Department of the Army (DA) Permit SAJ-1993-01395

Attachment G

COMPENSATORY MITIGATION PLAN

MOSAIC FERTILIZER, LLC
SOUTH PASTURE EXTENSION
HARDEE COUNTY, FLORIDA

Mosaic Fertilizer, LLC
P.O. Box 1549
Wauchula, FL 33873

September 2016

Table of Contents

Tables

Figures

Attachments

Record documents referenced in the Compensatory Mitigation Plan:

- September 2011 USACE Application Environmental Narrative; Submitted on September 16, 2011
- Wildlife Habitat Management Plan; Submitted on September 16, 2011
- Stormwater Pollution Prevention Plan; Submitted on March 22, 2011
- Best Management Practices/Pollution Prevention Plan; Submitted on September 26, 2013

INTRODUCTION

Mosaic Fertilizer LLC (Mosaic) owns and operates phosphate mining and beneficiation facilities located on approximately 15,000 acres in northwest Hardee County, Florida. The existing mining and beneficiation facilities located south of State Road 62 are referred to as the South Pasture Mine (SP).

Mosaic is currently seeking approvals to extend mining operations from the South Pasture onto approximately 7,513 acres of adjoining land known as the South Pasture Extension (SPE) to ensure a long-term supply of phosphate rock to meet the fertilizer demand of Mosaic's customers. The SPE is located in Sections 1, 2, 3, 10, 11, and 12, Township 34 South, Range 23 East, as well as Sections 2, 3, 4, 5, 6, 7, 8, and 10, Township 34 South, Range 24 East in Hardee County, Florida. More specifically, the SPE is located south of State Road 62, and north of State Road 64, and it is divided by County Road 663. These mineable phosphate ore reserves include ore lying beneath and adjacent to 1,768.2 acres of waters of the United States. As proposed, the mining of the SPE will result in approximately 1,198.2 acres of impacts to wetlands and 32,161 linear feet of impacts to natural and ditched streams.

This document is being provided to serve as a complete Compensatory Mitigation Plan (CMP) to address the United States Army Corps of Engineers (USACE) mitigation requirements in accordance with the 2008 Compensatory Mitigation Rule (33 CFR Part 332), consistent with 33 CFR 332.4 (c). All mitigation will be completed according to the Mitigation Work Plan (Attachment A) required by 33 CFR 332.4 (c)(7), which consists of the following two parts:

- Part 1 – Wetland Work Plan); and
- Part 2 - Stream Work Plan;

In addition to the Final Areawide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District (AEIS), this plan relies heavily on and incorporates information previously submitted as a part of the September 2011 SPE USACE Application and the response to the June 2013 and March 2014 Request for Additional Information, including the following reports:

- September 2011 USACE Application Environmental Narrative;
- Integrated Simulations for the South Pasture Extension Mine For Pre-Mining and Post-Reclamation Conditions;

- Wildlife Habitat Management Plan (as revised for the USACE, this document is now the LTMP);
- Stormwater Pollution Prevention Plan; and
- Best Management Practices/Pollution Prevention Plan.

The plans presented herein have been designed to meet federal criteria for permit issuance contained in 33 CFR 332.4 (c).

COMPENSATORY MITIGATION PLAN

Objective - A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address watershed needs. 33 CFR §332.4(c)(2)

As designed, mitigation for the 1,198.2 acres of wetland impacts is proposed in the form of 123.5 acres of wetland enhancement and 396 acres of wetland preservation prior to mining, together with 1259.58 acres of onsite herbaceous and forested wetland restoration and 44.7 offsite forested wetland restoration (Table 1, Figure 1), which will occur on a rolling basis across the site, as restoration follows behind mining. In addition, to mitigate for the 32,161 linear feet of stream impacts, the project will include the creation of 18,402 linear feet of streams, also on a rolling basis, and preservation of 55,501 linear feet of stream prior to mining (Table 2).

This plan also demonstrates that the wetland functions currently being provided by the on-site wetlands will be fully restored as measured by the Uniform Mitigation Assessment Methodology (UMAM) analysis (Tables 1, 7, 8, 9; and the stream function will be fully restored, as measured by the FDEP Habitat Assessment (Tables 2 and 4A, 4B, 4C). The proposed restoration plan demonstrates that greater than acre-for-acre and type-for-type wetland restoration will be achieved (Attachment A, Part 1), with more wetland acreage and linear footage of streams occurring onsite than currently exists today (Attachment A, Part 2), resulting in a net increase in wetland acreage consistent with national goal of “no net loss” of wetland acreage or function. Mosaic’s Wetland and Stream Work Plans restore and enhance to the maximum extent practicable the pre-mining drainage basins.

Table 1. Summary of SPE Functional Assessment

Table 1	Summary of SPE Wetland Functional UMAM Assessment		
	Acreage	Debits	Credits
Mining Impacts*			
Forested	420.67	204.95	
Herbaceous	777.50	315.22	
Total:	1198.17	520.17	
On-site Wetland Establishment**			
Forested	524.60		139.33
Herbaceous	734.98		278.07
Total:	1259.58		417.40
On-Site Wetland Preservation***			
Forested	329.13		48.70
Herbaceous	67.10		10.62
Total:	396.23		59.31
On-Site Wetland Enhancement****			
Forested	20.61		4.03
Herbaceous	102.91		26.58
Total:	123.52		30.61
Forested Credit Balance On-site:			**-12.90**
Herbaceous Credit Balance On-site:			**0.05**
Total Credit Balance On-site:			**-12.85**
Off-Site Wetland Establishment**			
Forested	44.70		13.50
Herbaceous	0.00		0.00
Total:	44.70		13.50
Total Credit Balance Off-site:			**13.50**
USACE Mitigation Summary			
Forested Credit Balance:			**0.60**
Herbaceous Credit Balance:			**0.05**
Total Credit Balance On-site + Off-site:			**0.65**

*See CMP Table 7
**See CMP Table 8
***See CMP Table 9
****See CMP Table 10

Table 2. Stream Flow and Mitigation Type Summary

Table 2	Summary of SPE Stream Functional Assessment						
	Ephemeral	Intermittent	Natural Streams (511)	Ditched Streams (512)	Length Total	Debits***	Credits****
Mining Impacts							
Linear Feet	30616	1545*	21342	10819	32161	13361.14	
Mile	5.8	0.3*	4	2	6.1		
Total:	30616	1545	21342	10819	32161	13361.14	
On-site Stream Establishment							
Linear Feet	17833	569	18402	0	18402		4437.46
Mile	3.4	0.1	3.5	0	3.5		
Total:	17833	569	18402	0	18402		4437.46
On-Site Stream Preservation**							
Linear Feet	21897	33604	53516	1005	55501		9003.16
Mile	4.1	6.4	10.1	0.2	10.5		
Total:	21897	33604	53516	1005	55501		9003.16
Total On-site Mitigation:	39730	34173	71918	1005	73903		13440.6
Total Credit Balance On-site:							**79.48**

This table only reflects USACE Stream Mitigation, for the complete SPE Stream Work Plan, See Attachment A Part 2

"Stream" includes unditched and ditched natural streams. See Table SRO-2 for breakdown.

*Entire length of intermittent stream in the proposed mining area is ditched.

**Includes 520 LF of stream that will be temporarily disturbed by mining infrastructure corridors and subsequently rebuilt to natural conditions. This length is intermittent.

***Based on the HA Functional Analysis (Tables 4A)

****Based on the HA Functional Analysis (Tables 4B and 4C)

The SPE Compensatory Mitigation Plan has been designed to maintain and improve the quality and quantity of aquatic resources within the Peace River Watershed. The Plan addresses specifically-identified needs such as those stated in the Charlotte Harbor National Estuary Program (CHNEP) Comprehensive Conservation and Management Plan (CCMP). The CCMP constitutes a watershed plan pursuant to 33 CFR § 332.3(c). The CHNEP adopted the current version of the CCMP (2013), with its stated goal of arresting and reversing the declines of watersheds that drain into Charlotte Harbor, as well as the Charlotte Harbor estuary. In the CCMP, four "Priority Problems" are identified, as well as fifteen short-term programs "Objectives" and 76 "Priority Actions" which were established by CHEP to address the Priority Problems. As stated in the CCMP, the identified Priority Problems are listed below:

1) Water Quality degradation: Pollution from agricultural and urban runoff, point-source discharges, septic systems and wastewater treatment systems, atmospheric deposition, groundwater, and other sources;

2) Hydrologic alterations: Adverse changes to amounts, locations, and timing of freshwater flows, the hydrologic function of floodplain systems and natural river flows;

3) Fish and wildlife habitat loss: Degradation and elimination of headwater streams and other habitats, conversion of natural shorelines caused by development, cumulative impacts of docks and boats, invasion of exotic species and cumulative and future impacts; and

4) Stewardship gaps: Limitations in people's knowledge of choices and management decisions that will lead to sustainability within their community. These gaps include overarching issues such as public outreach, advocacy, and data management.

When coupled with the onsite preservation plan elements, the onsite, in-kind wetland re-establishment plan elements are consistent with 33 CFR 332.3 and the watershed needs identified in the CCMP because:

- The SPE CMP is significant enough to result in watershed scale benefits from the work;
- The re-establishment plan elements would reduce non-point source pollutants associated with stormwater runoff (CHNEP Priority Action WQ-D);
- The re-establishment plan elements would improve and protect water quality to offset other anthropogenic impacts (CHNEP Priority Action WQ-E);
- The re-establishment plan elements would establish and maintain a more natural seasonal variation in freshwater flows by eliminating ditches and reducing peak runoff rates (CHNEP Priority Action HA-E);
- The re-establishment plan elements would restore and protect freshwater wetlands on at least an acre-for-acre basis (CHNEP Priority Action FW-C);

- The re-establishment plan elements would restore and protect aquatic and terrestrial native habitat (CHNEP Priority Action FW-F); and
- The re-establishment plan elements would increase the acreage of land protected under conservation easements (CHNEP Priority Action FW-H).

Mosaic has designed the onsite and offsite mitigation to achieve regional ecological benefits at the watershed level, creating integrated, interconnected landscape post reclamation. To address USACE mitigation requirements, including specifically-identified watershed plans such as the CCMP, Mosaic has designed a comprehensive post-mining landscape that includes combinations of preserved, enhanced, and reclaimed stream corridors, wetlands, and their adjacent uplands, which are linked geographically and hydrologically to the even larger upland and wetland habitat networks formed by regional stream networks such as Payne Creek and Horse Creek, which are major tributaries to the Peace River. This approach is consistent with the Integrated Habitat Network (IHN) and the CHNEP CCMP objectives for the Peace River watershed by addressing water quality degradation, hydrologic alterations, and fish and wildlife habitat loss Priority Problems that the SPE CMP, if implemented as proposed, can help achieve.

Site Selection - A description of the factors considered during the site selection process. This should include consideration of watershed needs, onsite alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site. 33 CFR §332.4(c)(3)

Mosaic acknowledges the USACE considers mitigation options pursuant to its 2008 Compensatory Mitigation Rule. This rule establishes a hierarchy of preference for the three compensatory mitigation mechanisms, with mitigation banks the most preferred mechanism, followed by in-lieu fee programs, then permittee-responsible mitigation as outlined in 33 CFR 332.3 (b). The Rule also allows the USACE to determine what constitutes the most appropriate and practicable compensatory mitigation based on consideration of project-specific circumstances, such as the availability of mitigation banks or in-lieu fee programs, and the watershed approach. The following discussion clarifies that permittee-responsible mitigation conducted on-site and in-kind through a watershed approach is the most appropriate and practicable mitigation mechanism, as it is the most likely to successfully replace the functions and services temporarily lost due to mining, given the scale, location, and design of the proposed mitigation.

First, mitigation banks are not an appropriate and practicable mitigation method for the SPE compensatory mitigation. As noted in Chapter 5 of the AEIS, there is a lack of sufficient mitigation bank credits to serve the phosphate industry and it is unlikely that future commercial mitigation banks would be developed and be available to meet the demand of mitigation needs of currently proposed or future mines. Second, as is noted in Chapter 5 of the AEIS the USACE has not issued any permits for in-lieu fee programs within the Central Florida Phosphate District or the Peace River watershed. Therefore,

in-lieu fee mitigation is not available or practicable. Third, Mosaic is required by state law to restore mined wetlands and streams on site on an acre-for-acre, type-for-type, foot-for-foot basis, a considerable expense that cannot be avoided by purchasing mitigation bank credits. See Fla. State. § 378.207(1); § 373.414(6)(b) (2013). The use of mitigation banks for large phosphate mine mitigation is therefore not appropriate or practicable. Accordingly, permittee-responsible mitigation, is the most practicable option for Mosaic. A sufficient amount of Permittee-responsible off-site mitigation is not available to completely fulfill Mosaic's compensatory mitigation requirements, because of the lack of viable offsite mitigation alternatives and the fact that on-site wetland restoration is already mandated.

The proposed compensatory mitigation on the SP and SPE site meets the hierarchy of preference expressed in the Compensatory Mitigation Rule because it constitutes permittee-responsible mitigation under a watershed approach, as that concept is expressed in the Rule. As noted in the AEIS, federal compensatory wetland mitigation for phosphate mines is typically completed on-site and in-kind, within the mine boundary, and is designed and implemented to improve or create habitat connectivity and healthy watersheds on a regional scale. The proposed plans, which are supported by considerable data, modeling and analysis, generally include a combination of mitigation approaches, including creation, restoration, enhancement and preservation designed to create/restore high quality wetland systems and enhance or preserve existing disturbed systems to provide the greatest benefit to the local and regional watershed. Mitigation as conducted by the phosphate industry using currently-accepted mitigation techniques and practices has been demonstrated to be successful and sustainable and uses the principles of a watershed approach outlined in 33 CFR §332.3(c).

The SPE on-site areas were chosen for the permittee-responsible, on-site, in-kind mitigation under the watershed approach, for the reasons described above. Factors considered in selecting the SPE sites are the following: (1) the off-site alternatives analysis that demonstrated SPE is the least environmentally damaging practicable alternative as the impact site; (2) the state requirement to conduct acre-for-acre, type-for-type wetland and stream restoration on-site; (3) the lack of availability of sufficient mitigation bank credits or in-lieu fee programs to accomplish the necessary mitigation; and (4) the lack of available mitigation in the South Pasture that wasn't already accounted for as mitigation to offset other approved impacts in the South Pasture Mine. As set forth above, these factors properly apply the hierarchy set forth in the Compensatory Mitigation Rule. These factors led to the selection of the SPE as the site for the majority of the proposed mitigation. The specific location and design of the post-reclamation landscape was based on extensive monitoring, data collection, and analyses demonstrating that the chosen locations would support the planned mitigation, and that the mitigation would be successful and self-sustaining.

The specific off-site creation areas were selected to maintain the balance of forested wetland impacts and mitigation credits associated with the SPE. The off-site wetlands will be held to ALL performance standards and conditions associated with the SPE 404

permit and will be included in the mitigation financial assurance. These off-site wetlands and their 120 foot buffer will be protected in perpetuity after achieving performance standards, and covered with Long Term Management Plan (LTMP) monitoring and long term financial assurance in order to maintain the purpose of the mitigation. The design of the SPE Reclamation Plan (Wetland Work Plan, Part 1) includes extensive modeling of pre and post-mining hydrology and topography that will be described below (which included the proposed offsite wetlands) to ensure that the reclaimed systems will function as designed, and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. Results of the integrated modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation. The wetlands will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands.

The design of the SPE Reclamation Plan (Wetland Work Plan, Part 1) includes extensive modeling of pre and post-mining hydrology and topography to ensure that the reclaimed systems will function as designed and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. As detailed in the report “Integrated Simulations for the South Pasture Extension Mine for Pre-Mining and Post-Reclamation Conditions” (AMEC-BCI 2011), which is part of the USACE Application Record, post-reclamation surface water and groundwater hydrology were evaluated in detail using the MIKE SHE / MIKE-11 integrated groundwater / surface water modeling platform. Results of the integrated hydrology modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation. As a result of changes in post-mining topography, streamflow within the reclaimed landscape will differ somewhat from pre-mining streamflow. These changes are expected to be largely beneficial to the watershed environment, with some reductions in streamflow during the wettest periods caused by increases in evapotranspiration and onsite wetland storage, and significant increases in the timing, magnitude, and duration of low flows. These changes can largely be attributed to the fact that much of the existing site has been ditched for agricultural uses causing water to leave the SPE landscape unnaturally quickly compared to historic conditions. These ditches will not be present in the reclaimed landscape, and more natural watershed storage and flow regime will be established, resulting in lands that will be somewhat wetter overall, with higher evapotranspiration rates and correspondingly lower wet season streamflows. The proposed plan will also result in the increased duration of low flows with the creation of conveyance network that more closely mimic the natural wetland slough systems, which existed prior to the agricultural alterations of the SPE.

Mosaic has a strong history of consistently improving wetland and stream habitat creation and enhancement efforts beginning in the late 1970s and continuing today. Mosaic employs proven modern, innovative scientific and technical methods encompassing planning, ecological and engineering design, modeling, construction, maintenance and monitoring. Data in the DA Application and AEIS Record demonstrate

that Mosaic can accomplish the goals of the SPE Compensatory Mitigation Plan. For example, the average SPE UMAM score for the post-reclamation forested wetlands (Florida Land Use Cover Forms Classification System (FLUCFCS) Code 617 wetlands is 0.69. Comparable restored wetlands on the South Pasture Mine achieved similar scores in less than 15 years as documented in the report, "Demonstration of Successful Land Reclamation and Habitat Enhancement," included here as Attachment B. While this dataset is not extensive, it is all accomplished by a single entity (Mosaic) in the same geographic region over decades; accordingly, Mosaic believes it is reasonable and appropriate to conclude that the reclamation on the SPE will equal or exceed those efforts accomplished to date on the SP, especially given continued innovations in reclamation technology and Mosaic's long-term experience with and understanding of the specific regional and SPE site hydrologic conditions. Accomplishing ecologically self-sustaining mitigation as proposed on-site is demonstrably practicable, based on the data and information contained in both the USACE Application Record and the AEIS Record. The SPE site is the appropriate location for the majority of the proposed compensatory mitigation, as the foregoing discussion demonstrates.

Site Protection Instrument - A description of the legal arrangements and instrument including site ownership that will be used to ensure the long-term protection of the mitigation project site. 33 CFR §332.4(c)(4)

Mosaic is the fee simple owner of the SPE.

Long-term protection of the mitigation areas will be provided in the form of perpetual Conservation Easements to the Florida Department of Environmental Protection (FDEP) and recorded in the public records of Hardee County. Conservation Easements are expressly authorized under Florida law (Section 704.06, Florida Statutes), and provide the long term protection required by the 2008 Compensatory Mitigation Rule 33C.F.R. § 332.7(a). A copy of the perpetual Conservation Easement form to be used, which provides third party beneficiary rights to the USACE, is attached as (Attachment C).

There are two levels of long-term protection (Immediate Level I and Post-Reclamation Level I) proposed for the SPE. The total land area to be put into permanent conservation upon completion of reclamation is 3,300 acres; consisting of 1,095 acres (both wetlands and uplands) preservation, and 2,205 acres of wetland creation and associated buffer. The location of the protection levels are shown on Figure 2. A summary of the acreage breakdown and both the restricted and allowable activities for each protection level is outlined in Long Term Management Plan Table LTMP-1 (Attachment D). In all cases, however, the Conservation Easements will recite the purpose of the easement to retain the mitigation areas in the preserved, enhanced, restored, or created condition required by the permit and will prohibit any activity or use of the Protected Property in a manner that is inconsistent with the purpose of the easement or the purpose of the wetlands as compensatory mitigation.

Consistent with 33 CFR 332.7, the proposed Conservation Easement would include the following requirements, rights and obligations:

- Identifies the Corps of Engineers as the named third-party beneficiary to

enforce the terms of the Conservation Easement (Paragraphs 5 and 9);

- Prohibits incompatible land uses that might jeopardize the objectives of the compensatory mitigation project (Paragraph 3);

- Establishes baseline conditions, maintenance practices and responsibilities to maintain the compensatory mitigation projects in the preserved, enhanced, restored, or created condition required by the Corps permit (Paragraphs 2 and 3), with specific maintenance and management practices specified in a written Management Plan attached and incorporated into the Conservation Easement (Exhibit C);

- Provides notice requirements and timing, including written notice to the Corps of Engineers at least 60 days before any action is taken to amend, alter, release, or revoke the Conservation Easement (Paragraph 5); and Require implementation of long term management procedures to remedy adverse unforeseen circumstances.

Baseline Information - A description of the ecological characteristics of the proposed mitigation project site, in the case of an application for a DA permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site. A prospective permittee planning to secure credits from an approved mitigation bank or in-lieu fee program only needs to provide baseline information about the impact site. 33 CFR §332.4(c)(2)

To aid in the development of the Mitigation Work Plan for the SPE, ecological baseline data collection was initiated in 2004. The data collection effort included wetland delineations, wetland quality assessments using UMAM, detailed vegetation and land use mapping, and wildlife and listed species surveys. A hydrologic assessment was also completed as a part of the MIKE SHE / MIKE-11 integrated groundwater / surface water modeling analysis. Data collected for water modeling analysis included SPE stream and drainage area characteristics, topography, precipitation rates, measurements of evapotranspiration, and hydrogeology as discussed in the report, “Integrated Simulations for the South Pasture Extension Mine for Pre-Mining and Post-Reclamation Conditions” (AMEC-BCI 2011), included as part of the USACE Application.

One important part of this ecological data collection was the establishment and documentation of forty vegetative transects across representative wetlands on the SPE to serve as a guide for the development of a wetland habitat and vegetative characterization. Transects began approximately 10 yards landward of the wetland line,

traversed through the wetland and continued for approximately 10 yards beyond the wetland limit on the opposite side. Surveyed points were established wherever a change in vegetation or topography occurred and seasonal high elevations data were collected at various points along the transect. The vegetation between points was characterized in terms of species presence and relative abundance. The location of each transect on the SPE property is depicted in Figure RP-1 of the Wetland Work Plan (Attachment A, Part 1), with representative cross-section and plan view drawings of this information. A summary of the existing and post reclamation SPE land use is provided in Table 3. For more comprehensive details regarding the existing site conditions on the SPE, please refer to Section 2 of the WHMP previously submitted as Appendix EN- 8 with the September 2011 SPE USACE Application.

Table 3. South Pasture Extension Existing and Post-Reclamation Land Use Summary

Table 3	South Pasture Extension Existing and Post-Reclamation Land Use Summary	
Land Use Type	**Existing Acres**	**Post-Reclamation Acres**
Non-Native Uplands (200-level , 700-level, 800-level land uses)	3548.9	3239.3
Native Uplands (300-level , 400-level land uses)	1978.9	2180.7
Open Waters/Wetlands* (500-level, 600-level land uses)	1985.0	2092.8
TOTAL	**7512.8**	

*Total on-site acreage, regardless of Jurisdiction

The evaluation of the USACE wetland jurisdictional determination involved many factors and included the review of aerial photographs and relevant Geographic Information Systems (GIS) data, geological quad sheets, county soils maps, field visits, and site specific information assembled by Mosaic. The location of all wetlands on the SPE and their USACE jurisdictional status as determined through the evaluation process are presented on (Figures 3a and 3b). A letter providing formal verification of USACE wetland jurisdiction was issued on October 18, 2012 [SAJ-1993-01395(IP-ACR)].

The collected data was compiled and used to develop a post-mining landscape that mimics pre-mining conditions, including wetland hydrology and vegetative composition, and landscape topography as summarized in Table 3. The result of this data collection effort was the development of the Wetland Work Plan and the Stream Work Plan, both of which detail the type and extent of wetland and stream systems to be created on the SPE.

Determination of Credits - A description of the number of credits to be provided including a brief explanation of the rationale for this determination. 33 CFR §332.4(c)(6)

- **For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and resource type of credits to be secured and how these were determined.**

All mitigation will be conducted by Mosaic on Mosaic-owned property. No planned purchase of mitigation bank credits or participation in an in-lieu fee program is proposed, for the reasons detailed above.

- **For permittee-responsible mitigation, this should include an explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity.**

AEIS Section 5.2 specifies the sufficiency of mitigation proposed by Mosaic must be evaluated separately for streams, herbaceous wetlands, and forested wetlands; account for and offset lost wetland functions due to temporal lag between the time wetland disturbances and the corresponding mitigation would occur, including consideration of advanced or concurrent mitigation; and assessed by applying either UMAM or other functional assessments to impact and mitigation sites. USACE's Regulatory Source Book provides additional guidance on calculating mitigation credits and the overall sufficiency of mitigation proposed, including a spreadsheet model for this purpose.

This SPE CMP has been designed to more than offset temporal losses of aquatic resource functions caused by implementing Mosaic's SPE proposed actions and to maintain or improve the chemical, physical, and biological integrity of waters of the United States, including wetlands on and adjacent to the SPE Mine. The following determinations of sufficiency are based upon the baseline conditions described in the above section and the mitigation performance standards that are anticipated in the DA permit. Stream mitigation is addressed separately from wetland mitigation. The method used to calculate mitigation sufficiency is the spreadsheet model presented in the Jacksonville District's Regulatory Source Book and through direction provided by the USACE Mining Team. Consistent with the AEIS guidance, streams, herbaceous wetlands, and forested wetlands are accounted for separately. UMAM is the functional assessment applied to measure wetland mitigation sufficiency. FDEP's Habitat Assessment Procedure is the functional assessment method applied to measure stream mitigation sufficiency.

Wetland Mitigation Credits

The wetland functions currently being provided by the on-site wetlands to be impacted will be fully restored and replaced in the SP and SPE as measured by the Uniform Mitigation Assessment Method (UMAM) analysis, 62-345 F.A.C. As the Compensatory Mitigation Rule recognizes, "where appropriate functional or condition assessment

methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required." 33 CFR 332.3(f). The “appropriate functional assessment method” accepted for use by the USACE in calculating wetland functional loss/gain is UMAM.

For each Assessment Area (AA) affected by the impact or mitigation proposed, each function (Location/Landscape Support, Water Environment, and Community Structure) in the UMAM is evaluated. This produces a Δ for each of the AA when comparing with and without impact or mitigation scenarios. The Δ for each AA is then multiplied by “temporal loss” factors, Risk and PAF (if applicable) which results in each AA having a weighted Δ that has been corrected for the importance value and temporal lag. The products are then summed by function for all AA’s to produce the final credit or debit total. The following Sections describe each of the independent variables listed above.

The assignment of scores for the UMAM assessment was based on extensive field evaluations of the existing site conditions, reviews of the Wetland Work Plan by regulatory staff, assessment of planned post-reclamation conditions and habitat connectivity, habitat management, and long-term protection. The UMAM assessment also includes a calculation of temporal loss that takes into account the time it takes for the system to mature as well as the sequencing of reclamation following mining sequentially across the site. The wetland functions currently being provided by the on-site wetlands to be impacted will be fully restored and replaced as measured by the UMAM analysis. As detailed above in Table 1, the UMAM analysis demonstrates a functional loss of -520.17 units, with a total of 520.82 units of functional gain, leaving a surplus functional lift of
0.65 units, which will not be available for compensation associated with any other future impacts. Electronic copies of the wetland impact and mitigation UMAM datasheets are included on a CD with this submittal (Attachment E).

ST-IS-R24-F will be a 16.87 acre forested wetland in the Shirttail Branch restoration area in the South Pasture Mine. The wetland is already incorporated into the FDEP WRP 252607909 mitigation plan and is modeled to be connected to an ACOE herbaceous wetland. This system was conservatively scored for LLS a 5, mainly because the surrounding restoration area (outside of the 120 ft. buffer) will not be protected by a restricted covenant. Although the wetland will be modeled post mining and prior to planting for correct hydrology annually, it was also scored conservatively at a 5 for the WE score for similar reason as LLS. A CS score of 7 (the typical target) was assigned considering that this wetland will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands. Risk is scored at a moderate 1.50 to incorporate risk elements associated with Hydrologic Vulnerability, Vegetative Vulnerability, and Invasive Species Vulnerability (See Table 12 below).

DB-IS-R59 will be a 27.83 acre forested wetland in the Doe Branch restoration area in

the South Pasture Mine. The wetland is already incorporated into the FDEP WRP 252607909 mitigation plan and is modeled to be connected to an ACOE herbaceous wetland. This system was scored as a 7 for LLS due to the fact that the surrounding restoration complex will be incorporated into a Declaration of Restrictions (as indicated in CMP Figure 2), limiting the amount of non-regulated activities that can occur adjacent to the wetland. The WE was assigned a score of 6 to account for the fact that the wetland will be modeled post-mining and prior to planting and monitored for correct hydroperiod annually, without any potential adjacent non-regulated influences, and a CS of 7 was assigned given that it will be constructed as described in the Mitigation Work Plan using Muck/Topsoil, planted with desirable tree and understory species, and held to the same 5% nuisance exotic standard as onsite establishment wetlands. Risk is scored at a moderate 1.50 to incorporate risk elements associated with Hydrologic Vulnerability, Vegetative Vulnerability, and Invasive Species Vulnerability (See Table 12 below).

Wetland Time Lag

Time lag was considered as part of all mitigation types and was used in the final calculation of Functional Gain for all Assessment Areas (AAs).

The FAEIS Table 5-1 temporal loss worksheet does not directly apply to the SPE Mine impacts because the USACE worksheet assumes all impacts occur during the same year, whereas mitigation is completed (i.e., defined as totally successful) over a number of years. The SPE temporal loss calculations were modeled after the South Fort Meade- Hardee Extension Mine calculations, as directed by the USACE Jacksonville District. In the case of the SPE Mine, the impacts would occur in discrete mining blocks over approximately 15 years, as compared to one year.

In order to account for the temporal impacts, Mosaic's functional analysis treats the SPE Mine as one ecosystem whose existing aquatic resource functional values are assumed to continue to be provided until the year when mining disturbance would occur. At that time, if the wetland polygon is proposed to be directly or indirectly affected, the functional values are eliminated. Table 5 and Table 7 detail the temporal lag factors used in the functional loss analysis. Supporting tables are provided in Appendix I.

The same approach is used to account for the time lag associated with compensatory mitigation in the years following T0. As shown in Table 6, credit isn't achieved until the mitigation is constructed and met the target functional value. Tables 8H and 8F present temporal lag factors for each forested and herbaceous mitigation wetland. The mitigation lag factors are based upon Mosaic's 30-plus years of experience in constructing over 21,000 acres of wetlands following extraction of phosphate ore.

In forested wetlands, full mitigation is credited upon the fifteenth year after the completion of planting. At that time, the adjacent uplands would be eligible for release

from Florida reclamation liability, such that the adjacent buffer would be provided. Similarly, within three years of the completion of physical work, the hydrology would be re-established and water quality standards would be met. Thus, full credit for these parameters begins then. Beginning in year built plus five, partial credit for wildlife utilization and overstory and groundcover vegetation would be granted. Groundcover is projected to be fully functioning in 10 years and canopy cover is projected to be fully functioning in 15 years. Wildlife utilization likewise follows the 15-year schedule. While groundcover would be established during the year built, the planting of shade tolerant target species beginning in year seven as the canopy begins to close is why 10 years are allowed; prior to canopy closure, the groundcover is not expected to be comprised of the shade tolerant species present in forested wetlands. For these reasons, the temporal lag factors assume the target functional capacity of the mitigation wetlands is reached 15 years following construction. These temporal lag factors are based upon the average UMAM functional values Mosaic is proposing to achieve, which are identified in Table 8F.

Herbaceous wetlands reach target functional capacities in much less time. As shown on Table 8H, Mosaic is allowing three years in the functional analysis.

Mosaic worked with the USACE Jacksonville District to develop temporal lag calculation approach to reflect the values shown on Tables 5 and 6. Tables 7 and 8 present the results of applying USACE guidance for re-establishment of forested and herbaceous wetlands, respectively.

Mitigation in the form of enhancement, along with the habitat types to be enhanced and the nature of the mining and reclamation process, was given the assignment of a three year time lag by the USACE Jacksonville District. Use of this t-factor is supported by Section 5 of the Final Areawide Environmental Impact Statement (FAEIS), which notes that phosphate mining occurs as a “rolling process” in which reclamation in some areas are reclaimed before other areas are impacted. Further, 62-345.600(1)(a) states that “there is no time lag if the mitigation fully offsets the anticipated impacts prior to or at the time of impact”. As noted in Attachment A, Mitigation Work Plan, the enhancement activities will be completed prior to mining, and the vegetative and hydrologic enhancements proposed are anticipated to improve the conditions in the enhanced wetlands within a very short time frame.

In summary, the temporal lag factors applied in the SPE Mine functional analysis apply the same approach, formulas and discount factors as the USACE Jacksonville District mitigation worksheets.

Determination of Wetland Mitigation Risk

Below is an overview of risk as outlined in 62-345.600(2) F.A.C., which was adopted by the USACE when they recommended that UMAM be used for federal wetland regulatory purposes starting August 1, 2005. This overview is then followed by a specific discussion of how each mitigation category was scored, and finally how each major habitat within the establishment mitigation category was scored.

Mitigation risk accounts for the degree of uncertainty that the proposed conditions will be achieved, resulting in a reduction in the ecological value of the mitigation assessment area. In general, mitigation projects which require longer periods of time to replace lost functions or to recover from potential perturbations will be considered to have higher risk than those which require shorter periods of time. Each assessment area is scored on a scale from 1 (for no or *de minimis* risk) to 3 (high risk), on quarter- point (0.25) increments. A score of one is typically applied to mitigation conducted in an ecologically viable landscape and deemed successful or clearly trending towards success prior to impacts, whereas a score of three would indicate an extremely low likelihood of success based on the ecological factors below (62-345.600(2) F.A.C.). This language supports the scoring of onsite preservation as a risk of one because this mitigation type already exists in an ecologically-viable landscape and the mitigation will already exist prior to impacts. This language also supports a risk factor of 1.25 for enhancement, as it was a previously existing wetland footprint, has a strong likelihood of success, will be conducted prior to mining, while acknowledging a risk for invasive species vulnerability (described below) during establishment.

A single risk score must be determined and assigned to each UMAM Assessment Area, considering the applicability and relative significance of the factors provided in 62-345.600(2)(a-f), based upon consideration of the likelihood and the potential severity of reduction in ecological value due to these factors. The risk score has a significant effect on the overall Functional Gain (FG) attained by the proposed mitigation. For instance, a risk score of 1.5 effectively eliminates one-third of the FG from the proposed mitigation and a risk score of 2.0 eliminates half, regardless of any other factor such as temporal lag.

The six specific factors to be considered in risk scoring outlined in 62-345.600(2)(a-f), are listed below, along with specific information regarding how the proposed project relates to each. Details on how the proposed conditions will be achieved and maintained are found throughout the application materials. This information includes, but is not limited to the presentation of a detailed integrated groundwater/surface water model, commitment to the use of native topsoil or muck when available, the use of sand tailings as the substrate for all wetland reclamation, as well as preservation and/or creation of upland vegetative buffers that exceed the any state or federal width requirements. Furthermore, every area included as federal mitigation is proposed for permanent protection that includes perpetual management

and a commitment to maintain baseline conditions.

Hydrologic Vulnerability - 62-345.600(2)(a)

This factor requires consideration of the "vulnerability of the mitigation to and the extent of the effect of different hydrologic conditions than those proposed". Specifically, the degree of dependence on mechanical or artificial means (i.e. pumps or adjustable weirs) to achieve proposed hydrologic conditions, effects of water withdrawals, diversion or drainage features, reliability of the hydrologic data, modeling, and design, and the hydrologic complexity of the proposed community must be considered. Systems with relatively simple and predictable hydrology would entail less risk than complex hydrological systems.

The CMP includes no dependence on artificial means to achieve hydrology and no post-reclamation water withdrawals are proposed as part of the post- reclamation landscape. The artificial drainage features (ditches) that currently exist in the landscape will be eliminated through mining and reclamation and no ditches are proposed to be reclaimed. Further, the permanent protection provided will prohibit ditching within the mitigation wetlands in perpetuity.

Finally, the design of the Wetland Work Plan includes extensive modeling of pre and post-mining hydrology and topography to ensure that the reclaimed systems will function as designed and that drainage basins will function similar to pre-mining basins to maintain or improve pre-mining watershed flow regimes. As detailed in the report "Integrated Simulations for the South Pasture Extension Mine for Pre- Mining and Post-Reclamation Conditions" (AMEC-BCI 2011), which is part of the USACE Application Record, post-reclamation surface water and groundwater hydrology were evaluated in detail using the MIKE SHE/MIKE-11 integrated groundwater surface water modeling platform. Results of the integrated modeling indicate that the proposed mitigation takes into account watershed needs and will result in ecologically self-sustaining mitigation.

The post-mining hydrologic modeling reports (attached as Attachment A – Part 1, AMEC_BCI Integrated Model Report) will be utilized to ensure that tailings are placed and graded to the correct depth and extent to ensure that the hydrologic regimes for reclaimed wetlands are successful in supporting and sustaining the target wetland types. All wetlands will be monitored for hydrologic performance and vegetative composition after they are constructed.

Based on the information provided above, hydrologic vulnerability was considered low risk for all mitigation types, however Mosaic agreed to consider hydrologic vulnerability within "stand-alone" wet prairies and seepage wetlands as moderate because of the low tolerance for variability/error within these systems.

Vegetative Vulnerability - 62-345.600(2)(b)

This factor requires consideration of "the vulnerability of the mitigation to the establishment and long-term viability of plant communities other than that proposed, and the potential reduction in ecological value which might result, considering the compatibility of the site soils and hydrologic conditions with the proposed plant community, planting plans, and track record for community or plant establishment method." This factor is essentially the risk that the proposed wetland will transition to an upland, or a type of wetland community that was not proposed because of improper hydrology or soils. It is separate and distinct from vulnerability to colonization by invasive or exotic species, which is considered in the next section.

As noted in the hydrologic vulnerability section above, extensive modeling has been conducted in preparing the CMP and designing post reclamation habitats and further modeling will be conducted to ensure proper hydrology for the species proposed. In addition, Mosaic has committed to employing the best available technology to provide viable growing medium. Specifically, the CMP states that forested and herbaceous wetlands will be created on sand tailings and then graded and capped with suitable wetland topsoil/muck, if available, or other suitable organic matter with specific depths and structure to be determined by habitat type. To create microhabitat and habitat heterogeneity within the wetlands, the created systems will be graded to provide a range of habitat types and distinct zonation, from seasonal to permanent inundation. Direct transfer of small shrubs and trees from the future mining areas will be utilized to the extent practicable. Any planted vegetation will be consistent with the species diversity and density of the targeted wetland community type. Species will be selected on design elevations of constructed wetlands and comparisons with similar wetlands proposed for impact.

The specific details for wetland reclamation are presented in Section 2 of the Mitigation Work Plan (Attachment A of the CMP), including construction methods for forested wetlands (Section 2.1, page 5) and herbaceous wetlands (Section 2.2, page 7). A detailed list of vegetation to be utilized in the reclamation by habitat type and planting depth is presented in Table RP-2 (page 8 and 9) of the Wetland Work Plan.

Mosaic has a history of creating viable plant communities using similar planting plans and techniques as those proposed in the CMP. Permit conditions will include requirements for percent cover and species composition, where appropriate, and will also limit intervention by Mosaic for two years prior to release from monitoring thereby increasing the likelihood that the mitigation, as described in the CMP, will be self-sustaining.

Based on the information provided above, vegetative vulnerability was considered low risk for most herbaceous wetlands, but moderate for wet prairies because of the low tolerance for hydrologic variability/error and moderate for all forested systems based on the time

necessary to reach maturity.

Invasive Species Vulnerability - 62-345.600(2)(c)

This factor requires consideration of “the vulnerability of the mitigation to colonization by invasive exotic or other invasive species, considering the location of recruitment sources, the suitability of the site for establishment of these species, [and] the degree to which the functions provided by plant community would be affected.”

As discussed in the section above, all established wetlands will be reclaimed to maximize direct transfer of muck from mined wetlands for use in creating an appropriate growing medium to the extent practicable. The CMP dictates that any stockpiled muck must be stockpiled in a manner to minimize both oxidation and colonization by nuisance species. In the event that insufficient wetland muck or topsoil is available, Mosaic will coordinate the use of other appropriate materials with USACE. Only wetland topsoil that is reasonably free of any nuisance or exotic vegetation will be used in reclamation.

As a maintenance practice, equipment that has been, or potentially been, operated in nuisance/exotic infested areas will be cleaned prior to being brought on-site to control the accidental introduction of undesirable seeds.

Subsequent to establishment, mitigation maintenance will include at least semi- annual inspections of wetlands for the presence of nuisance and exotic species and other protective measures (i.e. fencing) identified as needed during establishment of wetlands. Nuisance and exotic vegetation identified during the inspections will be controlled by appropriate methods, such as herbicide application, fire, hydrologic, or mechanical means in to limit their cover to less than 5 percent and to remove exotic species when present in each mitigation area. Manual or chemical treatment of nuisance and exotic species will be implemented at least annually when cover of undesirable vegetation in any mitigation area increases to more than five percent cover or if invasive exotic species are present. Manual or chemical treatment will also be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds 5 percent on reclaimed sites or five percent within 300 feet of any mitigation wetland or other surface water.

