

# MEMORANDUM



**TO:** Natural Resources Defense Council  
**FROM:** Rebecca Barkdoll, Ecologist  
**SUBJECT:** Comments on Turrell, Hall and Associates, Inc.'s 2020 Reclamation Monitoring Report – October 20th, 2020  
Burnett Oil Company's Nobles Grade 3-D Seismic Oil and Gas Exploration in the Big Cypress National Preserve  
**DATE:** December 15, 2020

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Quest Ecology Inc. (Quest) completed a desktop review of the 2020 Reclamation Monitoring Report (dated October 2020) prepared by Turrell, Hall and Associates, Inc (THA). The stated purpose of the THA report is to document Year One and Time-Zero reclamation conditions along approximately 101 miles of 'pathways' (seismic lines) created by Burnett Oil Company Inc.'s (BOCI) Nobles Grade 3-D Seismic Oil and Gas Exploration within Big Cypress National Preserve (BCNP) in 2017 and 2018.

Quest previously completed a desktop review of the 2019 Reclamation Monitoring Report prepared by THA and summarized preliminary comments in a memo to Natural Resources Defense Council (NRDC) dated 01/03/20 (January 2020 Memo). During a March 2020 site visit, Quest conducted topographic and vegetation monitoring at two (2) of the monitoring stations documented in THA's 2019 Monitoring Report and traversed approximately 4.5 miles of the assessment area. The results of this site visit are documented in a memo dated 03/15/20 (March 2020 Memo). Both the January 2020 Memo and the March 2020 Memo were revisited as part of the current review, to evaluate whether Quest's comments have been sufficiently addressed.

Major concerns regarding Section 2.1 (Monitoring Station Selection) raised in both of Quest's previous memos were not resolved in the 2020 Reclamation Monitoring Report. The number of monitoring stations is not proportional to the length of impacts within each reclamation area, and THA does not describe how the number of stations per area was determined. THA states that the location for each monitoring station location was randomly selected but does not define a method for doing so. Additional problems with monitoring methods, including the size of monitoring quadrats (quads) and frequency of data collection, are included in Section 2.1 below. In 2020, one (1) additional center quadrat was added to each of 24 randomly selected monitoring sites, but again the method for random selection is not disclosed. See Section 2.5 (Vegetation Sampling) for further issues regarding the 24 additional quads. Section 2.5 also questions how data from each disturbed quadrat can be compared to data from two (2) corresponding undisturbed quads.

In its previous memos, Quest raised critical issues with Section 2.8 (Reclamation Goals) of THA's 2019 Monitoring Report, but the content of this section is unchanged in the 2020 Reclamation Monitoring Report. THA has again failed to explain the source(s) of success criteria, or reclamation goals, named in the section. The report does not adequately describe how the criteria are evaluated and gives no indication of methods used to analyze data and draw conclusions. Finally, the report does not define any procedure for using these criteria to determine locations and quantities of restoration and/or mitigation needed for the reclamation areas to meet defined success criteria. Section 2.5 (Vegetation Sampling) includes several unanswered questions from previous Quest memos, including which references are used

to name taxa or which system is used to assign wetland indicator status, how cypress tree density and size data will be used, and where the 50% vegetation coverage threshold originated. Failure to detail the methods by which data is analyzed and conclusions are reached calls the conclusions into doubt, as there is no way to know what they are based upon and whether they are biased in favor of the desired outcome(s).

Our preliminary comments are summarized below according to corresponding sections of THA's 2020 Reclamation Monitoring Report and may be supplemented at a later date.

## **1.0 INTRODUCTION**

THA states that three zones (12b, 15, and 20) were restored in 2020. THA established 16 new monitoring stations within these zones and collected Time-Zero data. As noted in Section 2.1(a) below, these new monitoring stations do not address Quest's observation that the number of monitoring zones established in each of the 21 original reclamation zones is not proportional to the length of impacts within each zone. Quest's recommendation that one monitoring station be established for every 0.5 mile of impact was not addressed.

