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Introduction

White Springs Agricultural and Chemical, Inc, a wholly owned subsidiary of Nutrien (WSA), is pleased to submit the following Hamilton County Master Mining Plan Amendment (MMPA), in accordance with the requirements of Section 14.7.2, Part 5.B. of the Hamilton County Land Development Regulations (LDR). This 2020 MMPA outlines our request for the proposed modifications to the current mine and clay disposal plan for the Hamilton County Mine. In addition, WSA wishes to request an amendment to the most recent MMPA for the Hamilton County Mine, which was approved by the Hamilton County Board of County Commissioners on August 20, 2013.

This document is submitted concurrently with a Petition for Special Permit, as required under Section 14.7.2, Part 5.C. of the Hamilton County LDR. In addition, a request for modification of the existing Conceptual Reclamation Plan (CRP) PCS-HC-CP (F) was submitted to the Florida Department of Environmental Protection (FDEP) in July 2020. A copy of the 2020 CRP Modification (PCS-HC-CP(G)) application will be submitted concurrently with this 2020 MMPA to Hamilton County. These documents provide additional information regarding the requested modifications to the current mine and clay disposal plan in accordance with applicable regulations contained in the Hamilton County LDR.

MMPA History

Previous MMPA's have been approved for the Hamilton County Mine. The 2001 MMPA, Special Permit (03-1) and modification to Special Permit (96-4) for the Hamilton County Mine were approved on February 18, 2003. These approvals provided for area coverage coincident with federal and state permits. The 2003 Special Permits and MMPA modification incorporated 13,196 acres of mining areas into the permitted mining footprint and added 410 acres to the existing project boundary. In addition, these amendments and modifications changed the applicable standards for reclamation of certain specified mined lands from Alternate Standards -mitigation through contribution to the land acquisition fund created pursuant to the 1995 Memorandum of Understanding (MOU) - to conventional standards - on-site acre-for-acre and type-for-type reclamation meeting the standards in Rule 62C-16 F.A.C. - as described in

Section 14.7.2, Part 7.E., LDR. The conversion of Alternate Standards wetlands remaining to be mined after January 1, 2002 (except those in SA 10 and CB 9) back to conventional standards resulted in the conversion of standards for ± 14,267 acres

The 2004 MMPA was approved in February 2005. This amendment provided for the elimination of previously planned clay settling area SR 22. In addition, as a result of this approved amendment there was a reduction in the number of acres mined and disturbed, quantities of materials mined and processed, and the number of wetland acres impacted by mining activities. The reductions resulted in changes to the schedule of mining and reclamation activities and modifications to the post reclamation land use and hydrologic characteristics of portions of the mine site.

The 2013 MMPA was approved on August 20, 2013. The amendment provided for the inclusion of an additional proposed mining area known as Loncala (approximately 1,155 acres), the removal of several parcels of non-reserve lands from the approved mine plan, the elimination of three previously planned clay settling areas (SA11SC, SA27SR, & SA23SR), changes in the scheduling of mining and reclamation activities and modifications to the post reclamation land use and hydrologic characteristics of portions of the mine site. These modifications reduced the number of clay settling areas proposed in the clay management plan. As a result, a modification to the existing Special Permit and an amendment to the 2004 MMPA were necessary. The 2013 MMPA conformed to match the Conceptual Reclamation Plan (PCS-HC-CP-(D)) application approved by the FDEP on November 30, 2012.

The 2017 MMPA was submitted to include reductions in the number of acres mined and disturbed, quantities of materials mined and processed, and the number of wetland acres impacted by mining activities. Additionally, modifications were made to the schedule of mining, clay disposal and reclamation activities. The 2017 MMPA conformed to match the CRP (E) modification application approved by the FDEP February 2017.

The most important aspects of the 2017 MMPA were:

- elimination of one previously planned clay settling area (26/25 SC), which will be reclaimed ahead of the previously proposed schedule as required by the FDEP;
- change of a parcel that was identified as industrial in CRP(D) to a mine reclamation parcel PCS-HC-SC (21);
- incorporation of a clay consolidation modeling update, including a clay sampling and laboratory testing program, as required by the previously approved CRP (D) by FDEP; and
- modifications to the post reclamation land use and hydrologic characteristics of portions of the mine site.

2020 MMPA

The 2020 MMPA is submitted to include proposed changes to the current mine and clay disposal plan. The currently approved mine plan incorporates all proven and potential reserves located within the permitted mining area. The shutdown of the Suwannee River chemical plant, mine life timing, and changes in the mining and clay disposal plans require a modification to the MMPA. This 2020 MMPA has been developed in conjunction with the WSA 2020 CRP (G) application.

The most important aspects of this 2020 modification include the following:

- completion of the WRP/ERP application package for four newly added Reclamation Units (RUs) designated as PCS-HC-HC (13), PCS-HC-RCS (18), PCS-HC-RCS (19), and PCS-HC-RCS (20);
- incorporation of as-built drawings of post reclamation land use for RUs including PCS-HC-LB(1.2), PCS-HC-HC(4), PCS-HC-HC(11), PCS-HC-HC(6.1), PCS-HC-RCS(5)(A), and PCS-HC-RCS(9)(C);
- changes in the number of acres mined and disturbed, quantities of materials mined and processed; and the number of wetland acres impacted by mining activities;
- incorporation of a clay consolidation modeling update, including a clay sampling and

laboratory testing program, as required by the currently approved CRP (F);

- changes in the scheduling of mining, clay disposal, and reclamation activities; and
- modifications to the post reclamation land use and hydrologic characteristics to support the update of the hydrologic model.

Reclamation Standards

The reclamation for the Hamilton County Mine is acre-for-acre wetland restoration in areas impacted by mining. Reclamation standards provided for in the 1995 MOU included on-site reclamation standards and contributions by WSA for the acquisition of off-site environmental lands. Alternate Standards reclamation programs currently approved by the FDEP will be completed to meet the standards provided for in the 1995 OxyChem (a legacy company of WSA) MOU. Issuance of the 1995 MOU resolved subsequent administrative challenge to the FDEP's denial of conceptual plan modifications and certain reclamation program applications in May 1992. Previous versions of the Hamilton County Mining Master Plan and the Conceptual Reclamation Plan, both of which were approved in 1996, incorporated this reclamation concept.

The reclamation standards provided for in the MOU were designed to maximize the savings available for the land acquisition program, while still protecting important ecological values. The Alternate Standards addressed a wide variety of operational and reclamation activities, including sand tailings and clay management, settling area dam contouring requirements and earthmoving in land and lakes areas. No variances from water quality standards were allowed, and strict standards for restoration of hydrology were followed.

Mining, Material Management and Reclamation Objectives

The mining process at the Hamilton County Mine uses electrically powered walking draglines. WSA currently operates three 45-cubic yard and one 33-cubic yard draglines. The mine plan calls for the draglines to mine the reserves for transport to the Swift Creek Beneficiation Plant and was developed to balance predicted phosphate rock tonnage and grade to minimize dragline road crossings, improve reclamation timing, and enhance final reclamation

landforms. An additional criterion for dragline sequencing is completion of mining in areas within future clay settling area footprints to allow sufficient time for embankment construction. Changes to the mine plan, such as timing, may become necessary in the future, but those changes are not anticipated to be extensive.

Clay and sand tailings management and reclamation goals for the Hamilton County Mine include maximizing the use of existing and future settling areas, creating recreational lands, maintaining the hydrologic function of area creek systems, and protecting the quality of surface water going to the Suwannee River. The post reclamation land use plans and drainage basin configurations are developed to restore the pre-mining flow characteristics within each drainage basin. Reclamation will ultimately return all mined and disturbed lands to viable economic and environmental productivity, compatible with the surrounding unmined areas.