While the potential for existing or new nuisance/exotic species invasion exists in all habitat types, the techniques employed by the applicant and the enforceable conditions that will ultimately exist in the permit will drastically reduce the risk of such occurrences on the SPE. Permit conditions will include a requirements for semi-annual monitoring, limiting the percent cover of nuisance and exotic species prior to monitoring release, and also limiting intervention by Mosaic (i.e. supplemental planting, herbicide, etc.) for two years prior to release from monitoring.

Based on the information provided above, invasive species vulnerability was considered

moderate risk for all mitigation types.

Water Quality Degradation Vulnerability - 62-345.600(2)(d)

This factor requires the consideration of “the vulnerability of the mitigation to degraded water quality, considering factors such as current and future adjacent land use, and construction, operation, and maintenance of surface water treatment systems, to the extent that ecological value is affected by these changes.”

The SPE CMP has been designed to maintain and improve the quality and quantity of aquatic resources within the Peace River Watershed. Mining and reclamation will eliminate agricultural ditching, which will reduce flashy contributions of agricultural stormwater that is currently common within the landscape. Furthermore, there is a significant increase in width of (native) vegetated buffer in the post-reclamation landscape relative to many wetlands proposed for impact, which should improve the onsite and downstream water quality. In fact, the proposed buffer of wetlands and streams in the SPE CMP is over three times wider than that recommended by the National Resource Conservation Service for protection of stream water quality (FAEIS pg. 5-33).

Section 4.4.6 of the FAEIS stated that no significant water quality impacts would be expected as part of the SPE and the ERP constitutes water quality certification for the project. The post reclamation landscape will include a vast area of wetlands and upland buffers under permanent protection that will drastically reduce the likelihood of future water quality degradation.

Based on the information provided above, water quality degradation vulnerability was considered low risk for all mitigation types.

Secondary Impact Vulnerability - 62-345.600(2)(e)

This factor requires the consideration of “the vulnerability of the mitigation to secondary impacts due to its location, considering potential land use changes in surrounding area, existing protection provided to surrounding areas by easements, restrictive covenants, or federal, state, or local regulations, and the extent to which these factors influence the long term viability of functions provided by the mitigation site.”

The selection of each wetland for federal mitigation included an analysis of the vulnerability to secondary impacts. The wetlands proposed for mitigation are part of a vast network of consolidated reclaimed uplands and wetland habitat that complements the onsite preservation and provides an expanded wildlife corridor connecting onsite and offsite habitats. Wetlands that were considered to be most vulnerable to secondary impact because of their proximity to future development corridors – or a general isolated location – were excluded from the CMP as mitigation. The proposed permanent protection via a Conservation

Easement includes all CMP mitigation wetlands as well as an upland buffer that extends, in most cases, well beyond the limits of the wetland.

Based on the information provided above, secondary impact vulnerability was considered low risk for all mitigation types.

Direct Impact Vulnerability - 62-345.600(2)(f)

This factor requires the consideration of “the vulnerability of the mitigation to direct impacts, considering its location and existing and proposed protection provided to the mitigation site by easements, restrictive covenants, or federal, state, or local regulations, and the extent to which these measures influence the long term viability of the mitigation site.” Mosaic has agreed to protect all mitigation wetlands using a Conservation Easement. All direct dredging, filling, tree clearing, or other habitat alteration not associated with land management are prohibited. The USACE will have the right to enforce this restriction through granting of the CE.

Based on the information provided above, direct impact vulnerability was considered low risk for all mitigation types.

Table 12 below provides a risk consideration summary calculation for the types of mitigation provided in this plan. In this calculation, a consideration determined to be low risk is assigned a score of one, moderate risk is assigned a score of two and high risk is assigned a score of three. The subsequent risk calculation demonstrates that the overall risk scores assigned for each general habitat type are appropriate for the type of mitigation offered, given the methods employed and the commitments outlined in the CMP and application materials.

Table 12. Risk Consideration Summary

Risk Considerations per 62-345.600(2)(a-f), F.A.C.	Herbaceous		Forested	
	Typical	Wet Prairie 643	Typical	Off-Site
Hydrologic Vulnerability	1	1	1	1
Vegetative Vulnerability	1	2	2	2
Invasive Species Vulnerability	2	2	2	2
Water Quality Vulnerability	1	1	1	1
Secondary Impact Vulnerability	1	1	1	1
Direct Impact Vulnerability	1	1	1	1
Sum of Scores	7	8	8	8
Calculated (avg) Risk Score	1.17	1.33	1.33	1.33
Assigned Risk Score	1.25	1.5	1.5	1.5

Preservation Mitigation Calculations

Section 332.3(h) of the CMR dictates that preservation may be used to provide compensatory mitigation for activities authorized by DA permits when the five specific criteria listed below are met.

i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed

(ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available

(iii) Preservation is determined by the district engineer to be appropriate and practicable

(iv) The resources are under threat of destruction or adverse modifications

(v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust)

The importance of the resources and their contributions related to (i), (ii), (iii), and (v) are described in the above sections of the CMP and related to priorities of the CHNEP CCMP. Additionally, Mosaic's proposed preservation also meets item (iv) as described below.

Conservation easement protection would prevent aquatic resource degradation principally by precluding the conversions of adjacent uplands into agricultural or residential uses on the avoided and reclaimed lands subject to easement protection. Application of the UMAM to these potential land use changes would prevent the following losses in aquatic resource functions in the wetlands to be protected by easements:

The existing condition of the proposed preservation areas (i.e. upland buffers, riparian areas and the preserved wetlands) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities without the Conservation Easement proposed as part of this project. For example, without the project, no regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, row crops, etc.), 2) the surrounding uplands and non- jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise community structure, and 4) the composition and diversity of desirable species that may be compromised as the surrounding landscape is altered to create crops, pastureland or other similar use. Unregulated activities could have an indirect adverse effect on the avoided/preservation wetlands. In addition, no current restrictions exist on grazing or hunting activities and no land management is required without the mechanisms outlined as a part of this project.

While the unregulated activities described above would not totally eliminate the functions provided by the wetlands within the preservation area, they could significantly reduce the value of these functions. The UMAM analysis (Table 9) includes application of the "indirect adverse

modifications to the resource" concept, as well as the potential for the unregulated activities described above to adversely affect the onsite aquatic resources. The "without project" and "with project" scores were applied as directed by the ACOE Mining Team. These considerations are included in Part II of the UMAM data sheets and specifics on how these concepts were applied are described below.

Table 9 includes the "Current" scores of each Assessment Area designated as wetland preservation. Note the Community Structure and Water Environment scores in the "With Mitigation" condition are identical to those in the "Current" condition. This indicates that, although Mosaic has committed to significant actions adjacent to the preservation areas that will serve to promote natural ecological and hydrologic conditions, no UMAM "Lift" is attributed to these actions. Increases in the overall scores from the "Current" condition may be attributed to the co-located preserved uplands, and not to reclamation or a direct enhancement of the Preservation wetlands. The uplands provide buffers to protected wetlands/streams as well as wildlife habitat/connectivity, consistent with the Compensatory Mitigation Rule (CMR). The CMR does recognize that mitigation credit is appropriate when uplands provide essential services to protected wetlands and must be awarded when upland buffers are required. Note that the "Current" scores do not factor into the UMAM calculation for preservation. After uplands were removed from the dataset, the determination of credit from preservation was done in accordance with Chapter 62-345.500(3)(a) which states the following:

> *When assessing preservation, the "with mitigation" assessment shall consider the potential of the assessment area to perform current functions in the long term, considering the protection mechanism proposed, and the "without preservation" assessment shall evaluate the assessment area's functions considering the extent and likelihood of what activities would occur if it were not preserved, the temporary or permanent effects of those activities, and the protection provided by existing easements, restrictive covenants, or state, federal, and local rules, ordinances and regulations.*
>
> *The gain in ecological value is determined by the mathematical difference between the Part II scores for the "with mitigation" and "without preservation" (the delta) multiplied by a preservation adjustment factor. The preservation adjustment factor shall be scored on a scale from 0 (no preservation value) to 1 (optimal preservation value), on one-tenth increments. The score shall be assigned based on the applicability and relative significance of the following considerations:*
>
> *1. The extent to which proposed management activities within the preserve area promote natural ecological conditions such as fire patterns or the exclusion of invasive exotic species.*
>
> *2. The ecological and hydrological relationship between wetlands, other surface waters, and uplands to be preserved.*
>
> *3. The scarcity of the habitat provided by the proposed preservation area and the degree to which listed species use the area.*

4. The proximity of the area to be preserved to areas of national, state, or regional ecological significance, such as national or state parks, Outstanding Florida Waters, and other regionally significant ecological resources or habitats, such as lands acquired or to be acquired through governmental or non-profit land acquisition programs for environmental conservation, and whether the areas to be preserved include corridors between these habitats.

5. The extent and likelihood of potential adverse impacts if the assessment area were not preserved.

Consistent with the USACE application of the UMAM rule, the SPE "without preservation" assessment considered an assessment area's functions, including the type, extent and likelihood of activities that would occur if the area were not preserved, the temporary or permanent effects of those activities, and the protection provided by existing easements, restrictive covenants, or applicable rules, ordinances and regulations.

"Without project" scoring is based on the idea that the existing condition of the avoided/preservation areas (i.e. upland buffers, riparian areas and the preserved wetlands) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities. For example, without the project, no federal regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, raw crops, etc.), 2) the surrounding uplands and non-jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise community structure, and 4) the composition and diversity of desirable species that may be compromised as the surrounding landscape is altered to create crops, pastureland or other similar use. Unregulated activities could have an indirect adverse effect on the avoided/preservation wetlands.

The PAF was uniformly assigned a value of 1.0 for all wetland preservation areas based on the five considerations outlined above.

The 2008 rule also allows for all aquatic resources to be considered as compensatory mitigation at the discretion of the District Engineer. Although Mosaic is not requesting credit for the extensive upland preservation and enhancement proposed as part of the SPE mine, credit is being requested for the 22.16-acres of proposed wetland preservation currently considered to be non-jurisdictional according to the October 18, 2012 SPE Jurisdictional Verification Letter. These wetlands are proposed to be placed under a Conservation Easement (CE) prior to mining and, upon execution of this CE, the USACE will have third party beneficiary rights, right of reasonable access, as well as a right to enforce the conditions within the CE. These wetlands provide appropriate compensation for impacts to Waters of the United States (WOUS) because many of the WOUS proposed for impact were historically isolated and are only considered to be jurisdictional because of upland-cut ditch connections. These preservation wetlands exist as some of the few remaining examples of the isolated wetlands on the site that have not been

significantly affected by agricultural ditching and land conversion. In addition, these wetlands may provide significant habitat for federally listed species, including the wood stork, because of habitat type and short hydroperiod. The U.S. Fish and Wildlife Service stated in their Biological Opinion that, “All wetlands (1,769.2 ac of jurisdictional and 242.3 ac of non-jurisdictional) on-site are considered suitable wood stork habitat…”.

Section 5.9 of the FAEIS states that “The preservation and integration of high-quality habitats into the Integrated Habitat Network (IHN) benefits regional wildlife populations and various listed plant and animal species. Habitats that are typically targeted for avoidance and preservation include riverine systems and associated floodplains, large herbaceous wetlands, mature upland forests, and xeric upland habitats.” The proposed Compensatory Mitigation Plan was designed to be consistent with the goals and objectives of the IHN and is consistent with the FAEIS, and the current post-reclamation plan allows for a more favorable configuration of habitats and a less fragmented landscape than currently exists.

The concepts and considerations provided above, and guidance provided by the ACOE Mining Team, result in the scores and lift provided in Table 9. Because the preservation proposed are specifically designed to protect the habitat and corridors that support the ecological functioning of the aquatic resources, credit is appropriate.

Stream Functional Analysis

Compensation for unavoidable impacts to streams is separately demonstrated by the type-for-type stream restoration as detailed in the Stream Work Plan (Attachment A, Part 2) and the Stream Functional Assessment summarized in Table 2 of the Compensatory Mitigation Plan. Similar to wetlands mitigation sufficiency demonstrated above, Mosaic has used a functional assessment approach to demonstrate the adequacy of its stream mitigation. A numerical spreadsheet model has been developed utilizing the FDEP Habitat Assessment procedure described in section 2.1 of the Stream Work Plan. Stream mitigation is calculated on a linear foot basis as compared to the acreage basis used for wetlands. Channel centerline length is used to calculate both impacts and mitigation so as to properly account for sinuosity. Stream acreage is not utilized when designing mitigation for stream impacts, nor for calculating the sufficiency of the mitigation, for the following reasons:

- Stream acreage does not account for stream channel length because valley length is the only measurement available to calculate acres, thereby failing to account for stream sinuosity;
- Stream width is often greater than morphologically appropriate due to historical impacts including cattle and vehicle trail crossings, historical erosion, and, in some cases, artificial channelization;
- The bankfull width of a stream sized properly is based upon, among other factors, the drainage area; therefore, stream width cannot be increased or decreased independent of other geomorphic variables; and
- Streams are linear surface water features with ecological values more dependent on longitudinal features than cross-section features (e.g., riffle- pool habitat).

- Mitigation to compensate for artificially wide existing channels could result in creation of stream channels that would not experience bankfull events, thereby increasing the likelihood of erosion over time into undesirable morphological characteristics;

The Stream Condition Index, or SCI, is one of the principal tools FDEP has developed to assess whether streams are healthy or impaired under the Clean Water Act total mass daily load program and Numeric Nutrient Criteria (FAEIS pages 3-113 through 3- 116). In addition to macroinvertebrate sampling, the SCI procedure includes applying the FDEP Habitat Assessment Procedure, which FDEP derived from EPA's Rapid Bio-assessment Protocols.

The FDEP Habitat Assessment Procedure evaluates four primary and four secondary habitat components. The primary habitat components are:

- Substrate Diversity - number of productive habitats present = 1 – 20;
- Substrate Availability - % of major productive habitats present = 1 – 20;
- Water Velocity – score on velocity between < 0.05 m/sec and > 1.0 m/sec = 1 – 20; and
- Habitat Smothering - % of habitat affected by sand, silt, or algae = 1 – 20.

The secondary habitat components are:

- Artificial Channelization – degree sinuosity reduced by dredging = 1 – 20;
- Bank Full Stability – location of bank full indicators on each bank = 1 – 20;
- Riparian Buffer Zone Width – width of native habitat along each bank = 1 – 20; and
- Riparian Zone Vegetation Quality - % of native habitat in riparian zone = 1 – 20.

The scores range from a minimum score possible of 12 and a maximum score possible of 160. FDEP classifies stream habitat as follows:

- Optimal = 121 – 160,
- Suboptimal = 81 – 120,
- Marginal = 41 – 80, and
- Poor = ≤ 40.

Mosaic has applied the FDEP Habitat Assessment Procedure as the metric to numerically account for functional losses and gains associated with stream habitat impacts and mitigation. Comparison of FDEP's procedure to others demonstrates the FDEP procedure properly applies EPA's Rapid Bio-assessment Protocol. In addition, the validity of SCI, along with the FDEP Habitat Assessment Procedure, was carefully reviewed during the recent numeric nutrient criteria rulemaking.

Stream functional losses are calculated by applying the following equation: Function

Loss (FL) = ESL x (HAS/160) x TL

Where: ESL: = Existing stream segment length;

HAS = Habitat Assessment score (maximum possible = 160); and TL =

Temporal lag factor

Stream lengths and Habitat Assessment scores for impact areas are provided on Table 4A. The temporal lag factor is applied to calculate actual functional loss to reflect stream function removal over a period of 16 years rather than penalizing for complete functional loss upon permit approval. The Temporal Lag Factor used for the functional loss calculations are shown on Table 5.

Stream functional gains are calculated by applying the following equation: Functional

Gain (FG) = [CSL x (HAS/160)] ÷ (R x TL)

Where: CSL = Created wetland stream length;

HAS = Documented or Predicted Habitat Assessment score; R = Risk

factor; and

TL = Temporal lag factor

The following explain the HAS, R, and TL factors applied:

Stream lengths and Habitat Assessment scores for stream mitigation areas are provided on Table 4B and 4C. Table 4B reflects that preservation areas would be provided prior to mining, therefore Risk and Temporal Lag are appropriately set at 1. The Preservation Streams were scored similarly to the Preservation wetlands concepts. "Without project" scoring in Table 4B is based on the premise that the existing condition of the avoided/preservation areas (i.e. upland buffers, riparian areas and the preserved streams) would not be protected from degradation from non-corps regulated activities and/or exempt agricultural activities. For example, without the project and associated CE, no regulatory obstacles prevent 1) the surrounding uplands and non-jurisdictional wetlands from being converted to a more intensive land use (i.e., pasture, row crops, etc.), 2) the surrounding uplands and non-jurisdictional wetlands from being ditched resulting in an altered hydroperiod and/or degradation of water quality causing habitat smothering, changes within water velocity within the streams, 3) the logging of forested wetlands and their surrounding native forested uplands that could compromise the riparian buffer, changes in bank stability, and 4) the composition and diversity of desirable species may be compromised as the surrounding landscape is altered to create crops, pastureland or other similar uses. Unregulated activities could have an indirect adverse effect on the avoided/preservation streams, causing a reduction in the stream habitat. Table 4C describes the expected quality (including time lag and risk) of the established streams (further described below).

Predicted Habitat Assessment Scores (HAS)

Mosaic has assigned either the actual documented HAS (for impact areas) or, for created systems, a reasonably expected functional stream habitat value of 105 out of a possible 160, which is within the range of the suboptimal category (suboptimal ranges between 86 and 128).

The selected stream reference systems that will be utilized to determine success standards also fall within the suboptimal range. This score is also based on streams already established elsewhere on Mosaic property. Habitat Assessments conducted at Bryant's Branch, LMR-8, and Maron Run, streams established following phosphate ore extraction at Mosaic's Fort Meade, Four Corners, and South Fort Meade Mines are shown below. The following data compares these results to the results projected for the streams to be established on the SPE Mine:

Phosphate Ore Extractions						
Parameter	**BB**	**LMR-8**	**MR**	**Average**	**SPE**	**% Achieved**
SD	16	13	5	10	10	100
SA	15	20	18	17	12	71
WV	12	14	14	13	11	85
HS	10	17	15	12	16	133
AC	10	18	10	10	16	160
RBS	10	9	10	10	6	60
LBS	10	9	10	10	6	60
RBW	10	10	10	10	10	100
LBW	10	10	10	10	10	100
RBQ	10	4	5	6	4	57
LBQ	10	4	5	6	4	57
Total Score	**123**	**128**	**112**	**121**	**105**	**90**

Note: Totals affected by averaging.

The increased functional values projected for habitat smothering and artificial channelization at SPE over Bryant's Branch and Maron Run are attributable to the use of geotextile fabric to control erosion and preconstruction modeling of stream reaches to be re-established. These design techniques have been proven at other Mosaic stream creation sites, but were not employed at Bryant's Branch or Maron Run.

For these reasons, Mosaic has assigned an average lift in functional stream habitat of 105 out of a possible 160, which is within the range of the suboptimal category (suboptimal ranges between 81 and 120). The basis for this scoring is as follows:

Onsite Stream Re-Establishment Scores	
Habitat Assessment Parameter	**Score/Possible Score**
Substrate Diversity (SD)	10/20
Substrate Availability (SA)	12/20
Water Velocity (WV)	11/20
Habitat Smothering (HS)	16/20
Artificial Channelization (AC)	16/20
Right Bank Stability (RBS)	6/10
Left Bank Stability (LBS)	6/10
Right Riparian Buffer Width (RBW)	10/10
Left Riparian Buffer Width (LBW)	10/10
Right Riparian Buffer Quality (RBQ)	4/10
Left Riparian Buffer Quality (LBQ)	4/10
Total Score	**105/160**

These scores are based upon the projected stream condition three years following channel construction and, therefore, reflect immaturity of the stream system vegetative structure. Examples of increased function expected to occur as the vegetation matures with time include substrate diversity and availability that will increase, habitat smothering that will decrease, and bank stability and riparian buffer vegetation quality that will increase.

Stream Mitigation Risk Factors (R)

Two types of risks are associated with stream establishment: (1) risk of failing to reach the target habitat assessment score; and (2) the risk of degradation over time after the target habitat assessment score has been achieved. A risk factor of 1.11 was used in the calculations to account for risks associated with proposed secondary uses within those areas, Mosaic's mitigation and long term management plans minimize both of these risks by employing the measures described in the following subsections.

The stream channel design described in Section 2 of the Stream Work Plan eliminates the risk of failure to reach the target habitat functional value. This sequence results in an iterative and adaptive process that requires Mosaic to continue to modify the design until success is achieved, should initial efforts fail to reach the target. Coupled with the stream design modeling tools available to properly size the stream channel geometry and plan form, the risk associated with this sequential approach is not whether success will be achieved, but rather whether additional time beyond three years will be required.

In addition, there are a number of proven stream restoration tools that are applicable to created streams not yet achieving success criteria. These include adding large woody debris to create instream habitat, pool, or added sinuosity; planting trees or installing additional or different geotextile fabric in streambanks; excavating additional pools; removal of excessive sedimentation; and supplemental planting in the riparian buffer (see Table 4-8-A-xi). As a result, should a given stream segment fail to reach the design target, it is unlikely that the design team would need to "start over" to correct any deficiencies.

The risk is further reduced because all of the stream mitigation would take place in a controlled watershed that is isolated by the ditch and berm severance from the receiving stream. Mosaic can, therefore, control the flow rate in the stream by pumping mine recirculation system water through the created channel in pulses or continuously to test stream channel performance in terms of bank full events, erosion or accretion, stream flow velocities, etc. Construction of stream channels in the isolated environment Mosaic creates with the ditch and berm system essentially results in an in place "test cell" that is in stark contrast to attempts to restore existing degraded streams in situ in terms of risks of failure and consequences to the downstream, offsite aquatic environment

The comparison between Mosaic's historic performance at Bryant's Branch, LMR-8, and Maron Run and the projections for the SPE Mine correspond to a risk factor of 0.90 (or 1.11). This means there is only a 10 percent probability that Mosaic's future performance would fail to achieve results similar to its track record.

Degradation risk relates to the reduction of the functional value in the future following achievement of the success criteria and release of the financial responsibility instrument. On the SPE, this would be minimized by a 60-foot wide buffer on each side of the created streams. Table 11 details the buffers, which include uplands as well as wetlands. The restrictive provisions of the conservation easement presented in Attachment C would apply to the created stream channels because of their location within SPE Post Reclamation Protection Level 1 shown on LTMP Figure 3 (Attachment D).

Stream Temporal Lag Factor

Similar to the wetland mitigation temporal lag factors described above, Time Lag factors in Tables 5 and 6H were utilized in the calculation to convert the functional stream habitat lift generated by the created streams to facilitate evaluating whether mitigation more than offsets the functional loss created by mining. Table 4C assumes no functional habitat value is credited until the created stream is approved to be connected to the undisturbed downstream network, meaning that the hydrology and water quality performance standards have been met and the mitigation sequence has advanced to final pre-release monitoring. Under this assumption, zero value is applied until the reconnection dates listed on Table 4C are reached. Once

reconnected, the projected habitat values are applied.

The Stream Work Plan includes thorough descriptions of the proposed stream impacts. The plan summarizes the impact and creation of mitigation of streams in the form of linear feet (Attachment A, Part 2, Table SRO-2), and the quality of the streams proposed for impact (2010 Habitat Assessment Scores and CMP Table 4A, 4B, and 4C). The quality, amount and type of the streams proposed for creation are provided in Table SRO-5B and the Reference Stream Sampling Plan (CMP Attachment F) and in CMP Table 4A, 4B, and 4C. As indicated in the Stream Work Plan, more linear feet of natural, intact stream channel will exist on site post-reclamation than presently exists. Ditched, agriculturally impacted streams on site will either be restored or enhanced in accordance with the Stream Work Plan (which is Part 2 of the Mitigation Work Plan). Also a minimum 120ft. buffer will remain protected in perpetuity as indicated on Table 11 and LTMP Figure 2.

The ACOE Stream Mitigation will offset 13,361.14 units of loss with 13,440.6 units of lift associated with preservation and creation, for a surplus of 79.48 units that will be unavailable for compensation for any other future impacts. Table 2 demonstrates the sufficiency of the Stream mitigation using the functional assessment approach described above.

Mitigation Work Plan - Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; soil management; and erosion control measures. For stream mitigation projects, the mitigation work plan may also include other relevant information, such as planform geometry, channel form (e.g., typical channel cross-sections), watershed size, design discharge, and riparian area plantings. 33 CFR §332.4(c)(7)

The implementation of the SPE Compensatory Mitigation Plan will be carried out according to the SPE Mitigation Work Plan (Attachment A) consisting of two parts including the Wetland Work Plan and the Stream Work Plan. These individual plans are summarized below. The reclamation activities will commence upon completion of mining activities in a particular mine block.

Wetland Work Plan (Attachment A, Part 1)

The Wetland Work Plan provides specific details regarding the construction methodology to be employed for the restoration of upland and wetlands habitats on the SPE and off-site SP forested wetlands. Please note, the SPE Reclamation Plan as originally submitted to the USACE (which included FDEP reclamation references) in September 2013, for completeness purposes, remains a part of the DA Application Record.

Specific reclamation details outlined in the Wetland Work Plan Sections 1- 3 include construction methods, use of native soils, site topography, vegetation, hydrology, and exotic vegetation control. As noted in this plan, forested and herbaceous wetlands will be created on sand tailings and then graded and capped with suitable wetland topsoil/muck, if available, or other suitable organic matter with specific depths and structure to be determined by habitat type. To create microhabitat and habitat heterogeneity within the wetlands, the created systems will be graded to provide a range of habitat types and distinct zonations, from seasonal

to permanent inundation. In addition, habitat enhancements including snags to encourage wildlife usage, and stumps, logs, and shrubs to provide hummocks will be installed in the created wetlands where appropriate.

Likewise, direct transfer of small shrubs and trees from the future mining areas will be utilized to the extent practicable. Vegetation to be planted will be consistent with the species diversity and density of the targeted wetland community type. Species will be selected on design elevations of constructed wetlands and comparisons with similar wetlands proposed for impact. The specific details for wetland reclamation are presented in Section 2 (page 4) of Wetland Work Plan, including construction methods for forested wetlands (Section 2.1, page 4) and herbaceous wetlands (Section 2.2, page 6). A detailed list of vegetation to be utilized in the reclamation by habitat type and planting depth is presented in Table RP-2 (page 8).

The Wetland Work Plan also includes the methodology to be utilized for the enhancement of onsite wetlands. On the SPE, wetland enhancement will be accomplished through the re-establishment of historic hydroperiods and elimination of deleterious, uncontrolled agricultural practices. Enhancement will both increase the habitat value of the existing historical wetland area and result in the return of wetland transitional plant species to the wetland fringes, which are often dominated by non-natives (for example, bahia if pasture surrounds the wetland). Specific methods to be employed include eliminating silviculture and ditching, and the installation of ditch blocks. The wetland enhancement details are provided in Section 3 of the Mitigation Work Plan (Attachment A, Part 3).

Stream Work Plan (Attachment A, Part 2)

The Stream Work Plan provides specific details regarding the construction methodology to be employed for the restoration of functioning streams on the SPE and the restoration of the Brushy Creek stream crossing. It was developed with the goals of avoiding, minimizing, and compensating for the mining impacts to lotic systems, preserving the highest quality systems, and replacing and improving the functions of streams proposed for impact. 10.5 miles of stream will be preserved prior to mining. Restoration of streams will include the enhancement and restoration of 9.1 miles of open waters, consisting of restoring ditched streams to natural channels, restoring natural channels from areas that have been mined, and enhancing a previously bypassed channel system associated with Lettis Creek. Of this restoration, 3.5 miles will be created as ACOE mitigation and placed under Conservation Easement (including a 120ft. buffer) after completion.

The restoration plan incorporates in-stream channel design and improvements, as well as a comprehensive overview of all lotic site conditions, which include headwater wetlands and in-line wetlands and the surrounding habitat zones of flanking wetlands and terrestrial communities within and along the riparian valley. To accomplish these goals, forested corridors and native upland riparian zones will typically replace those that were historically cleared for agriculture on the SPE. The reclaimed valleys will form an unditched drainage network with a flow regime that is not artificially flashy like the existing ditched systems. The Stream Work Plan pays significant attention to landscape scale associations important to overall stream function by matching drainage area to valley geomorphology, width of the meander belt, and functional process zone (FPZ) types and sequences. The design covers a full hierarchy of scales, restoring a series of habitat patches and zones progressing from in-stream meso-habitats, such as individual logs and pools a few feet long, to the geomorphic and hydraulic linkages of entire lentic, paralotic, and lotic waterbodies and their associated ecotones encompassing many acres. These

landscape linkages are based largely on the historic conditions of the property, prior to land clearing and ditching, which will provide a better overall lotic system versus that existing immediately prior to mining. The successful implementation of the Stream Work Plan will result in the restoration of historic native, pre-agricultural conditions, wherever practical.

Maintenance Plan - A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed. 33 CFR §332.4(c)(8)

Mosaic will implement a vegetation maintenance program to promote the survivorship and growth of desirable species in all mitigation areas once construction is completed. The maintenance program is designed to meet USACE mitigation requirements and the goals of the CMP. The mitigation maintenance will include at least semi-annual inspections of wetlands and other surface waters for the presence of nuisance and exotic species and other protective measures (i.e. fencing) identified as needed during establishment of wetlands. Nuisance and exotic vegetation identified during the inspections will be controlled by appropriate methods, such as herbicide application, fire, hydrologic, or mechanical means in to limit their cover to less than five (5) percent and to remove exotic species when present in each mitigation area. Manual or chemical treatment of nuisance and exotic species will be implemented at least annually when cover of undesirable vegetation in any mitigation area increases to more than five (5) percent cover or if invasive exotic species are present. Manual or chemical treatment will also be implemented if cogon grass (*Imperata cylindrica*) coverage exceeds five (5) percent within 300 feet of any mitigation wetland or other surface water.

Funding of proposed maintenance activities for wetlands that have yet to be released and transitioned into long term management is included in the financial assurances mitigation cost estimate discussed below.

Performance Standards - Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives. 33 CFR §332.4(c)(9)

To meet the objectives of the approved final CMP, the Permittee shall achieve the following performance standards:

Wetland Performance Standards

Preserved Wetlands:

a. The Permittee shall maintain the baseline hydrology of the preserved wetlands, as documented by the Ecological Baseline Report described in Section 3 of the Long Term Management Plan (Attachment D of the CMP), in perpetuity.

b. The Permittee shall maintain the Community Structure UMAM scores of the preserved wetlands, as detailed in Table 9 of the CMP, in perpetuity. For those wetlands with a Community Structure of 6 or greater, the Permittee shall specifically maintain less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon* spp.),

Bahiagrass (*Paspalum notatum*), and cattail (*Typha* spp.), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass.

Preserved Upland Buffers:

a. Within each preserved upland buffer area, there shall be less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon spp*.), Bahiagrass (*Paspalum notatum*), and cattail (*Typha spp*.), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass.

b. The Permittee shall maintain the preserved upland buffers as native habitat consistent with the unimproved pasture (212), woodland pasture (213), rangeland (300 series) or upland forest (400 series) vegetation covers in FLUCCS, as shown in Figure 2 of the CMP. There will be no conversion from existing 300 or 400 series land uses to 200 series land uses, or from existing 212 or 213 series land uses to more intensive land uses such as improved pasture (211) within the preserved upland buffers. The Permittee shall cease any management activities associated with more intensive land uses such as improved pasture, including but not limited to planting non-native forage species and application of fertilizer. Any supplemental plantings in the upland buffers shall be native species consistent with rangeland (300 series) or upland forest (400 series) vegetation covers in FLUCCS. Other uses not specifically authorized in the LTMP (CMP Attachment D), such as agricultural activities including silviculture or other significant tree removal (as determined by the USACE), replacement of any native habitat with non-native habitat, and placing of additional internal fencing, roadways or firebreaks (unless related to habitat management in support of the primary purpose of providing compensatory mitigation), will also be prohibited in the preserved uplands.

The Permittee shall maintain and monitor the wetland and upland buffer preservation areas in accordance with the Long-Term Management Plan (Attachment D of the CMP).

Enhanced Wetlands:

a. Each mitigation area shall meet the criteria for Corps-jurisdictional wetlands in accordance with the *1987 Wetland Delineation Manual* and the *Atlantic and Gulf Coastal Plain Regional Supplement, Version 2.0*, November 2010.

b. Each mitigation area shall have at least 80 percent cover by wetland species (i.e., FAC or wetter) appropriate for each wetland type (by FLUCCS code) as shown in Table 10 of the CMP.

c. Within each mitigation area, there shall be less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermudagrass (*Cynodon spp.*), Bahiagrass (*Paspalum notatum*),

and cattail (*Typha spp.*), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass.

d. Within each mitigation area, hydrologic enhancement shall result in soils that are, at a minimum, saturated to the surface between 5 and 12.5 percent of the growing season.

The Permittee shall achieve the above performance standards within each enhanced wetland mitigation area by the end of a three-year monitoring period (starting no more than six months after the date of permit issuance), with no maintenance during the third year of monitoring. In the event that the above performance standards have not been achieved within a mitigation area in that timeframe, the Permittee shall undertake a remediation program approved by the Corps in accordance with the adaptive management section of the CMP and the **Mitigation Adaptive Management/Alternatives** Special Condition of the DA permit.

Established/Reestablished Wetlands – Herbaceous

a. Each mitigation area shall meet the criteria for Corps-jurisdictional wetlands in accordance with the *1987 Wetland Delineation Manual* and the *Atlantic and Gulf Coastal Plain Regional Supplement, Version 2.0*, November 2010. In addition, each mitigation area shall meet the criteria for waters of the United States in accordance with the most current federal regulations and guidance on determining the extent of waters of the United States.

b. Each mitigation area shall have at least 80 percent cover by wetland species (i.e., FAC or wetter) appropriate for each wetland type (by FLUCCS code) as shown in Table 8 of the CMP. Each mitigation area shall be planted with sufficient herbaceous species to establish the densities and species richness and dominance characteristics appropriate for each community type. No single species shall constitute more than 30% of the relative cover unless other scientific literature supports a species composition at greater than 30%.

c. Within each mitigation area, there shall be less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermuda grass (*Cynodon spp*.), Bahia grass (*Paspalum notatum*), and cattail (*Typha spp.*), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass.

d. Within each mitigation area, hydrology establishment shall result in soils that are, at a minimum, saturated to the surface between 5 and 12.5 percent of the growing season.

The Permittee shall achieve the above performance standards within each established/reestablished herbaceous mitigation area by the end of a five-year monitoring period (starting from the time of completion of mining operations at the location of each mitigation area, including backfilling with sand tailings), with no maintenance during the fifth year of monitoring. In the event that the above performance standards have not been achieved in that timeframe, the Permittee shall undertake a remediation program approved by the Corps in accordance with the adaptive management section of the CMP and the **Mitigation Adaptive Management/Alternatives** Special Condition of the DA permit.

Established/Reestablished Wetlands – Forested

a. Each mitigation area shall meet the criteria for Corps-jurisdictional wetlands in accordance with the *1987 Wetland Delineation Manual* and the *Atlantic and Gulf Coastal Plain Regional Supplement, Version 2.0*, November 2010. In addition, each mitigation area shall meet the criteria for waters of the United States in accordance with the most current federal regulations and guidance on determining the extent of waters of the United States.

b. Within each mitigation area, there shall be less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermuda grass (*Cynodon spp.*), Bahia grass (*Paspalum notatum*), and cattail (*Typha spp.*), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass.

c. Within each mitigation area, hydrology establishment shall result in soils that are, at a minimum, saturated to the surface between 5 and 12.5 percent of the growing season.

d. Bay swamp wetlands (FLUCCS 611) shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of bay trees (*Magnolia virginiana or Gordonia lasianthus*) in the canopy layer; and at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 611 community type as listed in Table RP-2 of the Wetland Work Plan.

e. Gum swamp wetlands (FLUCCS 613), shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of swamp tupelo (*Nyssa sylvatica var. biflora*) in the canopy layer; and at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 613 community type as listed in Table RP-2 of the Wetland Work Plan.

f. Inland pond and slough wetlands (FLUCCS 616) shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of popash (*Fraxinus caroliniana*) in the canopy layer; and at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 616 community type as listed in Table RP-2 of the Wetland Work Plan.

g. Mixed wetland hardwood wetlands (FLUCCS 617) shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size; at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 617 community type as listed in Table RP-2 of the Wetland

Work Plan; and shall not have a dominance (>50% by number) of any one tree species in the canopy layer.

h. Hydric pine flatwood wetlands (FLUCCS 625) shall have an average of at least 150 live trees per acre that are at least 12 feet tall, with no less than 50 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of slash pine (*Pinus elliottii*) in the canopy layer; at least 300 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 625 community type as listed in Table RP-2 of the Wetland Work Plan; and a dominance in the groundcover by native species typical of hydric pine flatwoods with a least ten (10) percent cover by wiregrass (*Aristida stricta var beyrichiana*).

i. Hydric pine savanna wetlands (FLUCCS 626) shall have an average of at least 50 live trees per acre that are at least 12 feet tall, with no less than 50 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of slash pine (*Pinus elliottii*) in the canopy layer; at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 626 community type as listed in Table RP-2 of the Wetland Work Plan; and a dominance in the groundcover by native species typical of hydric pine savannas with a least ten (10) percent cover by wiregrass (*Aristida stricta var beyrichiana*).

j. Slash pine swamp forest wetlands (FLUCCS 627) shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size; a dominance (>50% by number) of slash pine (*Pinus elliottii*) in the canopy layer; at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 627 community type as listed in Table RP-2 of the Wetland Work Plan; and a dominance in the groundcover by native species typical of slash pine swamp forests.

k. Wetland mixed hardwood-coniferous forest wetlands (FLUCCS 630) shall have an average of at least 400 live trees per acre that are at least 12 feet tall, with no less than 200 trees per acre in any area greater than one acre in size. Neither pines nor hardwoods shall account for more than 66% (by number) of the canopy, and no species shall account for more than 40% (by number) of the canopy. There will be at least 100 shrubs per acre consisting of at least five of the shrub species for the FLUCCS 630 community type as listed in Table RP-2 of the Wetland Work Plan, and a dominance in the groundcover by native species typical of wetland mixed hardwood-coniferous forests.

The Permittee shall achieve the above standards within each established/reestablished forested mitigation area for 3 consecutive years within the last 5 years of required monitoring with no maintenance during the final 2 years before a request for a determination of performance achievement can be made. This would assure standards were met and the mitigation is viable within the last 5 years of monitoring. The permittee shall implement the adaptive management plan as necessary to achieve mitigation success. In the event that the trees' growth or mortality would not lead to meet the above performance standards within a 15-year timeframe (starting from the time of completion of mining operations at the location of each mitigation area, including backfilling with sand tailings), the Permittee shall undertake a remediation program approved by the Corps in accordance with the adaptive management section of the CMP and the **Mitigation Adaptive**

Management/Alternatives Special Condition of the DA permit.

Stream Performance Standards

Stream Preservation

a. The Permittee shall maintain the stream segments' FDEP visual habitat assessment scores (HAS) shown in Table 4B of the CMP in perpetuity. Along with each segment's channel, the Permittee shall preserve a minimum buffer width of 60 feet on each side of the channel. The buffers shall be native wetland or upland [rangeland (FLUCCS 300 series) or upland forest (FLUCCS 400 series)] communities, and have less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (*Eupatorium capillifolium*), Bermuda grass (*Cynodon* spp.), Bahia grass (*Paspalum notatum*), and cattail (*Typha* spp.), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass. Any supplemental plantings in the buffers shall be native species consistent with the onsite wetland or upland habitats, based on FLUCCS classification codes.

The Permittee shall monitor the stream and riparian buffer preservation/enhancement areas in accordance with the Long-Term Management Plan (Attachment D of the CMP).

Stream Establishment

a. The Permittee shall create Rosgen Type "C5" and "E5" stream segments with the specific characteristics (drainage area, average bankfull cross-sectional area, average bankfull width, bankfull thalweg depth, hydraulic depth, width/depth ratio, pool depth, Rosgen class, sinuosity, stream length, bed slope, flood-prone width, and functional process zone type) described for each stream segment in Table SRO-5 of the Stream Work Plan. Each segment shall also have the stream design habitat amendments described in Table SRO-5C of the Stream Work Plan.

b. Each ephemeral or intermittent stream segment shall contain macroinvertebrate species richness and diversity within the range of or which exceeds the reference stream segments.

c. Each stream segment shall have a minimum FDEP visual habitat assessment score (HAS) of 105 with a minimum buffer width of 60 feet on each side and stable stream banks. The buffers shall be native wetland or upland [rangeland (FLUCCS 300 series) or upland forest (FLUCCS 400 series)] communities, and have less than five (5) percent cover of Category I and II invasive exotic plant species, pursuant to the most current list established by the Florida Exotic Pest Plant Council at http://www.fleppc.org, and the nuisance species, dogfennel (Eupatorium capillifolium), Bermuda grass (Cynodon spp.), Bahia grass (Paspalum notatum), and cattail (Typha spp.), and no more than ten (10) percent cover by non-native range grasses other than Bermuda grass and Bahia grass. Any supplemental plantings in the buffers shall be native species consistent with the onsite wetland or upland habitats, based on FLUCCS classification codes.

