

**FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT  
ON  
WHITE SPRINGS AGRICULTURAL CHEMICALS, INC.**

**(d/b/a PCS PHOSPHATE—WHITE SPRINGS)**

**HAMILTON COUNTY MINE CONTINUATION PERMITTING**

**HAMILTON COUNTY, FLORIDA**

Need or Opportunity. The White Springs Agricultural Chemicals, Inc. (d/b/a PCS Phosphate – White Springs) (PCS) project area covers 100,580 acres in southeast Hamilton County, Florida (Figure 1). The area is approximately 40 miles south of Valdosta, Georgia and 60 miles west of Jacksonville, Florida. It is located within the Suwannee River Basin that encompasses a total of 9,950 square miles in Florida and Georgia. Most of the river flow passing the Hamilton County Mine (HCM) originates in the Okefenokee Swamp, which results in the waters being very darkly colored and acidic. Land use in the basin is primarily silviculture and agriculture. Population in the upper basin is low.

On February 11, 1980, the Environmental Protection Agency (EPA), Region IV requested that the Jacksonville District, U. S. Army Corps of Engineers (ACOE, Corps or District), assert discretionary authority over all wetlands within the Occidental Chemical Agricultural Products, Inc. (Occidental) [predecessor to PCS Phosphate-White Springs] project area, based on concerns for habitat loss and potential water quality impacts on the Suwannee River. The location of the project area is shown in Figure 1. The District asserted discretionary authority on June 17, 1980. On January 8, 1981, the District Engineer determined that an Environmental Impact Statement (EIS) would be required.

Under Section 404 of the Clean Water Act, the ACOE issued an EIS in February 1986 for Occidental in Hamilton County. The 1985 DEIS considered various alternatives for mining and reclamation/mitigation for the purpose of producing phosphate ore. The final EIS was issued in 1986 and evaluated an additional alternative. The EIS was supported by a Technical Background Document (TBD) that was completed in 1985. Various regulatory decisions were made by the ACOE (and other regulatory authorities) in the years following finalization of the EIS.

Based on the EIS and a 1987 Memorandum of Understanding (MOU) among Occidental, EPA, and the Florida Department of Environmental Regulation (now Department of Environmental Protection (FDEP)), the ACOE issued a long-term permit (#198404652) for mining and mining operations in approximately 7,500 acres of wetlands on October 7, 1987. That permit was scheduled to expire on October 7, 2002. In a letter dated February 27, 2002 Mr. Kevin O’Kane of the ACOE extended the expiration date of that permit to October 7, 2007. Figure 2 shows the areas preserved from mining by the terms of the MOU (over 19,000 acres), cumulative areas permitted in prior actions or disturbed prior to assertion of jurisdiction by the ACOE (approximately 46,000 acres), and the evaluation area for this project (approximately 36,000 acres). The 1987 ACOE permit incorporated the terms of the 1987 MOU by reference. Figure 3 shows the breakdown of areas categorized by the 1987 MOU.

In 1995, Potash Corporation of Saskatchewan acquired the White Springs operations from Occidental. The Hamilton County facility has continued operations as PCS Phosphate-White Springs (PCS) Hamilton County Mine (HCM). In 1997, PCS approached the ACOE about permit needs to continue operations beyond the October 7, 2002 expiration date of the current permit. The ACOE directed PCS to update the 1985 TBD and the 1986 EIS and produce a Supplemental TBD (STBD) and Supplemental EIS (SEIS). Based on the alternative selected in the SEIS, PCS would then apply for a “life of mine” permit to complete operations within the EIS project boundary. The STBD was published on January 24, 2000 and an Addendum to the STBD was published on November 27, 2000.

PCS submitted various applications and documents to the regulatory agencies and interested parties for review in November 2001. Subsequently, PCS has responded to all agency and public comments through two Requests for Additional Information (RAI) submitted in May 2002 and September 2002, a Clay Management Plan and various correspondences. In October 2002 both the Bureau of Mine Reclamation (BOMR) and the US Army Corps of Engineers (ACOE) requested that PCS withdraw Upper Bee Haven Bay, Shaky Pond and Bell Creek from permit consideration. In addition, the ACOE requested reevaluation of jurisdiction within the project boundary, which resulted in an increase in jurisdictional wetland acres. The net result of the withdrawal of the three wetland areas and the increase in the ACOE jurisdiction was a decrease of ACOE jurisdictional wetland acres to be impacted. These changes resulted in a decrease in the mining footprint of approximately 1,000 acres (19,077 acres to 18,166 acres) and a decrease in wetland jurisdiction to be impacted from 1,858 acres to 1,671 acres.

This Final Supplemental Environmental Impact Statement (FSEIS) describes permitting actions and operations to include an additional 1,671 acres of wetland jurisdiction and reclaim 1,731 acres of wetlands as partial mitigation for the impacts within a 18,166 acre footprint as a modification of the existing permit.

Further modifications of mitigation standards for areas within the existing permit are also described.

As per the guidance on supplemental EISs, the DSEIS, and the STBD do not repeat information contained in the original EIS that is still valid. The original 1985 TBD 1985 DEIS and the 2001 DSEIS are available online at [http://www.saj.usace.army.mil/permit/hot\\_topics/hot\\_topics.htm](http://www.saj.usace.army.mil/permit/hot_topics/hot_topics.htm).

Efforts to develop the Plan of Study (POS) for the STBD and for this SEIS began in late 1997. The ACOE directed PCS to prepare a SEIS to update the 1986 EIS. PCS worked with the various local, state and federal agencies, environmental groups and interested parties to develop a draft POS for the STBD, which was to contain the technical information and analyses to support the SEIS. The formal Public Notice requesting comments on the draft POS was published by the ACOE on June 19, 1998. The ACOE published an intent to draft a Draft Supplemental Environmental Impact Statement (SEIS) in the Federal Register at FR/Vol. 63, No. 126/Wednesday, July 1, 1998/Notices. Several meetings with federal, state, and county organizations, environmental groups and the public were held to discuss the POS and obtain public input. On September 25, 1998, PCS published the final POS for the STBD.

The Ecosystem Management Advisory group (EMAg) members and interested public met twenty nine times from January 1998 through September 2001 to discuss issues related to the environmental evaluations and studies for the DSEIS and various permits needed by PCS. Records of these meetings can be found at the following address:

<http://www.dep.state.fl.us/northeast/admweb/pcsprogram/pcsmin.htm>  
and as Appendix B to the Ecosystem Management Agreement (EMA).

Major Findings and Conclusions. These proposed actions are in the national interest and can be constructed while protecting the human environment from unacceptable impacts. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

Wetland reclamation has become an accepted practice to mitigate for wetland mining impacts. Research and experience continue to improve wetland design and establishment practices. PCS has successfully reclaimed approximately 2,600 acres of wetlands at the HCM. Approximately 309 acres have been released by the FDEP Bureau of Mine Reclamation (BOMR) and approximately 2,300 acres have met all of the initial requirements and are in the five year extended establishment period. Given PCS's successful wetland reclamation, the ability to provide high paying jobs, tax payments, other economic benefits, and the lack of any significant adverse environmental impacts, it seems prudent and socially and environmentally correct to issue a mining permit to allow PCS to continue its mining operations. The avoidance and minimization analysis for the EIS project area was accomplished through the 1987 MOU, which formed the basis for the first ACOE mining permit and was supplemented by further work from September through December of 2002. Please refer to section 2.7 of the DSEIS for details of the MOU. Table 1 compares the alternatives examined in the STBD and selected alternative represented by the permit application.

Environmental benefits that would occur if each of the respective regulatory authorities of the applications approve the applications in substantially the same form as presented in the Ecosystem Management Agreement (EMA) are summarized as follows:

- PCS will perform reclamation of wetlands mined after January 1, 2002 at a minimum of acre-for-acre, type-for-type (forested vs. herbaceous) ("conventional standards") within the project boundary, except for those wetlands mined after January 1, 2002 within clay settling area 10V and within the reclamation program area designated as PCS-HC-CB(9), which shall remain subject to the previously approved alternate standards. This commitment includes areas that are currently permitted as alternate standards areas. Modification of the applicable reclamation/mitigation standards is incorporated in the applications.
- PCS will provide conservation easements within the Upper Suwannee River Region (or other form of permanent preservation including fee ownership) on one-third of a wetland acre per wetland acre mined (regardless of whether the mined wetlands are within the regulatory jurisdiction of any of the parties to this Agreement) in the areas covered by the Agreement. Wetland boundaries are fixed on the basis of the delineations represented by the June 30, 2000 ACOE delineation for the evaluation area and by delineations incorporated in previous ACOE permits. Selection of appropriate areas will be guided by the Upper Suwannee Region Land Acquisition and Management Advisory Team Strategic Plan approved by the Secretary of FDEP in April

1999. The conservation easement areas could include, but would not be required for, constructed on-site mitigation areas.

- A two-tier monitoring and release criteria system will be developed and applied. The Tier 1 system will be applicable to the mitigation projects described in the Joint ACOE/FDEP Wetland Resource Application. These mitigation projects relate to ACOE and "DER" (Department of Environmental Regulation) wetland impacts. Monitoring and release criteria are described in the applications. The design of these projects implements the environmental enhancement concept of concentration of wetlands at the downstream limits of mining and reclamation activity in specific drainage basins. The Tier 2 system will be applicable to all other wetland reclamation areas. This tier will follow the standard (non-ERP (Environmental Resource Permit)) FDEP BOMR criteria used for isolated wetlands in the project area as found in Chapter 62C-16, FAC (1993).
- PCS will incorporate the objective of water flow across wetlands prior to discharge into the specific design and implementation of future reclamation projects. Detailed flow patterns will be created to direct upland surface runoff through wetlands to the greatest extent practicable. For land-and-lakes reclamation projects designed to discharge directly to streams, a minimum acreage of 10% of the open water surface area in that lake will be constructed as wetland at the point of discharge.
- PCS will incorporate upland mixed forest buffers adjacent to Tier 1 wetlands into the specific design and implementation of future reclamation projects.
- Assuming wetland boundaries for the project area to be as described in the June 30, 2000 ACOE delineation, PCS will not contest or seek further review of ACOE jurisdiction within the project boundary, including the extent of jurisdiction on areas previously permitted.
- PCS will provide the minimum cumulative contribution to the existing land acquisition fund required by Special Condition 6 of the January 6, 1997 modification to ACOE permit 198404652 by the contribution scheduled for the year 2007, with the amount of the minimum contribution adjusted proportionally to correspond to the wetland acres mitigated through the "post-modification" standards. With modifications and various mapping corrections, the corrected total acreage of wetlands covered by the permit as of November 2, 2001 is 7,439. These are divided between 1,468 acres subject to "pre-modification" (conventional) standards and 5,971 acres subject to "post-modification" (alternative) standards. The conversion of mitigation standards in the application from "post-modification" to "pre-modification" for 2,700 acres leaves 3,271 acres to be mitigated through the

contributions. The wetland acreage in the existing permit footprint would then be 3,271 acres subject to “post-modification” standards and 4,168 subject to “pre-modification” (conventional) standards in chapter 16C-16 FAC, as they existed in 1993 (currently in 62C-16 FAC). Proportional reduction changes the minimum cumulative contribution from \$15,560,000 to \$8,523,993.

In addition to the environmental impacts, there are significant economic and human resource impacts. These economic and human resource impacts discussed below will be reduced due to the withdrawal of three wetland areas. The withdrawal of these areas resulted in a decrease of approximately 1,000 acres of mining reducing the mining footprint from 19,077 acres to 18,166 acres, thus reducing the mine life by approximately 15 – 18 months. These reductions will reduce the economic and human resource impacts proportionally.

The cumulative total impact on the State of Florida is over \$15.1 billion. Of this total, over \$4.4 billion represents personal incomes to Florida residents, over \$1.3 billion is taxes for the state and local governments in Florida, and over \$9.4 billion is sales for businesses located in Florida, after payrolls and taxes. Looked at another way, these 28 years of operation can be expected to generate over 160,000 person-years of employment in the state.

The total economic impact of a projected 28 years of PCS’s operations amounts to over \$5.3 billion in the three-county area including Hamilton, Columbia, and Suwannee Counties. Of this total, over \$2.2 billion represents incomes to the residents of the counties, just under \$390 million is taxes for the state and local governments in the area, and over \$2.7 billion represents sales for the businesses located in the three counties. In terms of employment, these 28 years of operation will generate more than 77,000 person-years of employment in the three counties.

The cumulative total economic impact of continued operation of PCS in Hamilton County for an additional 28 years will be more than \$2.0 billion. Of this total, just under \$837 million will be incomes to individual Hamilton County residents, over \$235 million will be taxes for Hamilton County, and over \$934 million will be sales for Hamilton County businesses, after payrolls and taxes. In terms of employment, these 28 years of operation will generate more than 26,000 person-years of employment in Hamilton County.

Adverse impacts would include the temporary elimination of upland and aquatic communities due to the clearing and mining activities. Some individual upland and aquatic fauna that are less mobile would be eliminated in the clearing and mining process. More mobile individuals would simply migrate into unimpacted areas or recently mined or reclaimed areas. None of these would be of significant magnitude to endanger any faunal populations in the areas. No listed threatened or

endangered species would be adversely impacted by any of the alternatives. The USFWS reviewed the proposed project and concluded in a letter from Mr. Pete Benjamin (dated November 19, 2002) that PCS:

“has sufficiently avoided, minimized, and mitigated for the proposed jurisdictional wetland impacts, and that the sequence of mining and wetland reclamation, Suwannee River tributary diversions and restorations, the proposed conservation easements, and future purchase of environmentally sensitive lands, including wetlands, will adequately offset the proposed wetland impacts.”

The reclamation and mitigation of uplands and wetlands would restore the communities eliminated by the mining activities. There will be a minor net loss in upland area after reclamation due the conversion of upland areas to lakes and wetlands.

Should the proposed activities not be approved there would be a significant adverse impact on the people and the economy of the local area.

The avoidance and minimization analysis required by federal regulation and the "public interest" review for both state and federal interests were completely addressed during the previous EIS and permitting efforts and was supplemented by further work from September through December of 2002. Occidental, the EPA, and the DER, (now FDEP) entered into a Memorandum of Understanding (MOU) in 1987 in order to formalize and document this process. This MOU provided the basis for EPA and DER to concur in the issuance of the requested ACOE Section 404 permit. The MOU represented a review of the entire project area, including the alternatives analysis in the EIS. It incorporated the results of a detailed examination of wetlands within the project boundary by a variety of federal and state agencies and other interested parties. The 1987 MOU directly addressed both the 1987 permitting and all future permitting within the project area. Among its most important terms was the categorization of wetlands within the project boundary. Based upon review of data compiled for the EIS and extensive fieldwork, wetlands were divided into the following categories:

**Preservation:** The highest quality, most sensitive wetlands, and the 100-year floodplain of the Suwannee River were designated for permanent preservation from the company's mining operations. More than 19,000 acres were identified for preservation. Preservation of these areas was to be accomplished by the transfer of the company's mining rights to public ownership or, where the company did not own such rights, a binding agreement not to acquire the right to mine or disturb the areas. The State of Florida designated the Suwannee River Water Management District (SRWMD) as the appropriate entity to receive those transfers and commitments. The transfer of existing mining rights was begun in 1990 with the company's interest in the 100-year floodplain of the Suwannee River. The actual areas transferred and made subject to the binding commitment are shown on Figure

6. The process was completed in 1997. Based upon the terms of the 1987 MOU, the company does not anticipate designation of additional preservation areas.

Conditional: Permitting of these areas, which included most of Swift Creek Swamp and a portion of Lower Bee Haven Bay, was made conditional upon the company's successful demonstration of forested wetland reclamation through a detailed monitoring program over a six-year period on four selected wetland reclamation sites. That demonstration was completed on schedule in 1993, whereupon the ACOE, with agreement from EPA and FDEP (EPA, June 28, 1994; ACOE August 25, 1994 approval letters), acknowledged the demonstration of success and the conditional areas were approved for operations under the terms of its 1987 permit (see below).

Deferral: All parties agreed to defer the permitting decision on these areas until the anticipated second major ACOE permit. Portions of these are included in this application.

Permittable: Terms were specified in the MOU for permitting of all remaining wetlands within the project boundary under standard regulatory programs. Except for the deferral areas noted above, all wetlands proposed for evaluation in the current process, as well as those permitted in the prior process, are covered by these terms.

Alternatives. All of the alternatives were evaluated in comparison to the "affected environment" as defined in 40 CFR 1502.15. It is the condition that would exist in the area in the absence of the currently proposed project. This includes the reclamation that would be completed for areas that have been or will be mined under the no action alternative, Alternative A. Each alternative and the activities included in the application include proposed mitigation to offset the impacts of the mining activities. As the mitigation compensates for the impacts of each alternative, comparisons among the alternatives is difficult. Mining is a temporary impact due to the reclamation and mitigation that goes hand in hand with the mining. It should be noted that the mining and reclamation activities occur over extended time periods. The timing between mining and reclamation is roughly the same regardless of the alternative. Only the mine life and acres impacted differ. Both federal and state laws require mitigation and reclamation of the land that is mined. Given the above, the main differences among the alternatives are the socioeconomic impacts.

All of these wetlands were carefully evaluated and their mitigation carefully designed to prevent any failures or offsite impacts. The details are provided in the joint ACOE and FDEP application. Overall impacts among the alternatives is best differentiated based on total acres impacted as all the wetlands are reclaimed on an acre for acre and type for type basis. Projected years of operation for each

alternative are incremental to existing permitted areas, and may vary substantially with changes in mining rates.

Alternative A; no wetland mining, no permitting actions (projected statistical mine plan basis), assumes that all upland areas 40 acres or greater in areal extent that contain reserves or may contain mineable quantities of phosphate are mined. No wetlands are mined in the Alternative A evaluation area except for the interim permit area as discussed in Section 1 (STBD, 2000). No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. A total of 2,841 acres of mining are projected for Alternative A. This figure represents the projected mining in the evaluation area and is equivalent to approximately 3 years of mine life. The excavation quantities were calculated to be 155,941,021 total cubic yards for the evaluation area at an average yearly rate of 46,685,258 yards per year.

Clays generated by Alternative A can be contained in the clay settling areas (CSA) identified in the Conceptual Reclamation Plan (CRP, 1995). No additional settling areas over those planned for construction inside the previously permitted and disturbed area would be needed.

Alternative B, mining of all reserves including wetlands (projected statistical mine plan basis), assumes that all areas within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. This alternative projects an approximate total of 16,298 acres mined over about 20 years. The excavation quantities would be 969,889,813 total cubic yards for the evaluation area at an average yearly rate of 49,503,803 total cubic yards.

Six additional settling areas (2,870 acres) over and above those identified in the CRP (1995) would be needed to contain the clays generated in this alternative. The additional settling areas would be located adjacent to and are incorporated into the existing CSA system to the greatest extent possible.

Alternative C, mining of all known reserves including wetlands excluding "DER" jurisdictional and deferral wetlands (projected statistical mine plan basis), assumes that all areas, except for the Deferral Areas and FDEP jurisdictional areas, within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. This alternative projects an approximate total of 14,005 acres mined over about 16 years. The excavation quantities were calculated to be 795,029,901 total cubic yards for the evaluation area at an average yearly rate of 49,503,803 total cubic yards.

Sand and clay placement in this alternative is the same as Alternative B except that less clay, tailings, and mudballs are generated due to the reduction in mining acres between the two alternatives.

Alternative D, mining of all known reserves (as of November 2000) including wetlands (prospect and landowner agreement mine plan basis), assumes that all areas within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some preservation areas may be affected on a limited basis by mine support corridors as contemplated in the MOU and discussed in Section 2.1 (Addendum to STBD, 2000). This alternative projects an approximate total of 20,514 acres mined over about 22 years. The excavation quantities were calculated to be 1,202,209,192 total cubic yards for the evaluation area at an average yearly rate of 54,854,137 total cubic yards.

Five additional settling areas (2,893 acres) over and above those identified in the CRP (1995) would be needed to contain the clays generated in this alternative. The additional settling areas would be located adjacent to and would be incorporated into the existing CSA system to the greatest extent possible.

The ACOE application footprint/preferred alternative contains approximately 18,166 acres. Mining or mine support activities will be conducted within these areas. Ditches and/or berms will isolate activities within this footprint from adjacent uplands and wetlands. All water within these areas will be captured and become part of the mine water system. It will only be released from the site through permitted discharge points and after it meets the permit limits to insure no adverse impacts to water of the U.S. or State.

There are 1,671 acres of ACOE jurisdictional wetlands within the footprint. The footprint also includes an additional 3,997 acre of other wetlands. All of the 5,670 acres of wetlands are regulated by the BOMR and Hamilton County. The 1,671 acres of ACOE jurisdiction will be mitigated for by reclaiming 1,731 acres of wetlands. These mitigation acres will be considered "Tier 1" which means that they have detailed design, monitoring and release criteria, many of which go beyond requirements in the applicable regulations (see Joint Application for Works in the Waters of Florida for Wetland Resource Alterations (Dredging and Filling (D/F Application)) for details). Other commitments of PCS described above and in the application provide additional mitigation.

This application footprint/preferred alternative, mining of all known reserves (as of July 2001) including wetlands (prospect and landowner agreement mine plan basis) and excluding the three wetland areas which were withdrawn, assumes that all areas within the application footprint that contain at least 40 contiguous acres of

mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some preservation areas may be affected on a limited basis by mine support corridors as contemplated in the MOU and discussed in Section 2.1 (Addendum to STBD, 2000). This alternative projects an approximate total of 18,166 acres mined.

Five additional settling areas (3,393 acres) over and above those identified in the CRP would be needed to contain the clays generated in this alternative. The additional settling areas would be located adjacent to and would be incorporated into the existing CSA system to the greatest extent possible.

Preferred Alternative(s). The preferred alternative is the application footprint/preferred alternative, which is discussed in the above section.

There are 1,671 acres of ACOE jurisdictional wetlands within the footprint. The footprint also includes an additional 3,997 acres of other wetlands. All of the 5,670 acres of wetlands are regulated by the BOMR and Hamilton County. The 1,671 acres of ACOE jurisdiction will be mitigated for by reclaiming 1,731 acres of wetlands. These mitigation acres will be considered "Tier 1" which means that they have detailed design, monitoring and release criteria, many of which go beyond requirements in the applicable regulations (see Joint Dredge and Fill Application for details).

Issues Raised by the Public and Agencies. The following issues were identified during scoping and by the preparers of the DSEIS to be relevant to the proposed action and appropriate for detailed evaluation:

- Wetland boundaries
- Wetland jurisdiction (revised to conform to the January 9, 2001 US Supreme Court decision, Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (SWANCC)). At the end of 2002 ACOE jurisdiction was reevaluated and finalized in a letter from Ms. Marie Burns (dated December 19, 2002)
- Best type of mitigation (conventional, pre-modification or alternative/offsite, post-modification)
- Location of clay settling areas
- Potential Net Ecosystem Benefits
- Wetland evaluation criteria
- Long-term land use
- Threatened and endangered species
- Socioeconomic impact on county and employees

Areas of Controversy. There are no areas of controversy at this time. The DSEIS and FSEIS were conducted as part of a State of Florida Ecosystem Management

Agreement process that includes extensive interagency and public involvement. All issues were resolved during this process.

Unresolved Issues. There are no unresolved issues at this time. The DSEIS and FSEIS were conducted as part of State of Florida Ecosystem Management Agreement process that includes extensive interagency and public involvement. All issues were resolved during this process.

**FINAL ENVIRONMENTAL IMPACT STATEMENT**

**ON**

**WHITE SPRINGS AGRICULTURAL CHEMICALS, INC.**

**(d/b/a PCS PHOSPHATE – WHITE SPRINGS)**

**HAMILTON COUNTY MINE CONTINUATION PERMITTING**

**HAMILTON COUNTY, FLORIDA**

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## ABBREVIATIONS

ACOE	U. S. Army Corps of Engineers
AICR	Advisory Council on Intergovernmental Relations
AMAT	Upper Suwannee Region Land Acquisition and Management Advisory Team
AMST	Upper Suwannee Region Land Acquisition and Management Team
BMP	Best Management Practices
BOMR	Bureau of mine Reclamation
BRN	Basin Runoff Networking
C	Centigrade
CARL	Conservation and Recreation Lands
CASLA	Combined Alternate Standards/Land Acquisition Reclamation/Mitigation Alternative
CDA	Coordinated Development Areas
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CR	County Road
CRP	Conceptual Reclamation Plan
CSA	Clay Settling Area
CSOS	Conventional Standards/On-Site Reclamation/Mitigation Alternative
DEIS	Draft Environmental Impact Statement
DER	Department of Environmental Regulation
DOQQ	Digital Orthophoto Quarter Quadrangles
DRI	Development of Regional Impact
EIS	Environmental Impact Statement
ELMS	Environmental Land Management Committee
EMA	Ecosystem Management Agreement
EMAg	Ecosystem Management Advisory Group
EMAT	Ecosystem Management Advisory Team
EPA	Environmental Protection Agency
ERC	Effective Radium Concentration
ERP	Environmental Resource Permit
ESP	Environmental Services and Permitting
ET	Evapotranspiration
F	Fahrenheit
FAC	Florida Administrative Code
FDE	Florida Defender of the Environment
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FDH	Florida Department of Health
FDNR	Florida Department of Natural Resources
FDOT	Florida Department of Transportation
FSEIS	Final Supplemental Environmental Impact Statement
FIPR	Florida Institute for Phosphate Research
FLUCCS	Florida Land Use, Cover and Forms Classification System (FDOT, 1985)
FNAI	Florida Natural Areas Inventory
FS	Florida Statutes
FT	Feet
FWCC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
GOAL	Greater Okefenokee Association of Landowners
GPS	Global Positioning System

HCM	Hamilton County Mine
HRS	Florida Department of Health and Rehabilitative Services
HSPF	Hydrologic Simulation Program – Fortran
HY8	Hydraulic Design of Highway Design Culverts
IHN	Integrated Habitat Network
LAMAC	Land Acquisition and Management Advisory Council
LDR	Land Development Regulations
MGD	Million Gallons per Day
MOA	Memorandum of Agreement, refers to 1995 OCC/FDEP MOA
MOU	Memorandum of Agreement, refers to 1987 OCC/EPA/DER MOU
MP	measuring point
MWRAP	Modified Wetlands Rapid Assessment Procedure
NCDC	National Climatic Data Center
NCFRPC	North Central Florida Regional Planning Council
NEB	Net Ecosystem Benefit
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NORM	Naturally occurring radioactive materials
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service, formerly Soil Conservation Service
OCC	Occidental Chemical Company
OFW	Outstanding Florida Water
OWRAP	Open Water Rapid Assessment Procedure
P2000	Preservation 2000
PCS	White Springs Agricultural Chemicals, Inc.(d/b/a PCS Phosphate - White Springs
PDWS	Primary Drinking Water Standards
PL	Public Law
POS	Plan of Study
SA	Settling Area
SCM	Swift Creek Mine
SCS	Soil Conservation Service
SEIS	Supplemental Environmental Impact Statement
SFWMD	South Florida Water Management District
SHW	Seasonal High Water
SOR	Save Our Rivers
SR	State Road
SRM	Suwannee River Mine
SRPP	Strategic Regional Policy Plan
SRWMD	Suwannee River Water Management District
STBD	Supplemental Technical Background Document
SWFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TBD	Technical Background Document
TLD	Thermoluminescent dosimeters
TNC	The Nature Conservancy
UF	University of Florida
UFA	Upper Floridian Aquifer
UPWRAP	Upland Rapid Assessment Procedure
USDA	U. S. Department of Agriculture
USDOT	U. S. Department of Transportation
USFS	U. S. Forest Service

USFWS  
USGS  
WEP  
WRAP

U. S. Fish and Wildlife Service  
U. S. Geologic Survey  
Wetlands Evaluation Procedure (Reppert et al., 1979)  
Wetlands Rapid Assessment Procedure

## DEFINITIONS

Adsorption- the attraction and adhesion of a layer of ions from an aqueous solution to the solid mineral surfaces with which it is in contact.

Affected Environment- the area within the Project Boundary in the condition that would exist in the absence of activities being evaluated in this study but including actual and predicted characteristics of areas previously permitted or disturbed after completion of all permitted activities (as described in and required by Code of Federal Regulations Title 40, Chapter V, Part 1502, Section 15).

Aquifer- a body of sediment or rock that is sufficiently permeable to conduct ground water and to yield economically significant quantities of water to wells and springs.

Biodegradation- the process of consumption of organic chemicals in the environment by microorganisms.

Brim-full Conditions- conditions at which maximum reach volumes have been attained and additional input results in immediate discharge.

Clay Settling Area (CSA)- an area within an engineered embankment utilized for the storage of phosphatic clay (may also be referred to as Clay Management Area).

Cone of Depression- a depression in the water table surface, roughly conical in shape, which results from the withdrawal of water from an aquifer.

Discharge Rate- a measure of flow, expressed in terms of volume per unit of time (i.e. cubic feet per second, millions of gallons per day).

Discharge Volume- a measure of quantity calculated by multiplying the discharge rate by a unit of time.

Evaluation Area- the area within the Project Boundary not including areas previously permitted or disturbed.

Evapotranspiration (ET)- the combined effect of direct evaporation and transpiration from vegetation, resulting in the conversion of liquid (water) into vapor.

Intermediate Aquifer/Confining Unit- the stratigraphic unit that lies between and collectively retards the exchange of water between the overlying Surficial Aquifer and the underlying Floridan Aquifer.

Mass Volume- the total quantity of runoff (in acre-feet) that discharges from the site as a result of a design storm event.

Method Detection Limit- the minimum concentration of a chemical that can be measured within a 99 percent confidence interval for an analyte concentration greater than zero.

Mine Support- includes activities associated with and often done in preparation for mining or unit operations or to provide access to and from mine blocks. These include activity such as construction of corridors, prospecting, dam construction, and other activities.

Mine Support Corridor- a variable length of land surface usually 200 to 1320 feet in width that is used to connect mining blocks together with infrastructure needed to conduct mining operations. The infrastructure may consist of vehicle roadways, pipelines, power lines, and dragline walking paths. Mine Support Corridors represent areas of land that are subject to disturbance or “dredging and filling”, but not subject to actual recovery of ore or mining. Hence the general soil profile is relatively undisturbed as compared to areas subject to mining.

Mining- recovery of ore (matrix) by a process of 1) removing overburden (stripping) and then 2) extracting ore. Usually both the ore extraction and overburden removal is accomplished by large electric draglines in Florida phosphate operations.

Mining Block- a contiguous area of land at least 40 acres in size that contains reserves.

Mining Operations- includes all steps in unit operations, placement of ore by-products such as sand tailings and clays, de-watering of clays to affect a surface suitable for reclamation, and clarification and handling of runoff waters.

Mining Probability Factor- the historical experience of the occurrence of reserve quality ore in any given potential mine area location expressed as a percentage.

Peak Flow Rate- the maximum instantaneous flow rate (in cubic feet per second) discharged from a particular drainage basin in response to a design rainfall event.

Potentiometric Surface- the elevation to which water would rise in a tightly cased well due to hydrostatic pressure.

Primary Drinking Water Standards (PDWS)- the maximum contaminant levels (MCLs) defined in Section 62.550.310 of the Florida Administrative Code (FAC).

Project Boundary- the lands included within the 1986 U. S. Army Corps of Engineers Environmental Impact Statement boundary.

Recharge- the process by which water is added to a zone of saturation (i.e. aquifer), either by direct return to a formation, or indirectly by way of another formation.

Surficial Aquifer- the saturated portion of the hydrologic unit nearest to the land surface, comprised principally of undifferentiated deposits of sand, silt and clay.

Unit Operations- include the repetitive steps of the mining operation necessary for ore recovery such as land preparation, stripping, ore recovery, and ore pumping.

Upper Floridan Aquifer (UFA)- the upper portion of the Floridan Aquifer.

Vertical Leakage- ground water conducted vertically (up or down) through permeable strata.

**FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT  
ON  
WHITE SPRINGS AGRICULTURAL CHEMICALS, INC.**

**(d/b/a PCS PHOSPHATE—WHITE SPRINGS)**

**HAMILTON COUNTY MINE CONTINUATION PERMITTING**

**HAMILTON COUNTY, FLORIDA**

**1. PROJECT PURPOSE AND NEED**

**1.1. PROJECT AUTHORITY.**

**1.1.1. INITIAL AUTHORIZATION.**

On February 11, 1980, the EPA, Region IV requested that the District assert discretionary authority over all wetlands within the Occidental Chemical Agricultural Products, Inc. (Occidental) [predecessor to PCS Phosphate-White Springs] project area, based on concerns for habitat loss and potential water quality impacts on the Suwannee River. The location of the project area is shown on Figure 1. The District asserted discretionary authority on June 17, 1980. The District Engineer determined that an EIS would be required on January 8, 1981.

Under Section 404 of the Clean Water Act, the U. S. Army Corps of Engineers (ACOE) issued an Environmental Impact Statement (EIS) in February 1986 for Occidental in Hamilton County. The 1986 EIS considered various alternatives for mining and reclamation/mitigation for the purpose of producing phosphate ore. The EIS was supported by a Technical Background Document (TBD) that was completed in 1985. Various regulatory decisions were made by the ACOE (and other regulatory authorities) in the years following finalization of the EIS.

