PMLevyCOLPEm Resource

From: Hambrick, Gordon A SAJ [Gordon.A.Hambrick@usace.army.mil]
Sent: Friday, August 28, 2009 10:56 AM
To: Snead, Paul
Cc: Bruner, Douglas
Subject: PEF/LNP - SAJ-2008-00490 (IP-GAH)
Attachments: Levy-LEDPANotes-FINAL08-26-09.doc

Paul:

Attached is a copy of my notes from my review of the alternatives analysis provided by PEF for the Levy project. It rambles around some, because it is for my benefit to help me frame the review within Section 404, try to understand the NRC's evaluation process, as well as the process used by PEF. It also notes concerns and comments regarding some other items I came across during my review of the documents, such as a statement regarding dredged and fill material, and why some materials were redacted. I've left you a voice mail regarding your offer for a teleconf with you and possibly Bill Marsh and Martha Klein of CH2MHil next week to go through my notes, as a precursor of what future RAIs from NRC and USACE may address. As my message said, either next Weds. or Thurs. (Sept. 2 or 3) would work for me. I also suggested a starting time of 1300 CDT (1400 EDT). Doug Bruner may join us, so if you would provide both of us with the information for the teleconference, I'd apprerciate it.
Thanks, Don.

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Levy Nuclear Plants Units 1 & 2 (LNP)- LEDPA Notes

1. This represents the Corps' initial review of the four documents, as cited by PEF, having information regarding alternatives. The documents are PEF's LEDPA analysis, entitled, *Levy Nuclear Units 1 and 2 (LNP) Section 404(b)(1) Alternatives Analysis* (AA), which in turn cites the Site Certification Application (SCA), the COL's Environmental Report (ER), and the *Evaluation of Florida Sites* (EFS) (both redacted and unredacted copies), as sources for information for the alternatives analysis. The review was almost entirely focused on the analysis of Section 3.3 of the AA, "Alternate Sites", and the sections of the ER and ESF, which the AA references; but some other items, as well, such as redactons.

"**Note**" marks Corps' comments, concerns and/or questions.

2. Review of the SCA (Volumes 1 thru 7) for alternatives analysis.

Note: The only reference found in the Table of Contents for the SCA in regard to alternatives/alternative sites was in Section 8.0 "Site and Plant Design Alternatives" in Volume 1 of the SCA. Section 8 solely states: "This optional chapter of the SCA will not be submitted as part of this application. Results of assessment conducted to evaluate proposed technologies and to identify the preferred site for this project are summarized in ER Section 9."

3. Background for the Corps' review → **Goal and parameters of the analysis under the 404(b)(1) Guidelines:**

Goal: The outcome of the alternatives analysis under 40 CFR 230.10 → **Determination of the Least Environmentally Damaging Practicable Alternative (LEDPA)**.

When it is determined that there is no identifiable difference in adverse impact on the environment between the applicant's proposed alternative and all other practicable alternatives, then the applicant's alternative is considered as satisfying the requirements of Section 230.10(a). (from: "Memorandum to the Field, Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternative Requirements (1993)", ¶3iii).

Parameters: The applicant must provide sufficient information and data for the Corps to reasonably evaluate, differentiate and compare the relative impacts of each practicable alternative on the overall environment, and on the aquatic environment in particular. The level of analysis should be commensurate with the level of project impacts. The burden of proof to demonstrate compliance with the Guidelines rests with the applicant; where insufficient information is provided to determine compliance, the Guidelines require that no permit be issued (section 230.12(a)(3)(iv)).

Note: Since the applicant's preferred alternative would directly impact over 700 acres of wetlands, it is a major project with substantial impacts to the aquatic

environment, thus requiring a more detailed level of analysis, especially in terms of wetland impacts.

4. Review of AA (Part 1):

a. Page 7 of AA, states three water dependent aspects of the project: cooling water, discharge cooling water, and the barge slip.

Note: Though true for these three specific activities, the impacts subject to the analyses for the three would be specific to the three elements individually, and do not change the no-water dependent analysis for the plant itself, the blowdown pipeline and transmission lines. The "water dependent" test is whether the proposed activity must be located in the particular **special aquatic site** proposed, in order to **fulfill the project's basic purpose**. However, acceptable parameter to the site selection would be that any plant would need to be located near a source of cooling water.

b. Page 13 of AA, PEF states that a detailed alternatives evaluation is included in the company's proprietary siting study, i.e. the EFS.

Note: An unredacted/confidential copy of the EFS was received by the Corps on April 6, 2009 (the RAI to which PEF responded with the AA was dated March 13, 2009). A redacted copy of the EFS was received by the Corps on May 14, 2009. The AA was received by the Corps through the NRC on July 1, 2009.

c. Page 19 of the AA, 1st full paragraph, 1st two sentences "The nuclear power option was considered the most cost-effective, least environmentally damaging, and the most reliable long-term source to satisfy the projected PEF electric energy needs and to meet the basic and overall purpose of the project. Wetland impacts associated with the LNP development are anticipated to be similar, if not less than, the other viable alternatives considered."