The Permittee shall achieve the above performance standards within each established stream segment by the end of a ten-year monitoring period (starting from the time of completion of mining operations at the location of each mitigation area, including backfilling with sand tailings), with at least five consecutive years of successfully meeting the performance standards. In the event that

the above performance standards have not been achieved in that timeframe, the Permittee shall undertake a remediation program approved by the Corps in accordance with the adaptive management section of the CMP and the **Mitigation Adaptive Management/Alternatives** Special Condition of the DA permit.

Monitoring Requirements - A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to the DE must be included. 33 CFR §332.4(c)(10)

Success of restoration efforts will be determined by implementing a comprehensive and extensive monitoring program that will be designed to gather sufficient data to demonstrate appropriate ecological conditions. Transects will be established in areas to be monitored, with periodic sampling points (the number of transects and sampling points will be based on area size) at which the following will be noted:

- Percent cover by desirable species by stratum
- Percent cover by exotic or nuisance specie
- Dominant species (planted or recruited at 5 percent cover or greater), with an estimate of cover of each
- Water depth relative to zonation
- Soil monitoring relative to muck depth, color, texture, litter accumulation and moisture
- The health and viability of the four trees nearest the point (forested areas only) by measuring DBH and height
- Tree density (forested areas only)

The mitigation wetland monitoring data will be summarized into a report that will include the above information as well as observed wildlife usage, an overall ecological evaluation, and any actions that may be required to improve the system. To the extent practicable, reports will be tabular in form for ease of review and year-to-year comparisons. Nuisance vegetation monitoring will consist of quarterly or semi-annual inspections of wetlands. Chemical or manual removal of the exotic species will occur semi-annually within all reclaimed wetlands until success has been obtained and the wetlands released. Table SRO-6 of the Stream Work Plan describes the parameters that the Permittee will monitor for the stream establishment mitigation.

The DA permit includes special conditions for the wetland and stream compensatory mitigation monitoring and reporting timeframes, and reporting format.

Long-term Management Plan - A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management. 33 CFR §332.4(c)(11)

As required by 33 CFR § 332.7(b), the compensatory mitigation has been designed, to the maximum extent practicable, to be self-sustaining once the performance standards have been achieved and the entire mine area released from further permit requirements. Therefore, little to no active long-term management is anticipated to be required beyond the operational life of the project.

The Long-Term Management Plan (Attachment D) provides specific protective measures and management strategies to be used for the monitoring and maintenance of the various SPE and off-site mitigation habitats to ensure that long-term sustainability of the mitigation areas once the performance standards contained in this CMP have been achieved. The Management Plan is intended to assure that the performance standards set forth in the CMP are sustained in perpetuity. Specific management techniques outlined in the Management Plan include prescribed fire, physical and chemical control of nuisance/exotic species, and controlled grazing (subject to a USACE-approved grazing management plan). Additional protection measures including fencing, signage, and maintenance of access gates are also provided in the plan. Mosaic has also provided a financial assurance mechanism for the long-term management of the required compensatory mitigation in attachment D, Appendix 4.

Adaptive Management Plan - A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures. 33 CFR §332.4(c)(12)

To ensure the mitigation meets the required performance standards, Mosaic acknowledges that an adaptive management approach will be an integral part of the CMP implementation.

As described in the Monitoring Requirements section of the CMP and as required by the DA permit, Mosaic will implement a comprehensive and extensive monitoring program designed to gather sufficient data to evaluate the progress of wetland and stream mitigation areas towards achievement of performance standards. Mosaic will also implement corresponding mitigation compliance reporting in accordance with the requirements of the DA permit.

If monitoring or compliance inspections identify performance deficiencies such as inappropriate hydrology or exotic/nuisance vegetation, or if the USACE otherwise determines that the mitigation is not progressing towards achievement of performance standards, Mosaic will promptly assess the mitigation to determine the cause(s) of the problem(s), and develop and implement a site-specific adaptive management/corrective action plan that addresses specific construction, maintenance, and/or enhancement measures to achieve the design objectives. Examples of corrective actions may include but would not be limited to adjusting wetland hydrology, supplemental plantings, or changing the exotic and nuisance species control frequency or methods. Mosaic shall submit any such adaptive management plan to the USACE for approval prior to implementation, and include a description of the implementation and results in the annual monitoring reporting.

As also required by the DA permit, Mosaic will monitor and provide annual reports on the construction compliance, including the acreage and location of mitigation areas implemented during the reporting period and cumulatively. If the site has areas that are determined to be different from the originally permitted mitigation area boundaries or community types, Mosaic shall request a permit modification to delineate the correct boundaries and/or community types and requisite functional assessment adjustments.

Financial Assurances - A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards. 33 CFR §332.4(c)(13)

Mosaic has provided a financial assurance mechanism sufficient to ensure satisfactory completion of the compensatory mitigation for the SPE project as required by the USACE permit. A copy of the final and accepted financial assurance documents, including the financial assurance instrument and the initial cost estimate as described below, are included in a separate submittal. A condition in the USACE permit shall require the proposed mitigation financial assurance to be in place and funded prior to commencing the permitted activity.

Summarized, Mosaic will provide a financial responsibility mechanism equal to 110 percent (%) of the estimated mitigation costs for wetlands and other surface waters projected to be impacted in the first three years of operation, including monitoring and maintenance. Further, the financial responsibility is required to be updated yearly to cover, on a rolling basis, the cost of mitigation activities proposed to be undertaken over the next three year period, with a 10% contingency factor for any adaptive management that might be required. The mechanism will be updated with revised costs until mitigation is released and transitioned into Long Term Management.

There will always be sufficient funds to cover the mitigation for completed impacts to waters of the United States. Financial assurances will be phased out as each mitigation area is deemed successful by the USACE, consistent with 33 CFR § 332.3(n)(4). These measures will ensure a high level of confidence that the mitigation will be successfully completed in accordance with the performance standards. 33 CFR § 332.4(13); § 332.3(n)

Table 4A
Stream Functional Loss Assessment

Stream ID	Year Severed*	HA	Stream Length (ft)	Units of Function Loss (HA/160 x length)	Time Lag	Adjusted Functional Loss
BC-MT-07	2025	77	306	147.26	0.63	93.00
BC-MT-08	2025	101	724	457.03	0.63	288.61
BC-MT-10	2025	119	393	292.29	0.63	184.58
BC-MT-12	2026	112	667	466.90	0.60	278.41
BC-MT-15	2023	99	534	330.41	0.71	233.01
BC-NC-01	2028	137	1425	1220.16	0.53	645.46
BC-NC-02	2028	111	1463	1014.96	0.53	536.91
BC-NC-07	2018	78	196	95.55	0.91	86.90
BC-NC-08	2018	78	144	70.20	0.91	63.85
BC-NC-09	2022	112	469	328.30	0.74	244.12
BC-NC-10	2022	112	149	104.30	0.74	77.56
BC-NC-11	2023	92	388	223.10	0.71	157.33
BC-NC-14	2026	67	232	97.15	0.60	57.93
BC-NC-15	2022	66	1060	437.25	0.74	325.14
BC-NE-01	2028	66	145	59.81	0.53	31.64
BC-NE-03a	2028	57	200	71.25	0.53	37.69
BC-NE-03b	2028	57	180	64.13	0.53	33.92
BC-NW-01	2027	137	678	580.54	0.56	326.32
BC-NW-02	2025	139	873	758.42	0.63	478.94
BC-NW-03a	2022	115	3302	2373.31	0.74	1764.80
BC-NW-06	2023	105	259	169.97	0.71	119.86
BC-NW-07b	2023	110	183	125.81	0.71	88.72
BC-SW-01	2023	50	1014	316.88	0.71	223.46
BC-SW-02	2023	138	1373	1184.21	0.71	835.11
BC-SW-03	2023	137	920	787.75	0.71	555.52
BC-SW-04	2022	136	711	604.35	0.74	449.39
BC-SW-05	2023	137	173	148.13	0.71	104.46
BC-SW-06	2020	142	310	275.13	0.82	226.73
BC-SW-07	2020	125	860	671.88	0.82	553.69
BC-SW-08	2021	78	601	292.99	0.78	229.50
LC-EB-01	2030	110	163	112.06	0.47	52.15
LC-EB-02	2030	110	137	94.19	0.47	43.83
LC-EB-03	2030	112	729	510.30	0.47	237.49
LC-EB-04a	2031	96	368	220.80	0.44	96.07
LC-EB-04b	2031	96	97	58.20	0.44	25.32
LC-EB-05	2031	96	106	63.60	0.44	27.67
LC-EB-10	2029	96	466	279.60	0.50	138.88
LC-EB-12	2031	61	508	193.68	0.44	84.27
LC-EB-13	2031	129	644	519.23	0.44	225.91
LC-EB-14	2031	100	202	126.25	0.44	54.93
LC-EB-15	2031	84	792	415.80	0.44	180.91
LC-MT-02	2029	97	768	465.60	0.50	231.26
LC-MT-03	2029	119	115	85.53	0.50	42.48
LC-NB-01	2029	130	212	172.25	0.50	85.56
LC-NB-04	2030	138	456	393.30	0.47	183.04
LC-NB-05	2031	111	680	471.75	0.44	205.26
LC-NB-06	2028	136	871	740.35	0.53	391.65
LC-NB-07	2029	118	284	209.45	0.50	104.03
LC-NB-08	2031	118	193	142.34	0.44	61.93
LC-NB-10	2028	135	770	649.69	0.53	343.68
TC-EB-01	2026	87	412	224.03	0.60	133.59
TC-EB-02	2026	115	1133	814.34	0.60	485.59
TC-EB-03	2026	105	380	249.38	0.60	148.70
TC-EB-04	2026	125	265	207.03	0.60	123.45
TC-EB-05	2026	100	207	129.38	0.60	77.15
TC-WB-01	2028	58	1271	460.74	0.53	243.73
Total Loss			**32161**	**21778.24**		**13361.14**

*Per SRO-7

**Per Table 4 Temporal Lag Factor for Wetland Functional Loss

Table 4B
Preserve/Enhance Stream Functional Assessment

Stream ID	Without Project HA Score- 20% reduction	Current HA Score	Stream Length (ft)	W/O Project Total	Current Condition Total (HA/160 x length)	Net Gain
BC-MT-01	111.2	139	7701	5352.195	6690.24	1338.05
BC-MT-02	101.6	127	1024	650.24	812.80	162.56
BC-MT-03	103.2	129	2638	1701.51	2126.89	425.38
BC-MT-04	104.8	131	2727	1786.185	2232.73	446.55
BC-MT-05	106.4	133	5325	3541.125	4426.41	885.28
BC-MT-06	98.4	123	2692	1655.58	2069.48	413.90
BC-MT-09	80.8	101	61	30.805	38.51	7.70
BC-MT-11	95.2	119	98	58.31	72.89	14.58
BC-MT-13	98.4	123	178	109.47	136.84	27.37
BC-MT-14	97.6	122	812	495.32	619.15	123.83
BC-MT-16	105.6	132	578	381.48	476.85	95.37
BC-NC-03	101.6	127	2767	1757.045	2196.31	439.26
BC-NC-04	96.8	121	310	187.55	234.44	46.89
BC-NC-05	105.6	132	2248	1483.68	1854.60	370.92
BC-NC-06	119.2	149	1995	1486.275	1857.84	371.57
BC-NC-12	86.4	108	1315	710.1	887.63	177.53
BC-NC-13	95.2	119	1321	785.995	982.49	196.50
BC-NC-16	48	60	109	32.7	40.88	8.18
BC-NE-02	52.8	66	55	18.15	22.69	4.54
BC-NE-04	81.6	102	80	40.8	51.00	10.20
BC-NE-05	108.8	136	1339	910.52	1138.15	227.63
BC-NE-06	100	125	589	368.125	460.16	92.03
BC-NE-07	116.8	146	719	524.87	656.09	131.22
BC-NW-03b	92	115	1180	678.5	848.13	169.63
BC-NW-04	114.4	143	468	334.62	418.28	83.66
BC-NW-05	98.4	123	549	337.635	422.04	84.41
BC-NW-07a	88	110	249	136.95	171.19	34.24
LC-EB-06	102.4	128	1267	810.88	1013.60	202.72
LC-EB-07	92	115	980	563.5	704.38	140.88
LC-EB-08	98.4	123	519	319.185	398.98	79.80
LC-EB-09	104.8	131	1906	1248.43	1560.54	312.11
LC-EB-11a	81.6	102	143	72.93	91.16	18.23
LC-EB-11b	81.6	102	147	74.97	93.71	18.74
LC-EB-16	94.4	118	351	207.09	258.86	51.77
LC-MT-01	101.6	127	4575	2905.125	3631.41	726.28
LC-NB-02	107.2	134	1935	1296.45	1620.56	324.11
LC-NB-03	104.8	131	4204	2753.62	3442.03	688.41
LC-NB-09	94.4	118	347	204.73	255.91	51.18
Total Preserve Credit			**55501**	**36012.645**	**45015.81**	**9003.16**

Table 4C
Created Stream Functional Gain Assessment

Stream ID	Mine Year Reconnected*	HA	Stream Length (ft)	Net Gain	Temporal Lag Factor**	Risk Factor	Adjusted Net Gain
BC-MT-1-R	2028	105	953	625.41	0.5110	1.11	287.91
BC-MT-2-R	2028	105	587	385.22	0.5110	1.11	177.34
BC-NC-4-R	2034	105	1236	811.13	0.3341	1.11	244.15
BC-NE-1-R	2031	105	1851	1214.72	0.4186	1.11	458.13
BC-NE-2-R	2031	105	584	383.25	0.4186	1.11	144.54
BC-NW-1-R	2030	105	696	456.75	0.4485	1.11	184.56
BC-NW-2-R	2030	105	1001	656.91	0.4485	1.11	265.43
BC-NW-3-R	2030	105	3749	2460.28	0.4485	1.11	994.12
LC-NB-1-R	2033	105	4249	2788.41	0.3615	1.11	908.01
LC-NB-4-R	2035	105	1135	744.84	0.3076	1.11	206.38
LC-NB-5-R	2035	105	710	465.94	0.3076	1.11	129.10
TB-EB-1-R	2030	105	1082	710.06	0.4485	1.11	286.91
TB-WB-3-R	2030	105	569	373.41	0.4485	1.11	150.88
Total Creation Gain			**18402**	**12076.33**			**4437.46**

*As Described in Table CRP-3 and CRP-5

**Per Table 5 Temporal Lag Factor for Wetland Establishment

Table 5	Temporal Lag Factor for Wetland Functional Loss		
Action	**Year**	**Mine Year**	**Discount Percentage**
T0 = Permit issued - Start of Impacts	2016	0	1.0000
Start of Reclamation	2017	1	0.9541
	2018	2	0.9095
	2019	3	0.8661
	2020	4	0.8241
	2021	5	0.7833
	2022	6	0.7436
	2023	7	0.7052
	2024	8	0.6678
	2025	9	0.6315
	2026	10	0.5963
	2027	11	0.5621
	2028	12	0.5290
	2029	13	0.4967
	2030	14	0.4654
Impacts Complete	2031	15	0.4351
	2032	16	N/A
	2033	17	N/A
Reclamation Complete	2034	18	N/A
	2035	19	N/A
	2036	20	N/A
	2037	21	N/A
	2038	22	N/A
	2039	23	N/A
	2040	24	N/A
	2041	25	N/A
	2042	26	N/A
	2043	27	N/A
	2044	28	N/A
	2045	29	N/A
	2046	30	N/A
	2047	31	N/A
	2048	32	N/A
Tmax = 32 yrs (15 years after Reclamation Completion)	2049	33	N/A

Table 6(H)	Temporal Lag Factor for Herbaceous Wetland Establishment on Mined Lands		
Action	**Year**	**Discount Percentage**	**Mine Year**
T0 = Permit issued - Start of Impacts	2016	0.9744	0
Start of Herbaceous Reclamation	2017	0.9292	1
	2018	0.8853	2
	2019	0.8427	3
	2020	0.8013	4
	2021	0.7612	5
	2022	0.7222	6
	2023	0.6843	7
	2024	0.6476	8
	2025	0.6119	9
	2026	0.5773	10
	2027	0.5436	11
	2028	0.5110	12
	2029	0.4793	13
	2030	0.4485	14
Impacts Complete	2031	0.4186	15
Herbaceous Reclamation Complete	2032	0.3896	16
	2033	0.3615	17
	2034	0.3341	18
	2035	0.3076	19
	2036	0.2818	20
	2037	0.2568	21
	2038	0.2325	22
	2039	0.2089	23
	2040	0.1860	24
	2041	0.1637	25
	2042	0.1422	26
	2043	0.1212	27
	2044	0.1008	28
	2045	0.0811	29
	2046	0.0619	30
	2047	0.0436	31
	2048	0.0263	32
Tmax = 32 yrs (15 years after All Reclamation Completion)	2049	0.0115	33

Table 6(F)	Temporal Lag Factor for Forested Wetland Establishment on Mined Lands		
Action	**Year**	**Discount Percentage**	**Mine Year**
T0 = Permit issued - Start of Impacts	2016	0.9246	0
	2017	0.8808	1
Start of Forested Reclamation	2018	0.8384	2
	2019	0.7971	3
	2020	0.7571	4
	2021	0.7182	5
	2022	0.6805	6
	2023	0.6438	7
	2024	0.6083	8
	2025	0.5737	9
	2026	0.5402	10
	2027	0.5077	11
	2028	0.4761	12
	2029	0.4454	13
	2030	0.4156	14
Impacts Complete	2031	0.3867	15
	2032	0.3586	16
	2033	0.3313	17
Forested Reclamation Complete	2034	0.3049	18
	2035	0.2792	19
	2036	0.2545	20
	2037	0.2308	21
	2038	0.2081	22
	2039	0.1864	23
	2040	0.1655	24
	2041	0.1454	25
	2042	0.1261	26
	2043	0.1074	27
	2044	0.0894	28
	2045	0.0721	29
	2046	0.0554	30
	2047	0.0396	31
	2048	0.0250	32
Tmax = 32 yrs (15 years after All Reclamation Completion)	2049	0.0115	33

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2016	02W-08-I	641*	4.93	4	5	5	0.47	2.3027	1.0000	2.3027
2016	02W-18-I	641	0.79	4	5	4	0.43	0.3417	1.0000	0.3417
2016	02W-20-I	641	0.31	4	4	2	0.33	0.1027	1.0000	0.1027
2016	02W-22-I	641	1.13	4	5	4	0.43	0.4896	1.0000	0.4896
2016	02W-24-I	641*	1.78	4	5	4	0.43	0.7713	1.0000	0.7713
2016	03W-06B-I	641*	7.08	6	5	6	0.57	4.0106	1.0000	4.0106
2016	03W-06C-I	641*	9.25	5	5	6	0.53	4.9319	1.0000	4.9319
2016	03W-06D-I	641*	1.26	6	7	5	0.60	0.7546	1.0000	0.7546
2016	03W-06E-I	641*	2.08	5	6	7	0.60	1.2495	1.0000	1.2495
2016	04E-15-I	6415	0.17	3	3	2	0.27	0.0457	1.0000	0.0457
2016	04E-16-I	641	0.97	3	2	2	0.23	0.2266	1.0000	0.2266
2016	04E-18-I	641*	16.53	4	2	4	0.33	5.5099	1.0000	5.5099
2016	04E-30-I	641	0.29	4	2	2	0.27	0.0774	1.0000	0.0774
2016	04E-32-I	641*	2.40	4	4	6	0.47	1.1205	1.0000	1.1205
2016	05E-04-I	643*	2.02	4	4	5	0.43	0.8759	1.0000	0.8759
2016	05E-06A-I	643*	13.80	4	6	6	0.53	7.3588	1.0000	7.3588
2016	05E-06B-I	641*	0.46	4	2	4	0.33	0.1540	1.0000	0.1540
2016	05E-08-I	641*	4.29	4	6	6	0.53	2.2892	1.0000	2.2892
2016	05E-14-I	641*	2.48	4	6	4	0.47	1.1566	1.0000	1.1566
2016	05E-22-I	643	0.57	5	6	4	0.50	0.2831	1.0000	0.2831
2016	05E-34-I	641*	3.50	6	7	7	0.67	2.3341	1.0000	2.3341
2017	02W-34-I	641*	1.94	6	6	5	0.57	1.1011	0.9541	1.0505
2017	02W-42-I	641*	5.83	4	6	4	0.47	2.7219	0.9541	2.5969
2017	03E-58A-I	641*	6.98	4	6	6	0.53	3.7231	0.9541	3.5521
2017	03E-58D-I	641*	1.44	4	4	3	0.37	0.5287	0.9541	0.5044
2017	03E-58E-I	641*	1.55	4	6	6	0.53	0.8291	0.9541	0.7910
2017	03E-72-I	641	0.11	4	4	4	0.40	0.0433	0.9541	0.0413
2017	03E-74A-I	641*	4.48	4	4	4	0.40	1.7926	0.9541	1.7102
2017	03E-74B-I	641*	0.10	4	2	5	0.37	0.0381	0.9541	0.0364

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2017	03E-74D-I	641*	1.28	4	4	4	0.40	0.5127	0.9541	0.4891
2017	03E-84-I	641	0.70	4	4	4	0.40	0.2814	0.9541	0.2684
2017	03E-88-I	641*	7.54	3	2	2	0.23	1.7601	0.9541	1.6793
2017	03E-90A-I	641*	4.04	4	6	5	0.50	2.0223	0.9541	1.9294
2017	03E-90B-I	641*	4.87	4	6	5	0.50	2.4346	0.9541	2.3228
2017	03E-92-I	641	3.54	3	4	4	0.37	1.2967	0.9541	1.2371
2017	03E-94A-I	641*	28.50	4	4	4	0.40	11.4016	0.9541	10.8778
2017	03E-94E-I	641*	3.50	4	6	5	0.50	1.7508	0.9541	1.6704
2017	03E-96-I	641*	1.59	3	5	6	0.47	0.7441	0.9541	0.7099
2017	03E-98-I	641	0.02	3	4	3	0.33	0.0067	0.9541	0.0064
2017	03W-06E-I	641*	8.11	5	6	7	0.60	4.8660	0.9541	4.6424
2017	04E-64-I	641	10.49	3	3	3	0.30	3.1473	0.9541	3.0027
2017	04E-68-I	641	5.30	3	3	4	0.33	1.7683	0.9541	1.6871
2017	06W-74-I	641*	0.34	8	6	6	0.67	0.2287	0.9541	0.2182
2017	08E-02-I	641*	3.97	6	7	7	0.67	2.6471	0.9541	2.5255
2017	08E-12-I	641*	3.55	7	7	7	0.70	2.4884	0.9541	2.3741
2017	08E-34-I	643*	0.21	7	7	7	0.70	0.1466	0.9541	0.1398
2017	08E-36-I	641*	2.53	7	7	7	0.70	1.7698	0.9541	1.6884
2017	08E-82-I	641	0.19	4	4	4	0.40	0.0769	0.9541	0.0734
2017	10E-02-I	641*	4.58	3	3	4	0.33	1.5258	0.9541	1.4557
2017	10E-04-I	641	0.67	4	5	7	0.53	0.3590	0.9541	0.3425
2017	10E-08C-I	641*	1.68	5	4	4	0.43	0.7277	0.9541	0.6943
2017	10E-10-I	641*	6.68	3	4	5	0.40	2.6715	0.9541	2.5487
2017	10E-12-I	641	0.48	3	2	2	0.23	0.1130	0.9541	0.1078
2017	10E-22-I	641*	1.62	5	4	5	0.47	0.7569	0.9541	0.7221
2017	10E-28-I	641*	5.44	3	4	3	0.33	1.8129	0.9541	1.7296
2017	10E-30-I	641	0.50	3	2	2	0.23	0.1157	0.9541	0.1104
2017	10E-32-I	641*	1.28	5	5	7	0.57	0.7248	0.9541	0.6915
2017	10E-40-I	641*	15.85	4	3	2	0.30	4.7539	0.9541	4.5355

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2017	10E-44-I	641	1.19	4	4	3	0.37	0.4367	0.9541	0.4166
2017	10E-47-I	6417	0.05	4	1	5	0.33	0.0156	0.9541	0.0149
2017	10E-52-I	6417	0.20	4	4	5	0.43	0.0846	0.9541	0.0807
2018	01W-16-I	641*	0.68	4	6	5	0.50	0.3397	0.9095	0.3089
2018	01W-18-I	641*	0.12	6	5	6	0.57	0.0684	0.9095	0.0622
2018	01W-20-I	641*	0.02	5	5	4	0.47	0.0116	0.9095	0.0105
2018	02E-16-I	6417*	2.77	3	2	2	0.23	0.6475	0.9095	0.5888
2018	02W-08-I	641*	7.11	4	5	5	0.47	3.3192	0.9095	3.0186
2018	02W-16-I	641	1.73	4	5	3	0.40	0.6904	0.9095	0.6279
2018	02W-18-I	641	3.43	4	5	4	0.43	1.4855	0.9095	1.3510
2018	02W-20-I	641	0.02	4	4	2	0.33	0.0073	0.9095	0.0066
2018	02W-24-I	641*	2.21	4	5	4	0.43	0.9590	0.9095	0.8721
2018	02W-28-I	641	0.78	4	4	4	0.40	0.3121	0.9095	0.2839
2018	02W-33-I	641*	0.12	4	3	2	0.30	0.0359	0.9095	0.0326
2018	02W-34-I	641*	2.94	6	6	5	0.57	1.6662	0.9095	1.5154
2018	02W-36-I	641	4.03	4	3	5	0.40	1.6128	0.9095	1.4667
2018	02W-38-I	641	2.35	4	4	3	0.37	0.8615	0.9095	0.7835
2018	02W-40-I	641	3.38	4	4	3	0.37	1.2388	0.9095	1.1267
2018	02W-74-I	641	0.39	4	2	2	0.27	0.1036	0.9095	0.0943
2018	03E-16-I	6415	1.26	3	4	2	0.30	0.3790	0.9095	0.3447
2018	07W-78-I	641*	2.58	4	5	3	0.40	1.0307	0.9095	0.9374
2018	07W-88-I	641	0.74	4	3	3	0.33	0.2477	0.9095	0.2253
2018	07W-92-I	641	1.75	4	3	2	0.30	0.5252	0.9095	0.4776
2018	07W-94-I	641*	2.31	4	5	6	0.50	1.1526	0.9095	1.0482
2018	07W-98-I	641	0.38	5	5	5	0.50	0.1916	0.9095	0.1742
2018	08E-12-I	641*	27.57	7	7	7	0.70	19.3016	0.9095	17.5538
2018	08E-22-I	643	0.86	7	7	3	0.57	0.4889	0.9095	0.4446
2018	08E-32-I	641*	19.65	8	6	4	0.60	11.7897	0.9095	10.7222
2018	08E-34-I	643*	2.61	7	7	7	0.70	1.8256	0.9095	1.6603

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2018	08E-36-I	641*	0.12	7	7	7	0.70	0.0830	0.9095	0.0755
2018	08E-40-I	641*	13.28	6	5	4	0.50	6.6390	0.9095	6.0378
2018	08E-42-I	641*	5.90	7	7	7	0.70	4.1324	0.9095	3.7582
2018	08E-44-I	641*	2.21	7	5	6	0.60	1.3273	0.9095	1.2071
2018	08E-50B-I	641*	22.00	6	6	5	0.57	12.4684	0.9095	11.3394
2018	08E-60-I	641*	7.97	7	7	6	0.67	5.3121	0.9095	4.8311
2018	08E-66-I	643*	0.04	7	5	7	0.63	0.0262	0.9095	0.0239
2019	02W-52-I	641*	0.73	5	6	6	0.57	0.4154	0.8661	0.3598
2019	02W-60-I	641*	1.14	4	3	2	0.30	0.3423	0.8661	0.2964
2019	03E-06B-I	641*	0.18	4	4	3	0.37	0.0660	0.8661	0.0571
2019	03E-38-I	641	1.69	3	3	5	0.37	0.6188	0.8661	0.5359
2019	08E-46-I	641	1.68	6	6	6	0.60	1.0054	0.8661	0.8708
2019	08E-48-I	641*	15.62	6	6	7	0.63	9.8936	0.8661	8.5693
2019	08E-50B-I	641*	6.24	6	6	5	0.57	3.5347	0.8661	3.0615
2019	08E-56-I	641*	3.04	5	6	4	0.50	1.5184	0.8661	1.3151
2019	08E-58-I	641*	12.80	6	6	6	0.60	7.6792	0.8661	6.6513
2019	08E-60-I	641*	2.20	7	7	6	0.67	1.4657	0.8661	1.2695
2019	08E-66-I	643*	1.13	7	5	7	0.63	0.7160	0.8661	0.6201
2019	11W-58-I	641	2.31	5	6	8	0.63	1.4605	0.8661	1.2650
2020	03E-08-I	641*	0.82	4	4	3	0.37	0.3016	0.8241	0.2485
2020	03E-20-I	641*	5.00	4	4	2	0.33	1.6667	0.8241	1.3736
2020	03E-22-I	641*	1.36	4	2	2	0.27	0.3621	0.8241	0.2984
2020	03E-24-I	641	1.99	4	6	6	0.53	1.0602	0.8241	0.8737
2020	03E-26-I	6415	0.26	3	2	2	0.23	0.0615	0.8241	0.0507
2020	03E-32-I	641*	1.14	4	4	3	0.37	0.4177	0.8241	0.3443
2020	03E-44-I	641*	2.09	4	4	7	0.50	1.0427	0.8241	0.8593
2020	03E-48-I	641*	0.83	4	5	3	0.40	0.3309	0.8241	0.2727
2020	03E-56-I	641*	0.64	4	3	4	0.37	0.2363	0.8241	0.1948
2020	03E-58A-I	641*	9.28	4	6	6	0.53	4.9511	0.8241	4.0802

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2020	03E-58C-I	641	0.51	4	4	3	0.37	0.1875	0.8241	0.1545
2020	03E-58D-I	641*	0.38	4	4	3	0.37	0.1405	0.8241	0.1158
2020	03E-58E-I	641*	0.07	4	6	6	0.53	0.0368	0.8241	0.0304
2020	03E-60-I	641	0.53	4	3	4	0.37	0.1926	0.8241	0.1587
2020	03E-62-I	641	0.37	4	3	4	0.37	0.1343	0.8241	0.1107
2020	03E-64-I	641	0.44	4	4	4	0.40	0.1772	0.8241	0.1461
2020	03E-66-I	641	0.03	4	2	2	0.27	0.0086	0.8241	0.0071
2020	04E-08-I	641*	2.34	4	4	5	0.43	1.0119	0.8241	0.8339
2020	04E-26-I	641*	2.62	5	3	3	0.37	0.9617	0.8241	0.7926
2020	04E-36-I	641*	0.35	5	6	7	0.60	0.2127	0.8241	0.1753
2020	05E-14-I	641*	1.47	4	6	4	0.47	0.6849	0.8241	0.5644
2020	10W-64-I	641	0.69	3	7	7	0.57	0.3914	0.8241	0.3225
2020	11W-28-I	641*	5.36	6	5	7	0.60	3.2153	0.8241	2.6497
2020	11W-30-I	641*	3.11	5	6	6	0.57	1.7634	0.8241	1.4532
2020	11W-44-I	641*	10.92	5	6	6	0.57	6.1899	0.8241	5.1011
2020	11W-58-I	641	0.74	5	6	8	0.63	0.4659	0.8241	0.3839
2021	04E-15-I	6415	0.09	3	3	2	0.27	0.0246	0.7833	0.0193
2021	04E-18-I	641*	5.67	4	2	4	0.33	1.8914	0.7833	1.4815
2021	04E-26-I	641*	5.04	5	3	3	0.37	1.8471	0.7833	1.4468
2021	04E-36-I	641*	2.96	5	6	7	0.60	1.7774	0.7833	1.3922
2021	05E-10-I	641*	5.63	3	5	5	0.43	2.4394	0.7833	1.9108
2021	05E-14-I	641*	3.77	4	6	4	0.47	1.7593	0.7833	1.3780
2021	10W-46-I	641*	18.31	4	5	7	0.53	9.7653	0.7833	7.6490
2021	10W-52D-I	641*	1.44	7	7	8	0.73	1.0552	0.7833	0.8265
2021	10W-58-I	641	0.55	3	6	5	0.47	0.2574	0.7833	0.2016
2021	11W-28-I	641*	0.42	6	5	7	0.60	0.2507	0.7833	0.1964
2022	03W-36-I	641*	0.60	4	3	4	0.37	0.2215	0.7436	0.1647
2022	03W-38A-I	641*	15.01	4	5	6	0.50	7.5063	0.7436	5.5820
2022	10W-05-I	641	0.08	4	2	2	0.27	0.0217	0.7436	0.0161

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2022	10W-09-I	6415	0.24	4	2	2	0.27	0.0633	0.7436	0.0470
2022	10W-18-I	641	0.80	4	2	3	0.30	0.2400	0.7436	0.1785
2022	10W-24-I	641*	0.84	8	8	7	0.77	0.6462	0.7436	0.4805
2023	03W-02-I	641	4.33	5	6	7	0.60	2.5971	0.7052	1.8314
2023	03W-14-I	641*	6.12	4	5	5	0.47	2.8578	0.7052	2.0153
2023	03W-38A-I	641*	5.70	4	5	6	0.50	2.8491	0.7052	2.0091
2023	03W-40-I	641*	4.30	4	6	7	0.57	2.4365	0.7052	1.7182
2023	03W-42-I	641*	2.12	4	6	5	0.50	1.0577	0.7052	0.7459
2024	03W-26-I	641*	12.56	5	7	6	0.60	7.5386	0.6678	5.0344
2024	10W-04-I	641*	2.62	4	2	3	0.30	0.7849	0.6678	0.5241
2025	06W-80-I	643*	0.67	8	4	6	0.60	0.4013	0.6315	0.2534
2025	06W-82-I	643*	1.95	7	4	6	0.57	1.1046	0.6315	0.6976
2025	07W-04-I	643*	1.75	4	4	5	0.43	0.7564	0.6315	0.4777
2025	07W-10-I	641*	4.34	4	5	5	0.47	2.0262	0.6315	1.2796
2025	07W-16-I	643*	1.53	6	7	7	0.67	1.0176	0.6315	0.6426
2025	07W-28-I	641*	0.57	4	2	2	0.27	0.1509	0.6315	0.0953
2025	07W-36-I	641	2.56	5	7	6	0.60	1.5351	0.6315	0.9695
2025	07W-38-I	641*	2.86	4	4	5	0.43	1.2405	0.6315	0.7834
2025	08E-12-I	641*	1.74	7	7	7	0.70	1.2181	0.6315	0.7693
2025	08E-30-I	641*	1.08	6	5	5	0.53	0.5751	0.6315	0.3632
2025	08E-40-I	641*	1.63	6	5	4	0.50	0.8150	0.6315	0.5147
2026	06W-14-I	641*	6.07	4	7	7	0.60	3.6405	0.5963	2.1709
2026	06W-28-I	641*	18.10	8	6	7	0.70	12.6688	0.5963	7.5548
2026	06W-38-I	643*	1.84	8	6	6	0.67	1.2244	0.5963	0.7302
2026	06W-44-I	641*	7.08	8	5	8	0.70	4.9544	0.5963	2.9545
2026	06W-56-I	641*	9.93	8	5	7	0.67	6.6216	0.5963	3.9487
2026	06W-58-I	641*	15.05	8	6	5	0.63	9.5304	0.5963	5.6833
2026	06W-74-I	641*	3.64	8	6	6	0.67	2.4269	0.5963	1.4472
2026	06W-80-I	643*	1.39	8	4	6	0.60	0.8344	0.5963	0.4976

Table 7(H) Functional Loss by Year for Herbaceous Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2027	01W-100A-I	641*	1.88	5	6	6	0.57	1.0676	0.5621	0.6001
2027	01W-48-I	641*	9.53	5	5	3	0.43	4.1285	0.5621	2.3208
2027	01W-56-I	641*	13.69	4	4	5	0.43	5.9335	0.5621	3.3355
2027	01W-72-I	641*	0.86	4	3	2	0.30	0.2571	0.5621	0.1445
2027	01W-76-I	641*	0.20	4	3	2	0.30	0.0609	0.5621	0.0342
2027	01W-90-I	641	3.51	5	3	4	0.40	1.4039	0.5621	0.7892
2027	02W-56C-I	641*	3.02	4	4	4	0.40	1.2070	0.5621	0.6785
2027	12W-04-I	641	0.21	4	4	5	0.43	0.0902	0.5621	0.0507
2027	12W-34-I	643*	0.79	6	4	6	0.53	0.4205	0.5621	0.2364
2028	01W-20-I	641*	2.78	5	5	4	0.47	1.2984	0.5290	0.6868
2028	01W-48-I	641*	0.00	5	5	3	0.43	0.0004	0.5290	0.0002
2030	01W-06-I	643*	0.28	7	6	7	0.67	0.1852	0.4654	0.0862
2030	01W-18-I	641*	15.75	6	5	6	0.57	8.9264	0.4654	4.1548
2030	01W-20-I	641*	5.15	5	5	4	0.47	2.4039	0.4654	1.1189
2030	01W-26-I	641*	16.24	7	6	5	0.60	9.7433	0.4654	4.5350
2030	01W-30-I	641*	2.87	7	6	7	0.67	1.9165	0.4654	0.8920
2030	01W-36-I	643*	2.05	4	6	5	0.50	1.0254	0.4654	0.4773
2030	01W-38-I	641*	4.48	7	6	6	0.63	2.8367	0.4654	1.3204
2030	01W-44-I	641*	5.56	7	5	5	0.57	3.1479	0.4654	1.4652
2030	01W-48-I	641*	5.29	5	5	3	0.43	2.2925	0.4654	1.0671
2030	01W-52-I	641	1.57	4	4	4	0.40	0.6265	0.4654	0.2916
2030	01W-56-I	641*	21.63	4	4	5	0.43	9.3709	0.4654	4.3616
2031	01W-30-I	641*	1.31	7	6	7	0.67	0.8763	0.4351	0.3812
2031	06W-14-I	641*	1.42	4	7	7	0.60	0.8501	0.4351	0.3699
Total			**777.50**							**315.22**

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types within a given Assessment Area are listed on the specific UMAM data sheet.