Based on the EIS and a 1987 Memorandum of Understanding (MOU) among the Occidental Chemical Agricultural Products, Inc. (Occidental), EPA, and the Florida Department of Environmental Regulation (now Department of Environmental Protection (FDEP)), the Corps of Engineers issued a long-term permit (#198404652) for mining and mining operations in approximately 7,500 acres of wetlands on October 7, 1987. That permit was scheduled to expire on October 7, 2002. In a letter dated February 27, 2002, Mr. Kevin O’Kane of the ACOE extended the expiration date of that permit to October 7, 2007. Figure 2 shows the areas preserved from mining by the terms of the MOU (over 19,000 acres), cumulative areas permitted in prior actions or disturbed prior to assertion of jurisdiction by the ACOE (approximately 46,000 acres), and the evaluation area for this project

(approximately 36,000 acres). The 1987 ACOE permit incorporated the terms of the 1987 MOU by reference. Figure 3 shows the breakdown of areas categorized by the 1987 MOU.

In 1995, Potash Corporation of Saskatchewan acquired the White Springs operations from Occidental. The Hamilton County facility has continued operations as PCS Phosphate-White Springs (PCS) Hamilton County Mine (HCM). In 1997, PCS approached the ACOE about permit needs to continue operations beyond the October 7, 2002 expiration date of the current permit. The ACOE directed PCS to update the 1985 TBD and the 1986 EIS and produce a Supplemental TBD (STBD) and Supplemental EIS (SEIS). Based on the alternative selected in the SEIS, PCS would then apply for a "life of mine" permit to complete operations within the EIS project boundary. The STBD was published on January 24, 2000 and an Addendum to the STBD was published on November 27, 2000.

PCS submitted various applications and documents to the regulatory agencies and interested parties for review in November 2001. Subsequently, PCS has responded to all agency and public comments through two Requests for Additional Information (RAI) submitted in May 2002 and September 2002, a Clay Management Plan and various correspondences. In October 2002 both the Bureau of Mine Reclamation (BOMR) and the US Army Corps of Engineers (ACOE) requested that PCS withdraw Upper Bee Haven Bay, Shaky Pond and Bell Creek (DER jurisdiction only) from permit consideration. In addition, the ACOE requested reevaluation of jurisdiction within the project boundary, which resulted in an increase in jurisdictional wetland acres. The net result of the withdrawal of the three wetland areas and the increase in the ACOE jurisdiction was a decrease of ACOE jurisdictional wetland acres to be impacted. These changes resulted in a decrease in the mining footprint of approximately 1,000 acres (19,077 acres to 18,166 acres) and a decrease in wetland jurisdiction to be impacted from 1,858 acres to 1,671 acres.

This Final Supplemental Environmental Impact Statement (FSEIS) is to include an additional 1,671 acres of wetland jurisdiction and reclaim 1,731 acres of wetlands as partial mitigation for the impacts within a 18,166 acre footprint.

#### 1.1.2. SUPPLEMENTAL INFORMATION.

As per the guidance on supplemental EISs, the DSEIS, and the STBD do not repeat information contained in the original EIS that is still valid. The original 1985 TBD, 1985 DEIS and 2001 DSEIS are available online at [http://www.saj.usace.army.mil/permit/hot\\_topics/hot\\_topics.htm](http://www.saj.usace.army.mil/permit/hot_topics/hot_topics.htm).

### 1.2. PROJECT LOCATION.

The PCS project area covers 100,580 acres in southeast Hamilton County, Florida (Figure 1). The area is approximately 40 miles south of Valdosta, Georgia and 60 miles west of Jacksonville, Florida. The existing Hamilton County Mine (HCM) is located within the Suwannee River Basin that encompasses a total of 9,950 square miles in Florida and Georgia. Figure 2 shows the breakdown of areas within the project area based on their current regulatory status. This FSEIS covers potential impacts related to mining of 1,671 acres of ACOE jurisdictional wetlands. Mining activities have already occurred or have been permitted on ~46,000 acres within the HCM.

### 1.3. PROJECT NEED OR OPPORTUNITY.

The White Springs Agricultural Chemicals, Inc. (d/b/a/ PCS Phosphate – White Springs) (PCS) proposes to discharge dredge/fill material into 1,671 acres of jurisdictional wetlands to facilitate a continuation of mining operations within a 100,580 acre project area located in Hamilton County, Florida. PCS mines phosphate ore and processes it into a variety of fertilizer and animal feed supplement products. Operations began at the Hamilton County location in 1965 as Occidental Chemical Company (OCC). Facilities were added and expanded incrementally, with the opening of the Swift Creek Chemical Complex (SCCC) completing the major facilities in 1979. The SCCC was

subject to an EIS produced by the U.S. Environmental Protection Agency (USEPA) in September 1978 (EPA 904/9-78-020). Mining operations were consolidated as the Hamilton County Mine (HCM) in the early to mid-1990's, while chemical processing operations continue at the Suwannee River and Swift Creek Chemical Complexes. Potash Corporation of Saskatchewan acquired the facilities from Occidental in 1995. Potash Corporation of Saskatchewan is the world's largest integrated fertilizer manufacturer, with world scale capacities in the production of potash, phosphate, and nitrogen.

Phosphate is an essential nutrient for plants and animals for which there is no known synthetic substitute. Phosphate is mined in the United States for fertilizer and animal feed supplements almost exclusively in Florida and North Carolina (85% of the U.S. production). Phosphate rock and the various products derived from it support food production worldwide. Should the requested permit not be issued, the mine life would be shortened significantly. This would result in the loss of a valuable natural resource necessary for food production and a significant loss of jobs.

#### **1.4. AGENCY GOAL OR OBJECTIVE.**

The agency goal is to objectively evaluate all alternatives, seek public and cooperating agencies' input, and select the best alternative. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered.

#### **1.5. RELATED ENVIRONMENTAL DOCUMENTS.**

As noted above, various related environmental documents have been produced. These include:

- Technical Background Document: Environmental Evaluation of Existing and Proposed Mining Operations; May, 1985;
- Draft Environmental Impact Statement, Section 404, Clean Water Act; 1985 DEIS
- Final Environmental Impact Statement, Section 404, Clean Water Act: Environmental Evaluation of Existing and Proposed Mining; February, 1986;
- Final Plan of Study: Supplemental Technical Background Document for an Ecosystem Management Agreement; September, 1998;
- Supplemental Technical Background Document in Support of a Supplemental Environmental Impact Statement and an Ecosystem Management Agreement; January, 2000;
- Addendum to Supplemental Technical Background Document in Support of a Supplemental Environmental Impact Statement and an Ecosystem Management Agreement; November 2000.
- Records of Ecosystem Management Team Advisory Team meetings; January 1998 – March 2002 (<http://www.dep.state.fl.us/northeast/admweb/pcsprogram/pcsmmin.htm>)
- Draft Supplemental Environmental Impact Statement, Section 404, Clean Water Act, Permitting Continued Mining Operations of PCS Phosphate, at Hamilton County Mine; November, 2001;
- Joint Application for Works in the Waters of Florida for Wetland Resource Alterations (Dredging and Filling); November, 2001;
- Response to PCS EMAG Consolidated Request for Additional Information; May, 2002;
- Response to PCS EMAG Second Consolidated Request for Additional Information; September, 2002;

- Permit Application Package Clay Management Plan for the Hamilton County Mine; November, 2002.
- Supplemental Information Submittal for Conceptual Reclamation Plan (PCS-HC-CP(B)), Joint Application (ACOE/FDEP) for Works in the Waters of Florida for Wetland Resource Alterations (0144913-003), and Master Mining Plan Amendment and Petition for Special Permit; December, 2002;

#### **1.6. DECISIONS TO BE MADE.**

This Final Environmental Impact Statement will evaluate whether to permit 1,671 acres of ACOE jurisdictional wetlands for mining and, if so, evaluate alternatives to accomplish that goal. These acres will be mitigated for with 1,731 acres of wetlands. The decision will be part of a comprehensive set of federal, state and county actions that will provide PCS with the authorizations it needs to operate their Hamilton County mine for its remaining projected mine life. Wetland impacts covered under this permit will be mitigated for onsite and will include commitments outlined in a PCS May 29, 2001 letter to the federal, state and county organizations involved in this process. The preferred alternative/application footprint includes the 1,671 acres of jurisdictional wetlands and 3,997 acres of isolated wetlands.

#### **1.7. SCOPING AND ISSUES.**

Efforts to develop the plan of study for the STBD and for this SEIS began in late 1997. The ACOE directed PCS to prepare a SEIS to update the 1986 EIS. PCS worked with the various local, state and federal agencies, environmental groups and interested parties to develop a draft Plan of Study (POS) for the STBD. The formal Public Notice requesting comments on the draft POS was published by the ACOE on June 19, 1998. The ACOE published an intent to prepare a Draft Supplemental Environmental Impact Statement (SEIS) in FR/Vol. 63, No. 126/Wednesday, July, 1998/Notices (Appendix C of the 2001 DSEIS). Several meetings with federal, state, and county organizations and environmental groups and the public were held to discuss the POS and obtain public input. On September 25, 1998, PCS published the final POS for the STBD.

##### **1.7.1. ISSUES EVALUATED IN DETAIL.**

The following issues were identified during scoping and by the preparers of this Environmental Impact Statement to be relevant to the proposed action and appropriate for detailed evaluation:

- Wetland boundaries
- Wetland jurisdiction (revised to conform to the January 9, 2001 US Supreme Court decision, Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (SWANCC)). At the end of 2002 ACOE jurisdiction was reevaluated and finalized in a letter from Ms. Marie Burns (dated December 19, 2002).
- Best type of mitigation (conventional, pre-modification or alternative/offsite, post-modification)
- Location of settling areas
- Potential Net Ecosystem Benefits
- Wetland evaluation criteria
- Long-term land use
- Threatened and endangered species
- Socioeconomic impact on county and employees

**1.7.2. IMPACT MEASUREMENT.**

Impacts due to each of the alternatives are actually very similar in nature, except for the no action alternative, Alternative A: No wetlands mining or mine support within the unpermitted or undisturbed areas. There are no unique or special wetlands being proposed for mining. Please refer to Section 1.1.1 for details on the temporary withdrawal of three wetlands and Section 2.7 for a discussion of previous identification and protection of perceived higher quality wetlands.

All of the alternatives were evaluated in comparison to the “affected environment” as defined in 40 CFR 1500. It is the conditions that would exist in the area in the absence of the proposed project. This includes the reclamation that would be completed for areas that have been or will be mined under the no action alternative, Alternative A. All of these wetlands were carefully evaluated and their mitigation carefully designed to prevent any failures or offsite impacts. Each alternative and the activities included in the application include proposed mitigation to offset the impacts of the mining activities. As the mitigation compensates for the impacts of each alternative, comparisons among the alternatives is difficult. Mining is a temporary impact due to the reclamation and mitigation that goes hand in hand with the mining. It should be noted that the mining and reclamation activities occur over extended time periods. The timing between mining and reclamation is roughly the same regardless of the alternative. Only the mine life and acres impacted differ. Both federal and state laws require mitigation and reclamation of the land that is mined. Given the above, the main differences among the alternatives are the socioeconomic impacts.

**1.7.3. ISSUES ELIMINATED FROM DETAIL ANALYSIS.**

All issues identified in the scoping process were addressed in the EMAG process or evaluated in the STBD and the DSEIS.

**1.8. PERMITS, LICENSES, AND ENTITLEMENTS.**

The following existing permits are relevant to the mining operations.

Agency	Type	Area	Permit Number	Expiration Date
ACOE	Dredge/Fill	Mine-wide	198404652(IP)	Oct. 7, 2007
FDEP	Dredge/Fill	Swift Creek	241341569	May 30, 2015
FDEP	Dredge/ Fill	Cabbage Head	0144913-002	Oct. 13, 2004
FDEP	Dredge/Fill	Roaring Creek	0144913-001	Dec.5, 2004
FDEP	NPDES/IW	Suwannee River facility	FL 0000655	May 28, 2002
FDEP	NPDES/IW	Swift Creek facility	FL 0036226	May 28, 2002
FDEP	Conceptual Reclamation Plan	Hamilton County Mine	PCS-HC-CP	Life of Mine
FDEP	Reclamation Programs	Individual areas of the Hamilton County Mine	Various	Upon release
SRWMD	Consumptive Use	Suwannee River facility	2-84-00701	May 16, 2005
SRWMD	Consumptive Use	Swift Creek facility	2-84-00703	May 16, 2005
Hamilton County	Conceptual Reclamation	Mine-wide	SP-96(4)	Duration of operations in permitted area

## **1.9 ACOE WETLAND JURISDICTIONAL DETERMINATION**

The ACOE jurisdiction changed dramatically during the preparation of the DSEIS. The SWANCC January 9, 2001 U. S. Supreme Court decision substantially reduced the federal wetland jurisdiction within the project area. In addition, at the end of 2002 ACOE jurisdiction was reevaluated and finalized in a letter from Ms. Marie Burns (dated December 19, 2002). However, the process used to develop the wetland boundaries for the PCS supplemental EIS remains valid. The process used to develop these wetland boundaries was described in detail in the 2001 DSEIS.

## **2. ALTERNATIVES**

In order to evaluate various options for mining and reclamation, it is necessary to identify realistic and feasible alternatives (i.e. practicable alternatives as defined in 40 CFR 230.3.q.) that could be considered for continuation of PCS' operations in Hamilton County. Since it is not realistic or necessary to identify all possible alternatives, an attempt was made to "bracket" the various options with respect to the extent of mining and possible impact on the environment. The range of alternatives evaluated, from the "no additional mining" (no project) alternative, to "mine everything" alternative, is necessary and required under the National Environmental Policy Act (NEPA). All of the alternatives considered were addressed in the DSEIS (2001).

### **2.1. DESCRIPTION OF ALTERNATIVES.**

#### **2.1.1. ALTERNATIVE A: WETLAND MINING, NO ACTON (PROJECTED STATISTICAL MINE PLAN BASIS)**

This alternative was addressed in the 2001 DSEIS and has not changed since that document was submitted. This alternative assumes that all upland areas 40 acres or greater in areal extent that contain reserves or may contain mineable quantities of phosphate are mined. No wetlands are mined in the Alternative A evaluation area except for the interim permit area. No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. A total of 2,841 acres of mining are projected for Alternative A. This figure represents the projected mining in the evaluation area and is equivalent to approximately 3 years of mine life.

No additional settling areas over those planned for construction inside the previously permitted and disturbed area would be needed. Sand tailings were deposited in mine cuts and on exhausted clay settling areas. Of the areas mined in Alternative A, some 1,317 acres were devoted to Tails Fill reclamation and 1,524 acres to Land and Lakes reclamation. No areas were devoted to construction of clay settling areas.

#### **2.1.2. ALTERNATIVES B: MINING OF ALL RESERVES INCLUDING WETLANDS (PROJECTED STATISTICAL MINE PLAN BASIS)**

This alternative was addressed in the 2001 DSEIS and has not changed since that document was submitted. This alternative assumes that all areas within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. This alternative projects an approximate total of 16,298 acres mined over about 20 years.

The number of settling areas for this alternative are consistent with the number identified in the Conceptual Reclamation Plan Modification (PCS-HC-CPB as approved on February 25, 2003). The settling areas would be located adjacent to and would be incorporated into the existing CSA system to the greatest extent possible. Tails fill reclamation was the primary type of reclamation in this plan. Some 8,667 acres of mining were devoted to Tails Fill reclamation. Land and Lakes accounted for 4,761 acres and 2,870 acres were dedicated to clay storage, ultimately being reclaimed as Elevated Fill area.

**2.1.3. ALTERNATIVE C: MINING OF ALL KNOWN RESERVES INCLUDING WETLANDS EXCLUDING DER JURISDICTIONAL AND DEFERRAL WETLANDS (PROJECTED STATISTICAL MINE PLAN BASIS)**

This alternative was addressed in the 2001 DSEIS and has not changed since that document was submitted. This alternative assumes that all areas, except for the Deferral Areas and FDEP jurisdictional areas, within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some small areas may be affected on a limited basis for mine support corridors. This alternative projects an approximate total of 14,005 acres mined over about 16 years. Sand and clay placement in this Alternative is the same as Alternative B except that less clay, tailings, and mudballs are generated due to the reduction in mining acres between the two Alternatives.

Under the Alternative C mine plan and Reclamation plan, 6,489 acres of mined area would be devoted to Tails Fill Reclamation, 4,645 acres devoted to Land & Lakes Reclamation and 2,870 acres to Elevated Fill after use as clay settling areas.

**2.1.4. ALTERNATIVE D: MINING OF ALL KNOWN RESERVES (as of November 2000) INCLUDING WETLANDS (PROSPECT & LANDOWNER AGREEMENT MINE PLAN BASIS)**

This alternative was addressed in the 2001 DSEIS and has not changed since that document was submitted. This alternative assumes that all areas within the evaluation area that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some preservation areas may be affected on a limited basis by mine support corridors as contemplated in the 1987 MOU and discussed in Section 2.1 (Addendum to STBD, 2000). This alternative projects an approximate total of 20,514 acres mined over about 22 years. The number of settling areas for this alternative are consistent with the number identified in the Conceptual Reclamation Plan Modification (PCS-HC-CPB as approved on February 25, 2003). The settling areas would be located adjacent to and would be incorporated into the existing CSA system to the greatest extent possible.

Sand tailings were used for backfill of mine cuts, dam construction, and capping of settling areas. Priority use of sand tailings included the reclamation of FDEP wetlands and Deferral Areas where mined. Mudballs generated from washer processing were scheduled for placement on exhausted clay settling areas located in the previously permitted and disturbed area.

**2.1.5. APPLICATION FOOTPRINT/PREFERRED ALTERNATIVE: MINING OF ALL KNOWN RESERVES (as of July 2001) INCLUDING WETLANDS (PROSPECT AND LANDOWNER AGREEMENT MINE PLAN BASIS) AND EXCLUDING WETLANDS WITHDRAWN FROM CURRENT PERMIT CONSIDERATION AS REQUESTED BY ACOE**

The ACOE application footprint contains approximately 18,166 acres. Mining or mine support activities will be conducted within these areas. Ditches and/or berms will isolate activities within this footprint from adjacent uplands and wetlands. All water within these areas will be captured and become part of the mine water system. It will only be released from the site through permitted discharge points and after it meets the permit limits to insure no adverse impacts to water of the U.S. or State.

There are 1,671 acres of ACOE jurisdictional wetlands within the footprint. The footprint also includes an additional 3,997 acres of other wetlands. All of the 5,670 acres of wetlands are regulated by BOMR and Hamilton County. The 1,671 acres of ACOE jurisdiction will be mitigated

for by reclaiming 1,731 acres of wetlands. These mitigation acres will be considered “Tier 1” which means that they have detailed design, monitoring and release criteria, many of which go beyond requirements in the applicable regulations (see Works in the Waters of Florida for Wetland Resource Alterations (Dredging and Filling) for details). Other commitments of PCS described in the application provide additional mitigation.

This alternative assumes that all areas within the application footprint (excluding the three withdrawn areas) that contain at least 40 contiguous acres of mineable ore are mined whether under wetland or upland. No preservation areas are scheduled for mining, but some preservation areas may be affected on a limited basis by mine support corridors as contemplated in the 1987 MOU and discussed in Section 2.1 (Addendum to STBD, 2000). This alternative projects an approximate total of 18,166 acres mined (see table below).

The number of settling areas for this alternative are consistent with the number identified in the Conceptual Reclamation Plan Modification (PCS-HC-CPB as approved on February 25, 2003). The settling areas would be located adjacent to and would be incorporated into the existing CSA system to the greatest extent possible. Of the 5 clay settling areas constructed, approximately 4 are for the upland volume mined, which is already permitted. In order to minimize areal impact, several of the settling areas were modeled to operate at a higher elevation than the typical elevations utilized by PCS. Reduction in operating height from these proposals would require either additional surface area dedicated to clay storage or reduction in mining life.

Sand tailings were used for backfill of mine cuts, dam construction, and capping of settling areas. Priority use of sand tailings included the reclamation of FDEP wetlands and Deferral Areas where mined. Mudballs generated from washer processing were scheduled for placement on exhausted clay settling areas located in the previously permitted and disturbed area.

Category	Acres
Total area mined	18,166
Uplands mined	12,495
Wetlands mined	5,670
Years added to mine life	Approx. 28 years (reduced by 15-18 months)
Acres needed for clay disposal new area	3,393* 5 settling areas
Reclamation types	
Land & Lakes	6,245
Tails fill	7,446
Clay	2,872

\* Approximately 500 acres are contained within the existing permitted area.

## 2.2. ISSUES AND BASIS FOR CHOICE

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit,

which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be evaluated.

Wetland reclamation has become an accepted practice to mitigate for wetland mining impacts. The only issues relate to the wetland design and establishment practices. PCS has successfully reclaimed approximately 2,600 acres of wetlands at the Hamilton County Mine. Approximately 309 acres have been released by the BOMR and approximately 2,300 acres have met all of the initial requirements and are in the five year extended establishment period. Given PCS's successful wetland reclamation and the ability to provide high paying jobs, tax payments, other economic benefits and the lack of any significant adverse environmental impacts it seems prudent and socially and environmentally correct to issue a mining permit to allow PCS to continue their mining operations. The avoidance and minimization was accomplished through the 1987 MOU, which formed the basis for the first ACOE mining permit. Please refer to section 2.7 for details of the MOU. Table 1 compares the alternatives.

### **2.3. PREFERRED ALTERNATIVE(S)**

The preferred alternative is included in the application. It includes plans to mine or disturb 1,671 acres of jurisdictional wetlands and reclaim 1,731 mitigation wetland acres within a 18,166 acre footprint. It resulted from a change in the ACOE jurisdiction and the public EMAG process that served to build consensus for an alternative that would allow PCS to recover a valuable natural resource while minimizing adverse environmental impacts. In addition to the jurisdictional wetlands, approximately 3,997 acres of isolated wetlands would be mined and reclaimed in accordance BOMR and Hamilton County regulations. All of these wetlands will be in the overall ACOE application footprint, which includes 18,166 acres.

### **2.4. ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION**

All of the alternatives identified as feasible during the scoping process were evaluated in the STBD (2000). These alternatives were discussed in detail in the DSEIS (2001). All of the alternatives identified as feasible during the scoping process were evaluated in the STBD (2000). However, some of the federal, state and county organizations expressed concerns about the off-site reclamation/mitigation being evaluated as part of the EIS process. These alternatives and options were addressed in the STBD (2000). Combined alternative standards/land acquisition form of mitigation was eliminated based on agreements between PCS and the regulatory authorities. The agreement is detailed in a November 28, 2000 letter from PCS to the agencies. Therefore these alternatives are not addressed in the DSEIS.

### **2.5. ALTERNATIVES NOT WITHIN JURISDICTION OF LEAD AGENCY**

Alternative A, "No Mining or mine support within wetlands," would not require a permit from the ACOE.

### **2.6. COMPARISON OF ALTERNATIVES**

Table 1 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. This table has been updated since the submittal of the DSEIS (2001) due to the withdrawal of three wetland areas. This withdrawal resulted in a reduction of the mining footprint of approximately 1,000 acres. Table 1 has been revised to reflect this change and is attached.

## **2.7. MITIGATION**

### **2.7.1. MINIMIZATION AND AVOIDANCE**

The avoidance and minimization analysis required by Federal Regulation and the "public interest" review for both the state and federal interests were completely addressed during the previous EIS and permitting efforts and was supplemented by further work from September through December of 2002. The company, the EPA, and the Florida Department of Environmental Regulation (DER, now FDEP) entered into a Memorandum of Understanding (MOU) in 1987 in order to formalize and document this process. This MOU provided the basis for EPA and DER to concur in the issuance of the requested ACOE Section 404 permit. The MOU represented a review of the entire project area, including the alternatives analysis in the EIS. It incorporated the results of a detailed examination of wetlands within the project boundary by a variety of federal and state agencies and other interested parties. The 1987 MOU directly addressed both the 1987 permitting and all future permitting within the project area. Among its most important terms was the categorization of wetlands within the project boundary. Based upon review of data compiled for the EIS and extensive fieldwork, wetlands were divided into the following categories four categories preservation, conditional, deferral and permittable. Descriptions of these categories were provided in the DSEIS (2001).

### **2.7.2. ADDITIONAL ENVIRONMENTAL BENEFITS**

Additional environmental benefits would occur if each of the respective regulatory authorities of the applications approve the applications in substantially the same form as presented in the Ecosystem Management Agreement (EMA). These additional benefits are described in detail in the DSEIS (2001).

### 3. AFFECTED ENVIRONMENT

The Affected Environment section in the DSEIS (2001) succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented.

#### 3.1. GENERAL ENVIRONMENTAL SETTING

The general environmental setting was described in great detail in the DSEIS (2001). This description remains unchanged since the submittal of the DSEIS, except for minor changes to Tables 1, 5, 6 and 7 and Figures 4 and 5. These changes are due to the withdrawal of three wetland areas, which resulted in a 1,000 acre reduction to the mining footprint (19,077 acres to 18,166 acres). These tables and figures have been updated and are attached.

#### 3.2. VEGETATION

Classifications of land uses for the project area were based on the Florida Land Use, Cover and Forms Classification System (FLUCCS) (DOT 1985). Based on this system, 23 land use types were identified for the project areas, approximately 100,580 acres. Classifications of land uses for the project area were discussed in detail in the DSEIS (2001). Tables 5 and 6 have since been updated and are provided at the back of this document.

#### 3.3. THREATENED AND ENDANGERED SPECIES

The USFWS has concluded, via a letter from Mr. Pete Benjamin (dated November 19, 2002) that this proposed project will not adversely affect any of the threatened and endangered species addressed in the DSEIS. Specifically Mr. Benjamin stated that the proposed project will not adversely affect the following species: flatwoods salamander (*Ambystoma cingulatum*), Eastern indigo snake (*Drymarchon corais couperi*), red-cockaded woodpecker (*Picoides borealis*), bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), gray bat (*Myotis grisescens*), Chapman's rhododendron (*Rhododendron chapmanii*) and Gulf sturgeon (*Acipenser oxyrinchus desotoi*). In addition, Mr. Benjamin went on to state that PCS:

"has sufficiently avoided, minimized, and mitigated for the proposed jurisdictional wetland impacts, and that the sequence of mining and wetland reclamation, Suwannee River tributary diversions and restorations, the proposed conservation easements, and future purchase of environmentally sensitive lands, including wetlands, will adequately offset the proposed wetland impacts."

#### 3.4. HARDGROUNDS

This section is not applicable to the PCS project area. It refers to a zone at the sea bottom.

#### 3.5. FISH AND WILDLIFE RESOURCES

All flora and fauna issues were addressed in detail in the DSEIS (2001). The mining and reclamation process provides both positive and negative effects for fish and wildlife. This process creates a much more heterogeneous landscape with more habitat types and better mixes. Interim habitats created by excavation and extraction support a large number of species including several protected by the U.S. Fish and Wildlife Service and/or Florida Fish and Wildlife Conservation Commission. For example, small mammal populations on mining and processing lands were found to be more

abundant than those in adjacent flatwoods (Frohlich, 1981). Please see Table 1 of this document for more details on this topic.

### **3.6. ESSENTIAL FISH HABITAT (EFH)**

There is no essential fish habitat within the project area as defined by the Magnuson-Stevens Act. This act addresses marine and anadromous species. The proposed project is over 150 river miles from the Gulf of Mexico.

### **3.7. COASTAL BARRIER RESOURCES**

There are no designated coastal barrier resources in the project area that would be affected by this project. The proposed project is over 150 river miles from the Gulf of Mexico.

### **3.8. WATER QUALITY**

Extensive water quality data have been collected within the project area since 1965 by PCS, its consultants, and the Suwannee River Water Management District (SRWMD). Discussion of this data is provided in the DSEIS (2001).

PCS and its predecessors have operated the HCM facility since 1965. The quality of the discharges from the mining operations have steadily improved over that period. All mine water discharges occur through permitted outfalls (NPDES/IW). The discharges meet all applicable permit limits, which are designed to insure compliance with applicable state and federal water quality standards. Regardless of the action taken by the ACOE on the proposed activities, the mining discharges will continue and the quality will not change.

### **3.9. HAZARDOUS, TOXIC AND RADIOACTIVE WASTE**

There are no hazardous, toxic or radioactive wastes produced by or during the mining process. A more detailed discussion on this topic is provided in the DSEIS (2001).

### **3.10. AIR QUALITY**

Air quality issues were addressed in the DSEIS (2001) these issues have not changed since the submittal of that document. No air quality permits are required for mining operations. The potential air pollutant emissions from phosphate rock mining are limited to fugitive particulate matter contributed by clearing, mining, transport of material, and reclamation activities. The air quality monitoring data collected in the vicinity of HCM and both chemical complexes show that total suspended particulate matter levels are below standards established by EPA and adopted by FDEP. Quantities of carbon monoxide, nitrogen oxides, volatile organic compounds, and sulfur dioxide, resulting from the exhaust of mobile equipment, are negligible.

### **3.11. NOISE**

Noise issues were addressed in the DSEIS (2001); these issues have not changed since the submittal of that document. In the absence of stationary operational plants and mobile, off-road earth-moving equipment, the baseline day/night average noise level was established to be 40dB (DEIS, 1985). Noise levels for major mobile equipment, including the large draglines, which may also be considered as point sources, are 76-85 dBA at 100 ft distance. These impacts are of short duration and localized. Based on noise source data and the noise attenuation rate, the range of existing noise levels more than one mile from principal noise sources is 40-55 dB, just slightly greater than baseline levels.

### **3.12. AESTHETIC RESOURCES**

Aesthetic resources were addressed in the DSEIS (2001) and have not changed since the submittal of that document. Large-scale forest management activities, ongoing mining and reclamation, past logging, fires and drainage activities have altered the natural flora and fauna of the ecological systems in the project area. Once mining and reclamation are complete, the aesthetics of the project area will improve. Reclamation will create more diverse habitat through the creation of a mosaic landscape, which will include lakes, wetlands, hardwood forests, etc. Creating this mosaic attracts various wildlife such as wading birds and waterfowl, which would not be present otherwise.

### **3.13. RECREATION RESOURCES**

Recreation resources were addressed in the DSEIS (2001) and have not changed since the submittal of that document. Hamilton County is bounded on three sides by rivers, which are the foundation for resource-based recreational opportunities in the county (STBD, Section 3.2.2.). The Suwannee River runs eighty miles on the east and south, and the Withlacoochee River is the twenty-five mile western boundary. The public lands of the Suwannee River are primitive natural unimproved areas open to the public for recreation activities such as fishing, hunting, hiking, biking, horseback riding, nature study and canoe camping. The recreational and natural resource activities of the Suwannee River were analyzed using the ACOE Recreation and Natural Resource Assessment Criteria (ACOE, 1978) (TBD, Section 3.10). General recreation of the Suwannee River was evaluated to be moderate, primarily due to access, unstable water levels, and shoals.

### **3.14. NAVIGATION**

There are no natural navigable waters within the project area as was stated in the DSEIS (2001). The reclaimed lakes are "boatable", but are not interconnected to provide inter lake navigation.

### **3.15. HISTORIC PROPERTIES**

The Florida Department of State, Division of Historical Resources has confirmed that "no cultural resources are recorded or known to exist in the wetland areas identified in the 2002 USACOE permit".

## 4. ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. See Table 1 in section 2.0 Alternatives, for summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

### 4.1. GENERAL ENVIRONMENTAL EFFECTS

The alternatives as evaluated in the STBD and DSEIS evaluate direct, indirect, and cumulative impacts. The impacts were evaluated in the context of the existing permitted activities over approximately 46,000 acres within the 100,580 acre project area. These alternatives were evaluated in the DSEIS (2001) and remain unchanged since the submittal of that document. Although the alternatives evaluated in the DSEIS (2001) did not change, the application footprint and ACOE jurisdiction proposed to be impacted did change by way of a reduction of the number of acres impacted. The revised application covers 1,671 acres of current ACOE jurisdiction within the 18,166-acre application footprint. The ACOE wetlands will be mitigated for by 1,731 acres of created wetlands.

### 4.2. VEGETATION

The ecological or vegetation communities that would exist within the project area were described in detail in the DSEIS (2001). Due to the decrease in the application footprint the following tables have been revised and are attached: Table 2, Table 3, Table 5, Table 6 and Table 7. Other than the changes made to the aforementioned tables and the table shown below, all details provided in this section of the DSEIS (2001) remain unchanged.

Landforms	Pre-mining	Affected Environment	Post- reclamation Permits Issued
Uplands	67,630	66,717	61,231
Wetlands	32,883	28,336	32,162
Open water	67	5,527	7,186

### 4.3. THREATENED AND ENDANGERED SPECIES

There will be no adverse impact on any federally listed species. Please see section 3.3 for a discussion of the section 7 issues and resolution.

### 4.4. HARDGROUNDS

This section is not applicable to the PCS project area.

### 4.5. FISH AND WILDLIFE RESOURCES

Fish and wildlife resources were discussed in detail in the DSEIS (2001) and remain unchanged since the submittal of that document. The creation of reclaimed lakes provides great fishing opportunities and actually draws fishermen from outside the area. The FWCC operates two fish management areas in reclaimed lakes: Eagle Lake and Lang Lake.