Note: What are the other viable alternatives referenced in c? Need to know to evaluate the statement about wetlands. Seems the conclusion in this section should only be that nuclear has been identified as the appropriate alternative as a power source. So why is a specific alternative site, LNP, discussed here? So should assume the referenced viable alternatives are those discussed in the next section, or are they the alternate power generation designs? Which ones?

5. Review of the Alternatives Section of the ER:

a. Chapter 9 of the ER comprises the alternatives review of the ER.

b. Section 9.3 of Chapter 9 comprises the "Site Selection Process" which identifies and compares alternatives to the proposed site, in this case the LNP site, which is the Levy 2 site in the EFS.

c. ER states in section 9.3.2: The objectives of the selection procedure were to identify a geographic location for a nuclear power generating facility that: 1) meets

PEF's business objectives for the COL project, 2) satisfies applicable NRC site suitability requirements, and 3) is compliant with NEPA requirements regarding the consideration of alternative sites.

Note: Consideration of 404 (b)(1) Guidelines not explicitly stated.

d. ER on page 9-42 states that PEF adopted the EPRI Siting Guide (ESG) in its site selection process involving a four step procedure.

Note: The ESG explicitly lays out and describes the four steps. The ER on pages 9-43 thru 9-45, copies exactly the first 3 steps in the ESG, **but then step 4 is not explicitly restated in the ER as it is stated in the ESG, but instead the ESF is referenced in the ER as providing information for the fourth step. The fourth step, as stated in the ESF, is then restated in the ER and is not totally consistent with step 4 of the ESG. Conflated and somewhat inconsistent descriptions of the actual 4-step ESG process is described in the EFS at pages 9 thru 10 and then the evaluation process as used for this project is described on pages 15 thru 18. <u>The chart on page 2-2 of the ESG and Step 4 on page 2-5, indicates the need for more detailed, site-specific information.</u>**

e. Step 4 from the ESG:

"Step 4 - The purpose of step 4 is to select a preferred site from candidate sites identified in Step 3. **To accomplish this objective, this step may involve conducting additional screening of the candidate sites and/or confirming the results of Step 3, at a higher confidence level, using more detailed site-specific data developed from on-site verification surveys (Step 4).** The actual logistics of Step 4 should be designed based on the applicant's needs and the number of sites remaining after Step 3. Detailed on-site studies designed to provide verification of critical site suitability characteristics (which have been based up to this point on published data and reconnaissance information) should be conducted first. **These studies should provide additional differentiation among the candidate sites, and in doing so, will provide the basis for an issue-by-issue analysis that will allow the applicant to identify the cost and environmental tradeoffs associated with developing each of the acceptable sites during Step 4. <u>Costs for these verification studies have proven to be justified since they provide a higher level of assurance that the preferred site has no fatal flaws which could result in extended licensing delays and increased costs.</u>** This also the standard approach for siting low-level radioactive waste and similar facilities. **In contrast to the composite suitability analyses conducted in earlier steps which "roll up" all site suitability considerations into a single composite value, this analysis allows the decision-maker to consider actual tradeoffs in environmental impacts and site-specific costs quantitatively (<u>e.g., acres of wetlands</u>, miles of transmission line). <u>This provides the decision-maker with a clear basis for differentiating among candidates, and thereby selecting, a preferred site.</u>** The trade-off information should be presented in a table, using Table 5 of Regulatory Guide 4.2 as a model."

Note: It appears that the Step 4 evaluation, which was conducted in the EFS by the "drive-thrus", and no data/maps were created/used – just generalized statements of observations.

6. (Background Information) EFS setup: There are four attachments.

- Attachment IV is the McCullum-Turner Siting Study (MTSS) pages 46 thru 227. It has four appendices:

1) Appendix A is set of redacted maps for ROI to "potential sites" determination.

2) Appendix B is explanation for how weight factors were developed.

3) Appendix C is the "Technical Basis for the Criterion Ratings", i.e. to provide details of ratings to determine the "candidate sites" from the "potential sites". Pages 90 thru 112.

4) Appendix D is the "Technical Basis for General Site Criteria Evaluations", i.e. to provide details of ratings to determine the "alternate sites" from the "candidate sites". Pages 113 thru 227.

Then there are another two appendices to the EFS itself: Appendix A is composed of aerial photographs of the 20 potential sites. Appendix B is composed of land maps of the 5 alternative sites.

7. Review of the ER and EFS together:

Note: Reviewed ER and EFS together to some extent, since the ER references the EFS to such a large extent. Corps understands that the evaluation of the final suite of "alternative sites" is first subjected to comparison through the Technical Evaluation process, which includes: health & safety, environmental, land use & socioeconomics, and engineering & cost-related. See page 10 of 289 of the ESF. The Technical Evaluation is the "gatekeeper". But these "alternative sites" are then subject to "business strategy considerations" to determine the "preferred site". See EFS page 3 and page 15.

The process, as indentified in the ESF and ER:

"Regions of Interest (ROI)" → "candidate areas/potential sites" → "candidate sites" → "alternative sites" → "preferred site"

Note: Some confusion in regard to second step above: ER separates out this step into two separate steps, while ESF conflates the two together in the "potential sites" selection section (page 55 of ESF).

a**. "Regions of Interest (ROI)" → "potential sites" analysis:** 20 "potential sites" in ROI (19 greenfields and existing Crystal River site)– shown on Figure 1 of Attachment I of the unredacted EFS.

