMENT A
UMAM DATA SHEETS

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland A - Mixed Forested Wetland	
FLUCCs code 630 - Mixed Forested Wetland		Further classification (optional)		Impact or Mitigation Site? Mitigation	Assessment Area Size 7.4
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Mixed forested wetland surrounding two cypress domes. Upland pine/mixed hardwood forest regeneration/plantation surround wetlands. Mixed forested portion of wetland has been disturbed by silvaculture activities.					
Assessment area description Mixed forested wetlands, which have been part of ongoing silvaculture activities.					
Significant nearby features GRU Deerhaven Power plant to southeast, HWY 441 to west.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Wildlife foraging, cover, breeding, water storage, nutrient assimilation, T/E species habitat			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Alligators, reptiles, amphibians, small mammals, deer			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland A - Mixed Forested
Impact or Mitigation Mitigation	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support p pres or curr ent with 6 7	Without Preservation - loss of nearby upland will minimize wildlife habitat, foraging/cover/access and could introduce invasive species. With Preservation - Ensure upland to west will remain intact and continue to provide wildlife support and act as a buffer to invasion of invasive species.
.500(6)(b)Water Environment (n/a for uplands) p pres or curr ent with 8 8	Without Preservation - Potential for increased stormwater runoff and decreased water quality. With Preservation - Maintain good water quality and levels that are present.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community p pres or curr ent with 7 8	Without Preservation - logging activities/development of upland to west may allow invasion of weedy and invasive species. With Preservation - Disturbance activities in adjacent areas will be minimized.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with 0.7 0.76

If preservation as mitigation,
Preservation adjustment factor = .3
Adjusted mitigation delta = .021

For impact assessment areas
FL = delta x acres =

Delta = [with-current] 0.07

If mitigation
Time lag (t-factor) = 1
Risk factor = 1

For mitigation assessment areas
RFG = delta/(t-factor x risk) = .021

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland A- Cypress	
FLUCCs code 621 - Cypress		Further classification (optional)		Impact or Mitigation Site? Mitigation	
				Assessment Area Size 2.85	
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Cypress wetlands embedded within in larger mixed forested wetland system. Disconnected from off-site wetlands due to surrounding development.					
Assessment area description High quality cypress domes surrounded by mixed forested wetlands.					
Significant nearby features GRU Deerhaven Power plant to southeast, HWY 441 to west.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Wildlife foraging, cover, breeding, water storage, nutrient assimilation, T/E species habitat			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Alligators, reptiles, amphibians, small mammals, deer			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wading birds, alligator		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland A - Cypress
Impact or Mitigation Mitigation	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support p pres or curr ent with 6 7	Without Preservation - loss of nearby upland will minimize wildlife habitat, foraging/cover/access and could introduce invasive species. With Preservation - Ensure upland to west will remain intact and continue to provide wildlife support and act as a buffer from invasive/weedy nuisance species.
.500(6)(b)Water Environment (n/a for uplands) p pres or curr ent with 8 8	Without Preservation - Potential for increased stormwater runoff and decreased water quality. With Preservation - Maintain good water quality and current water levels.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community p pres or curr ent with 7 8	Without Preservation - logging activiteis/development of upland to west may allow invasion of weedy and invasive species. With Preservation - Disturbance activities in adjacent areas will be minimized.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with 0.7 0.76

If preservation as mitigation,
Preservation adjustment factor = .3
Adjusted mitigation delta = .018

For impact assessment areas
FL = delta x acres =

Delta = [with-current] 0.06

If mitigation
Time lag (t-factor) = 1
Risk factor = 1

For mitigation assessment areas
RFG = delta/(t-factor x risk) = .018

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number 50' Upland Buffer Surrounding Wetland A	
FLUCCs code 434 - Hardwood Conifer Mixed		Further classification (optional)		Impact or Mitigation Site? Mitigation	Assessment Area Size 4.08
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Mixed oak/pine forest adjacent to Wetland A					
Assessment area description Secondary growth mixed conifer-hardwood forest, which has been subject to silviculture activities and is transected by logging trails/roads					
Significant nearby features GRU Deerhaven Power plant to southeast, HWY 441 to west.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Wildlife habitat for foraging, cover, breeding; buffer to adjacent forested wetlands			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Deer, hog, small mammals, reptiles, amphibians, song birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) None		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number 50' Upland Buffer - Wetland A
Impact or Mitigation Mitigation	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support pres or current 7 with 7	W/out preservation - Reasonable potential this piece of upland will be cleared and developed, as there is a direct connection via an upland access road to the GREC and Deerhaven Generating Station facility. If developed it will provide wildlife support/access or benefit to adjacent wetlands. With Preservation- Will continue to provide wildlife access, foraging, denning and cover opportunities. Disturbance free buffer will limit opportunity for invasive species encroachment into adjacent wetland.
.500(6)(b)Water Environment (n/a for uplands) pres or current with	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community pres or current 6 with 8	W/out preservation - Reasonable potential the upland will be cleared and developed and therefore would provide no community structure for wildlife. With Preservation- System would continue to provide good structure for wildlife support, including desirable species composition. Silviculture activities would cease and existing logging roads would naturalize.

Score = sum of above scores/30 (if uplands, divide by 2)
curr ent 0.65 with 0.750

If preservation as mitigation,
Preservation adjustment factor = 0.3
Adjusted mitigation delta = 0.03