Wildlife in the evaluation area is doing well. Only 500 – 1000 acres are mined each year depending on the demand for PCS products. Reclamation rates are currently exceeding mining rates, so more land is being returned to other economic and wildlife uses than is temporarily taken out of service. These communities have adapted to existing in the mined and reclaimed areas, as the operations

have been ongoing for over thirty-five years. This is evidenced by the high hunter success in the PCS Wildlife Management Area operated by the FWCC which is in an active mine area within the PCS project area.

A significant portion of the 100,580 acre project area will not be disturbed by mining activities, thus serving as biological reserves for species invasion and migration into adjacent areas of interim habitat types as well as reclaimed areas.

#### **4.6. ESSENTIAL FISH HABITAT**

There is no essential fish habitat within the project area as defined by the Magnuson-Stevens Act. This act addresses marine and anadromous species. The proposed project is over 150 river miles from the Gulf of Mexico.

#### **4.7. HISTORIC PROPERTIES**

The Florida Department of State, Division of Historical Resources has confirmed that “no cultural resources are recorded or known to exist in the wetland areas identified in the 2002 USACOE permit”.

#### **4.8. SOCIO-ECONOMIC**

Socio-economic issues were discussed for all five alternatives in the DSEIS (2001). The discussion relative to Alternatives A through D remains valid, as there have been no changes to these alternatives. All future economic impacts under the permitting scenario were presented in the DSEIS (2001). These future economic impacts have been reduced due to the withdrawal of three wetland areas. The withdrawal of these areas resulted in a decrease of approximately 1,000 acres of mining reducing the mining footprint from 19,077 acres to 18,166 acres, thus reducing the mine life by approximately 15 – 18 months. These reductions will reduce the economic impacts proportionally.

#### **4.9. AESTHETICS**

The reclaimed landscape after mining will be more heterogeneous and contain less silvicultural stands. Lakes will be more prominent in the area. The lakes will have associated uplands that will provide vistas over the lakes and to many will be more aesthetically pleasing than the pre-mining landscapes. Bird watching has become very prevalent in the area since the beginning of mining because of the attraction of the open water areas that were not prevalent prior to mining.

#### **4.10. RECREATION**

The active mine areas and reclaimed areas provide many new and enhanced recreational options. The reclaimed lakes provide public boating and fishing opportunities that were either not present or severely limited prior to the mining and reclamation activities. These areas draw waterfowl in the thousands. This has been clearly demonstrated over the past decade by the consistently high hunter success in the PCS project areas. The FWCC operates several wildlife management areas within the project area in previously mined and operational areas. A successful commercial hunting and fishing operation also operates on ~14,500 acres of natural, previously mined and reclaimed areas. A private entity recently purchased ~3,000 acres of reclaimed wetlands, lakes and uplands for use as a retreat and recreational area.

#### **4.11. COASTAL BARRIER RESOURCES**

This project is over 150 river miles from the coast and at over 100 feet NGVD. Therefore, this is not applicable.

## 4.12. WATER QUALITY AND QUANTITY

### 4.12.1. WATER QUALITY

A detailed water quality discussion was provided in the DSEIS (2001). There are over 12,000 acres of undisturbed wetland acres not proposed for disturbance within the project boundary, which will provide the same water quality functions and still influence area water quality. After mining ceases and reclamation is completed, water quality in the Suwannee River, area tributaries, and unaffected and reclaimed wetlands should approximate pre-mining characteristics.

Contributions of organic material to the Suwannee River should not be altered significantly, as contributions of project area streams are relatively insignificant on a regional scale. Falling Creek, Robinson Creek, Little Creek, and Deep Creek (located on the east side of the river) have approximately the same discharge as streams draining the project area. Thus, it can be assumed that their organic contributions are similar. Any short-term alteration would be insignificant in terms of the overall dynamics of the project area. Additionally, major floodplain areas of the Suwannee River and tributaries for at least 0.5 miles upstream of the tributaries' confluence with the Suwannee River (potentially a major source of organic material for aquatic systems) will not be disturbed.

The upper/middle portions of the Suwannee River (beginning approximately at White Springs), chemical characteristics fluctuate widely, depending on the relationship between input from tributaries, the Okefenokee Swamp, and surface and subterranean springs. Bass and Hitt (1971) and Cox (1970) explained the relationship between discharge and water chemistry in the Suwannee River. The wide-ranging chemical regime in this portion of the Suwannee River suggests that the biological community in the river is composed mainly of organisms that are tolerant of these extreme conditions. Any localized changes that may occur in the Suwannee River as a result of PCS mine water discharge represent only another dimension in an already extremely variable chemical environment. Hence, the organisms inhabiting the Suwannee River are adapted to widely fluctuating conditions and should not be significantly impacted by stream discharges containing water from reclaimed areas.

The Florida Department of Environmental Regulation (now FDEP) sampled macroinvertebrates throughout the Suwannee River, including stations both immediately above and below Hunter and Swift Creeks for approximately two years beginning in February. Values above and below Hunter Creek for all macroinvertebrate parameters were equivalent. Diversity below Hunter Creek was generally the same and always > 75% of the values above Hunter Creek, indicating that the criteria for biological integrity, as defined in Florida water quality standards, were met. More taxa were present below the confluence and diversity values were comparatively high, indicating a well-balanced community and good water quality.

Additional evidence that the Suwannee River does not exhibit adverse effects below Swift Creek is provided by the Florida Game and Fresh Water Fish Commission (FGFWFC, now FWCC). From 1969 to 1982 FGFWFC sampled the fish community above and below the confluence of Swift Creek. FGFWFC stated that "no consistent differences between the two sample stations are apparent" and found "no obvious trend since 1969". The FGFWFC concluded that the station below Swift Creek was similar to the station above Swift Creek and that "both sample locations are similar and reflect streams not degraded by impacts of man" (FGFWFC, 1983). In a summary report, the FGFWFC reviewed data for six sampling periods from 1980 to 1983 and found that mean sport fish biomass below Swift Creek was nearly double the biomass found above Swift Creek (Krummich and Kautz, 1984).

4.12.2. WATER QUANTITY

The 17 drainage basins within the project area will be restored to approximately pre-mining sizes. Changes in the discharge volume and peak flow rates are relatively small and fall within the criteria agreed to by BOMR and PCS as documented in the 1995 MOA. The reporting drainage basin and the design storm were presented in the DSEIS (2001). The design presented in the DSEIS (2001) has not changed, but the application footprint and ACOE jurisdiction proposed to be impacted did, by way of a reduction of the number of acres impacted. The revised application covers 1,671 acres of current ACOE jurisdiction within the 18,166-acre application footprint. Due to the decrease in the application footprint Table 4 has been revised and is attached. Other than the changes made to the aforementioned table and the table shown below, all details provided in this section of the DSEIS (2001) remain unchanged.

**Percent changes from pre-mining to post-reclamation.**

ALTERNATIVE	Acres		Discharge Volume		Peak Flow Rates	
	Min.	Max.	Min.	Max.	Min.	Max.
A	-8.5	6.0	-10.1	2.8	-29.1	4.6
B	-3.6	5.3	-6.6	4.1	-40.0	1.7
C	-3.6	5.3	-7.8	3.8	-40.0	2.8
D	-7.3	5.4	-9.1	4.8	-38.3	1.5
Application Footprint/Preferred	-3.4	5.8	-6.5	4.9	-33.3	2.0

There is no evidence of the large-scale change in ground water storage that appears to be EPA’s concern resulting from PCS’s mining operations. Where this general concern has been raised in the context of activities in the Peace River basin, it has been adequately addressed, including testimony accepted and relied upon by the Administrative Law Judge in the recent case upholding state approval of a phosphate mining operation’s application for a wetlands mining permit. There is no reason to expect material change in surficial aquifer storage in land-and-lakes and tailings fill reclamation areas. Any such change in clay settling reclamation areas would be highly localized, and in PCS’s case, would be in the upstream, flat portion of the various drainage basins, far removed from any areas of possible ground water contributions to streamflow. We should again note that PCS does not use the sand-clay mix reclamation technique. Documentation relative to these matters is found in the STBD and other supporting materials previously provided to EPA.

Water quantity and quality are addressed in detail in both the STBD and the original TBD (1985). In addition, the application for modification of the Conceptual Reclamation Plan includes surface water modeling that documents the absence of hydrologic impact on the Suwannee River. Copies of all that material have been provided to EPA.

Reclaimed wetlands at the Hamilton County Mine are typically located in areas backfilled with sand tailings and capped with overburden. The wetlands are built in areas contoured to elevations very similar to the pre-mining wetlands, typically two to five feet lower than the adjacent uplands. Water level fluctuations in the reclaimed wetlands are influenced by rainfall and contributions from the adjacent uplands.

The reclamation soils, overburden and tailings sand, have a range of hydraulic conductivity values similar to the pre-mining sandy soils. These soils will be placed and contoured to provide a landscape and topography similar to the pre-mining conditions. The suitability of reclaimed soils to maintain functioning wetlands is demonstrated by the following. Reclamation of thousands of acres

of tailings filled mine cuts has demonstrated that the Surficial aquifer water table returns to pre-mining levels. Observed soil moisture in reclaimed wetlands at the Hamilton County Mine demonstrates sufficient baseflow from adjacent uplands. The porosity of the overburden capped tailings sand strata is similar to the pre-mining soils, and often somewhat greater, due to a lower density of the hydraulically placed washed tailings sand. Reclaimed soils have a range of hydraulic conductivity values similar to pre-mining soils. Post-reclamation soils will result in similar water storage in the surficial aquifer during wet periods. This stored groundwater will flow to the wetlands in dryer periods, thereby sustaining the critical wetland habitat.

The undisturbed in-situ sands in unmined areas surrounding mine blocks provide boundary conditions that tend to mute small changes in the hydrologic characteristics in post-reclamation soils. Clayey strata below the matrix unit that retard vertical movement downward are not disturbed during mining.

A program to monitor the surficial aquifer was proposed by PCS at the March 12, 2002 EMAg meeting and will be incorporated into the permit. The proposed system includes placement of piezometers in locations distant from mining activities to provide background data. A comparison of data from background piezometers and piezometers installed in reclaimed wetlands will allow an evaluation of how soil characteristics affect the seasonal water level fluctuations in the reclaimed wetlands.

The impacts of clay settling areas on regional recharge rates to the Floridan aquifer have not been well documented. Recharge rates for unmined locations in the study area where the Floridan aquifer is well confined are estimated to be less than two inches per year (Stewart, 1980). Locations where the Floridan aquifer is poorly confined have estimated rate of recharge that range from 2 to 10 inches per year (Stewart, 1980). Mining will not disturb the primary confining beds overlying the Floridan aquifer that control aquifer recharge. In addition to phosphatic clay, reclaimed clay settling areas consist of remnant overburden spoil rows within the clay settling areas and overburden around the perimeter and. The overburden provides connections to the confining units below, and pathways for downward movement of water. The slow rates of vertical recharge exhibited by the in situ clays of the confining beds typically control recharge to the Floridan aquifer. The USGS determined that long term records for regional observation wells located near White Springs, Lake City and Valdosta, Georgia have not shown pronounced water level declines if climatic variations are factored in (Miller, 1978).

Continuous hydrologic simulations of pre-mining and post-reclamation conditions for the Rocky Creek basin were completed to evaluate stream baseflow. The results of the HSPF model simulations were averaged for an eight year period. The USGS HYSEP model was used to separate baseflow and surface water runoff components of the stream hydrograph. The analysis for Case C in the STBD showed that baseflow for the pre-mining conditions was 0.65 inches and 0.67 for the post-reclamation landscape. This represents a 3 percent change in baseflow, and a 0.3 percent change in total annual stream flow volume. The simulations indicated a similarity in the periodicity of low flow conditions, an indication that surficial aquifer contributions to stream baseflow should not be significantly impacted by mining and reclamation.

#### **4.13. HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE**

The mining process does not generate any of these type wastes.

#### **4.14. AIR QUALITY**

The mine does not have any significant adverse effects on air quality. Please see section 3.10.

#### **4.15. NOISE**

Noise levels from mining operations are regulated by section 14.7.2, Part 7.A.3 or the Hamilton County Land Development Regulations and applicable regulations of the U.S. Mine Safety and Health Administration (MSHA). PCS has always been in compliance these regulations.

#### **4.16. PUBLIC SAFETY**

The mining authorized by ACOE permits will occur on lands that are restricted for public access. Any associated activities, such as transportation of goods and supplies on roads and railroads, will comply with applicable laws concerning public safety.

#### **4.17. ENERGY REQUIREMENTS AND CONSERVATION**

PCS works to conserve energy, as it is an expense that reduces profit. The proposed activities would not increase the rate of the energy expenditure. All the necessary infrastructure is in place to bring energy to the site. Should the permit be denied and the phosphate produced by the Hamilton County Mine have to be imported, the increase in energy expenditures would be significant.

This aspect was not quantified. However, the least energy per unit of phosphate recovered will occur under the application alternative. The no action and the more restrictive alternatives prevent the equipment from being utilized efficiently. Avoiding wetlands and mining in smaller disjunct blocks will increase energy consumption.

#### **4.18. NATURAL OR DEPLETABLE RESOURCES**

The phosphate ore that is mined, processed and shipped for use in fertilizers and animal feed supplements is a resource that is depleted by the proposed action. However, phosphate is necessary for life and must be extracted and processed for use by the world population. There are no other substitutes.

#### **4.19. SCIENTIFIC RESOURCES**

There are no unique or special scientific resources within the project area.

#### **4.20. NATIVE AMERICANS**

There are no known lands or facilities owned or controlled by Native Americans within the project boundary.

#### **4.21. REUSE AND CONSERVATION POTENTIAL**

PCS has reuse and conservation programs in place for their operation. Details of these programs were presented in the DSEIS (2001).

#### **4.22. URBAN QUALITY**

All of the lands within the DSEIS application footprint are either rural or agricultural in nature. There are no urban land uses with this boundary.

#### **4.23. SOLID WASTE**

Solid wastes generated by the mining operations are managed in accordance with state law. This includes both disposal of typical "household" type waste that are sent to the Hamilton County landfill and on-site management of construction and demolition type debris.

#### **4.24. DRINKING WATER**

Direct mining activities, digging overburden and mining the phosphate matrix, are confined to generally sandy strata that make up the surficial aquifer. More clayey sediments that comprise the confining units of the Intermediate Aquifer System are left virtually intact in the pit bottom. There are no effects to the drinking water sources of the Floridian Aquifer.

PCS maintains a system of production wells to support the production and processing of phosphate rock. The production wells (and several potable water wells) withdraw from the Floridian Aquifer, and are permitted by the Suwannee River Water Management District (SRWMD). All SRWMD water use permits are in compliance.

#### **4.25. CUMULATIVE IMPACTS**

The PCS project area covers 100,580 acres in southeast Hamilton County, Florida. The area is approximately 40 miles south of Valdosta, Georgia and 60 miles west of Jacksonville, Florida. It is located within the Suwannee River Basin that encompasses a total of 9,950 square miles in Florida and Georgia. The HCM (Hamilton County Mine) is underlain by a sequence of hydrogeologic units that comprise the source for most of the freshwater utilized in the vicinity of the PCS site. Three aquifer systems are present within the HCM; the Surficial Aquifer, the Secondary Artesian Aquifer, and the Floridan Aquifer. The Secondary Artesian Aquifer (intermediate aquifer) is not continuously present in the HCM.

The "affected environment" is a defined term in the DSEIS (from the Plan of Study and the STBD), referring in that case to the point of comparison for evaluation of various alternatives. The affected environment is the current state of the HCM, assuming that all currently permitted work is completed. The baseline condition for purposes of consideration of cumulative impact was defined as that condition existing prior to the initiation of any mining activities by PCS or its predecessors in Hamilton County. The cumulative impacts of wetland mining were evaluated by comparison of baseline land use and hydrologic conditions to those that would exist after the completion of all mining and reclamation, in approximately the year 2040. All of the past and future activities are outside the 100-year floodplain of the Suwannee River. The major tributaries and significant headwater wetlands and upland buffers (in total over 19,000 acres) were designated in the course of the previous permitting process to be preserved from mining. Those areas remain unaffected by the permitting actions considered in this process.

All of the impacts discussed in the DSEIS (2001) and STBD (2000) were evaluated in the context of what has already been mined or disturbed, as well as the ongoing mining and reclamation activities (the affected environment). These alternative analyses provided in the STBD incorporated the cumulative effects of mining and reclamation/mitigation by adding the incremental impacts of the currently proposed actions. Watershed impacts were evaluated based on drainage basin boundaries, which in some cases extended outside the 100,580 acre project boundary, and well beyond the DSEIS evaluation area within that project boundary. It was only necessary to evaluate drainage basins that drain from the property since, due to the physiographic location of the HCM, there are no basins that drain to the property. For the purposes of the hydrologic analysis, these impacts were evaluated based on total land use of the project boundary, i.e. pre-operation conditions. Both land use and hydrologic conditions were evaluated in pre-operation and post-reclamation conditions.

Cumulative impact analysis for the aquatic environment should be limited to the Acquisition and Management Advisory Team (AMAT) boundary (exclusive of Georgia) identified in the Upper Suwannee Region Land Acquisition and Management Advisory Team Strategic Plan (adopted March 11, 1999) as referenced in the DSEIS and the STBD (Sections 2.7.2 and 3.2.3.4 respectively). The AMAT boundary is not readily available in an electronic format that would enable GIS analysis for

this evaluation. To facilitate the cumulative impact analysis, data for Hamilton, Columbia, and Suwannee Counties have been utilized even though those counties contain areas well beyond the cumulative impact evaluation area.

Census data from 1960 indicates that the populations of these counties were low with 20,077 people in Columbia County, 7,705 people in Hamilton County, and 14,961 people in Suwannee County.

In 1964, prior to phosphate mining in Hamilton County, these three counties' main sources of income were silviculture, hunting and some agriculture. The land use was made up of silviculture/pine plantations, a few agricultural lands and scattered residences. No land use mapping is available prior to the 1960's for the three county area. The Suwannee River Water Management District (SRWMD) did map land use for the three county area based on 1994-95 USGS DOQ's (infrared aerial photography). The results are summarized below.

<b>SRWMD 95 Land Use (acres)</b>			
<b>Land Use*</b>	<b>Hamilton County</b>	<b>Columbia County</b>	<b>Suwannee County</b>
100 Urban	39,340	6,170	41,535
200 Agricultural	45,550	18,652	156,836
300 Rangeland	3,910	2,318	5,834
400 Upland	189,024	170,011	222,458
500 Open Water & Rivers	3,526	1,663	3,362
600 Wetland			
611, 613, 614, and 615	5,032	6,780	734
621 and 622	13,545	27,455	1,243
630 and 631	28,590	49,646	4,721
Other	1,659	1,117	1,555
700 Barren	23	136	91
800 Transportation/Utilities	2,129	2,630	4,543
<b>Total</b>	<b>332,328</b>	<b>286,578</b>	<b>442,912</b>

\* Florida Land Use Cover and Forms Classification (FLUCCS).

Data on water quality and quantity, wetland functions and ground water withdrawal for the cumulative impact evaluation area prior to phosphate mining is unavailable. The Suwannee River, in the vicinity of the HCM, was designated an Outstanding Florida Water (OFW) in 1979. Given the lack of data prior to phosphate mining, it is assumed that there were no water quality problems since the Suwannee received flow from the Okefenokee Swamp and runoff from rural undeveloped areas and pine plantations. However, one could speculate that the Suwannee also received municipal waste that was not well treated and could have increased nutrient and bacteria levels.

Within the cumulative impact evaluation area the industry that had the greatest ability to impact large acreage is silviculture. The silviculture industry now operates according to Best Management Practices (BMP) which have been endorsed by Federal and State agencies. Prior to the implementation of BMP, wetlands were adversely impacted by extensive ditching and in some cases conversion of wetlands to pine plantation. There continues to be substantial alteration of uplands between pine plantation and agriculture. This causes a loss of diversity in wildlife habitat, which in most cases is detrimental to wildlife. As a result of implementation of the BMP, additional cumulative impacts to wetlands attributable to silviculture can now be assumed to be negligible. The nature and scope of silvicultural activities are independent of the activities being evaluated for this action.

Currently the portions of these three counties in the cumulative impact evaluation area exist much the same as they did in 1960 with the exception the HCM. The land use within the cumulative impact area still consists of silviculture/pine plantations, agriculture (which is slowly being converted to silviculture) scattered residences and a few state parks (see the SRWMD 95 Land Use Table presented above) . These counties have realized little development due marginal population growth. Census data for 2000 reveals that Columbia County has a population of 56,513 (an increase of 910 people per year), Hamilton County has a population of 13,327 (an increase of 140 people per year), and Suwannee County has a population of 34,844 (an increase of 497 people per year).

Given the low growth rate within these three counties it is evident that there is not much development in this part of North Florida. From 1992 through 2002, the ACOE has authorized approximately 34 acres of wetland fill and required approximately 48 acres of compensatory mitigation in Columbia, Hamilton and Suwannee Counties exclusive of PCS's activities. The ACOE is unaware of any other federally regulated land disturbance activities within the evaluation area that would affect significant upland or any wetland resources within the cumulative impact evaluation area that should be incorporated into a cumulative impact analysis. The only other major land disturbance impacts within the area are related to past and ongoing silvicultural activities in both uplands and wetlands. PCS has transferred all of their rights within the 100-year floodplain of the Suwannee River and additional areas (approximately 19,000 acres) considered to be higher quality wetlands and upland buffers to the SRWMD. The SRWMD has purchased significant additional portions of the floodplain to specifically preclude development in these sensitive wetland areas. Total SRWMD ownership/conservation easements is 171,000 acres, most of which is within the Suwannee basin.

As stated previously, the entire HCM consists of approximately 100,580 acres. Prior to the preferred alternative, approximately 46,497 acres were either previously disturbed or permitted (current permit 198404652) for mining or use as mine support. Out of the total, approximately 14,078 acres are wetland acres. Based on the Florida Department of Environmental Regulation, Bureau of Mine Reclamation (BOMR) approved (February 25, 2003) Conceptual Reclamation Plan Modification (PCS-HC-PCB), there will be approximately 12,307 acres reclaimed within this area. The difference, approximately 1,771 acres, is due to disturbance of wetlands prior to the requirement of wetland reclamation which were not replaced and offsite mitigation, pursuant to the 1995 Memorandum of Agreement (as provided in Appendix C of the DSEIS). As noted above, there is a difference between pre-mining and post-reclamation wetland acreage. That difference was more than adequately compensated for by contributions that PCS made into a fund to purchase environmentally sensitive lands as stated in the June 5, 1996 Supplemental Environmental Assessment and Statement of Findings (Statement of Findings) issued by the ACOE. In addition, approximately 5,000 acres of lakes have been created primarily within the HCM from upland areas which enhances aquatic habitat and diversity in the area.

Hamilton County issued PCS a permit (Resolution 03-05, dated February 18, 2003) for mining. BOMR has issued a notice of approval of the Conceptual Reclamation Plan Modification a Wetland Resource Permit (#0144913-003). The BOMR Wetland Resource Permit will constitute state water quality certification pursuant to Section 401 of the Clean Water Act. Both the Conceptual Reclamation Plan and the Wetland Resource Permit applications (submitted November 2001) addressed impacts resulting from PCS operations. In addition, the Conceptual Reclamation Plan compares the pre-mining and post-reclamation land uses for the entire HCM as well as those portions of the drainage basins that extend outside of the actual project boundary.

In addition to the above outlined impacts, the preferred alternative would involve mining/directly impacting an additional 1,671 acres of jurisdictional wetlands and an additional 3,997 acres of isolated wetlands. Mitigation and reclamation will adequately mitigate for the effects of the proposed activity. All wetland impacts, regardless of jurisdiction, are mitigated for according to State, County and Federal regulations. The STBD and previous evaluations confirmed the viability of reclaimed wetlands for restoration of wetland functions. PCS proposes to reclaim the mined or disturbed wetlands on an acre-for-acre and type-for type (FLUCCS) basis. The mitigation plan for the preferred alternative will result in the creation of 1,731 wetland acres. As additional mitigation PCS proposes to provide "conservation easements" (or other form of permanent preservation) on a mixture of reclaimed and unimpacted environmentally sensitive wetlands. The acreage of conservation easements will equal 1/3 of wetlands impacted regardless of jurisdiction. Also, compensatory mitigation through onsite reclamation and purchase of environmentally sensitive lands will offset wetland impacts covered by previous ACOE permits.

Pre-mining, within the HCM, there were approximately 32,883 acres of wetlands. Post-reclamation assuming the preferred alternative is permitted as proposed, there will be approximately 32,162 acres of unimpacted and mitigation wetlands. The pre-mining and post-reclamation difference is explained by offsite mitigation and the fact that some wetlands were impacted prior to assertion of ACOE discretionary jurisdiction. The offsite mitigation proposal, which was endorsed by the ACOE, was determined to have no cumulative impact as concluded in the Statement of Findings (June 5, 1996) issued by the ACOE.

Populations of wetlands flora and fauna will be temporarily reduced in active operational areas. However, populations will not be eliminated from the HCM. Populations of wetland species may shift (increase for some species and decrease for others) even though reclamation will provide acre-for-acre replacement of affected wetlands. Preservation from mining of approximately 19,000 acres of floodplain and wetlands, as well as the approximately 36,000 acres of undisturbed habitat within the HCM, will aid in maintaining viable populations of wetland species within the project boundary and will serve as a colonizer sources after reclamation is complete. There will be an overall increase in species diversity due to creation of new wetland systems and aquatic habitats, which are limited, or not presently existing in the HCM.

The flood and stormwater storage function of wetlands will be provided storage in lakes and mine pits during active operations. During mining, portions of the drainage areas in the HCM will be altered as the water is diverted from its natural drainage area to the mine water management system. Active management of storm water within the mine water system will prevent downstream flooding and uncontrolled surface runoff. Reclaimed wetlands and reclaimed lakes will provide storage functions similar to pre-mining conditions.

The supporting documentation (DSEIS, TBD, and STBD) describes the impacts of the mining operation to the upper portion of the surficial aquifer. The mining operation does not affect the confining layer beneath the phosphate zone or directly affect the deeper Floridan Aquifer. The USGS determined that long term records for regional observation wells located near White Springs, Lake City and Valdosta, Georgia have not shown pronounced water level declines if climatic variations are factored in (Miller, 1978). Cumulative impacts to the Floridan Aquifer would be limited to minor local changes in recharge rates due to the consolidation of less permeable clays in settling areas. These would be offset by increases of recharge in other areas reclaimed with sand tailings.

The reclamation soils, overburden and tailings sand have a range of hydraulic conductivity values similar to the pre-mining sandy soils. These soils will be placed and contoured to provide a

landscape and topography similar to the pre-mining conditions. Infiltration to the surficial aquifer will be reduced under clay settling areas due to the reduced permeability of clays.

The number of clay settling areas (5 containing approximately 3,393 acres) proposed for the preferred alternative are consistent with the number identified in the Conceptual Reclamation Plan Modification (PCS-HC-PCB as approved on February 25, 2003). Of the 5 settling areas, approximately 4 will be constructed for mined upland volume, which is already permitted (Hamilton County (Resolution 03-05, dated February 18, 2003), BOMR Wetland Resource Permit (#0144913-003)). As stated previously, replacement of the surficial aquifer with waste phosphatic clay will locally decrease recharge of the surficial aquifer.

A program to monitor the surficial aquifer (proposed by PCS at the March 12, 2002 EMAG meeting) will be implemented during mining regardless of which alternative is permitted. The proposed system includes placement of piezometers in locations distant from mining activities to provide background data. A comparison of data from background piezometers and piezometers installed in reclaimed wetlands will allow an evaluation of how soil characteristics affect the seasonal water level fluctuations in the reclaimed wetlands.

Water quantity and quality are addressed in detail in both the STBD and the original TBD (1985). In addition, the application for modification of the Conceptual Reclamation Plan includes surface water modeling that documents the absence of hydrologic impact on the Suwannee River. Nutrient loadings from the entire facility have decreased significantly over the past decade since the Suwannee River was determined to be an Outstanding Florida Water (OFW). Until recently the Suwannee River received discharges from the Town of White Springs Wastewater Plant. However, these discharges to the river have ceased since PCS has agreed to accept the discharge into its mine water system. The nutrients that would have gone directly to the river are now reduced through wetland uptake in the vegetated portions of the clay settling system that are either inactive due to a shut down of one mine area or due to a compaction/consolidation state which takes the areas out of active service for a period of time. NPDES discharges to the Suwannee River's tributaries will cease upon mine closure around 2040. The cessation of discharges will occur after completion of reclamation when all runoff water will be returned to pre-mining location flows.

The hydrologic analysis confirmed that the pre-mining volume, flow, and storm response characteristics of each of the affected basins would be restored through the mitigation and reclamation program. The differences in land use from the pre-mining to the post-reclamation condition are essentially in the conversion of upland areas to lakes (approximately 7,131 acres). This is a necessary consequence of the extraction of the volume of phosphate ore, as the water fills the void left from the removal of the phosphate. The lakes serve valuable ecological functions, diversifying and enhancing wildlife habitat, creating additional aquatic habitats, and providing substantial recreational opportunities. The evaluation also noted that permitted activity does not affect large portions of the affected drainage basins. The combination of unaffected area, effective mitigation, increased habitat diversity, restoration of drainage patterns and the fact that PCS is the only phosphate mine in the watershed results in no adverse cumulative impact. The following table presents the ultimate land use for the HCM following reclamation and mitigation for the preferred alternative, wetlands that were impacted prior to assertion of ACOE discretionary jurisdiction and wetlands impacted under ACOE permits.

<b>Land Use Acres within the Hamilton County Mine</b>		
<b>Land Use*</b>	<b>Pre-mining<sup>1</sup></b>	<b>Post-reclamation</b>
100 Urban	392	2,670
200 Agricultural	5,790	4,841
200/400 Agriculture/Silviculture		9,888
400 Upland	60,303	42,591
500 Open Water	39	7,170
600 Wetlands		
611, 615, 617 and 618	3,501	10,386
620	6,081	3,903
630	23,126	17,590
640	175	283
700 Barren	28	16
800 Transportation/Utilities	1,145	1,242
<b>Total</b>	<b>100,580</b>	<b>100,580</b>
* Florida Land Use Cover and Forms Classification (1999, DOT).		
<sup>1</sup> Based on LANDSAT images and aerial photography indicating land surface conditions prior to 1960 (HCM Conceptual Reclamation Plan Modification (PCS-HC-CPB), 2001).		

As noted in the DSEIS, given the sequencing of mine preparation, mining, reclamation, and the temporary nature of the attendant impacts, the amount of land at any time involved in active operations is relatively constant. Mined lands are being reclaimed as fast or faster than mined on a net acre basis. Since 1991 PCS has reclaimed approximately 1,000 more acres than it has mined.

The HCM is not a source for significant groundwater recharge function to the Floridan aquifer due to the presence of an areally consistent confining layer separating the surficial aquifer from the Floridan aquifer below. Recharge functions for the surficial aquifer are provided by both uplands and wetlands. Reclaimed land will provide this function in the HCM similar to existing conditions. As discussed previously, a program to monitor the surficial aquifer was proposed by PCS and will be implemented regardless of which alternative is chosen. The monitoring program will consist of a comparison of data from background piezometers and piezometers installed in reclaimed wetlands to evaluate the effect of soil characteristics on seasonal water level fluctuations in reclaimed wetlands. Temporary impacts to the surficial aquifer will cease upon closure of the HCM around 2040.

In addition to the reclamation for jurisdictional wetlands, PCS will mitigate for impacts to approximately 3,997 acres of isolated wetlands that are outside of the ACOE's jurisdiction. At a minimum PCS will perform acre-for-acre and type-for-type reclamation for these impacts.

There will also be approximately 3,271 acres subject to "post-modification" (alternative) standards (covered in the 198404652 permit) mitigated through contributions. As noted above, there is a

difference between pre-mining and post-reclamation wetland acreage. That difference was more than adequately compensated for by contributions that PCS made into a fund to purchase environmentally sensitive lands as stated in the June 5, 1996 Statement of Findings. Due to PCS's proposed mitigation plan and the absence of other significant impacts, there will be no permanent loss of wetland function within the cumulative impact evaluation area.

Mining operations will cease at the exhaustion of the reserve estimated to be 2040. Due to the combination of unaffected area, effective mitigation, increased habitat diversity, and restoration of drainage patterns, there will be no permanent loss of wetlands/wetland functions within the mine boundary. One would expect that since the mine would not close down all at once and would instead phase down, that the county would develop other sources of economic activity. Hamilton County has anticipated this by adopting a long-term land use vision, which provides direction for the development of the county and preservation of the rural character. PCS's reclamation plans were specifically developed to minimize conflict with the long-term land use vision. The long-term land use vision indicates a recognition that mining is a temporary land use, and that the company should be a partner in planning for post-reclamation economic activity. The preferred alternative will facilitate the long-term economic development in Hamilton County due to extended mine life. Thus it is anticipated that Hamilton County will be much less dependent upon the HCM for employment opportunities than it is currently.

The most important conclusion of the cumulative impact analysis of the FSEIS, based on the DSEIS, TBD, STBD and other studies referenced in the DSEIS, is that any impacts from the proposed activities will be adequately mitigated through: acre-for-acre type-for-type reclamation (for jurisdictional and isolated wetlands), preservation from mining of approximately 19,000 acres of floodplain and wetlands, contributions to a fund to purchase environmentally sensitive wetlands, and conservation easements placed on 1/3 of the wetlands impacted. The only differences, therefore, are in the socioeconomic impacts of the various alternatives.