Note: No location or drawing showing the ROI, nor the location of the 20 "potential sites" in the redacted EFS.

1) Table 3-1 (found in both the EFS at page 50 and the ER at page 9-86) states for the "Regional Ecological Features" that known, mapped wetlands are to be "excluded" in the screen, and that "map aerial extent of identified features" is one of the screening criteria.

Note: There is not a screen/map showing mapped wetlands. The only maps identified for this category, "Regional Ecological Features" (in Appendix A, pages 81 thru 86 of the unredacted ESF) **only show ESA critical habitats, but no wetland screens**. The note for this category even mentions marsh or estuarine areas, but again not a mapped screen. Therefore, in reality, wetlands do not appear to have been a consideration in this screen, though it is appropriate that they would be. The table states that wetlands are mapped data. Gulf would seem to be an odd choice for a potential site, given the extensive wetlands, including interior freshwater marsh, of the site area. ***All of the figures showing the screens to determine the "candidate areas" are redacted, even though they do not show any individual site locations. Why?***

2) How were the 20 potential sites individually chosen – steps below.

- According to Step 2 of the ESG, and as printed on page 9-43 of the ER, the selection of the "potential sites" is made from review of the "candidate areas" screen for within the ROI.

- Step 2 states: "Candidate areas identified in Step 1 **are further screened using <u>refined</u> exclusionary and avoidance criteria to identify optimum areas for a facility**. As in Step 1, screening is conducted as an iterative process with the application of refined criteria until an appropriate number of potential sites can be identified. **A key difference in the application of exclusionary and avoidance criteria in Step 2 is the introduction of data that is at a more refined scale (1:24,000 versus 1:250,000); therefore, information at this scale may not have been considered in Step 1**. A variety of protected lands, population features, **ecologically protected resources (e.g., wetlands)**, and resources set aside for cultural or historical reasons **are at such a scale that (because of their limited areal extent) they would not be considered as part of Step 1.** These could, for example, include resources that are identified at the state, county, or local institutional levels. However, circumventing these "smaller" sized exclusionary and avoidance features is equally as valid as avoiding the larger features considered in Step 1. **<u>Accordingly, the consideration of these more detailed features in Step 2 will be essential to the process of reducing candidate areas to potential sites</u>**."

- **Note**: ER on page 9-49 also states an evaluation process, which was used, but does not appear to be consistent with the procedure as outlined above: "Geographic [candidate] areas identified in the ROI screening were examined to identify sites that would be feasible for a new nuclear power plant, taking into account the considerations identified in Section 4.1 [in PEF's "New Nuclear Baseload Generation Addition, Evaluation of Florida Sites"]. The following process was used:

1. **1:100,000-scale topographic maps** ([U.S. Geological Survey] USGS) were examined to identify possible areas for potential sites within the previously screened siting areas; **information on identified areas was supplemented using [American Automobile Association] AAA Florida state map, 1998, and Florida County highway maps showing roads, towns, wetlands, dedicated lands, etc**.

Note: 1:24,000 not used? Why not, especially when Step 2 states 1:24,000 to be used? Appears NWI maps and other sources of ecological information were not used.

2. Low resolution aerial photographs of the areas were scanned using Google Earth® (http://earth.google.com/). **Potential sites of approximately 6000 acres were identified** by visually applying the criteria described below.

Note: What does "visually" mean? There should be maps to demonstrate findings and to allow review. Should show the boundary of the 6000-acre sites.

3. The latitude and longitude of the approximate center point of the potential site was noted.

4. Higher resolution USGS aerial photographs were inspected to confirm the location of nearby communities and the amount of development in the vicinity of the potential site as well as topography. (http://www.terraserver-usa.com). If a potential conflict was determined from information found on the USGS aerial photograph, the potential site was relocated, using the same resources and process."

Note: Considerable use of unredacted *EFS* to review aerial photographs to see location of sites, water sources nearby, apparent wetlands, and other concerns – review not possible w/o unredacted copy.

b**. Evaluation of the Potential Sites and the identification of the Candidate Sites (page 58 of the redacted ESF and pages Section 9.3.2.1.4 of the ER, pages 9-50 thru 9-53:**

1) **Note**: List of nine criteria. Weighted, total: 60.3. 2of the 9 are environmental", P5-Ecology, and P6-Wetlands, both weighted at 5.6, which is about 20% of the criteria weights. Table 5-1 shows that the only factor for ecology was number of "ESA" species, and for wetlands the number or % of wetlands within a site area based on nominal 6000-acre sites.

Note: No maps showing the 6000-acre polygons, no maps showing ESA species, and particularly no maps showing wetlands on the sites. Criterion 6 – Wetlands table on page 107 of redacted *ESF* states could not search wetland polygon data for 5 sites. Table states Riverine wetlands not included. Data seems very inaccurate - only 61 acres shown for Levy 2, when the NWI maps in my procession appear to show many 100s of acres of wetlands within the site. I took a look at the Dixie site. The table states 50 acres of wetlands, when there would appear from a look at the GoogleEarth map for the site area that there would be much more area of wetlands within a 6000-acre site. This level of review should be at the level where NWI maps, FLUCS maps along with soils maps, aerial photographs, etc. are used. Subsequent delineation has shown that about 2/3 of the 5000-acre site LNP site (i.e. north and south parcels) is comprised of wetlands. Species is just on a "by County" analysis - see table for Criterion P5 of Appendix C of the McCallum-Turner Siting Study, page 103 of redacted EFS.