The vegetation sampling methods stated in THA's 2019 Monitoring Report described placement of a 1m<sup>2</sup> sampling quadrat at the northwest corner, center point, and southwest corner of each monitoring station. Quest noted in its January 2020 Memo that this method places the center quadrat at the center of the pathway, between soil ruts created by vibroseis vehicle tires, and does not adequately sample the conditions within the ruts. In response to Quest feedback regarding the bias in THA's center quadrat placement, THA placed an additional center quadrat in 24 randomly selected (preexisting) monitoring stations. THA's results are discussed in an addendum to the 2020 Reclamation Monitoring Report entitled *2020 Reclamation Monitoring Report Supplemental Information* (October 2020). As discussed in Section 2.5 below, the method THA used to randomly select the stations was not provided. THA must define the method used and explain why it is suitable for selecting random monitoring stations in this case.

THA states that the monitoring scheduled for December 2019 was delayed until March 2020 due to elevated water levels and was then interrupted by a shutdown related to the COVID-19 pandemic. As discussed in Section 2.1(c) below, it is not clear how the inconsistency in timing will be accounted for when evaluating the data. Monitoring events should take place at the same time each year to ensure consistent data collection and allow for comparison with previous events.

Quest recommends that THA include a section in the Introduction section which lists the permit criteria used to evaluate the success of the reclamation activities. The success criteria should be explicitly listed, and the permit(s) from which they are derived should be cited, in order to provide a clear picture of the criteria being evaluated in the monitoring report and the methodologies used to evaluate these criteria.

Although reclamation goals are described in Section 2.8, including them earlier in the report would help the reader understand the purpose of monitoring station selection, sampling methods, and contour measuring, which are described in Sections 2.1 – 2.6.

Due to the large number of monitoring stations, Quest recommends adding an Executive Summary section including tables such as the one below to display the pertinent results, including percent cover of wetland non-nuisance and non-exotic vegetation, percent cover of nuisance and exotic vegetation, and elevation difference, for each monitoring station in each year.

% Desirable Cover									
		2019		2020		2021		2022	
Station ID	EVENT 1	EVENT 2	EVENT 1	EVENT 2	EVENT 1	EVENT 2	EVENT 1	EVENT 2	

This will allow the reader to compare results at a glance and easily assess improvement or deterioration of site conditions over time.

**2.0 SAMPLING METHODOLOGY**

**2.1 Monitoring Station Selection**

Quest made the following comments (a, b, c) on Section 2.1 of THA’s 2019 Monitoring Report in Quest’s January 2020 Memo and reiterated them in Quest’s March 2020 Memo. However, none of these comments were sufficiently addressed in THA’s 2020 Reclamation Monitoring Report.

a. The number of monitoring stations within each designated reclamation area is not proportional to the length of impacts reported for each reclamation area (See table on “Monitoring Station Tracking” Exhibit of THA report). If completion of reclamation, achievement of success criteria, potential release of Burnett Oil Company from further monitoring and/or mitigation requirements are to be assessed on an area-by-area basis, the number of monitoring stations should be proportional to the length of impacted pathways in each reclamation area. The 16 new monitoring stations added during the 2020 monitoring season were established in three areas THA stated were more recently reclaimed (Zones 12b, 15, and 20).

b. The number and size of vegetation monitoring quadrats is insufficient to yield statistically significant results. THA collected disturbed vegetation data from a single 1 m<sup>2</sup> (~10.8 ft<sup>2</sup>) quadrat, which is used to purportedly represent approximately 1 mile of disturbed pathway (63,360 ft<sup>2</sup>, based on a minimum pathway width of 12 feet). Therefore, each of THA’s central/disturbed quadrats represents a maximum of ~0.02% of the associated impact area. In a 3/28/19 letter to the National Park Service, Acting Superintendent Laura Perdices, Big Cypress National Preserve, NRDC relayed Quest’s recommendations that one monitoring station consisting of one impacted plot and one adjacent, undisturbed plot should be established for every 0.5 mile of impact, and that the disturbed vegetation monitoring plots should include the full width of the disturbed pathway. Based on this recommended design, each impact plot would have captured approximately 5.5% of the associated impact area, which would yield a statistically significant comparison between impacted and adjacent plots. As discussed below in Section 2.5 (a), including the full width of the disturbed pathway in the disturbed plot would prevent bias in center quadrat placement.

c. This section states that monitoring stations will be surveyed twice per year (once at the beginning of the dry season and once at the end of the dry season) for a period of at least three years. Presumably, twice per year monitoring is intended to capture seasonal variations in hydrology and the appearance of ephemeral vegetation taxa. However, THA’s Time-Zero monitoring data was collected during a single monitoring event, near the end of the dry season, when vegetative cover is presumably at or near the annual minimum. It is not clear how data to be collected twice per year during subsequent monitoring events will be combined and compared to this Time-Zero data collected during a single monitoring event. Also, it is not explicitly stated what criteria will be used to determine whether three years of monitoring will be sufficient, or if that decision will be based on individual reclamation areas or monitoring stations, or Burnett Oil Company’s seismic survey area in its entirety.