In addition to the details above, cumulative impact analyses were conducted and presented in the following documents:

Draft Environmental Impact Statement	May, 1985
Technical Background Document	May, 1985
Final Environmental Impact Statement	February, 1986
Record of Decision, 84B-4652	1987
Supplemental Environmental Assessment and Statement of Findings	June, 1996
Supplemental Environmental Assessment and Statement of Findings	December, 1996
Supplemental Technical Background Document	January, 2000
Draft Supplemental Environmental Impact Statement	November, 2001
Conceptual Reclamation Plan Modification	November, 2001

All of the above documents concluded that, to the extent that they existed, all cumulative impacts were adequately mitigated.

#### **4.26. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

The irreversible and irretrievable commitments of resources were discussed in detail in the DSEIS (2001). These irreversible and irretrievable commitments of resources have been reduced due to the withdrawal of three wetland areas. The withdrawal of these areas resulted in a decrease of

approximately 1,000 acres of mining reducing the mining footprint from 19,077 acres to 18,166 acres, thus reducing the mine life by approximately 15 – 18 months. These decreases will reduce the resources proportionally.

#### **4.27. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS**

In the DSEIS (2001) unavoidable adverse environmental effects were discussed in detail for the following topics: upland communities, wetland communities, aquatic communities, forestry and agricultural resources, game and migratory wildlife, rare and endangered species, surface water quality, air quality, radiation, historical and archaeological resources and recreation. Since the time of the DSEIS (2001) submittal USFWS has concluded that there will be no adverse impacts to rare and endangered species as stated in a letter from Mr. Pete Benjamin (dated November 19, 2002). Other than this change, the discussion provided in the DSEIS (2001) remains valid for the remaining topics.

#### **4.28. LOCAL SHORT-TERM USES AND MAINTENANCE/ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

In the DSEIS (2001) local short-term uses and maintenance/enhancement of long-term productivity were discussed in detail for the following topics: ecology, surface water quality, air quality, radiation, historical and archaeological resources, recreation, productivity outside the project boundary, water quality and fauna. The discussion provided in the DSEIS (2001) remains valid for all of these topics.

#### **4.29. INDIRECT EFFECTS**

The primary indirect effect is related to the economic impacts on the local, state, National, and world economies. As discussed previously, the withdrawal of the three wetland areas resulted in a decrease of approximately 1,000 acres of mining reducing the mining footprint from 19,077 acres to 18,166 acres, thus reducing the mine life by approximately 15 – 18 months. These decreases will reduce the economic impacts proportionally.

#### **4.30. COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES**

PCS has been participating in an Ecosystem Management Agreement (EMAg) process, which is designed to bring all interested federal, state and local governments as well as interested parties into the process from the beginning. The result of this effort is expected to be the execution of an EMA and the issuance of federal, state and local permits, which will insure consistency and compatibility with all federal, state and local objectives.

#### **4.31. CONFLICTS AND CONTROVERSY**

No conflicts or controversies have arisen to date that have not been resolved through agreements, commitments on the part of PCS or project modifications.

#### **4.32. UNCERTAIN, UNIQUE, OR UNKNOWN RISKS**

As discussed in the DSEIS (2001) no uncertain, unique or unknown risks are expected.

#### **4.33. PRECEDENT AND PRINCIPLE FOR FUTURE ACTIONS**

As noted previously in the DSEIS (2001) it is expected that future actions will be based on previous actions taking into consideration any new or modified regulations and requirements

#### 4.34. ENVIRONMENTAL COMMITMENTS

PCS Phosphate – White Springs is committed to excellence in employee safety, environmental protection, and production operations. These are not separate commitments or conflicting priorities. Safety, environmental protection, and product quality go hand-in-hand. PCS has played a leading role in development of the Florida Phosphate Council’s Guiding Principles, which provide overall direction to company efforts. Operations under these Principles will result in safe and environmentally sound production of high quality products.

PCS and its employees bear a special responsibility for the stewardship of the environment and natural resources. Stewardship of the environment requires that PCS minimize any negative effect of work to the greatest extent possible. That stewardship obligation is for the benefit of the environment in Hamilton County and the surrounding areas for present and future generations.

Every employee shares the responsibility for environmental protection. This is not an added assignment – it is an integral part of everything PCS does. PCS employees take the time to examine the environmental impact of their work – on the land where they live, the water they drink, and the air they breathe.

PCS’s environmental record is built on both a commitment to environmental protection and performance. More importantly, it sets the standard for improvement in the future. PCS employees work together and continue to be a leader in environmental protection in the Florida phosphate industry and among PCS facilities.

#### 4.35. COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

##### 4.35.1. NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and a Draft Environmental Impact Statement was submitted (November 2001). The project is in compliance with the National Environmental Policy Act.

##### 4.35.2. ENDANGERED SPECIES ACT OF 1973

Consultation was initiated with NMFS and the USFWS during the review period for the DSEIS. The NMFS stated in an email dated June 5, 2002 that

“comments and recommendations submitted to the ACOE by the USFWS also represent those of the NMFS”.

The USFWS has concluded, via a letter from Mr. Pete Benjamin (dated November 19, 2002) that this proposed project will not adversely affect any of the threatened and endangered species addressed in the DSEIS. Specifically Mr. Benjamin stated that the proposed project will not adversely affect the following species: flatwoods salamander (*Ambystoma cingulatum*), Eastern indigo snake (*Drymarchon corais couperi*), red-cockaded woodpecker (*Picoides borealis*), bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), gray bat (*Myotis grisescens*), Chapman’s rhododendron (*Rhododendron chapmanii*) and Gulf sturgeon (*Acipenser oxyrinchus desotoi*). In addition, Mr. Benjamin went on to state that PCS:

“has sufficiently avoided, minimized, and mitigated for the proposed jurisdictional wetland impacts, and that the sequence of mining and wetland reclamation, Suwannee River tributary diversions and restorations, the proposed conservation easements, and future purchase of environmentally sensitive lands, including wetlands, will adequately offset the proposed wetland impacts.”

4.35.3. FISH AND WILDLIFE COORDINATION ACT OF 1958

The proposed project was coordinated with the USFWS during the review period for the DSEIS. Please see the above section for details of the USFWS's conclusion.

4.35.4. NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

The proposed project was coordinated with the Florida Department of State, Division of Historical Resources. The Division of Historical Resources has confirmed that "no cultural resources are recorded or known to exist in the wetland areas identified in the 2002 USACOE permit". Therefore there are no outstanding issues regarding this topic.

4.35.5. CLEAN WATER ACT OF 1972

All State water quality standards would be met by the activities proposed. State water quality certification has been issued for all past projects. All past similar activities in the past have been certified. A Section 404(b) evaluation is included in the DSEIS (2001) as Appendix A. In addition, BOMR has issued a Wetland Resource Permit (#0144913-003) for the preferred alternative, which constitutes state water quality certification pursuant to Section 401 of the Clean Water Act.

4.35.6. CLEAN AIR ACT OF 1972

No air quality permits would be required for this project.

4.35.7. COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C was included in the DSEIS (2001) as Appendix B. State consistency review was performed during the coordination of the draft DSEIS and permit application.

4.35.8. FARMLAND PROTECTION POLICY ACT OF 1981

No prime or unique farmland would be impacted by implementation of this project. This act is not applicable.

4.35.9. WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This act is not applicable.

4.35.10. MARINE MAMMAL PROTECTION ACT OF 1972

This project is over 150 river miles from the Gulf of Mexico. No extant marine mammals have ever been seen or documented within the project area.

4.35.11. ESTUARY PROTECTION ACT OF 1968

This project is over 150 river miles from the Gulf of Mexico. No designated estuary would be affected by project activities. This act is not applicable.

4.35.12. FEDERAL WATER PROJECT RECREATION ACT

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) as amended do not apply as there is no federal money involved in the project.

4.35.13. FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976

Consultation was initiated with NMFS and the USFWS during the review period for the DSEIS. The NMFS stated in an email dated June 5, 2002 that

"comments and recommendations submitted to the ACOE by the USFWS also represent those of the NMFS".

The USFWS has concluded, via a letter from Mr. Pete Benjamin (dated November 19, 2002) that this proposed project will not adversely affect any of the threatened and endangered species addressed in the DSEIS. Specifically Mr. Benjamin stated that the proposed project will not adversely affect the following species: flatwoods salamander (*Ambystoma cingulatum*), Eastern indigo snake (*Drymarchon corais couperi*), red-cockaded woodpecker (*Picoides borealis*), bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria americana*), gray bat (*Myotis grisescens*), Chapman's rhododendron (*Rhododendron chapmanii*) and Gulf sturgeon (*Acipenser oxyrinchus desotoi*). In addition, Mr. Benjamin went on to state that PCS:

*"has sufficiently avoided, minimized, and mitigated for the proposed jurisdictional wetland impacts, and that the sequence of mining and wetland reclamation, Suwannee River tributary diversions and restorations, the proposed conservation easements, and future purchase of environmentally sensitive lands, including wetlands, will adequately offset the proposed wetland impacts."*

#### 4.35.14. SUBMERGED LANDS ACT OF 1953

The project would not occur on submerged lands of the State of Florida. Therefore this act is not applicable.

#### 4.35.15. COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

This project is over 150 river miles from the Gulf of Mexico. There are no designated coastal barrier resources in the project area that would be affected by this project. These acts are not applicable.

#### 4.35.16. RIVERS AND HARBORS ACT OF 1899

There are no navigable waters covered by this act within the project area. The project contains only small headwater streams. The proposed work would not obstruct navigable waters of the United States.

#### 4.35.17. ANADROMOUS FISH CONSERVATION ACT

Please see Section 4.35.15 above.

#### 4.35.18. MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

No migratory birds would be adversely affected by project activities. Migratory birds actually benefit from the open water created by the mining and reclamation activities. The project is in compliance with these acts.

#### 4.35.19. MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

The Marine Protection, Research and Sanctuaries Act does not apply to this project. The disposal activities addressed in the DSEIS have been evaluated under Section 404 of the Clean Water Act.

#### 4.35.20. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

There is no essential fish habitat within the project area as defined by the Magnuson-Stevens Act. This act addresses marine and anadromous species. The proposed project is over 150 river miles from the Gulf of Mexico. Please see Section 4.35.15 above.

#### 4.35.21. E.O. 11990, PROTECTION OF WETLANDS

This Executive Order does not apply to regulatory permit actions. Wetlands would be impacted if a permit were issued. Wetland impacts would be subject to evaluation under the guidelines pursuant to Section 404(b) of the Clean Water Act. Additional requirements of this Executive Order would not apply, as the activity is not funded fully or partially by any Federal, state or local government.

#### 4.35.22. E.O. 11988, FLOODPLAIN MANAGEMENT

The project is not in the base floodplain (100-year flood). The proposed project increases storage onsite through the creation of reclaimed lakes that act to reduce the flood peaks. The proposed project has been evaluated in accordance with this Executive Order. The proposed project is in compliance.

#### 4.35.23. E.O. 12898, ENVIRONMENTAL JUSTICE

This project would not result in adverse human health or environmental effects. PCS is an Equal Opportunity Employer (EOE) and does not discriminate based on race, color, or national origin. The activity would not impact "subsistence consumption of fish and wildlife". The proposed activity would not substantially impact health or the environment or unfairly impact a minority or low-income population.

#### 4.35.24. E.O. 13089, CORAL REEF PROTECTION

This project is over 150 river miles from the nearest coral reefs and at over 100 feet NGVD. Therefore, this order is not applicable.

## 5. LIST OF PREPARERS

NAME	DISCIPLINE	EXPERIENCE	CONTRIBUTION
Stanley W. Posey	Environmental management	20 years experience in environmental science and management	Overall project management
John Wester	Mitigation/reclamation design	4 years environmental; 23 years reclamation planning & management	Mitigation/reclamation plans
Cameron Lynch, EIT	Mine engineer	20 years mine planning, reclamation design	Mine plans/post reclamation design
Eric Norman, P.E.	Mine planning	23 years mine planning, reclamation, operations	Mine reclamation plans
Randall L. Armstrong	Ecology, water quality, permitting	30 years in resource mgmt., regulation, permitting	Project mgmt., permitting
John A. Davis. Ph.D.	Ecology, permitting	25 years in resource mgmt., regulation, permitting	Ecology, wetlands, water quality, permitting
Julie T. Stone	Wildlife and ecology	6 years in ecology, wildlife, permitting	Wildlife, ecology, document preparation
Cornelis Winkler III, P.G.	Geology, clay consolidation, reclamation,	24 years in mining, disposal planning, reclamation	Geology, clay management, reclamation plans
Michael P. Timpe, P.E.	Surface water modeling, geographic information systems (GIS)	20 years in water resource management	Surface water modeling, GIS mapping
W. Emmet Bolch, Jr., Ph.D.	Sanitary engineering	35 years experience in radiation studies and environmental impact assessments	Radiation
Roger L. Burford, Ph.D.	Economics and statistics	40 years in economic impact and cost-benefit studies	Socioeconomics
Mark Gluckman	Planning		Future land use plans

## **6. PUBLIC INVOLVEMENT**

### **6.1. SCOPING AND SEIS**

Efforts to develop the plan of study for the STBD and for this SEIS began in late 1997. The ACOE directed PCS to prepare an SEIS to update the 1986 EIS. PCS worked with the various local, state and federal agencies, environmental groups and interested parties to develop a draft Plan of Study (POS) for the STBD, which was to contain the technical information and analyses to support the SEIS. The formal Public Notice requesting comments on the draft POS was published by the ACOE on June 19, 1998. Several meeting with federal, state, and county organization and environmental groups and the public were held to discuss the POS and obtain public input. On September 25, 1998, PCS published the final POS for the STBD.

A Notice of Intent (NOI) to prepare a draft of this EIS appeared in the Federal Register on July 1, 1998 (FR 63, #126 p. 35916). In addition, a public notice was mailed to interested and affected parties on June 19, 1998. A public hearing was held on July 30, 1998. Comments were incorporated with the POS. See section 1.7 of the DSEIS (2001) document for a list of scoping activities and coordination with regulatory authorities.

### **6.2. AGENCY COORDINATION**

Official agency coordination was done during the review period for the DSEIS. The project has been an interactive process with the primary agencies through the EMAG process as noted above.

### **6.3. LIST OF STATEMENT RECIPIENTS (DRAFT EIS)**

A list of the recipients of the DSEIS, other related documents and notices are contained in Appendix C of the DSEIS (2001).

### **6.4. COMMENTS RECEIVED AND RESPONSE**

Comments received and responses have been compiled and addressed in the Appendix A of this FSEIS.

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**APPENDIX A**  
**COMMENTS RECEIVED AND RESPONSES**

## COMMENTS ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

On May 31, 2002, the U.S. Environmental Protection Agency (EPA) published the Notice of Availability (NOA) of the Draft Supplemental Environmental Impact Statement (DSEIS) in the Federal Register (FR), Volume 67, No. 105, with a 45 day comment period (EIS no. 020209). By letter of 5 July, 2002, EPA requested a 30 day extension of the comment period, from 15 July, 2002, until 15 August, 2002. By letter of 15 July, 2002, Dr. Sydney Bacchus requested a 30 day extension of the DSEIS comment period. By e-mail of 15 July, 2002, Ms. Barbara Herrin of Wetlands Alert, Inc., also requested extension of the DSEIS comment period for an unspecified length of time. The Corps informally granted these requests, and has continued to accept comments from the general public since publication of the NOA. Notice of Availability Comments: The Corps has reviewed all of the comments submitted on the DSEIS. These comments are summarized below;

1. **U.S. Environmental Protection Agency (EPA):** By letter dated 12 August, 2002, the EPA provided the following comments on the DSEIS;

**Comment:** The Corps and the applicant should consult with the USFWS concerning potential for impacts to endangered species prior to mining.

**Response:** The Corps has consulted with the USFWS pursuant to Section 7 of the Endangered Species Act. As a result of this consultation, the Corps has concluded that the proposed continuation of mining will not jeopardize the continued existence of any federally listed threatened and endangered species.

**Comment:** The DSEIS did not adequately address cumulative impacts on large-scale disturbance of the subsurface aquifer zone, reduced permeability of soils altered by mining/restoration, the effect of phosphate mining on subsurface aquifer storage, and the potential for impacts on the Suwannee River. The final SEIS should provide a more balanced discussion of environmental and economic issues attendant with the preferred alternative.

**Response:** The FSEIS has been revised to more thoroughly reference the existing supporting information contained in the following documents: the May, 1985 Technical Background Document (TBD); the May, 1985 DEIS; the February, 1986 FEIS; the January, 2000 Supplemental Technical Background Document (STBD); the November, 2000 Addendum to the STBD; the November, 2001 DSEIS; the November, 2001 Joint FDEP and USACOE Dredge and Fill Application; the November, 2002 Clay Management Plan; the January, 1998 – March, 2002 records from the Ecosystem Management Advisory Team Meetings, and; the May, 2002 and September, 2002 responses to requests for additional information. In addition, Section 4.12.2 of the FSEIS includes an expanded discussion of the impacts to the surficial aquifer and

changes in soil permeability. Pursuant to the Corps request, PCS has expanded the cumulative impact analysis of the FSEIS (Section 4.25) to fulfill the NEPA requirement.

The supporting documentation describes the limitation of mining impacts to the upper portion of the surficial aquifer. There is no evidence of the large scale change in ground water storage and permeability that appears to be of concern to the EPA. However, there will be localized changes in surficial aquifer recharge potential and ground water conductivity regardless of which alternative is permitted. In areas reclaimed using overburden and sand tailings, aquifer recharge and transmissivity will increase. The land and lakes areas will provide aquifer recharge to some degree. Replacement of the surficial aquifer with waste phosphatic clay will reduce both aquifer recharge and transmissivity. Clay settling areas (CSAs) have been and will continue to be located in the most upstream areas to minimize their effect on ground water contributions to stream flow.

The undisturbed in-situ sands in unmined areas surrounding mine blocks provide boundary conditions that tend to mute any changes in the hydrologic characteristics in post-reclamation soils. Also, the clayey strata below the phosphate matrix unit that retard vertical movement of water downward to the Floridan Aquifer are not disturbed during mining.

PCS intends to implement a surficial aquifer monitoring program to identify and mitigate potential future effects on this aquifer. A comparison of data from background piezometers and piezometers installed in reclaimed wetlands will allow an evaluation of how soil characteristics affect the seasonal water level fluctuations in the reclaimed wetlands.

Potential impacts to the Suwannee River and its tributaries area addressed extensively in the DSEIS supporting documentation, primarily the 1985 TBD, the 2000 STBD and the Addendum to the STBD. Although there will be temporary changes in the flows of some individual tributaries during mining, this project would have a negligible effect on the Suwannee River flow regardless of which alternative is permitted. In addition, the application for modification of the Conceptual Reclamation Plan includes surface water modeling that documents the absence of hydrologic impact on the Suwannee River. The 17 drainage basins within the project area will be restored to approximately pre-mining sizes upon reclamation.

**Comment:** The EPA requested that the applicant implement a long-term ground water monitoring program to document ground water conductivity.

**Response:** The ground water monitoring program described at the March 12, 2002 EMAG Meeting and supporting documentation is designed to provide the technical basis for addressing potential short term impacts to nearby shallow (surficial aquifer) domestic and agricultural wells, agricultural areas, ponds, and wetland/preservation areas. The DSEIS and supporting documentation clearly demonstrate the recovery of surficial

aquifer levels to pre-mining conditions after the mining operation and reclamation are complete. The ground water monitoring program will continue for the life of the mine as described in the supporting documents.

**Comment:** The DSEIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment.

**Response:** The Hamilton County Mine (HCM) has been in operation for nearly 40 years and has been studied extensively. Massive amounts of data have been compiled by the applicant, it's consultants, and both federal and state agencies. Much of this information is contained in the documents referenced above and listed in Section 1.5 of the FSEIS. All of these documents have been provided to EPA and are available at the Corps' Jacksonville District.

**2. Dr. Sydney Bacchus:** Dr. Bacchus provided extensive comments on the public notices and DSEIS on behalf of Floridians for Environmental Accountability and Reform (FEAR) and Wetlands Alert, Inc. Her response consisted of three separate comment letters (dated 15 July, 2002; 16 July, 2002, and; 14 August, 2002) and a large volume of supporting information. This information included technical reports, newsletters, peer reviewed publications from a variety of scientific journals, book chapters, regulations, comments provided on past projects, and excerpts/photographs relating to her past communications in regard to the IMC Phosphates projects in west central Florida. This supporting information dealt primarily with cumulative impacts analysis, alternative technologies for recovery of phosphorus, effects of eutrophication on various species, and the impacts of surface mining on ground water, aquifers and tree survival. Dr. Bacchus also stated, "If the proposed modification is not denied, I am requesting that a series of public hearings be held throughout the State of Florida and Georgia regarding the impacts that would occur from this project." Although some of the information provided by Dr. Bacchus is not directly relevant to the proposed action, the Corps has extracted the following comments/concerns from the large volume of information provided for applicant responses.

**Comment:** The DSEIS does not address the long term effects of mining on the surficial and Floridan aquifers and the resources dependent upon these aquifers

**Response:** Localized changes in surficial aquifer recharge potential and ground water conductivity have been discussed in the response to the EPA's comments above. There is an observable decline in the water table as mining operations and associated dewatering approach, with recovery to previous levels after mining and dewatering cease. Drawdown effects are generally limited to within one half mile of the active mine pit under normal operating, hydrologic and climatic conditions, but can extend to nearly a mile under the most extreme conditions. PCS employs a variety of techniques to mitigate this effect. The area disturbed by mining at any given time would not increase regardless of which alternative is permitted, though the duration of mining would vary for each alternative.

Potential impacts to the Floridan Aquifer are addressed in the DSEIS supporting documentation, primarily the 1985 TBD, the 2000 STBD and the Addendum to the STBD. The Floridan Aquifer is well confined in the eastern part of the project area, and more poorly confined further west. The slow rates of vertical recharge exhibited by the in situ clays of the confining beds typically control recharge to the Floridan Aquifer. These confining beds are well below the phosphate matrix and will not be disturbed by mining.

The number of clay settling areas (5) proposed for the preferred alternative are consistent with the number identified in the Conceptual Reclamation Plan Modification (PCS-HC-PCB as approved on February 25, 2003). Of the 5 settling areas, approximately 4 will be constructed for mined upland volume, which is already permitted (Hamilton County (Resolution 03-05, dated February 18, 2003), BOMR Wetland Resource Permit (#0144913-003)). The total number of acres for clay settling areas permitted (through the current CRP (PCS-HC-PCB)) is 19,085. Of these acres approximately 14,472 are already constructed or under construction. Approximately 810 acres of CSAs will be constructed for wetlands mined under the preferred alternative. As stated previously, replacement of the surficial aquifer with waste phosphatic clay will decrease recharge of the surficial aquifer.

The net effect of mine pit dewatering and ground water withdrawals will be a slight increase in local recharge to the Floridan Aquifer. The locations and duration of this increase will vary based on which alternative is permitted. Initially the results from dewatering of the active mine pit, which lowers the head pressure between the surficial and Floridan Aquifer, could locally decrease recharge of the Floridan Aquifer by as much as 50 percent under the active mine pit. Since a maximum of a thousand acres is dewatered per year (approximately 20 acres per dragline at any given time), the regional effects of localized, temporary dewatering on the Floridan Aquifer recharge should be insignificant. Conversely, ground water withdrawals from the Floridan Aquifer increase the head difference between the surficial and Floridan Aquifers, accelerating the rate of downward leakage between the two aquifers, resulting in the net increase in recharge.

**Comment:** White Springs has ceased to flow as a result of this mining activity.

**Response:** White Springs derives its flow from the Floridan Aquifer, not the surficial aquifer. Several other springs in the northern portion of the Florida peninsula have stopped flowing as a result of extended drought. Any attempt to correlate the flow of White Springs with the impact of phosphate mining during extended drought would be sheer speculation.

**Comment:** PCS is solely responsible for more than 50% of all ground water withdrawals permitted by the Suwannee River Water Management District.

**Response:** Historical and projected future ground water withdrawal rates by PCS range from 11 to 28 million gallons per day (mgd). PCS is currently permitted to withdraw 45 mgd from the Floridan Aquifer. Internal mine water is recycled at approximately ten times the rate of new withdrawal. Ground water withdrawal is discussed in the 1985 TBD, the 2000 STBD, and the Addendum to the STBD. This documentation provides evidence that water withdrawals from the Floridan Aquifer have not resulted in significant regional decline in the Floridan Aquifer potentiometric surface if climatic variations are factored in.

**Comment:** The DSEIS should address the catastrophic and destructive wildfires caused by impacts of the mining on ground water

**Response:** Drawdown of the surficial aquifer is limited to within one mile of the active mine pit under the most extreme set of conditions. The frequency and severity of fires in and around the project area is likely more related to decades of fire suppression (increased fuel loads) and extended drought than dewatering of mine pits by PCS.

**Comment:** Degradation of waters via eutrophication is an indirect effect of phosphate mining that should be addressed in the DSEIS.

**Response:** Nutrient loading to the Suwannee River is addressed in the supporting documentation for the 1986 FEIS and the current FSEIS. PCS has no plans to increase the size or number of its existing beneficiation or chemical complex operations, which provide most of the phosphate, and nitrogen related nutrients. Regardless of the mining alternative selected, the permitted NPDES discharges will continue until mining operations cease. The alternative selected will affect only the duration of these discharges and not the quality.

Expansion of the mine increases the amount of rainfall captured and discharged as part of the mine water system. Total nutrient loading to the Suwannee River will not substantially increase as a result of additional areas being brought into the mine perimeter ditching. In fact, nutrient loadings from the entire facility have decreased over the past decade since designation of the Suwannee River as an Outstanding Florida Water (OFW). Nevertheless, the historical and existing input from PCS and other point and non-point discharges into the Suwannee River has increased concentrations of some nutrients.

Until recently the Suwannee River received discharges from the White Springs Wastewater Plant. However, these discharges to the river have ceased since PCS has agreed to accept the discharge into its mine water system. The nutrients that would have gone directly to the river are now reduced through wetland uptake in the vegetated portions of the clay settling system prior to discharge.

PCS is aware of the potential effects of eutrophication, but cannot be expected to control the ultimate fate of their products once sold on global markets. This issue is

larger than the study area and the Corps' authority. The impact of this single project on the global problem of eutrophication cannot be practicably evaluated.

**Comment:** The DSEIS fails to consider the cumulative impacts of continued discharges on water quality or to consider the direct, indirect and cumulative impacts of altered hydrology and hydroperiods on water quality of the Suwannee River and its tributaries

**Response:** Water quality issues are discussed in the 1985 TBD, the 2000 STBD and the Addendum to the STBD. The Suwannee River was designated an Outstanding Florida Water following 15 years of phosphate mining at the Hamilton County Mine, and remains so to this date. Mine water discharges will continue to be regulated by NPDES permit regardless of which alternative is permitted. After mining ceases and reclamation is completed, water quality in the Suwannee River, its tributaries, and unmined and reclaimed wetlands should approximate pre-mining characteristics. Pursuant to the Corps request, PCS has expanded the cumulative impact analysis of the FSEIS (Section 4.25) to fulfill the NEPA requirement.

**Comment:** All of the wetlands within the 19,077 acre project evaluation area are within the jurisdiction of the Corps; there are no isolated wetlands within the 100,580 acre project boundary.

**Response:** The jurisdictional determination has been completed in accordance with Corps regulations and guidance, as well as the policies of the Jacksonville District. This determination is consistent with the January 9, 2001 U.S. Supreme Court decision (SWANCC), and has been field verified by Corps and EPA staff. The final jurisdictional determination verified as accurate by the Corps indicates that the project evaluation area contains 2,250 acres of jurisdictional wetlands and 4,024 acres of nonjurisdictional (isolated) wetlands.

**Comment:** There is no scientific basis for the claim that wetlands can be restored or replaced once mined. Even if the trees survive, the wetland functions, faunal populations and soils are not reestablished.

**Response:** There is little doubt that the phosphate mining industry can construct wetlands that visually appear to be providing functions similar to those of the wetlands mined. The plant and wildlife communities present in the wetlands can be documented. Hydrology can be measured in the wetland system and may replicate what normally would be found in the surficial water table. The soil can eventually be shown to be developing hydric characteristics. Some functions are based upon the physical location of the wetland, and are restored immediately upon reclamation. Other functions, such as habitat for wildlife requiring the structural diversity of mature forests, will require many decades to be restored. The Corps and EPA are working to develop mitigation success criteria placing greater emphasis on obtaining appropriate soil and water

chemistry. Use of such criteria can further ensure that reclaimed wetlands are trending toward success at the time of release.

**Comment:** The success criteria used in the mitigation plan are inappropriate, especially high seed production, which is usually indicative of severe stress conditions.

**Response:** The Corps is aware that seed production is not necessarily an indication of plant vigor. This success criterion was included to counter an assertion that cypress planted in reclamation areas are not capable of producing viable seeds.

Success criteria for the required wetland reclamation have not been finalized, but will likely not be as dependent on meeting vegetational criteria as in the past. The Corps is working closely with the EPA to establish appropriate success criteria. These may include the use of reference wetlands, and requirements for reclaimed wetlands to have certain soil and water chemistry to meet mitigation requirements.

**Comment:** The DSEIS does not address secondary effects on wetlands, especially the effect of ground water withdrawals and open pits on reducing hydroperiod.

**Response:** Impacts to the surficial aquifer resulting from mine dewatering have been discussed above. Regardless of which alternative is permitted, drawdown of the surficial aquifer will affect the hydrology of wetlands in the vicinity of the active mine pit. The exact extent of wetlands that would be impacted by those areas that are being dewatered cannot be determined to any practical degree since such factors as size, distance, configuration, slope, depth of water table, type of wetland, antecedent rainfall, depth of mining and other factors would need to be determined for each individual wetland. Past experience at the project site indicates that mining and mine support impacts are generally localized in nature. These impacts can be largely mitigated using a variety of techniques. The mere fact that some reclaimed wetlands have initially been too wet indicates the localized nature and short duration of hydrologic effects.

**Comment:** The proposed action would adversely affect wildlife, including the federally endangered wood stork and manatee.

**Response:** Ecological impacts have been addressed in the supporting documentation for the DSEIS. Regardless of which alternative is permitted, the continuation of mining will have a wide range of effects on wildlife in the project area. Deleterious effects will include the loss of some wildlife utilizing areas cleared for mining, most notably the amphibians, reptiles, eggs and young of nesting birds, and small mammals. Anticipated effects will range from local, temporary extinction of less mobile species to interruption of migratory, feeding and reproductive cycles of species able to avoid the areas being cleared. Displaced wildlife will likely experience higher mortality while searching for new habitat, while wildlife in adjacent undisturbed habitats may be affected by over competition for limited resources. Reclaimed habitats will not be suitable for some of the species displaced for decades.

Beneficial effects will include increased habitat for fish, alligators, and migratory waterfowl. The combination of natural areas, active mine areas and various stages of reclamation provide large amounts of forage areas and habitats for game species. This has been clearly demonstrated over the past decade by the consistently high hunter and fisherman success rates in the PCS Wildlife Management Area operated by the Florida Fish and Wildlife Conservation Commission (FWCC). This area is in an active mine area within the PCS project boundary. The FWCC also operates two wildlife management areas (Eagle Lake Fish Management Area and Lang Lake Fish Management area) within the project boundary on previously mined areas. A successful commercial hunting and fishing operation also operates on a mosaic of approximately 14,500 acres of natural, previously mined and reclaimed lands.

Wood storks are commonly seen in the mined and reclaimed areas, where none were present prior to mining. Bald eagles now nest in the area due to the increased feeding opportunities in the reclaimed lakes. The 1986 Final EIS prepared for the entire project area concluded that the proposed mining will not jeopardize the continued existence of federally protected threatened and endangered species. The Corps has again consulted with the USFWS pursuant to Section 7 of the Endangered Species Act. This consultation included the newly listed flatwoods salamander, and the proposed designation of critical habitat for the Gulf sturgeon. As a result of this consultation, the Corps has concluded that the proposed continuation of mining will not jeopardize the continued existence of any federally listed threatened and endangered species.

The West Indian manatee was not included in the Section 7 consultation because it does not occur in the project area. Water quality data shows that local changes in water quality decrease to background due to inputs from other tributary systems and the Floridan Aquifer downstream of the project area. Manatees using the lower portion of the Suwannee River should not be exposed to detectable changes in water quality resulting from this project.

**Comment:** The DSEIS failed to consider or analyze alternatives to mining wetlands for phosphate such as the following; extracting phosphorus from animal and human wastes, food wastes, wastewater, and biosolids; mining of uplands only, and; importing phosphate from abroad. Phosphate mining is not a water-dependent activity.

**Response:** Although technologies exist to remove phosphate from a variety of waste products, they cannot meet the production volumes and economies of scale required by the agricultural industry. The fact that the mining activity impacts jurisdictional wetlands is normally not the primary concern when mining units are planned and finally developed. Recovery of high quality, large quantities of phosphate ore is of prime importance. The large scale, open pit operations make it difficult to avoid wetlands with irregular boundaries unless an entire 40-acre block is eliminated from the mining plan. Phosphate has been recognized as an international strategic mineral by the United States. Use of this term implies a nation's perception of vulnerability to supply disruptions, and of a need to

safeguard its industries from repercussions of a loss of supplies. Developing domestic reserves is vital for our agricultural industries so that they are not reliant on foreign sources of phosphate.