Note: ER and the ESF state two different sizes of polygons for the selection of the candidate sites from potential sites. The ESF, which the ER references dozens of times, states on page 16 that : "Each of the 20 potential sites covered an area approximately three miles in diameter (6000 acres) to ensure sufficient size to develop a nuclear plant along with support structures and facilities. "; but the ER on page 9-49 states: "Aerial photographs and other available geographic information were used to identify potential sites from the candidate areas that met the above-listed characteristics. Potential sites were generally 2424 ha (6000 ac.) in size, although favorable sites as small as 809 ha (2000 ac.) were considered." It seems inappropriate to use the number of acres on a particular site as the rating scale for P6, if the sites are different sizes. Should be proportional or % of site instead?

Note: In either case no maps showing the sites and the various selection criteria, and thus no data to demonstrate the analysis was actually done and how done.

c**. Evaluation of Candidate Sites and Identification of Alternative Sites (page 67 of the redacted EFS and Section 9.3.2.1.5 of the ER, pages 9-53 thru 9-55):**

1) 40 factors in the review, factors are weighted,

Note: Only 7 of the 40 are environmental, of which 6 are aquatic/wetlands – basic problem of sorting the "practicable" alternatives. No maps for wetlands, ESA T&E, floodplains. Doesn't appear to be any refinement of the data from the selection of the candidate sites to selection of the alternative sites. Important info redacted on page 68 of the EFS on why 3 sites not included in alts sites list.

d**. Selection of Preferred Site from Alternative Sites (page 74 of the redacted EFS, and Section 9.3.2.1.7 of the ER, pages 9-59 thru 9-61):**

Note: Environmental section on page 75 of EFS states that onsite inspections showed that for all of the alt sites, less than 5% of any of the sites was wetlands, even Levy, which is about 2/3 wetlands. Analysis, therefore, appears to be very inaccurate. Need much better wetland impact analysis for all alt sites. Need NWI/wetland maps of project sites with facility overlay.

Note: Page 75 of EFS: States that all sites lie in **ranges** of T&E species, but no site specific info as to whether actual suitable habitat on sites and no reference to occurrence data (Such information is likely readily available from the Florida Natural Areas Inventory (FNAI) - see #29 below).

Note: Table 7-2 on pages 77-79 of the EFS appears to be inaccurate and incomplete for environment, since inaccurate statement about area of wetlands on Levy, nothing about T&E species; nor maps supporting habitat/land use.

Note: From page 80 of the redacted EFS - problem statements bolded and/or underlined):

7.2 Selection of Proposed Site

Based on these considerations, Levy was selected as the proposed site for the Progress COL.
Levy is characterized by:
 Transmission costs as low as any of the sites under consideration,
 Significant reliability advantages over Crystal River, both with respect to storm surge flooding and the potential for single weather event outages,
 Geotechnical conditions that allow design of plant foundations that will support deployment of a certified design without a requirement for deep foundations,
 Ecological conditions similar to those at other alternative sites, and
(Note: This statement does not appear to be supported by maps nor site species lists/habitats information/maps, incorrect floodplain information)
 Adequate water supply (from the Gulf of Mexico through the Florida Barge Canal), without impacting riverine surface water resources.

From Page 9-56 of the ER: "All of the sites examined have been previously disturbed via farming or mining activity and/or are in the process of being logged. **All sites appeared to contain some wetland areas (<u>less than 5% of total site area</u>)**, although very little standing water was actually observed during the site visits."

Note: < 5% for the Levy site is very inaccurate – therefore, is there an accuracy problem for wetlands on other sites, and data for other criteria for evaluation of the sites?

8. From page 75 of the redacted ESF and page 9-57 of the ER:
"Overall, from **an ecological perspective, Crystal River is judged to be slightly superior to the other sites as a result of existing land use** and the Highlands site less suitable because of the local intensive dairy and beef farming. **The other three sites are considered to be similar, and there is no compelling basis for differentiating among them from an ecological perspective**."
Note: What does this mean? Where are the quantifiable data/maps for wetlands, ESA E&T/Habitat, and floodplains to make this judgment? Or other aquatic and non-aquatic environmental factors for determination of the LEDPA, that should be used for the level of screening at the review of alternative sites at least?

9. **Note**: Endangered species review – especially for the review of the alternative sites: Just statements that species are located in the county (i.e. species occurrences for these sites are based on county lists, not something more site specific) - need more detailed information/evaluation: past incidence of presences (FNAI), appropriate habitat on alternate site and adjacent land, etc. See #29 below.

10. **Note**: Page 141 of unredacted *EFS* states that Levy site is not located in the 100-year floodplain, but flood maps show most of the current site is in the 100-year floodplain. The evaluation gave Levy site the highest score (5 out of 5) for flooding (the higher the "better").