For impact assessment areas
FL = delta x acres =

Delta = [with-current]
0.100

If mitigation
Time lag (t-factor) = 1
Risk factor = 1

For mitigation assessment areas
RFG = delta/(t-factor x risk) = 0.03

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Extended Upland Buffer - Wetland A	
FLUCCs code 434 - Hardwood Conifer Mixed		Further classification (optional)		Impact or Mitigation Site? Mitigation	Assessment Area Size 8.25
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Mixed oak/pine forest adjacent to Wetland A					
Assessment area description Secondary growth mixed conifer-hardwood forest, which has been subject to silviculture activities and is transected by logging trails/roads					
Significant nearby features GRU Deerhaven Power plant to southeast, HWY 441 to west.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Wildlife habitat for foraging, cover, breeding; buffer to adjacent forested wetlands			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Deer, hog, small mammals, reptiles, amphibians, song birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Extended Upland Buffer - West of Wetland A
Impact or Mitigation Mitigation	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support p pres or curr ent with 0 7	W/out preservation - Reasonable potential this piece of upland will be cleared and developed, as there is a direct connection via an upland access road to the GREC and Deerhaven Generating Station facility. If developed it will provide wildlife support/access or benefit to adjacent wetlands. With Preservation- Will provide wildlife access, foraging, denning and cover opportunities. Disturbance free buffer will limit opportunity for invasive species encroachment into adjacent wetland.
.500(6)(b)Water Environment (n/a for uplands) p pres or curr ent with 	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community p pres or curr ent with 0 7	W/out preservation - Reasonable potential the upland will be cleared and developed and therefore would provide no community structure for wildlife. With Preservation- System would continue to provide good structure for wilfdlife support, including desirable species composition.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with 0 0.700
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If preservation as mitigation,
Preservation adjustment factor = 0.3
Adjusted mitigation delta = 0.21

For impact assessment areas
FL = delta x acres =

Delta = [with-current] 0.700

If mitigation
Time lag (t-factor) = 1
Risk factor = 1

For mitigation assessment areas
RFG = delta/(t-factor x risk) = 0.21

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland F	
FLUCCs code 631 - Shrub Wetland		Further classification (optional)		Impact or Mitigation Site? Impact	Assessment Area Size 0.18
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Isolated wetland; presumably man-made incidental to silvaculture activities.					
Assessment area description Small depressional wetland vegetated with a mix of mainly sand blackberry, soft rush, woolgrass, and a few wetland sedges. It is surrounded by upland pine/mixed oak that is regenerating following previous clearing/bedding/silvaculture activities.					
Significant nearby features GRU Deerhaven Power Plant to the south, including several large stormwater management ponds and a fly-ash landfill.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Water storage, nutrient assimilation and sediment deposition, breeding ground for amphibians, foraging and cover for smaller mammals			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Various amphibians, small mammals, birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) N/A		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland F
Impact or Mitigation Impact	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support Does or does not currently exist with 6 0	Location/Landscape support is fair. Pine plantations/mixed hardwood immediately surrounding wetland and scattered wetlands/swales in vicinity provide good wildlife access, cover and foraging opportunities. GRU operations and silvaculture activities in area may slightly impede wildlife access and provide opportunity for disturbance species to invade. Bahia grass and carpet grass are prevalent throughout nearby access roads/other open lands. Disconnected nature of small assessment area limits benefits to downstream wildlife/habitats.
.500(6)(b)Water Environment (n/a for uplands) Does or does not currently exist with 5 0	Water environment is fair to poor. No obvious hydrologic indicators present; however water levels are sufficient to support hydrophytes. Most species are transitional opportunistic species, not those of a well developed shrub wetland. Wetland hydrology is assumed to be relatively recent, as this area does not appear to be historically wet based on historic aerial photo review and soils/NWI mapping. Hydrology sufficient to support small populations of expected wildlife species. Wetland hydrology is expected to be seasonal. No direct evidence of water quality impairment.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community Does or does not currently exist with 5 0	Community structure is fair. Species composition is primarily early successional species well suited to disturbed sites. Chinese tallow saplings present. Bahia grass present. Furrowing in wetland is unnatural. Old logging debris still present. No distinct zonation, primarily a hodgepodge of weedy species. Silvaculture activities inhibit natural succession of wetland and encourage recruitment of weedy/disturbance tolerant species. Structural habitat is good; snags present from logging activities.

Score = sum of above scores/30 (if uplands, divide by 2)
Does or does not currently exist w/o pres with
0.53 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = .0954

Delta = [with-current]
0.53

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland G	
FLUCCs code 631 - Wetland Shrub		Further classification (optional)		Impact or Mitigation Site? Impact	
				Assessment Area Size 0.05	
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Isolated wetland; presumably man-made incidental to silvaculture activities.					
Assessment area description Small depressional wetland vegetated with shrubs and weedy herbaecous species including Carolina willow, salt bush, Chinese tallow, soft rush, woolgrass, and a few wetland sedges. It is surrounded by upland pine/mixed oak that is regenerating following previous clearing/bedding/silvaculture activities.					
Significant nearby features GRU Deerhaven Power Plant to the south, including several large stormwater management ponds and a fly-ash landfill.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Water storage, nutrient assimilation and sediment deposition, breeding ground for amphibians, foraging and cover for smaller mammals			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Various amphibians, occasional wading birds, small mammals			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) None		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors: 					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland G
Impact or Mitigation Impact	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support p pres or curr ent with 6 0	Location/Landscape support is fair. Pine plantations/mixed hardwood immediately surrounding wetland and scattered wetlands/swales in vicinity provide good wildlife access, cover and foraging opportunities. GRU operations and silvaculture activities in area may slightly impede wildlife access and provide opportunity for disturbance species to invade. Bahia grass and carpet grass are prevalent throughout nearby access roads/other open lands. Disconnected nature of small assessment area limits benefits to downstream wildlife/habitats.
.500(6)(b)Water Environment (n/a for uplands) p pres or curr ent with 6 0	Water environment is fair. Water levels are sufficient to support hydrophytes but most species are transitional opportunistic species, not those of a well developed shrub wetland. Wetland hydrology is assumed to be relatively recent, as this area does not appear to be historically wet based on historic aerial photo review and soils/NWI mapping. Hydrology sufficient to support small populations of expected wildlife species. Swales and large ditch to south may have some drainage effect. No direct evidence of water quality impairment.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community p pres or curr ent with 5 0	Community structure is fair. Species composition is primarily early successional species well suited to disturbed sites. Chinese tallow shrubs/small trees and bahia grass present. Furrowing in wetland is unnatural. Old logging debris still present. Silvaculture activities inhibit natural succession of wetland and encourage recruitment of weedy/disturbance tolerant species. Structural habitat is good; snags present from logging activities.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with 0.56 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = .028