**Comment:** A comprehensive cumulative impacts analysis pursuant to NEPA is needed.

**Response:** The Corps agrees that the discussion of cumulative impacts in the DSEIS was insufficient. Pursuant to the Corps request, PCS has expanded the cumulative impact analysis of the FSEIS (Section 4.25) to fulfill the NEPA requirement.

**Comment:** The DSEIS should address the effect of the project on deforestation.

**Response:** Upland and wetland revegetation is addressed in Sections 3.1 and 4.2 of the DSEIS. The vast majority of the project area consists of forested uplands and wetlands that are already being managed for timber production. Clearing for mining is not a precursor for a change to other land uses in the post-mining landscape. Revegetation at the HCM will be completed to comply with appropriate FDEP rules (62C-16 F.A.C.) which require mined lands to be returned to beneficial economic uses. Reclamation of mined lands includes restoration of pre-mining vegetation types, including forested wetlands and upland forests. Since 1991, PCS has reclaimed approximately 1,000 more acres than it has mined.

**Comment:** The DSEIS should address the effect of the project on global warming.

**Response:** The complex issue of global warming extends far beyond the regulatory authority of the Corps, and cannot be controlled through evaluation of impacts associated with dredge and fill projects.

**Comment:** The DSEIS suggests that phosphate mine sites are aesthetic.

**Response:** Comment noted. The Corps includes a discussion of aesthetics in the public interest review for all individual permit applications.

**Comment:** Selling crack cocaine would produce more lucrative jobs at approximately the same level of legality as phosphate mining.

**Response:** Comment noted.

3. **Sierra Club:** By letter of 14 August, 2002, Ms. Kathleen A. Cantwell informed the Corps that the comments and exhibits submitted by Dr. Bacchus for FEAR and Wetlands Alert, Inc., were also submitted for the Suwannee-St. John Group of the Florida Chapter of the Sierra Club.

**Response:** Comment noted.

## **TABLES**

**Table 1. Summary of Direct and Indirect Impacts**

Environmental Factors	Alternative				
	Application/Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D
<b>Alternative Description</b>	Mining of all known reserves (as of July 2001) including wetlands (prospect and landowner agreement mine plan basis) excluding wetlands withdrawn from current permit consideration as requested by ACOE	No wetland mining, no action (projected statistical mine plan basis)	Mining of all reserves including wetlands (projected statistical mine plan basis)	Mining of all reserves including wetlands excluding DER jurisdictional and deferral wetlands (projected statistical mine plan basis)	Mining of all known reserves (as of November 2000) including wetlands (prospect and landowner agreement mine plan basis)
Project Setting/Existing Conditions	100,580 acre project area. There are approximately 46,000 acres previously disturbed or permitted areas. Avoidance and minimization was completed during the 1987 permitting process and approximately 19,000 acres were preserved from mining in the 1987 original federal and state permitting efforts. SWANCC January 9, 2001 US Supreme Court decision reduced Corps jurisdiction to approximately 1,671 acres within the 18,166 acre application area mining footprint.				
Alternative Details/Description	805 acres DER jurisdiction. 1,671 acres of Corps jurisdiction. Some overlap occurs. The application footprint is approximately 18,166 acres. BOMR and Hamilton County permits for all upland and wetland areas.	No wetlands would be impacted. No new federal permits required. No state jurisdictional wetland permits required. The operational footprint is approximately 2,841 acres. BOMR and Hamilton County permits for all upland areas.	All wetlands with reserves and sufficient mineral interests would be mined or disturbed. Permits required from both federal and state agencies. 1,448 acres DER jurisdiction. 1,858 acres of Corps jurisdiction. The operational footprint is approximately 16,299 acres. BOMR and Hamilton County permits for all upland and wetland areas.	This is the B Alternative minus the "DER" hydrologically connected jurisdictional areas and areas shown as deferral in the pervious EIS. 0 acres DER jurisdiction. Approximately 600 acres of Corps jurisdiction. The operational footprint is approximately 14,005 acres. BOMR and Hamilton County permits for all upland and wetland areas.	Activities under this alternative closely track the current application footprint. 1,448 acres DER jurisdiction. 1,858 acres of Corps jurisdiction. The operational footprint is 20,514 acres. BOMR and Hamilton County permits for all upland and wetland areas.
Wetlands Impacted	A total of 5,670 wetland acres will be mined. Of these acres there are 805 acres of DER jurisdiction and 1,671 acres of ACOE jurisdiction.	0 wetland acres mined.	A total of 5,159 wetland acres will be mined. Of these acres there are 1,448 acres of DER jurisdiction and 1,858 acres of ACOE jurisdiction.	3,648 wetland acres mined.	A total of 6,712 wetland acres will be mined. Of these acres there are 1,448 acres of DER jurisdiction and 1,858 acres of ACOE jurisdiction.
Post-reclamation wetland acreage and change	Slightly greater than acre-for-acre replacement of wetlands in the application area after reclamation is completed.	0 wetland acres reclaimed.	Slightly greater than acre-for-acre replacement of wetlands after reclamation is completed. Overall there will be an increase of approximately 1,178 acres (12%) post-reclamation.	Slightly greater than acre-for-acre replacement of wetlands after reclamation is completed. Overall there will be an increase of approximately 858 acres (9%) post-reclamation.	Slightly greater than acre-for-acre replacement of wetlands after reclamation is completed. Overall there will be an increase of approximately 2,014 acres (20%) post-reclamation.

<b>Environmental Factors</b>	<b>Application/Preferred Alternative</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Wildlife	Changes in vegetation and faunal makeup as succession takes place after restoration is complete. Natural biological system values initially increase over time. Construction of lakes in the area will increase the habitat available for waterfowl, wading birds, fish and aquatic mammals.		Changes in vegetation and faunal makeup as succession takes place after restoration is complete. Natural biological system values initially increase over time. Construction of lakes in the area will increase the habitat available for waterfowl, wading birds, fish and aquatic mammals.	Changes in vegetation and faunal makeup as succession takes place after restoration is complete. Natural biological system values initially increase over time. Construction of lakes in the area will increase the habitat available for waterfowl, wading birds, fish and aquatic mammals.	Changes in vegetation and faunal makeup as succession takes place after restoration is complete. Natural biological system values initially increase over time. Construction of lakes in the area will increase the habitat available for waterfowl, wading birds, fish and aquatic mammals.
Groundwater Recharge	No changes are projected between pre-mining and post-reclamation groundwater recharge.		No changes are projected between pre-mining and post-reclamation groundwater recharge.	No changes are projected between pre-mining and post-reclamation groundwater recharge.	No changes are projected between pre-mining and post-reclamation groundwater recharge.
Water Table	Localized lowering of water table may cause the short term drying of some wetlands immediately adjacent to the active mine pits. The water table and drawdown will quickly return to normal as soon as the active mining moves away. See Section 3.1.3.3. (STBD, 2000). The potential amount of unmined areas affected is commensurate with the total amount of mining.				
Uplands Impacted	12,495 upland acres mined.	2,841 upland acres mined.	11,140 upland acres mined.	10,357 upland acres mined.	13,802 upland acres mined.
Post-reclamation upland acreage and change	Overall there will be a decrease of approximately 3,218 acres (12%) post-reclamation. The decrease in upland acreage results in increases in lakes and wetlands.	Overall there will be a decrease of approximately 735 acres (3%) post-reclamation. The decrease in upland acreage results in increases in lakes and wetlands.	Overall there will be a decrease in upland acres of approximately 3,053 acres (12%) post-reclamation. There will be an increase of approximately 265 acres of Hardwood Forest (FLUCCS 434). The decrease in upland acreage results in increases in lakes and wetlands.	Overall there will be a decrease in upland acres of approximately 2,692 acres (10%) post-reclamation. There will be an increase of approximately 260 acres of Hardwood Forest (FLUCCS 434). The decrease in upland acreage results in increases in lakes and wetlands.	Overall there will be a decrease in upland acres of approximately 4,403 acres (17%) post-reclamation. There will be an increase of approximately 2,761 acres of Hardwood Forest (FLUCCS 434). The decrease in upland acreage results in increases in lakes and wetlands.
Wildlife	Changes in vegetation and faunal makeup as succession takes place after mining operations are concluded. Loss of upland habitat, flora and fauna due to conversion of uplands to lakes. See Section 3.1.3.2. (STBD, 2000)				
Lakes Reclaimed	Overall there will be an increase of approximately 2,422 acres post-reclamation.	Overall there will be an increase of approximately 736 acres post-reclamation.	Overall there will be an increase of approximately 1,875 acres post-reclamation.	Overall there will be an increase of approximately 1,834 acres post-reclamation.	Overall there will be an increase of approximately 2,079 acres post-reclamation.

<b>Environmental Factors</b>	<b>Application/Preferred Alternative</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Incremental Years of Mining (see section x for rates of mining)*	28 years (reduce by 15 to 18 months due to the decrease in the mining footprint).	3 years	20 years	16 years	22 years
Protected Species	<p>The USFWS has concluded, via a letter from Mr. Pete Benjamin (dated November 19, 2002) that this proposed project will not adversely affect any of the threatened and endangered species addressed in the DSEIS. Specifically Mr. Benjamin stated that the proposed project will not adversely affect the following species: flatwoods salamander (<i>Ambystoma cingulatum</i>), Eastern indigo snake (<i>Drymarchon corais couperi</i>), red-cockaded woodpecker (<i>Picoides borealis</i>), bald eagle (<i>Haliaeetus leucocephalus</i>), wood stork (<i>Mycteria americana</i>), gray bat (<i>Myotis grisescens</i>), Chapman's rhododendron (<i>Rhododendron chapmanii</i>) and Gulf sturgeon (<i>Acipenser oxyrinchus desotoi</i>). In addition, Mr. Benjamin when on to state that PCS:</p> <p>"has sufficiently avoided, minimized, and mitigated for the proposed jurisdictional wetland impacts, and that the sequence of mining and wetland reclamation, Suwannee River tributary diversions and restorations, the proposed conservation easements, and future purchase of environmentally sensitive lands, including wetlands, will adequately offset the proposed wetland impacts."</p>				
Fish and Wildlife Resources	<p>There is a temporary loss of habitat in the areas being mined. Increase in density of wildlife in undisturbed areas with potential increases in predation, disease, etc. Increase in habitat diversity. The project area provides a wide diversity of habitats that serve as strong attractors for migratory wildlife. The combination of natural, active mine areas and various stages of reclaimed area provide large amounts of forage areas and habitats. This has been clearly demonstrated over the past decade by the consistently high hunter success in the PCS Wildlife Management Area operated by the FWCC. This area is actually in an active mine area within the PCS project areas. The FWCC also operates two wildlife management areas (Eagle Lake Fish Management Area and Lang Lake Fish Management Area) within the project area on previously mined areas. A successful commercial hunting and fishing operation also operates on a mosaic of ~14,500 acres of natural, previously mined and reclaimed areas. A private entity recently purchased nearly 3,000 acres of reclaimed wetlands, lakes and uplands for use as a retreat and recreational area.</p>				
Essential Fish Habitat	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
Water Quality	<p>PCS and its predecessors have operated the HCM facility since 1965. The quality of the discharges from the mining operations have steadily improved over that period. All mine water discharges occur through permitted outfalls (NPDES/IW). The discharges meet all applicable permit limits which are designed to insure compliance with applicable state and federal water quality standards. Regardless of the action taken by the ACOE on the proposed activities, the mining discharges will continue and the quality will not change due to the alternatives selected, even if it is the "no action" alternative. Therefore, there are no differences among the alternatives, except for the potential duration given the various mining periods for each alternative.</p>				
Hydrology	<p>Drainage basin boundaries changed during mining operations. During mining runoff captured and routed to permitted discharge points. Hydrologic modeling shows post-reclamation flooding reduced due to increased lake storage. Post-reclamation drainage basins are restored to approximate pre-mining area. Post-reclamation surface water hydrology is restored to approximate pre-mining conditions.</p>				
Recreation	<p>Hamilton County is bounded on three sides by rivers, which are the foundation for resource-based recreational opportunities in the county (STBD, Section 3.2.2.). The Suwannee River runs eighty miles on the east and south, and the Withlacoochee River is the twenty-five mile western boundary. The public lands of the Suwannee River are primitive natural unimproved areas open to the public for recreation activities such as fishing, hunting, hiking, biking, horseback riding, nature study and canoe camping. The recreational and natural resource activities of the Suwannee River were analyzed using the ACOE Recreation and Natural Resource Assessment Criteria (ACOE, 1978) (TBD, Section 3.10). General recreation of the Suwannee River was evaluated to be moderate, primarily due to access, unstable water levels, and shoals. There will be positive impacts on recreation due to the increase in lakes. The increase in mixed upland forest (FLUCCS 434) around the lakes will provide wildlife habitat and hunting opportunities. Recreational opportunities on the Suwannee River will not be affected. There should be no significant differences except for the differences in acres of lakes.</p>				
Aesthetics	<p>Large-scale forest management activities, ongoing mining and reclamation, past logging, fires, and drainage activities have altered the natural flora and fauna of the ecological systems in the project area. Once mining and reclamation are complete, the aesthetics of the project area will improve. Reclamation will create more diverse habitat through the creation of a mosaic landscape which will include lakes, wetlands, hardwood forests, etc. Creating this mosaic attracts various wildlife such as wading birds, and waterfowl, which would not be present otherwise.</p>				

<b>Environmental Factors</b>	<b>Application/Preferred Alternative</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Navigation	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
Shoreline Erosion	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
Statewide Cumulative Economic Impacts	\$15,184,943,000 expenditures and 160,066 person years of employment reduced by 15 to 18 months due to the decrease in the application footprint of approximately 1,000 acres.	\$1,626,958,000 expenditures and 17,150 person years of employment	\$10,846,388,000 expenditures and 114,333 person years of employment	\$8,677,110,000 expenditures and 91,466 person years of employment	\$11,931,027,000 expenditures and 125,766 person years of employment
Historic Properties	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.
Energy Requirements and Conservation	This aspect was not quantified. However, the least energy per unit of phosphate recovered will occur under the application alternative. The no action and the more restrictive alternatives prevent the equipment from being utilized efficiently. Avoiding wetlands and mining in smaller disjunct blocks will increase energy consumption.				
Hard Ground	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
Aquatic Communities	There will be no loss of streambed habitat, all losses will be replaced.				
Air Quality	No air quality permits are required for mining operations. The potential air pollutant emissions from phosphate rock mining are limited to fugitive particulate matter contributed by clearing, mining, transport of material, and reclamation activities. The air quality monitoring data collected in the vicinity of both the Swift Creek and the Suwannee River and PCS manufacturing facilities show that total suspended particulate matter levels are below standards established by EPA and adopted by FDER (TBD Section 3.5). quantities of carbon monoxide, nitrogen oxides, volatile organic compounds, and sulfur dioxide, resulting from the exhaust of mobile equipment, are negligible. There have been no significant changes in the mining methods since the TBD. Therefore there is no reason to believe the air quality situation or impacts have changed.				
Noise	In the absence of stationary operational plants and mobile, off-road earth-moving equipment, the baseline day/night average noise level was established to be 40dB (DEIS, 1985). Noise levels for major mobile equipment, including the large draglines, which may also be considered as point sources, are 76-85 dBA at 100 ft distance. These impacts are of short duration and localized. Based on noise source data and the noise attenuation rate, the range of existing noise levels more than one mile from principal noise sources is 40-55 dB, just slightly greater than baseline levels (TBD, Section 3.6). There have been no significant changes in the mining methods since the TBD. Therefore there is no reason to believe the noise situation or impacts have changed.				
Radiation	The mining process does not produce radioactive waste. However, radon emission may increase slightly on mined and reclaimed lands. This has been extensively studied for several years. The increase is not related to community type since, the increase occurs whether wetlands or uplands are mined. There are no risks to humans or wildlife as long as the state guidelines are followed.				
Acres of Clay Settling Areas Required	3,393 acres for the application footprint.	0 acres for the alternative footprint.	2,870 acres for the alternative footprint.	2,870 acres for the alternative footprint.	2,893 acres for the alternative footprint.

\* The estimated years of mine life were based upon continuous operations at a consistent production rate until all the reserves are mined. Experience has demonstrated that production levels and mining rates vary widely over time. The estimated years of mine life are valid for comparison of alternatives, but should not be viewed as a limitation on the duration of permitted operations. All alternatives evaluated are incremental to the currently permitted operations.

**Table 2. Percent Relative Dominance Summary of Wetland Data Collected at PCS.** (revised 01/07/03)

<u>Taxa</u>	<u>Wetland #</u>										<u>Average</u>	
	2696 <sup>A</sup>	1175 <sup>A</sup>	2275 <sup>A</sup>	2734 <sup>B</sup>	1370 <sup>B</sup>	1227 <sup>B</sup>	1378 <sup>B</sup>	1690 <sup>B</sup>	2139 <sup>B</sup>	2550 <sup>B</sup>	620	630/615
<i>CANOPY</i>												
<i>Nyssa biflora</i>	16.52	4.17	28.57	50.00	43.75	38.71	44.31	45.10	82.52	37.90	16	61
<i>Taxodium ascendens</i>	69.57	95.83	71.43	40.00	37.50	54.03	44.31	18.95	4.85	14.23	79	89
<i>Magnolia virginiana</i>				7.50				9.15	5.83	21.89		11
<i>Pinus elliotii</i>	13.91			2.50	18.75	7.26	2.40	10.46	0.97	0.18	14	16
<i>Acer rubrum</i>									4.85	21.17		13
<i>Gordonia lasianthus</i>							8.38	9.15		3.38		7
<i>Persea borbonia</i>							0.60	7.19	0.97	0.71		2
<i>Lyonia lucida</i>										0.18		0
<i>Ilex opaca</i>										0.18		0
<i>Ilex sp.</i>										0.18		0
<i>SUBCANOPY</i>												
<i>Lyonia lucida</i>	30.95	29.17	53.85	13.33		19.35	35.93	43.84	36.27	1.96	38	53
<i>Clethra alnifolia</i>	5.50	12.50	3.85	16.67		4.84	6.59	4.11	15.69	11.61	7	15
<i>Nyssa biflora</i>	18.25	8.33	38.46	41.67	68.75	52.42	49.10	33.56	33.33	30.18	22	60
<i>Taxodium ascendens</i>	34.12	4.17	3.85	8.33	12.50	15.32	6.59	5.48	1.96	4.11	14	18
<i>Pinus elliotii</i>	4.76				6.25					0.18	5	7
<i>Persea borbonia</i>	3.17									1.25	3	4
<i>Myrica cerifera</i>	3.17	33.33				4.84	0.60		0.98	0.71	18	15
<i>Magnolia virginiana</i>					6.25	1.61		6.85	9.8	7.41		6
<i>Acer rubrum</i>					6.25			1.37		40.54		16
<i>Gordonia lasianthus</i>							1.20	4.11		1.79		2
<i>Ilex sp.</i>										0.36		0
<i>Cephalanthus occidentalis</i>		8.33				1.61		0.68	1.96		8	8
<i>Ilex virginiana</i>		4.17									4	
<i>Saururus cernuus</i>										0.18		0

<sup>A</sup> Based on reference wetland data and descriptions in the Florida Land Use, Cover and Forms Classification System (FLUCCS), code 620 Wetland Coniferous Forest.

<sup>B</sup> Based on reference wetland data and descriptions in the Florida Land Use, Cover and Forms Classification System (FLUCCS), code 630/615 Wetland Forested Mixed/Stream and Lake Swamps (Bottomland).

**Table 3. Reference Wetland Composition.** (revised 01/07/03)

<b>Tree Groups</b>	<b>Percentage</b>	<b>FLUCCS Code</b>	<b>Acres</b>
<i>Nyssa</i>	30	630/615	958
<i>Taxodium spp.</i>	35	630/615	
bays	15	630/615	
pinos	5	630/615	
misc. hardwoods	15	630/615	
<i>Taxodium spp.</i>	60	620	230
pinos	20	620	
misc. hardwoods	20	620	

**Table 4. Summary of Disturbance within Pre-mining Drainage Basins - Hamilton County Mine.**

Year	PERCENT OF BASIN ISOLATED FROM BASE FLOW																			
	Bell Creek	Bull Bay	Camp Branch	Cat Creek	Cone Bridge	East Hamilton	Four Mile Branch	Godwin Bridge	Hunter Creek	Jerry Branch	Long Branch	Ratliff Creek	Roaring Creek	Rocky Ck. Shaky pd	Sal Marie Branch	Sugar Creek	Suwannee River	Swift Creek	Top Bay	White Springs
Pre Mining Acres	4051.79	1474.82	(1) 5548.85	309.73	1894.23	1084.69	2659.96	398.64	(1) 16613.94	2222.77	3922.09	1004.46	11810.82	30014.93	1809.92	2993.14	3645.46	(1) 24677.75	171.99	305.46
2001	11%	5%		30%	0%	0%	19%	0%		0%	4%	0%	43%	10%	34%	21%	0%		23%	0%
2002	21%	5%		58%	0%	0%	19%	0%		0%	4%	0%	43%	11%	62%	32%	0%		23%	0%
2003	21%	5%		58%	0%	0%	19%	0%		0%	4%	0%	47%	11%	62%	32%	0%		23%	0%
2004	21%	5%		58%	0%	0%	19%	0%		0%	4%	0%	47%	11%	62%	32%	0%		23%	0%
2005	21%	8%		58%	0%	0%	30%	0%		0%	4%	0%	47%	11%	62%	32%	0%		23%	0%
2006	21%	8%		58%	0%	0%	30%	0%		0%	4%	0%	47%	11%	62%	32%	0%		23%	0%
2007	21%	8%		58%	0%	0%	30%	0%		0%	19%	0%	50%	11%	62%	0%	0%		23%	0%
2008	21%	8%		0%	0%	0%	30%	0%		0%	19%	0%	50%	0%	62%	0%	0%		23%	0%
2009	0%	8%		0%	0%	0%	36%	0%		15%	19%	0%	50%	0%	62%	0%	1%		23%	0%
2010	0%	8%		0%	0%	0%	36%	0%		15%	19%	0%	50%	0%	62%	0%	1%		23%	0%
2011	15%	0%		0%	48%	0%	6%	0%		34%	34%	0%	50%	0%	62%	0%	1%		0%	0%
2012	15%	0%		0%	48%	0%	6%	0%		34%	34%	0%	50%	5%	0%	0%	1%		0%	0%
2013	15%	0%		0%	48%	0%	6%	0%		34%	34%	0%	50%	5%	0%	11%	6%		0%	0%
2014	15%	0%		0%	48%	0%	6%	0%		34%	34%	0%	46%	5%	0%	11%	6%		0%	0%
2015	18%	0%		0%	48%	65%	6%	0%		34%	34%	0%	48%	5%	0%	11%	6%		0%	0%
2016	18%	0%		0%	48%	65%	6%	0%		34%	34%	0%	48%	5%	0%	11%	6%		0%	0%
2017	18%	0%		0%	48%	65%	0%	0%		19%	34%	0%	54%	5%	0%	37%	6%		0%	0%
2018	32%	0%		0%	48%	65%	0%	0%		19%	38%	21%	54%	9%	0%	37%	6%		0%	0%
2019	17%	0%		0%	48%	65%	0%	0%		19%	23%	21%	31%	9%	0%	37%	6%		0%	0%
2020	17%	0%		0%	48%	65%	0%	0%		19%	4%	21%	31%	9%	0%	37%	6%		0%	0%
2021	17%	0%		0%	0%	65%	0%	0%		19%	4%	21%	31%	9%	0%	37%	5%		0%	0%
2022	17%	0%		0%	0%	65%	0%	0%		0%	17%	21%	31%	9%	0%	37%	5%		0%	0%
2023	17%	0%		0%	0%	65%	0%	0%		0%	17%	21%	31%	6%	0%	37%	5%		0%	0%
2024	10%	0%		0%	0%	65%	0%	57%		0%	17%	21%	29%	6%	0%	26%	0%		0%	0%
2025	10%	0%		0%	0%	65%	0%	57%		0%	31%	21%	29%	10%	0%	0%	0%		0%	0%
2026	10%	0%		0%	0%	0%	0%	57%		0%	31%	0%	29%	10%	0%	0%	0%		0%	0%
2027	10%	0%		0%	0%	0%	0%	57%		0%	31%	0%	29%	10%	0%	0%	0%		0%	0%
2028	10%	0%		0%	0%	0%	0%	57%		0%	18%	0%	29%	9%	0%	0%	0%		0%	0%
2029	7%	0%		0%	0%	0%	0%	57%		0%	18%	0%	29%	9%	0%	0%	0%		0%	0%
2030	7%	0%		0%	0%	0%	0%	57%		0%	18%	0%	29%	10%	0%	0%	0%		0%	0%
2031	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	10%	0%	0%	0%		0%	0%
2032	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	6%	0%	0%	0%		0%	0%
2033	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	4%	0%	0%	0%		0%	0%
2034	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	4%	0%	0%	0%		0%	0%
2035	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	4%	0%	0%	0%		0%	0%
2036	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	42%	1%	0%	0%	0%		0%	0%
2037	7%	0%		0%	0%	0%	0%	0%		0%	1%	0%	37%	0%	0%	0%	0%		0%	0%
2038	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	29%	0%	0%	0%	0%		0%	0%
2039	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	20%	0%	0%	0%	0%		0%	0%
2040	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	20%	0%	0%	0%	0%		0%	0%
2041	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%		0%	0%
2042	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%		0%	0%

(1) THESE BASINS CONTAIN NPDES DISCHARGE POINT. AS A RESULT, ALL FLOW FOR THAT BASIN IS ROUTED TO THE DISCHARGE POINT AND THERE IS NO ISOLATION OF AREA.

**Table 5. Comparison of Evaluation Area Affected Environment and Post-reclamation Landuse by Alternative.**

FLUCCS	Description	AFFECTED	ALT A	ALT B	ALT C	ALT D	Application Footprint/ Preferred Alternative
		ENVIRONMENT	ONSITE	ONSITE	ONSITE	OnSITE	
		EVALUATION	EVALUATION	EVALUATION	EVALUATION	EVALUATION	
		AREA	AREA	AREA	AREA	AREA	
110	Residential	271	242	170	180	171	219
200/400	Agriculture/Forestry	0	0	2,565	2,565	1,341	1,538
212	Unimproved Pastures	1,997	1,660	1,551	1,554	1,117	1,385
215	Field Crops	1,149	950	638	668	725	852
232	Poultry Feeding Operations	50	50	-	-	0	3
254	Aquiculture	81	81	81	81	77	81
411	Pine Flatwoods	2,154	1,845	513	567	263	337
434	Hardwood - Conifer Mixed	1,463	2,021	2,092	2,101	4,484	3,307
441	Coniferous Plantations	18,710	18,294	15,231	15,485	13,322	14,657
520	Lakes	5	741	1,896	1,856	2,101	2,326
611	Bay Swamps	620	620	607	607	203	615
615	Stream & Lake Swamps (Bottomland)	367	367	364	389	239	344
617	Mixed Wetland Hardwoods	284	284	255	254	176	205
618	Willow & Elderberry	-	-	471	471	1,551	1,341
620	Wetland Coniferous Forests	5,415	5,415	3,388	3,549	3,025	3,371
630	Wetland Forested Mixed	3,216	3,216	6,053	5,548	6,808	4,895
640	Vegetated Non-Forested Wetlands	114	114	57	57	28	120
742	Borrow Areas	28	28	10	10	10	16
812	Railroads	11	11	11	11	11	11
814	Roads & Highways	102	101	85	85	75	125
<b>TOTAL</b>		36,038	36,038	36,038	36,038	35,727	35,747

wetlands <sup>1</sup>		10,016	10,016	11,194	10,874	12,030	10,890
uplands <sup>2</sup>		25,605	24,900	22,671	23,021	21,329	22,159
water <sup>3</sup>		32	768	1,907	1,866	2,112	2,342
urban <sup>4</sup>		384	354	266	276	257	355

wetlands <sup>1</sup>		10,016	10,016	11,194	10,874	12,030	10,890
uplands <sup>5</sup>		25,989	25,254	22,937	23,298	21,586	22,515
water <sup>3</sup>		32	768	1,907	1,866	2,112	2,342

Note<sup>1</sup> wetlands = sum of 611, 615, 617, 618, 620, 630, and 640.

Note<sup>2</sup> uplands = sum of 200/400, 212, 215, 232, 254, 411, 434, and 441.

Note<sup>3</sup> water = sum of 510 and 520 + 742

Note<sup>4</sup> urban = sum of 110, 140, and 150 + 812 and 814.

Note<sup>5</sup> uplands = sum of uplands and urban.

**Table 6. Comparison of Project Area Affected Environment and Post-reclamation Landuse by Alternative.**

FLUCCS	Description	AFFECTED ENVIRONMENT PROJECT AREA	ALT A ONSITE PROJECT AREA	ALT B ONSITE PROJECT AREA	ALT C ONSITE PROJECT AREA	ALT D ONSITE PROJECT AREA	Application Footprint/ Preferred Alternative
110	Residential	271	242	170	180	180	219
140	Commercial and Services	1	1	1	1	1	1
150	Industrial	2,431	2,431	2,431	2,431	2,431	2,450
200/400	Agriculture/Forestry	4,690	4,690	8,134	8,134	8,134	9,888
212	Unimproved Pastures	5,129	4,785	4,620	4,642	4,642	3,879
215	Field Crops	1,150	950	638	668	668	861
232	Poultry Feeding Operations	67	67	17	17	17	20
254	Aquiculture	81	81	81	81	81	81
411	Pine Flatwoods	5,145	4,835	3,480	3,568	3,568	1,975
434	Hardwood - Conifer Mixed	6,620	7,188	6,885	6,880	6,880	7,946
441	Coniferous Plantations	39,916	39,507	36,512	36,731	36,731	32,670
510	Streams & Waterways	36	36	36	36	36	36
520	Lakes	5,463	6,198	6,977	6,932	6,932	7,134
611	Bay Swamps	1,579	1,579	1,585	1,585	1,585	1,612
615	Stream & Lake Swamps (Bottomland)	1,001	1,001	957	983	983	1,052
617	Mixed Wetland Hardwoods	1,154	1,154	1,124	1,124	1,124	1,075
618	Willow & Elderberry	4,915	4,915	5,426	5,426	5,426	6,647
620	Wetland Coniferous Forests	6,046	6,036	3,926	4,086	4,086	3,903
630	Wetland Forested Mixed	13,354	13,353	16,151	15,646	15,646	17,590
640	Vegetated Non-Forested Wetlands	287	287	216	216	216	283
742	Borrow Areas	28	28	11	11	11	16
812	Railroads	65	65	65	65	65	209
800	Transportation & Utilities	1,150	1,150	1,138	1,138	1,138	1,034
<b>TOTAL</b>		<b>100,580</b>	<b>100,580</b>	<b>100,580</b>	<b>100,580</b>	<b>100,580</b>	<b>100,581</b>

wetlands <sup>1</sup>		28,336	28,325	29,385	29,066	29,066	32,162
uplands <sup>2</sup>		62,798	62,104	60,367	60,720	60,720	57,321
water <sup>3</sup>		5,527	6,263	7,024	6,979	6,979	7,186
urban <sup>4</sup>		3,918	3,889	3,805	3,815	3,815	3,913

wetlands <sup>1</sup>		28,336	28,325	29,385	29,066	29,066	32,162
uplands <sup>5</sup>		66,717	65,993	64,172	64,535	64,535	61,233
water <sup>3</sup>		5,527	6,263	7,024	6,979	6,979	7,186

Note <sup>1</sup> wetlands = sum of 611, 615, 617, 618, 620, 630, and 640.

Note <sup>2</sup> uplands = sum of 200/400, 212, 215, 232, 254, 411, 434, and 441.

Note <sup>3</sup> water = sum of 510 and 520 + 742

Note <sup>4</sup> urban = sum of 110, 140, and 150 + 812 and 814.

Note <sup>5</sup> uplands = sum of uplands and urban.

**Table 7. Landuse Types Impacted by Mine/Mine Support by Alternative.**

		Alternative A	Alternative B	Alternative C	Alternative D	Application Footprint/ Preferred Alternative
<b>FLUCCS</b>	<b>Description</b>					
110	Residential	29	101	90	100	57
150	Industrial	0	0	0	0	0
200/400	Agriculture/Forestry	0	0	0	0	0
212	Unimproved Pastures	337	381	378	865	632
215	Field Crops	201	513	483	425	300
232	Poultry Feeding Operations	0	50	50	50	50
254	Aquiculture	0	0	0	0	0
411	Pine Flatwoods	310	1,642	1,587	1,723	1809
434	Hardwood - Conifer Mixed	222	501	420	458	473
441	Coniferous Plantations	1,730	7,888	7,290	10,114	9106
520	Lakes	0	0	0	0	0
611	Bay Swamps	0	376	376	515	486
615	Stream & Lake Swamps (Bottomland)	0	230	6	237	253
617	Mixed Wetland Hardwoods	0	116	114	119	100
618	Willow & Elderberry	0	0	0	0	0
620	Wetland Coniferous Forests	0	2,731	2,320	3,553	3241
630	Wetland Forested Mixed	0	1,630	755	2,166	1490
640	Vegetated Non-Forested Wetlands	0	60	60	104	93
742	Borrow Areas	0	17	17	17	11
812	Railroads	0	0	0	0	0
814	Roads & Highways	11	64	58	66	64
<b>TOTAL</b>		<b>2,841</b>	<b>16,299</b>	<b>14,005</b>	<b>20,514</b>	<b>18,166</b>

wetlands <sup>1</sup>		0	5,159	3,648	6,712	5674
uplands <sup>2</sup>		2,800	10,975	10,208	13,636	12370
water <sup>3</sup>		0	0	0	0	0
urban <sup>4</sup>		40	165	148	166	122

wetlands <sup>1</sup>		0	5,159	3,648	6,712	5674
uplands <sup>5</sup>		2,841	11,140	10,357	13,802	12491
water <sup>3</sup>		0	0	0	0	0

Note <sup>1</sup> wetlands = sum of 611, 615, 617, 618, 620, 630, and 640.