11. Page 182 of redacted EFS states "Another sub-criteria evaluated was the total acreage of wetland within the 6000 acres, not including the lake or reservoir that would be the primary source of cooling water."
Note: Don't understand reference to lake or reservoir, since all 20 potential sites were chosen to be near waterbodies with enough capacity/flow for direct intake – which implies no need for reservoir. But if reservoirs are required at specific sites (example is case (see ER 9.3.3.2.4) made to rate Dixie moderate for terrestrial ecology impacted "based on need to build a reservoir, mod to large for Highlands and Putnam (see 9.3.3.3.4 & 9.3.3.4.4)), that should be quantified to some degree based on the aerials of the 6000-acre site and overlays of soils, wetlands, species, important habitats, etc.

12. **Note**: In EFS, Appendix A, there is no "radius" bar for Crystal River site aerial map – what is the 6000-acre review area? Overall, the boundaries of the sites, which were reviewed, should be shown on aerials and other appropriate maps.

13. **Note**: Do the radius bars which represent the "site circles" really represent 6000 acres? Calculation for the Levy 2 aerial shows about 4500 acres. The limits of the actual review areas for these sites should be shown with the number of acres within stated.

14. From page 183 of redacted *EFS* for terrestrial ecology (similar statement for aquatic ecology on page 175): "No information was obtained which would indicate that any of the sites under consideration would exceed the exclusionary or avoidance criteria

relative to ecology. Therefore, the evaluation focused on the relative suitability of the site based on the number of areas where limited potential impact is expected. The number of potential impact areas was directly correlated to the number of rare, threatened, and endangered terrestrial species that may occur in the host county**, their habitat (based on existing reports and professional judgment of the amount and quality of habitat available for species), and flexibility (professional judgment of the amount of space within the site circle to avoid known locations of protected species during construction of the facility**). Note that the evaluation was limited to the plant site and not existing or potential (future) transmission corridors. AND "The relative suitability of the candidate sites with respect to ecology (rare, threatened and endangered aquatic and terrestrial species, and critical habitat) and wetlands was evaluated in the screening criteria report (Criterion P5, aquatic and terrestrial species combined; and P6). **Additional site ecological information specific to terrestrial resources at each site is included in the full discussion below**."

Note: Can find no data or other information specific to the statement bolded above either in the section this statement is included, nor in the cited Criterion P5 & P6 Tables specific to species or their habitats, than was already used to chose the candidate sites form the potential sites. The species analysis appears to be simply a restatement of the county list of Federal ESA species for the entire county and thus stated to say the particular species has the potential to occur in the vicinity of the site. The site ratings table based on Terrestrial Species/Habitat based on critical habitat has no supporting info for the Habitat or Flexibility ratings, and T&E ratings are flawed per prior two sentences.

15. **Note**: From page 187 redacted *EFS*: Wetland tables appear to be very inaccurate, at least based on Levy 2. Table states 1% of wetlands mapped over 6000-acre site. Where is a map that shows the 6000-acre site and mapped wetlands (per NWI maybe?) Per NWI map for the site area, "eyeball" approx. is maybe 20%. It appears that NWI map is very inaccurate, since the vast majority of the preferred site has been determined to be about 2/3 wetlands. Therefore, other sources for mapping wetlands may need to be used, in conjunction with aerial photo-interpretation. Table on page 186 states there are 51 acres of high quality wetlands within the 6000-acre site. Again no map demonstrating this, and "eyeball" look shows hundreds of acres of forested/scrub swamps (definition for high quality wetlands by the applicant). Why are sites with the same % wetlands scored differently for the Flexibility rating, which is based on % wetlands? Above calls into question reliability of the Site Ratings based on Wetlands table and the "Dewatering Effects on Adjacent Wetlands" table on page 188.

16. From page 188 of redacted *EFS*: "The evaluation included a review of information related to the depth of the water table and the distance to nearby wetlands. **A determination of the extent of wetland acreage within the study area was limited. National Wetland Inventory maps were used for some sites as the basis for determining wetland acreage. Those maps include numerous areas that do not represent jurisdictional wetlands under Section 404 of the Clean Water Act, which contributed to the difficulty in making an estimate of wetland acreage. Moreover, those maps were based primarily on interpretation of aerial photography, and the**

amount of field validation that was performed varies according to region of the country and local terrain. Overall site elevation is being used as an indicator of depth to groundwater."

Note: Statement that wetland acreage was determined by NWI maps on some sites, therefore NWI maps were not used on other sites. So how was wetland acreage determined? Where are the maps showing the sites and the wetlands that were determined? If the Levy 2 site is indicative of the NWI mapping situation for the analysis of the wetlands for this project, the NWI maps underestimated the area of 404 wetlands. This should have been evident when doing the "drive-thrus" that this might be a problem that would need to be dealt with. The purpose of this exercise is to evaluate potential impacts of the various alternative sites on the environment – in this case wetlands. The impacts to wetlands exist, whether they happen to be jurisdictional or nor not for the Corps. In addition, if going by the experience at the Levy site, the initial determination by the applicant was that almost all of the wetlands were not jurisdictional, while approx. 99% of the wetlands on the site are, in fact, jurisdictional for the Corps. Also, the State of Florida would have jurisdiction over all of the wetlands, including isolated wetlands.