Clay management at the Swift Creek plant uses gravity flow of clay to above-grade clay settling areas (CSAs). The proposed clay management plan includes pumping clay to the CSAs located in the eastern portion of the mine site when the capacity of the western CSAs is exhausted. As the maximum available storage volume in each CSA is achieved, it will become available for reclamation.

Sand tailings resulting from ore processing at the flotation plant will be used to backfill mine cuts. Tailings fill areas have been selected based on availability of open mined areas, preferred location for restoration of at-grade wetlands, and economics. Overburden will be used to cap sand tailings fill areas prior to revegetation.

Land and lakes projects use the available overburden from mining to create land areas and water areas. Currently approved Alternate Standards land and lake areas have less extensive interior and shoreline contouring. With the exception of Reclamation Areas PCS-HC-SC (7) and PCS-HC-CB (9), the reclamation of lands mined after January 1, 2002, will be completed according to the sloping and revegetation requirements included in Chapter 62C-16, F.A.C. Regardless of the reclamation standards used, these areas will be designed for future beneficial land uses.

The reclamation goals of the MMPA are to:

- restore pre-mining drainage basins and hydrologic function;
- protect the water quality of the Suwannee River and its tributaries; and,
- produce landforms that will support a variety of agriculture, silvicultural, wildlife and recreational uses.

Mining, clay and sand tailings management, and reclamation plans have been modified to be consistent with the Conventional Reclamation Standards for all lands mined after January 1, 2002, with the exception of the two previously noted program areas. The post reclamation landscape has been designed to harmonize with undisturbed areas with emphasis on recreating a variety of vegetation and wildlife systems. The non-mandatory lands that encompass parts of the previously permitted and disturbed areas (shown on **Map VI-1**) have also been incorporated into the hydrologic modeling and the land use planning processes discussed in this report. The following table illustrates the pre-mining and post reclamation land use acres by vegetation type proposed in the 2020 MMPA.

LAND USE SUMMARY*

Land Use Code	Land Use Description	Pre-Mining (Acres)	Post Reclamation (Acres)
100	Urban and Built-up	385	2,776
200	Agriculture	5,136	3,796
300	Rangeland	0*	74
400	Upland Forest	59,548	51,468
500	Water	37	7,444
600	Wetlands	33,268	32,664
700	Borrow Areas	27	15
800	Transportation	1,187	1,352
TOTAL		**99,588**	**99,588**

Areas rounded to nearest whole acre

(*) Areas less than one acre

A detailed hydrologic analysis of the project area can be found in the CRP application for modification (PCS-HC-CP(G)) that will be submitted to the FDEP concurrently with this application. The modeling completed as part of the hydrologic analysis indicates that the criteria outlined in Section 5G of the 1995 MOU between the FDEP and OxyChem are met at the critical points exiting the mine boundary.

Section 14.7.2 Special Permits for Phosphate Mining, Mining Operations, and Reclamation

Part 5. Administrative and Permit Procedures
Subsection B. Master Mining Plan

a. Owner

White Springs Agricultural Chemical, Inc. is an indirect subsidiary of Nutrien, Ltd. (WSA)
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b. Applicant/Operator

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c. Engineer or Geologist of Record

Ms. Jenna Ramsey Doering, P.E
Mine Services Superintendent
WSA
15843 South East 78th Street
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(386) 397-8142
Florida Professional Engineer Registration No. 84267

d. Description of Project Area

The Hamilton County Mine is within the 99,588-acre project area located in Hamilton County, Florida. The center of the project area lies approximately eight miles north of the town of White Springs. As indicated on **Map IV-1**, the project site is located to the west and north of the Suwannee River, along both the east and west sides of Interstate 75, and south of the Georgia

border. The legal description of the application area (by ¼ -¼ section) is provided in **Table IV-1**.

e. Material

WSA mines phosphate rock in the manner most commonly employed by operators in the Florida phosphate industry. Electrically powered draglines strip overburden (primarily sand), averaging 25 feet in thickness, and excavate phosphate-bearing ore (matrix) that averages 15 feet in thickness. The matrix consists of a mixture of phosphate rock, sand and clay. The stripped overburden is cast back into the mined area and the matrix is placed in an earthen sump, where it is mixed with high-pressure water to form a pumpable matrix slurry. A typical dragline mining operation is depicted in **Figure VI-1**, and **Map VI-1** depicts areas disturbed by mining activities. **Map VI-9** depicts the currently permitted areas and areas proposed for mining in this amendment.

The matrix slurry is pumped to the Swift Creek Beneficiation Plant, where the matrix is processed to separate the phosphate rock, clay, sand, and mudballs. Mudballs are oversized clumps of clay (greater than ¾-inch) that resist disaggregation when high-pressure water is applied to them. Once the mudballs reach the beneficiation plant, they are screened from the matrix material and pumped to areas designated for their deposition.

Phosphate minerals processing includes washing, screening, sizing and flotation. Phosphate rock recovered from the process is stockpiled and transported to the Swift Creek Chemical Plant for conversion to phosphate fertilizer products and animal feed supplements or shipped off-site by truck or rail. The Suwannee River Chemical Plant is making granular fertilizer products that are also shipped off site by truck or rail

During the mine's remaining active life from 2019 through 2028, approximately 5,997 acres of land will be mined for phosphate. Processing of the matrix removed from this total acreage will result in the production of approximately 72.6 million tons of sand tailings and 23.0 million tons of clay through 2028 (**Table VI-1**). In addition, up to approximately 3,400 acres of

potential reserves may be mined between 2028 and 2034, as shown in **Table VI-1**, increasing the amount of clay produced to approximately 37.3 million tons.

f. Topographic Maps

The Hamilton County Mine is situated on a relatively high, flat area drained by several tributaries of the Suwannee River. Hunter Creek, Roaring Creek, Camp Branch, Rocky Creek and Swift Creek are the major streams that drain the project site. Elevations above mean sea level (MSL) range from less than 100 feet in the streambeds, located in the southern and southwestern portions of the site, to more than 150 feet in the northwestern portions of the property.

Pre-mining topographic mapping for the project area is provided on **Map V-1**. The composite pre-mining topography of the project area was obtained from digital versions of a series of nine United States Geological Survey (USGS) 7.5-minute quadrangle maps. The nine maps utilized to generate the topographic imagery include the Jasper, Cypress Creek, Fargo SW, Hillcoat, Genoa, Benton, Live Oak East, White Springs West and White Springs East Quadrangle maps.

g. Mining Plan

g.(1) Contiguous Landowners

Selected parcels from the 2019 Hamilton County Property Appraiser's Database that fall within the permitted mine boundary are shown on the map series in **Appendix A**. The maps show the boundaries of all proposed mining units and the landowners who have property adjoining these areas. **Table III-1** lists lessor's names and addresses, and **Table III-2** lists the property owners adjacent to proposed mining areas.

g.(2) Location and Boundaries of Proposed Mining Units

The location and boundaries of all proposed mining units are shown on **Map VI-2.**

g.(3) Schedule of Operations

The mining strategy for the Hamilton County Mine incorporates the goals of efficient resource recovery, accommodation of clay storage needs, and the return of mined lands to

productive use while maintaining environmental quality. **Maps VI-2** and **VI-6** indicate the currently proposed mining schedule. Mining operations are currently planned to continue until 2028, but mining of potential additional reserves would extend WSA operations through 2034.