As described in the Introduction of THA's October 2020 Reclamation Monitoring Report, THA stated that the data collection scheduled for December 2019 was delayed until March 2020 due to elevated water levels. The monitoring methodology has been revised to state that monitoring events are "subject to favorable weather conditions conducive to access and data collection" but it is not clear how the inconsistency in timing will be accounted for when evaluating the data. Monitoring events should take place at the same time each year to ensure consistent data collection and allow for comparison with previous events. If it is not possible to schedule monitoring events for times of low water levels, alternate means of access should be utilized.

### **2.3 Sampling Locations**

As noted in Quest's previous memos, this section does not state whether monitoring station locations were recorded with GPS. GPS location and reporting of the latitude and longitude coordinates for each monitoring station should be a fundamental component of this report and all subsequent monitoring reports.

### **2.5 Vegetation Sampling**

a. Quest's concern regarding bias associated with placement of the disturbed vegetation quadrat within the center of the pathway, between the soil ruts created by vibroseis vehicle tires, was addressed by THA in an addendum entitled *2020 Reclamation Monitoring Report Supplemental Information*. The addendum describes the addition of one (1) new disturbed vegetation quadrat to 24 "randomly selected monitoring stations" but does not indicate the method used to randomly select the stations. THA must define the method used and explain why it is suitable for selecting random stations in this case.

THA compared vegetative cover in the original center quadrat with vegetative cover in the additional quadrat and calculated the percent difference between the two. Out of 24 additional quads, 13 showed a difference in absolute vegetative cover of less than 10%, 6 showed 10% more absolute vegetative cover, and 5 showed 10% less absolute vegetative cover. Percent cover and wetland indicator status of each species is included within the results from each station, but only absolute vegetative cover is summarized across stations. A diagram of each station depicts the placement of both quads in relation to the pathway but there is no summary of the quads placed within soil ruts created by the vibroseis vehicle tires and quads placed between these ruts. Likewise, data recorded within ruts is not compared to data recorded between ruts, but THA considers that to be a neutral factor. Since more than half of the additional quads had less than 10% difference of vegetative cover when compared with the original quads, THA concluded that there is no bias in placement of the quadrat between tire ruts. THA asserts that during reclamation, the entire pathway was raked and regraded, so no part of the pathway is undisturbed.

However, the damage (rutting, compaction, and mortality of vegetation) caused by vibroseis vehicle tires during the seismic surveys is more severe than disturbance from raking and regrading. The comparison of vegetative percent cover in 24 sets of adjacent quads does not adequately capture potential differences in impacts, nor does it explicitly compare data collected within tire ruts to data collected between ruts.

Therefore, Quest continues to recommend (as relayed in NRDC's 3/28/19 letter to the National Park Service) that the boundaries and size of all impact plots contain the full width of the impacted pathway, (including ruts, the central ridge between the tire tracks created by the vibroseis vehicles, and any ridges or disturbed soils on the outside of each rut caused by soil displacement or reclamation activities). Including the full width of the impacted pathways would account for the full range of disturbance and eliminate the possibility of bias. THA did not implement this recommendation in its 2020 monitoring event.

As discussed above in Section 2.1(b), sampling the full width of the impacted pathways, and increasing the number of monitoring stations to one per 0.5 mile is necessary to yield a statistically significant comparison between impacted and adjacent plots. THA's continued use of one 1m<sup>2</sup> plot per 1.0 mile is neither explained nor scientifically supported in its October 2020 Reclamation Monitoring Report.