Delta = [with-current] 0.56

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland J	
FLUCCs code 643 - Wet Prairie		Further classification (optional)		Impact or Mitigation Site? Impact	Assessment Area Size 0.04
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Isolated wetland; presumably man-made incidental to silvaculture activities.					
Assessment area description Small depressional wetland vegetated with a mix wetland herbs and forbs. It is surrounded by upland pine/mixed oak that is regenerating following previous clearing/bedding/silvaculture activities.					
Significant nearby features GRU Deerhaven Power Plant to the south, access road and ditches to north and west.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Water storage, nutrient assimilation and sediment deposition, breeding ground for amphibians, foraging and cover for smaller mammals			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Various amphibians, small mammals, birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) None		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland J
Impact or Mitigation Impact	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support pres or curr ent with 7 0	Location/Landscape support is fair. Pine plantations/mixed hardwood immediately surrounding wetland and forested wetlands/swales in vicinity provide good wildlife access, cover and foraging opportunities. GRU operations, residential, and silvaculture activities in area may slightly impede wildlife access and provide opportunity for disturbance species to invade. Bahia grass and carpet grass are prevalent throughout nearby access roads/other open lands. Disconnected nature of small assessment area limits benefits to downstream wildlife/habitats.
.500(6)(b)Water Environment (n/a for uplands) pres or curr ent with 7 0	Water environment is fair to good. Water levels are sufficient to support hydrophytes. Wetland hydrology is assumed to be relatively recent, as this area does not appear to be historically wet based on historic aerial photo review and soils/NWI mapping. Hydrology sufficient to support small populations of expected wildlife species. Wetland hydrology is expected to be seasonal. No direct evidence of water quality impairment.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community pres or curr ent with 7 0	Community structure is fair to good. Species composition is a mix of weedy and desirable species. No invasives present. Wetland appears to be shallow excavation in uplands -rectangular in shape. No distinct zonation. Silviculture activities inhibit natural succession of wetland and encourage recruitment of weedy/disturbance tolerant species. Vertical complexity is good.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with
0.7 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = .028

Delta = [with-current]
0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland Q	
FLUCCs code 641 - Marsh		Further classification (optional)		Impact or Mitigation Site? Impact	
				Assessment Area Size 0.03	
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Small isolated depression within grassed field; swale within approximately 50 feet.					
Assessment area description Small wet pocket in the middle of a grassed field.					
Significant nearby features GRU Deerhaven Power Plant to the south, access roads and swale in close proximity to wetland.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Water storage, nutrient assimilation and sediment deposition, breeding and foraging for amphibians.			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Various amphibians, small mammals, birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) None		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors: 					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland Q
Impact or Mitigation Impact	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support p pres or curr ent with 4 0	Location/Landscape support is poor to fair. Wetland surrounded by grassed field that is mowed on a regular basis. Very little cover or foraging opportunities for most wildlife species. Vegetated swale to east provides some habitat. Bahia grass and other undesirable species predominat field. Disconnected nature of small assessment area limits benefits to downstream wildlife/habitats.
.500(6)(b)Water Environment (n/a for uplands) p pres or curr ent with 5 0	Water environment is fair to good. Water levels are sufficient to suport hydrophytes. Hydrology sufficient to support small populations of expected wildlife species. Wetland hydrology is expected to be seasonal. No direct evidence of water quality impairment although run-off from road is likely.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community p pres or curr ent with 3 0	Community structure is poor. Species composition is a mix of weedy and undesirable species. Torpedo grass and alligator weed are present. No distinct zonation. Routine mowing inhibits succession. Vertical complexity is poor.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with 0.4 0
--

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = .012

Delta = [with-current] 0.4

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center		Application Number		Assessment Area Name or Number Wetland R	
FLUCCs code 641 - Marsh		Further classification (optional)		Impact or Mitigation Site? Impact	
				Assessment Area Size 0.08	
Basin/Watershed Name/Number Turkey Creek		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Small isolated depression within grassed field; swale within approximately 50 feet.					
Assessment area description Small wet pocket in the middle of a grassed field.					
Significant nearby features GRU Deerhaven Power Plant to the south, access roads and swale in close proximity to wetland.			Uniqueness (considering the relative rarity in relation to the regional landscape.) None		
Functions Water storage, nutrient assimilation and sediment deposition, breeding and foraging for amphibians.			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Various amphibians, small mammals, birds			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) None		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None					
Additional relevant factors:					
Assessment conducted by: L.Ricker			Assessment date(s): 5/27/2009		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Gainesville Renewable Energy Center	Application Number	Assessment Area Name or Number Wetland R
Impact or Mitigation Impact	Assessment conducted by: L. Ricker	Assessment date: 5/27/2009

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support pres or curr ent with 4 0	Location/Landscape support is poor to fair. Wetland surrounded by grassed field that is mowed on a regular basis. Very little cover or foraging opportunities for most wildlife species. Vegetated swale to east provides some habitat. Bahia grass and other undesirable species predominat field. Disconnected nature of small assessment area limits benefits to downstream wildlife/habitats.
.500(6)(b)Water Environment (n/a for uplands) pres or curr ent with 5 0	Water environment is fair to good. Water levels are sufficient to suport hydrophytes. Hydrology sufficient to support small populations of expected wildlife species. Wetland hydrology is expected to be seasonal. No direct evidence of water quality impairment although run-off from road is likely.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community pres or curr ent with 3 0	Community structure is poor. Species composition is a mix of weedy and undesirable species. Torpedo grass and alligator weed are present. No distinct zonation. Routine mowing inhibits succession. Vertical complexity is poor.

Score = sum of above scores/30 (if uplands, divide curr ent w/o pres with
0.4 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = .012

Delta = [with-current]
0.4

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

ATTACHMENT B

WETLAND AND UPLAND DATA SHEETS

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland A
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 6.092" N Long: 82° 24' 6.420" W Datum: NAD 83
 Soil Map Unit Name: Monteocha Loamy Sand NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☒ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☒ No ☐ Depth (inches): <u>24</u>	Wetland Hydrology Present? Yes ☒ No ☐	
Water Table Present?	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:

Seasonally flooded cypress dome. Standing water present throughout most of wetland. Deeper areas were ponded approximately 24".