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2016	03W-06A-I	630*	3.46	5	4	7	0.53	1.8479	1.0000	1.8479
2016	03W-06F-I	617*	3.68	6	6	8	0.67	2.4556	1.0000	2.4556
2016	04E-50-I	617	0.06	5	5	4	0.47	0.0276	1.0000	0.0276
2016	05E-02-I	617*	62.92	6	6	6	0.60	37.7498	1.0000	37.7498
2016	05E-12-I	618*	0.22	4	6	5	0.50	0.1077	1.0000	0.1077
2016	05E-32-I	617*	11.42	7	7	6	0.67	7.6144	1.0000	7.6144
2017	02W-10-I	630*	1.45	7	6	4	0.57	0.8238	0.9541	0.7860
2017	03E-74E-I	617*	0.97	3	2	4	0.30	0.2908	0.9541	0.2775
2017	03W-06F-I	617*	5.56	6	6	8	0.67	3.7039	0.9541	3.5337
2017	05E-40-I	617*	22.46	6	6	7	0.63	14.2272	0.9541	13.5735
2017	05W-38-I	630*	1.78	5	6	7	0.60	1.0671	0.9541	1.0181
2017	08E-10-I	617*	1.72	7	6	7	0.67	1.1437	0.9541	1.0911
2017	10E-14-I	617*	2.17	5	5	6	0.53	1.1550	0.9541	1.1019
2017	10E-18-I	617*	0.85	6	2	6	0.47	0.3982	0.9541	0.3799
2017	10E-20A-I	617*	7.10	5	4	6	0.50	3.5481	0.9541	3.3851
2017	10E-20B-I	630*	0.35	5	2	6	0.43	0.1500	0.9541	0.1431
2017	10E-45-I	617*	0.47	4	1	5	0.33	0.1553	0.9541	0.1481
2017	10E-46-I	617	1.70	4	2	5	0.37	0.6229	0.9541	0.5943
2017	10E-49-I	617*	0.28	4	1	5	0.33	0.0931	0.9541	0.0888
2018	01W-04-I	617*	0.02	6	4	7	0.57	0.0113	0.9095	0.0103
2018	02E-02-I	617	0.11	3	3	3	0.30	0.0322	0.9095	0.0292
2018	02E-04-I	617*	33.38	4	3	4	0.37	12.2379	0.9095	11.1298
2018	02E-10-I	617	12.68	4	3	4	0.37	4.6495	0.9095	4.2285
2018	02W-44-I	630*	0.54	5	5	7	0.57	0.3061	0.9095	0.2784
2018	02W-56A	617	0.02	4	7	7	0.60	0.0110	0.9095	0.0100
2018	02W-62-I	613*	0.49	4	6	6	0.53	0.2620	0.9095	0.2383
2018	02W-78-I	611*	1.61	4	4	6	0.47	0.7496	0.9095	0.6817
2018	03E-06A-I	617*	7.78	4	5	7	0.53	4.1513	0.9095	3.7754

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2018	07W-68-I	617	0.00	6	4	5	0.50	0.0003	0.9095	0.0003
2018	07W-80-I	626*	1.79	4	5	4	0.43	0.7749	0.9095	0.7047
2018	07W-86-I	626*	7.06	4	4	7	0.50	3.5285	0.9095	3.2090
2018	08E-20-I	630*	0.17	5	4	3	0.40	0.0693	0.9095	0.0630
2018	08E-50C-I	627*	1.47	7	6	7	0.67	0.9820	0.9095	0.8931
2019	02W-44-I	630*	0.83	5	5	7	0.57	0.4680	0.8661	0.4054
2019	02W-62-I	613*	0.04	4	6	6	0.53	0.0198	0.8661	0.0171
2019	03E-06A-I	617*	37.37	4	5	7	0.53	19.9307	0.8661	17.2628
2019	03W-34B-D	617	0.72	7	7	7	0.70	0.5052	0.8661	0.4376
2019	03W-34-D	617	0.17	7	7	7	0.70	0.1209	0.8661	0.1047
2019	08E-50C-I	627*	12.33	7	6	7	0.67	8.2214	0.8661	7.1210
2020	03E-02-I	617*	8.07	4	4	3	0.37	2.9590	0.8241	2.4385
2020	03E-06A-I	617*	0.09	4	5	7	0.53	0.0481	0.8241	0.0396
2020	03E-46-I	617*	2.72	4	6	6	0.53	1.4522	0.8241	1.1968
2020	04E-06-I	617*	1.74	4	2	6	0.40	0.6941	0.8241	0.5720
2020	05E-12-I	618*	5.41	4	6	5	0.50	2.7039	0.8241	2.2283
2020	10W-40-I	630*	10.42	6	6	5	0.57	5.9070	0.8241	4.8680
2020	10W-52B-I	630*	7.29	7	7	8	0.73	5.3482	0.8241	4.4074
2020	10W-52E-I	613*	3.32	7	7	8	0.73	2.4315	0.8241	2.0038
2020	10W-60-I	630*	0.38	6	7	8	0.70	0.2672	0.8241	0.2202
2020	11W-56-I	630	0.73	5	6	6	0.57	0.4110	0.8241	0.3387
2021	03E-02-I	617*	8.49	4	4	3	0.37	3.1133	0.7833	2.4385
2021	05E-12-I	618*	17.93	4	6	5	0.50	8.9650	0.7833	7.0221
2021	10W-22-I	626*	1.88	8	8	7	0.77	1.4444	0.7833	1.1314
2021	10W-26-I	617*	2.58	8	8	8	0.80	2.0620	0.7833	1.6151
2021	10W-28-I	617	0.64	8	8	7	0.77	0.4917	0.7833	0.3852
2021	10W-36-I	630*	3.41	7	6	7	0.67	2.2722	0.7833	1.7797
2021	10W-38-I	630*	5.60	4	6	7	0.57	3.1733	0.7833	2.4856

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2021	10W-40-I	630*	5.43	6	6	5	0.57	3.0796	0.7833	2.4122
2021	10W-42-I	617*	1.00	8	8	7	0.77	0.7658	0.7833	0.5999
2021	10W-52A-I	617	0.80	7	7	8	0.73	0.5841	0.7833	0.4576
2021	10W-52B-I	630*	26.09	7	7	8	0.73	19.1354	0.7833	14.9884
2021	10W-52C-I	617*	9.40	7	7	8	0.73	6.8960	0.7833	5.4015
2021	10W-52E-I	613*	1.26	7	7	8	0.73	0.9267	0.7833	0.7258
2021	10W-60-I	630*	0.21	6	7	8	0.70	0.1460	0.7833	0.1144
2022	03W-46-I	617*	2.35	5	6	7	0.60	1.4073	0.7436	1.0466
2022	03W-48-I	630*	0.01	5	5	7	0.57	0.0042	0.7436	0.0031
2022	10W-20-I	617	2.15	5	5	7	0.57	1.2207	0.7436	0.9078
2022	10W-26-I	617*	0.96	8	8	8	0.80	0.7658	0.7436	0.5695
2022	10W-28-I	617	0.00	8	8	7	0.77	0.0001	0.7436	0.0001
2022	10W-32-I	630	0.70	8	6	7	0.70	0.4912	0.7436	0.3653
2022	10W-36-I	630*	1.72	7	6	7	0.67	1.1478	0.7436	0.8535
2022	10W-38-I	630*	0.02	4	6	7	0.57	0.0112	0.7436	0.0083
2023	03W-48-I	630*	0.54	5	5	7	0.57	0.3064	0.7052	0.2161
2024	03W-30-I	626*	1.05	5	6	4	0.50	0.5262	0.6678	0.3514
2025	06W-20-I	630*	0.63	8	4	5	0.57	0.3552	0.6315	0.2243
2025	07W-14-I	617*	0.92	6	6	7	0.63	0.5807	0.6315	0.3667
2025	07W-24-I	617*	0.67	7	5	6	0.60	0.4018	0.6315	0.2538
2025	07W-32-I	617*	6.59	6	7	7	0.67	4.3918	0.6315	2.7736
2025	07W-33-I	617*	0.27	6	6	7	0.63	0.1730	0.6315	0.1093
2025	07W-40-I	617*	0.79	7	7	7	0.70	0.5499	0.6315	0.3473
2025	08E-20-I	630*	0.40	5	4	3	0.40	0.1616	0.6315	0.1021
2026	05E-02-I	617*	6.80	6	6	6	0.60	4.0811	0.5963	2.4337
2026	06W-06A-I	626*	1.00	7	6	6	0.63	0.6357	0.5963	0.3791
2026	06W-18-I	617*	0.20	5	7	7	0.63	0.1239	0.5963	0.0739
2026	06W-26-I	630*	0.85	8	6	8	0.73	0.6208	0.5963	0.3702

Table 7(F) Functional Loss by Year for Forested Wetlands

Impact Year	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	UMAM	Debit	USACE T-factor	Final Debit
2026	06W-34-I	626*	0.53	7	4	7	0.60	0.3201	0.5963	0.1909
2026	06W-36-I	626*	5.04	7	7	6	0.67	3.3577	0.5963	2.0023
2026	06W-46-I	617*	1.59	7	6	7	0.67	1.0610	0.5963	0.6327
2026	06W-54-I	630*	0.45	8	5	7	0.67	0.3009	0.5963	0.1794
2026	06W-56B-I	630*	2.79	8	5	7	0.67	1.8608	0.5963	1.1096
2027	01W-100B	617	0.12	5	4	6	0.50	0.0578	0.5621	0.0325
2027	01W-46-I	617	0.00	7	4	6	0.57	0.0002	0.5621	0.0001
2027	01W-68-I	614*	1.29	5	3	5	0.43	0.5575	0.5621	0.3134
2027	01W-92-I	617*	0.28	4	4	6	0.47	0.1290	0.5621	0.0725
2027	06W-06A-I	626*	0.81	7	6	6	0.63	0.5130	0.5621	0.2884
2030	01W-04-I	617*	1.97	6	4	7	0.57	1.1176	0.4654	0.5202
2030	01W-08-I	630*	0.67	7	6	6	0.63	0.4266	0.4654	0.1986
2030	01W-28-I	630*	0.91	6	6	6	0.60	0.5462	0.4654	0.2542
2030	01W-40-I	617*	0.79	7	6	7	0.67	0.5259	0.4654	0.2448
2030	01W-42-I	617*	0.70	8	5	5	0.60	0.4209	0.4654	0.1959
2031	01W-14-I	630*	0.94	7	5	7	0.63	0.5952	0.4351	0.2589
2031	06W-06A-I	626*	1.10	7	6	6	0.63	0.6992	0.4351	0.3042
Total			**420.67**							**204.95**

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types within a given Assessment Area are listed on the specific UMAM data sheet.

Table 8: Herbaceous Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T-factor	T-factor Adjusted RFG	Final Credit
2017	2020	R-03W-04-641	641	41.88	6	7	7	0.67	27.92	1.25	0.5333	0.9292	0.4956	20.75301
2017	2020	R-04E-06-641	641	20.18	6	6	7	0.63	12.78	1.25	0.5067	0.9292	0.4708	9.501542
2017	2020	R-04E-18-641	641	4.29	6	6	7	0.63	2.72	1.25	0.5067	0.9292	0.4708	2.021169
2017	2020	R-05-06-641	641	1.96	6	6	7	0.63	1.24	1.25	0.5067	0.9292	0.4708	0.92337
2018	2021	R-03E-02-641	641	4.13	7	6	7	0.67	2.76	1.25	0.5333	0.8853	0.4722	1.952165
2018	2021	R-03E-02-641a	641	4.14	7	8	7	0.73	3.04	1.25	0.5867	0.8853	0.5194	2.152663
2018	2021	R-03E-02-641b	641	56.16	6	7	7	0.67	37.44	1.25	0.5333	0.8853	0.4722	26.51681
2018	2021	R-03W-12-641	641	1.45	6	7	7	0.67	0.97	1.25	0.5333	0.8853	0.4722	0.686366
2018	2021	R-03W-20-641	641	4.88	6	7	7	0.67	3.26	1.25	0.5333	0.8853	0.4722	2.305575
2018	2021	R-04E-08-641	641	4.15	6	6	7	0.63	2.63	1.25	0.5067	0.8853	0.4486	1.860832
2018	2021	R-04E-20-641	641	12.68	6	7	7	0.67	8.45	1.25	0.5333	0.8853	0.4722	5.986481
2018	2021	R-04E-22-641	641	6.51	6	6	7	0.63	4.12	1.25	0.5067	0.8853	0.4486	2.920408
2018	2021	R-04E-24-641	641	15.79	6	6	7	0.63	10.00	1.25	0.5067	0.8853	0.4486	7.084483
2018	2021	R-10E-06-641	641	9.22	6	6	6	0.60	5.53	1.25	0.4800	0.8853	0.4249	3.918967
2018	2021	R-03E-02-643	643	21.67	7	8	7	0.73	15.89	1.50	0.4889	0.8853	0.4328	9.380296
2018	2021	R-06W-26-641	641	11.98	7	6	7	0.67	7.99	1.25	0.5333	0.8853	0.4722	5.656005
2019	2022	R-02W-10-641	641	0.49	6	6	7	0.63	0.31	1.25	0.5067	0.8427	0.4270	0.209493
2019	2022	R-02W-22-641	641	5.38	7	7	7	0.70	3.77	1.25	0.5600	0.8427	0.4719	2.540481
2019	2022	R-07W-24-641	641	50.59	6	7	7	0.67	33.73	1.25	0.5333	0.8427	0.4494	22.73773
2019	2022	R-07W-28-641	641	0.39	6	7	7	0.67	0.26	1.25	0.5333	0.8427	0.4494	0.174602
2020	2023	TB151	640	7.59	6	6	7	0.63	4.80	1.25	0.5067	0.8013	0.4060	3.079739
2020	2023	R-02W-10-641	641	1.18	6	6	7	0.63	0.75	1.25	0.5067	0.8013	0.4060	0.478453
2020	2023	R-02W-16-641	641	1.64	7	7	7	0.70	1.15	1.25	0.5600	0.8013	0.4487	0.73429
2020	2023	R-03W-28-641	641	4.22	7	7	7	0.70	2.95	1.25	0.5600	0.8013	0.4487	1.891973
2020	2023	R-03W-42-641	641	0.76	7	6	7	0.67	0.50	1.25	0.5333	0.8013	0.4274	0.323551
2020	2023	R-11W-10-641	641	16.55	7	8	7	0.73	12.14	1.25	0.5867	0.8013	0.4701	7.780101
2021	2024	R-11W-04-641	641	1.09	7	7	7	0.70	0.77	1.25	0.5600	0.7612	0.4263	0.466441
2021	2024	R-11W-06-641	641	22.41	7	7	7	0.70	15.68	1.25	0.5600	0.7612	0.4263	9.551226
2021	2024	R-11W-04-643	643	1.40	7	7	7	0.70	0.98	1.50	0.4667	0.7612	0.3552	0.497517
2022	2025	R-03E-02-641b	641	92.91	6	7	7	0.67	61.94	1.25	0.5333	0.7222	0.3852	35.78645
2022	2025	R-04E-06-641	641	5.89	6	6	7	0.63	3.73	1.25	0.5067	0.7222	0.3659	2.153518
2022	2025	R-04E-12-641	641	6.20	6	7	7	0.67	4.13	1.25	0.5333	0.7222	0.3852	2.388729
2022	2025	R-05-04-641	641	8.81	6	6	7	0.63	5.58	1.25	0.5067	0.7222	0.3659	3.224744
2022	2025	R-03E-02-643a	643	2.01	7	8	7	0.73	1.47	1.50	0.4889	0.7222	0.3531	0.709135
2022	2025	R-03E-02-643b	643	7.85	7	8	7	0.73	5.76	1.50	0.4889	0.7222	0.3531	2.771198
2022	2025	R-05-04-643	643	7.64	6	6	7	0.63	4.84	1.50	0.4222	0.7222	0.3049	2.329123
2024	2027	R-03W-02-641	641	4.34	6	6	6	0.60	2.60	1.25	0.4800	0.6476	0.3108	1.348668
2024	2027	R-03W-06-641	641	7.55	6	6	6	0.60	4.53	1.25	0.4800	0.6476	0.3108	2.346149
2024	2027	R-03W-08-641	641	2.89	6	7	7	0.67	1.93	1.25	0.5333	0.6476	0.3454	0.998036
2024	2027	R-03W-14-641	641	6.10	6	7	7	0.67	4.07	1.25	0.5333	0.6476	0.3454	2.106699
2024	2027	R-03W-18-641	641	1.87	7	7	7	0.70	1.31	1.25	0.5600	0.6476	0.3627	0.677393
2024	2027	R-03W-50-641	641	1.73	7	8	7	0.73	1.27	1.25	0.5867	0.6476	0.3799	0.655705
2025	2028	R-03W-22-641	641	8.02	7	7	7	0.70	5.61	1.25	0.5600	0.6119	0.3427	2.748119
2025	2028	R-03W-24-641	641	1.00	7	7	7	0.70	0.70	1.25	0.5600	0.6119	0.3427	0.342459

Table 8: Herbaceous Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T-factor	T-factor Adjusted RFG	Final Credit
2025	2028	R-03W-30-641	641	6.34	6	6	7	0.63	4.02	1.25	0.5067	0.6119	0.3100	1.966308
2025	2028	R-03W-32-641	641	7.51	6	7	7	0.67	5.01	1.25	0.5333	0.6119	0.3263	2.450784
2025	2028	R-03W-36-641	641	12.30	7	8	7	0.73	9.02	1.25	0.5867	0.6119	0.3590	4.4154
2026	2029	R-06W-28-641	641	7.53	8	7	7	0.73	5.52	1.25	0.5867	0.5773	0.3387	2.551599
2026	2029	R-07W-04-641	641	7.69	8	7	7	0.73	5.64	1.25	0.5867	0.5773	0.3387	2.604995
2026	2029	R-07W-18-641	641	1.92	8	7	7	0.73	1.41	1.25	0.5867	0.5773	0.3387	0.649549
2026	2029	R-08E-01-641	641	9.34	7	6	7	0.67	6.23	1.25	0.5333	0.5773	0.3079	2.875888
2026	2029	R-08E-06-641	641	16.06	7	6	7	0.67	10.71	1.25	0.5333	0.5773	0.3079	4.94494
2026	2029	R-07W-18-643	643	3.42	8	7	7	0.73	2.51	1.50	0.4889	0.5773	0.2822	0.96558
2027	2030	R-06W-12-641	641	5.47	7	6	7	0.67	3.65	1.25	0.5333	0.5436	0.2899	1.586901
2028	2031	R-01W-34-641	641	0.20	8	7	7	0.73	0.15	1.25	0.5867	0.5110	0.2998	0.060834
2028	2031	R-01W-44-641	641	3.54	8	7	7	0.73	2.60	1.25	0.5867	0.5110	0.2998	1.062413
2028	2031	R-01W-50-641	641	7.86	8	7	7	0.73	5.76	1.25	0.5867	0.5110	0.2998	2.356323
2028	2031	R-01W-56-641	641	3.71	7	7	7	0.70	2.60	1.25	0.5600	0.5110	0.2862	1.062255
2028	2031	R-02W-14-641	641	5.31	7	7	7	0.70	3.72	1.25	0.5600	0.5110	0.2862	1.51906
2028	2031	R-06W-12-641	641	3.37	7	6	7	0.67	2.25	1.25	0.5333	0.5110	0.2725	0.918437
2028	2031	R-11W-14-641	641	3.71	7	8	7	0.73	2.72	1.25	0.5867	0.5110	0.2998	1.113266
2028	2031	R-12W-04-641	641	4.12	8	8	7	0.77	3.16	1.25	0.6133	0.5110	0.3134	1.290396
2028	2031	R-12W-06-641	641	1.40	7	8	7	0.73	1.03	1.25	0.5867	0.5110	0.2998	0.419701
2028	2031	R-12W-12-641	641	1.13	7	8	7	0.73	0.83	1.25	0.5867	0.5110	0.2998	0.338759
2028	2031	R-12W-14-641	641	0.79	7	8	7	0.73	0.58	1.25	0.5867	0.5110	0.2998	0.236339
2029	2032	R-01W-16-641	641	4.11	8	7	7	0.73	3.02	1.25	0.5867	0.4793	0.2812	1.156743
2029	2032	R-02W-02-641	641	6.89	6	6	7	0.63	4.36	1.25	0.5067	0.4793	0.2428	1.673141
2031	2034	R-01W-02-641	641	18.32	6	6	7	0.63	11.60	1.25	0.5067	0.4186	0.2121	3.885898
2031	2034	R-01W-05-641	641	2.39	8	8	7	0.77	1.83	1.25	0.6133	0.4186	0.2567	0.614154
2031	2034	R-01W-06-641	641	5.26	7	6	7	0.67	3.51	1.25	0.5333	0.4186	0.2233	1.175027
2031	2034	R-01W-08-641	641	6.55	7	7	7	0.70	4.59	1.25	0.5600	0.4186	0.2344	1.536542
2031	2034	R-01W-09-641	641	3.63	8	8	7	0.77	2.78	1.25	0.6133	0.4186	0.2567	0.931784
2031	2034	R-01W-12-641	641	1.57	8	7	7	0.73	1.15	1.25	0.5867	0.4186	0.2456	0.38459
2031	2034	R-01W-18-641	641	14.80	8	7	7	0.73	10.85	1.25	0.5867	0.4186	0.2456	3.634564
2031	2034	R-01W-20-641	641	21.80	8	7	7	0.73	15.99	1.25	0.5867	0.4186	0.2456	5.354376
2031	2034	R-01W-21-641	641	3.52	7	7	7	0.70	2.46	1.25	0.5600	0.4186	0.2344	0.825107
2031	2034	R-01W-02-643	643	9.26	6	6	7	0.63	5.86	1.50	0.4222	0.4186	0.1767	1.636246
2031	2034	R-01W-20-643	643	13.51	8	7	7	0.73	9.91	1.50	0.4889	0.4186	0.2046	2.764941
2032	2035	R-01W-05-641	641	1.31	8	8	7	0.77	1.01	1.25	0.6133	0.3896	0.2390	0.314056
2032	2035	R-01W-08-641	641	9.74	7	7	7	0.70	6.82	1.25	0.5600	0.3896	0.2182	2.125034
			Total	**734.98**										**278.0738**

Table 8: Forested Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T-factor	T-factor Adjusted RFG	Final Credit
2018	2033	R-03E-02-617a	617	7.02	7	7	7	0.70	4.92	1.50	0.47	0.8384	0.39	2.75
2018	2033	R-10E-02-617	617	4.58	6	6	7	0.63	2.90	1.50	0.42	0.8384	0.35	1.62
2018	2033	R-03E-02-626	626	15.29	7	8	7	0.73	11.21	1.50	0.49	0.8384	0.41	6.27
2018	2033	R-10E-12-626	626	4.85	6	6	7	0.63	3.07	1.50	0.42	0.8384	0.35	1.72
2018	2033	R-03E-02-630a	630	6.84	7	6	7	0.67	4.56	1.50	0.44	0.8384	0.37	2.55
2018	2033	R-10E-02-630	630	8.80	6	6	7	0.63	5.57	1.50	0.42	0.8384	0.35	3.11
2018	2033	R-10E-08-630	630	15.96	6	6	7	0.63	10.11	1.50	0.42	0.8384	0.35	5.65
2019	2034	R-02W-18-630	630	1.61	6	6	7	0.63	1.02	1.50	0.42	0.7971	0.34	0.54
2019	2034	R-07W-32-630	630	9.36	6	7	7	0.67	6.24	1.50	0.44	0.7971	0.35	3.32
2019	2034	R-07W-36-630	630	0.74	6	7	7	0.67	0.50	1.50	0.44	0.7971	0.35	0.26
2019	2034	R-08E-09-641*	617	23.06	6	6	7	0.63	14.60	1.50	0.42	0.7971	0.34	7.76
2019	2034	ST-IS-R24**	610	16.87	5	5	7	0.57	9.56	1.50	0.38	0.7971	0.30	5.08
2021	2036	R-11W-06-617	617	15.98	7	7	7	0.70	11.19	1.50	0.47	0.7182	0.34	5.36
2022	2037	R-03E-02-617b	617	5.91	7	7	7	0.70	4.14	1.50	0.47	0.6805	0.32	1.88
2022	2037	R-03E-02-630b	630	17.68	6	7	7	0.67	11.78	1.50	0.44	0.6805	0.30	5.35
2022	2037	DB-IS-R59**	610	27.83	7	6	7	0.67	18.55	1.50	0.44	0.6805	0.30	8.42
2023	2038	R-03W-48-611	611	3.45	6	7	7	0.67	2.30	1.75	0.38	0.6438	0.25	0.85
2023	2038	R-10W-02-617	617	8.71	7	8	7	0.73	6.39	1.50	0.49	0.6438	0.31	2.74
2025	2040	R-03W-38-617	617	2.34	6	7	6	0.63	1.48	1.50	0.42	0.5737	0.24	0.57
2026	2041	R-07W-06-616	616	15.52	7	7	7	0.70	10.87	1.50	0.47	0.5402	0.25	3.91
2026	2041	R-07W-06-617	617	126.85	7	7	7	0.70	88.79	1.50	0.47	0.5402	0.25	31.98
2026	2041	R-07W-14-617	617	6.53	8	7	7	0.73	4.79	1.50	0.49	0.5402	0.26	1.73
2026	2041	R-07W-02-630	630	2.56	8	7	7	0.73	1.88	1.50	0.49	0.5402	0.26	0.68
2026	2041	R-07W-10-630	630	0.67	8	7	7	0.73	0.49	1.50	0.49	0.5402	0.26	0.18
2027	2042	R-06W-08-617	617	14.09	7	7	7	0.70	9.86	1.50	0.47	0.5077	0.24	3.34
2027	2042	R-06W-14-617	617	20.95	7	7	7	0.70	14.67	1.50	0.47	0.5077	0.24	4.96
2027	2042	R-06W-18-617	617	2.15	7	6	7	0.67	1.44	1.50	0.44	0.5077	0.23	0.49
2027	2042	R-06W-22-617	617	7.58	6	6	7	0.63	4.80	1.50	0.42	0.5077	0.21	1.62
2027	2042	R-06W-24-641*	617	14.12	6	6	7	0.63	8.95	1.50	0.42	0.5077	0.21	3.03

Table 8: Forested Wetland Establishment on Mined Lands by Year

Reclamation Year	Year Finish (YF)	Wetland ID	FLUCCS	Acreage	LL Score	WE Score	CS Score	Delta	Subtotal Credit	Risk	Risk Adjusted RFG	USACE T-factor	T-factor Adjusted RFG	Final Credit
2027	2042	R-06W-26-617	617	36.79	6	6	7	0.63	23.30	1.50	0.42	0.5077	0.21	7.89
2027	2042	R-06W-22-626	626	26.48	6	6	7	0.63	16.77	1.50	0.42	0.5077	0.21	5.67
2027	2042	R-06W-22-627	627	11.04	6	6	7	0.63	6.99	1.50	0.42	0.5077	0.21	2.37
2027	2042	R-06W-04-630	630	4.44	7	7	7	0.70	3.11	1.50	0.47	0.5077	0.24	1.05
2027	2042	R-06W-22-630	630	33.77	6	6	7	0.63	21.39	1.50	0.42	0.5077	0.21	7.24
2028	2043	R-01W-54-613	613	4.04	8	7	7	0.73	2.96	1.50	0.49	0.4761	0.23	0.94
2028	2043	R-06W-08-617	617	2.44	7	7	7	0.70	1.71	1.50	0.47	0.4761	0.22	0.54
2028	2043	R-11W-02-617	617	17.26	7	8	7	0.73	12.66	1.50	0.49	0.4761	0.23	4.02
2028	2043	R-12W-08-625	625	4.80	6	6	6	0.60	2.88	1.50	0.40	0.4761	0.19	0.91
2028	2043	R-12W-10-625	625	12.70	7	8	7	0.73	9.31	1.50	0.49	0.4761	0.23	2.95
2028	2043	R-02W-04-630	630	3.02	7	7	7	0.70	2.11	1.50	0.47	0.4761	0.22	0.67
2031	2046	R-01W-07-617	617	0.70	8	8	7	0.77	0.54	1.50	0.51	0.3867	0.20	0.14
2031	2046	R-01W-09-617	617	2.56	8	8	7	0.77	1.96	1.50	0.51	0.3867	0.20	0.51
2031	2046	R-01W-05-626	626	0.47	8	8	7	0.77	0.36	1.50	0.51	0.3867	0.20	0.09
2034	2049	03W-34B-DR	617	0.72	7	8	9	0.80	0.58	1.50	0.53	0.3049	0.16	0.12
2034	2049	03W-34-DR	617	0.17	7	8	9	0.80	0.14	1.50	0.53	0.3049	0.16	0.03
			Total	**524.60**										**139.33**

* Previously proposed as a herbaceous wetland

**Wetlands will be established on the South Pasture Mine

Table 9: Summary of Preservation (With and Without Project) UMAM Values by Assessment Area ID

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM Score			Delta	Risk	Time Lag	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.						
Wetland	12W-57-P	513	5	6	7	4	5	5	3	4	4	0.40	0.50	0.53	0.13	1	1	1	0.11	0.01
Wetland	03W-24-P	611	5	6	7	6	7	7	8	9	9	0.63	0.73	0.77	0.13	1	1	1	18.34	2.45
Wetland	11W-02A-P	611	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	16.42	2.74
Wetland	12W-18-P	616	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	2.72	0.45
Wetland	12W-50-P	616	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	4.62	0.77
Wetland	12W-62B-P	616	5	6	7	6	7	7	7	8	8	0.60	0.70	0.73	0.13	1	1	1	3.07	0.41
Wetland	01W-100B-P	617	5	5	6	5	6	6	7	8	8	0.57	0.63	0.67	0.10	1	1	1	0.06	0.01
Wetland	01W-44-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	0.01	0.00
Wetland	01W-46-P	617	5	7	8	5	6	6	7	8	8	0.57	0.70	0.73	0.17	1	1	1	0.53	0.09
Wetland	01W-62-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	6.66	1.11
Wetland	01W-92-P	617	5	7	8	3	4	4	7	8	8	0.50	0.63	0.67	0.17	1	1	1	0.25	0.04
Wetland	02W-44-P	617	5	5	6	5	6	6	8	9	9	0.60	0.67	0.70	0.10	1	1	1	0.37	0.04
Wetland	02W-56A-P	617	5	5	6	6	7	7	8	9	9	0.63	0.70	0.73	0.10	1	1	1	25.90	2.59
Wetland	02W-56B-P	617	5	6	7	6	7	7	8	9	9	0.63	0.73	0.77	0.13	1	1	1	1.83	0.24
Wetland	02W-56C-P	617	5	5	6	6	7	7	5	6	6	0.53	0.60	0.63	0.10	1	1	1	0.04	0.00
Wetland	02W-66-P	617	5	6	7	5	6	6	6	7	7	0.53	0.63	0.67	0.13	1	1	1	3.52	0.47
Wetland	02W-70-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	2.63	0.44
Wetland	02W-80-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	8.78	1.46
Wetland	02W-81-P	617	5	6	7	5	6	6	8	9	9	0.60	0.70	0.73	0.13	1	1	1	0.75	0.10
Wetland	02W-88A-P	617	5	6	7	6	7	7	8	9	9	0.63	0.73	0.77	0.13	1	1	1	12.49	1.66
Wetland	03W-04-P	617	5	6	7	4	5	5	8	9	9	0.57	0.67	0.70	0.13	1	1	1	2.34	0.31
Wetland	03W-34B-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	2.14	0.36
Wetland	03W-34-P	617	5	6	7	7	8	8	8	9	9	0.67	0.77	0.80	0.13	1	1	1	15.38	2.05
Wetland	03W-50-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.37	0.23
Wetland	06W-40-P	617	5	8	9	7	8	8	7	8	8	0.63	0.80	0.83	0.20	1	1	1	0.87	0.17
Wetland	06W-42-P	617	5	8	9	7	8	8	8	9	9	0.67	0.83	0.87	0.20	1	1	1	3.63	0.73
Wetland	06W-54-P	617	5	8	9	7	8	8	8	9	9	0.67	0.83	0.87	0.20	1	1	1	0.22	0.04
Wetland	06W-63-P	617	5	8	9	7	8	8	6	7	7	0.60	0.77	0.80	0.20	1	1	1	0.34	0.07
Wetland	06W-65-P	617	5	8	9	7	8	8	6	7	7	0.60	0.77	0.80	0.20	1	1	1	1.15	0.23
Wetland	06W-66-P**	617	5	8	9	7	8	8	5	6	6	0.57	0.73	0.77	0.20	1	1	1	0.28	0.06
Wetland	06W-77-P	617	5	6	7	5	6	6	3	4	4	0.43	0.53	0.57	0.13	1	1	1	0.01	0.00
Wetland	07W-40-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	0.12	0.02
Wetland	07W-54A-P	617	5	6	7	7	8	8	8	9	9	0.67	0.77	0.80	0.13	1	1	1	17.95	2.39
Wetland	07W-62-P	617	5	6	7	6	7	7	7	8	8	0.60	0.70	0.73	0.13	1	1	1	10.90	1.45
Wetland	07W-64-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	2.97	0.49
Wetland	07W-66-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	3.16	0.53
Wetland	07W-68-P	617	5	6	7	5	6	6	8	9	9	0.60	0.70	0.73	0.13	1	1	1	0.98	0.13
Wetland	07W-70-P	617	5	6	7	7	8	8	7	8	8	0.63	0.73	0.77	0.13	1	1	1	0.57	0.08
Wetland	11W-02C-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	15.73	2.62

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM Score			Delta	Risk	Time Lag	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.						
Wetland	11W-02D-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	15.11	2.52
Wetland	11W-02H-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.95	0.32
Wetland	11W-04-P	617	5	8	9	7	8	8	7	8	8	0.63	0.80	0.83	0.20	1	1	1	0.33	0.07
Wetland	11W-26-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.09	0.18
Wetland	11W-34-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.14	0.19
Wetland	11W-40-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.39	0.23
Wetland	11W-50-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	8.20	1.37
Wetland	11W-53-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	1.16	0.19
Wetland	12W-06-P	617	5	7	8	6	7	7	7	8	8	0.60	0.73	0.77	0.17	1	1	1	34.40	5.73
Wetland	12W-32-P	617	5	7	8	5	6	6	7	8	8	0.57	0.70	0.73	0.17	1	1	1	0.41	0.07
Wetland	12W-36-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	2.66	0.44
Wetland	12W-38-P	617	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	7.11	1.19
Wetland	12W-42-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	1.01	0.17
Wetland	12W-44-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	7.73	1.29
Wetland	12W-52C-P	617	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	3.40	0.57
Wetland	12W-54-P	617	5	7	8	6	7	7	6	7	7	0.57	0.70	0.73	0.17	1	1	1	0.70	0.12
Wetland	12W-56-P	617	5	8	9	7	8	8	8	9	9	0.67	0.83	0.87	0.20	1	1	1	4.53	0.91
Wetland	12W-62A-P	617	5	7	8	7	8	8	7	8	8	0.63	0.77	0.80	0.17	1	1	1	3.71	0.62
Wetland	12W-66-P	617	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	1.42	0.24
Wetland	12W-69-P	617	5	7	8	6	7	7	7	8	8	0.60	0.73	0.77	0.17	1	1	1	0.00	0.00
Wetland	12W-71-P	617	5	7	8	6	7	7	7	8	8	0.60	0.73	0.77	0.17	1	1	1	0.02	0.00
Wetland	12W-72-P	617	5	7	8	6	7	7	7	8	8	0.60	0.73	0.77	0.17	1	1	1	0.10	0.02
Wetland	12W-74-P**	617	5	7	8	7	8	8	7	8	8	0.63	0.77	0.80	0.17	1	1	1	1.66	0.28
Wetland	01W-14-P	630	5	8	9	6	7	7	8	9	9	0.63	0.80	0.83	0.20	1	1	1	2.58	0.52
Wetland	01W-68-P	630	5	6	7	6	7	7	6	7	7	0.57	0.67	0.70	0.13	1	1	1	0.75	0.10
Wetland	02W-88B-P	630	5	6	7	5	6	6	7	8	8	0.57	0.67	0.70	0.13	1	1	1	2.18	0.29
Wetland	02W-88C-P	630	5	7	8	4	5	5	6	7	7	0.50	0.63	0.67	0.17	1	1	1	1.47	0.24
Wetland	02W-88D-P	630	5	5	6	4	5	5	6	7	7	0.50	0.57	0.60	0.10	1	1	1	0.69	0.07
Wetland	03W-12-P	630	5	5	6	6	7	7	8	9	9	0.63	0.70	0.73	0.10	1	1	1	20.19	2.02
Wetland	03W-22-P	630	5	5	6	6	7	7	8	9	9	0.63	0.70	0.73	0.10	1	1	1	5.20	0.52
Wetland	03W-48-P	630	5	6	7	7	8	8	8	9	9	0.67	0.77	0.80	0.13	1	1	1	0.04	0.01
Wetland	06W-26-P	630	5	8	9	7	8	8	7	8	8	0.63	0.80	0.83	0.20	1	1	1	0.55	0.11
Wetland	07W-76-P	630	5	6	7	6	7	7	7	8	8	0.60	0.70	0.73	0.13	1	1	1	0.53	0.07
Wetland	11W-10-P	630	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	0.81	0.13
Wetland	11W-12-P	630	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	5.82	0.97
Wetland	01W-102-P	641	5	6	7	6	7	7	7	8	8	0.60	0.70	0.73	0.13	1	1	1	1.62	0.22
Wetland	01W-60-P	641	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.33	0.22
Wetland	01W-66-P	641	5	6	7	7	8	8	8	9	9	0.67	0.77	0.80	0.13	1	1	1	14.54	1.94
Wetland	01W-98-P	641	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	1.41	0.23
Wetland	02W-84-P	641	5	5	6	4	5	5	4	5	5	0.43	0.50	0.53	0.10	1	1	1	0.73	0.07
Wetland	03W-10-P	641	5	6	7	4	5	5	8	9	9	0.57	0.67	0.70	0.13	1	1	1	0.10	0.01
Wetland	06W-62-P	641	5	8	9	7	8	8	6	7	7	0.60	0.77	0.80	0.20	1	1	1	2.25	0.45

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM Score			Delta	Risk	Time Lag	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.	Without Project	Current	With Proj.						
Wetland	06W-64-P	641	5	8	9	7	8	8	6	7	7	0.60	0.77	0.80	0.20	1	1	1	4.60	0.92
Wetland	07W-46-P	641	5	5	6	5	6	6	5	6	6	0.50	0.57	0.60	0.10	1	1	1	1.55	0.16
Wetland	07W-50-P	641	5	6	7	6	7	7	7	8	8	0.60	0.70	0.73	0.13	1	1	1	1.57	0.21
Wetland	07W-52-P	641	5	7	8	7	8	8	6	7	7	0.60	0.73	0.77	0.17	1	1	1	0.67	0.11
Wetland	07W-74-P**	641	5	6	7	7	8	8	6	7	7	0.60	0.70	0.73	0.13	1	1	1	1.17	0.16
Wetland	11W-08A-P	641	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	9.24	1.54
Wetland	11W-14-P	641	5	6	7	5	6	6	7	8	8	0.57	0.67	0.70	0.13	1	1	1	0.77	0.10
Wetland	11W-16-P**	641	5	5	6	5	6	6	5	6	6	0.50	0.57	0.60	0.10	1	1	1	1.20	0.12
Wetland	11W-24-P**	641	5	7	8	5	6	6	7	8	8	0.57	0.70	0.73	0.17	1	1	1	1.22	0.20
Wetland	12W-20-P	641	5	7	8	5	6	6	7	8	8	0.57	0.70	0.73	0.17	1	1	1	2.55	0.43
Wetland	12W-28-P**	641	5	6	7	6	7	7	8	9	9	0.63	0.73	0.77	0.13	1	1	1	4.06	0.54
Wetland	12W-48-P**	641	5	7	8	7	8	8	7	8	8	0.63	0.77	0.80	0.17	1	1	1	5.90	0.98
Wetland	12W-64-P	641	5	7	8	5	6	6	6	7	7	0.53	0.67	0.70	0.17	1	1	1	1.18	0.20
Wetland	01W-61-P	643	5	7	8	7	8	8	6	7	7	0.60	0.73	0.77	0.17	1	1	1	0.03	0.00
Wetland	06W-78-P	643	5	8	9	7	8	8	5	6	6	0.57	0.73	0.77	0.20	1	1	1	1.66	0.33
Wetland	11W-38-P**	643	5	7	8	7	8	8	8	9	9	0.67	0.80	0.83	0.17	1	1	1	1.07	0.18
Wetland	11W-51-P	643	5	7	8	5	6	6	8	9	9	0.60	0.73	0.77	0.17	1	1	1	0.64	0.11
Wetland	12W-51-P	643	5	5	6	7	8	8	3	4	4	0.50	0.57	0.60	0.10	1	1	1	0.07	0.01
Wetland	12W-65-P	643	5	7	8	7	8	8	7	8	8	0.63	0.77	0.80	0.17	1	1	1	0.07	0.01
Wetland	12W-70-P**	643	5	7	8	7	8	8	7	8	8	0.63	0.77	0.80	0.17	1	1	1	2.81	0.47
Wetland	01W-97-P	6417	5	7	8	6	7	7	8	9	9	0.63	0.77	0.80	0.17	1	1	1	0.24	0.04
Wetland	12W-68-P**	6417	5	8	9	6	7	7	8	9	9	0.63	0.80	0.83	0.20	1	1	1	2.79	0.56
																		Total	396.23	59.31

*This represents the predominant habitat type within each Assessment Area. Where they exist, minor habitat types within a given Assessment Area are listed on the specific UMAM data sheet.
**These UMAM Assessment Areas are in the no-mine area and are non-jurisdictional per the 2012 Rapanos

Table 10: Summary of Enhancement (With and Without Project) UMAM Values by Assessment Area ID

Type (Wetland or OSW)	UMAM Assessment Area ID	Land Use Code*	Location Landscape Support Score			Water Environment Score			Community Structure Score			UMAM Score			Delta	Risk	USACE T-factor	Preservation Adjustment Factor	Ac.	Functional Gain
			Without Project	Current	With Project	Without Project	Current	With Project	Without Project	Current	With Project	Without Project	Current	With Project						
Wetland	06W-60-P	617	7	7	9	6	6	8	7	7	8	0.67	0.67	0.83	0.17	1.25	0.9292	N/A	7.55	1.08
Wetland	06W-76-P	617	5	5	8	6	6	8	7	7	8	0.60	0.60	0.80	0.20	1.25	0.9292	N/A	5.37	0.93
Wetland	07W-08-P	617	5	5	8	3	3	8	7	7	8	0.50	0.50	0.80	0.30	1.25	0.9292	N/A	6.47	1.67
Wetland	12W-40-P	617	6	6	9	3	3	8	6	6	8	0.50	0.50	0.83	0.33	1.25	0.9292	N/A	1.21	0.35
Wetland	06W-20-P	641	7	7	9	4	4	8	5	5	8	0.53	0.53	0.83	0.30	1.25	0.9292	N/A	102.91	26.58
																		Total	**123.52**	**30.61**