The remaining Quest comments (b, c, d, e) on Section 2.5 of THA's 2019 Monitoring Report were not addressed in THA's October 2020 Reclamation Monitoring Report.

b. At each monitoring station, disturbed vegetative cover was assessed within a single 1 m<sup>2</sup> quadrat, while "adjacent", supposedly undisturbed vegetative cover was assessed at two, 1 m<sup>2</sup> quadrats. The THA report does not explain how data from a single disturbed quadrat will be compared to two undisturbed quadrats. In NRDC's 3/28/19 letter to the National Park Service, a simple paired plot design – one impact plot and one un-impacted plot – was recommended for each monitoring station. The establishment of two "adjacent" quadrats at each monitoring station by THA, suggests that the data from the impacted quadrat could be compared to either of the un-impacted quadrats. Disturbed and undisturbed plots should be equally represented at each monitoring station.

c. The vegetation sampling methods do not provide references for nomenclature used to identify taxa or discuss which system of wetland indicator status (federal vs. state) will be used to calculate percent cover of Facultative Wet (FACW) or Obligate (OBL) vegetation. Based on the results presented (discussed in Section 3.2 below), a combination of taxonomic and wetland indicator sources was apparently used. These details and discrepancies should be resolved in this and future monitoring reports.

d. One paragraph in this section describes how data regarding cypress tree density and size was collected at each monitoring station, yet there is no discussion of how this data will be used or analyzed to assess restoration progress. Quest agrees that cypress density and basal area are extremely important variables to document and track to determine restoration success, but, at present, there are no explicit restoration goals or criteria established for cypress.

e. One paragraph in this section states that "center plot sampling will be compared each year to those undisturbed plots to determine if impacted vegetation has regenerated to at least 50% of what exists naturally within the monitoring station." The origin of this 50% vegetation coverage threshold or how it will be calculated is unknown, but half of 'what exists naturally' is not consistent with the overall reclamation goal stated in the first paragraph of the THA report, Section 2.8 of the THA report, or Specific Condition 21 of Burnett Oil Company's Oil & Gas Geophysical Permit issued by the Florida Department of Environmental Protection (FDEP), which reads as follows: "The goal of long-term maintenance and monitoring of site reclamation areas is to return survey areas to conditions consistent with presurvey conditions..."

## **2.6 Contour Measuring**

Quest stated in previous memos that the method described in THA's 2019 Monitoring Report for comparing undisturbed elevation contours to reclaimed contours was biased and inconsistent with Burnett Oil Company's FDEP Environmental Resource Permit (ERP) and Oil and Gas Geophysical Permit and noted that elevation differences between disturbed and undisturbed ground elevations were being calculated based on a comparison of the lowest elevation of adjacent undisturbed areas with the lowest elevation in the source trail.

As described in its March 2020 Memo, Quest collected topographic data at two (2) of THA's monitoring stations during a March 2020 site visit. Quest modified the THA data collection method by using wooden

stakes to anchor the string on each end, which provided greater stability than using trees or shrubs as THA did. The distance to the ground was measured in inches and then converted to centimeters.

THA, in its 2020 Reclamation Monitoring Report, calculated elevation differences between disturbed and undisturbed ground elevations based on a comparison of average elevation of adjacent undisturbed areas with the average elevation in the source trail. Quest compared the average of adjacent (undisturbed) elevations to the lowest elevation of the source trail, not the average, in order to accurately represent topographic impacts. As noted in Quest's March 2020 Memo, this method of analysis is consistent with Specific Condition 12 of BOCI's Environmental Resource Permit (FDEP #11-0323836-002).

Quest's previously stated concerns regarding success criteria for topographic contours were not addressed in THA's October 2020 Reclamation Monitoring Report. THA states that "[i]f restored pathway elevations fall below 7.62 centimeters (3 inches) of the lowest adjacent undisturbed elevation, then the reclamation in that location may be deemed unsuccessful." (See Section 2.6 of the THA October 2020 Reclamation Monitoring Report). This requirement presumably comes from Specific Condition 12 of the ERP, which states "*rutting shall be defined as indentations in the soil that are visibly identifiable or greater than 3 inches deep as measured from the average elevation of the adjacent un-impacted wetlands*" (hereinafter, "3-inch contour condition"). However, the Oil and Gas Geophysical permit makes no reference to a 3-inch contour condition, but, rather, per Specific Conditions 13a and 13b, "*original contour conditions*" to "*match the topographic elevations in adjacent undisturbed wetlands*" are to be restored. It is clear that considerable liberties with interpretation of FDEP permit language have been taken in THA's report.