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Nyssa biflora</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Taxodium ascendens</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Acer rubrum</u>	<u>5</u>		<u>FAC</u>	
4. <u>Liquidambar styraciflua</u>	<u>5</u>		<u>FAC+</u>	
5. <u>Pinus ellioti</u>	<u>5</u>		<u>FACW</u>	
6. _____				
7. _____				
		<u>65</u>	= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
Shrub Stratum (Plot size: _____)				
1. <u>Vaccinium corymbosum</u>	<u>5</u>		<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrica cerifera</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Cephalanthus occidentalis</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Itea virginica</u>	<u>5</u>		<u>FACW+</u>	
5. _____				
6. _____				
7. _____				
			= Total Cover	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: _____)				
1. <u>Panicum hemitomon</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Cladium jamaicense</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Woodwardia virginica</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Carex camosa</u>	<u>5</u>		<u>OBL</u>	
5. <u>Sagittaria lancifolia</u>	<u>5</u>		<u>OBL</u>	
		<u>65</u>	= Total Cover	Hydrophytic Vegetation Present? Yes ☒ No ☐
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
			= Total Cover	

Remarks: (If observed, list morphological adaptations below).
Cypress knees, tree trunk buttressing

SOIL

Sampling Point: Wetland A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	>70					Mucky sand	
3-11	10YR 4/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☒ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland A
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 5.350" N Long: 82° 24' 4.202" W Datum: NAD 83
 Soil Map Unit Name: Chibley Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Upland A

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Quercus nigra</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)
2. <u>Pinus elliotii</u>	<u>5</u>		<u>FACW</u>	
3. <u>Quercus laurifolia</u>	<u>10</u>		<u>FACW</u>	
4. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>50</u>	<u>= Total Cover</u>		
Sapling Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Pinus elliotii</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. <u>Vaccinium corymbosum</u>	<u>5</u>		<u>FACW</u>	
2. <u>Myrica cerifera</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Serenoa repens</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Callicarpa americana</u>	<u>5</u>		<u>FACW+</u>	
5. <u>Rubus cuneifolius</u>	<u>5</u>		<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Herb Stratum (Plot size: _____)				
1. <u>Panicum hemitomon</u>	<u>5</u>		<u>OBL</u>	
2. <u>Eupatorium capillifolium</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>5</u>	<u>= Total Cover</u>		

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Upland A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	<70					Sand	Salt and pepper sand
3-11								

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland B
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 45' 55.491" N Long: 82° 24' 3.894" W Datum: NAD 83
Soil Map Unit Name: Monteocha Loamy Sand NWI classification: PFO6F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)			
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)			
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)			
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)			
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)			
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)			
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)			
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)			
☒ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)			
			☐ FAC-Neutral Test (D5)		
Field Observations:					
Surface Water Present?	Yes ☒ No ☐	Depth (inches): <u>24</u>			
Water Table Present?	Yes ☒ No ☐	Depth (inches): <u>surface</u>			
Saturation Present?	Yes ☒ No ☐	Depth (inches): <u>surface</u>			
(includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Seasonally ponded cypress dome. Standing water present throughout most of wetland. Deeper areas were ponded approximately 24".					

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland B

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Nyssa biflora</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Taxodium ascendens</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Acer rubrum</u>	<u>10</u>		<u>FAC</u>	
4. <u>Liquidambar styraciflua</u>	<u>5</u>		<u>FAC+</u>	
5. <u>Pinus ellioti</u>	<u>10</u>		<u>FACW</u>	
6. _____				
7. _____				
		<u>65</u>	= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. <u>Sapium sebiferum</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Pinus ellioti</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Baccharis halimifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrica cerifera</u>	<u>5</u>		<u>FAC+</u>	
3. <u>Lyonia lucida</u>	<u>5</u>		<u>FACW</u>	
4. _____				
5. _____				
6. _____				
7. _____				
		<u>20</u>	= Total Cover	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: <u>30 ft</u>)				
1. <u>Juncus effusus</u>	<u>15</u>	<u>Y</u>	<u>FACW+</u>	
2. <u>Hydrocotyle umbellata</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Eupatorium cappillifolium</u>	<u>5</u>		<u>FACU</u>	
4. <u>Polygonum punctatum</u>	<u>15</u>		<u>FACW+</u>	
5. <u>Lemna minor</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
6. <u>Woodwardia virginiana</u>	<u>10</u>		<u>OBL</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
		<u>75</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis rotundifolia</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes ☒ No ☐
2. _____				
3. _____				
4. _____				
5. _____				
			= Total Cover	

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Wetland B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	>70					Mucky sand	
3-11	10YR 4/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☒ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland B
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 55.829" N Long: 82° 23' 59.774" W Datum: NAD 83
 Soil Map Unit Name: Wachula Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Upland B

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pinus elliotii</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)
2. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		<u>40</u>	= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. <u>Pinus elliotii</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		<u>25</u>	= Total Cover	
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Baccharis halimifolia</u>	<u>10</u>	_____	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrica cerifera</u>	<u>5</u>	_____	<u>FAC+</u>	
3. <u>Rubus cuneifolius</u>	<u>25</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		<u>40</u>	= Total Cover	
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
2. <u>Pteridium aquilifolium</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Eupatorium cappillifolium</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
		<u>20</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis rotundifolia</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes ☒ No ☐
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		<u>20</u>	= Total Cover	

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Upland B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	<70					Sand	salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland C
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 38.664" N Long: 82° 24' 6.096" W Datum: NAD 83
 Soil Map Unit Name: Pomona Sand NWI classification: PFO6F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☒ No ☐ Depth (inches): <u>24</u>	Wetland Hydrology Present? Yes ☒ No ☐	
Water Table Present?	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:

Seasonally ponded mixed forested wetland. Standing water present throughout most of wetland. Deeper areas were ponded approximately 24".