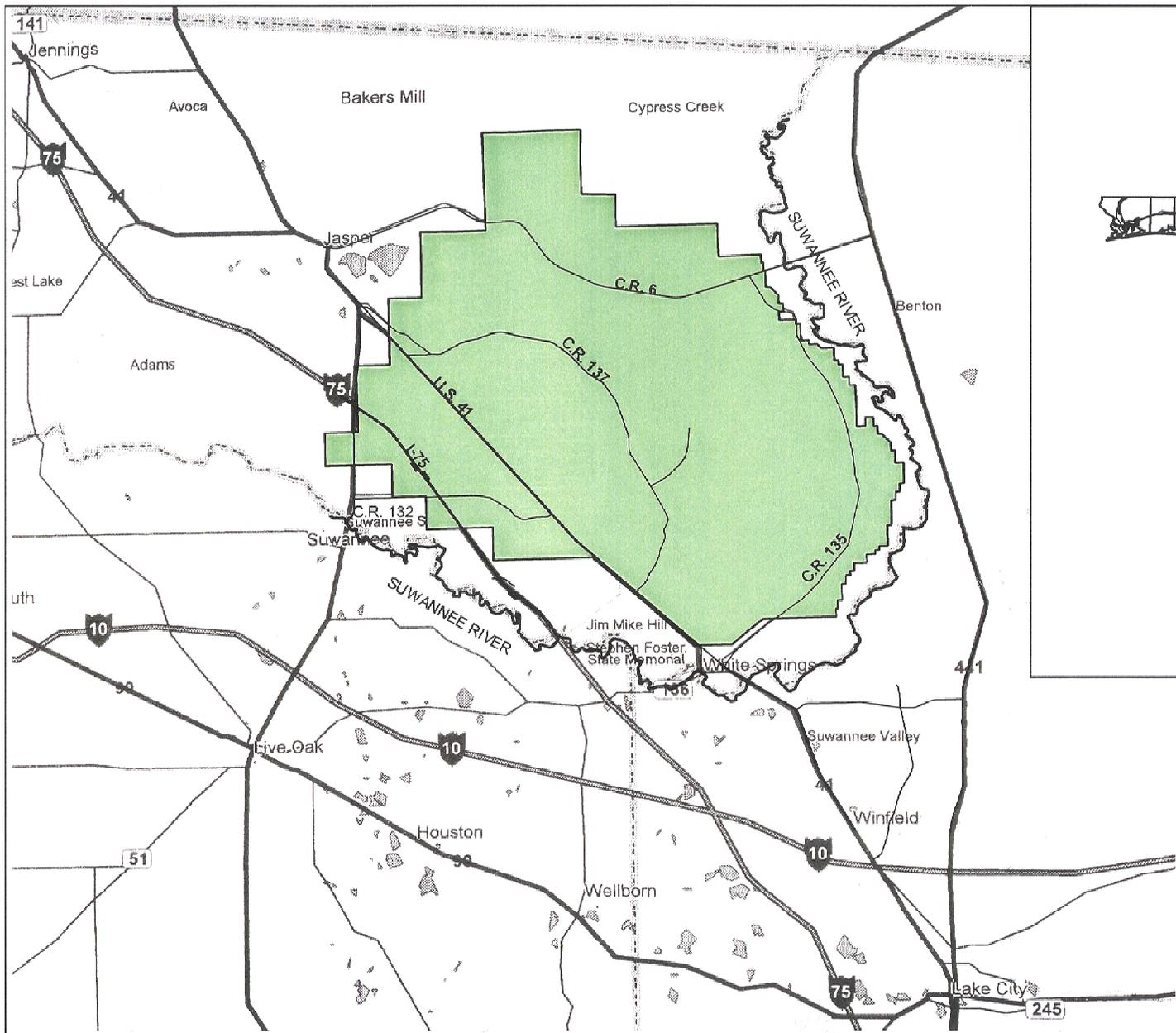
Note <sup>2</sup> uplands = sum of 200/400, 212, 215, 232, 254, 411, 434, and 441.

Note <sup>3</sup> water = sum of 510 and 520 + 742

Note <sup>4</sup> urban = sum of 110, 140, and 150 + 812 and 814.

Note <sup>5</sup> uplands = sum of uplands and urban.

## **FIGURES**



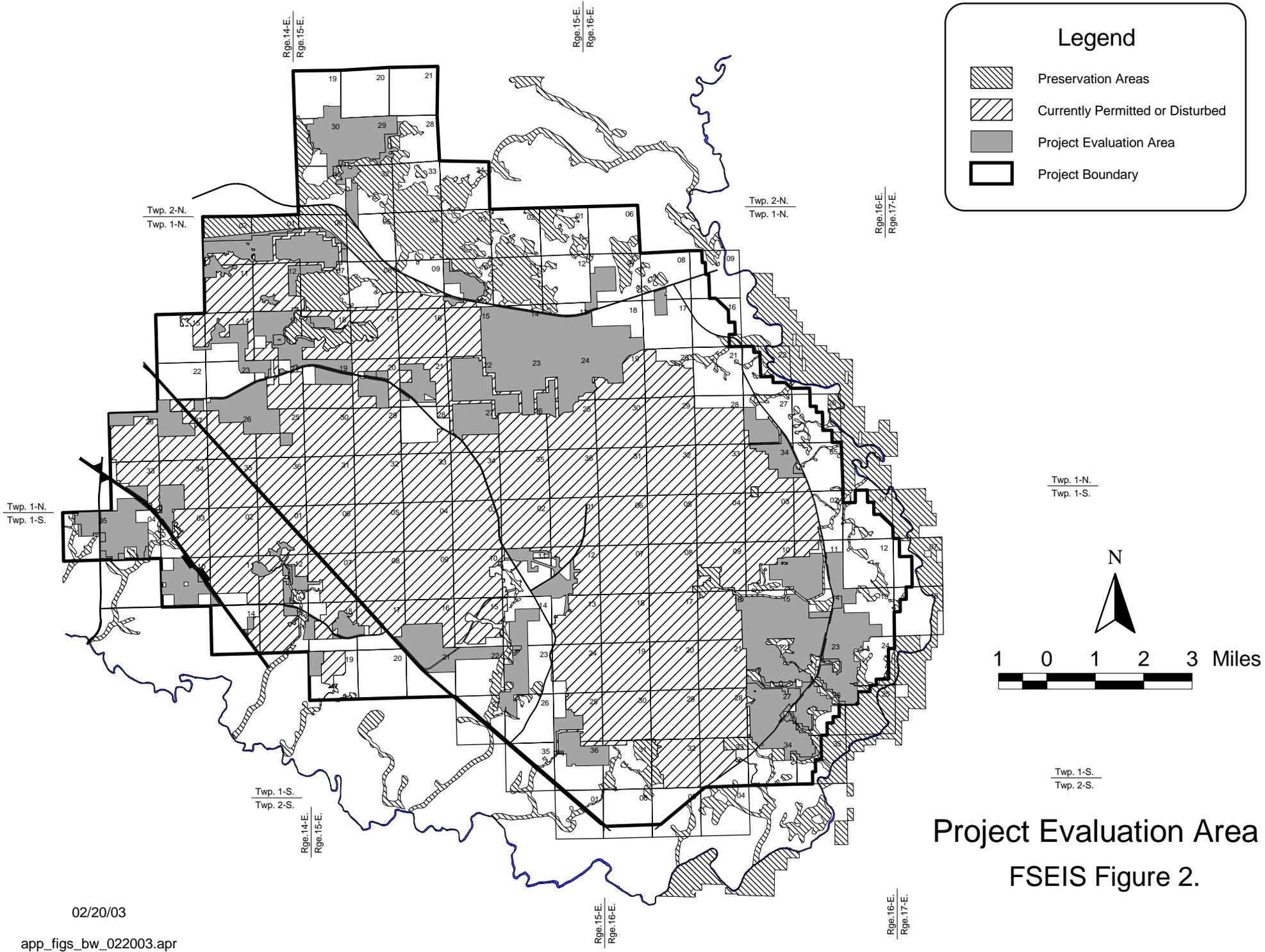
**FSEIS FIGURE 1**  
**Project Location Map**

Prepared By:  
Environmental Services and Permitting, Inc.  
11/08/01  
File: app\_figs.apr



□ Project Area

Note: Not to Scale, Schematic Representation



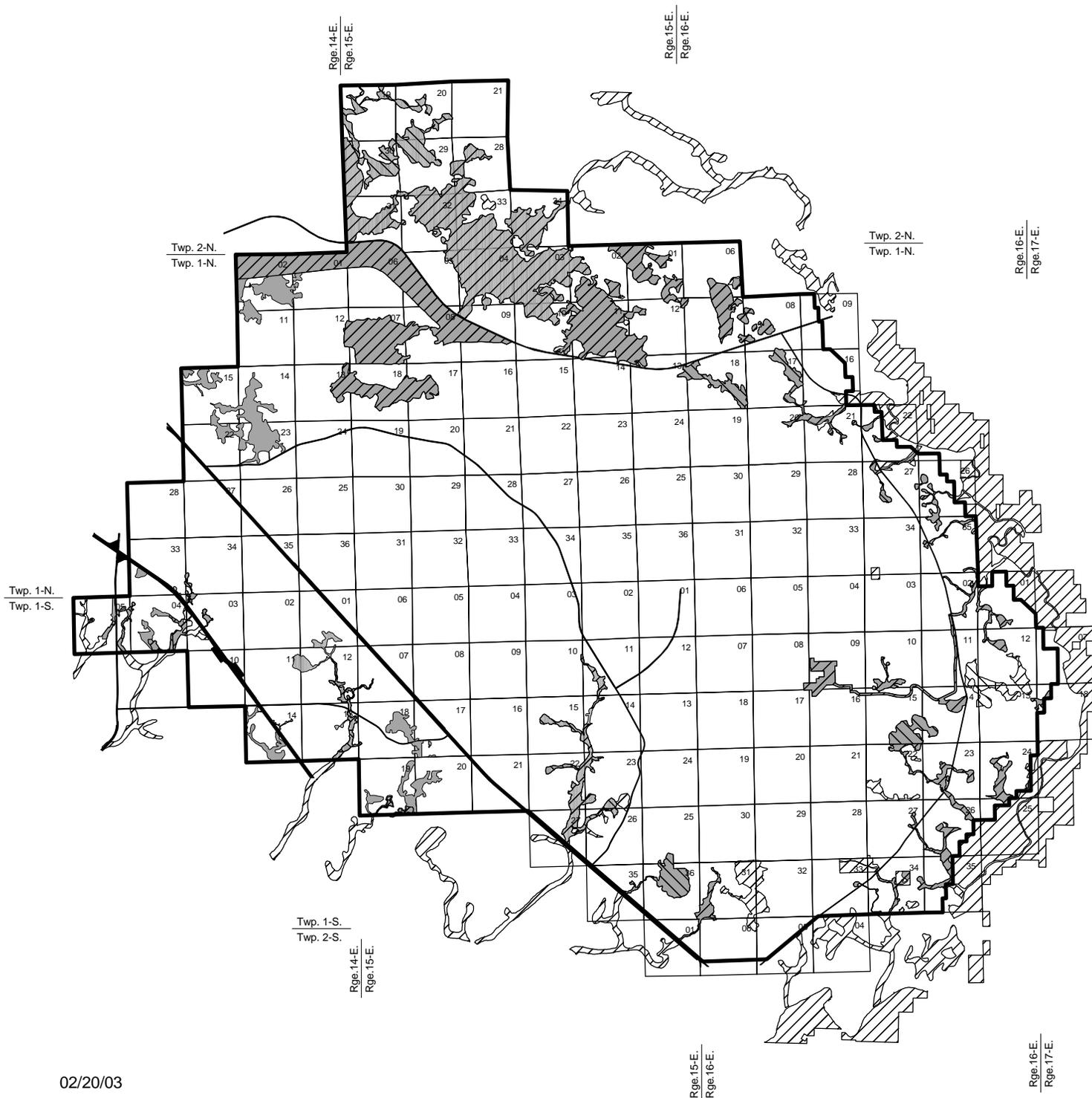
### Legend

- Preservation Areas
- Currently Permitted or Disturbed
- Project Evaluation Area
- Project Boundary

Project Evaluation Area  
FSEIS Figure 2.

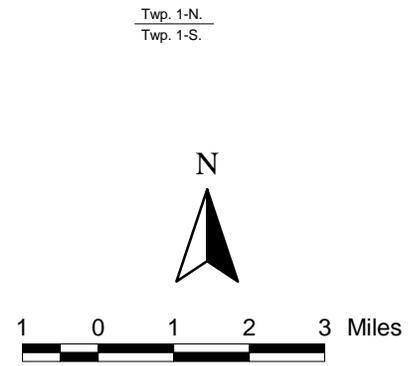
02/20/03

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### Legend

-  FDEP Jurisdiction
-  Deferral Areas
-  Preservation Areas
-  Project Boundary



Memorandum of Understanding Map  
FSEIS Figure 3.

02/20/03

**FSEIS FIGURE 4.**

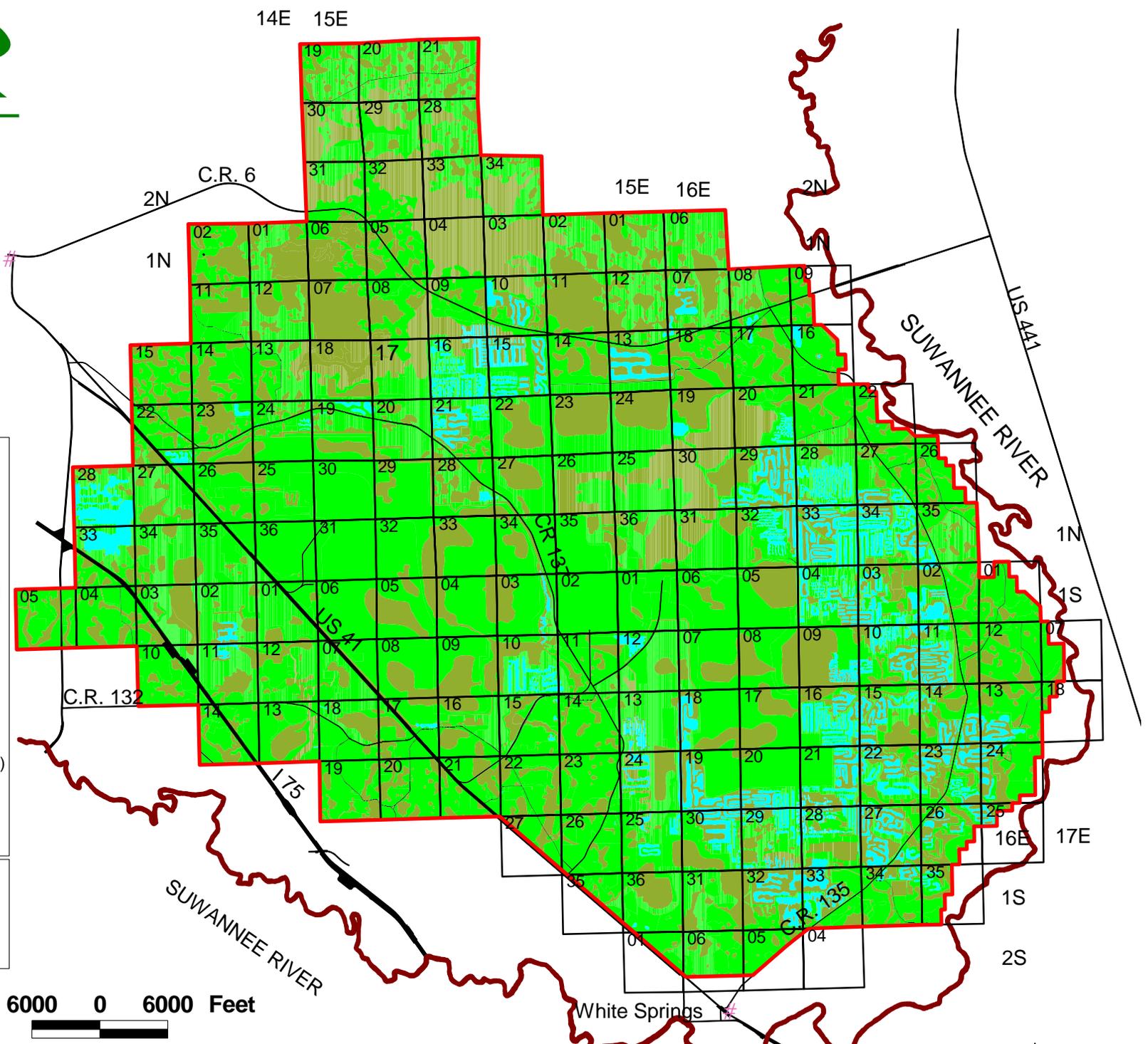
**Post-Reclamation  
Landforms Assuming  
Permits Issued**

-  ROADS (1,225 Ac.)
-  UPLAND (59,978 Ac.)
-  WATER (7,186 Ac.)
-  WETLAND (32,162 Ac.)

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ENVIRONMENTAL SERVICES &  
PERMITTING, Inc.

December 17, 2002  
111\_appl02.apr

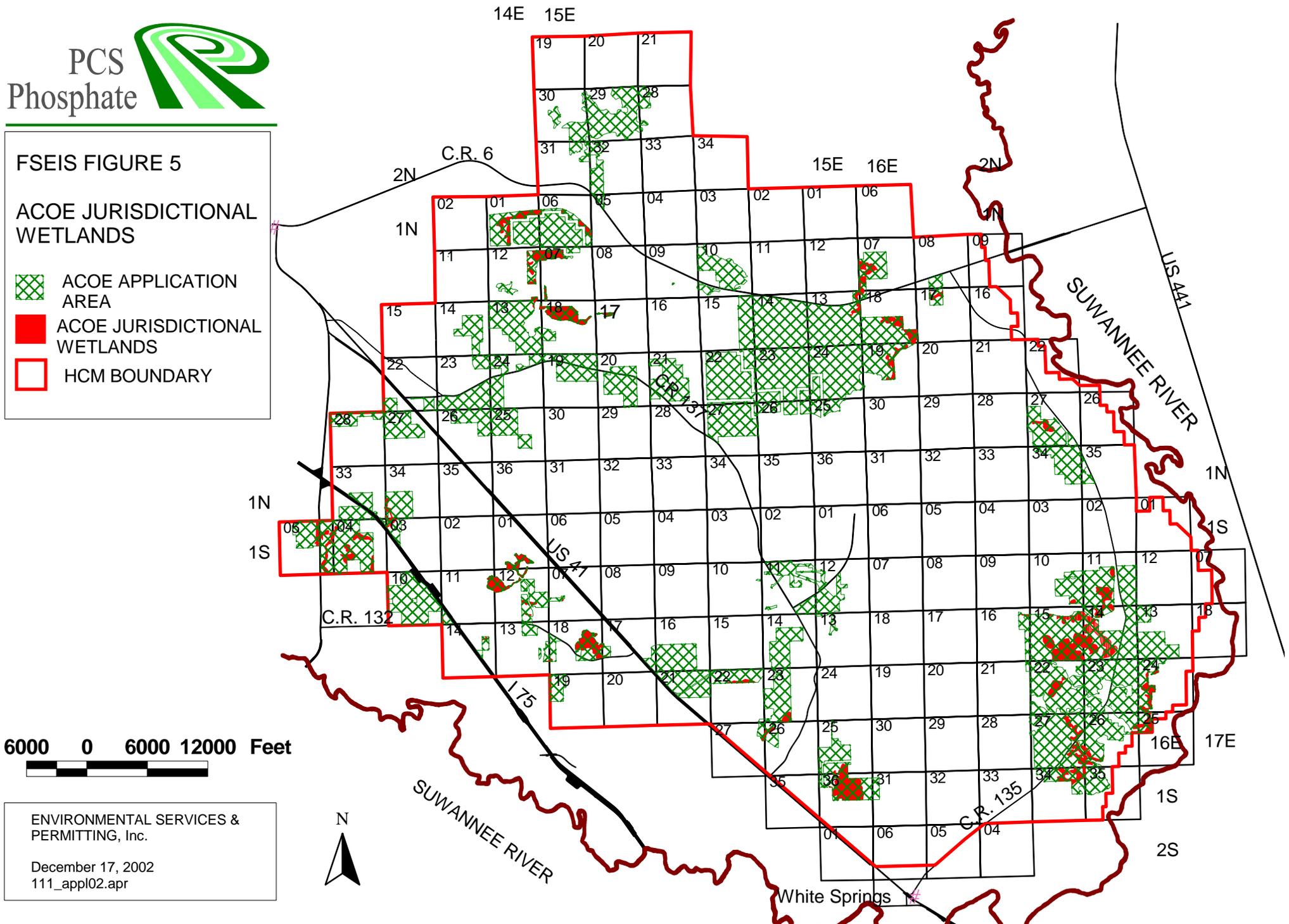


6000 0 6000 Feet

FSEIS FIGURE 5

ACOE JURISDICTIONAL WETLANDS

-  ACOE APPLICATION AREA
-  ACOE JURISDICTIONAL WETLANDS
-  HCM BOUNDARY



6000 0 6000 12000 Feet



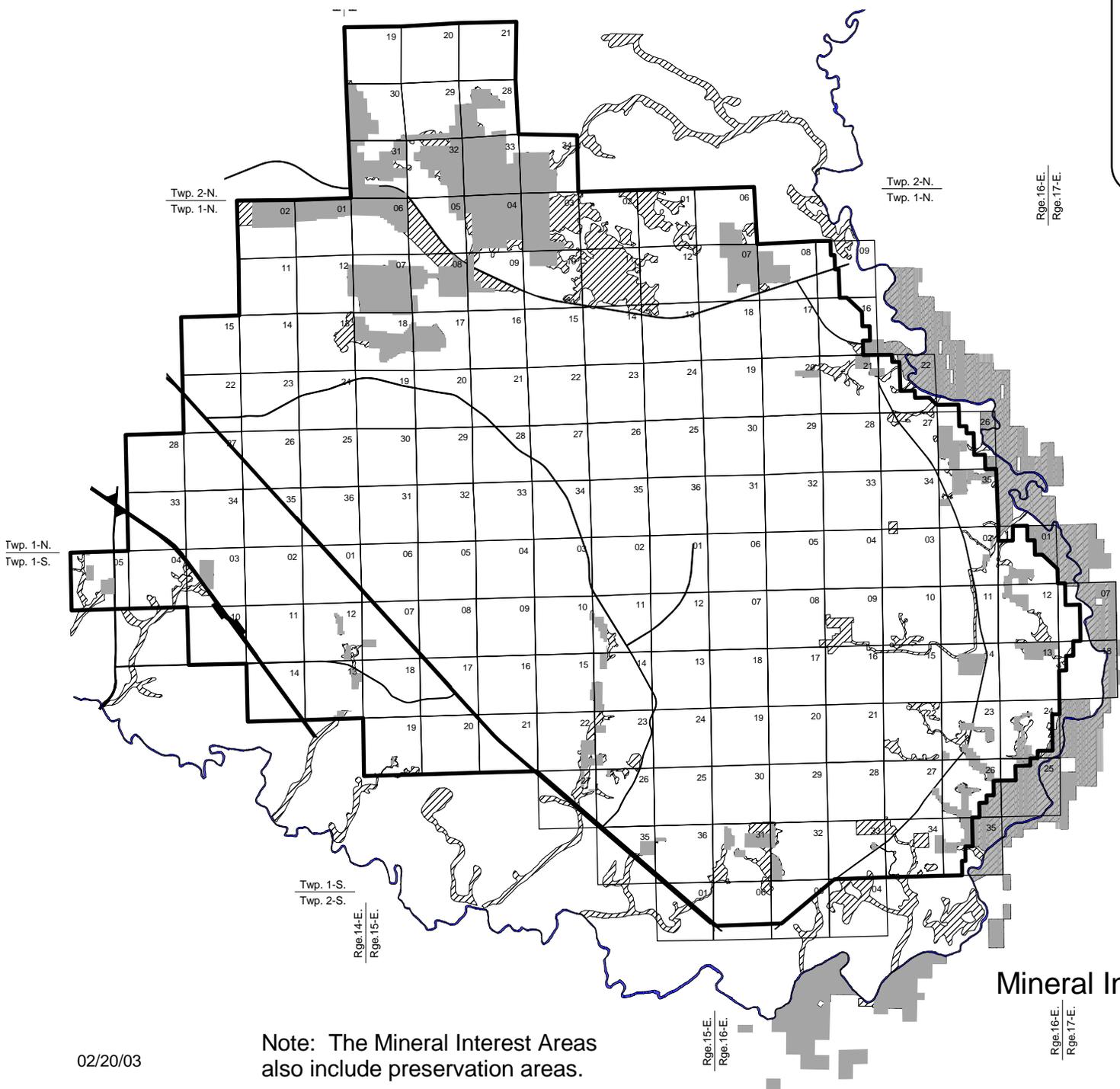
ENVIRONMENTAL SERVICES &  
PERMITTING, Inc.

December 17, 2002  
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# Legend

- Mineral Interest Transferred to SRWMD
- Preservation Areas
- Project Boundary



Note: The Mineral Interest Areas also include preservation areas.

Mineral Interest Transfer to SRWMD

FSEIS Figure 6

02/20/03

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## **COMMENTS**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

AUG 12 2002

**RECEIVED**

AUG 16 2002

JACKSONVILLE DISTRICT  
USACE

Colonel James G. May, District Engineer  
Attn: Richard Legere  
Regulatory Division  
U.S. Corps of Engineers  
Gainesville Regulatory Office  
101 NW 75<sup>th</sup> Street, Suite 3  
Gainesville, FL 32607-1609

SUBJ: Draft Supplemental Environmental Impact Statement (DSEIS) on Section 404, Clean water Act, Permitting Continued Mining Operations of PSC Phosphate at Hamilton County Minc, Hamilton County, Florida. November 2001  
CEQ No. 020209

Dear Colonel May:

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the referenced SDEIS. The Jackson District of the U.S. Army Corps of Engineers (Corps) has received a request for modification to Permit No.19840452 for the PSC Phosphate - White Springs Mine (PSC Phosphate) located in Hamilton County, Florida. PSC Phosphate has been engaged in phosphate mining a 100,580-acre project area under permits from the Corps, Florida Department of Environmental Protection (FDEP), and Hamilton County. The current federal permit will expire in 2002. The proposed new mining areas include jurisdictional wetlands. Permit modifications would be issued under Section 404 of the Clean Water Act under a joint permitting process with the FDEP. The preferred alternative, as described in the SDEIS, is to permit for mining a tract having federal jurisdictional wetlands and isolated wetlands. It is estimated that the productive life of the mine will be approximately 37 years.

Wetland Issues - The status of federal jurisdictional wetlands and isolated wetlands at the White Springs Mine are currently under review by Region 4's Wetlands Regulatory Section.

Threatened and Endangered Species - Areas to be mined include uplands which may harbor the federally-protected eastern indigo snake, the red cockaded woodpecker, and the wood stork. The eastern indigo snake frequently inhabits the burrows of the gopher tortoise, a species protected by the state of Florida. To prevent being crushed in their burrows by mining equipment, indigo snakes and gopher tortoises should be removed to adjacent, undisturbed habitats. EPA requests that the Corps and PSC consult with U.S. Fish and Wildlife Service (FWS) prior to disturbing the upland areas, and that FWS relocation protocols for protected species be conducted prior to mining. Tortoise relocations have been successfully accomplished at other projects in the Southeast.

Cumulative Impacts - The DSEIS did not adequately address cumulative impacts on large-scale disturbance of the subsurface aquifer zone, reduced permeability of soils altered by mining and restoration, and the potential for impacts on the Suwannee River. The preponderance of cumulative impact discussions focused upon the economic benefits attendant to the project. The DSEIS section designated as "cumulative impacts" (Page 48) comprised three paragraphs on environmental issues whereas "cumulative impacts" on economic benefits comprised five pages and five tables (Pgs 36 - 41), elements of which were reiterated repeatedly throughout the document.

The Council on Environmental Quality (CEQ, 1997) regulations require consideration of incremental environmental impacts of an action when added to other past, present and reasonably foreseeable future actions (40 CFR 1508.7). CEQ has published guidelines on considering cumulative impacts under the National Environmental Policy Act. While this guidance does address economic impacts, the primary focus is on cumulative impacts on the natural and human environment. EPA requests that the final SEIS provide a more balanced discussion of environmental and economics issues attendant with the preferred alternative.

Suggested Improvements - EPA has identified areas in the final SEIS that might be strengthened, specifically on the long-term impacts from phosphate mining on rivers, streams, surficial aquifers, and subsurface water storage. EPA's authority on groundwater issues stems from the Safe Drinking Water Act Sections 1445 and 1450 authorizing protection of aquifers and underground sources of drinking water.

The phosphate mining process disrupts established surface and subsurface water movement. To gain access to the ores, the overburden is removed, the ore removed, and the voids filled with mixtures of sand-clay tailings, and phosphogypsum from the beneficiation process. Fine sands and clays dislodged during the mining process or introduced from clay settling areas and restoration activities have been reported to clog interstitial spaces of the soils and reduce conductivity of the underlying aquifers that feed tributary creeks.

Reduced aquifer conductivity has been documented in phosphate mining sites located southwest of Hamilton County in the Peace River drainage basin (Desoto, Manatee, Sarasota and Hardee Counties) in Florida. Here, mining and reclamation processes have been reported to alter natural drainage patterns and lower ground-water levels (U.S. Geological Survey, 1998). Soils altered by reclamation activities were reported to be less pervious because of increased clay content in the surface horizons. A progressive long-term decline in stream flows occurring along the Upper Peace River since 1931 has been reported due to the lowering of the potentiometric surface of the Upper Floridan aquifer that is attributable to agriculture and phosphate mining. Because Hamilton County and the Peace River drainage basin share similar geological characteristics (both regions have recoverable depositions of marine-origin phosphate ores overlain with sandy soils), EPA is concerned that a similar pattern of reduced water flow may occur in the Suwannee basin. The Suwannee River system provides important recreational and commercial natural resources including timbering, hunting, fishing, canoeing, hiking and

drinking water. The Suwannee River is a National Historic Site, an Outstanding Florida Water, and is being considered for designation as a critical habitat for the short-nosed sturgeon.

PSC clearly is cognizant of groundwater issues. The surficial aquifer monitoring program, described on pages 45-47 in the DSEIS, is a strong element in the site environmental management plan. Surficial aquifer level data are reported quarterly to the Corps. PSC has identified additional piezometer sites to be situated adjacent to the mining area and in sites remote from mining activity to serve as controls. In addition, PSC has proposed monitoring the ground water levels of adjacent wetland systems that are to be protected from the dewatering process. (Dewatering is a process employing a series of in-ground well points connected to a vacuum manifold system that temporarily lowers the water table in mining areas to prevent mine sidewall collapse and enhance safety.)

While the environmental risks from short-term dewatering are being monitored by PSC, EPA believes that long-term groundwater trends are a far more critical issue. A longer range perspective is needed to determine if mining and reclamation is/is not disrupting subsurface hydraulic connections between the Suwannee River and its tributaries (Upper Camp Branch, Lower Camp Branch, Swift Creek). Empirical evidence of stream flow declines observed in the Peace River raises concerns that the PSC's proposed mine expansions, over time, could reduce the Suwannee River surface flows by interrupting subsurface ground-water input to the Suwannee.

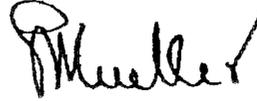
EPA requests that PSC commit to taking long-term groundwater depth data for pre- and post-mining surficial aquifers in reclaimed wetlands and clay-settling areas. Post-mining aquifer data should be taken over the estimated 37-year life of the mining project and provided to the USGS and the Suwannee River Water Management District. Because some piezometers have already been installed, and additional sites have been proposed for this latest mining expansion, leaving the piezometer systems in situ after mining (where feasible) would cost very little and would provide valuable long-term data on ground-water levels.

Changes in ground water storage - Surficial aquifers are typically recharged during the wet seasons and provide water resources for vegetation and animal life during the dry season. Their existence depends upon continuing soil permeability maintaining interstices between soil particles which allow for both storage (and movement) of water. While the amount of surficial aquifer storage will vary with soil type and porosity, storage capacity may be up to millions of gallons per acre. What happens to this ground-water storage capacity when the natural substrate is replaced with clay-settling ponds? A similar question arises when considering reclaimed and re-contoured areas following restoration and filling with sand tailings mixed with clay, a common reclamation/disposal technique. EPA requests that evaluation of impacts on the subsurface aquifer storage of mined areas, reclaimed areas, and clay-settling ponds be considered in the final SEIS.