17. **Note**: 6000-acre circles for the candidate sites probably ok for the selection of the 5 alternate sites from the 8 candidate sites. But need site specific info/boundaries, as shown in Appendix B of the EFS for the alternative sites for the selection of the preferred site among the 5 alternate sites.

18. **Note**: From page 216/217 "Flooding" section of EFS: States Levy 2 not in 100-year floodplain. This is inaccurate according to FEMA flood maps provided to me for the JD of Levy 2 site. Casts doubt on reliability of the information presented regarding 100 year floodplains for all sites. No maps provided showing the 6000-acre sites overlaid by floodplain maps.

19. **Note**: Overall, it appears that there is not enough accurate and detailed information regarding the alternative sites, and possibly the candidate sites (because of inaccuracies noted above) to select a preferred site as the LEDPA (or even NEPA). At a minimum need more detailed, accurate and site-specific information/data for the five alternate sites (and possibly the eight candidate sites) in regard to wetlands, important species and habitats, and floodplains. Need maps of the actual proposed sites with parameters shown and quantified. It seems that Step 3 of the evaluation procedure per the EPRI Siting guides requires this level of information for the review and selection process for this.

20. **Note**: Probably the three most important parameters for the Corps' 404 alternatives analysis, which need more detail, which is also accurate, are wetlands, ESA/important species/habitat, and 100-year floodplains.

21. **Note**: The Corps' expectation was that the response to the request would be responsive to essentially the first sentence of the RAI: "The applicant must provide sufficient information and data for the USACE to reasonably evaluate, differentiate and compare the relative impacts of each practicable alternative on the overall environment,

and on the aquatic environment in particular." The response should identify and supplement with the sufficient level of detailed information to competently allow comparison of all of the alternative sites at least, and may really need to be the same for the 8 candidate sites from which the 5 alternative sites were chosen. There appears to be some updated info in PEF's AA (such as new wetland numbers), but there are no maps or/and table of wetlands, floodplains, and species/habitats.

22. **Note**: It appears that the need for reservoirs played in the elimination of certain sites, and if so, need wetland, floodplain, ESA, etc. impacts related to potential reservoirs in order to compare sites.

23. From page 9-61 of the ER:

"According to NUREG-0099, Regulatory Guide 4.2, Revision 2, "the applicant is not expected to **conduct detailed environmental studies at alternative sites; only preliminary reconnaissance-type investigations need be conducted**." Therefore, existing information and PEF's "New Nuclear Baseload Generation Addition, Evaluation of Florida Sites" (Reference 9.3-001) was used to conduct the evaluation."

Note: The Corps is not requesting detailed environmental studies, such as onsite species surveys, wetland delineations, etc. – but Corps has expectation that information that is readily available through maps, and other sources, such as NWI, FLUCS, aerial photography, ESA info occurrences available from FNAI, that is more site specific and accurate than what appears to have been used (see #29 below).

24. **Note**: In the alternative sites reviews in the ER, Sections 9.3.3.1.10 and 9.3.3.5.10, why are Crystal River and Levy graded so differently on Transmission corridors? Crystal River is rated "Moderate", while Levy is rated "Small". However, the background info seems they should both be rated the same. Both are located the same distances from the same three load destinations. Cost is shown for Crystal River in 9.3.3.1.10 as $560-725 mil, and rated 3 on page 222 of EFS; but Levy is rated 5 for same load distances and rated 5. Can't find costs estimates for Levy at the references given, but found on page 74 of EFS, that Levy along with Crystal River and Dixie would cost b/w $560 & 725 mil. Reliability not a factor listed in "Transmission Evaluation" on page 74 of EFS.

25. **Note**: Crystal River was identified as a "problem" in that PEF does not want to co-locate new generating capacity for reliability reasons – seems this could be a reasonable criterion, does that make it "impracticable"? Need more elaboration/justification?

26. Page 75 of EFS states (sections of Corps interest are bolded):

"**On-site reconnaissance** of the greenfield alternative sites (Dixie, Highlands, Levy, Putnam) was conducted to determine whether there were any ecological resources or conditions that would present significant impacts or that would indicate significant differences in the ecological suitability between the alternative sites. Going

beyond the aerial reconnaissance conducted in support of the evaluation of candidate sites (Section 6.0**), these surveys were conducted via vehicle drive-over and examination on foot**. "

"All of the sites examined have been previously disturbed via farming or mining activity and/or are in the process of being logged. **All sites appeared to contain some wetland areas (<u>less than 5% of total site area),</u>** although very little standing water was actually observed during the site visits. The wetland areas were mostly characterized by depressed areas which tend to be wet (usually due to surface aquifer inflow) except during drought conditions and typically exhibit vegetation that is characteristic of wetlands. Except for {redacted} all of the greenfield sites exhibit land cover typical of open forested pineland. {redacted } Crystal River is characterized by industrial development with both nuclear and fossil power plants and associated support facilities present, although areas that would be newly disturbed in adding to new units at Crystal River are ecologically similar to the greenfield sites."