Herbaceous	102.91	26.58
Forested	20.61	4.03

Table 11A Existing Streams

Land Use in 120 foot stream buffer

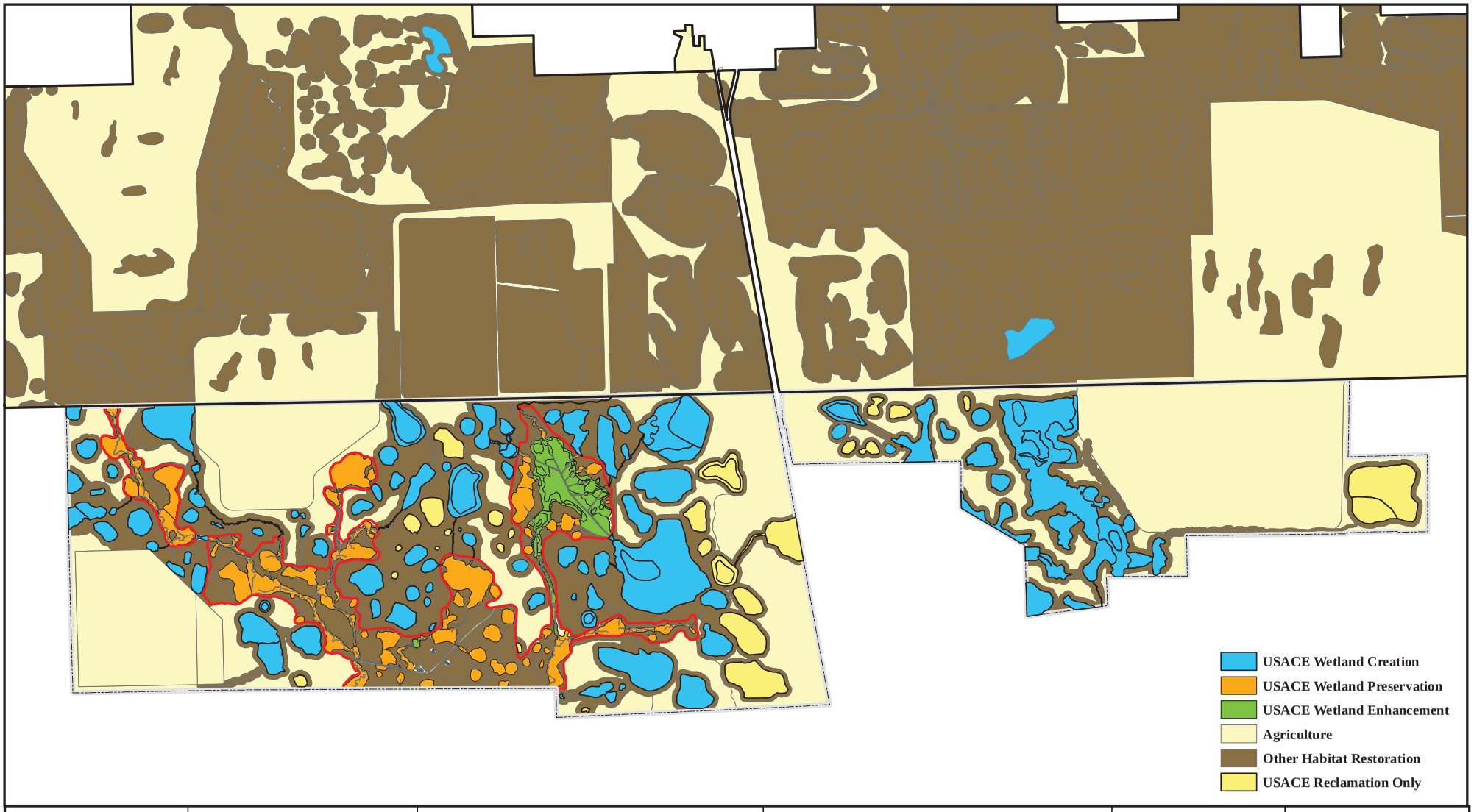
NAME	211	213	215	321	329	330	411	425	427	434	438	513	514	534	611	613	617	618	625	626	630	641	6415	6417	643	814	Sum of Acres
BC-MT-07	0.27			0.01			0.45						0.06							0.27		0.01			0.01		1.08
BC-MT-08	1.19						0.67			0.27										0.03	0.07	0.03					2.27
BC-MT-10	0.02						1.04			0.01											0.08	0.13					1.28
BC-MT-12										1.11							0.03				0.76						1.90
BC-MT-15	0.26			0.00			0.34	0.67									0.05					0.16					1.49
BC-NC-01	0.55						0.17		0.36	0.66											0.44	0.13			1.48		3.80
BC-NC-02	1.70			0.18	0.14					0.21							0.97				0.15	0.07	0.19				3.62
BC-NC-07	0.68												0.05														0.73
BC-NC-08	0.48												0.04									0.12					0.64
BC-NC-09	0.35								0.19			0.10	0.00									0.57					1.21
BC-NC-10									0.20								0.23					0.09			0.11		0.63
BC-NC-11	0.82								0.22								0.03					0.12	0.02				1.20
BC-NC-14	0.53								0.08						0.12	0.05						0.05					0.83
BC-NC-15	2.51									0.14												0.16	0.06				2.87
BC-NE-01	0.26								0.29		0.07		0.01				0.01										0.64
BC-NE-03a	0.57											0.01					0.13					0.06					0.77
BC-NE-03b	0.56								0.00								0.12										0.68
BC-NW-01	0.23								0.08	1.33							0.02				0.17	0.10					1.93
BC-NW-02						0.24				1.76							0.18				0.10	0.11					2.38
BC-NW-03a	1.84			0.15		1.01	0.65			1.49	1.30						0.63				0.56	0.04					7.66
BC-NW-06	0.00			0.94																							0.95
BC-NW-07b				0.55			0.08			0.08																	0.71
BC-SW-01	1.49				0.69				0.55			0.01					0.12					0.02	0.02				2.89
BC-SW-02	0.11			0.52			0.61		0.02	0.68							0.22				1.25	0.03				0.12	3.57
BC-SW-03							1.05			0.38			0.01				0.55				0.25	0.10		0.04			2.38
BC-SW-04	0.40									0.71							0.29				0.38			0.02			1.81
BC-SW-05				0.04						0.25							1.01				0.42						1.71
BC-SW-06								0.05				0.01					1.19										1.24
BC-SW-07				0.41			0.10	0.31		0.23											0.02						1.07
BC-SW-08	1.57																					0.10			0.07		1.74
LC-EB-01										0.40		0.04									0.23						0.67
LC-EB-02										0.15		0.02									0.44						0.61
LC-EB-03									0.14	0.17							1.29				0.47						2.07
LC-EB-04a	0.42									0.44			0.01								0.20		0.06	0.04			1.18
LC-EB-04b	0.24								0.08	0.12			0.05														0.49
LC-EB-05	0.23								0.02	0.20			0.02				0.04										0.51
LC-EB-10	0.68			0.58	0.03					0.10												0.08					1.47
LC-EB-12	1.33		0.06						0.05		0.03	0.01										0.07	0.01				1.55
LC-EB-13				0.09					1.19								0.54										1.82

Land Use in 120 foot stream buffer

NAME	211	213	215	321	329	330	411	425	427	434	438	513	514	534	611	613	617	618	625	626	630	641	6415	6417	643	814	Sum of Acres
LC-EB-14									0.39								0.37										0.76
LC-EB-15			0.02	0.04					0.96	0.45		0.02					0.59					0.07					2.14
LC-MT-02	0.14			0.23			0.13			1.16									0.34	0.20		0.05					2.25
LC-MT-03										0.35												0.08					0.44
LC-NB-01									0.09	0.15											0.49						0.73
LC-NB-04										0.37											0.91	0.03			0.00		1.31
LC-NB-05										0.60							0.22				0.94	0.04					1.80
LC-NB-06							0.10		0.15	0.43	0.04						1.47					0.25					2.44
LC-NB-07									0.43								0.50			0.02		0.05					0.99
LC-NB-08										0.16		0.01									0.58						0.75
LC-NB-10							0.29		0.09	0.38		0.03					1.08			0.12					0.14		2.13
TC-EB-01		0.19							0.30			0.03	0.03				0.49					0.14					1.19
TC-EB-02	0.28								1.46			0.02					0.97							0.00			2.74
TC-EB-03	0.97																	0.00				0.14	0.04		0.07		1.22
TC-EB-04	0.16							0.13									0.50					0.07	0.05				0.91
TC-EB-05	0.09							0.03	0.27								0.25										0.64
TC-WB-01	0.43	2.15							0.31			0.01	0.04	0.02								0.07		0.02		0.02	3.07
Grand Total	21.37	2.34	0.08	3.74	0.86	1.25	5.67	1.19	7.93	14.95	1.44	0.31	0.32	0.02	0.12	0.05	14.09	0.00	0.34	0.64	8.91	3.35	0.45	0.12	1.87	0.14	91.57
%	23.3	2.5605	0.1	4.09	0.9	1.4	6.2	1.3	8.7	16.324	1.6	0.3	0.4	0	0.1	0.1	15.4	0	0.4	0.7	9.7	3.7	0.49	0.13	2	0.15	100%

Stream Segment	Land Use in 120 foot Stream Buffer																						Sum of Acres
	211	213	215	321	330	411	425	427	434	438	513	514	534	611	616	617	626	630	640	641	6415	643	814	
BC-MT-1	0.08					1.54		0.10	2.35							4.77		8.67		0.03				17.54
BC-MT-1-R				0.94		0.04		0.83	0.08									0.05		0.06				2.00
BC-MT-11						0.01												0.03						0.04
BC-MT-13																0.19		0.13						0.32
BC-MT-14									0.20							1.02		0.91						2.13
BC-MT-16				0.01			0.26									0.70								0.97
BC-MT-2						0.20										0.72		0.52						1.44
BC-MT-2-R				0.57		0.27		0.20								0.12		0.08						1.24
BC-MT-3	0.19			0.08			0.23		0.74	0.50						3.81						0.12		5.67
BC-MT-4				0.05		0.18	0.01		0.59	0.63						4.40								5.86
BC-MT-5				0.16				2.23	0.22							10.42								13.03
BC-MT-6	0.01						0.36	0.34				0.03				4.75							0.11	5.60
BC-MT-9									0.01									0.11						0.12
BC-NC-12	0.64			0.40				1.23	0.01								0.10			0.36				2.74
BC-NC-13	0.59							1.38	0.03							0.47				0.08				2.55
BC-NC-16									0.17											0.11				0.28
BC-NC-3	0.48							0.10	0.69	0.32						1.93		1.92		0.14				5.58
BC-NC-4																0.76								0.76
BC-NC-4-R				0.13					3.12									0.06		0.30				3.61
BC-NC-5								0.30	2.03							0.73		2.62						5.68
BC-NC-6								1.58	0.41							2.92								4.91
BC-NE-1-R				3.35				0.03		0.06						0.02				0.03		0.10		3.59
BC-NE-2				0.01				0.01		0.04						0.08								0.14
BC-NE-2-R				1.14												0.03				0.10				1.27
BC-NE-4				0.07				0.09								0.05								0.21
BC-NE-5								0.02		2.62						0.59				0.10				3.33
BC-NE-6								0.58								1.20								1.78
BC-NE-7								0.86					0.04			1.21								2.11
BC-NW-1-R				1.50					0.03											0.27				1.80
BC-NW-2-R									1.81											0.24				2.05
BC-NW-3-R	0.01								9.19	0.05						0.05				0.12				9.42
BC-NW-3b	0.24			0.19					0.49	0.50						0.70								2.12
BC-NW-4									0.12							1.34								1.46
BC-NW-5									0.67							0.99								1.66
BC-NW-7				0.15		0.11										0.23								0.49
LC-EB-1-R								1.11								0.06		0.13						1.30
LC-EB-11	0.02							0.05	0.19							0.43								0.69
LC-EB-16								0.05	0.03							0.80								0.88
LC-EB-6	0.01								1.47							1.63		0.05						3.16
LC-EB-7				0.06					0.50							1.72								2.28
LC-EB-8	0.05							0.04	0.09							1.04								1.22
LC-EB-9	0.34	0.08						0.29		0.19						3.56						0.02		4.48
LC-MT-1								1.40								4.15				0.16				5.71
LC-NB-1-R									0.36											0.09				0.45
LC-NB-2						0.53		0.21	1.72						0.12	0.93		1.38				0.08		4.97
LC-NB-3	0.03	0.57		0.21				1.80	0.28			0.04				5.99				0.26	0.05		0.11	9.34

LC-NB-4-R									2.47							0.36								2.83
LC-NB-5-R									1.36							0.22								1.58
LC-NB-9									0.19		0.02					0.13		0.66		0.02		0.11		1.13
TB-EB-1-R				2.29																0.10				2.39
TB-WB-3-R				1.10														0.04		0.13				1.27
Grand Total	2.69	0.65	0.00	12.41	0.00	2.88	0.86	14.83	31.62	4.91	0.02	0.07	0.04	0.00	0.12	65.22	0.10	17.36	0.00	2.70	0.05	0.43	0.22	157.18
%	1.71	0.41	0.00	7.90	0.00	1.83	0.55	9.44	20.12	3.12	0.01	0.04	0.03	0.00	0.08	41.49	0.06	11.04	0.00	1.72	0.03	0.27	0.14	100%



N
W E
S

Feet
0 3,000
1 in = 3,000 feet

MOSAIC FERTILIZER, LLC.
SOUTH PASTURE EXTENSION

HARDEE COUNTY, FLORIDA

added_creation_07212016
South Pasture Mine
South Pasture Extension
No Mine Boundary

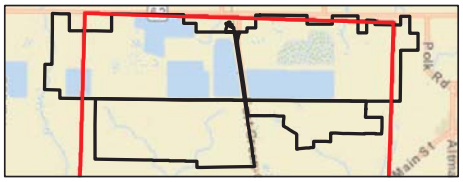
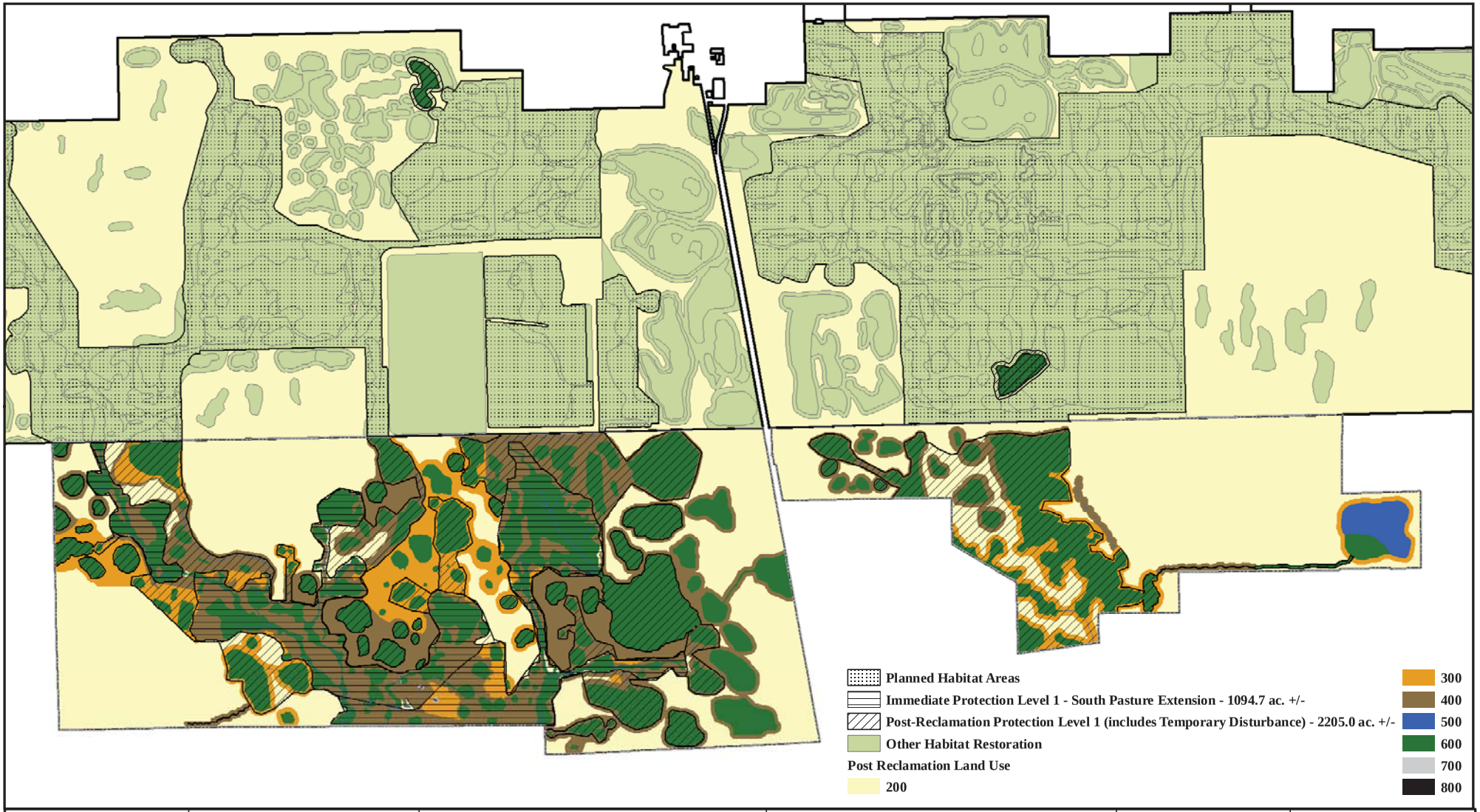


FIGURE 1
USACE
WETLAND
MITIGATION
MAP

FLATWOODS Consulting Group

P:\0003MOS\083-SPE USACE Permitting\GIS\ACOE MITIGATION



N
W E
S

Feet
0 3,000
1 in = 3,000 feet

MOSAIC FERTILIZER, LLC.
SOUTH PASTURE EXTENSION

HARDEE COUNTY, FLORIDA

South Pasture Extension
South Pasture Mine
No Mine Boundary

Source: Dec. 2014 Mosaic Imagery

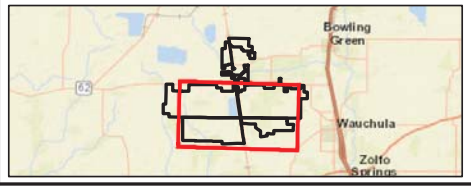
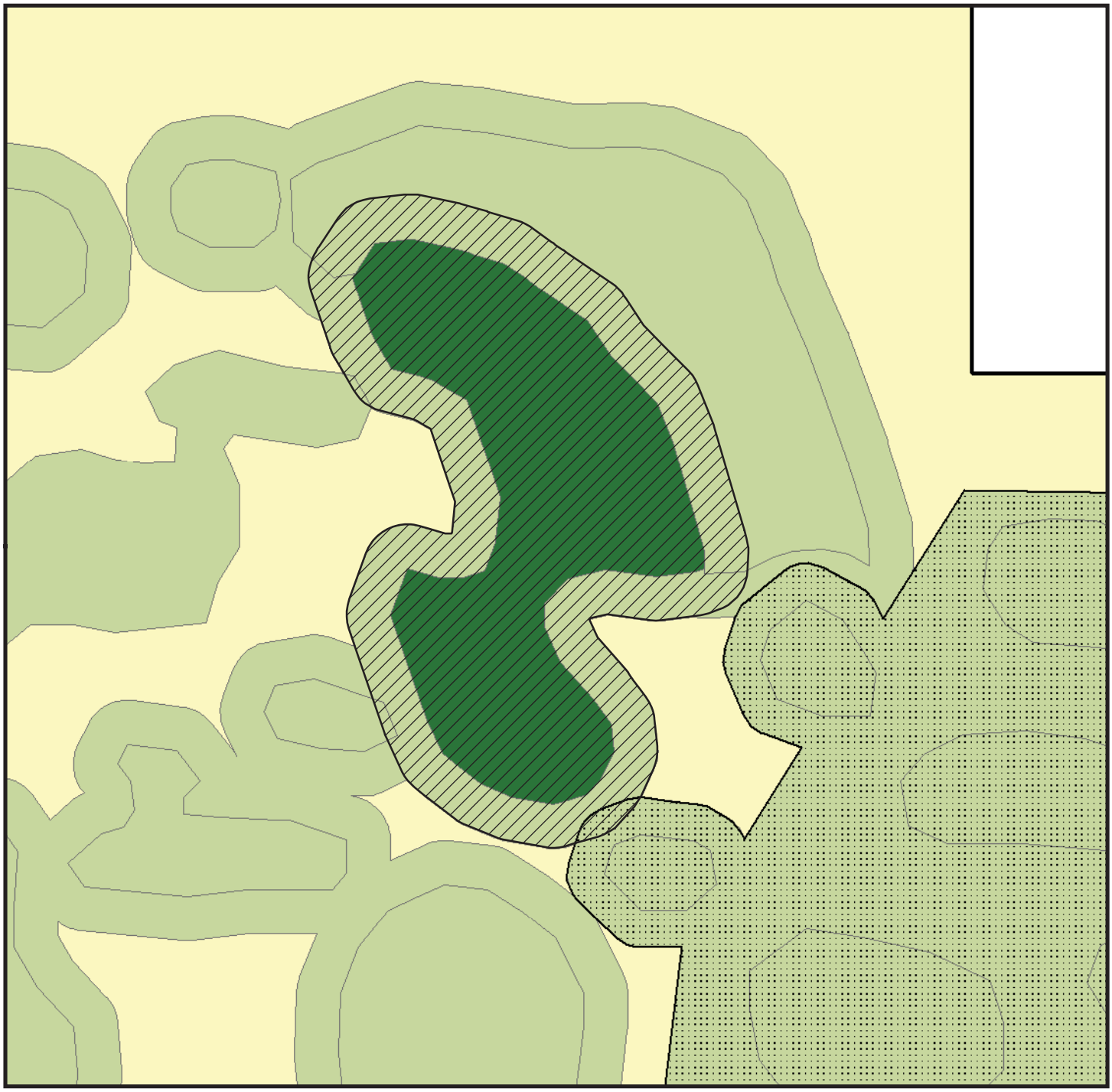


FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

FLATWOODS Consulting Group

P:\0010CF1005-South Pasture Misc. Services\GIS\PROTECTION LEVELS



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

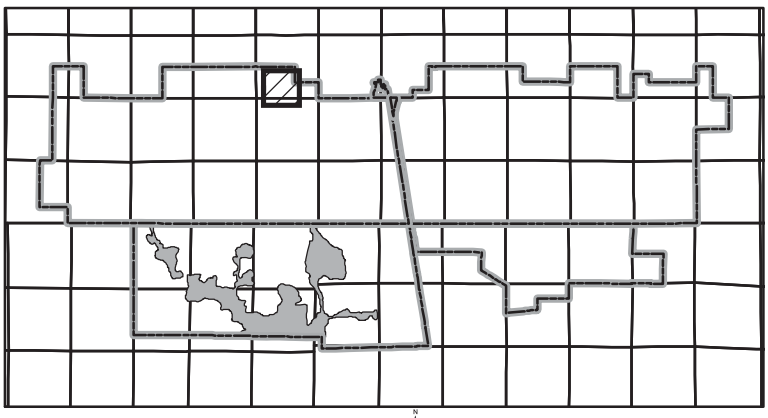
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 1 of 56

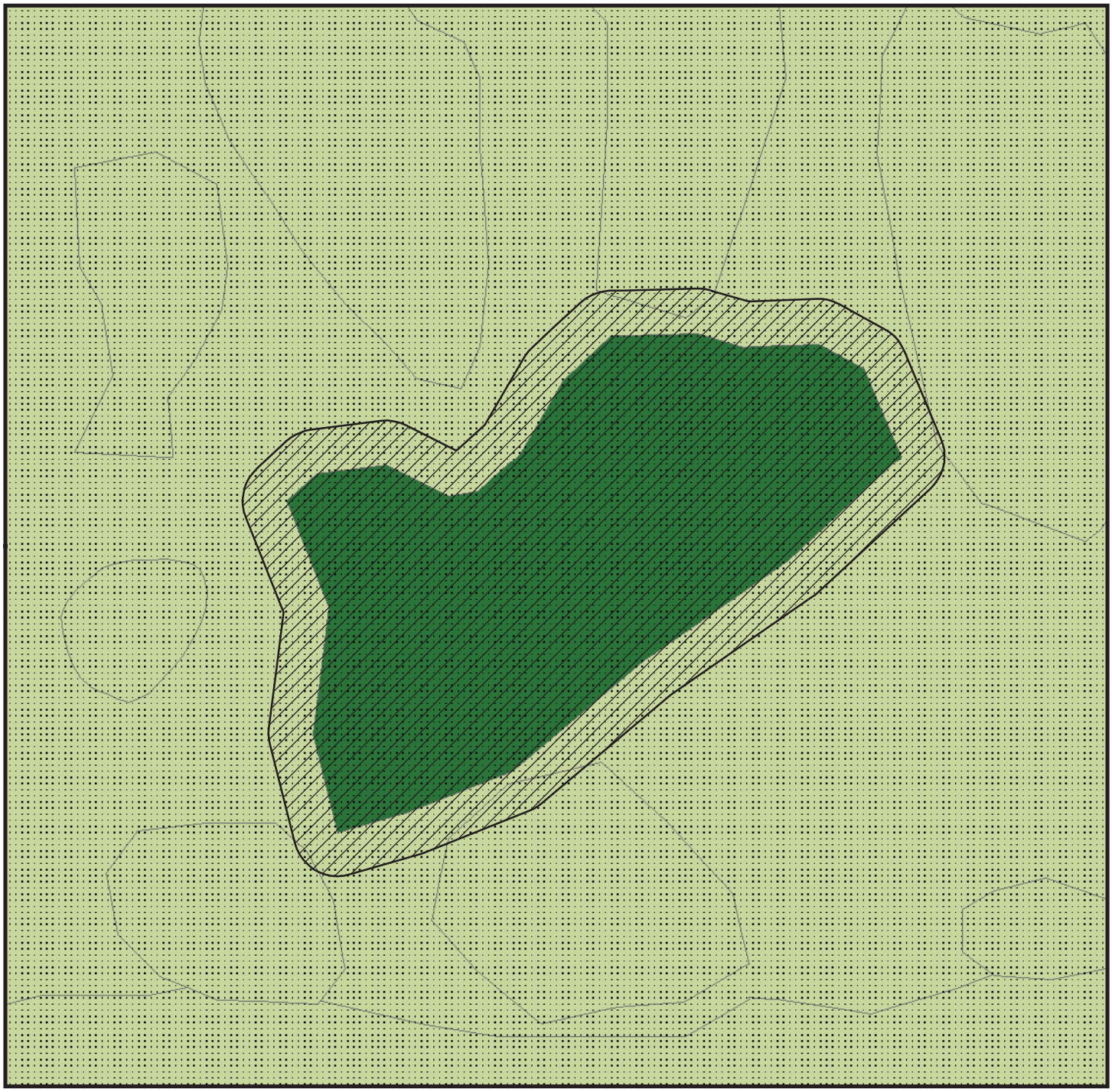
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

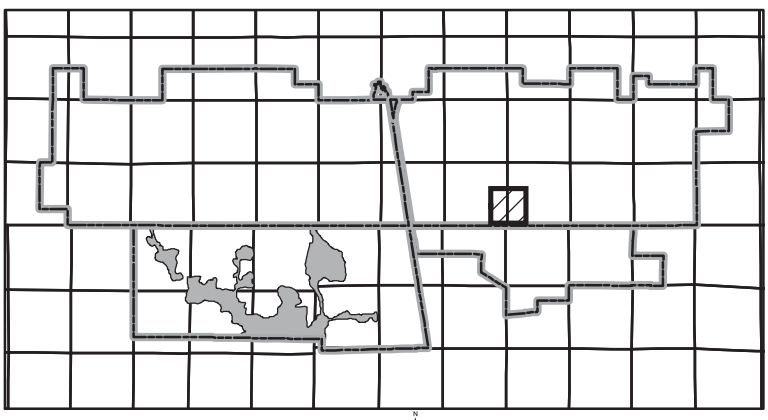


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 2 of 56

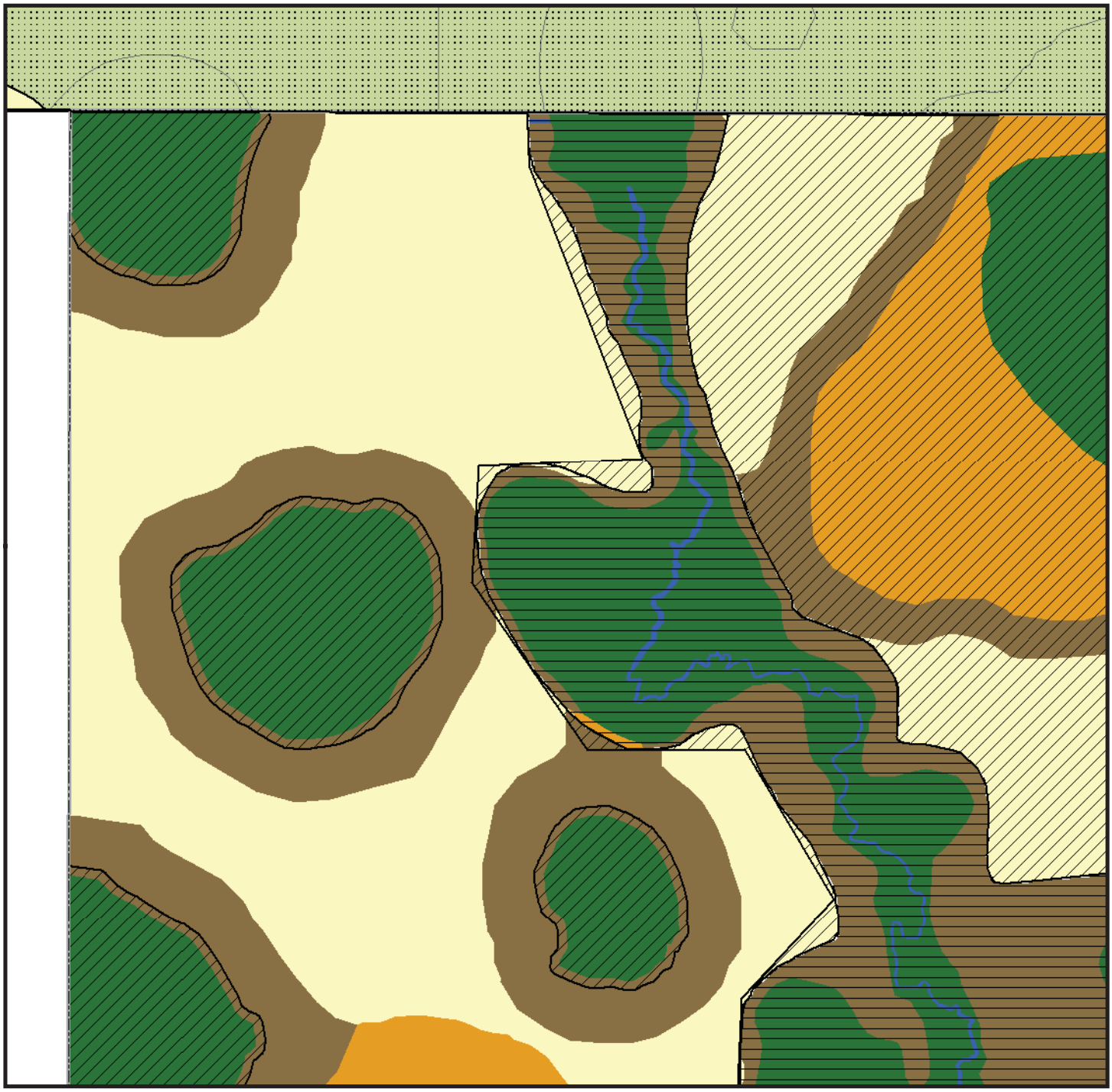
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

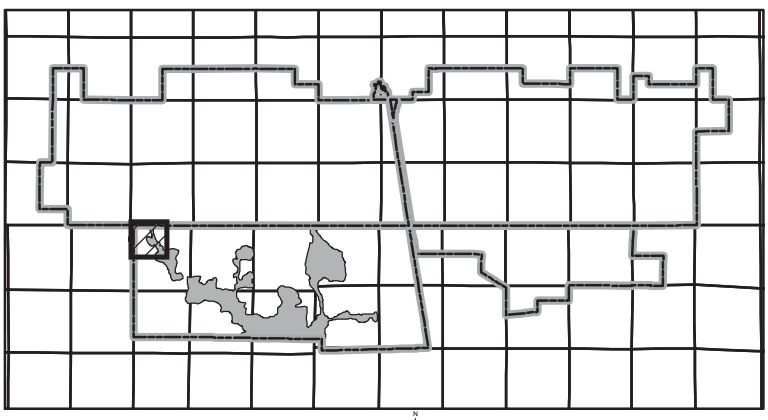


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 3 of 56

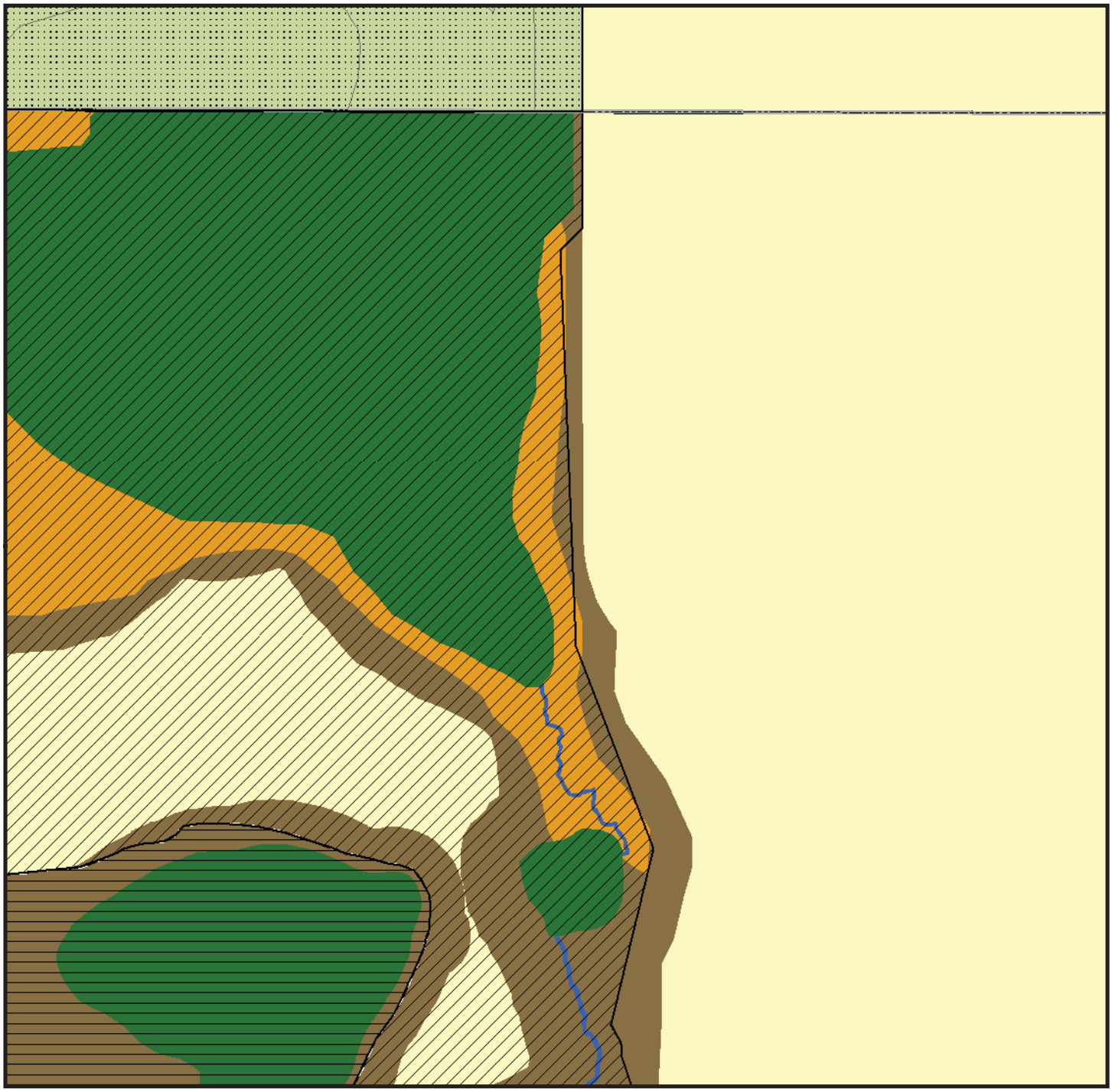
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

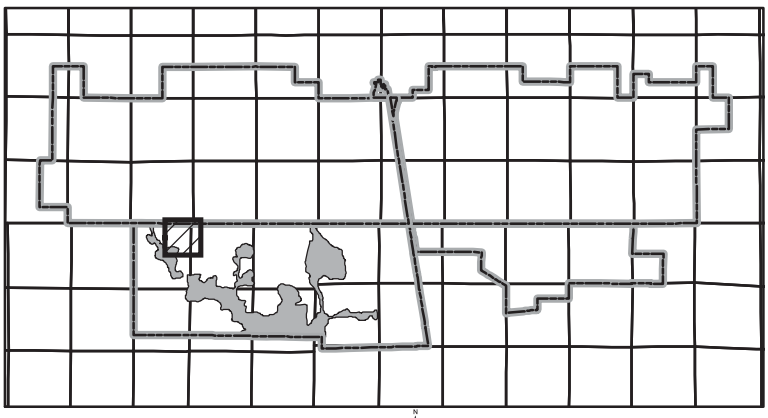
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 4 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

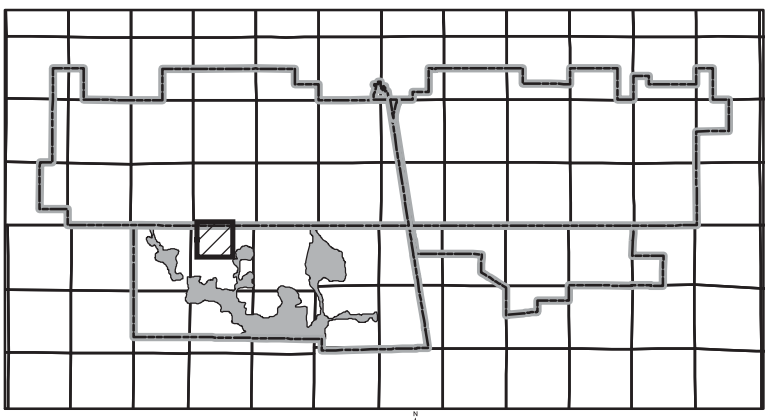
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 5 of 56

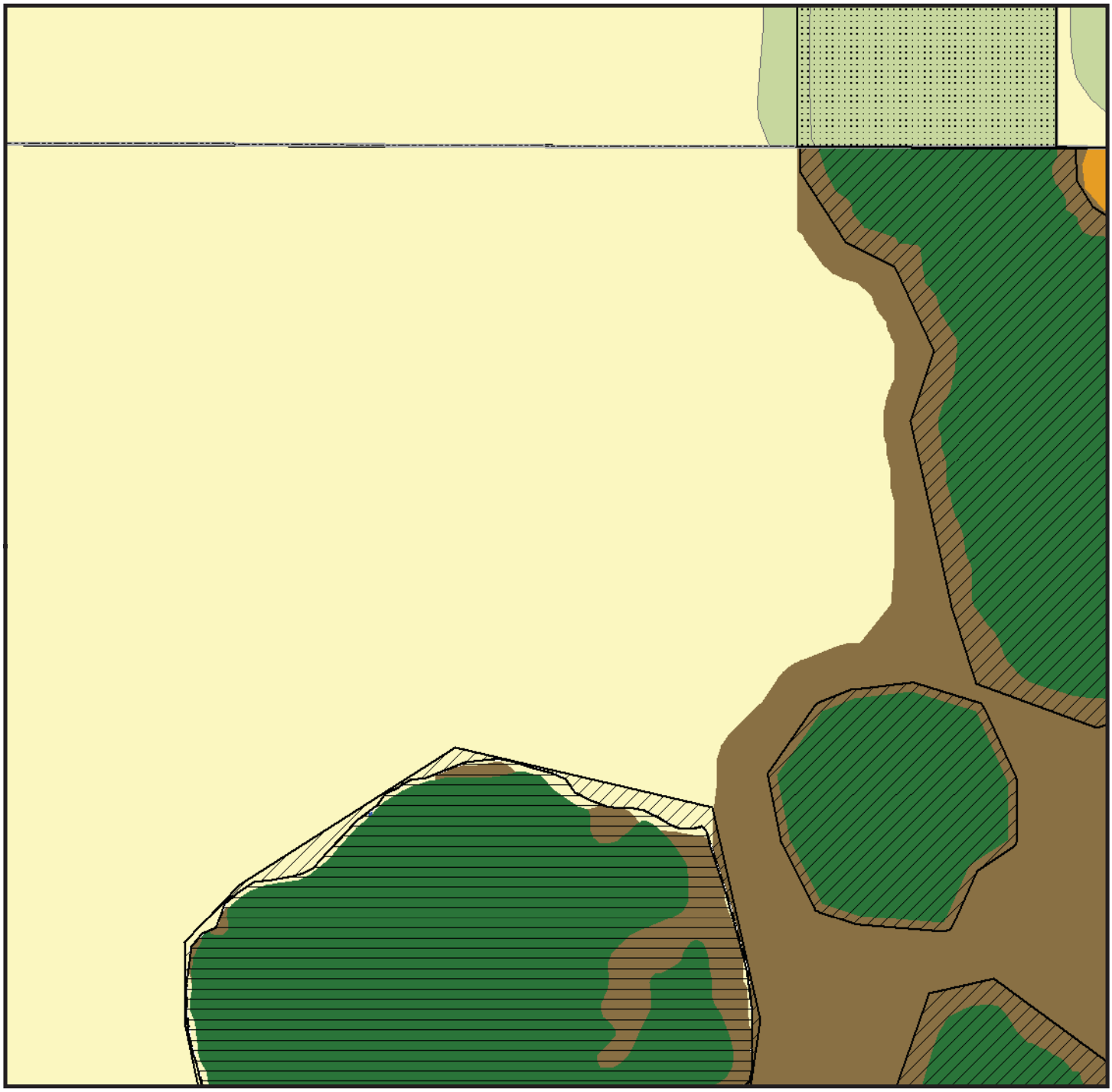
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