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland C

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Nyssa biflora</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Taxodium ascendens</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Acer rubrum</u>	<u>5</u>		<u>FAC</u>	
4. <u>Liquidambar styraciflua</u>	<u>5</u>		<u>FAC+</u>	
5. <u>Pinus ellioti</u>	<u>5</u>		<u>FACW</u>	
6. <u>Quercus nigra</u>	<u>5</u>			
7. _____				
		<u>65</u>	= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. <u>Salix caroliniana</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
2. _____				
3. _____				
4. _____				
5. _____				
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Bachcharis halimifolia</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrica cerifera</u>	<u>5</u>	<u>Y</u>	<u>FAC+</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		<u>10</u>	= Total Cover	
Herb Stratum (Plot size: <u>30 ft</u>)				
1. <u>Sagittaria lancifolia</u>	<u>5</u>		<u>OBL</u>	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
2. <u>Panicum hemitomon</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Pontedaria cordata</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Eleocharis spp.</u>	<u>5</u>		<u>OBL</u>	
5. <u>Polygonum punctatum</u>	<u>20</u>	<u>Y</u>	<u>FACW+</u>	
6. <u>Saururus cernuus</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
7. <u>Woodwardia virginica</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
		<u>70</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes ☒ No ☐
2. _____				
3. _____				
4. _____				
5. _____				
			= Total Cover	
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Wetland C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	>70					Mucky sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☒ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland C
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 39.275" N Long: 82° 24' 3.442" W Datum: NAD 83
 Soil Map Unit Name: Wachula Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Upland C

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pinus elliotii</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)
2. <u>Quercus nigra</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Quercus laurifolia</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Sabal palmetto</u>	<u>5</u>		<u>FAC+</u>	
5. <u>Magnolia grandiflora</u>	<u>5</u>		<u>FAC+</u>	
6. _____				
7. _____				
		<u>55</u>	= Total Cover	
Sapling Stratum (Plot size: _____)				
1. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Callicarpa americana</u>	<u>10</u>		<u>UPL</u>	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Myrica cerifera</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Rubus cuneifolius</u>	<u>10</u>		<u>FACU-</u>	
4. _____				
5. _____				
6. _____				
7. _____				
		<u>35</u>	= Total Cover	
Herb Stratum (Plot size: _____)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
2. <u>Pteridium aquilifolium</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Eupatorium cappillifolium</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
		<u>20</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis rotundifolia</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes ☒ No ☐
2. _____				
3. _____				
4. _____				
5. _____				
		<u>20</u>	= Total Cover	

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Upland C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	<70					Sand	salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland D
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 43.263" N Long: 82° 24' 9.899" W Datum: NAD 83
 Soil Map Unit Name: Pomona Sand NWI classification: PFO6F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)	
☒ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☒ No ☐ Depth (inches): <u>6-18</u>	Wetland Hydrology Present? Yes ☒ No ☐	
Water Table Present?	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐ Depth (inches): <u>surface</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:

Seasonally wet marsh surrounded by wet pine plantation. Water levels in marsh were 6-18" deep. Forested wetland had saturated soils.

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland D

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pinus elliottii</u>	<u>35</u>	<u>Y</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		<u>35</u>	= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		_____	= Total Cover	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		_____	= Total Cover	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: <u>30 ft</u>)				
1. <u>Juncus effusus</u>	<u>20</u>	<u>Y</u>	<u>FACW+</u>	
2. <u>Panicum hemitomon</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Caladium jamaicense</u>	<u>15</u>		<u>OBL</u>	
4. <u>Polygonum hydropiperoides</u>	<u>10</u>		<u>FACW+</u>	
5. <u>Woodwardia virginica</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
		<u>85</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		_____	= Total Cover	
Remarks: (If observed, list morphological adaptations below).				

Hydrophytic Vegetation Present?
Yes ☒
No ☐

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 2/1	>70					Muck	
6-14+	10YR 2/1	>70					Mucky sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☒ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☒ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12) (LRR T, U)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes



No



Remarks:

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland D
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 45' 42.999" N Long: 82° 24' 7.556" W Datum: NAD 83
Soil Map Unit Name: Wachula Sand NWI classification: UPL

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

Wetland Hydrology Indicators:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)					
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)			
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)			
☐ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)			
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)			
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)			
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)			
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)			
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)			
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)			
		☐ FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	Yes ☐ No ☒	Depth (inches): _____		Wetland Hydrology Present? Yes ☐ No ☒	
Water Table Present?	Yes ☐ No ☒	Depth (inches): _____			
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches): _____			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

VEGETATION – Use scientific names of plants.

Sampling Point: Upland D

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Pinus elliotii	65	Y	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 3 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
65 = Total Cover				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Sapling Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____				
_____ = Total Cover				
Shrub Stratum (Plot size: 30 ft) 1. Ilex glabra 65 Y FACW 2. Rubus cuneifolius 10 FACU- 3. _____ 4. _____ 5. _____ 6. _____ 7. _____				
75 = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: _____) 1. _____ 2. Pteridium aquilifolium 10 Y FACU 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____				
10 = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes ☒ No ☐
Remarks: (If observed, list morphological adaptations below). 				

SOIL

Sampling Point: Upland D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	<70					Sand	salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland F
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 5.003" N Long: 82° 23' 49.583" W Datum: NAD 83
 Soil Map Unit Name: Pomona Sand NWI classification: UPL (Map) PSS (Field)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					
Low area within pine plantation; appears man-made					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	☐ Sparsely Vegetated Concave Surface (B8)	☐ Drainage Patterns (B10)	☐ Moss Trim Lines (B16)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Marl Deposits (B15) (LRR U)	☐ Dry-Season Water Table (C2)	☐ Crayfish Burrows (C8)	☐ Saturation Visible on Aerial Imagery (C9)
☒ Saturation (A3)	☐ Hydrogen Sulfide Odor (C1)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	☐ Shallow Aquitard (D3)	☐ FAC-Neutral Test (D5)
☐ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Recent Iron Reduction in Tilled Soils (C6)			
☐ Sediment Deposits (B2)	☐ Thin Muck Surface (C7)	☐ Other (Explain in Remarks)			
☐ Drift Deposits (B3)					
☐ Algal Mat or Crust (B4)					
☐ Iron Deposits (B5)					
☐ Inundation Visible on Aerial Imagery (B7)					
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☒ No ☐ Depth (inches): 10 BGS (includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Area is unlikely to pond water. Soils are saturated during wet season.					