Thank you for the opportunity to review this DSEIS. EPA rates this document BC-2, that is, the document does not contain sufficient information for EPA to fully assess environmental

impacts that should be avoided in order to fully protect the environment. Additional information that would improve the final SEIS include timely consultations with FWS on protected species, a long-term ground water monitoring program to document ground water conductivity, cumulative impacts on Suwannee River flows, and discussion of phosphate mining on subsurface aquifer storage. If you have questions on our comments, please call John Hamilton at (404) 562-9617.

Sincerely,



Heinz Mueller

Chief

Office of Environmental Assessment

Literature Cited:

U.S. Geological Survey, 1998. Lewelling, B.R., A.B. Tihansky, and J.L. Kindinger. "US Geological Survey. Water-Resources Investigations Report 97-4211: Assessment of the Hydrologic Connection between Ground Water and the Peace River, West-Central Florida." Prepared in cooperation with the Southwest Florida Water Management District.

CEQ, 1997. "Considering Cumulative Effects Under the National Environmental Policy Act" Prepared by: Council on Environmental Quality, Executive Office of the President

July 15, 2002

Colonel James G. May, District Engineer  
Atten: Richard H. Legere and Kelly Finch  
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Re: **White Springs Agricultural Chemicals, Inc. (d/b/a PCS Phosphate - White Springs)**  
**Draft Supplemental Environmental Impact Statement (DSEIS)**  
Permit Application No. 198404652 (IP-RHL)

Dear Colonel James G. May:

Last month I requested a copy of the DSEIS referenced above. When it arrived, it included no information regarding the closing date for comments. When I contacted the Corps' (COE) Gainesville Regulatory Office to inquire regarding the closing date for comments on the DSEIS and the permit application, the response I received was that the deadline for comments was July 16, 2002. A subsequent e-mail was forwarded to me, that I just received, indicating that closing date was not correct for comments on the DSEIS, but that today was the deadline for comments.

I have been requested to provide comments on the referenced DSEIS on behalf of Floridians for Environmental Accountability (FEAR) and Wetlands Alert, Inc. (Wetlands Alert) The DSEIS fails to address numerous critical environmental issues and economic issues. The DSEIS also contains numerous statements which have no scientific or factual basis. Conversely, there is scientific evidence refuting many of the statements that are inferred as fact in the DSEIS. Therefore, in view of the extensive omissions and factual misstatements in the DSEIS referenced above, **on behalf of FEAR, Wetlands Alert and myself, I am hereby requesting a 30 day extension of the comment period for the DSEIS so that more comprehensive comments can be submitted regarding the gross inadequacies of that document.** Examples of only some of the many types of inadequacies and scientifically-unfounded statements in the DSEIS are provided below.

#### EXAMPLES

1. The DSEIS addresses only the short-term economic benefits of employment associated with the mine, but fails to address or attempt to quantify the gross, long-term economic costs of irreversible damage to both the surficial aquifer and regional Floridan aquifer, and all of the associated natural resources that are interlinked with and dependent upon the natural hydroperiod of those aquifers (e.g., forest resources, downstream fisheries - both finfish and shellfish).
2. The "success" criteria (e.g., for restoration) that apparently is being used by the COE is without scientific basis. High seed production apparently is being used by the COE to indicate successful "restoration". In fact, high seed production in many of Florida's forested wetland species is indicative of severe stress conditions.

3. There is no scientific basis for claim the forested wetlands can be "restored" or "replaced" once they have been mined because even if the trees survive (and meet the arbitrary conditions set forth in the COE permit), the wetland functions, faunal populations, and soils are not re-established.

4. This is a 100,000 acre site that has been in some state of mining for years, yet the DSEIS fails to address the extensive and regional adverse cumulative impacts (e.g., environmental, socioeconomic) of the proposed expansion of the mining activities. A comprehensive Cumulative Impacts Analysis, pursuant to NEPA is required to address all of the myriad adverse impacts of this proposed project that the DSEIS failed to address.

5. The DSEIS infers that the COE jurisdiction includes only approximately 2,000 acres of wetlands. Although it cannot be determined by the DSEIS or the public notice for the application, it appears that the mine expansion proposes to destroy approximately 7,000 acres of additional wetlands. All of those wetlands are within your agency's jurisdiction.

6. The DSEIS addresses only the impacts of the surface footprint of the proposed mine expansion, and ignores all impacts associated with the subsurface impacts. For example, the current mining activities have resulted in the permanent, irreversible alteration of the natural hydroperiod of both the wetlands and the wetlands for miles beyond the actual mine site. This hydroperiod alteration is resulting in the death of both wetland and upland trees on property beyond the boundaries of the site, including on private and public property not associated with the mine.

7. The so-called "lakes" that will be dredged and remain as part of the proposed mine expansion will result in additional, more extensive hydroperiod alteration, leading to the catastrophic destruction of all wildlife habitat associated with that upper portion of the Suwannee River, which has been designated as an Outstanding Florida Water (OFW).

8. Wood storks, a federally-endangered species relies on precisely the types of wetlands which have and will continue to experience irreversible hydroperiod alteration as adverse direct, indirect, and cumulative impacts of the existing and proposed mine. The DSEIS fails to identify the adverse impacts on these wetlands which are essential for both the feeding and successful reproduction of this federally-endangered species. In fact, the DSEIS actually infers that the observation of wood storks at clay slime pits on the mining site can be interpreted to mean that clay slime pits are 'habitats' that can maintain reproductive populations of this species.

Please notify me by electronic mail regarding confirmation of the extended comment period.  
Thank you in advance.

Sincerely,

Sydney T. Bacchus, Ph. D.  
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July 16, 2002

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Re: **White Springs Agricultural Chemicals, Inc. (d/b/a PCS Phosphate - White Springs)**  
**Formal Comments on the Proposed Modification of Permit Application No. 198404652 (IP-RHL)**  
**and the Draft Supplemental Environmental Impact Statement (DSEIS)**

Dear Colonel James G. May:

Yesterday I forwarded a letter to you (electronically), on behalf of **Floridians for Environmental Accountability (FEAR), Wetlands Alert, Inc. (Wetlands Alert)**, and myself, requesting at least a 30 day extension of the comment period for the referenced DSEIS. This request was based on the extensive omissions and factually-unfounded statements in the DSEIS. Today, I am providing formal comments on both the proposed permit modification and DSEIS referenced above, which are linked inextricably.

The comments that are provided below and in the referenced Exhibits, are not meant to be exhaustive, but should be sufficient to illustrate the gross inadequacies of both, with respect to the Federal laws and regulations that govern these proposed actions. These comments also are provided on behalf of FEAR, Wetlands Alert, and myself. The Exhibits that could not be forwarded electronically have been forwarded to you at the address provided above (as indicated in the Public Notice), via Express Mail (EU531814984US). Please direct any responses to this letter to Dr. Kathy Cantwell, FEAR's Director of the Suwannee River Regional Chapter; Barbara Herrin, President of Wetlands Alert, Inc.; and me, at the addresses provided below. By copy of this letter, I also am requesting that actual notice of any proposed action that the U. S. Army Corps intends to take regarding the proposed permit modification and DSEIS referenced above, also be forwarded to each of us.

#### **PERSONAL BACKGROUND AND EXPERIENCE, EDUCATION AND RESEARCH**

1. Before I provide comments on the proposed project modification and DSEIS (referenced above), I am including the following brief synopsis of my scholastic and professional background, as support for the validity of my comments. I received a BS and MS from Florida State University. The topic of my masters research was the influence of hydrologic conditions on wetland and aquatic plant community distribution. Immediately upon completion of my masters degree I was hired by the Florida Department of Environmental Regulation (DER - now known as the Florida Department of Environmental Protection - DEP), where I worked for approximately 10 years on various aspects of wetland and aquatic ecosystems, including the identification of wetlands in areas of dredge and fill violations.
2. During and subsequent to my employment with governmental regulatory agencies in Florida, I

served as an expert witness for countless enforcement and permitting cases/potential cases throughout the entire State of Florida, in addition to overseeing numerous large "restoration" projects. I then shifted from government regulatory work to return to the academic realm and obtain my doctoral degree. The foundation of my groundwater flow/hydrogeology/geochemistry background was graduate-level courses at the University of South Florida (Departments of Engineering and Geology). That university has one of the most prominent programs in karst hydrology in the nation (possibly the world). I then transferred to the University of Georgia to complete additional courses focusing on forest hydrology, forest pathology and ecology. That extensive multidisciplinary background was essential for both my doctoral and post-doctoral research problems, which included identifying anthropogenic (man-induced) groundwater alterations as a causal agent in the premature decline and death of trees, wetlands, and other significant and permanent adverse environmental impacts.

3. My research for the past 10 years has involved surfacewater/groundwater interactions and the ecological impacts of anthropogenic groundwater perturbations in the southeastern Coastal Plain. I have published more than 30 peer-reviewed papers (including contributing a book chapter regarding surfacewater/groundwater interactions). I also have received several awards for my hydrologic contributions to communities, and have been invited to present papers at several International Hydrologic Conferences.

4. I was nominated as a Technical Advisory Member in the field of hydrology for the proposed mining of the Trail Ridge relict sand dunes in the vicinity of the Okefenokee National Wildlife Refuge, and was selected to serve as a Peer Reviewer for the related proposed mining issues. A "no mining" scenario was imposed for Trail Ridge, however, in part because of adverse impacts that would occur to Waters/wetlands of the United States in the Okefenokee Swamp if one of the primary recharge areas (Trail Ridge) was dredged. Note that it was recognized in that case that adverse impacts would occur beyond the boundaries of the property to be dredged. My Curriculum Vitae is provided as EXHIBIT 1 (forwarded as a hard copy), for more details regarding my background and related peer-reviewed publications.

#### JOINT COMMENTS ON MODIFICATION TO PERMIT #198404652 (IP-RHL) AND DSEIS

4. All of the Exhibits for this comment letter are listed in EXHIBIT 2 (provided electronically and as a hard copy). EXHIBIT 2 also indicates which Exhibits were forwarded as hard copies and which are being forwarded electronically. The Public Notice for the permit modification referenced above, originally was dated May 17, 2002, and was for a 15-year permit to mine approximately 7,500 acres of wetlands. The Public Notice was republished on June 13, 2002, with the comment period extended to July 16, 2002, at the request of the U. S. Environmental Protection Agency, according to an electronic communication that I received from Richard H. Legere, with the COE's Gainesville Regulatory Office. In that Public Notice, the applicant (Potash Company of Saskatchewan (PCS Phosphate-White Springs))" proposed to mine an additional 1,858 acres of jurisdictional wetlands within a 19,077-acre application footprint over a 47 year period."

5. The Public Notice states that the referenced COE permit was issued on October 7, 1987. Prior to the issuance of that permit and the extensive mining of wetlands, including those associated with Beehaven Bay, I conducted inspections of the wetlands that were proposed to be mined, as an employee of the Florida Department of Environmental Regulation (FDER). That agency now is known as the Florida Department of Environmental Protection (FDEP). Those inspections confirmed that the extensive forested wetlands were connected to the Suwannee River ("jurisdictional") as a result of those inspections. The connection of those wetlands subsequently were challenged by Occidental Chemical and Petroleum Company (the original permittee) in two Administrative Hearings with FDER. The State of Florida prevailed in both Hearings, confirming that the wetlands that were proposed to be mined were both jurisdictional Waters of the State and jurisdictional Waters of the United States.

6. Both the original Public Notice dated May 17, 2002 and the DSEIS infer or specifically state that considerable areas of "isolated" wetlands occur on the site. There are no isolated wetlands on the approximately 100,580 acres project site. All of the wetlands that have been considered not to be "jurisdictional" (e.g., depressionnal pond-cypress wetlands) are, in fact, connected to Waters of the United States or are adjacent waters. Consequently the acreage of wetlands that would be mined (lost) as the direct result of the surface footprint of the proposed mine is considerably greater than indicated in the Public Notices and DSEIS.
7. Extensive additional acreage of Waters of the United States would be destroyed as adverse direct, indirect, and cumulative impacts (e.g., groundwater) associated with the subsurface (e.g., groundwater) footprint of the proposed modification. Refer to EXHIBITS 3 and 4 (all forwarded electronically) for more detailed comments regarding the extensive adverse impacts associated with these types of mining projects and the failure of the DSEIS to address these impacts. The points concerns addressed in EXHIBIT 3 remain unaddressed in the DSEIS. Note that the mines addressed in the four comment letters included in EXHIBIT 4 represent mines that are resulting in or will result in extensive irreversible loss of wetlands not accounted for in the permits authorizing those permits.
8. The DSEIS (p. viii and p. 17) indicates that Alternative A is a "no wetland mining" alternative, and states that alternative "would not require a permit from the ACOE". That statement is grossly misleading (without factual basis) in two aspects. First, it continues to presume that vast areas of wetlands on the project site are not within the COE's "jurisdiction", although those wetlands are Waters of the United States. Second, the wetlands on the site are so extensive that even if mining legitimately was confined only to uplands (and no wetlands were mined) the applicant still would have to get permits from the COE for road crossings and similar activities required to mine the uplands.
9. The DSEIS failed to consider any true "no mining" alternatives, such as the no-mining alternative that prevailed when mineral mining in the Okefenokee Swamp (Georgia) was considered.
10. Furthermore, page 49 of the DSEIS includes the statement, "There is no alternative, natural or synthetic, to substitute for phosphate." This statement implies that mining wetlands is the only means of obtaining phosphate. This is NOT the case. Alternative A (mining only uplands) confirms the obvious - that phosphate mining is NOT a water-dependent (wetland-dependent) activity. Therefore, practicable alternatives are presumed to be available (see the Section 404(b)(1) Guidelines).
11. EXHIBIT 5a provides numerous high-tech examples of recovering phosphate (as described by the European Chemical Industry Council) that does NOT result in the irreversible loss of natural resources (as is the case with the proposed mining). In fact, the techniques described in EXHIBIT 5a (e.g., recovering phosphate from animal manures) result in a true net improvement in water quality and environmental resources, unlike similar unsubstantiated claims made in the referenced Public Notice and DSEIS.
12. These "functional" Alternatives to mining wetlands are not just available to the progressive-thinking Europeans. In the "backwoods" of north Georgia, similar types of environmental sound and sustainable "functional" Alternatives to mining wetlands for phosphate are available. EXHIBIT 5b provides a brief description of the approaches currently being used as the result of research at the University of Georgia. In addition to obtaining the nutrient from animal waste, this project also is able to use human waste.
13. Clearly the DSEIS did not give a hard look at all of the reasonable and practicable alternatives - such as the two functional alternatives described above. It also did not consider "geographic" Alternatives, such as importing phosphate rock. For example, when the COE examined alternatives to PCS' proposed mine expansion in North Carolina, a determination was made that importing phosphate rock from Morocco was a viable alternative. That alternative would not involve the loss of Waters of the

United States.

14. The Agenda for The Florida Association for Water Quality Control 24th Annual Conference, June 13-16, 2001 (EXHIBIT 6), devoted an entire afternoon's session to the discussion of nutrient management in the Phosphate Industry. This alludes to the magnitude of the eutrophication problem linked, intimately with this primitive means of obtaining phosphate. One of the sessions is titled, "Do We Need an Area Wide Environmental Impact Statement (EIS) for Mining?" My response is NO. What is needed is a REGIONAL EIS for mining in Florida.

15. The six peer-reviewed publications provided in EXHIBIT 7a-f describe the widespread environmental/wildlife degradation that results from this eutrophication, with the first publication specifically dealing with the eutrophication of the Suwannee River, to which the wetlands proposed to be mined are connected. The wildlife that suffer significant adverse impacts from the eutrophication include the federally-listed Florida manatee. These publications illustrate another highly significant adverse impact of the phosphate mining that occurs, but was not addressed in the DSEIS. Specifically, the degradation and contamination of Waters of the United States at areas throughout the entire state and U. S., as indirect and cumulative impacts to fertilizer runoff. These factors should have been addressed in the DSEIS.

16. The Public Notice and DSEIS repeated promote the "jobs" associated with the existing and proposed mining in Hamilton County. Selling crack cocaine would provide more lucrative jobs at approximately the same level of legality. Since the Suwannee River Basin now has significant nutrient loading problems, a more sustainable approach to providing long-term jobs in that area would be to establish a phosphate-recovery facility/composting facility like the ones described in EXHIBIT 5. That "Alternative" would provide economic stimulus, while improving water quality and the environmental conditions, rather than degrading and destroying those natural resources.

17. EXHIBIT 8 provides a simplified synopsis of Florida's Hydroecology, describing the intimate connection between the karst aquifer system and surfacewater resources. EXHIBIT 8a-e are selected relevant peer-reviewed publications that provide the scientific backbone of the synopsis. This scientific documentation illustrates the magnitude of damage that has been and will continue - but was unaddressed - as the result of that mining.

18. EXHIBIT 9a-e provide additional graphic explanation (from various peer-reviewed publications) regarding how the "subsurface" impacts or "footprints" occur in conjunction with the mining.

19. EXHIBIT 10a-e include entire copies of various relevant peer-reviewed publications to explain these concepts more thoroughly. These publications illustrate the magnitude of the damage that the combination of massive groundwater withdrawals and the excavated pits have on the hydroperiods of the wetlands for miles beyond the boundaries of the project site.

20. The relevant Federal documents included in EXHIBIT 11 continue to describe the magnitude of the damage associated with mining in Florida and the Coastal Plain. The importance of maintaining wetlands like those on the site of the proposed modification is addressed in EXHIBIT 11d.

21. I have personal knowledge regarding this type of damage, since it was the focus of my doctoral research. The copies of the color photographs that I took at various sites in Florida are provided in EXHIBIT 12.

22. Cumulative impacts were mentioned on page 48 of the DSEIS, almost in passing. Less than a page was devoted to the discussion of cumulative impacts. Please refer to EXHIBITS 13 and 14. They describe in detail what constitutes "cumulative impacts". A comprehensive Cumulative Impacts Analysis, pursuant to NEPA standards is required for this project.

23. Finally, **EXHIBITS 15 and 16** list only some of the critical wildlife that are dependent on the thousands of areas of depressional wetlands that are proposed to be destroyed with this modification. As I indicated previously, the wood storks are federally-endangered species and the regeneration of their populations will suffer significant adverse impact if the proposed modification is authorized.

Please notify me by electronic mail if any of my comments or Exhibits were unclear regarding their relevancy to the proposed project. The Public Notice and the DSEIS strongly suggest that the authors have no scientific background for the reviews and analysis that were attempted, and the Public Notice clearly states that none of the information submitted was verified. **If the proposed modification is not denied, I am requesting that a series of Public Hearings be held throughout the State of Florida regarding the impacts that would occur from this project.** Thank you in advance.

Sincerely,

Sydney T. Bacchus, Ph. D.  
Hydroecologist  
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Enclosures:

See **EXHIBIT 2** for complete list of enclosed exhibits

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## EXHIBIT 2

### LIST OF EXHIBITS FOR COMMENTS BY BACCHUS ON PROPOSED MODIFICATION TO PERMIT #198404652 (IP-RHL) AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DSEIS)

#### PERSONAL BACKGROUND AND EXPERIENCE, EDUCATION AND RESEARCH:

1. Curriculum Vitae [9 pages]

#### JOINT COMMENTS ON MODIFICATION TO PERMIT #198404652 (IP-RHL) AND DSEIS:

2. List of Exhibits [3 pages]
3. Comment letter dated 11/2/00 from Blackner to Hendrix/COE re: proposed permit modification [8 pages, submitted electronically]
4. Comment letters from Bacchus to COE re: mining in Florida [submitted electronically]
  - a. 4/6/01 Green Swamp
  - b. 4/18/01 Everglades Pits
  - c. 8/8/01 Carabelle
  - d. 8/9/01 CFI
5. Reasonable and Practicable Functional Alternatives That are Readily Available, but Were Not Addressed in the DSEIS:
  - a. Scientific Committee on Phosphates Scope Newsletter Special Edition No. 41: Phosphate Recovery - Where do we stand today? In preparation to the 2nd International Conference on Phosphorus Recovery for Recycling from sewage and animal wastes, Noordwijkerhout (near Amsterdam) Holland, 12-14th March 2001. European Chemical Industry Council.
  - b. Grattan, M. July/August 2002. Researchers at UGA's Bioconversion Center solve waste problems through compost. Georgia and Southeast Environmental News. [3 pages]
6. Agenda for The Florida Association for Water Quality Control 24th Annual Conference, June 13-16, 2001. [3 pages]
7. Examples of peer-reviewed publications pertaining to water quality and adverse impacts of eutrophication to migratory birds, wading birds, and other wildlife in Florida:
  - a. Bledsoe, E. L. and E. J. Philips. 2000. Relationships between phytoplankton standing crop and physical, chemical, and biological gradients in the Suwannee River and Plume Region, U.S.A. *Estuaries* 23(4):458-473.
  - b. Lapointe, B. E., W. R. Matzie, and M. W. Clark. 1993. Phosphorus inputs and eutrophication on the Florida Reef Tract. pp. 106-112 in: R. Ginsburg (ed.) *Proceedings of the Colloquium on Global Aspects of Coral Reefs: Health, Hazards, and History*. University of Miami.
  - c. Bossart, G. D., D. G. Baden, R. Y. Ewing, B. Roberts, and S. D. Wright. 1998. Brevetoxicosis in manatees (*Trichechus manatus latirostris*) from the 1996 epizootic: gross, histologic, and immunohistochemical features. *Toxicologic Pathology* 26(2):276-282.
  - d. Frederick, P. C., S. M. McGehee, and M. G. Spalding. 1996. Prevalence of *Eustrongylidosis ignotus* in Mosquito fish (*Gambusia holbrooki*) in Florida: Historical and Regional Comparisons. *Journal of Wildlife Diseases* 32(3):552-555.
  - e. Spalding, M. G. 1990. Antemortem Diagnosis of *Eustrongylidosis* in Wading Birds (Ciconiiformes). *Colonial Waterbirds* 13(1):75-77.
  - f. Spalding, M. G., G. T. Bancroft, and D. J. Forrester. 1993. The Epizootiology of *Eustrongylidosis* in Wading Birds (Ciconiiformes) in Florida. *Journal of Wildlife Diseases* 29(2):237-249.

8. "Synopsis of Florida's Hydroecology: The Intimate Connection Between Surface Waters and Ground Waters"
  - a. Bacchus, S. T. 2000b. **Uncalculated impacts of unsustainable aquifer yield including evidence of subsurface interbasin flow.** *Journal of American Water Resources Association* 36(3):457-481.
  - b. **Illustrated Typical Cross-Section of the Floridan Aquifer System**
  - c. Bacchus, S. T. 2000a. **Predicting nearshore environmental impacts from onshore anthropogenic perturbations of ground water in the southeastern Coastal Plain, USA.** pp. 609-614 *in: Interactive Hydrology: Proceedings of the 3rd International Hydrology and Water Resources Symposium of the Institution of Engineers, Australia, 20-23 November 2000 Perth, Western Australia.*
  - d. **Illustration of Aquifer Impacts from Dredged Pits: Intact Aquifer Cube v Dredged Cube**
  - e. **Ecological Risk Ranking Scores for 33 Major Environmental Stressors by the USEPA Scientific Advisory Board (Figure 26.8 in: Bacchus, S. T. 2002. The 'Ostrich' Component of The Multiple Stressor Model: Undermining Florida)**
  
9. **Graphic Excerpts from Peer-Reviewed Publications:**
  - a. **Cross-sections of depressional wetlands in Florida (Watson et al. 1990, Fig. 3)**
  - b. **Vertical hydraulic conductivity in karst depressions (Williams 1985, Fig. 5.16C)**
  - c. **Vertical fracture through "confining" layers of the Floridan aquifer system (Spechler and Phelps 1997, Fig. 3)**
  - d. **Fractures and faults in Florida's karst aquifer extending approximately 35 miles (Popenoe et al. 1984)**
  - e. **Depressional (pond-cypress) wetlands and relict sinkhole lakes aligned along fractures (Brook and Sun 1982, Figs. 10 and 18)**
  
10. **Examples of peer-reviewed publications pertaining to altered hydroperiods and adverse impacts to natural resources:**
  - a. Curtis, T. G. 1989. **Estimating Unsteady Water Table Behavior Using Boundary Integral Approximations.** pp. 298-310 *In: J. E. Moore, A. A. Zaporozec, S. C. Csallany, and T. C. Varney (eds.). Recent Advances in Ground-water Hydrology. American Institute of Hydrology.*
  - b. Patten, T. H. and J.-G. Klein, 1989. **Sinkhole formation and its effect on Peace River hydrology.** *In: B. F. Beck (Editor) Proceedings of the Third Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, St. Petersburg Beach, Florida, 2-4 October 1989. A. A. Balkema Publishers, Old Post Road, Brookfield, Vermont. pp. 25-31.*
  - c. Lewelling, B. R., A. B. Tihansky, and J. L. Kindinger. 1998. **Assessment of the Hydraulic Connection Between Ground Water and the Peace River, West-Central Florida.** *USGS Water-Resources Investigations Report 97-4211. 96 pp.*
  - d. Bacchus, S. T., 1997. **Premature decline and death of trees associated with a man-made lake and groundwater withdrawals in Albany, Georgia.** *In: K. J. Hatcher (Editor) Proceedings of the 1997 Georgia Water Resources Conference, held March 20-22, 1997, at The University of Georgia, Athens, Georgia. pp. 280-286.*
  - e. Bacchus, S. T., T. Hamazaki, K. O. Britton and B. L. Haines. 2000. **Soluble sugar composition of pond-cypress: A potential hydroecological indicator of groundwater perturbations.** *Journal of American Water Resources Association* 36(1):1-11.
  
11. **Relevant Federal Documents**
  - a. 4/6/95 EPA Memo from Bacchus to Wylie
  - b. 3/1/98 EPA Memo from Bacchus to Wylie
  - c. 3/00 Final Programmatic EIS, Rock Mining - Freshwater Lakebelt Plan, Miami-Dade County, Florida [1 page excerpt]
  - d. 3/22/02 Riparian Areas: Functions and Strategies for Management (NRC report excerpts)

12. Photographs taken by Bacchus and supplemental background information:
  - a. 3 symptoms of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - b. 2 photographs of another symptom of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - c. 2 additional symptoms of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - d. 2 photographs of an additional symptom of premature decline, and 1 photograph of newly-formed sinkholes, all due to subsurface alteration of surficial aquifer hydroperiod in Florida [1 sheet]
  - e. symptoms of premature decline from subsurface alteration of wetlands hydroperiod at Little Gator Creek [3 sheets]
  - f. symptoms of premature decline and subsurface alteration of wetlands hydroperiod from mineral mining at Starke [4 sheets]
  - g. symptoms of altered physical and chemical conditions of "stream" water and habitat due to due to phosphate mining at Dog Leg Branch [5 sheets]
  - h. faxes from the Florida Institute of Phosphate Research to Bacchus dated 7/20/98 and 7/21/98 with supplemental background information [6 pages]
  - i. symptom of premature decline due to subsurface alteration of surficial aquifer hydroperiod in Live Oak [1 sheet]
  - j. symptoms of premature decline from subsurface alteration of wetlands hydroperiod at White Springs [3 sheets]
  - k. canopy of normal cypress tree lacking any symptoms of premature decline on Suwannee River [1 sheet]
  - l. nonaesthetic mine-scapes permanently and irreversibly altering the rural watersheds and natural habitats throughout Florida [2 sheets]

**CUMULATIVE EFFECTS:**

13. "What are Cumulative Impacts? Synopsis of the U. S. Council on Environmental Quality: 1997 Cumulative Effects Report"
14. "Considering Cumulative Effects Under The National Environmental Policy Act"
15. Season and Depth Requirements of Surface Water for Successful Breeding of Amphibians Associated with Depressional Wetlands in Florida [1 page Table]
16. Fish and Wildlife Service Wood Stork Recovery Plan

August 14, 2002

Colonel James G. May, District Engineer  
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Re: **White Springs Agricultural Chemicals, Inc. (d/b/a PCS Phosphate - White Springs)  
Supplemental Comments on the Draft Supplemental Environmental Impact Statement (DSEIS)  
and the Proposed Modification of Permit Application No. 198404652 (IP-RHL)**

Dear Colonel James G. May:

On July 15 and 16, 2002, I forwarded formal written comments to your office regarding the referenced **Draft Supplemental Environmental Impact Statement (DSEIS) and Proposed Modification of the existing permit, to expand phosphate mining in Suwannee River wetlands and surrounding uplands at the White Springs site (Permit Application No. 198404652) for the life of the mine (47 years).** Those comments were forwarded electronically, on behalf of **Floridians for Environmental Accountability (FEAR), Wetlands Alert, Inc. (Wetlands Alert),** and myself. I also forwarded hard copies of exhibits that could not be forwarded electronically.

Today, I am providing supplemental formal comments (electronically) regarding the DSEIS and proposed permit modification referenced above, which are linked inextricably. These comments again are being forwarded on behalf of FEAR, Wetlands Alert, and myself. Additionally, I have been requested to submit comments on behalf of Suwannee/St. Johns Sierra. Accompanying my supplemental comments are additional exhibits. These additional exhibits have been forwarded either via Express Mail (EU531814975US) or hand-delivery, and have been added to the list of Exhibits in my previous "EXHIBIT 2" (in total bold), and renamed "**Supplemental EXHIBIT 2**". A copy of that "**Supplemental EXHIBIT 2**" also is being forwarded electronically, to be included in the record with my formal comments. Also, for your convenience and for the record, I have forwarded signed copies of my previous electronic comment letters referenced above. The first page of my letter dated July 15, 2002, contained typographical errors, which were corrected in the signed copies forwarded with the supplemental exhibits (via Express Mail).

As indicated previously, my comments are not meant to be exhaustive, but should be sufficient to illustrate the gross inadequacies of both the DSEIS and the referenced permit application, with respect to the Federal laws and regulations that govern these proposed actions.

**SUPPLEMENTAL JOINT COMMENTS ON DSEIS/MODIFICATION TO PERMIT #198404652 (IP-RHL)**

1. The DSEIS fails to address the extensive, significant and cumulative adverse groundwater impacts (including irreversible impacts) that are occurring at the White Springs mining site and would increase exponentially if the proposed modification was authorized. Based on records from the Suwannee River Water Management District, the existing mining operation is permitted to withdraw more than 50% of all of the ground water that is permitted by the District for withdrawal for other industrial, agricultural, and municipal uses combined in all of the counties in their District. The extensive pits (both permanent and those that may be filled in part or in full following mining) represent additional, long-term/permanent, irreversible adverse impacts to ground water and surface water. **These adverse impacts were not addressed in the DSEIS.**
  
2. One example of adverse impacts associated with the long-term/permanent, irreversible alterations of ground water and surface water referenced above is the premature decline and death of both wetland and upland trees, including trees that provide critical nesting habitat for federally-endangered wood storks. Please note that the DSEIS claims that there were no endangered species in the project area, but failed to consider the habitat for those species and the adverse impacts on that habitat from the existing and proposed mining activities. Significant declines in wood stork populations in "preserved" wetlands, such as those of the Corkscrew Swamp Sanctuary, due to the adverse impacts of mining activities in surrounding areas have been documented. This represents one factor in the loss of **natural habitat for wildlife**, including species such as the Florida black bear. This loss of habitat would extend far beyond the surface footprint of the proposed mine expansion, and would coincide with the subsurface footprint (groundwater impact zone) of the proposed mine expansion. Refer to **EXHIBITS 8, 9, and 10** for more detailed information regarding impacts from groundwater perturbations. **These adverse impacts were not addressed in the DSEIS.**
  
3. Trees also represent significant carbon sinks. **Massive forest decline and tree death** in that extensive area of north Florida due to the direct, indirect, and cumulative adverse impacts of the proposed mine expansion is proposed, as illustrated in the photographs of trees provided previously in **EXHIBIT 12**. This significant and irreversible loss is tantamount to the extensive deforestation in developing countries that is contributing to global degradation of air quality and global warming. **This adverse impact was not addressed in the DSEIS.**
  
4. The groundwater impacts associated with the existing and proposed mining activities have contributed to, and will continue to contribute to catastrophic and destructive wildfires in areas that include the Okefenokee Swamp and Okefenokee National Wildlife Refuge. Wildfires that have been burning in that Refuge for the past months have cost the federal taxpayers more than \$5 million dollars. The Press Release dated July 16, 2002, from Governor Bush (**EXHIBIT 17**) indicates that Floridians no longer are willing to tolerate the extensive environmental and economic burden of destructive dredging projects promoted by the COE. **The DSEIS did not address the catastrophic damage that results from those wildfires, nor the economic burden of those wildfires on the federal tax payers.**
  
5. The "Project Evaluation Area" (DF Figure 1.2.-1) and "Memorandum of Understanding Map" (DF Figure 1.3.5.-1), included as pages 2 and 3 of 13, respectively, in the Public Notice, depict areas delineated as **"Preservation from Mining"**. Those areas have not been and **cannot be "preserved"**. In reality, the adverse impacts of the existing mine activities already have set into motion a chain of events that is leading to the destruction of those areas designated as "Preservation from Mining". The direct, indirect, and cumulative impacts of the proposed mining activities would result in the permanent, irreversible destruction of those areas designated for "preservation". Further problems are associated with entities which are designated to "manage" such preserved areas (e.g., The Nature Conservancy, the Water Management District), but which cause additional damage to the "preserved areas by generating additional groundwater impacts for which public comment is not sought. **Those adverse impacts were**

not addressed in the DSEIS.