The current mine plan is based on estimates of tonnage requirements for the Hamilton County Mine. Changes in economic conditions, time schedules, equipment needs, geologic conditions and/or regulatory requirements may necessitate modification to this plan.

g.(4) Clay Settling Area Data

This section summarizes the proposed update to the Hamilton County Mine clay management system, including clay settling area (CSA) data, anticipated clay quantities over the remaining life of the mine, and results of the clay consolidation modeling used to develop the clay deposition schedule and post reclamation conditions. Further details of the clay management plan are provided in Part VI, Section 2.0 of the 2020 CRP (G) modification application.

Table VI-3 includes settling area statistics for the mine's clay management system. WSA has estimated settling area acreages and storage volumes based on current prospect data and life-of-mine simulations. Volume estimates for future clay settling areas are based on projected embankment construction volumes and associated quantities of spoil material to be removed from interior areas. As shown in **Table VI-3**, the average fill height for each CSA was calculated by dividing the CSA's volume by its area. The existing and proposed CSAs are depicted on **Map VI-3**. The mine's clay management system currently includes six active CSAs (6A SC, 8A SC, 8B SC, 10V SC, 9 SC, and 4 SC). As part of the current update of the clay management system, WSA has reactivated settling area 4 SC, which had been under active dewatering and clay consolidation for several years. Reusing this settling area to store additional clays will maximize its utilization and has delayed the need to transfer clays to the eastern (Suwannee River) side of the mine.

Clay deposition and CSA storage capacities were modeled based on the anticipated life-of-mine clay production (**Table VI-1**), existing and proposed settling area geometry (**Table VI-3**), predicted filling rates, and an established clay correction factor. Based on previous investigations conducted at the Hamilton County Mine, a clay correction factor (CCF) has been used to adjust the predicted prospect clay tonnage for all long-term and short-term clay consolidation modeling. Based on a comparison of measured versus estimated prospect clay tonnage in active CSAs, the CCF has been revised over time as new data are obtained during periodic updates of the mine clay management system. Based on the results of the latest clay sampling and laboratory testing performed by AECOM in the active CSAs, a CCF value of 0.62 was used to estimate the life-of-mine clay production for the current CRP (G) modification, as shown in **Table VI-1**.

Similar to the previous update of the clay consolidation model performed in 2018 by AECOM Technical Services, Inc. (AECOM, 2019), clay consolidation modeling described in this 2020 MMPA submittal was performed using the computer program CONDES (short for CONsolidation and DESiccation), together with the same multi-CSA consolidation model (CSAPLAN) previously developed by URS (now part of AECOM) to estimate the clay deposition schedule over the remaining active life of the mine (URS, 2010; URS, 2016).

CONDES is a large strain, finite difference consolidation model developed at the University of Colorado at Boulder under the sponsorship of the former Florida Institute of Phosphate Research (FIPR). CONDES is used to predict the consolidation behavior of very soft clay slurries under self-weight stresses during deposition at arbitrary filling rates, with or without resting periods. The model can also be used to predict post reclamation and ultimate clay heights, incorporating the impact of a lowered phreatic surface, as well as the effect of a surcharge applied at the clay surface after filling has been completed (e.g., by sand capping). CONDES has been accepted by the FDEP Mining and Mitigation Program as a tool to demonstrate the effectiveness of a given clay disposal scenario and predict post reclamation and ultimate clay consolidation conditions.

Input parameters required by CONDES are similar to those used in other large strain consolidation models. These include the clay slurry disposal rate, the initial (30-day) solids content (So), specific gravity, and the compressibility and permeability relationships of the material which are defined by the following power curve functions:

Compressibility Relationship:

$$e = A \cdot (\sigma' + Z)^B$$

where e = void ratio
σ' = effective stress
A, B and Z = empirical compressibility parameters

Permeability Relationship:

$$k = C \cdot e^D$$

where k = permeability
C, D = empirical permeability parameters

As shown above, the compressibility relationship used in the CONDES model incorporates a third parameter (Z) when compared to the 2-parameter (A and B) function used in other large-strain consolidation models. The expanded, 3-parameter function has been shown to potentially provide a better characterization of the compressibility of very soft clays than the simpler 2-parameter relationship. The Z parameter is a measure of the material's void ratio at zero effective stress. Once the A and B parameters have been estimated, Z is computed using the above compressibility equation by making $\sigma' = 0$ and $e = e_o$ (initial slurry void ratio at the beginning of the consolidation process). Conventional weight-volume relationships are used to estimate the initial void ratio from the initial (30-day) solids content, S_o, and the material's specific gravity, G_s. For CONDES modeling purposes, the following average values of these parameters were used based on the latest results of laboratory testing:

$$S_o = 7.9\% \text{ and } G_s = 2.61$$

A calibration of the clay consolidation model parameters was first performed by URS in 2010 as part of the CRP (D) modification studies (URS, 2010). Further calibration of the clay compressibility and permeability parameters was performed by AECOM in 2018 during the

previous clay consolidation modeling update (AECOM, 2019). As part of the most recent studies performed for the latest CRP (G) modification submittal, AECOM performed further calibration of the model parameters based on available clay thickness data in the currently active CSAs through July-August 2021. The recent model calibration started with the compressibility and permeability parameters obtained during the 2018 model calibration. **Table VI-2** summarizes the clay consolidation parameters developed by AECOM based on the most recent (2022) CONDES model calibration. For comparison purposes, the 2018 calibration parameters are also provided in the table. As shown in **Table VI-2**, the two sets of parameters are similar except for the Z value due to different initial solids content and specific gravity values obtained during the 2018 and 2021 laboratory testing programs.

The clay management plan for the remaining life of the mine was developed using the CSAPLAN model previously developed by URS (URS, 2010). The MS Excel-based model is an interactive tool that greatly facilitates the task of evaluating alternative clay disposal scenarios into existing and future CSAs over the remaining life of the mine. The CSAPLAN model was discussed with the FDEP Mining and Mitigation Program's staff at a meeting in December 2009 and used in the previous CRP (D) and CRP (E) modification studies to develop the life-of-mine clay disposal schedule (URS, 2010; URS, 2016). Since then, WSA has continued to use the model to periodically update the clay disposal plan as needed. As described in the CRP (G) modification application, the CSAPLAN model coefficients required small adjustments as a result of the recent calibration of the large strain consolidation parameters performed with the CONDEL model, as described above.

Using the recommended CCF value of 0.62, **Table VI-1** provides updated clay production estimates as of January 2022 based on the current reserve data and mine plan. According to these data, the life-of-mine clay production for the Hamilton County Mine from 2022 through mine out of the known reserves in 2028 is approximately 18.0 million tons, increasing to 32.2 million tons if the potential reserves were to be mined until 2033. Assuming mining through 2033, the clay management plan for the remaining life of the mine was developed using the CSAPLAN model described above. The resulting schedule for clay deposition at the Hamilton County Mine is presented in **Table VI-4**. The new clay management

plan reflected in Table VI-4, and particularly the proposed CSA sequence, was developed in close coordination with WSA staff and considers several operational considerations and future reclamation plans. Following are some key observations regarding the proposed schedule for clay deposition.