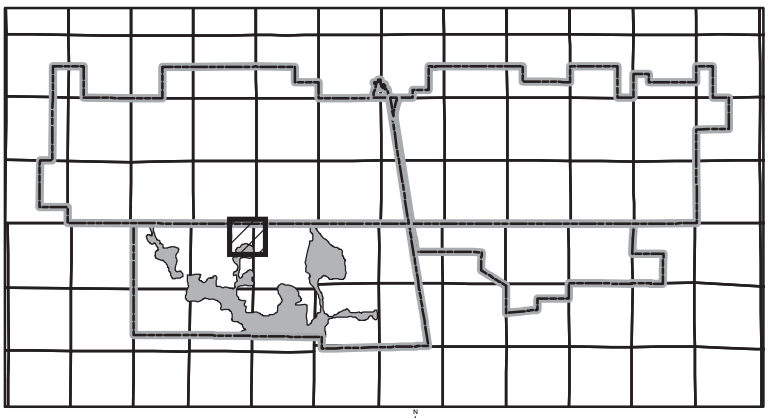
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 6 of 56

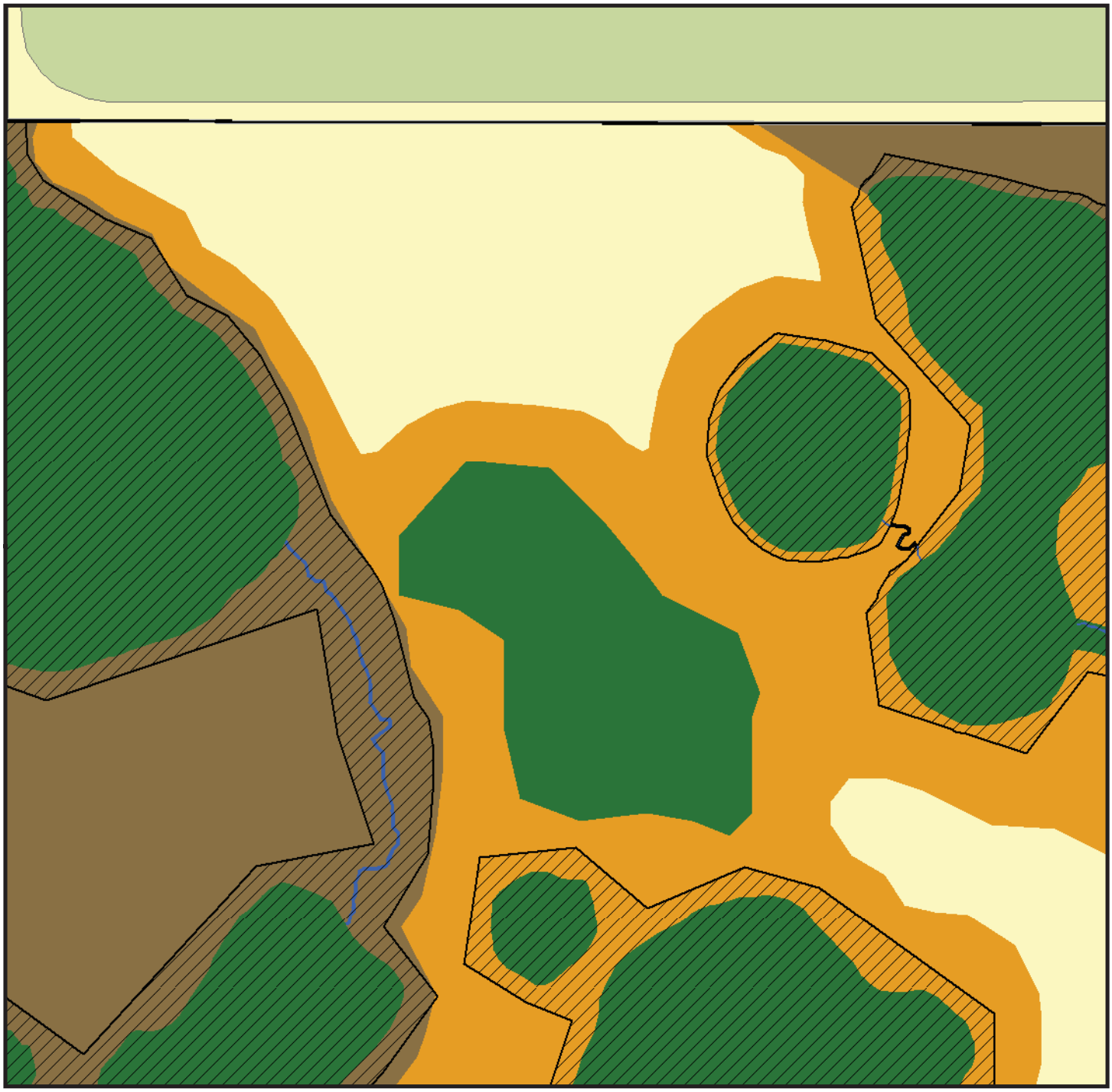
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

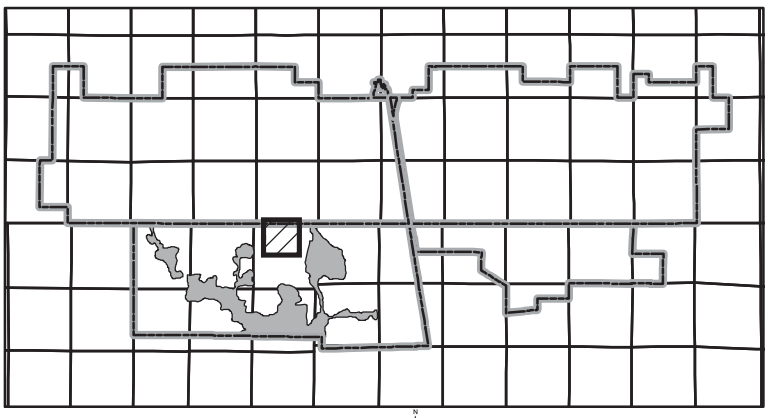


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 7 of 56

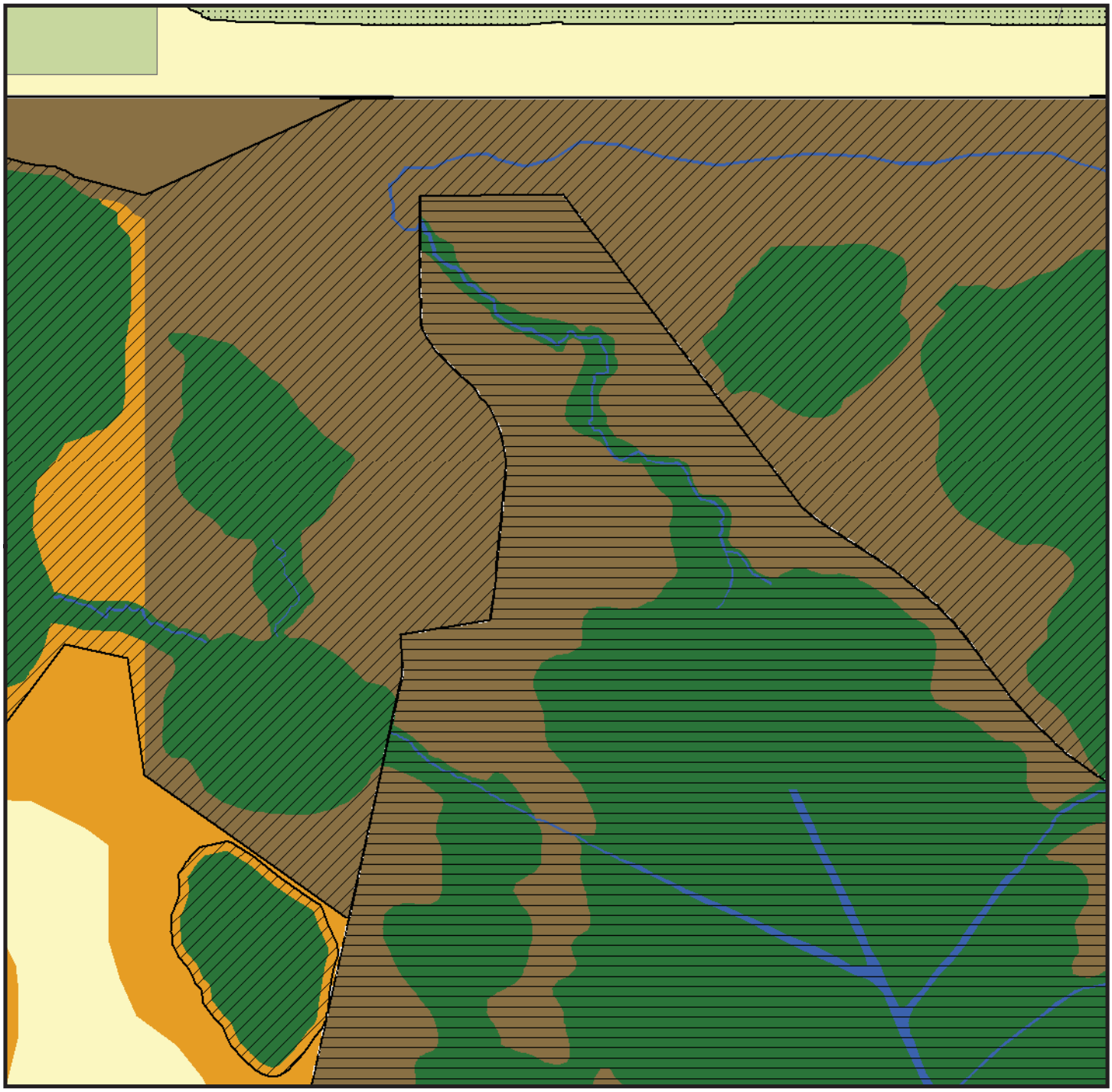
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

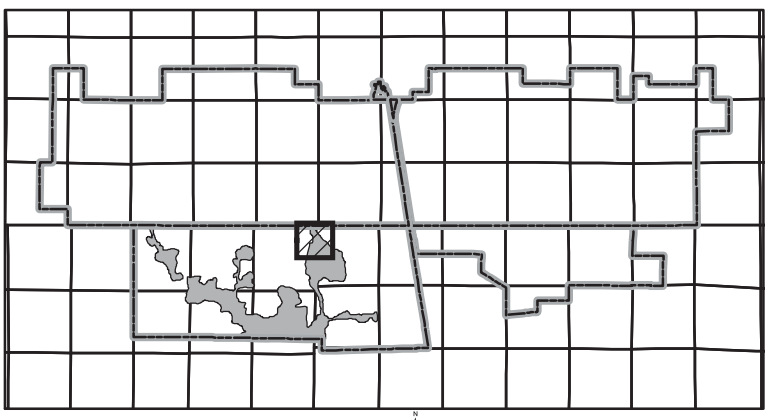


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 8 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

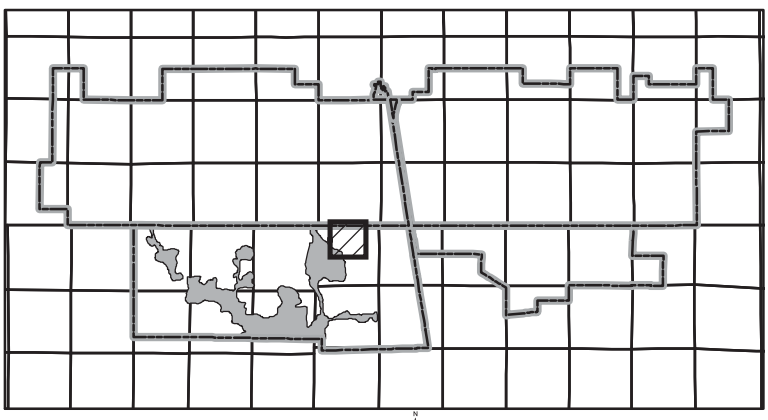
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 9 of 56

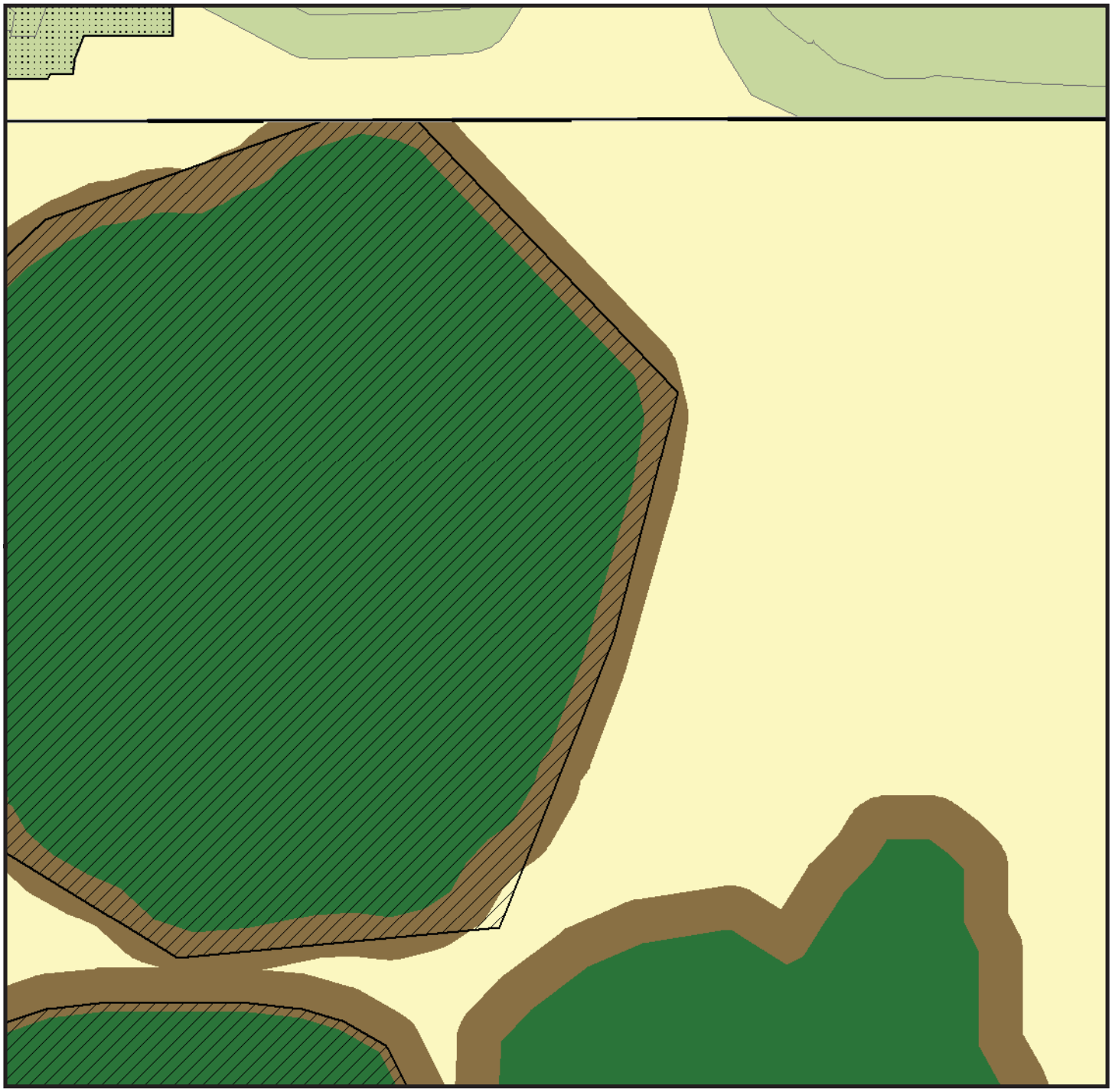
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

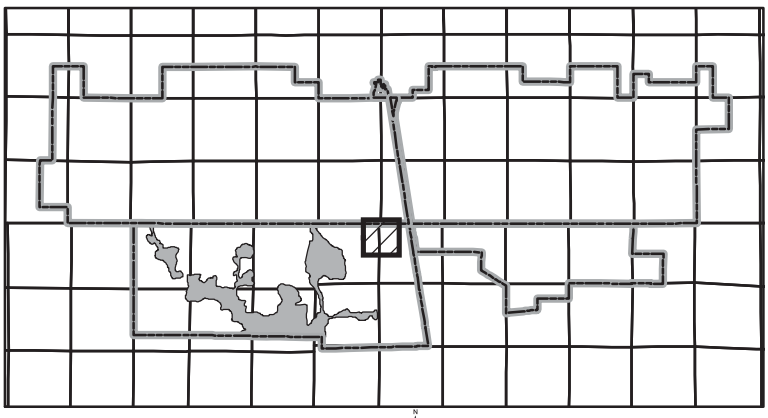


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 10 of 56

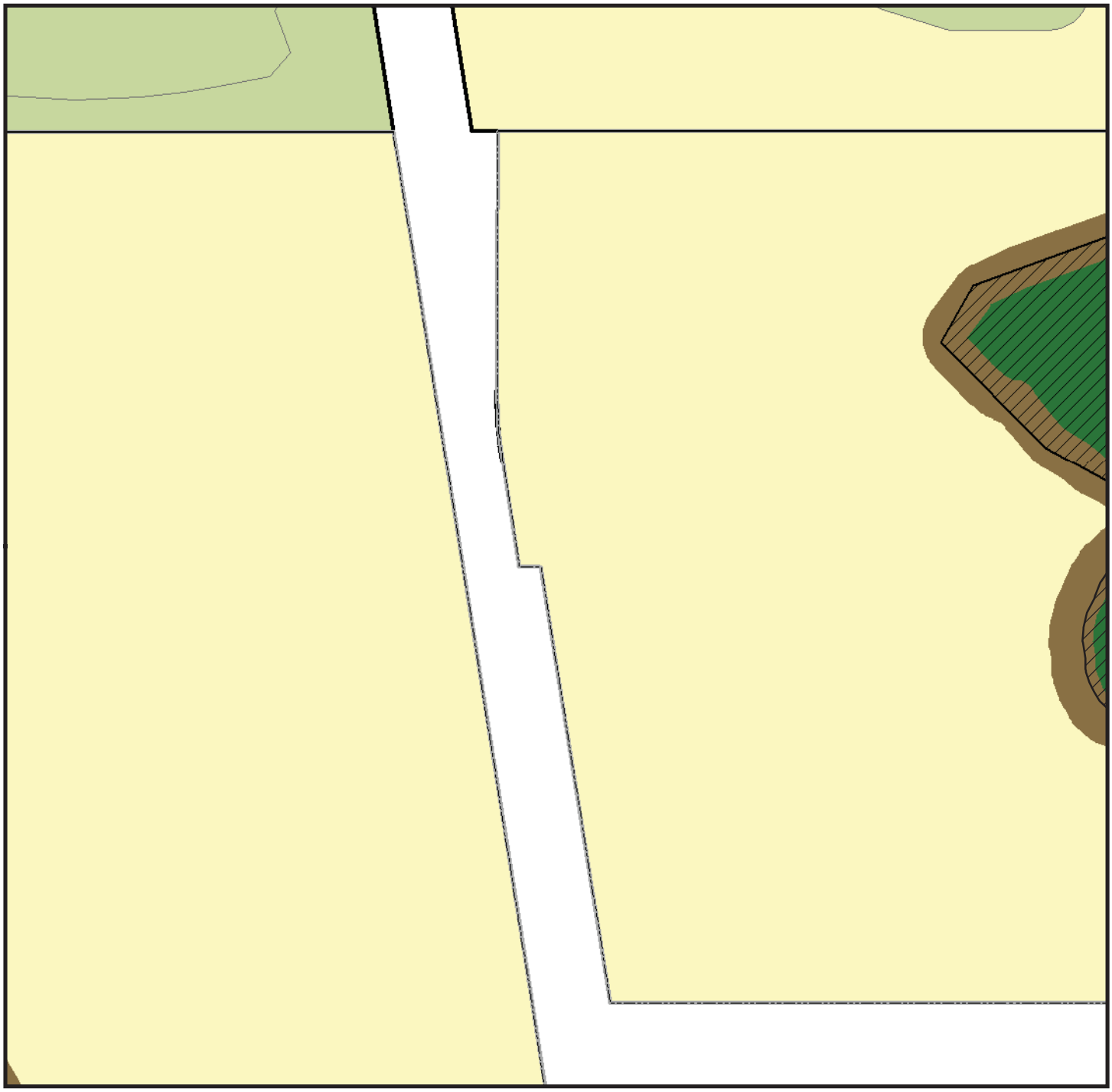
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

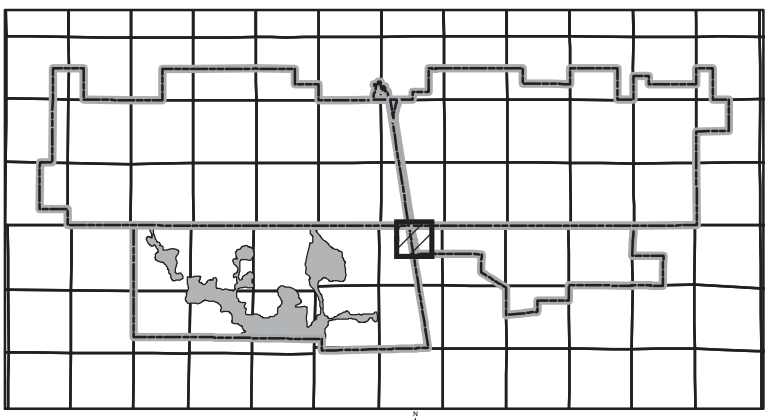


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 11 of 56

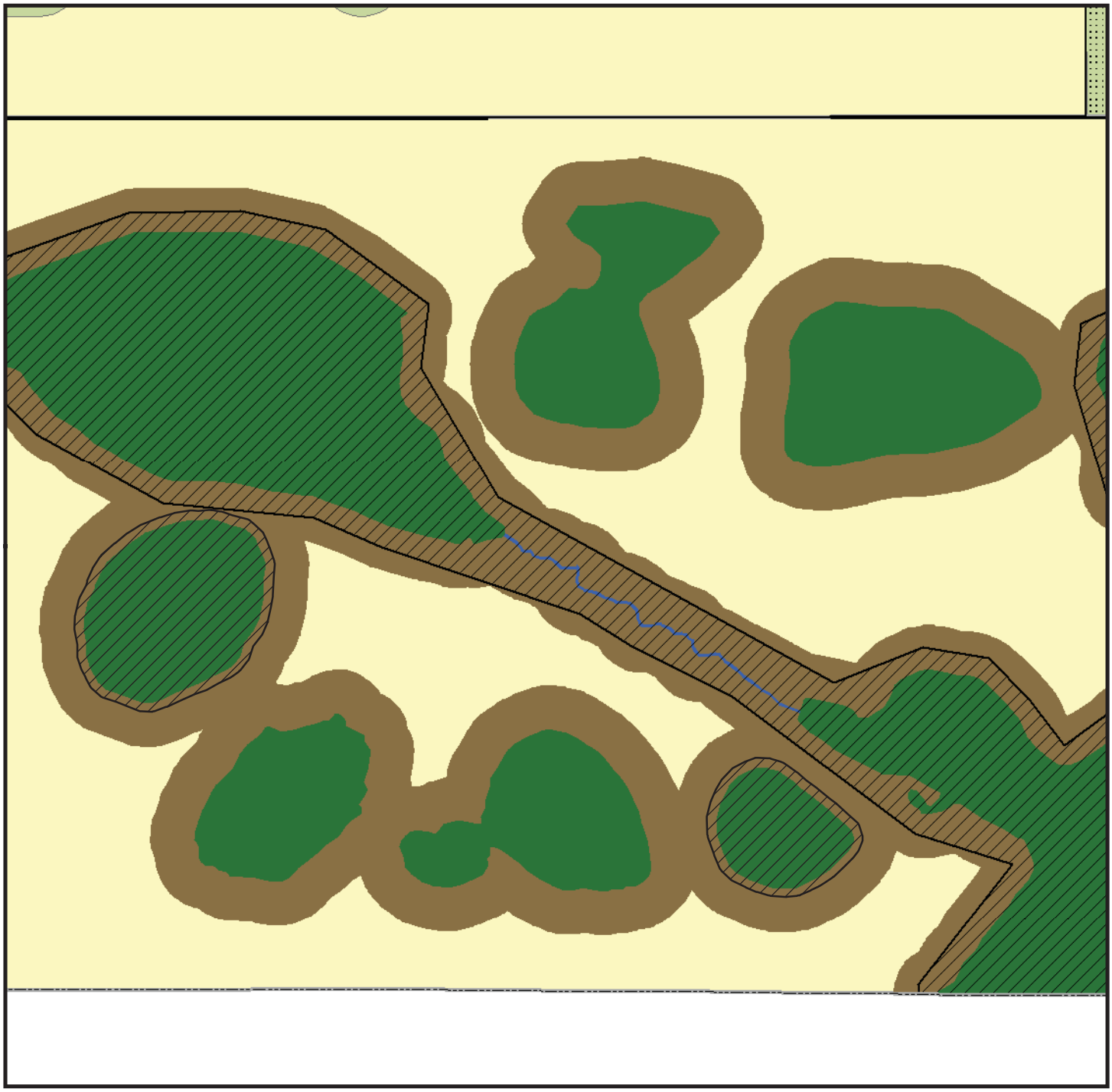
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

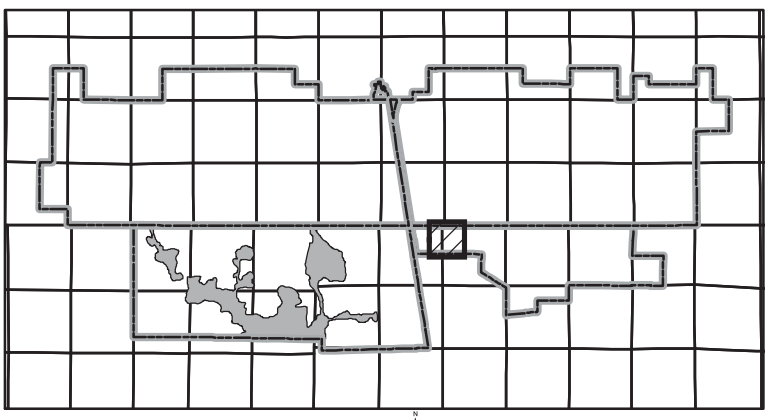


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 12 of 56

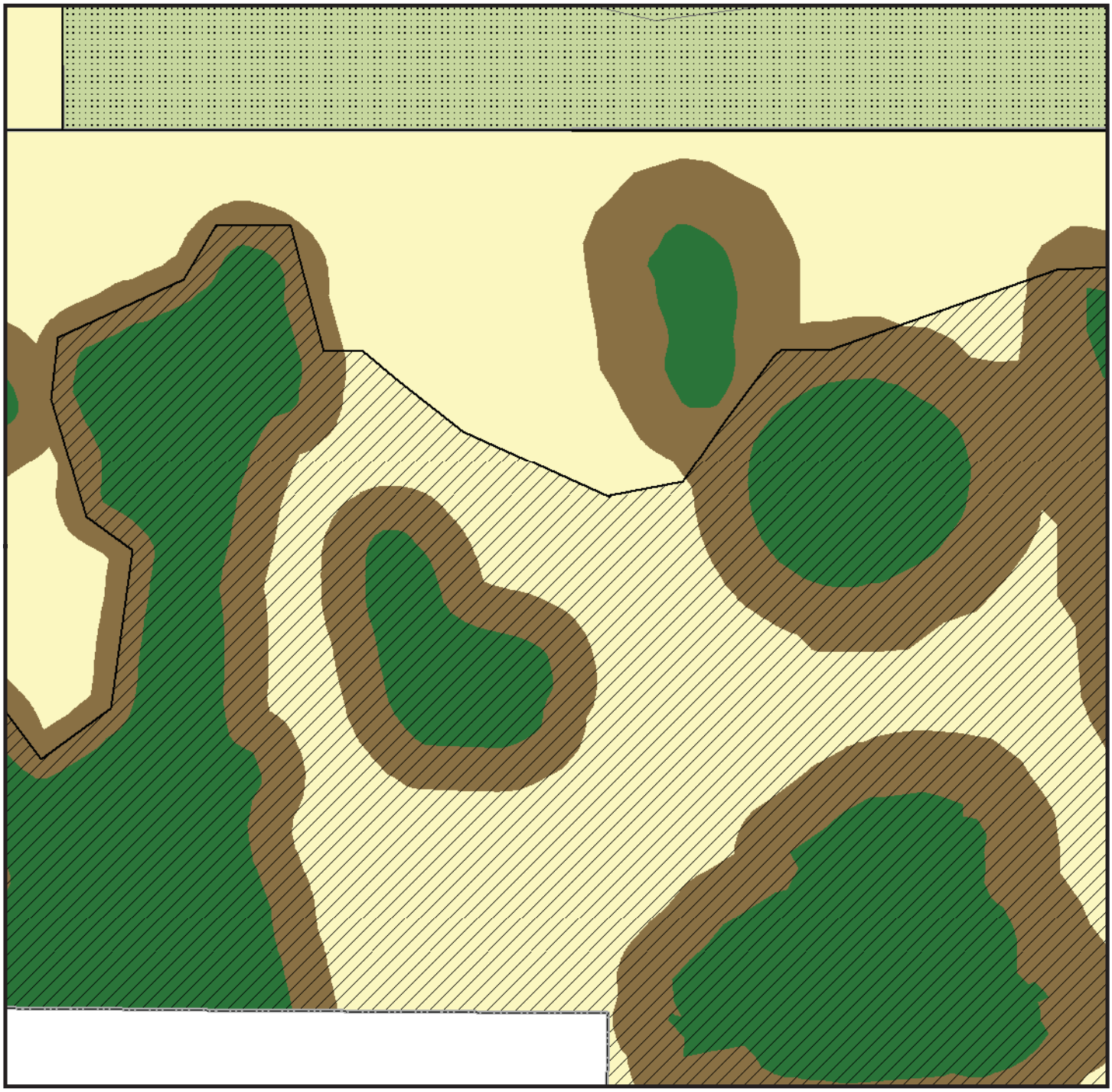
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

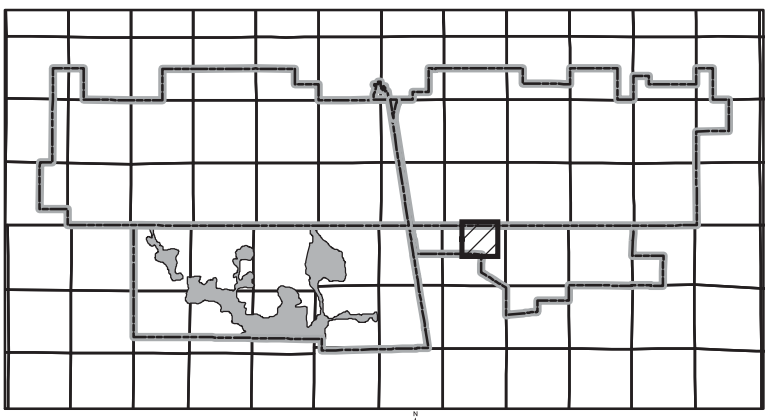


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 13 of 56

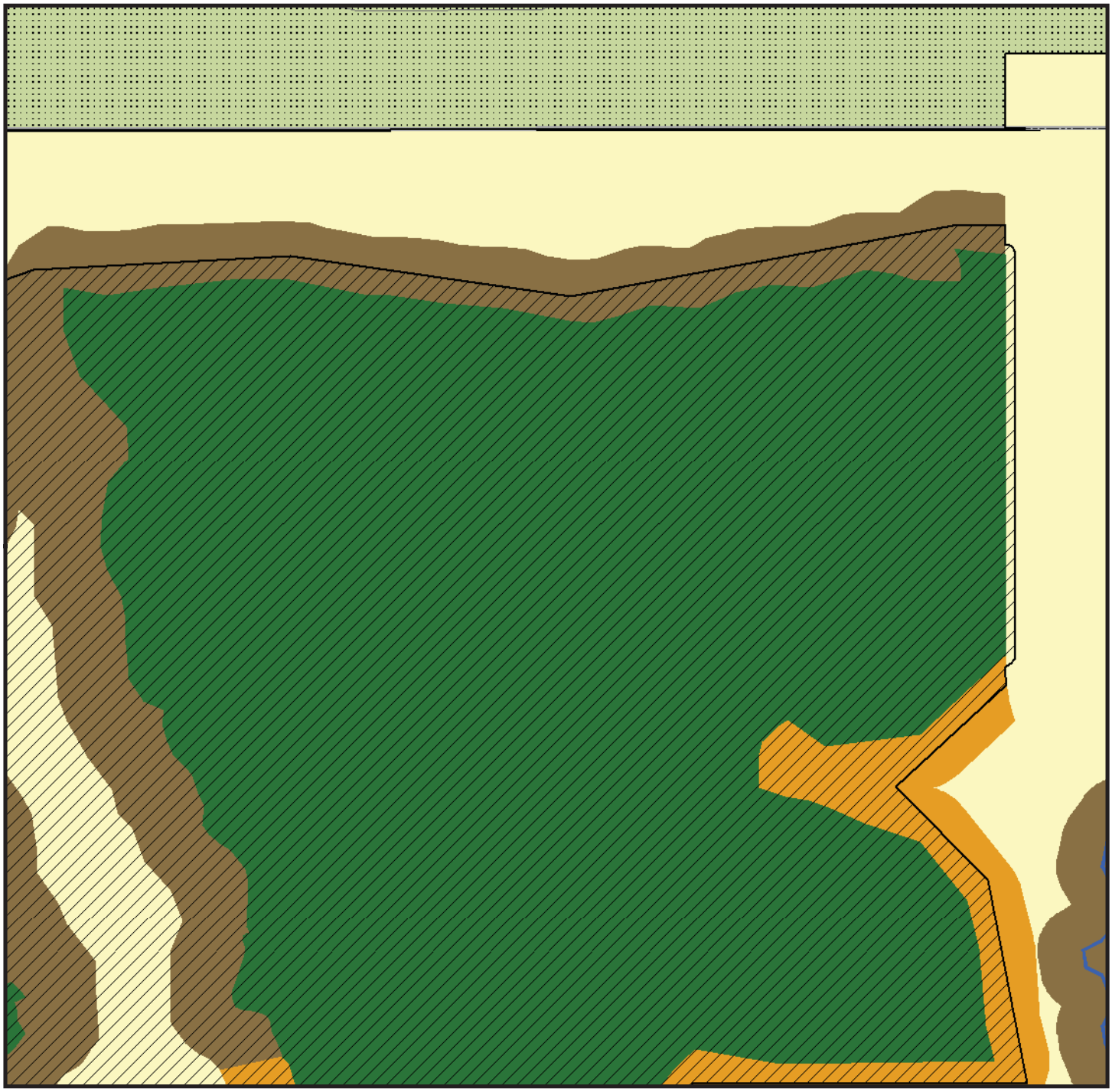
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

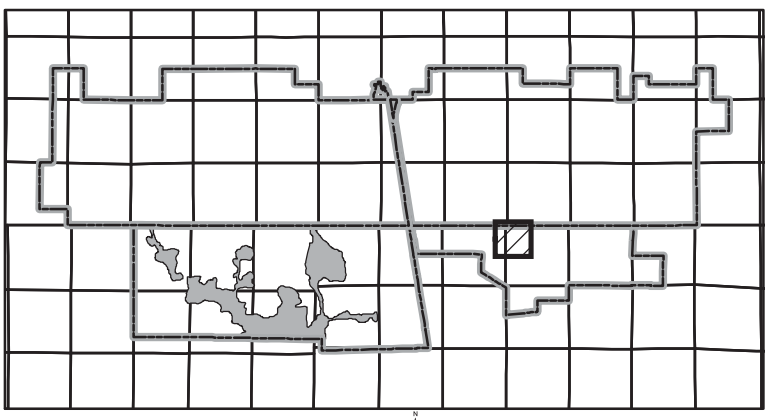


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 14 of 56

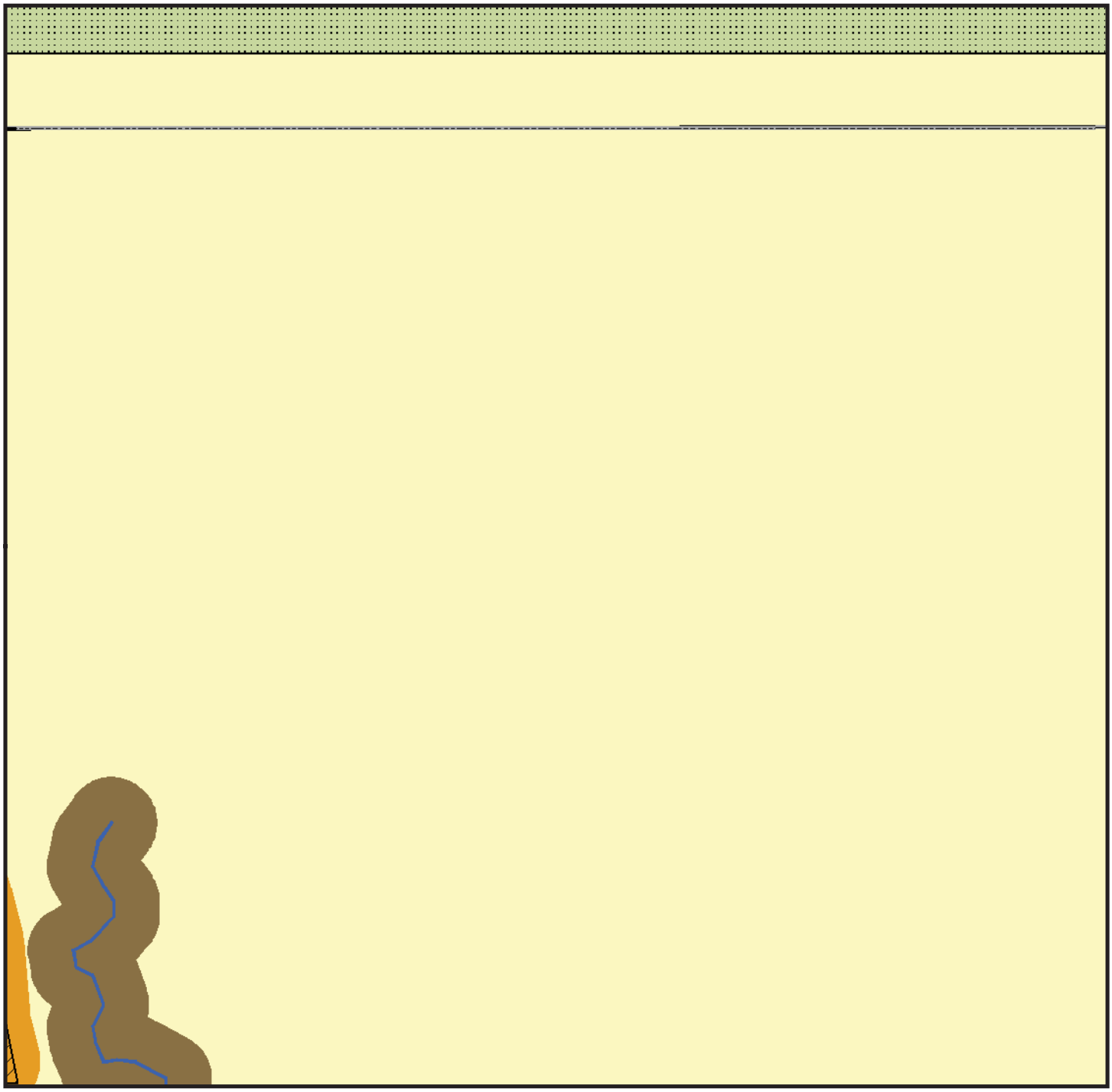
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