As noted in Quest's January 2020 Memo and again in the March 2020 Memo, it is unclear where THA drew the dividing lines between 'cut pathways' and 'adjacent grades.' According to THA methods, a biologist "noted where along the tape measure edges of pathway began and ended." During the March 2020 site visit, Quest defined this boundary as "the outer limits of disturbed soils associated with the seismic lines, whether disturbed by soil displacement from vibroseis vehicles driving through the wetlands to conduct the seismic testing for oil, resulting in soil rutting and/or by the reclamation attempts to return displaced soils to the ruts." In its March 2020 Memo, Quest noted that the boundary is visually evidenced by "abrupt changes in topography, soil structure, and/or vegetation composition and abundance." THA must disclose the methodology it utilized to determine the dividing line between cut pathways and adjacent grades.

## **2.8 Reclamation Goals**

THA included acres of impact to each habitat type in Table 2 (see page 6 of the October 2020 Reclamation Monitoring Report). Calculations were based on an average 15-foot-wide source trail, which Quest believes are conservative based on our observations. These calculations did not include seismic survey lines where cypress trees were cut but not traversed by vibroseis trucks. Most of the impacts included in Table 2 (176.38 acres out of 185.69 total) were to habitats with a cypress component. True restoration of these habitats will require cypress recruitment, of which there has been little to none, and development to maturity, which takes years. Mature cypress trees provide structure utilized by wildlife species native to these habitats, and the habitat cannot be restored without this component.

Quest made the following comments (a, b, c) on Section 2.8 of its 2019 Monitoring Report in the January 2020 Memo and reiterated them in its March 2020 Memo. None of these comments were sufficiently addressed in THA's 2020 Reclamation Monitoring Report.

a. This section states that "*Permitted reclamation goals require the area achieves at least 80% of the total coverage of Obligate and Facultative Wetland non-nuisance and non-exotic vegetation based on presurvey*

*conditions.*” Questions regarding the methods THA used to quantify this stated goal have already been mentioned above, including: (1) which ‘adjacent’ quadrat will be used for comparison?; (2) how will bi-annual monitoring data be combined for comparison to a one-time, Time-Zero monitoring event?; (3) will all stations within a reclamation zone be required to meet this criterion before release or mitigation assessment?; and (4) what source(s) will be used to determine wetland indicator status and/or resolve related taxonomic inconsistencies?

Additional concerns about the inadequacy of the reclamation goal to ensure that all seismic survey areas are returned to *“conditions consistent with presurvey conditions”* were raised in NRDC’s 3/28/19 letter to the National Park Service, which included a discussion on the importance of similarity in groundcover composition and species richness between impacted and un-impacted areas as important measures of success of the reclamation, in addition to overall vegetation abundance and cypress density and size. Fundamental plant community attributes between impacted and adjacent sites are not being addressed by the current low standard of 80% native wetland vegetation cover and other purported reclamation goals.

b. It is not clear in the following statement which Burnett Oil Company permits are being referenced: *“Permitted reclamation goals require the area achieves at least 80% of the total coverage of Obligate and Facultative Wetland non-nuisance and non-exotic vegetation based on presurvey conditions.”* If FDEP permits are the intended reference, it is important to note that the Burnett Oil Company’s ERP does not include any specific “reclamation goals” or success criteria because it was issued based on the assurance that no damages beyond a temporary “layover of vegetation” were expected (See Specific Condition 6). Unexpected impacts, such as soil ruts and vehicle tracks which are *“visibly identifiable or greater than 3 inches, shall be restored to original contours.”* Specific Condition 21 of the Oil and Gas Geophysical permit does contain some language regarding long-term maintenance goals for percent cover of desirable wetland vegetation and nuisance/exotics, but no 3-inch contour condition is mentioned, as it is in the ERP. On the contrary, Specific Condition 13 of the Oil and Gas Geophysical permit requires restoration of *“areas with ruts, depressions, and vehicle tracks...to original contour conditions.”*

c. This section also states that *“Exotic/nuisance plant species may not exceed 5% total coverage of the restored pathways for a period of 2 consecutive years in accordance with provisions of the POP.”* This section should clearly identify what source(s) will be used to assess the nativity of plant taxa and which species are to be considered nuisance species. The methods section of the report should also specify how the 5% threshold will be calculated and applied. Most importantly, this 5% threshold is an extremely low standard to set for an area that currently has very limited populations of nuisance/exotics, as verified by this Time-Zero report and prior Quest reports.