6. The "Project Evaluation Area" and "Memorandum of Understanding Map" referenced in the paragraph above also delineate the "Project Boundary". As indicated above, the adverse impacts associated with subsurface footprint of the existing mining operation extends beyond the delineated "Project Boundary". The direct, indirect, and cumulative impacts from the proposed permit modification for the "life of the mine" activities would exacerbate and expand the area of impact even further beyond the "Project Boundary" shown in those referenced figures, including onto extensive privately-owned and public land. This adverse impact was not addressed in the DSEIS.

7. Based on the inadequacies described above, the "Project Evaluation Area" depicted in DF Figure 1.2.-1, and utilized by the DSEIS, is not representative of the area that should have been evaluated for the DSEIS and proposed permit modification. Likewise, extensive areas have been "disturbed" by the existing mining operation and would be "disturbed" by the proposed mining operation beyond the area depicted as "Currently Permitted or Disturbed", in DF Figure 1.2.-1. Therefore, the areas addressed by the DSEIS are inadequate.

8. The "Memorandum of Understanding Map" referenced above also delineates "FDEP Jurisdiction" and the DSEIS references "jurisdictional" and "isolated" wetlands. As I indicated previously, all of the wetlands within the area considered to be the "Project Boundary" are within the COE's jurisdiction, not just the approximate 2,000 acres addressed in the DSEIS. Waters of the United States (including "jurisdictional wetlands") include wetlands adjacent to waters (such as navigable waters and their tributaries). "Adjacent" is defined as "bordering, contiguous, or neighboring." [33 CFR Section 328.3(d)] Additionally, all of the wetlands are within reasonable proximity to other waters, such that those wetlands are part of the aquatic system of the Suwannee River. Since the DSEIS failed to consider all of the wetlands within the designated (insufficiently small) "Project Boundary" as being within the COE's jurisdiction, the DSEIS is grossly inadequate.

9. The DSEIS also is deficient with respect to the analysis of alternatives. It failed to analyze a "non-jurisdictional waters" alternative or even to assess whether the proposed activity was water-dependent. Clearly, the mere fact that uplands are being mined is sufficient proof the mining is not "water-dependent".

10. The DSEIS stated that mining phosphate rock provided the only source for phosphate (e.g., for such uses as phosphorus in fertilizers). Refer to the peer-reviewed publication enclosed as new EXHIBIT 5c. That publication describes how 75% of phosphorus can be removed from swine manure solids by relatively simple and inexpensive techniques. Phosphorus also can be extracted from wastewater, sludge, dairy waste (manure), and chicken waste (manure). Those sources of phosphorus are available within the Suwannee River watershed, without the destruction of any Waters of the United States. In fact, many of those sources currently are factors in water quality degradation in the Suwannee River watershed. The use of those materials as a source of phosphorus would improve the water quality of the Suwannee River watershed and coastal waters. This alternative was not considered in the DSEIS.

11. Another study, too recent for publication, revealed that approximately 13% of Total P can be recovered from food waste and 4% can be recovered from biosolids (municipal wastewater sludge) using large-scale composting (K. C. Das, personal communication). That study indicated that in 1990, only 8% (an estimated 761,000 Mg/yr ) of food wastes were diverted from landfills and composted. Although food wastes and biosolids are readily available in north Florida for large-scale composting as a source of the nutrient proposed to be obtained via mining under the proposed permit application, the DSEIS failed to consider or analyze that alternative.

12. Soil amendments for horticultural, landscaping, and agricultural use (that would include both phosphorus and nitrogen) without dredging wetlands and irreversible adverse impacts to Waters of the

United States also can be obtained by composting by-products from bleached kraft pulping processes, as described in the peer-reviewed publication enclosed as new EXHIBIT 5d. North Florida has many such pulp mills that could be used to generate the referenced nutrients that the proposed mining operation purportedly must provide. **The DSEIS failed to consider or analyze that alternative.**

13. The alternatives described above represent some of many **functional alternatives which are economical, readily-available, and do not result in destruction of wetlands and other Waters of the United States.** In fact, the use of any of the alternatives described above would result in a bona fide improvement in water quality for Waters of the United States. These functional alternatives also would provide jobs in the area that were long-term and sustainable, not just temporary (e.g., "life-of-the-mine") jobs.

14. The DSEIS addressed "aesthetics", suggesting that phosphate mine sites are aesthetic. Refer to the photographs I took in the area surrounding and including the existing White Springs mine site, and sites with similar groundwater impacts, including those photographs of premature decline and death of trees (EXHIBIT 12). Also refer to the additional photographs that I took showing the mountain of dredged aquifer matrix at other phosphate mines in Florida (EXHIBIT 12m; Sheet 1, upper and lower, and Sheet 2, upper). These mountains of mined aquifer matrix can range from two to three stories in height, as noted by comparison with the buildings and power poles in the photographs. Certainly no serious argument can be made that those mountains of mined aquifer matrix can be considered "aesthetic". By comparison, the mountain of composted waste/by-products shown in EXHIBIT 12m (Sheet 2, lower) represents a large-scale reduction in other destructive practices (e.g., landfills), ultimately resulting in a more aesthetic (less disturbed) natural landscape.

15. **Geographic alternatives also are available, but were not considered in the DSEIS.** An example of a practicable geographic alternative is importing the ore from an area that does not involve the discharge of dredged and fill material in Waters of the United States.

16. The on-site "no wetland" mining alternative considered in the DSEIS (not a true geographic or functional alternative) appeared to consider only 2,841 acres of upland mining, so that it only provided enough material to be mined for three years. In contrast, the other "alternatives" include between 10,000 and 13,800 acres of uplands to be mined. **No alternative in the DSEIS included only mining in uplands.**

17. The DSEIS failed to evaluate the adverse cumulative impacts of the proposed mine (e.g., the proposed creation of an additional 6,000 acres of pits - erroneously referenced as "lakes" approximately 70 to 90 feet deep, and **admitted-proposed destruction of approximately 7,000 acres of wetlands**) with respect to the previously permitted mining activities at the White Springs site, as well as with respect to other PCS Phosphate mining activities in the United States. An example of the latter is the reported **1,268 acres of wetlands in Beaufort County, North Carolina** that the COE recently permitted for destruction (No. 02cv0053). For example, page 46 of the DSEIS references monitoring of the surficial aquifer drawdown with mining, yet that "monitoring" is incapable of addressing the impact on wetland hydroperiod within and beyond the designated "Project Boundary" because sufficient pre-mining and post-mining data were not collected within those wetlands. On the same page of the DSEIS it is noted that dewatering of the sites for mining has much more of an effect on the water table when the rainfall is less, yet there was no attempt to address the direct, indirect, and cumulative adverse environmental impacts of that dewatering.

18. The DSEIS also failed to evaluate the adverse cumulative impacts of the proposed mine with respect to the previously permitted mining activities in Florida by other mining companies. Examples include the thousands of acres of wetlands recently permitted for destruction by the COE in Miami/Dade County associated with the mining of approximately 22,000 acres in the Florida Everglades - another area supporting the federally-endangered wood storks (refer to my comment letters in EXHIBIT 4).

19. Pages 26 and 27 of the DSEIS infer that since the proposed permit modification would not direct any new direct or indirect discharges to the Suwannee River - an Outstanding Florida Water (OFW) - that no water quality evaluation is necessary. That train of thought, however, fails to consider cumulative impacts of continued discharges on water quality or to consider the direct, indirect, and cumulative impacts of altered hydrology and hydroperiods on water quality of the Suwannee River and other waters of the United States (e.g., the 7,000 acres of wetlands reported to occur within the designated "Project Boundary"). For example, groundwater alterations that would result from the proposed mining expansion will cause induced recharge from the wetlands, Suwannee River, Okefenokee Swamp, and associated tributaries - White Springs has ceased to flow due to activities from the existing mine. Impacts to water quality are implicit in the induced recharge from those surfacewater systems. Altering the hydrology and hydroperiod of waters of the United States (e.g., reducing flow in the Suwannee River and its springs) also will result in changes in water quality, simply by altering the volume of water historically in the natural systems. None of those impacts are addressed in the DSEIS.

20. Additional inadequacies of the DSEIS can be found on page 44, where implications are made that since fish and macroinvertebrates are not different above and below the mining operation, the mining activities have no adverse impacts on populations of those organisms. That assumption fails to take into account the extensive adverse impacts that have occurred upstream due to the existing mining activities (e.g., induced recharge) and would be exacerbated by the proposed expansion of those mining activities. Furthermore, the DSEIS fails to consider the adverse impacts to coastal organisms from changes in water quality, including those associated with reductions in water quantity and altered hydroperiod.

21. Despite the failure of the DSEIS to address water quality impacts, the Suwannee River Water Management District has conducted water quality studies. Since 1996, those studies consistently have rated Swift, Hunter, and Camp Branch (tributaries of the Suwannee River in the vicinity of the existing and proposed mining activities) as impaired waterbodies with "fair" quality. The District's reports further state that "any of the data outside normal parameters are due to mining influence." The proposed continuation of that "mining influence" represents another cumulative impact that was not considered in the DSEIS.

Please notify me by electronic mail if any of my comments or Exhibits were unclear regarding their relevancy to the proposed project. As indicated previously, please direct any responses to this letter to Dr. Kathy Cantwell, FEAR's Director of the Suwannee River Regional Chapter; Barbara Herrin, President of Wetlands Alert; and me, at the addresses provided below. By copy of this letter, I also am requesting that actual notice of any proposed action that the U. S. Army Corps intends to take regarding the DSEIS and proposed permit modification referenced above, also be forwarded to each of us. If the proposed modification is not denied, I am requesting that a series of Public Hearings be held throughout the State of Florida and Georgia regarding the impacts that would occur from this project. Thank you in advance.

Sincerely,

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Enclosures:

See Supplemental EXHIBIT 2 for complete list of exhibits

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SUPPLEMENTAL EXHIBIT 2\*

LIST OF EXHIBITS FOR COMMENTS BY BACCHUS ON  
PROPOSED MODIFICATION TO PERMIT #198404652 (IP-RHL)  
AND  
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DSEIS)

PERSONAL BACKGROUND AND EXPERIENCE, EDUCATION AND RESEARCH:

1. Curriculum Vitae [9 pages]

JOINT COMMENTS ON MODIFICATION TO PERMIT #198404652 (IP-RHL) AND DSEIS:

2. List of Exhibits [3 pages]
3. Comment letter dated 11/2/00 from Blackner to Hendrix/COE re: proposed permit modification [8 pages, submitted electronically]
4. Comment letters from Bacchus to COE re: mining in Florida [submitted electronically]
  - a. 4/6/01 Green Swamp
  - b. 4/18/01 Everglades Pits
  - c. 8/8/01 Carabelle
  - d. 8/9/01 CFI
5. Reasonable and Practicable Functional Alternatives That are Readily Available, but Were Not Addressed in the DSEIS:
  - a. Scientific Committee on Phosphates Scope Newsletter Special Edition No. 41: Phosphate Recovery - Where do we stand today? In preparation to the 2nd International Conference on Phosphorus Recovery for Recycling from sewage and animal wastes, Noordwijkerhout (near Amsterdam) Holland, 12-14th March 2001. European Chemical Industry Council.
  - b. Grattan, M. July/August 2002. Researchers at UGA's Bioconversion Center solve waste problems through compost. Georgia and Southeast Environmental News. [3 pages]
  - c. Worley, J. W. and K. C. Das. 2000. Swine manure solids separation and composting using alum. *Applied Engineering in Agriculture* 16(5):555-561.
  - d. Das, K. C., E. W. Tollner, and T. G. Tornabene. 2001. Composting by-products from a bleached kraft pulping process: Effect of type and amount of nitrogen amendments. *Compost and Science Utilization* 9(3):256-265.
6. Agenda for The Florida Association for Water Quality Control 24th Annual Conference, June 13-16, 2001. [3 pages]
7. Examples of peer-reviewed publications pertaining to water quality and adverse impacts of eutrophication to migratory birds, wading birds, and other wildlife in Florida:
  - a. Bledsoe, E. L. and E. J. Philips. 2000. Relationships between phytoplankton standing crop and physical, chemical, and biological gradients in the Suwannee River and Plume Region, U.S.A. *Estuaries* 23(4):458-473.
  - b. Lapointe, B. E., W. R. Matzie, and M. W. Clark. 1993. Phosphorus inputs and eutrophication on the Florida Reef Tract. pp. 106-112 in: R. Ginsburg (ed.) *Proceedings of the Colloquium on Global Aspects of Coral Reefs: Health, Hazards, and History*. University of Miami.
  - c. Bossart, G. D., D. G. Baden, R. Y. Ewing, B. Roberts, and S. D. Wright. 1998. Brevetoxicosis in manatees (*Trichechus manatus latirostris*) from the 1996 epizootic: gross, histologic, and immunohistochemical features. *Toxicologic Pathology* 26(2):276-282.
  - d. Frederick, P. C., S. M. McGehee, and M. G. Spalding. 1996. Prevalence of *Eustrongylidosis ignotus* in Mosquito fish (*Gambusia holbrooki*) in Florida: Historical and Regional Comparisons. *Journal of Wildlife Diseases* 32(3):552-555.
  - e. Spalding, M. G. 1990. Antemortem Diagnosis of *Eustrongylidosis* in Wading Birds

- (Ciconiiformes). Colonial Waterbirds 13(1):75-77.
- f. Spalding, M. G., G. T. Bancroft, and D. J. Forrester. 1993. The Epizootiology of Eustrongylidosis in Wading Birds (Ciconiiformes) in Florida. Journal of Wildlife Diseases 29(2):237-249.
8. "Synopsis of Florida's Hydroecology: The Intimate Connection Between Surface Waters and Ground Waters"
    - a. Bacchus, S. T. 2000b. Uncalculated impacts of unsustainable aquifer yield including evidence of subsurface interbasin flow. Journal of American Water Resources Association 36(3):457-481.
    - b. Illustrated Typical Cross-Section of the Floridan Aquifer System
    - c. Bacchus, S. T. 2000a. Predicting nearshore environmental impacts from onshore anthropogenic perturbations of ground water in the southeastern Coastal Plain, USA. pp. 609-614 in: Interactive Hydrology: Proceedings of the 3rd International Hydrology and Water Resources Symposium of the Institution of Engineers, Australia, 20-23 November 2000 Perth, Western Australia.
    - d. Illustration of Aquifer Impacts from Dredged Pits: Intact Aquifer Cube v Dredged Cube
    - e. Ecological Risk Ranking Scores for 33 Major Environmental Stressors by the USEPA Scientific Advisory Board (Figure 26.8 in: Bacchus, S. T. 2002. The 'Ostrich' Component of The Multiple Stressor Model: Undermining Florida)
  9. Graphic Excerpts from Peer-Reviewed Publications:
    - a. Cross-sections of depressional wetlands in Florida (Watson et al. 1990, Fig. 3)
    - b. Vertical hydraulic conductivity in karst depressions (Williams 1985, Fig. 5.16C)
    - c. Vertical fracture through "confining" layers of the Floridan aquifer system (Spechler and Phelps 1997, Fig. 3)
    - d. Fractures and faults in Florida's karst aquifer extending approximately 35 miles (Popenoe et al. 1984)
    - e. Depressional (pond-cypress) wetlands and relict sinkhole lakes aligned along fractures (Brook and Sun 1982, Figs. 10 and 18)
  10. Examples of peer-reviewed publications pertaining to altered hydroperiods and adverse impacts to natural resources:
    - a. Curtis, T. G. 1989. Estimating Unsteady Water Table Behavior Using Boundary Integral Approximations. pp. 298-310 In: J. E. Moore, A. A. Zaporozec, S. C. Csallany, and T. C. Varney (eds.). Recent Advances in Ground-water Hydrology. American Institute of Hydrology.
    - b. Patten, T. H. and J.-G. Klein, 1989. Sinkhole formation and its effect on Peace River hydrology. In: B. F. Beck (Editor) Proceedings of the Third Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, St. Petersburg Beach, Florida, 2-4 October 1989. A. A. Balkema Publishers, Old Post Road, Brookfield, Vermont. pp. 25-31.
    - c. Lewelling, B. R., A. B. Tihansky, and J. L. Kindinger. 1998. Assessment of the Hydraulic Connection Between Ground Water and the Peace River, West-Central Florida. USGS Water-Resources Investigations Report 97-4211. 96 pp.
    - d. Bacchus, S. T., 1997. Premature decline and death of trees associated with a man-made lake and groundwater withdrawals in Albany, Georgia. In: K. J. Hatcher (Editor) Proceedings of the 1997 Georgia Water Resources Conference, held March 20-22, 1997, at The University of Georgia, Athens, Georgia. pp. 280-286.
    - e. Bacchus, S. T., T. Hamazaki, K. O. Britton and B. L. Haines. 2000. Soluble sugar composition of pond-cypress: A potential hydroecological indicator of groundwater perturbations. Journal of American Water Resources Association 36(1):1-11.

11. Relevant Federal Documents
  - a. 4/6/95 EPA Memo from Bacchus to Wylie
  - b. 3/1/98 EPA Memo from Bacchus to Wylie
  - c. 3/00 Final Programmatic EIS, Rock Mining - Freshwater Lakebelt Plan, Miami-Dade County, Florida [1 page excerpt]
  - d. 3/22/02 Riparian Areas: Functions and Strategies for Management (NRC report excerpts)
  - e. 7/16/02 Press Release from Governor Bush supporting legislation to halt damage by COE
  
12. Photographs taken by Bacchus and supplemental background information:
  - a. 3 symptoms of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - b. 2 photographs of another symptom of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - c. 2 additional symptoms of premature decline from subsurface alteration of wetlands hydroperiod in Florida [1 sheet]
  - d. 2 photographs of an additional symptom of premature decline, and 1 photograph of newly-formed sinkholes, all due to subsurface alteration of surficial aquifer hydroperiod in Florida [1 sheet]
  - e. symptoms of premature decline from subsurface alteration of wetlands hydroperiod at Little Gator Creek [3 sheets]
  - f. symptoms of premature decline and subsurface alteration of wetlands hydroperiod from mineral mining at Starke [4 sheets]
  - g. symptoms of altered physical and chemical conditions of "stream" water and habitat due to due to phosphate mining at Dog Leg Branch [5 sheets]
  - h. faxes from the Florida Institute of Phosphate Research to Bacchus dated 7/20/98 and 7/21/98 with supplemental background information [6 pages]
  - i. symptom of premature decline due to subsurface alteration of surficial aquifer hydroperiod in Live Oak [1 sheet]
  - j. symptoms of premature decline from subsurface alteration of wetlands hydroperiod at White Springs [3 sheets]
  - k. canopy of normal cypress tree lacking any symptoms of premature decline on Suwannee River [1 sheet]
  - l. nonaesthetic mine-scapes permanently and irreversibly altering the rural watersheds and natural habitats throughout Florida [2 sheets]
  - m. **mountains of dredged aquifer matrix vs. mountains of composted waste and by-products [2 sheets]**

**CUMULATIVE EFFECTS:**

13. "What are Cumulative Impacts? Synopsis of the U. S. Council on Environmental Quality: 1997 Cumulative Effects Report"
14. "Considering Cumulative Effects Under The National Environmental Policy Act"
15. Season and Depth Requirements of Surface Water for Successful Breeding of Amphibians Associated with Depressional Wetlands in Florida [1 page Table]
16. Fish and Wildlife Service Wood Stork Recovery Plan
17. **Suwannee River Water Quality Report by Suwannee River Water Management District**

\* Supplemental exhibits shown in total bold.

## **RESPONSES**

September 26, 2002

Colonel James G. May, District Engineer  
Attn: Richard Legere  
Regulatory Division  
U.S. Corps of Engineers  
Gainesville Regulatory Office  
101 NW 75<sup>th</sup> Street, Suite 3  
Gainesville, FL 32607-1609

Re: EPA Comments on Draft Supplemental Environmental Impact Statement  
PCS Phosphate – White Springs Response

Dear Colonel May:

Thank you for the opportunity to review and respond to the comments of the U.S. Environmental Protection Agency (EPA) on the Draft Supplemental Environmental Impact Statement (DSEIS) prepared in association with our application for a Section 404 permit to continue our phosphate mining operations in Hamilton County, Florida. We should note as a threshold matter that the issues raised in this letter were not raised by EPA or any other party in response to the scoping notice for this DSEIS (63 Federal Register 35916, July 1, 1998). This response is organized to follow the general comment headings in the EPA letter.

#### Wetland Issues

We look forward to a rapid resolution of any remaining federal jurisdictional issues. As we have previously noted, EPA did not identify any issues with jurisdiction in a timely manner. We are nevertheless moving forward with resolution. The DSEIS and the application package submitted to federal, state, and local agencies in November 2001 were developed in reliance upon the jurisdictional proposal made by the company in May 2001.

#### Threatened and Endangered Species

The U.S. Fish & Wildlife Service (FWS) has been represented in the current permitting process since its inception in 1997, and has adequately addressed all threatened and endangered species issues. The Corps has requested a §7 consultation with FWS. Based on a recent conversation with FWS personnel, we expect that consultation to be completed by the end of September with a finding of no adverse effect.

#### Cumulative Impacts

EPA is referred to the Supplemental Technical Background Document (STBD) for detailed analysis of the matters raised in this paragraph. Water quantity and water quality are addressed in detail in both the STBD and the original TBD (1985). In addition, the application for modification of the Conceptual Reclamation Plan includes surface water modeling that documents the absence of hydrologic impact on the Suwannee River. Copies of all that material have been provided to EPA.

The most important conclusion of the DSEIS, based on the TBD, STBD, and other studies referenced in the DSEIS, is that any impacts from the proposed activities are adequately mitigated, whichever alternative is selected. The only differences, therefore, are in the socio-economic impacts of the various alternatives. The discussion in the DSEIS is appropriate.

The supporting documentation also includes information apparently not considered by EPA describing the limitation of the impact of the mining operation to the upper portion of the surficial aquifer. The mining operation does not affect the confining layer beneath the phosphate zone or the deeper Floridan Aquifer.

#### Suggested Improvements

We should note again that the following issues were not raised by EPA or any other party in response to the scoping notice and process for this DSEIS. It would be our view that these issues are not properly before the Corps of Engineers for consideration.

We should also note that neither sand-clay mix nor phosphogypsum-clay blend techniques are used by PCS Phosphate – White Springs.

To the extent that EPA's authority in this area is related to underground sources of drinking water, it should be noted that there are no community water systems or non-transient non-community water systems utilizing the surficial aquifer or surface water as sources of supply in Hamilton County.

The concerns raised by EPA related to the Peace River basin have been thoroughly addressed by parties working in that area. It has been conclusively demonstrated that phosphate mining is responsible for less than 2 percent of the reported changes in stream flow in the Peace River. Furthermore, there is no relationship between conditions in the Peace River Basin and conditions in Hamilton County. Localized changes in surficial aquifer conductivity in the most upstream, flat-lying portion of drainage basins, which is where PCS's clay settling areas are located, would not adversely affect stream flows, and would clearly not influence the flow of the Suwannee River, because of both the vertical and horizontal separation of the mining operations from any subsurface hydrogeologic units that would be expected to contribute to stream flow. The operations are required to restore pre-mining surface water conditions under Florida reclamation rules, and the modeling done for this permit application describes how that is to be accomplished. Documentation relative to these matters is found in the STBD and other supporting materials previously provided to EPA.

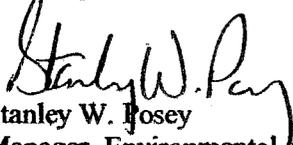
The groundwater monitoring program described in the DSEIS and supporting documentation is designed to provide the technical basis for addressing potential short-term impacts to nearby shallow (surficial aquifer) ponds, wells, and wetlands. The DSEIS and supporting documentation clearly demonstrate the recovery of surficial aquifer levels to pre-mining conditions after the mining operation and reclamation are complete. PCS does not employ the dewatering technique described in the letter. Surficial aquifer impact, monitoring, and mitigation were the primary subjects of the Ecosystem Management Advisory team meeting and presentations of March 12, 2002. The minutes from that meeting, other team meetings, and other records of the process are found on DEP's web site for this process at <http://www.dep.state.fl.us/northeast/admweb/pcsprogram/pcsmmin.htm>. The monitoring program will be implemented over the life of the operations as described in the documents.

Changes in Ground Water Storage

There is no evidence of the large-scale change in ground water storage that appears to be EPA's concern resulting from PCS's mining operations. Where this general concern has been raised in the context of activities in the Peace River basin, it has been adequately addressed, including extensive testimony accepted and relied upon by the Administrative Law Judge in the recent case upholding state approval of a phosphate mining operation's application for a wetlands mining permit. There is no reason to expect material change in surficial aquifer storage in land-and-lakes and tailings fill reclamation areas. Any such change in clay settling reclamation areas would be highly localized, and in PCS's case, would be in the upstream, flat portion of the various drainage basins, far removed from any areas of possible ground water contributions to streamflow. We should again note that PCS does not use the sand-clay mix reclamation technique. Documentation relative to these matters is found in the STBD and other supporting materials previously provided to EPA.

Thank you again for the opportunity to comment. Please let us know if we can provide further information.

Sincerely,

  
Stanley W. Posey  
Manager, Environmental Affairs

c: Marie Burns, U.S. Army Corps of Engineers  
Haynes Johnson, U. S. EPA  
John Hamilton, U.S. EPA

STANLEY W. POSEY  
MANAGER, ENVIRONMENTAL AFFAIRS

November 14, 2002

Mr. Richard Legere  
Department of the Army  
Jacksonville District Corps of Engineers  
Gainesville Regulatory Office  
101 NW 75<sup>th</sup> Street, Suite 3  
Gainesville, Florida 32607-1609

Re: Response to Dr. Sydney Bacchus' Comments on PCS Phosphate's Draft Supplemental Environmental Impact Statement (DSEIS) and Proposed Modification of Permit Application No. 198404652 (IP-RHL)

Dear Mr. Legere:

We appreciate your providing Dr. Sydney Bacchus' comments on the Draft Supplemental Environmental Impact Statement (DSEIS) and the Proposed Modification of Permit Application No. 198404652 (IP-RHL). We have reviewed her letters (dated July 15<sup>th</sup>, July 16<sup>th</sup> and August 14<sup>th</sup>, 2002) and the supporting reference materials you provided. Much of the material is not relevant to the referenced documents, and few of the comments were specific enough to enable a response. We should note that many of the comments indicate unfamiliarity with the project history and the current process. We have attempted to organize the various comments and materials into groups for purposes of evaluation, and offer the following responses.

- Alternatives Analysis and Water Dependency

Comments on these issues generally fail to recognize that the current work is a continuation and supplement to work done in the early to mid-1980s. The permit application does not involve expansion of the scope or nature of the operations, and is within the original EIS project boundary. The issues of water dependency for this project and wetland avoidance alternatives were thoroughly addressed in the initial Clean Water Act Section 404 wetland permitting effort completed in 1987. The initial effort was begun in 1980 with the U.S. Army Corps of Engineers (ACOE) assertion of discretionary jurisdiction over wetlands within the HCM boundaries. The proposed mining area was extensively evaluated over a seven-year period. The conclusion of this comprehensive analysis was an ACOE permit and Memorandum of Understanding (MOU) in 1987 between the applicant, the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Regulation (FDER) pertaining to the entire project area. The MOU contains agreements for the applicant to forego mining in wetland considered "environmentally sensitive" and worthy of protection. Approximately 19,000 acres were included in the wetlands and buffers to be preserved from mining, including approximately 12,000 acres (12% of the area) within the project boundary. The applicant's mining rights were legally transferred to the Suwannee River Water Management District (SRWMD) to insure no future mining could be conducted in these areas. The terms of the MOU were documented in the ACOE "Record of Decision" CESAJ-FD-P for permit # 84B-4652, and the substantive terms of the MOU were incorporated into the permit conditions. The applicant's operations and the process for the current permit application have been conducted in reliance upon these determinations.

Alternatives addressed in the DSEIS were developed through the scoping process, which resulted in a Plan of Study (POS) for the SEIS process. This scope was public noticed and published in the Federal Register (vol. 63, # 126/Wed, July 1, 1998, p. 35916). The POS was approved by all the regulatory authorities and the EMAG after receiving public comment.

- Groundwater

The issues raised here seem to be similar to those raised by Dr. Bacchus and others in recent state administrative proceedings on permits in central Florida. These issues were addressed in the context of the administrative hearing and were not found relevant or persuasive by the administrative law judge.

Potential aquifer impacts have been extensively addressed during the EIS and permitting efforts. Evaluations of long-term trends indicate that water levels have remained relatively stable in the Floridan Aquifer and a close correlation exists between average precipitation rates and Floridan Aquifer water levels (STBD, Section 3.1.4.3.2, Page 3-63). Section 3.1.1.3.3 of the STBD (2000) provides a detailed description of the hydrogeology of the project area. Mining activities are confined entirely to the strata that comprise the surficial aquifer, and do not result in impact to the Floridan Aquifer.

Potential temporary impacts to the surficial aquifer were addressed in the Response to PCS EMAG Consolidated Request for Additional Information (May 10, 2002, Appendix 12) and the Ecosystem Management Advisory Group (EMAG) meeting of March 12, 2002 provided in Section R (Response to PCS EMAG Second Request for Additional Information September 9, 2002). Section R includes minutes of the EMAG meetings held since the submittal of the November 15, 2001, application documents. These minutes may also be found on the FDEP website for this project at [www.dep.state.fl.us/northeast/adminweb/pcsprogram/pcsmin](http://www.dep.state.fl.us/northeast/adminweb/pcsprogram/pcsmin).

- Deforestation

Dr. Bacchus is apparently not familiar with PCS's current and past reclamation practices at the Hamilton County Mine (HCM). PCS has planted thousands of acres of wetland and upland trees to replace those harvested or removed for mining operations.

Revegetation at the HCM will be completed to comply with appropriate FDEP rules (62C-16 F.A.C.) which require the mined lands to be returned to useful economic uses. Clearing and mining are gradual processes, and reclamation follows, with re-establishment of vegetative cover and invasion and colonization of flora from adjacent areas. Upland and wetland revegetation is discussed in detail in Sections 3.1 and 4.2 of the DSEIS. The analogy Dr. Bacchus attempts to draw to deforestation in developing countries to the mine expansion is unsupported, given that land in developing countries is converted to pasture or fields. Reclamation of mined lands includes restoration of pre-mining vegetation types including forested wetlands and upland forests, both pine and mixed hardwoods.

- Cumulative Impacts

All of the impacts discussed in the DSEIS and STBD (2000) were evaluated in the context of what has already been mined or disturbed and the ongoing mining and reclamation activities. PCS is now reclaiming land as fast or faster than it is mined on a net acre basis. Since 1991 PCS has reclaimed approximately 1,000 more acres than it has mined. Please see Section 4.25 of the DSEIS for more details on environmental and economic and human resource impacts.

- Extent of Federal Jurisdiction

Federal jurisdiction is determined by wetland boundary determinations and application of criteria consistent with the decision of the U.S. Supreme Court in January 2001 (SWANCC) which restricted assertion of federal jurisdiction over isolated wetlands. Wetland boundaries were developed by a technical working group of the EMAG composed of state, federal and applicant representatives. Federal jurisdiction within the project boundary has been addressed by the EPA and ACOE through extensive field work and site verification.

- Surface Water Quality

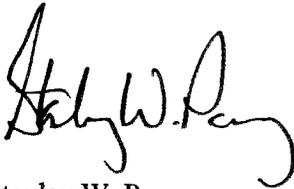
The HCM has been in operation for almost 40 years. The Suwannee River was designated an Outstanding Florida Water (OFW) in the early 1980's after nearly 15 years of mining at the HCM. PCS has demonstrated through all of the studies produced in support of this application process that water quality the Suwannee River will not be degraded. Surface water discharges at the mine are regulated by the permit. Conveyance of waters at the mine and off-site discharges are managed in strict accordance with permit requirements. Water quality data are submitted to the FDEP monthly for the NPDES / IW permits, and consistently demonstrate no degradation of surface water quality.

- Wildlife and Endangered Species

A thorough assessment has been made of potential federal listed species that may occur in the application area. Potential occurrences were addressed in Section 3.3 of the DSEIS. A Section 7 consultation has been initiated by the ACOE with the U.S. Fish and Wildlife Service (USFWS) (letters November 30, 2001 and July 9, 2002). The mitigation for mining impacts will actually increase habitat diversity and benefit wildlife. For example, bald eagles now nest in the area due to increased feeding areas provided by reclaimed lakes. Wood storks are commonly seen in the mining and reclaimed area where none were present prior to mining. USFWS staff has indicated that they are in agreement with the DSEIS assessments and intend to notify the ACOE that no formal Section 7 consultation will be required as no adverse impacts on threatened or endangered species are anticipated.

Please let us know if you need further information.

Sincerely,



Stanley W. Posey

c: Joseph Bakker, DEP  
Marie Burns, ACOE  
Ernie Frey, DEP/NED  
Lewis Vaughn, Hamilton County