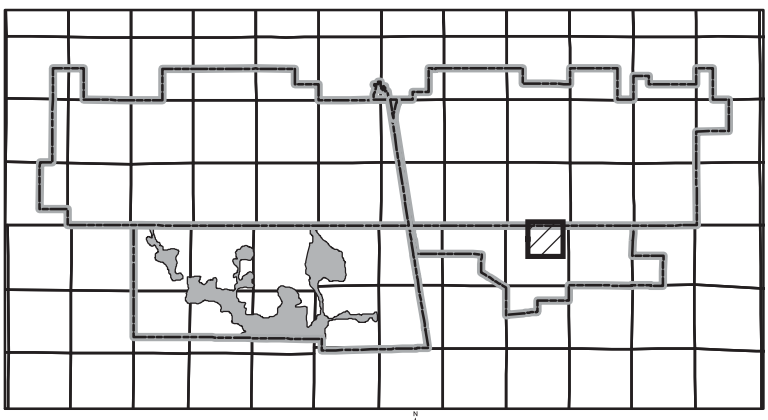


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 15 of 56

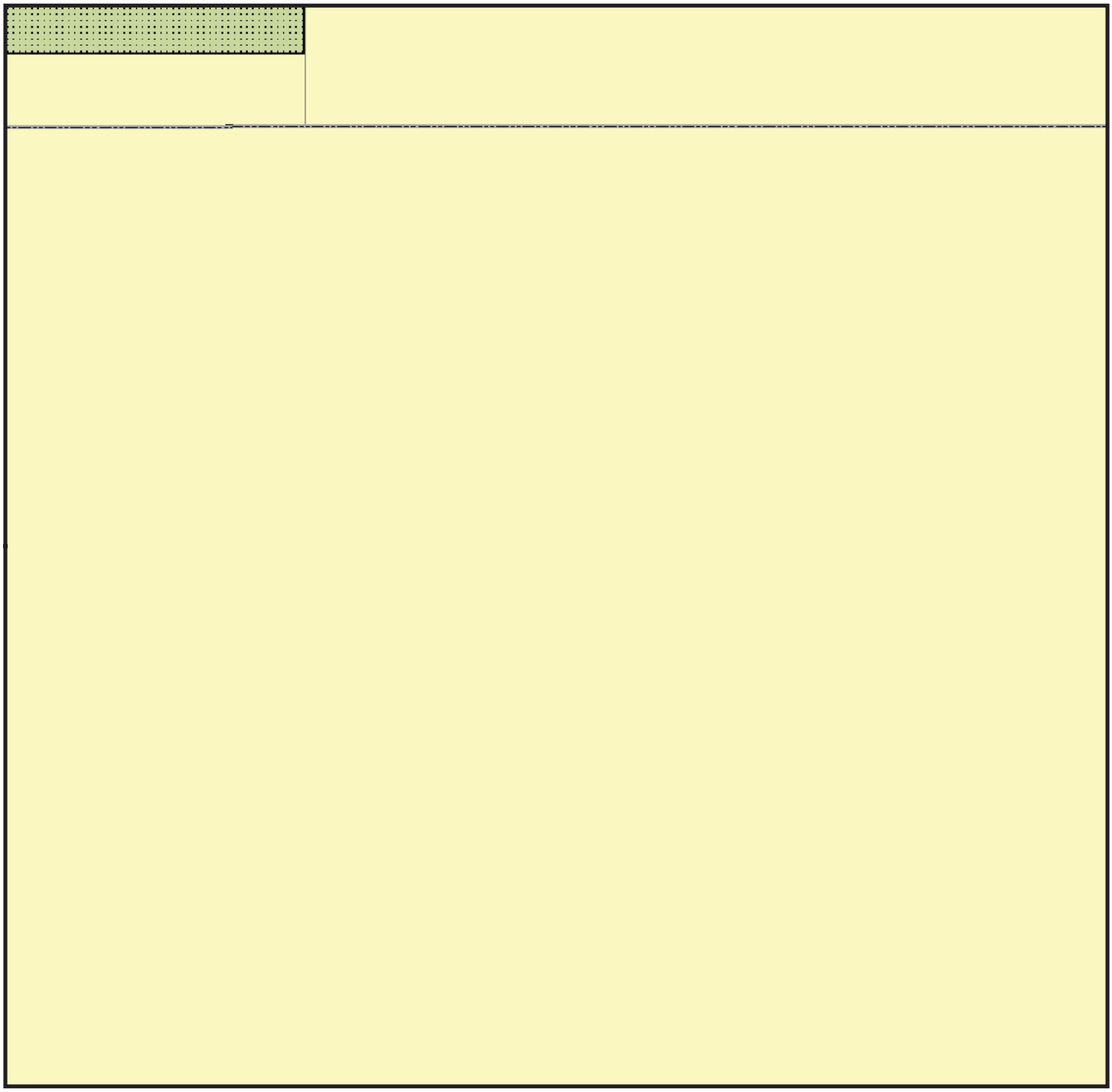
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

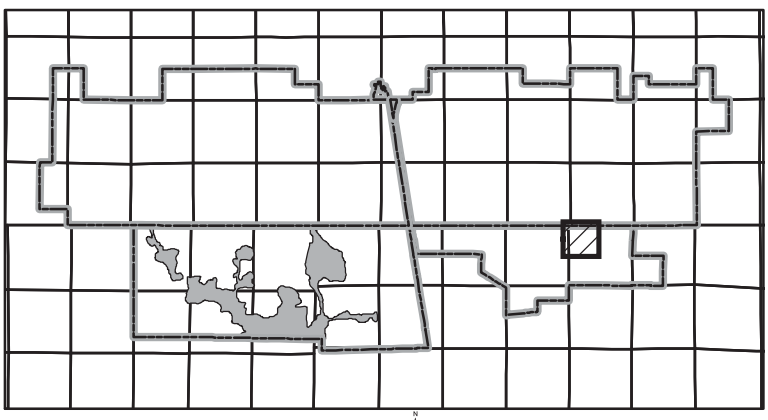


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 16 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

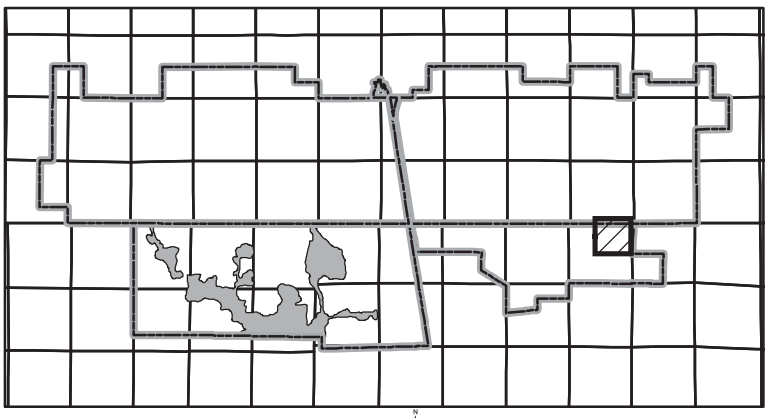
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 17 of 56

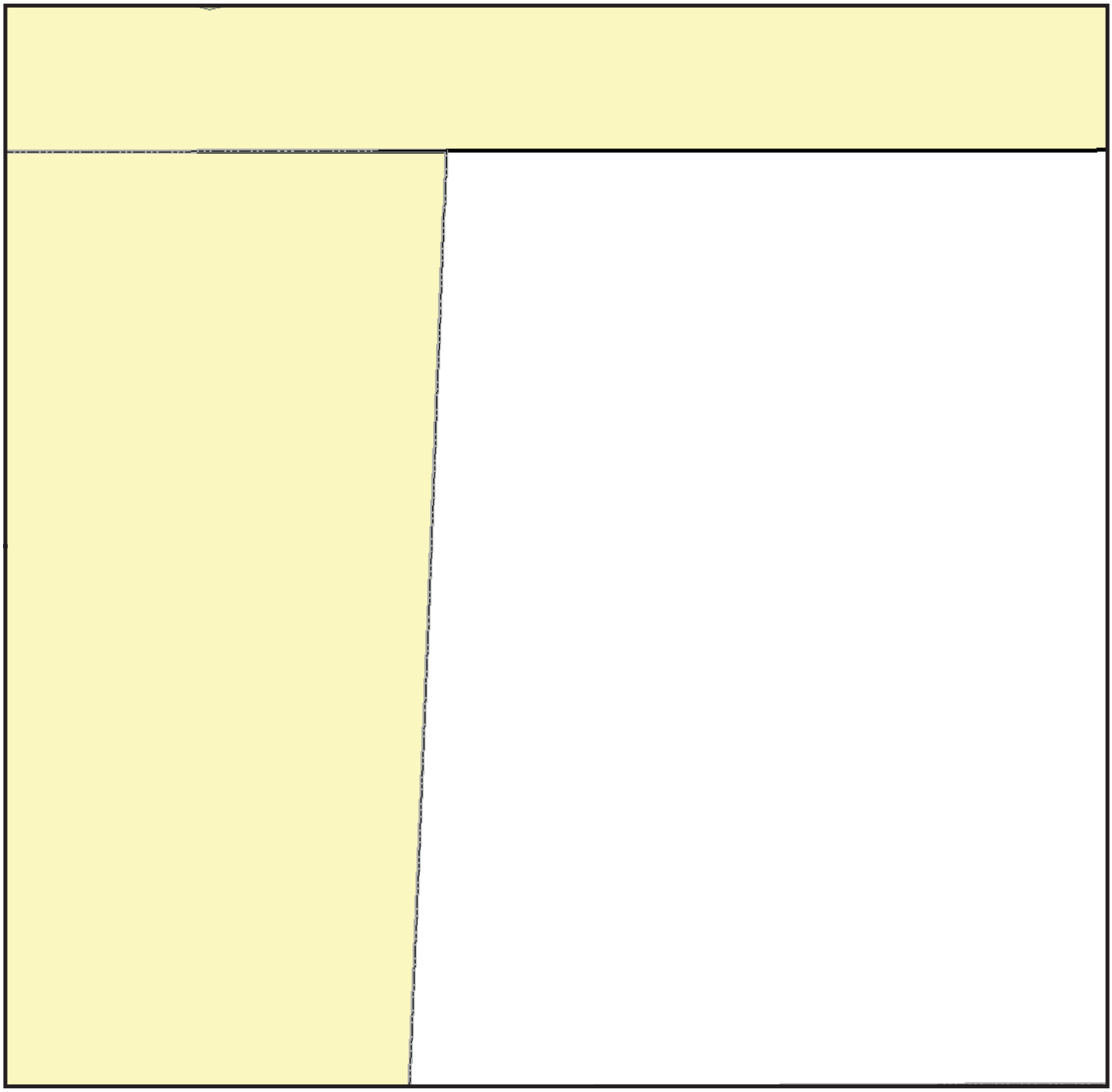
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

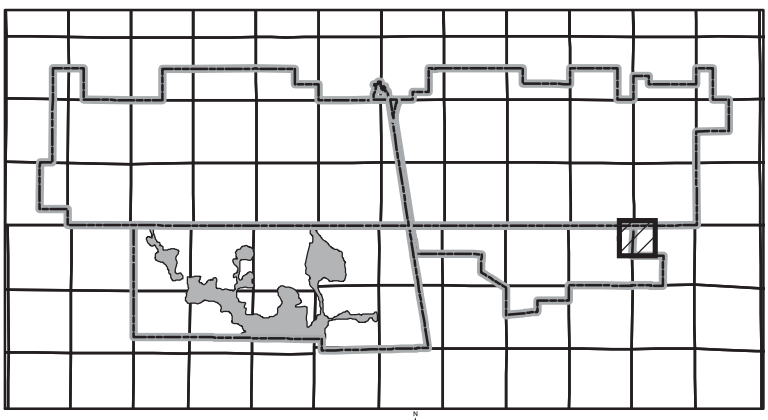
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 18 of 56

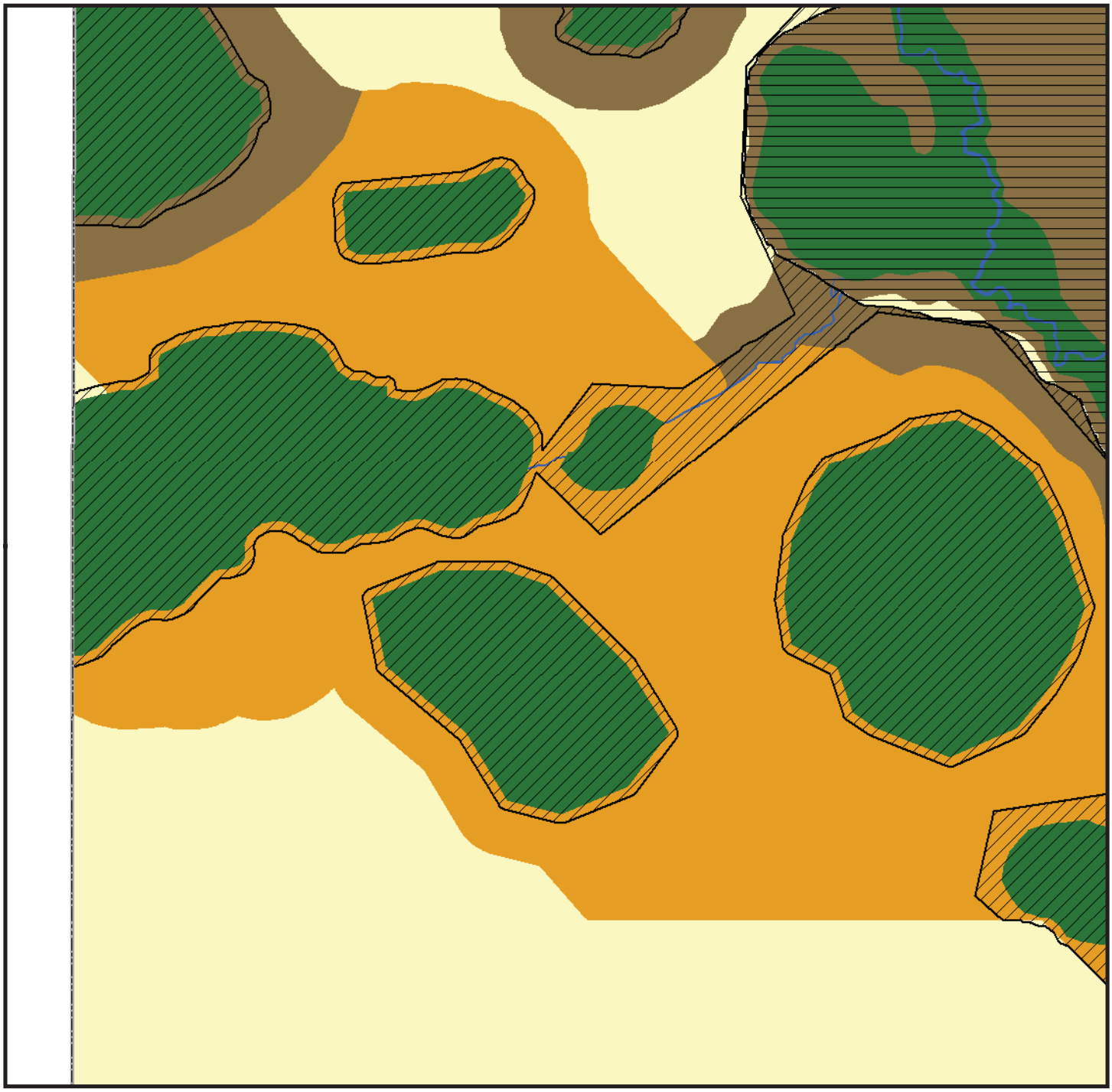
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

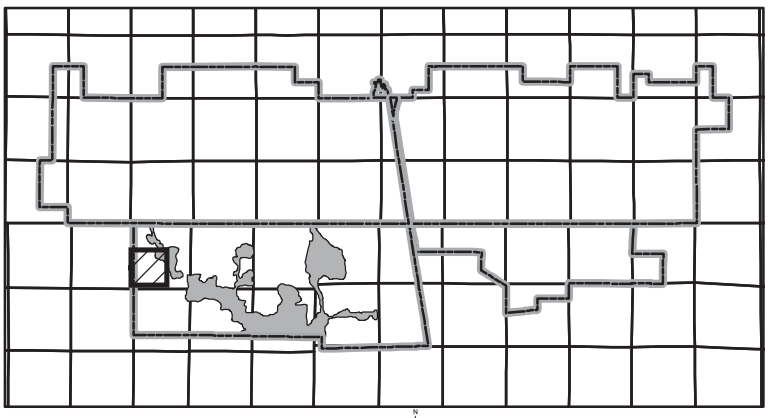


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 19 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

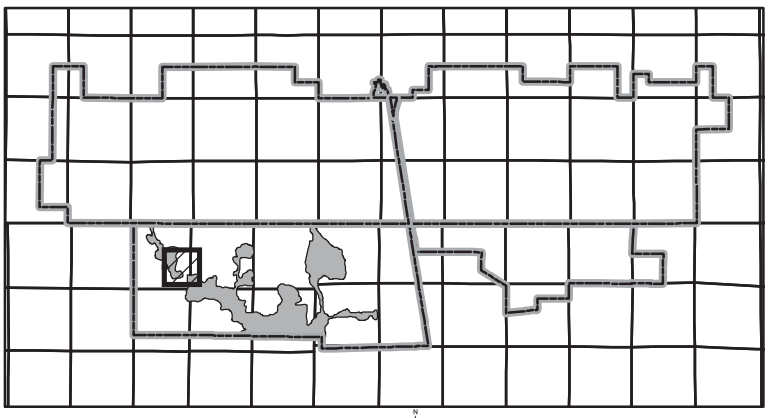
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 20 of 56

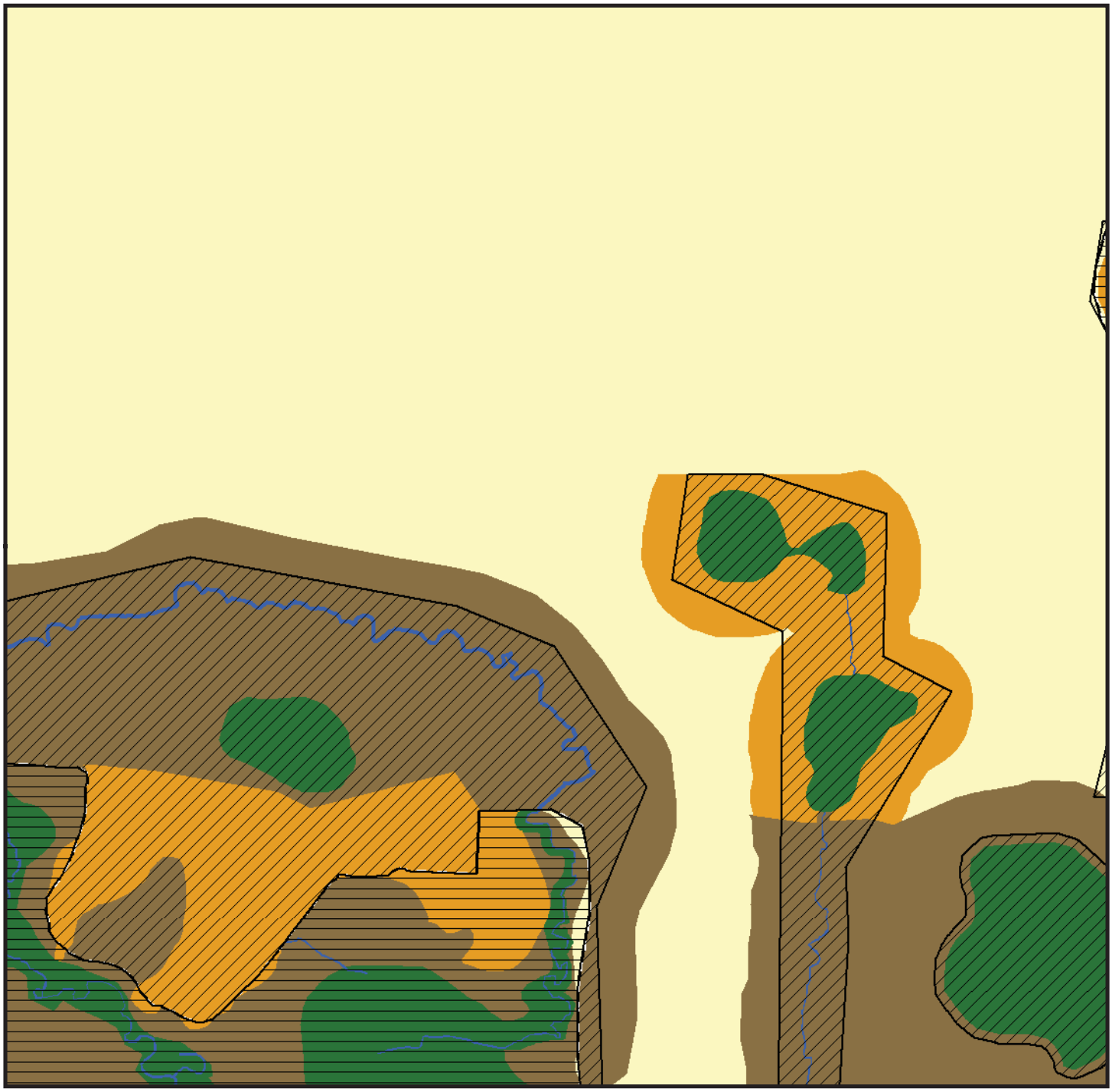
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

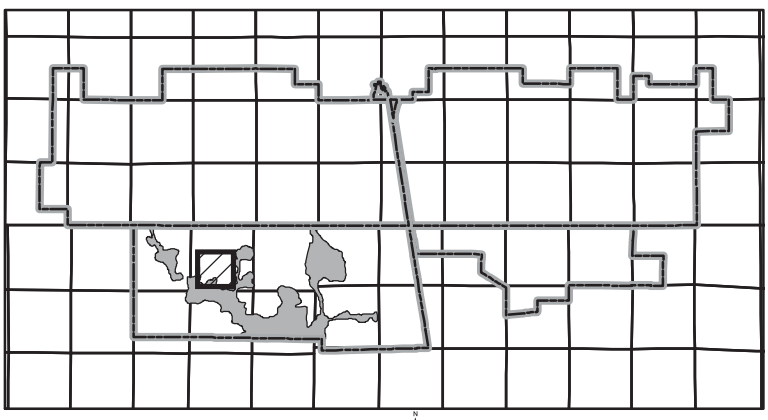


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 21 of 56

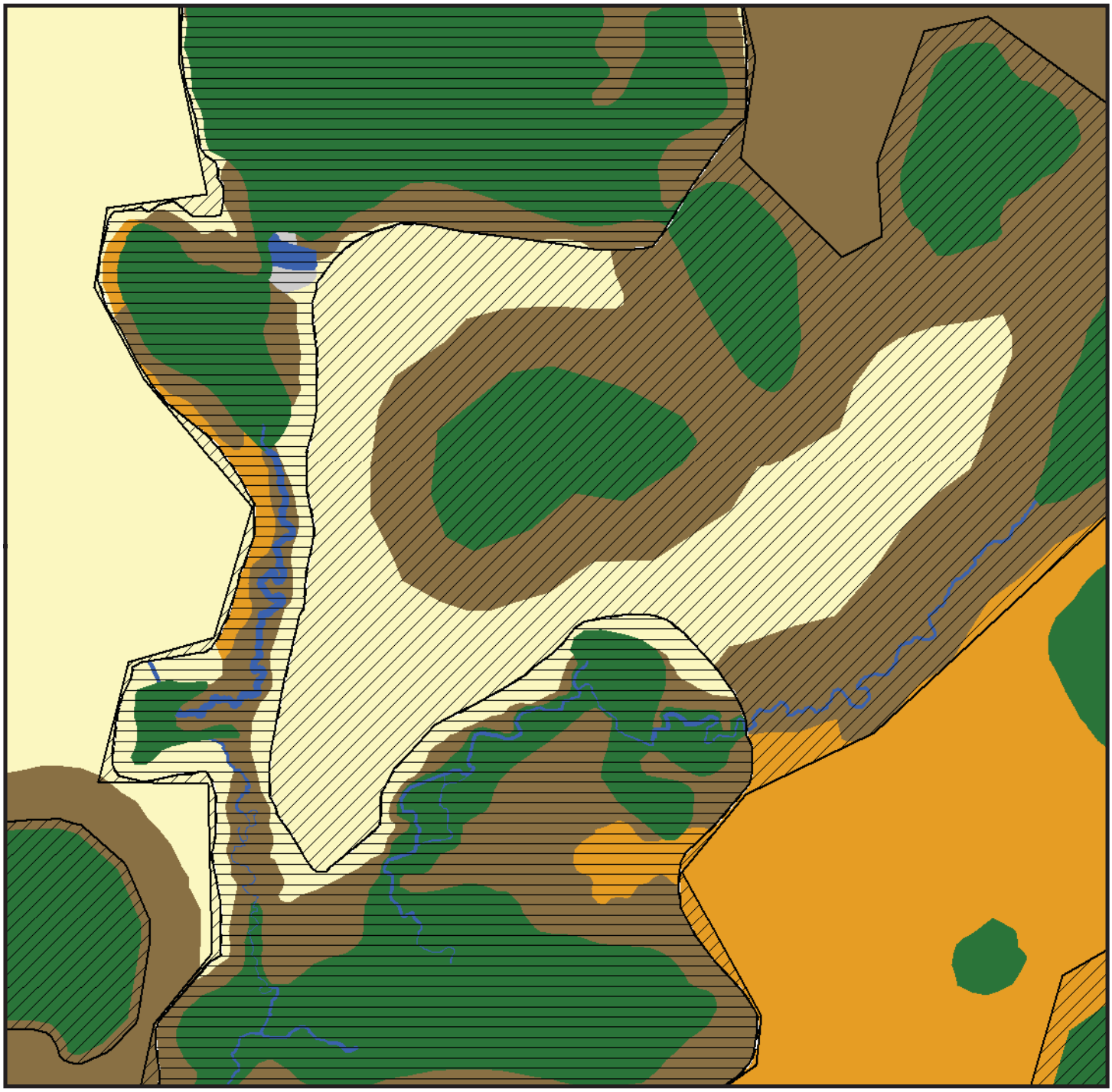
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

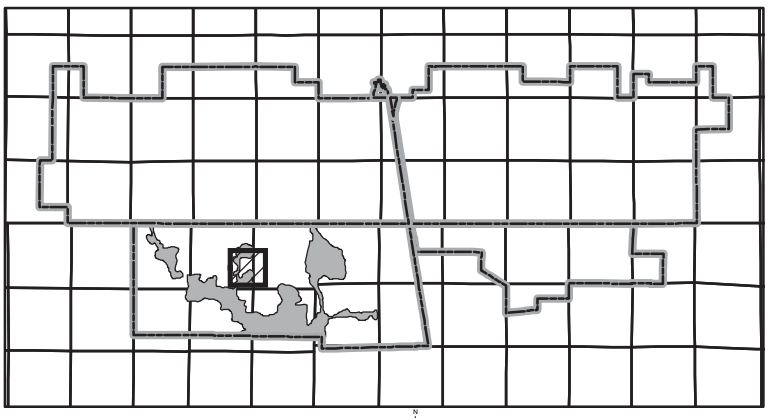
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 22 of 56

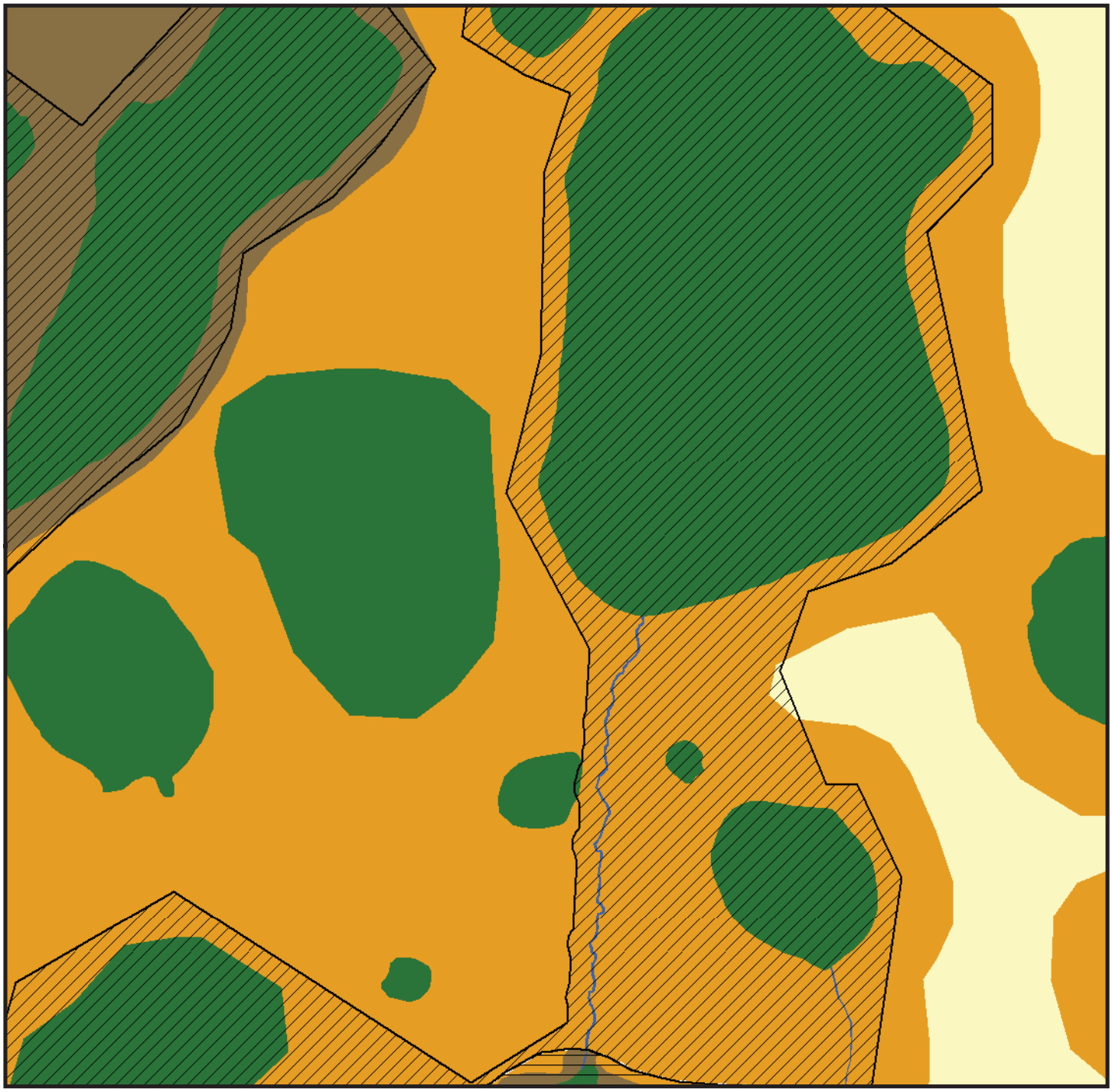
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

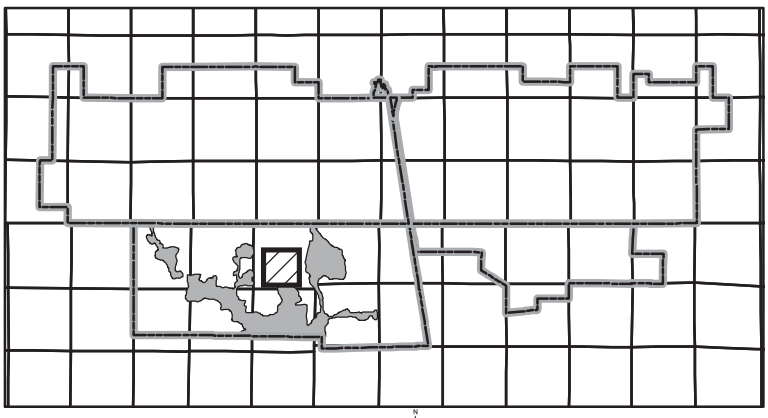


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 23 of 56

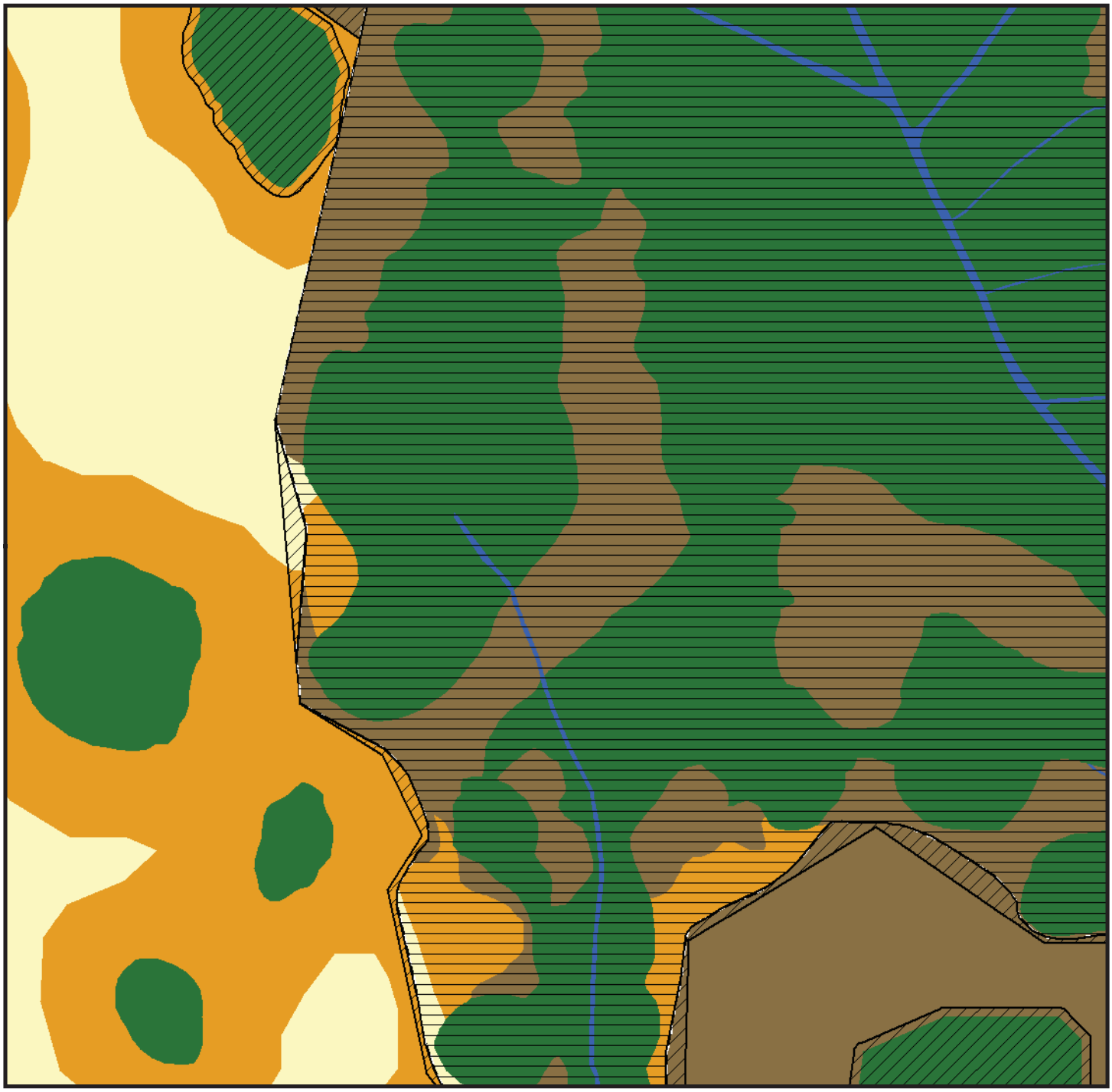
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

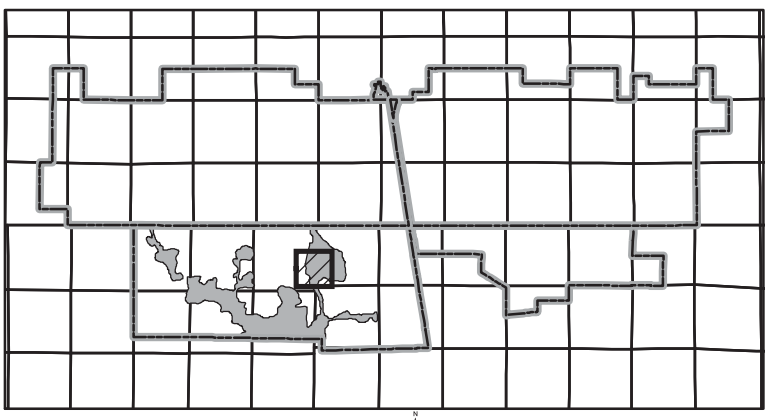
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 24 of 56

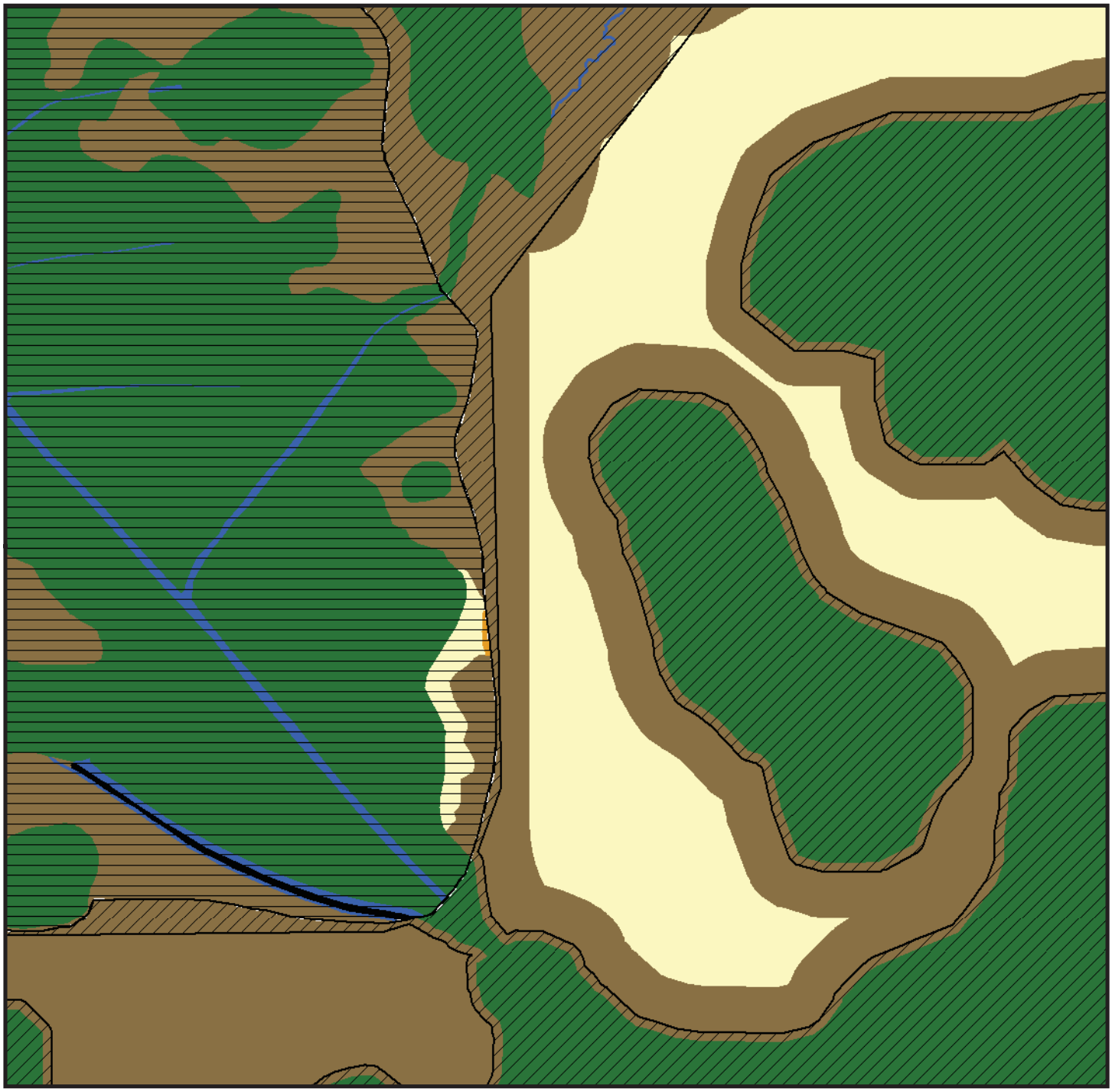
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