The clay management plan depicted in Table VI-4 demonstrates that the anticipated clay tonnage production through mine-out, even assuming mining of the potential reserves, can be accommodated in the existing and proposed clay settling areas. CSA 6A-SC is not scheduled to receive additional clay for the remaining of the mine's life. Dewatering activities in this settling area are scheduled to start in 2028. Clay deposition in the eastern (SR) settling areas will soon be expanded beyond the two flow-through ponds currently receiving dredged clays (4-SR and 8-SR). As currently being done, clays will continue to be pumped under CR 137 from settling area 8A-SC to area 4-SR, from where clays will flow by gravity through 4-SR and 8-SR, to eventually be deposited in CSAs 6B-SR, 11-SR, and 7-SR. New clay deposition is scheduled to occur in these three settling areas during 2022. Pumping will be required to transfer clays from settling area 7-SR to area 9-SR which serves as flow-through. Assuming full mining of the potential reserves, clay transfer to the east is forecast to continue through the extended mine-out in 2033. Settling area 8B-SC will continue to be used through mine-out in 2033. Although not considered in the CSAPLAN simulation, CSA 8A-SC, which is currently serving as a transfer pond for dredged clays, will again receive fresh clays from the beneficiation plant during the last year of the mine life. The last settling area to be activated (14-SR) is scheduled to start receiving clays in 2030 and, therefore, would only be needed if the potential reserves were to be mined. The planned flow path to each of the clay settling areas is indicated in **Table VI-5**.

Based on WSA's reclamation experience, a six-year schedule has been used for planning reclamation activities from the end of clay deposition to reclamation release. This schedule allows for a three-year dewatering period and two years for earthmoving and revegetation, with an additional year for establishment. Dewatering of the clay settling areas will continue during the earthmoving and revegetation phases.

Ultimate clay heights for all settling areas (post reclamation conditions) were estimated utilizing the CONDES computer model to develop predictions of the clay consolidation behavior versus time after the end of deposition, including the effect of dewatering. The results from the CSAPLAN modeling of the life-of-mine filling of the settling areas, as presented in **Table VI-4**, were used as input data (i.e., filling schedule) in the CONDES program. Due to its impact on post reclamation conditions, ultimate clay heights and corresponding clay surface elevations were estimated separately for the mined and unmined sections of each CSA, where applicable (refer to **Table VI-3** for mined and unmined acreage information). For this purpose, projected clay quantities going into each CSA, as provided in **Table VI-4**, were split between the mined and unmined areas in proportion to their respective volume capacities. For the inactive CSAs in the eastern side of the mine, as well as CSA 4 SC, where future clay deposition modeling ignores the presence of the existing clays, post reclamation analyses were performed for the entire area without consideration of mined and unmined sub-areas. In the case of settling area 10V-SC, where only a relatively small area is currently available for clay disposal (181 acres), as discussed in the CRP (G) modification application, a single post-reclamation analysis was also performed.

During the dewatering phase, the phreatic surface within each settling area is controlled by the invert elevation of ditches and discharge points. Dewatering activities will dramatically enhance consolidation resulting in a significantly lower clay thickness at any given time following dewatering. As a result, predicted ultimate clay elevations (including the increased weight of the clay above the water table) are lower than ultimate quiescent elevations (submerged with no dewatering). Experience has shown that the clay surface will neither rebound nor consolidate further if an area is reflooded. Based on past WSA experience, ultimate clay elevations for all settling areas at the Hamilton County Mine were estimated based on the phreatic surface being five feet below the adjacent land surface. The latter is assumed to correspond to the natural ground surface elevation given in **Table VI-3**. The analysis further assumes lowering of the phreatic surface occurs two years after the end of clay deposition shown in **Table VI-4**. To simulate the effect of the increased weight of the clay above the water table, an equivalent surface load equal to the unit weight of water times the depth to the water table

below the clay surface following dewatering was applied two years after the end of deposition. This approach has yielded good predictions of the post reclamation clay topography in the past.

The CONDES output of the post reclamation analyses includes a summary of consolidated clay height, average dry density (from which the average solids content can be computed), and other parameters versus time, as well as ultimate (steady state) clay conditions. Ultimate clay surface elevations are obtained from the CONDES model predictions of ultimate clay heights and average pit bottom elevations reported in **Table VI-3** (for the mined portion of the settling area) or the original ground surface elevation (for the unmined portion). **Table VII-2** summarizes estimated ultimate clay elevations obtained with the CONDES model for all existing and proposed clay settling areas (mined and unmined portions, where applicable). Ultimate clay elevation predictions do not include the effect of any capping of the clays with embankment material or sand tailings.

Ultimate clay elevations provided in **Table VII-2** were used in the post reclamation hydrologic analyses. This approach minimizes the potential for post reclamation drainage patterns being altered by reduced water contributions to downstream lands and/or changes in land use resulting from additional clay consolidation and impoundment of water in above-grade clay settling areas.

g.(5) Physical Plant Facilities and Pipelines

Proposed mining operations will incorporate continued use of several plant facilities and pipelines and may include the reactivation of currently idle plant infrastructure. **Map VI-7** illustrates the location of the Swift Creek Mine plant site along with existing pipeline roadway crossings.

g.(6) Flood Control Features

WSA has constructed several structures to control water flows from the mine property. As shown on **Map VI-7**, the major surface water control structures are located at the sites of four National Pollutant Discharge Elimination System (NPDES) outfalls: S.P. 004-1 (Camp Branch),

S.P. 001-18 and S.P. 001-4 (Swift Creek), S.P. 002-2 (Hunter Creek), and S.P. 003 (Roaring Creek). Existing culverts under local roadways will not be affected by the proposed mining activities. Per the MOU, the hydrologic analysis completed as part of the 2020 CRP (G) application has evaluated the 9.1 inch, 24-hour storm event and determined that the post mining conditions will not significantly increase the peak flow rates at these critical points. **Maps V-2** (pre-mining drainage) and **VII-2** (post reclamation drainage) show the location of the critical points included in the hydrologic analysis. A detailed description of the hydrologic analysis is provided in Part VII, Section 3.0 of the 2020 CRP (G).

g.(7) Air Pollutant and Wastewater Point Source Discharges

Map VI-7 shows the locations of air emission sources that are associated with the chemical processing facility at the Swift Creek Chemical and Suwannee River Chemical plants. Surface water flows to Camp Branch, Swift Creek, Hunter Creek, and Roaring Creek are point source discharges that are monitored at the five previously listed NPDES discharge points **(Map VI-7).**

Table VI-7 includes a summary of the current status of all hazardous waste, water, air, aquatic plant, mine reclamation, potable well, solid waste, storage tank, wetland, wastewater treatment, consumptive use, and mining permits issued to WSA for its mining and chemical facilities in Hamilton County. The table indicates that WSA has maintained compliance with the applicable regulatory standards associated with each of the permits.

g.(8) Streams, Lakes, Wetlands and Suwannee River Floodplain

The property is drained by 13 named streams and five unnamed surface water conveyances. The named streams include Swift Creek, Rocky Creek, Bell Creek, Cat Creek, Ratliff Creek, Sugar Creek, Camp Branch, Jerry Branch, Long Branch, Four Mile Branch, Sal Marie Branch, Hunter Creek and Roaring Creek. Rocky Creek is the largest stream system flowing through the project site. For hydrologic modeling purposes, named designations were given to each of the five unnamed surface water conveyances. The designations for these five conveyances include Bull Bay, Cone Bridge, East Hamilton, Godwin Bridge and Top Bay. These streams and surface water conveyances provide flow pathways from the 18 drainage basins within the project area, all of which drain to the

Suwannee River. The pre-mining topography is shown on **Map V-1** and the pre-mining drainage basins within the project area are shown on **Map V-2. Map VII-1** illustrates the post reclamation topography and **Map VII-2** illustrates the post reclamation drainage basins in the project area.