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland F

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. <u>Sapium sebiferum</u>	<u>5</u>		<u>FAC</u>	
2. <u>Pinus elliottii</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Myrica cerifera</u>	<u>10</u>	<u>Y</u>	<u>FAC+</u>	
2. <u>Baccharis halimifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Rubus cuneifolius</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: <u>30 ft</u>)				
1. <u>Scirpus cyperinus</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Paspalum urvillei</u>	<u>10</u>		<u>FAC</u>	
3. <u>Cirsium nuttallii</u>	<u>5</u>		<u>FAC</u>	
4. <u>Solidago sp.</u>	<u>5</u>			
5. <u>Eupatorium capillifolium</u>	<u>10</u>		<u>FACU</u>	
			_____ = Total Cover	Hydrophytic Vegetation Present? Yes ☒ No ☐
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Wetland F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland F
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 46' 5.025" N Long: 82° 23' 48.749" W Datum: NAD 83
Soil Map Unit Name: Pomona Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Upland F

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. <u>Pinus elliotii</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Shrub Stratum (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Myrica cerifera</u>	<u>20</u>	<u>Y</u>	<u>FAC+</u>	
2. <u>Baccharis halimifolia</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Rubus cuneifolius</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>30 ft</u>)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. <u>Paspalum notatum</u>	<u>45</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Paspalum urvillei</u>	<u>10</u>	_____	<u>FAC</u>	
3. <u>Cirsium nuttallii</u>	<u>5</u>	_____	<u>FAC</u>	
4. <u>Solidago sp.</u>	<u>5</u>	_____	_____	
5. <u>Eupatorium capillifolium</u>	<u>10</u>	_____	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Upland F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/1	<70					Sand	
5-12	10YR 4/2						Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland G
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 0.466" N Long: 82° 23' 49.057" W Datum: NAD 83
 Soil Map Unit Name: Wauchula Sand NWI classification: UPL (Map) PSS (Field)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☒ No ☐ Depth (inches): 10 (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			
Wetland is saturated during wet season. Water may pond during heavy rain events but unlikely to be sustained for any significant duration.			

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland G

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		_____ = Total Cover		
Sapling Stratum (Plot size: _____)				
1. <u>Salix caroliniana</u>	15	Y	OBL	
2. <u>Pinus elliotii</u>	15	Y	FACW	
3. <u>Sapium sebiferum</u>	5		FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		_____ = Total Cover		
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. <u>Baccharis halimifolia</u>	10	Y	FAC	
2. <u>Rubus cuneifolius</u>	15	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
		25 _____ = Total Cover		
Herb Stratum (Plot size: <u>30 ft</u>)				
1. <u>Juncus effusus</u>	20	Y	FACW+	
2. <u>Scirpus cyperinus</u>	20	Y	OBL	
3. <u>Ludwigia repens</u>	5		OBL	
4. <u>Eupatorium capillifolium</u>	5		FACU	
5. <u>Cirsium nutalli</u>	5		FAC	
6. <u>Paspalum urvillei</u>	5		FAC	
7. <u>Carex albotescens</u>	5		FAC+	
8. <u>Mikania scandens</u>	5		FACW+	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
		70 _____ = Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		_____ = Total Cover		
Remarks: (If observed, list morphological adaptations below).				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

 Total Number of Dominant Species Across All Strata: 6 (B)

 Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)

 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
☒ Dominance Test is >50%
☐ Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes ☒

No ☐

SOIL

Sampling Point: Wetland G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	~70					Sand	fainting stripping begins ~ 10" bgs

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland G
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 0.298" N Long: 82° 23' 48.587" W Datum: NAD 83
 Soil Map Unit Name: Chibley Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Upland G

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. <u>Pinus elliotii</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Shrub Stratum (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Myrica cerifera</u>	<u>20</u>	<u>Y</u>	<u>FAC+</u>	
2. <u>Baccharis halimifolia</u>	<u>15</u>	<u>Y</u>	<u>FAC+</u>	
3. <u>Rubus cuneifolius</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>30 ft</u>)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. <u>Paspalum notatum</u>	<u>45</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Paspalum urvillei</u>	<u>10</u>	_____	<u>FAC</u>	
3. <u>Cirsium nuttallii</u>	<u>5</u>	_____	<u>FAC</u>	
4. <u>Solidago sp.</u>	<u>5</u>	_____	_____	
5. <u>Eupatorium capillifolium</u>	<u>10</u>	_____	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Upland G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/1	<70					Sand	
5-12	10YR 4/2						Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland J
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 11.569" N Long: 82° 23' 57.595" W Datum: NAD 83
 Soil Map Unit Name: Chipleay NWI classification: Upl (Map) PEM (Field)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☒ Saturation (A3) ☒ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): <u> </u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>2"</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			
Seasonally ponded depression; rectangular in shape, appears man-made.			

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland J

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. <u>Pinus elliottii</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: _____)				
1. <u>Hypericum fasciculatum</u>	<u>5</u>		<u>FACW+</u>	
2. <u>Rubus cuneifolius</u>	<u>25</u>	<u>Y</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: _____)				
1. <u>Andropogon virginicus</u>	<u>15</u>	<u>Y</u>	<u>FAC-</u>	
2. <u>Rhynchospora spp.</u>	<u>5</u>			
3. <u>Woodwardia virginica</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Centella asiatica</u>	<u>5</u>			
5. <u>Bacopa caroliniana</u>	<u>5</u>		<u>OBL</u>	
6. <u>Diodia virginiana</u>	<u>5</u>		<u>FACW</u>	
7. <u>Solidago fistulosa</u>	<u>5</u>		<u>FAC+</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes ☒ No ☐
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below). 				