Note: Problem with credibility of the onsite drive/walk-thrus, if it was not recognized that much more than 5% of the Levy site is comprised of wetlands**.**

"**All sites are located near special ecologically protected areas (1-5 miles) and all lie in the range of threatened or endangered species which could occur onsite (e.g., eastern indigo snake), although none were observed during the site visits**."

Note: This analysis appears still based on species occurrence on county lists – no evidence of more detail, which is needed at this level of alternative site comparisons.

27. Review of the AA (Part 2):

Note: Sites which are referenced to as the "alternative sites" in the ER and EFS are referred to as the "candidate sites" in the AA, which are the group of sites from which the "alternative sites" were selected in ER and EFS, and as referenced in this document, as well. This is confusing – references should be consistent through the applicant's supporting documents.

a. From page 22: "Each of these five sites was previously disturbed via farming, mining activity, and/or silvicultural activities. Based upon National Wetlands Inventory maps, all sites contain wetland areas, although at the time of the survey, very little standing water was present at any of the sites."

Note: Where are these maps with alternate sites overlaid with NWI maps for this analysis referenced in the AA?

"The observed wetland and potential wetland areas were characterized by depressed areas, which tend to be wet due to surface water runoff and aquifer surface discharge, except during drought conditions, and typically exhibit vegetation characteristic of wetlands."

Note: In the ER and EFS statements that all of the alternative sites had less than 5% wetlands, and here states onsite observations were made – credibility problem for all sites, when Levy is much more than 5% wetland.

b. **Note**: Page 27 of the AA: For Highlands, states 30 listed species in the vicinity of the site – should this really state on the county list, as stated for T&E species for the other alternate sites? Need actual data for site – from FNAI (see #29 below)?

c. **Note**: Tables 7 on page 34 and 8 on page 35. No maps showing the boundary of the sites with overlay of wetlands. Size of the sites reviewed for these tables is not provided – so how can discuss "proportion of site is wetlands" , when no basis to compare? There are no maps that show the alternate sites, with plant facility overlay with wetlands to support the onsite acreages. This information is very different than that provided in the ER and EFS. These kinds of inconsistencies are very problematic.

d. **Note**: Page 37 potential for large reservoir mentioned for Highlands site – reservoirs referenced as probable for Highlands, Putnam, and Dixie in ER and ESF – but not in the AA .

e. Page 43, statement "These conclusions were also confirmed by the FPSC's Final Order, dated August 12, 2008, determining the need for the LNP, as the most cost-effective option to meet that need (FPSC, 2008a)."

Note: Is this to defend the LNP site in terms of alternative sites, or in terms of alternative method of electrical power generation?

f. Page 45, Section 3.3.4, Evaluation of Dredged or Fill Materials:
"Dredged or fill materials associated with this project will not be hazardous and will not adversely impact special aquatic sites. All site work will employ rigorous best management practices (BMPs). Samples have been collected from the CFBC in the project vicinity and subjected to Toxicity Characteristic Leaching Procedure (TCLP) analysis. Results from each of the three sediment samples were "undetected" for all analytes tested are considered nonhazardous (CH2M HILL, 2009d)."

Note: Deposition of fill material into 100's of acres of wetlands (a special aquatic site) is an adverse impact. My understanding is that at this time the source of fill material has not yet been identified for any of the components of the project – wouldn't a more accurate statement be, assuming this to be true, that fill material used for this project will be clean, free of hazardous contaminants, and obtained from appropriately permitted sources? Is material to be dredged from the CFBC to be used as fill material?

g. Page 45, Section 3.4 - Actions to Minimize and Mitigate Adverse Impacts of LNP:

Note: This section is beyond the scope of the immediate alternatives analysis. The Corps will be further reviewing onsite minimization of impacts to the aquatic environment, especially wetlands, on the site found to be the LEDPA. Assuming Levy 2 is the LEDPA, additional review of the proposed site configuration of the plant site and its accessory components, such as access roads, haul road, etc., will be reviewed for minimization in more detail and after the onsite wetlands are completely delineated and those delineations have been approved by the Corps. Minimization of the wetland

impacts associated with transmission lines will also be subject to further Crops review. The mitigation plan will also be reviewed by the Corps in more detail in the future.

h. Page 50, Table 9 – Summary of Results of Environmental Criteria Evaluation for the Final Candidate Sites.

Note: Problems similar as stated elsewhere – no maps showing the sites' boundaries and wetlands, floodplains. Inadequate species info.

i. Page 52, Table 10 – Site Selection Matrix.

Note: It would likely be helpful to expand this table as the summary showing the specific parameters (as bullets?) for each "selection criteria" and how they were rated (maybe small, moderate, large with amount of impact (e.g., acres of wetlands) or yes/no, as suitable for the specific parameter,) to come up with the yes/no determinations. Need a list of clear rating parameters for each selection criterion. The same parameters must be used and rated for each of the alternative sites. Example: Quality of wetlands as a parameter within aquatic environment criterion, as was stated as a justification for Levy, then needs to be an assessment of the quality of wetlands that could be impacted for all of the alternative sites. The criterion "Less impact on the aquatic environment" doesn't make sense. All the sites are to be rated against common standards. The "No action" alternative should be included. This analysis must clearly separate practicability out from environmental factors.

j. **Note**: Problematic that all of the sites, except the Levy site, are determined not to be practicable in Table 10. Need laid out in Table 10, as stated in i. above, the parameters evaluated for this selection criterion.