The pre-mining wetlands within the project area are shown on **Map V-5**. The few lakes present in the pre-mining land use appear to have been man-made. **Map VII-5** illustrates the post reclamation land use and shows the location of all unmined and reclaimed wetlands and lakes in the project area. Preservation areas are shown on **Map VI-2** with the mined-out blocks also shown to demonstrate where mining has occurred.

g.(9) Pre-Mining and Post Reclamation Land Uses and Landforms

g.(9)(a) Pre-Mining Landforms

Pre-mining landform distributions were derived from LANDSAT images and aerial photography indicating land surface conditions prior to 1960. Landform polygons were assigned attributes relating to the Florida Land Use, Cover and Forms Classification System (FLUCFCS) Level II codes and other variables. The FLUCFCS codes issued by the Florida Department of Transportation (FDOT) in January 1999 were used to categorize the landform types depicted on **Map V-4.** Pre-mining landform statistics were compiled by overlaying the mine boundary and landform coverages, which included upland, wetland, water and roads/railroads.

Approximately 66 percent of the pre-mining acreage of the project area was occupied by upland areas. Wetlands comprised an additional 33 percent of the project area. The remaining acreage was comprised of water and roads/railroads.

g.(9)(b) Pre-Mining Land Use

The three primary land use classifications relating to pre-mining vegetation within the project area include upland forest, and agriculture. Sources for determining the land use acreages included the USGS 1986 LANDSAT images compiled by the Florida Department of Natural Resources (now known as the FDEP) and Bureau of Mining and Minerals Regulation (BMMR), the SRWMD mosaic of three 1988 LANDSAT satellite images, and field verification

by Environmental Services and Permitting, Inc. (ESP). ESP performed an environmental assessment of this area in 1999 for submittal to the U.S. Army Corps of Engineers (ACOE).

Compiled pre-mining data indicates that approximately 60 percent of the project area was comprised of upland forest. The upland forest within the project area included coniferous plantations (43%), pine flatwoods (13%) and mixed hardwood-coniferous forest (4%). Wetlands comprised roughly 33 percent of the total project area acreage. The vegetative communities included in the wetland classification consisted of mixed wetland forest (23%), wetland coniferous forest (6%), bay swamps (2%), mixed wetlands hardwoods (1%), and stream and lake swamps (1%). Agriculture operations comprised approximately six percent of the project area and included pasture (5%) and field crops (1%). Water, transportation and utilities comprise the remaining one percent of the project area. A map depicting the pre-mining land use distributions within the project area is included as **Map V-5**, and the pre-mining soils are shown on **Map V-3**.

A breakdown of pre-mining land uses and the corresponding acreages and percentages of coverage is provided as **Table VII-1**.

g.(9)(c) Post Reclamation Landforms

The mine property will support a variety of landforms once reclamation is complete. Post reclamation landforms will include silviculture, agriculture, wildlife habitat, recreation, and industrial. Post reclamation landform statistics, which include upland, wetland, water, and roads/railroads classifications, are shown on **Map VII-4**. Approximately 60 percent of the post reclamation acreage of the project area will be occupied by uplands. Wetlands will comprise 32 percent of the post reclamation acreage. Open water will occupy an additional 7 percent of the post reclamation landscape. The remaining acres are comprised of roads/railroads.

g.(9)(d) Post Reclamation Land Use

Revegetation at the Hamilton County Mine will be completed to comply with Florida Administrative Code (F.A.C.) chapter 62C-16. The acreage breakdown of existing and proposed land uses is presented in **Table VII-1**. The FLUCFCS system issued by the FDOT in January 1999 was used in determining the post reclamation vegetation and land use types. **Map VII-5**

depicts the major land use types within the post reclamation landscape, and the post reclamation soils are shown on **Map VII-3**.

Statistics for wetland size, lakes, and topographic distribution were generated using the ArcGIS® Geographical Information Systems (GIS) software. The GIS facilitated accurate calculation of statistical data as the reclamation plans were revised. The GIS maps and database generated for the 2020 CRP (G) application will allow WSA to integrate reclamation program applications with the conceptual plan.

Digital files depicting dragline mining sequences and clay settling area depositional histories were used to define the areas impacted by mining activities. Existing reclamation programs and conceptual designs for future mine areas were combined to define the post reclamation land uses. This data was Geoprocessed to create unaltered pre-mining land uses with post reclamation land uses for disturbed areas. Analysis of these map coverages provided the post reclamation land use distributions for each mine. Overlaying the layers depicting various categories of mine use determined the areas requiring mandatory reclamation.

Compiled post reclamation data indicate that approximately 52 percent of the project area will be comprised of upland forest. The upland forest within the project area will include coniferous plantations (34%), pine flatwoods (2%), and mixed hardwood-coniferous forest (16%). Wetlands will comprise roughly 32 percent of the total project area acreage. The vegetative communities included in the wetland classification will consist of mixed forest (20%), wetland coniferous forest (4%), bay swamps (2%), mixed wetland hardwoods (1%), willow maple cypress with elderberry (4%) and stream and lake swamps (1%). Agriculture operations will comprise approximately 16 percent of the project area, and includes mixed ag/forest (12%), pasture (3%), and field crops (1%).

g.(10) Surface and Subsurface Water Withdrawals for Production

WSA maintains a system of production wells to support the production and processing of phosphate rock. All wells, SCM, SCM2, SRM, SRM 1, 2 and 3, are permitted for withdrawals under Water Use Permit Number 2-047-219878-6 which is in compliance. **Map VI-8** depicts the locations of the consumptive use wells listed above.

g.(11) Existing and Proposed Monitoring Stations

g.(11)(a) Surface Water Monitoring Stations

Surface waters from the active operational areas are collected, monitored, and discharged only as approved by the applicable permit. WSA currently has four FDEP-permitted NPDES outfalls within the project area (**Map VI-7**), as part of a regulatory program delegated to the State of Florida by the U.S. Environmental Protection Agency (EPA). **Appendix C** includes the applicable discharge water quality standards for the four NPDES outfalls.

In addition, WSA has been issued Industrial Wastewater Facility (IWW) permits for the release of process generated and mine dewatering discharges, treated sanitary wastewater and stormwater from the Swift Creek and Suwannee River chemical complexes and the Hamilton County mine to nearby surface water conveyances. The IWW permit number is FL0000655.

Surface waters from reclamation and mitigation areas are managed under the NPDES system, unless otherwise prescribed by conditions of a specific permit. For example, the FDEP permit for the "hydrologically connected" wetlands activities in Roaring Creek required connection of the relocated Roaring Creek to waters of the state soon after its construction and included water quality monitoring provisions for water thus discharged. Similar provisions exist in other such permits. Following completion of reclamation and mitigation requirements and release from further requirements by the applicable agency, surface water flow will be restored according to the design outlined in the 2020 CRP (G) application and then regulated as stormwater.

g.(11)(b) Ground Water Monitoring

Based on the results of previous studies completed at the Hamilton County Mine and other sites in Central Florida, the FDEP does require ground water quality monitoring at phosphate mining operations. All monitoring of groundwater is submitted in accordance to the NPDES permits and in the Annual Reports.

g.(11)(c) Air Monitoring Stations

Title V Air Permit number 0470002-175-AV, issued by the FDEP, outlines the operation and monitoring for all sources of air emissions at the chemical plants and mine facilities. The location of the existing air monitoring stations at the Swift Creek and Suwannee River Chemical plants are shown on **Map VI-7**.

g.(11)(d) Proposed Monitoring Stations

In each County Annual Report, PCS documents all current and proposed Surface Water, Groundwater and Air monitoring stations.

g.(12) Type and Classification of Overburden

The sandy sediments that comprise the overburden soils are referred to as "undifferentiated marine terrace deposits." These sediments consist of fine to medium-grained quartz sand with minor amounts of organic material, clays, and heavy minerals (Ceryak, 1983). The distribution of pre-mining soil types is shown on **Map V-3**.

g.(13) Water Table Elevations

The extent and duration of water table impacts due to mining operations and associated surficial aquifer dewatering is dependent upon site-specific and climatological conditions. These include, among other factors, the depth of mine pit dewatering, the length of time the pit is kept dewatered, the amount of rainfall received during the period of dewatering, and the hydraulic characteristics of the specific area. Certain mining practices such as spoil placement and perimeter ditch placement can significantly affect the extent and duration of water table impacts. Under typical operating and hydrologic conditions and with normal rainfall, the water table can be expected to show a decline of one foot or less at a distance of 2,000 feet from the active mining area. The distance and magnitude of decline can vary, as can the time required for water table recovery to previous levels.