### **3.0 SAMPLING RESULTS**

#### **3.1 Profile Drawings**

Quest suggested that cross-sections in THA’s 2019 Monitoring Report may not have extended far enough on each side of the disturbed pathway to accurately capture adjacent, undisturbed elevation grades. It appears that cross sections included in THA’s October 2020 Reclamation Monitoring Report were extended further on each side in response to this feedback. But there are still profiles in which left-side adjacent grade is dissimilar to the right-side adjacent grade and where one or both adjacent grades are depicted as steeper slopes than typical for undisturbed habitats within Big Cypress National Preserve, where elevation gradients are normally on the order of ~5 to 10 inches per mile (Duever, 1986).

Quest noted that profile drawings included in THA's 2019 Monitoring Report were not representative of the topography that Quest has observed along reclaimed pathways and adjacent undisturbed habitats, or that has been documented by others (Duever, 1986). In Quest's June 2019 Inspection Report, elevation differences of 3 inches or more were documented at 14 of the 19 (74%) sampling stations inspected along ~3.7 miles of reclaimed Seismic Survey Line B. However, according to 2019 THA results, only 4 of the total 102 monitoring stations (i.e., 4%) along 91 miles of survey tracks were not meeting the 3-inch contour condition stated in the ERP. This discrepancy was not addressed in THA's 2020 Reclamation Monitoring Report, and THA's 2020 monitoring results show that only 4 of the total 118 (i.e., less than 4%) monitoring stations were not meeting the contour condition.

### 3.2 Vegetation Results

Four (4) issues(a, d, e, h) identified by Quest in Section 3.2 of THA's 2019 Monitoring Report were corrected in the 2020 Reclamation Monitoring Report. However, the following issues (b, c, f, g,) were not addressed.

b) *Muhlenbergia capillaris* is listed as a dominant species in many of the vegetation data tables, and assigned an indicator status of OBL, which is consistent with FDEP nomenclature and wetland indicator status provided in Rule 62-340.450, Florida Administrative Code. However, the National Wetland Plant List (NWPL) classifies *Muhlenbergia capillaris* as Facultative (FAC). The *Atlas of Florida Plants* recognizes three varieties of *Muhlenbergia capillaris* (var. *capillaris*, var. *filipes*, and var. *trichopodes*, the latter of which is restricted to the Florida Panhandle)) and notes that var. *filipes* is synonymous with *Muhlenbergia sericea*. The predominant *Muhlenbergia* of Big Cypress marl prairies is *M. capillaris* var. *filipes*/*Muhlenbergia sericea*, neither of which are included in Rule 62-340.450, Florida Administrative Code. NWPL classifies *M. sericea* as FACW. Quest recommends that nomenclature and wetland indicator status in the THA report be supported by appropriate references and rationale that are consistently followed for all taxa and subsequent reports.

c) *Schizachyrium rhizomatum* is frequently listed in the THA data tables, and assigned a wetland indicator status of FACW, which is consistent with NWPL. However, no *Schizachyrium* species are included in Rule 62-340.450, Florida Administrative Code, and the FDEP's *Florida Wetlands Delineation Manual* classifies all *Schizachyrium spp.* as Facultative (FAC). The *Atlas of Florida Plants* notes that *S. rhizomatum* appears to be confluent with *S. stoloniferum*; however, this species is not recognized by NWPL. Quest recommends that nomenclature and wetland indicator status in the THA report be supported by appropriate references and rationale that are consistently followed for all taxa and subsequent reports.

f) *Dichantherium ensifolium* occasionally appears in THA data tables, and is assigned an indicator status of OBL, which is consistent with the indicator status assigned to its former name (*Panicum ensifolium*) in the Florida Wetlands Delineation Manual. However, this taxon is not recognized by NWPL, and three varieties (var. *ensifolium*, var. *breve*, and var. *unciphyllum*) are recognized by the Atlas of Florida Plants. Quest recommends that nomenclature and wetland indicator status in the THA report be supported by appropriate references and rationale that are consistently followed for all taxa and subsequent reports.

g) Several vine species are listed in the vegetation tables and assigned the following wetland indicator statuses that are consistent with NWPL: *Cassytha filiformis* (FAC), *Smilax auriculata* (FACU), *Ipomoea sagittata* (FACW), and *Lygodium microphyllum* (FACW). However, none of these species are assigned an indicator status by FDEP or in Rule 62-340.450, Florida Administrative Code, because vines, by rule, are ignored for the purposes of wetland delineation. Quest recommends that nomenclature and wetland indicator status in the THA report be supported by appropriate references and rationale that are consistently followed for all taxa and subsequent reports.