SOIL

Sampling Point: Wetland J

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/1	>70					Sand	
4-6	10YR 5/1		10YR 4/1				Sand	
6-12+	10YR 7/1							Stripped Sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland J
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 46' 11.562" N Long: 82° 23' 57.171" W Datum: NAD 83
 Soil Map Unit Name: Chipleay Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7)	☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland J

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. <u>Quercus nigra</u>	15		FAC	
2. <u>Pinus elliotii</u>	25	Y	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Shrub Stratum (Plot size: 30 ft)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Myrica cerifera</u>	20	Y	FAC+	
2. <u>Ilex glabra</u>	15	Y	FAC+	
3. <u>Rubus cuneifolius</u>	15	Y	FACU	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: 30 ft)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50 = Total Cover				
1. <u>Paspalum notatum</u>	20	Y	FACU	
2. <u>Eupatorium capillifolium</u>	10		FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
30 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>Smilax rotundifolia</u>	10	Y	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				Hydrophytic Vegetation Present? Yes ☒ No ☐

SOIL

Sampling Point: Upland J

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	<70					Sand	Salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 9/9/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland Q
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 45' 57.236" N Long: 82° 23' 40.221" W Datum: NAD 83
Soil Map Unit Name: Surrency Sand NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)					
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☒ Surface Soil Cracks (B6)			
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)			
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)			
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)			
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)			
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)			
☒ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)			
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)			
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)			
			☐ FAC-Neutral Test (D5)		
Field Observations:					
Surface Water Present?	Yes ☒ No ☐	Depth (inches): <u>2</u>			
Water Table Present?	Yes ☒ No ☐	Depth (inches): <u>surface</u>			
Saturation Present?	Yes ☒ No ☐	Depth (inches): <u>surface</u>			
(includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Small depressional wet spot in middle of grassed field. Low area is saturated or holds several inches of water during wet season.					

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland Q

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
			_____ = Total Cover	
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. Paspalum repens	15	Y	OBL	
2. Hydrocotyle umbellata	15	Y	OBL	
3. Paspalum notatum	15	Y	FACU+	
4. Ludwigia repens	20	Y	OBL	
5. Dichromena colorata	5		OBL	
6. Cyperus retrorsus	5		FACU+	
7. Paspalum urvillei	15	Y	FAC	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			80 = Total Cover	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Wetland Q

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"
 Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 9/9/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland R
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 55.654" N Long: 82° 23' 41.280" W Datum: NAD 83
 Soil Map Unit Name: Surrency Sand NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No ☐ Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☒ Surface Soil Cracks (B6)	☐ Sparsely Vegetated Concave Surface (B8)		
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	☐ Moss Trim Lines (B16)		
☒ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Dry-Season Water Table (C2)	☐ Crayfish Burrows (C8)		
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	☐ Geomorphic Position (D2)		
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Shallow Aquitard (D3)	☐ FAC-Neutral Test (D5)		
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)				
☒ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)				
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)				
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)				
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <u>2</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> (includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Small depressional wet spot in middle of grassed field. Low area is saturated or holds several inches of water during wet season.					

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland R

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
			_____ = Total Cover	
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. Paspalum repens	10		OBL	
2. Polygonum punctatum	5		FACW+	
3. Paspalum notatum	15	Y	FACU+	
4. Ludwigia repens	20	Y	OBL	
5. Dichromena colorata	5		OBL	
6. Cyperus surinamensis	1		FACW	
7. Paspalum urvillei	15	Y	FAC	
8. Alternanthera philoxeroides	10		OBL	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			81 = Total Cover	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Wetland R

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/1.5	>70					Sand	
4-10	10YR 4/2	>70					Sand	
10-12+	10YR 8/1						Sand	Stripped

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 5/27/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland Q&R
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 45' 56.647" N Long: 82° 23' 40.782" W Datum: NAD 83
Soil Map Unit Name: Surrency Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches):	
		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland Q&R

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Shrub Stratum (Plot size: <u>30 ft</u>)				Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. <u>Paspalum notatum</u>	<u>60</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Paspalum urvillei</u>	<u>25</u>		<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>85</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				Hydrophytic Vegetation Present? Yes ☐ No ☒

SOIL

Sampling Point: Upland Q&R

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	<70					Sand	Salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 9/9/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland T
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 46.977" N Long: 82° 23' 33.613" W Datum: NAD 83
 Soil Map Unit Name: Pomona Sand NWI classification: UPL (Map) PEM (Field)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					
Swale that drains into a wetland and stormwater management pond.					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	☐ Sparsely Vegetated Concave Surface (B8)	☐ Drainage Patterns (B10)	☐ Moss Trim Lines (B16)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Marl Deposits (B15) (LRR U)	☐ Dry-Season Water Table (C2)	☐ Crayfish Burrows (C8)	☐ Saturation Visible on Aerial Imagery (C9)
☒ Saturation (A3)	☐ Hydrogen Sulfide Odor (C1)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	☐ Shallow Aquitard (D3)	☐ FAC-Neutral Test (D5)
☒ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Recent Iron Reduction in Tilled Soils (C6)			
☐ Sediment Deposits (B2)	☐ Thin Muck Surface (C7)	☐ Other (Explain in Remarks)			
☐ Drift Deposits (B3)					
☐ Algal Mat or Crust (B4)					
☐ Iron Deposits (B5)					
☐ Inundation Visible on Aerial Imagery (B7)					
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <u>4-6</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> (includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Drains stormwater from uplands to wetland and stormwater management pond.					