28. **Note**: Should the 20 potential sites have been mapped and subject to a quantified analysis of at least NWI maps for wetland comparisons, FEMA 100-year floodplain maps, and T&E species/important species/habitats mapped occurrences FNAI (see below).

This level for the 8 candidate sites, if not the 20 potential sites, for T&E/imp species/habitats: Detailed reports in regard to T&E/important species are available from FNAI. These reports are called **Standard Data Reports** and are site-specific. Includes an 8.5" by 11" color map of site and surrounding area, and lists of detailed natural resource information. Features shown include rare plant and animal species, high-quality natural communities, conservation lands, land acquisition projects, potential habitat for rare species, and Potential Natural Areas.

29. **Note**: What is the type/quality of proposed wetland impacts on the preferred site and alternative sites?

30. **Note**: The Corps overall project purpose will likely be revised to more clearly state the applicant's reasonable desire for reliable electrical power generation available to the public.

As published in Mach 16, 2009 public notice:

```
Overall:  To meet the public's need for increased
          electrical baseload generating capacity in the
          Central Florida area.
```

Proposed revision:

```
Overall:  To meet the public's need for reliable
          increased electrical baseload generating
          capacity in the Central Florida area.
```

31. **Note**: According to the Corps' *Standard Operating Procedures for the U.S. Army Corps of Engineers Regulatory Program (July 2009)*: "Under the 404(b)(1) Guidelines, the only alternatives that need to be considered are practicable alternatives." To be practicable, an alternative must be capable of being done in light of the overall project purpose. It is unclear what the suite of "practicable" alternatives are that should have undergone the final round of review, i.e. the "alternative sites" are by definition all practicable – according to Table 9.3-19 (copy attached below with areas of concern highlighted), which shows that all 5 alternative sites are "good" candidate sites. But then Table 10 in the AA (copy attached below) shows only the Levy site as being practicable. But no parameters as to what is not practicable. Should not <u>all</u> of the sites subject to at least the review of alternative sites be "practicable?"

32. Good discussion on page 33 of AA " Sanctuaries, Refuges, and ES Habitat " regarding Florida Ecological Greenways and Critical Linkages and Strategic Habitat and Conservation Areas – could be a listed parameter for "Other significant environmental impacts" in Table 10.

33. Need sufficient info regarding relative costs for different alternate sites, if costs are a criterion for practicability.

34. **Note**: Difficulty of redacted ESF. Makes review extremely difficult. A lot of the information seems unnecessarily redacted. Instances of material redacted, but reproduced in the ER or the AA. Examples: Redacted paragraph regarding geotec at top of page 75 is reprinted in its entirety in the ER on page 9-56. Redacted information regarding Highlands on pages 75 & 80 of the ESF is essentially restated in the unredacted ESF Table 7-1. 2nd full paragraph on page 22 of the LEDPA analysis is redacted information in the ESF. Why is information associated with the two publicly known alternative sites, Crystal River and Levy 2, redacted?

Levy Nuclear Plant Units 1 and 2
COL Application
Part 3, Environmental Report

Table 9.3-19
Summary Comparison of Alternative Sites

Location	LNP Site	Crystal River Site	Dixie Site	Highlands Site	Putnam Site
Land Use	SMALL	SMALL	SMALL	SMALL	SMALL
Air Quality	SMALL	SMALL	SMALL	SMALL	SMALL
Water	SMALL	SMALL	MODERATE to LARGE	MODERATE to LARGE	MODERATE to LARGE
Terrestrial Ecology	SMALL to MODERATE	SMALL	MODERATE to LARGE	MODERATE to LARGE	MODERATE to LARGE
Aquatic Ecology	SMALL	SMALL	SMALL	SMALL	SMALL
Socioeconomics	SMALL	SMALL	SMALL	SMALL	SMALL
Historic, Cultural, and Archeological Resources	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SMALL	SMALL	SMALL	SMALL	SMALL
Transmission Corridors	SMALL	MODERATE	MODERATE	LARGE	LARGE
Transportation	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Is this Site a Candidate Site?	Yes	Yes	Yes	Yes	Yes
Is this Candidate Site a Good Alternative Site to the Proposed Site?	Yes	Yes	Yes	Yes	Yes
Is the Site Environmentally Preferable?	Preferred alternative	No	No	No	No
Is the Site Obviously Superior?	Preferred alternative	Not Evaluated	Not Evaluated	Not Evaluated	Not Evaluated

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TABLE 10
Site Selection Matrix

Criteria	Dixie	Highlands	Crystal River	Putnam	Levy
Practicable, considering cost, logistics, and technology	No	No	No	No	Yes
Available to the applicant	No	Yes	Yes	Yes	Yes
Less impact on the aquatic environment	No	No	No	No	N/A
Other significant environmental impacts	Yes	Yes	Yes	Yes	No
Meets the applicant's overall purpose	Yes	Yes	No	Yes	Yes