In a study completed for WSA in March 2000, Ardaman and Associates, Inc. (Ardaman) installed additional piezometers at a nearby site to assess surficial aquifer impacts resulting from mine dewatering. In their conclusions, Ardaman stated that:

> "The drawdown effects of mine pit dewatering on the surficial aquifer water table are heavily influenced by rainfall conditions. For typical mining depths, the calculated distance to a water table drawdown of six inches is less than 1,500 feet during periods of higher-than-normal rainfall, and less than 2,500 feet during periods of normal rainfall. During periods of extended drought (i.e., periods with no net recharge to the surficial aquifer) the calculated distance is just over 4,000 feet from the mine pit."

Figure VI-2 (Graph No. 1 from the Ardaman report) shows the range of water table impacts resulting from mine pit dewatering. **Map VI-8** shows the location of additional piezometers at the Hamilton County Mine.

g.(14) Transportation Analysis

The roadways surrounding the project area currently meet or exceed the level of service standard required for traffic circulation facilities, as provided in Hamilton County's Comprehensive Plan. The most important roadway segment serving the impact area at present is County Road 137, which forms a loop between White Springs and Jasper that begins and ends at U.S. Highway 41, north of White Springs and just south of Jasper. The WSA complex is the only major developed land use along this highway and accounts for most of the vehicular trips. This is the only highway segment on which the complex has an impact. The modifications requested in this 2020 MMPA will cause no significant changes in traffic patterns in the vicinity of the project area.

Norfolk-Southern Railroad provides mainline rail service directly to the facilities in Hamilton County. WSA also has access to the CSX mainline through a truck-rail transfer facility near Lake City. A dedicated fleet of trucks delivers sulfur to the WSA chemical plant and then returns to the transfer facility with outgoing shipments of liquid fertilizer. The truck fleet averages approximately 40 round trips per day.

g.(15) Archeological/Historical Sites and Cemeteries

The 2001 DRI modification (submitted concurrently with the 2001 MMPA) contained references to six historic sites that were identified within the project area. Those sites included

the R. D. Sanders Mound Site, the Stephen Foster Memorial Site, the Spring House, the Swift Creek 2 Site, the White Springs Site, and Atlantic Coast Railroad Bed.

Archeological issues related to the project area were addressed for the entire project area during preparation of the 1985 Environmental Impact Statement (EIS) and the 1985 Technical Background Document. The ACOE requested, via a November 20, 1981 letter, that the State Historic Preservation Office (SHPO) review and comment on archeological resources and any necessary actions that should be taken to prevent any loss of sites eligible for protection. The SHPO responded and sent OxyChem a series of USGS 7.5-minute quadrangles identifying areas that needed to be addressed within the project area. The company chose to survey all areas identified by the SHPO that were in areas to be permitted by the ACOE. The remaining areas would be surveyed prior to mining any new tracts permitted by the ACOE that contained identified sites. The ACOE permit contained a condition requiring this action.

In final comments on the draft EIS, contained in a letter from the SHPO to the ACOE dated March 26, 1986, the SHPO stated it concurred with the draft EIS conclusions as follows:

> "We concur with statement 4.57 on page 37 of the above-cited document, which indicates that the project will have no impact on archaeological or historical resources in the proposed project area. It is the opinion of this office, therefore, that the project will have no effect on sites eligible, or potentially eligible, for listing in the National Register of Historic Places, or otherwise of national, state or local significance."

WSA will have archeologists survey any of the identified areas that fall within the identified areas and present the results to the SHPO prior to any actual mining in the identified areas. WSA will obtain the necessary approvals prior to actual mining.

The Poole Pond Cemetery and several other smaller cemeteries are located within the project area along private roads maintained by WSA. The Poole Pond Cemetery is located in Section 26, Township 1 North, Range 15 East. Public access to these cemeteries will continue to be maintained by WSA.

Cultural Resources Assessments were completed for Loncala in 2012, the Disturbance Corridor permitted in CRP (F) and for the Four New Reclamation Units permitted in CRP (G) to be submitted concurrently with this application.

g.(16) Public Utilities, Roads and Railroads Affected by Mining

Public utilities, roads and railroads affected by mining are shown on **Map VI-7**. Graded roads may be temporarily relocated during mining.

g.(17) Sand/Clay Mix Disposal/Reclamation Details

Sand/clay mix is not utilized as part of the materials management and reclamation processes conducted at the Hamilton County Mine.

g.(18) Dam Break Analysis

In 2016, Ardaman submitted a report to WSA summarizing the results of a study completed to evaluate the potential impacts of hypothetical dam breach scenarios for CSA 10V SC. At the time of Ardaman's study, 10V SC was a new settling area and the only one with a significant amount of water. A dam breach of older settling areas filled with more consolidated clays is considered highly unlikely and, therefore, they were not considered as part of the analysis.

A dam breach was assumed along each of the four walls of the settling area. The four scenarios were considered for the sunny day mode of failure (i.e., no or low flow in creeks). This sunny day scenario refers to a piping breach at the maximum height of the water in the settling area without significant deposits of clays covering the bottom. The first scenario was west into the headwaters of Bell Creek. The second scenario was southwest into the Swift Creek Chemical Plant area and beyond possibly into the Camp Branch watershed west of U.S. Highway 41. The third scenario was east toward the headwaters of Swift Creek, and the fourth scenario was north toward CR-6 into Bee Haven Bay and downstream into the Rocky Creek watershed. The four evaluations were run to determine maximum flood levels and maximum discharges along downstream impacted areas.

In their conclusions, Ardaman began by stating that the hypothetical dam breach of settling area 10V SC "was considered as possible but not likely. All of the settling area dams at WSA are designed, constructed, frequently inspected and maintained in accordance with the rules of the FDEP under Chapter 62-672, F.A.C." The four dam breach scenarios evaluated would primarily affect four stream systems: Swift Creek, Camp Branch, Rocky Creek, and Bell Creek. In addition, roads, railroads, buildings/dwellings, and a cemetery in the vicinity of this settling area would be impacted. A copy of Ardaman's 2016 report is included as **Appendix B**.

h. Monitoring Plan

Table VI-7 includes a summary of all hazardous waste, water, air, aquatic plant, mine reclamation, potable well, solid waste, storage tank, wetland, wastewater treatment, consumptive use, and mining permits currently issued to WSA for its mining, beneficiation and chemical facilities in Hamilton County.