#### **4.0 CONCLUSIONS**

Quest's concerns regarding the conclusions of THA's 2019 Monitoring Report, as documented in Quest's January 2020 Memo and March 2020 Memo, apply to THA's October 2020 Reclamation Monitoring Report as well.

THA's 2020 Reclamation Monitoring Report concludes that ground contours have been successfully reclaimed, the removal of cypress in the pathways had minimal impact on the canopy coverage as a whole, nuisance/exotic populations are currently minimal, and groundcover vegetation is expected to rebound over time. It is not surprising that THA's 2020 Reclamation Monitoring Report concludes with such optimism given the extremely low bar set by the poorly-defined 'reclamation goals,' the problematic profiles described in Section 2.8, and the siting of the disturbed vegetation quadrats in the least-disturbed portion of the seismic pathways. Quest has advocated for the establishment of more meaningful success criteria and robust monitoring methods in prior reports and letters to the National Park Service and FDEP, which have not been implemented to date, despite the failure of the National Park Service's Minimization and Mitigation Measures outlined in the Finding of No Significant Impact, and FDEP permit conditions, to minimize or mitigate the extensive damage caused by Burnett Oil Company's seismic activities in this national park unit. Based on our observations and findings stated in this memorandum and prior reports, it is reasonable to assume that long-term soil, hydrologic, and vegetation damage will persist as a result of Burnett Oil Company's seismic survey activities and unsuccessful reclamation attempts to date.

#### **EXHIBITS**

The following edits to the Exhibits portion of the report were recommended by Quest previously and were not addressed in the October 2020 Monitoring Report:

- a) A smaller dot should be used to indicate monitoring station locations. At present, each 10 m<sup>2</sup> station is represented by a dot that is ~200 feet in diameter.
- b) Many of the dots used to indicate monitoring station locations are clearly not on the impacted pathway, in spite of the large size of the dots (e.g. in Zone 7, #13948). The location of each monitoring station should be accurately depicted and supported by latitude-longitude coordinates in this and future monitoring reports.
- c) Related to Item (b) above, the 533,926 feet of impacted pathways indicated in the Exhibit tables should be shown as thin colored lines on the 'Monitoring Station Tracking – West' and 'Monitoring Station Tracking – East' exhibit figures and legend for comparison to actual impacts visible on aerials.
- d) Some station locations are not visible on the Exhibits (e.g., 1326 in Zone 16; 4040 in Zone 17), and some station number labels are not visible (1 station in Zone 1) or not clear (SE corner of Zone 11, center of Zone 15). A review of the Exhibits maps is recommended to ensure that all monitoring stations are clearly depicted.

## **References**

Duever, M.J., J.E. Carlson, J.F. Meeder, L.C. Duever, L.H. Gunderson, L.A. Riopelle, T.R. Alexander, R.L. Myers, and D.P. Spangler. 1986b. The Big Cypress National Preserve. Research Report No. 8 of the National Audubon Society. New York, New York. 468 p.

Gilbert, K.M., J.D. Tobe, R.W. Cantrell, M.E. Sweeley, and J.R. Cooper. The Florida Wetlands Delineation Manual. 210 p.

National Wetland Plant List:

[http://wetlandplants.usace.army.mil/nwpl\\_static/v33/species/species.html?DET=001100#](http://wetlandplants.usace.army.mil/nwpl_static/v33/species/species.html?DET=001100#)

Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2018. Atlas of Florida Plants (<http://florida.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, University of South Florida, Tampa.

Quest Ecology, Comments on Turrell, Hall and Associates, Inc.'s *2019 Reclamation Monitoring Report – August 30<sup>th</sup> 2019*, Burnett Oil Company's Nobles Grade 3-D Seismic Oil and Gas Exploration in the Big Cypress National Preserve (January 3, 2020), *available at:*

<https://www.nrdc.org/sites/default/files/quest-ecology-memorandum-2019-reclamation-monitoring-report-01032020.pdf>.

Quest Ecology, Summary of March 6, 2020 Site Assessment within Burnett Oil Company's Nobles Grade 3-D Seismic Oil and Gas Exploration area, Big Cypress National Preserve, Collier County, Florida (March 15, 2020), *available at:* <https://www.nrdc.org/sites/default/files/final-quest-ecology-memorandum-20200306.pdf>.