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland T

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
			_____ = Total Cover	
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
1. <i>Ludwigia repens</i>	40	Y	OBL	
2. <i>Polygonum punctatum</i>	5		FACW+	
3. <i>Typha latifolia</i>	5		FACU+	
4. <i>Cyperus odoratus</i>	5		OBL	
5. <i>Rhynchospora traceii</i>	5		OBL	
6. <i>Cyperus haspan</i>	5		FACW	
7. <i>Paspalum urvillei</i>	5		FAC	
8. <i>Alternanthera philoxeroides</i>	5		OBL	
9. <i>Saururus cernuus</i>	1		OBL	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			76 = Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: Wetland T

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	>70					Mucky sand	
3-12+	10YR 2/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☒ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 9/9/09
 Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Wetland W
 Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): <5%
 Subregion (LRR or MLRA): U Lat: 29° 45' 47.104" N Long: 82° 23' 30.073" W Datum: NAD 83
 Soil Map Unit Name: Pomona Sand NWI classification: UPL (Map) PEM (Field)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					
Swale that drains into a wetland and stormwater management pond.					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	☐ Sparsely Vegetated Concave Surface (B8)	☐ Drainage Patterns (B10)	☐ Moss Trim Lines (B16)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Marl Deposits (B15) (LRR U)	☐ Dry-Season Water Table (C2)	☐ Crayfish Burrows (C8)	☐ Saturation Visible on Aerial Imagery (C9)
☒ Saturation (A3)	☐ Hydrogen Sulfide Odor (C1)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	☐ Shallow Aquitard (D3)	☐ FAC-Neutral Test (D5)
☒ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Thin Muck Surface (C7)	☐ Other (Explain in Remarks)	
☐ Sediment Deposits (B2)					
☐ Drift Deposits (B3)					
☐ Algal Mat or Crust (B4)					
☐ Iron Deposits (B5)					
☐ Inundation Visible on Aerial Imagery (B7)					
Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): <u>2-4</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>surface</u> (includes capillary fringe)			Wetland Hydrology Present? Yes ☒ No ☐		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Drains stormwater from uplands to wetland and stormwater management pond.					

VEGETATION – Use scientific names of plants.

 Sampling Point: Wetland W

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	
Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			_____ = Total Cover	
Herb Stratum (Plot size: _____)				
1. Echinochloa crusgallii	5	Y	FACW-	
2. Polygonum punctatum	5	Y	FACW	
3. Setaria geniculata	5		FAC	
4. Phyla nodiflora	15	Y	FACW	
5. Hydrocotyle umbellata	5		OBL	
6. Cyperus odoratus	5		FACW	
7. Paspalum urvillei	5		FAC	
8. Solidago fistulosa	5		FAC+	
9. Aschyenome indicus	5		FACW+	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			55 = Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
			_____ = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0¹

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Wetland W**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	>70					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☐ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
 (MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12) (LRR T, U)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):Type: Did not encounter in upper 16"

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Gainesville Renewable Energy Center (GREC) City/County: Gainesville/Alachua Sampling Date: 9/9/09
Applicant/Owner: Gainesville Renewable Energy Center, LLC State: FL Sampling Point: Upland T & W
Investigator(s): ECT, Inc. Section, Township, Range: 08S, 19E, 27
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <5%
Subregion (LRR or MLRA): U Lat: 29° 45' 47.118" N Long: 82° 23' 31.897" W Datum: NAD 83
Soil Map Unit Name: Pomona Sand NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Marl Deposits (B15) (LRR U)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland T & W

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>30 ft</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
Herb Stratum (Plot size: _____)				
1. <u>Paspalum notatum</u>	<u>60</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Paspalum urvillei</u>	<u>25</u>		<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes ☐ No ☒
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: Upland T & W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	<70					Sand	Salt and pepper sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

APPENDIX 10.4.4

GRU LETTER ON WETLAND MITIGATION PLAN FOR GREC

November 4, 2009

Jim Gordon, Chief Executive Officer
Gainesville Renewable Energy Center LLC
75 Arlington Street, 5th Floor
Boston, Massachusetts 02116

Re: Wetlands Mitigation Plan for Gainesville Renewable Energy Center

Dear Mr. Gordon:

On behalf of the Gainesville Regional Utilities (GRU), I am sending you this letter to confirm and supplement the information GRU has provided Gainesville Renewable Energy Center, LLC (GREC LLC), concerning the Gainesville Renewable Energy Center (Energy Center).

Environmental Consulting & Technology, Inc. (ECT) has prepared a "Preliminary Wetland Delineation Report and Mitigation Plan" (Mitigation Plan) for the Energy Center. Section 7 of the Mitigation Plan (dated October 2009) identifies certain wetland and upland areas that could be preserved to mitigate the wetland impacts resulting from the construction of the Energy Center. The proposed mitigation areas (Mitigation Areas) are located in the northwest corner of the property that GRU will lease to GREC LLC for the Energy Center and they are depicted in Figure 2 of the Mitigation Plan. Table 4 of the Mitigation Plan indicates that the Mitigation Areas include: (a) two wetlands, collectively referred to as Wetland A, that total approximately 10.25 acres in size; (b) an upland buffer on the east side of Wetland A that is approximately 50 feet wide and approximately 4.08 acres in total size; and (c) an upland buffer on the west side of Wetland A that is approximately 8.25 acres in size.

Since the electricity generated by the Energy Center will be provided to GRU, GRU will preserve the Mitigation Areas, if the preservation of the Mitigation Areas will enable GREC LLC to obtain approval for the construction and operation of the Energy Center. More specifically, GRU will record a conservation easement that protects and preserves as much of the Mitigation Areas as the Florida Department of Environmental Protection (FDEP) deems necessary to mitigate the wetland impacts of the Energy Center. GRU also agrees that the FDEP may modify the conditions of certification for GRU's Deerhaven Generating Station (DGS), only in so far as is necessary to permit the construction of the Energy Center and also require GRU to record such conservation easement as the owner of the Mitigation Areas.

Please note, however, that GRU should not be required to record the conservation easement until GREC LLC is ready to commence construction in one or more of the wetland areas on the site of the Energy Center. The modification of the conditions of

certification for GRU's DGS may be issued by the FDEP when the FDEP issues the site certification for the Energy Center, but the modification for DGS should state that the conservation easement is not required to be recorded until, and unless, GREC LLC is ready to commence construction on the Energy Center.

GRU understands that this letter will be submitted to the FDEP with the Site Certification Application for the Energy Center. GRU's commitments in this letter are being made for the benefit of GREC LLC and the FDEP. These commitments are intended to be enforceable by GREC LLC and the FDEP against GRU.

Sincerely,



Robert E. Hunzinger
General Manager

cc: John Stanton, Assistant General Manager for Energy Supply
Ed Regan, Assistant General Manager for Strategic Planning
Raymond O. Manasco, Jr., Utilities Attorney
Joshua Levine, GREC Project Manager