Surface water quality data are collected weekly at the Camp Branch (S.P. 004-1), Swift Creek (S.P. 001-18 and S.P. 001-4), Hunter Creek (S.P. 002-2), and Roaring Creek (S.P. 003) NPDES outfalls. Surface water samples collected at these locations are analyzed for pH, conductivity, temperature, total phosphorus, total nitrogen and other parameters. **Appendix C** includes the applicable discharge water quality standards for the four NPDES monitoring locations. Map **VI-7** shows the locations of the four NPDES outfalls.

WSA's Title V Air Permit Number 0470002-075-AV outlines the operation and monitoring for all sources of air emissions at the Swift Creek and Suwannee River Chemical plants. **Map VI-7** shows the air quality monitoring locations.

All water withdrawals to support production and potable water uses are from the Floridan Aquifer and are regulated by the SRWMD. **Table VI-7** includes a summary of all water use permits currently issued to WSA for its mining and chemical facilities in Hamilton County. Groundwater monitoring data are submitted to the SRWMD as required in the permit.

All currently required monitoring of impacts to preservation areas are being completed by WSA and submitted to the appropriate agencies. Potential impacts to unmined wetlands adjacent to mining areas were addressed in a report completed for WSA (Ardaman, 2000). The report included computer modeling of the surficial aquifer to determine the potential impacts to wetlands adjacent to the temporarily dewatered active mining areas. **Figure VI-2** (Graph No. 1 from the Ardaman report) illustrates the impact to the surficial aquifer based on different rainfall conditions.

Current monitoring of the surficial aquifer adjacent to active mining areas has shown no effect to adjacent agricultural or domestic supply wells, or agricultural activities. Future mining adjacent to agricultural and domestic activity will be monitored to identify any adverse impacts. If observed, mitigation measures will be employed to reduce or eliminate the impacts.

i. Inspection Summary

Clay settling area embankments and spillways at the Hamilton County Mine are inspected on an annual basis in general accordance with FDEP Chapter 62-672, F.A.C. The inspections typically consist of a driving and walking reconnaissance of the perimeter dams along the downstream toe, crest areas, interior dams, and spillways. The most recent inspections of the dams associated with clay settling areas and cooling ponds at the Hamilton County Mine were performed by Ardaman in 2018 and concluded that the PCS settling area and cooling pond dikes are well maintained and in good condition. A copy of Ardaman's 2018 Annual Inspection report, including detailed results of the inspections, corrective or maintenance recommendations, and inspection requirements, is provided in **Appendix D**.

The FDEP Mining and Mitigation Program conduct inspections at the Hamilton County Mine. The FDEP reviewer assigned to WSA inspects and reviews active and future RUs with regard to status and success. Any requests for release or modifications to existing plans and permits are also discussed during these inspections. This and other required monitoring at the Hamilton County Mine will be maintained for the periods specified in the applicable regulations and permits.

j. Production Water Use Plan

WSA maintains a system of Floridan Aquifer production wells to supply process water for the production of phosphate rock, and potable water for domestic uses. All water uses from these wells are regulated by the SRWMD. All wells, SCM, SCM2, SRM, SRM 1, 2 and 3, are permitted for withdrawals under Water Use Permit Number 2-047-219878-6 which is in compliance. **Map VI-8** depicts the locations of the existing production wells at the Hamilton County mine, and copies of the existing Water Use permit for the site are provided in **Appendix F**.

k. Reclamation Plan

The reclamation schedules for the Hamilton County Mine have been developed to achieve the timetables outlined in Section 62C-16, F.A.C. Clay settling areas will be dewatered for a six-year period following the last deposition of clay and will then be reclaimed as areas of elevated fill. During this time, measures will be taken to remove water from the clay surface to accelerate consolidation and surficial crusting and cracking. The dewatering period will be followed by a two-year earthmoving phase. Revegetation will follow earthmoving and will be completed within the one-year requirement. **Figure VII-1** depicts the elevated fill reclamation stratigraphy.

Sand tailings areas will be reclaimed through the revegetation phase within two years after completion of tailings deposition. Land and lakes areas will have a two-year active reclamation period – 18 months for earthmoving and six months for revegetation. **Table VI-6** summarizes the existing program areas. **Figure VII-2** shows the tailings fill reclamation stratigraphy.

Map VI-4 depicts reclamation programs complete through revegetation and partially complete through revegetation. Areas shown on the map as complete through revegetation (as of December 31, 2018) total 17,228 acres. A total of 13,740 acres are located in programs that are partially complete through revegetation. Several of the partially complete programs have only been partially mined, and the entire mined portions have been reclaimed through revegetation. Reclamation within these areas will be completed as mining occurs in the RUs.

Map VI-5 depicts the RUs and identifies the areas that were approved for Alternate Standards reclamation but will be converted to Conventional Standards reclamation. The

amendment to the January 2001 MMPA converted approximately 14,500 acres from Alternate Standards to Conventional Standards reclamation. As shown on the map, several RUs will include Alternate and Conventional Standards reclamation. **Table VI-6** identifies the reclamation status, reclamation standard and completion status for each RU.

k.(1) Contours

Once mining is concluded and clay/sand/mudball deposition has been completed, the earthmoving phase of the reclamation will begin. **Map VII-1** shows the final post reclamation contours. A variety of earth moving equipment, including bulldozers, scrapers and excavators, will relocate earthen materials in land and lake areas. The lake slopes around the upland areas will be graded to no steeper than four feet horizontal to one foot vertical (4H:1V), and the lakes will be allowed to fill with water. **Figure VII-3** depicts the stratigraphy of land and lakes areas.

The RUs delineated as sand-tailings fill areas will also be recontoured with a variety of earthmoving equipment. Initially the tailings will be pumped into the voids between the overburden spoil peaks. Dozers and scrapers will fill in low areas and level off the high spots. Dozers will then contour the tracts to final grade, resulting in the tailings being capped with the overburden.

Reclamation of the CSAs will begin once these tracts have been dewatered. After each CSA has been permanently taken out of service, it will be dewatered for approximately three years to allow the clays to consolidate and form a crust thick enough to support equipment. Dozers will grade the dams to slopes of no steeper than two and one-half feet horizontal to one foot vertical (Alternate Standards), or four feet horizontal to one foot vertical (Conventional Standards) and leave them as topographic highs that will serve as drainage boundaries. Wetlands within a CSA will generally be associated with the previously mined area. These systems will retard water flow, control water quality, and allow surface waters to exit through a breach in the dam.

k.(2) Location and Acreage

Once earthmoving within the RUs has been finished to final grade, revegetation will begin. The method of revegetation on these tracts is dependent upon land use and the type of species required for each area. **Map VII-5** shows the location of the post reclamation land uses and **Map VI-4** shows the corresponding RUs. **Table VII-1** lists the total acreages of each FLUCFCS Code type.

k.(3) Description of Reclamation Types

Map VII-5 and **Table VII-1** summarize post reclamation land use types. These descriptions are referenced in the FDOT's January 1999 Handbook "Florida Land Use, Cover and Forms Classification System."

k.(4) Revegetation Plan

Upland Forest Revegetation

Upland forest areas will typically be planted at a density of 650 trees per acre. Success criteria for upland forest areas require that a density of 200 trees per acre be living after one year from the planting date. FDEP personnel will conduct inspections on these areas during the regularly scheduled quarterly inspections. After one year, these areas will be eligible for release provided that the proper density is reached.

Upland Non-Forested Revegetation

Upland non-forested revegetation will be spread with overburden as available and disked. Grass seed will be applied and allowed to revegetate if erosion is expected. Success criterion for upland non-forested communities requires that coverage meets or exceeds 80 percent. FDEP quarterly inspections will monitor success of these upland communities.

Wetland Forest Community Revegetation (Tier 1)

Wetland forests (Tier 1) will typically be planted at a density of 650 trees per acre. Available overburden will be spread across the entire site. Wetland forest communities will be

planted with mechanical tree planters when possible. Potted and/or bare root trees will be planted by hand in areas not suitable for mechanical planting. Monitoring criteria for Tier 1 wetlands are contained in Wetland Resource Permits (WRP) Permit 0144913-003 and -021.

The FDEP's success criteria for wetland-forested communities require a minimum of 400 trees per acre to be alive at the end of the monitoring period. At this time the canopy coverage must meet 33 percent coverage. Nuisance or exotic species are required to make up less than ten percent of the overall herbaceous coverage or demonstrate a decreasing trend over the last three years of monitoring. Desirable herbaceous coverage is required to meet at least 80 percent coverage.

Monitoring of wetland forest communities will continue annually until deemed successful. Wetland tree species will be counted and measured along transects established by WSA and the applicable government agencies. Tree density and canopy coverage will be calculated and presented in report format. Understory vegetation will be identified, and results calculated to determine percent coverage by desirable wetland species and nuisance or exotic species.

Wetland Forest Community Revegetation (Tier 2)

Wetland forests (Tier 2) will typically be planted at a density of 650 trees per acre. Overburden will be spread across the entire site as available. Wetland forest communities will be planted with mechanical tree planters when possible. FDEP's success criteria for wetland forest systems require a minimum of 200 trees per acre after one year from the planting date. FDEP quarterly inspections will monitor success of these wetland communities.

Wetland Non-Forested Community Revegetation

Wetland non-forested revegetation will be graded and spread with overburden. Success criteria for wetland non-forested communities address coverage of desirable wetland herbaceous species. Monitoring of wetland non-forested communities will occur annually until deemed successful. Vegetation will be identified, and results calculated to determine percent coverage by desirable wetland species and nuisance or exotic species.

l. Pre-Mining Operations

Site preparation consists primarily of land clearing and construction or installation of mining facilities such as mine service roads, drainage ditches, matrix lines, and power lines. To provide a stable bench for the dragline, all vegetation is cleared prior to mining. The lead-time for land clearing will depend on the vegetative cover and soil conditions in the mining area and will occur approximately 24 months prior to mining. In areas currently used for silviculture, timber will be harvested prior to mining operations.

Preparation begins with installation of drainage ditches to remove surface water and lower the water table within the mining block. These ditches recirculate water throughout the mining operation, aide in water clarification and may also be used to recharge unmined wetlands adjacent to mining.

m. Financial Responsibility

m.(1) Financial Responsibility Based on Acres Mined or Utilized as Clay Settling Areas

m.(1)(a) Land Actually Mined and Reclaimed (in acres)

At the time of the submittal of this 2020 MMPA, there are approximately 1,880 acres of Non-CSA lands requiring reclamation. At $5,400 per acre, this requires demonstration of financial responsibility in the amount of $10,152,000

m.(1)(b) Storage Above Grade in the Clay Settling Area (in acre)

At the time of the submittal of this 2020 MMPA, there are approximately 8,500 acres of CSA requiring reclamation. At $1,250 per acre, this requires demonstration of financial responsibility in the amount of $10,625,000.

m.(2) Evidence of Financial Responsibility

Per Hamilton County Mining Ordinance #2016-01, evidence of financial assurance for lands that have been mined and used for CSAs but not yet reclaimed is required. The acreages shown here are as of year-end 2020.

Financial Assurance for Hamilton County:		Year-End 2020 Calculation	
	Acres		
Non-CSA Reclamation:	1,994	@ $5,400 / acre	10,767,000
CSA Reclamation:	8,500	@ $1,250 / acre	10,625,000
		Deduct DEP Wetland Financial Assurance:	-10,837,045
		Net Added to Schedule A:	**$10,555,555**

All relevant financial assurance obligations are listed in Schedule A, which is part of the solid waste financial assurance form submitted to FDEP. A copy of that submission is attached (**Attachment J**).

Evidence of financial responsibility is provided by copy of the audited financial statement of Nutrien as found in the 2019 corporate annual report. A copy of the consolidated financial statement from that report is provided as **Appendix G**. A complete copy of the report is privileged Client information provided to the County lawyer and to the County Consultant

The quarterly report shows an increase in shareholder equity from the beginning of the year and documents the absence of material adverse change in the financial condition of the company.

n. Subsequent Proofs

WSA will submit updated financial information and proofs of financial responsibility as required in Hamilton County's LDR.

o. Aerial Photographs

Aerial photographs of the project, plotted at a scale of one-inch equals 6,600 feet, are provided as **Map VII-6**. **Appendix H** (provided under separate cover) includes aerial photographs plotted at a scale of one inch equals 400 feet.

p. Fee

The appropriate fee is provided.

Part 14. Variances

The following variances are requested from the requirements for Hamilton County Section 14.7.2, Special Permits for Phosphate Mining, Phosphate Operations and Phosphate Mining Reclamation. Variance requests list the relevant section of the ordinance, the ordinance requirement, the requested variance, and a justification for the request.

f. Topographic Maps

f.(1) Small Scale Topographic Maps

Requirement: Pre-mining topographic map with 5-foot contour intervals – one section per sheet at a scale of one-inch equals 400 feet, with section corners located.

Requested Variance: Request approval to submit composite USGS Quadrangle sheets with project boundaries shown. (See f. (2) below).

Justification: Submitting the information as requested would be over 140 sheets for the entire mine property project boundary.

f.(2) Composite Topographic Maps

Requirement: Composite topographic maps on single sheets, not to exceed 72 by 72 inches in size.

Requested
Variance: Plot the composite USGS topographic map at a scale of one-inch equals 2,200 feet on two or more 36-inch x 48-inch drawings.

Justification: Most plotter widths are 36 inches. Submitting composite topographic maps plotted at a scale consistent with the variance will provide sufficient topographic detail.

g. Mining Plan

g.(9) Pre-mining and post reclamation land uses and landforms

Requirement: Pre-mining and post reclamation land use maps, with acreages for all types of reclamation to be utilized.

Requested
Variance: Omit land use acres for each reclamation unit.

Justification: Overall land use map will provide summary of total reclaimed land use acres. Typically, reclamation programs reflect post reclamation land use acres.

j. Production Water Use Plan

Requirement: Submit a plan for the production use of water.

Requested
Variance: Submit copies of consumptive use and water use permits only.

Justification: These documents will summarize all information needed by the County to review the MMPA.

k. Reclamation Plan

Requirement: Post reclamation topographic map with RUs.

Requested
Variance: Plot the 5-foot post reclamation topographic maps at a scale of one-inch equals 2,200 feet on two, 36-inch by 48-inch drawings.

Justification: The proposed map scale sufficiently depicts the post reclamation topography of the project area.

C. Special Permit Required

(1) Application for Special Permit

Requirement: 20 copies of a Special Permit are required.

Requested Variance: Submit eight copies. Additional copies could be provided if requested by the County.

Justification: 20 copies seem excessive and would require significant cost to produce the accompanying graphics.

REFERENCES

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APPENDIX A
Proposed Mining Areas and Contiguous Landowners.

APPENDIX B
Dam Break Analysis Report

APPENDIX C
Industrial Wastewater Facility Permit Effluent Limitations and Monitoring Requirements

APPENDIX D
Dam Inspection Report

APPENDIX E
Reserved for Future Use

APPENDIX F
Water Use Permits

APPENDIX G
Nutrien Corporate Financial Statements