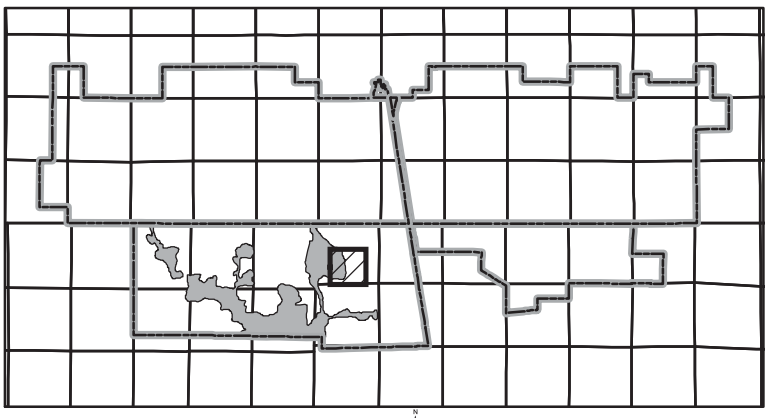


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 25 of 56

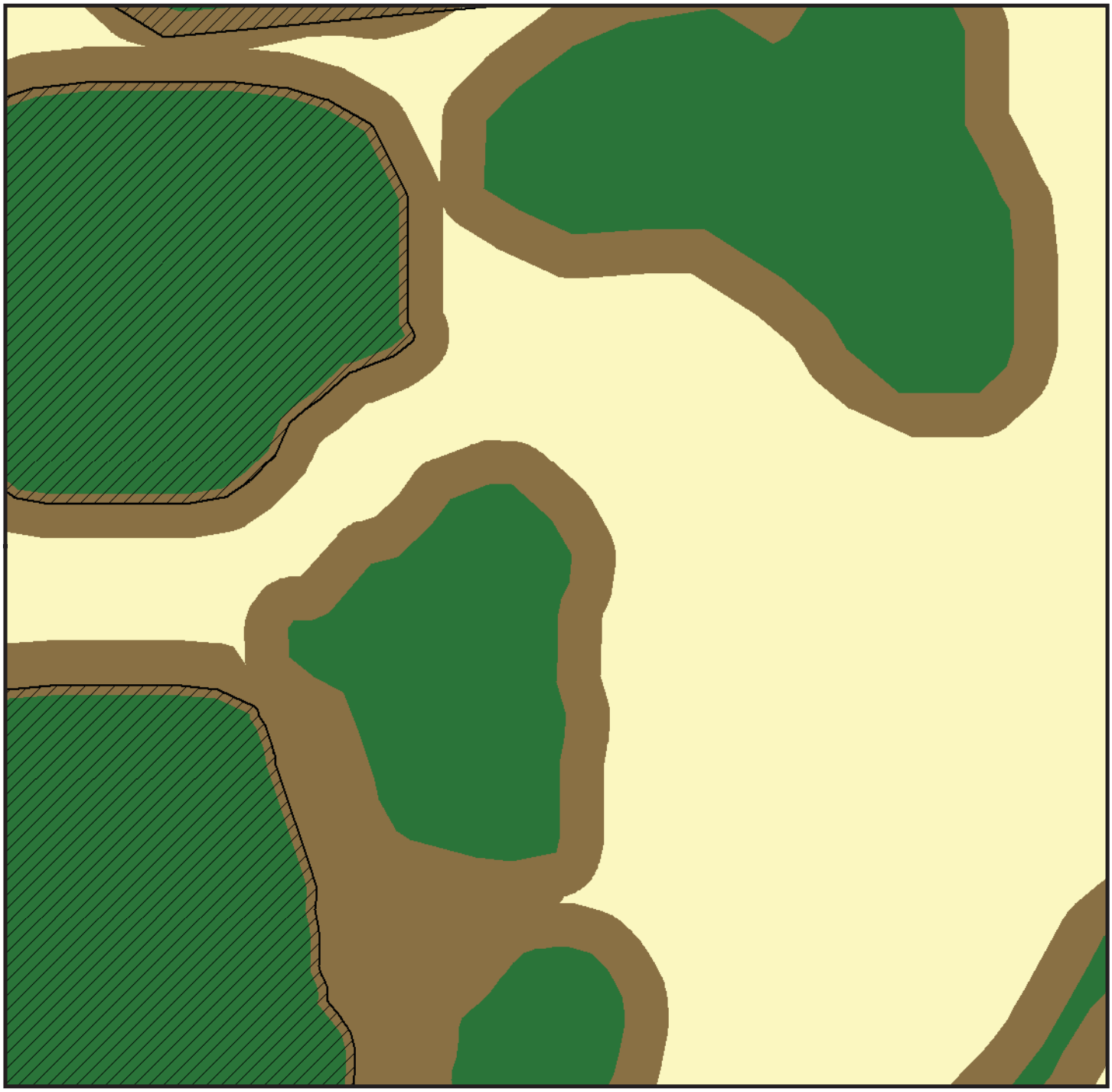
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

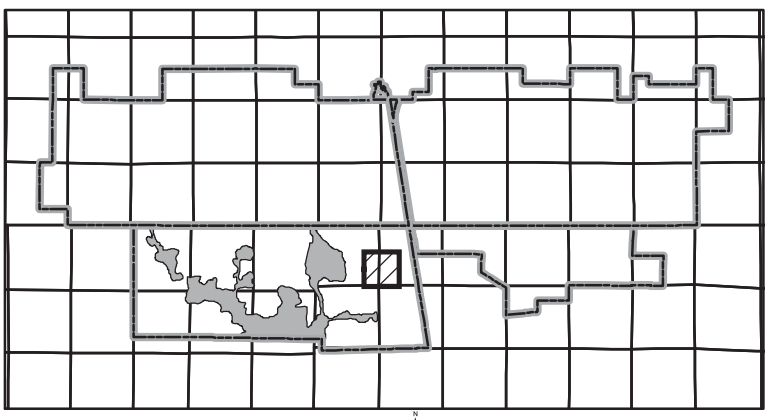
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 26 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

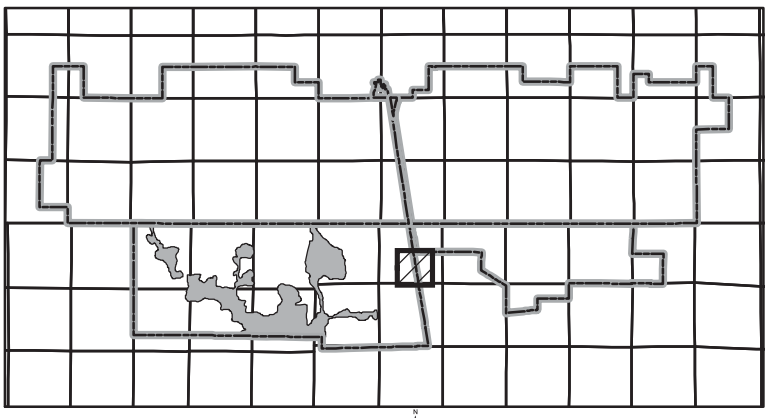
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 27 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

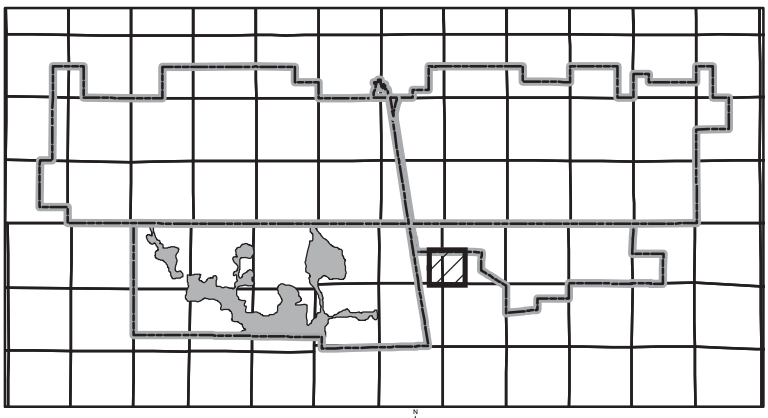
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 28 of 56

Mosaic

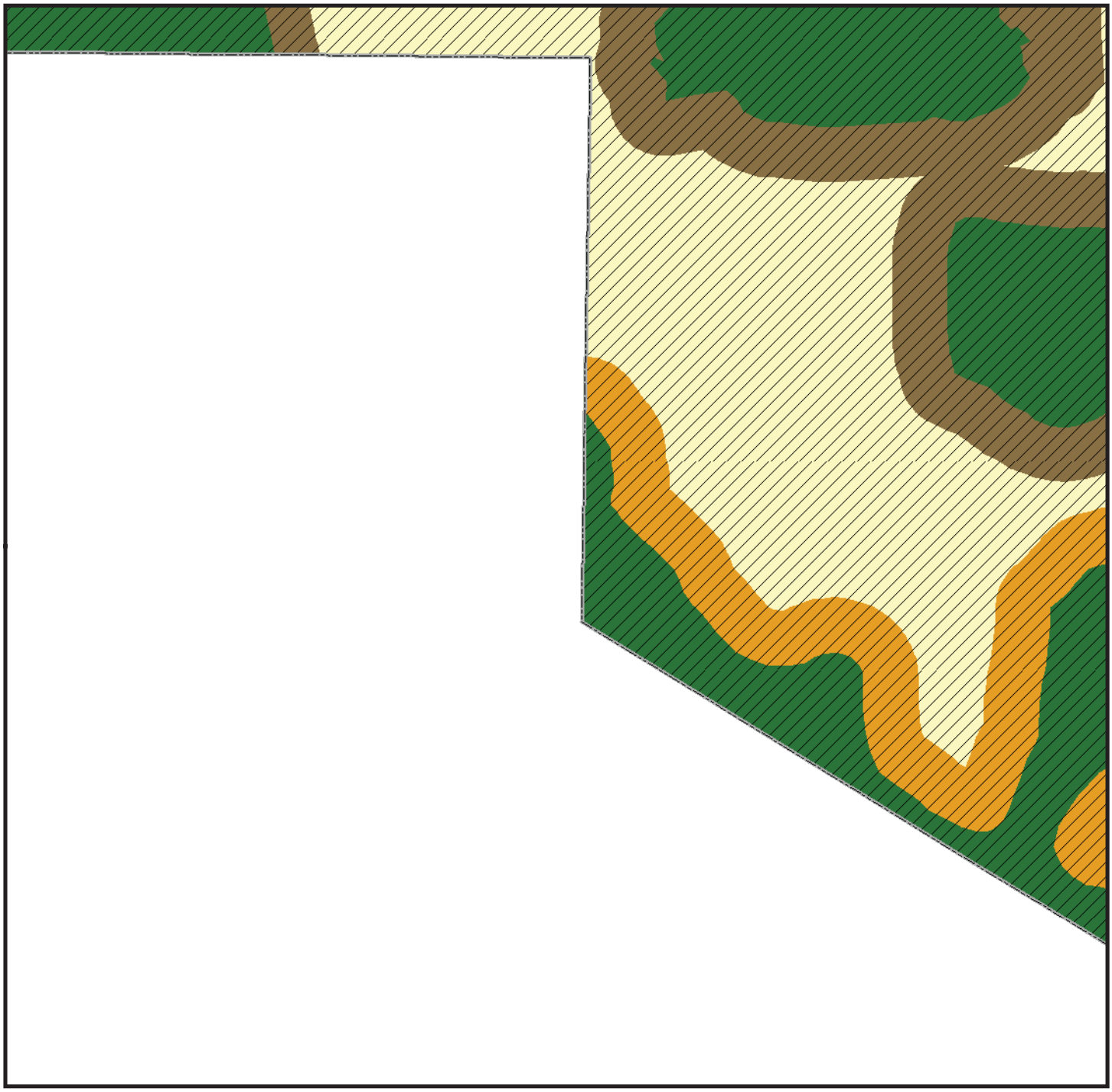
SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2

PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

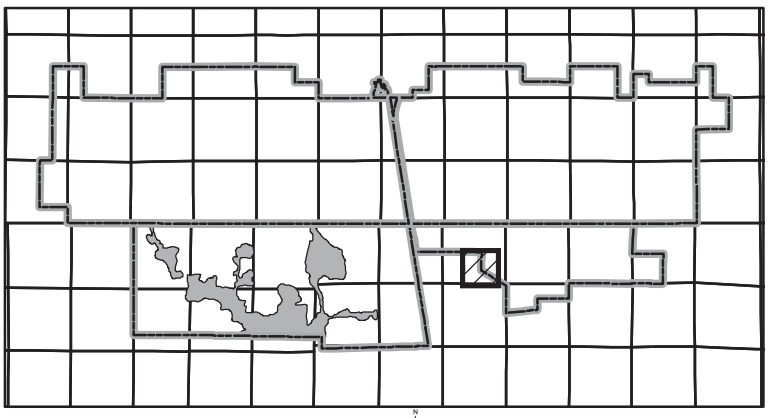


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 29 of 56

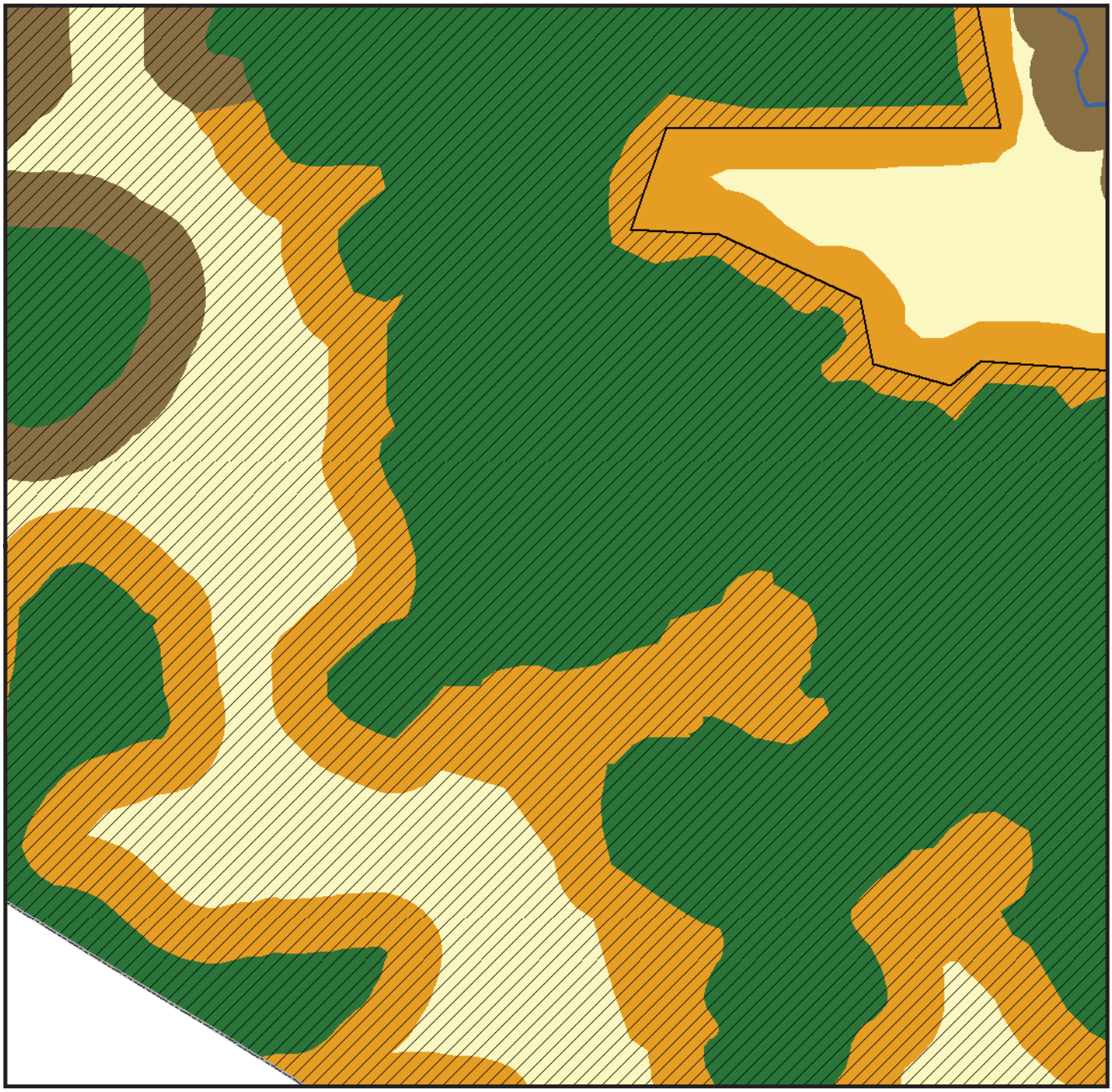
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

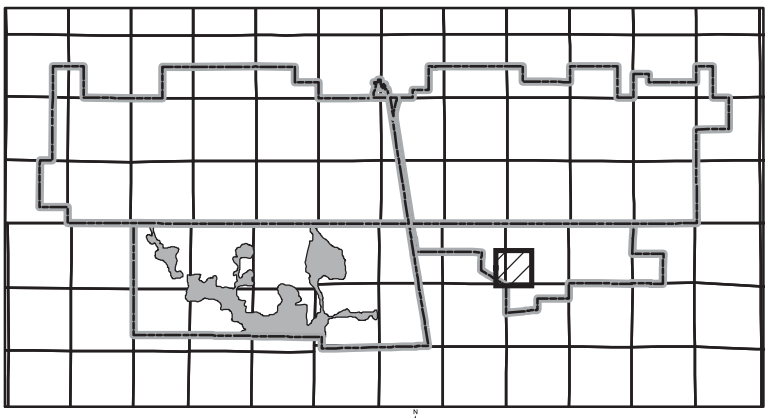
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 30 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

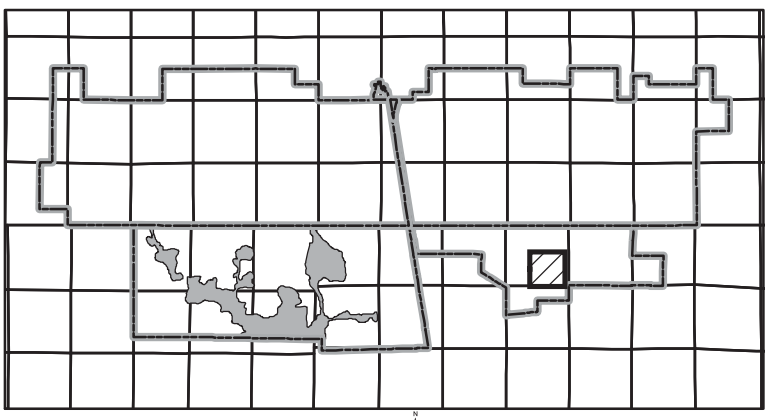
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 31 of 56

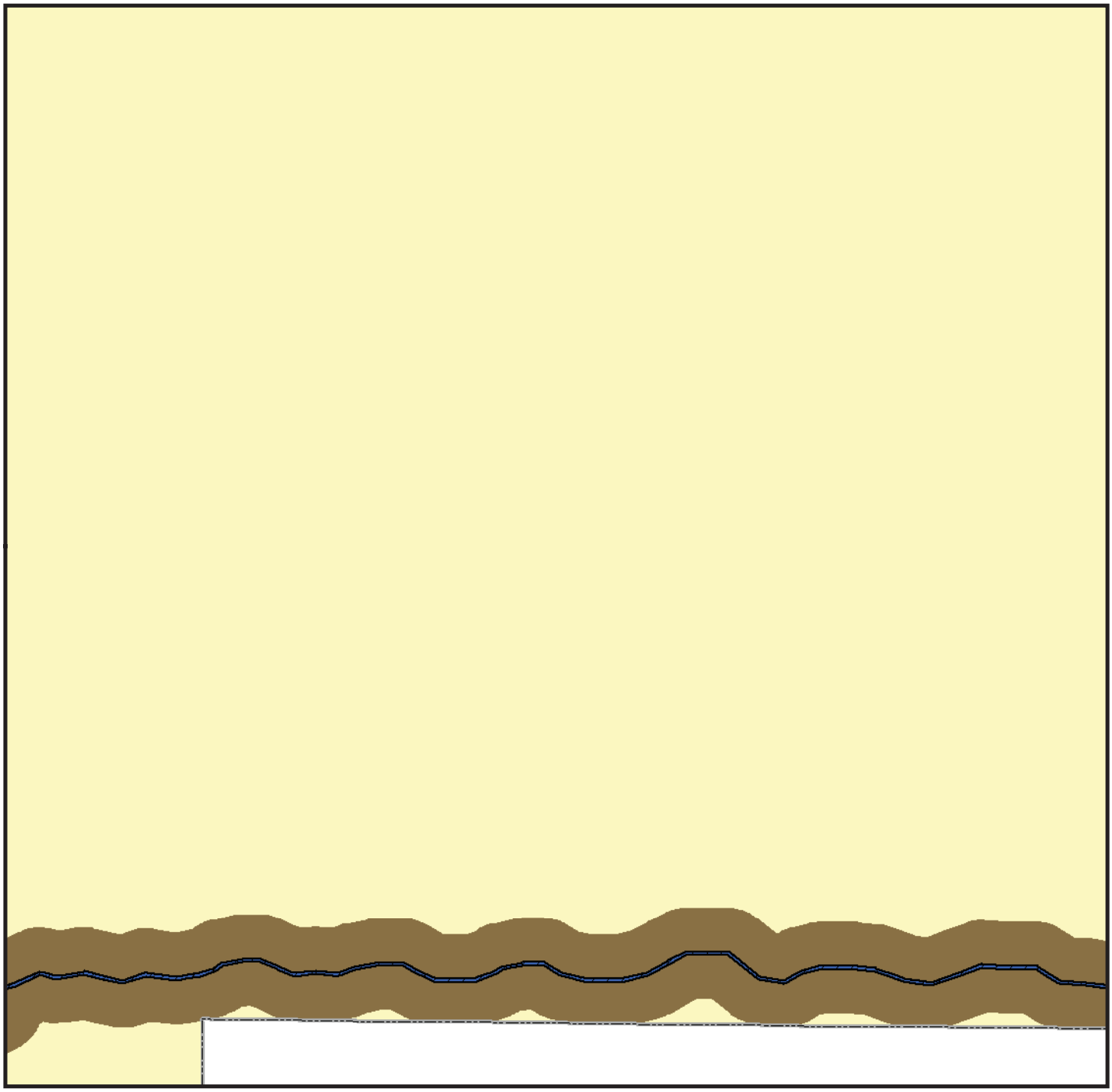
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

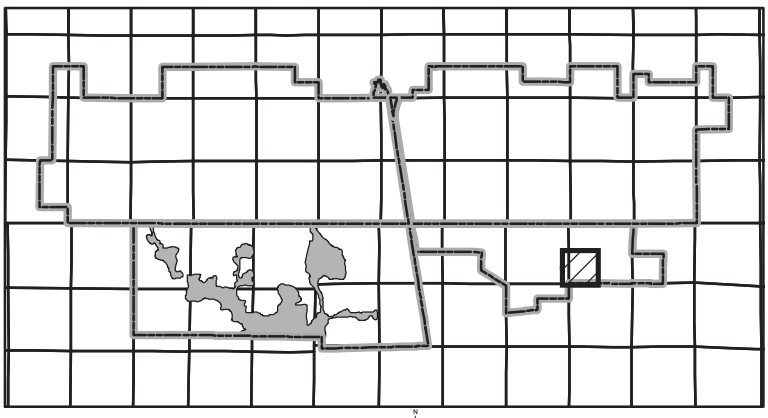


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 32 of 56

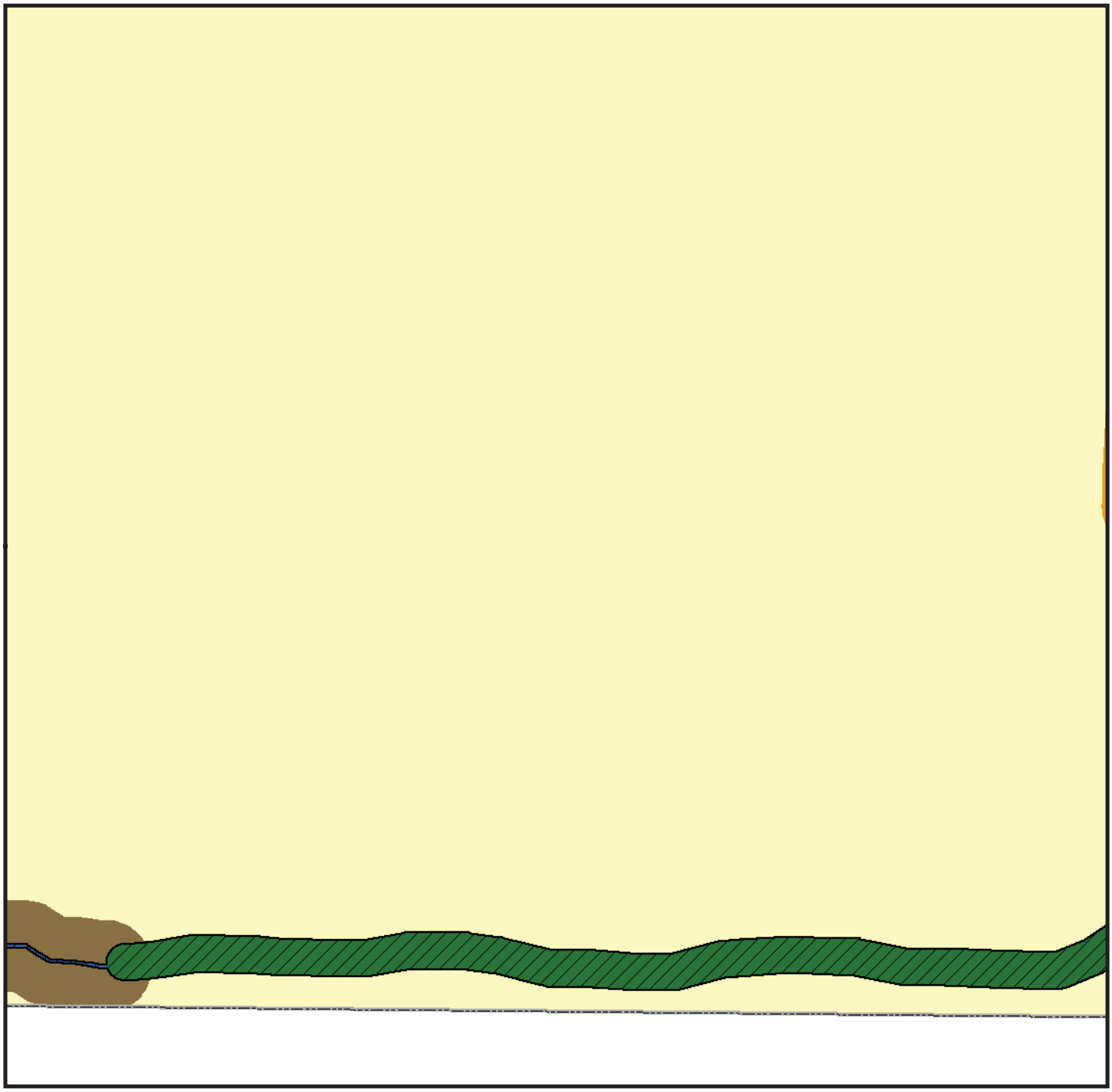
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

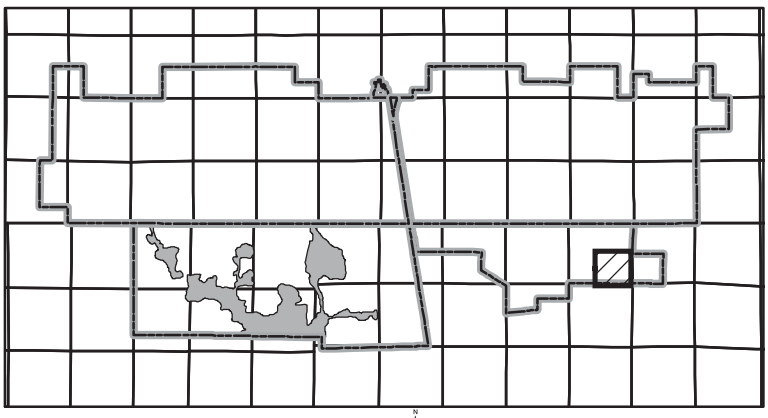


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 33 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

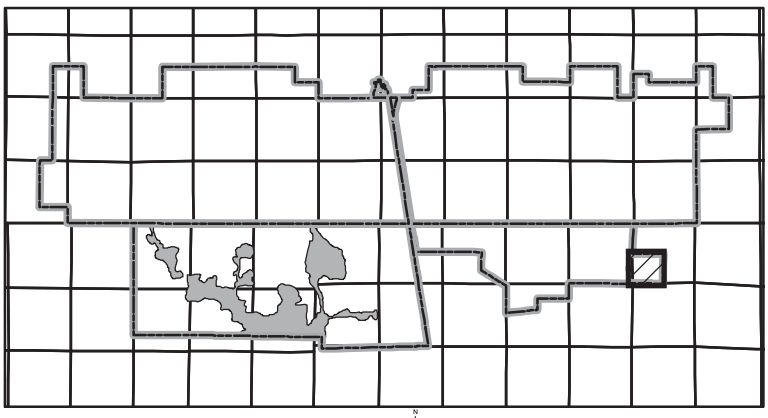
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 34 of 56

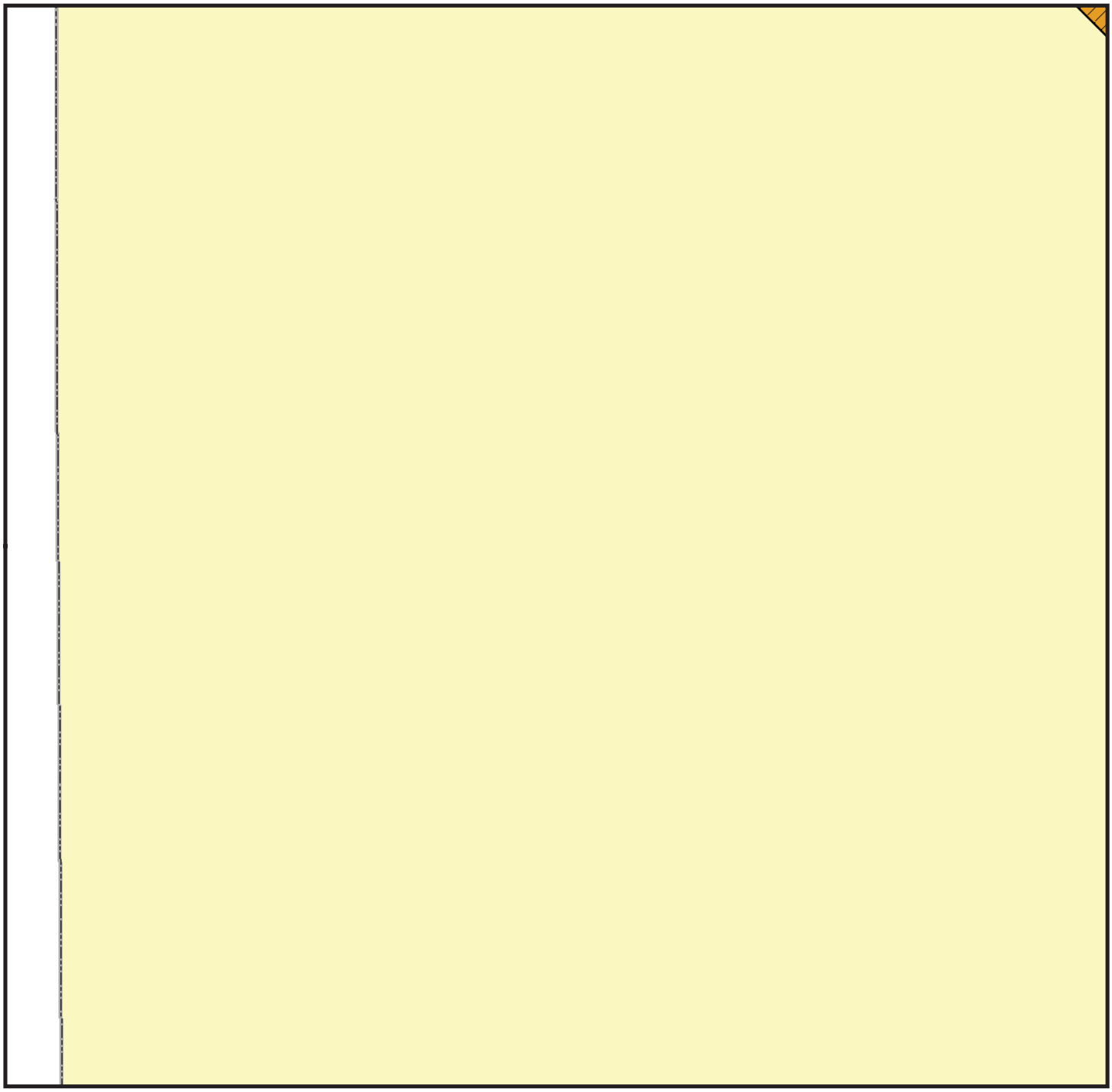
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

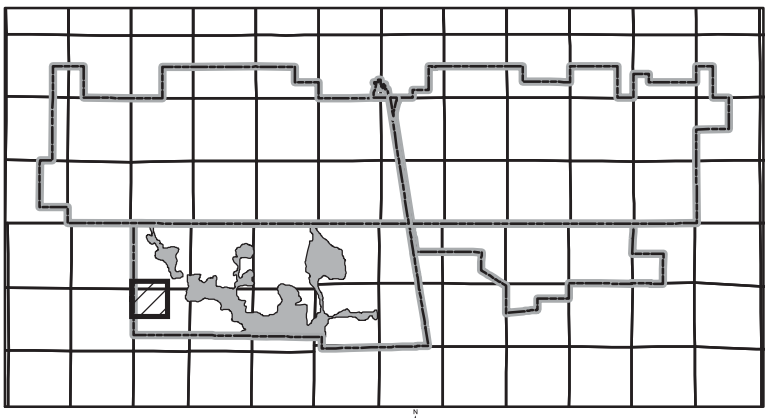
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 35 of 56

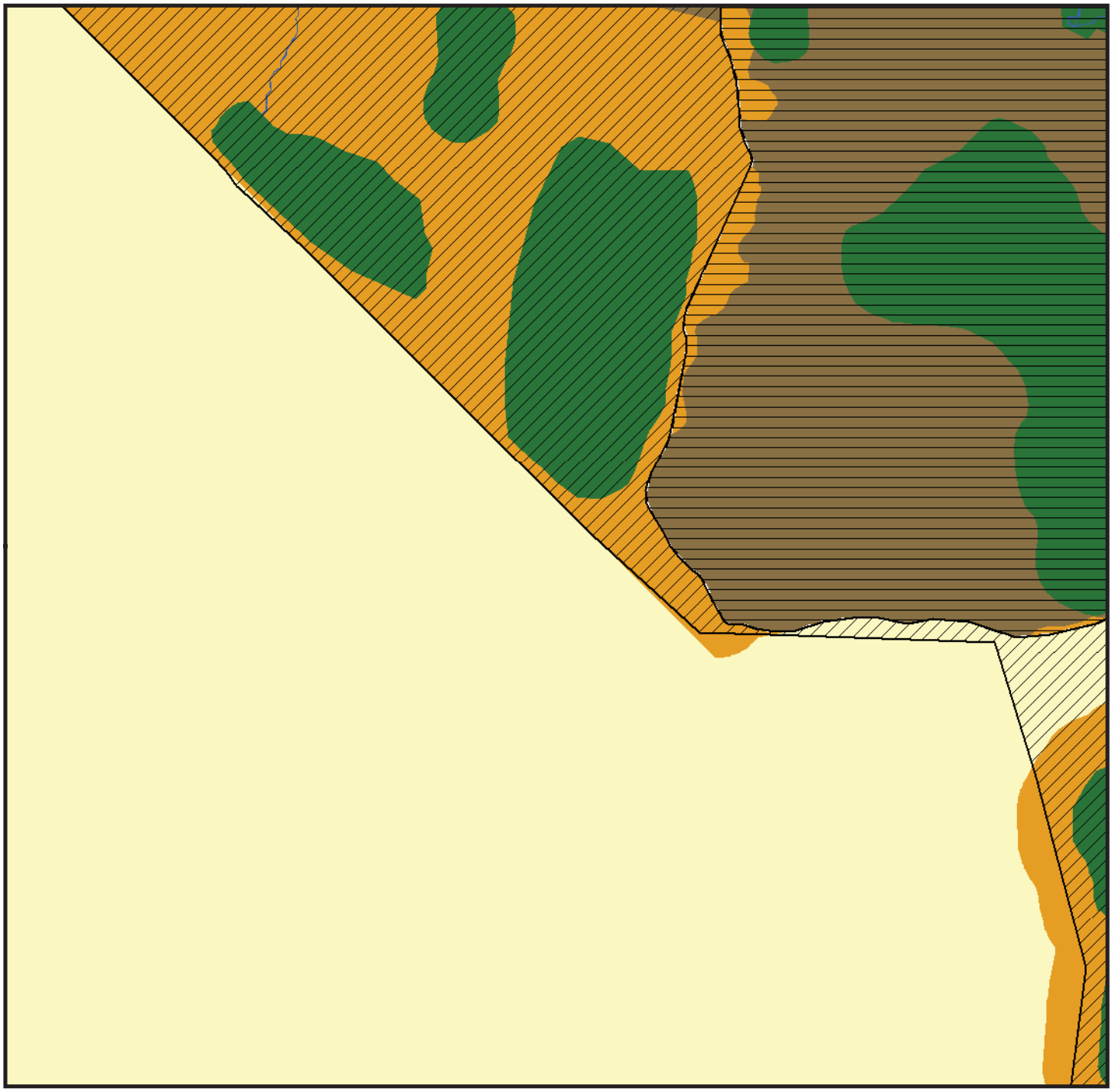
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

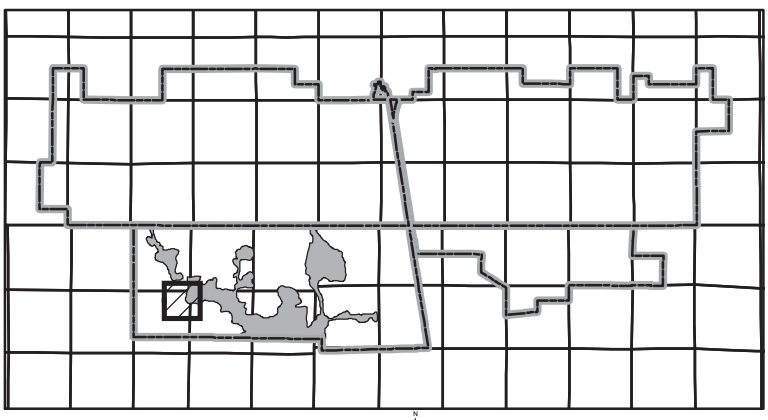
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 36 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

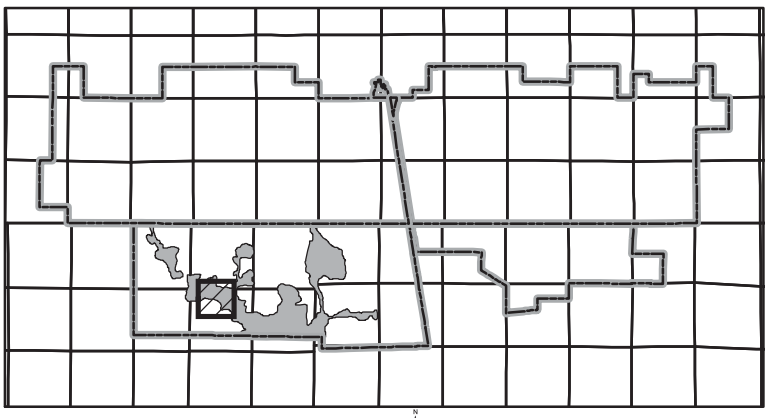
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 37 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

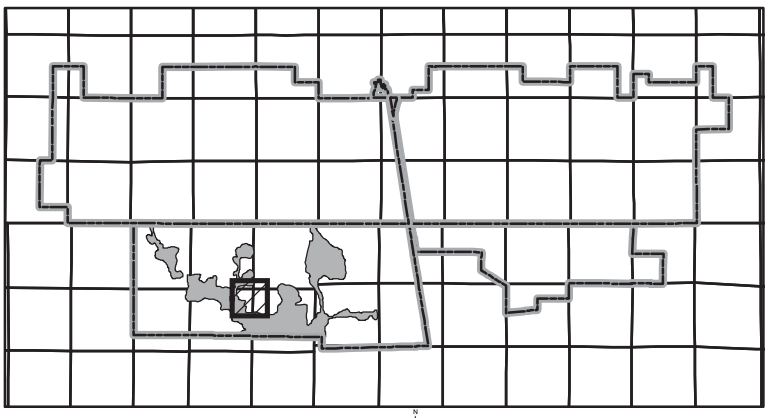
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 38 of 56

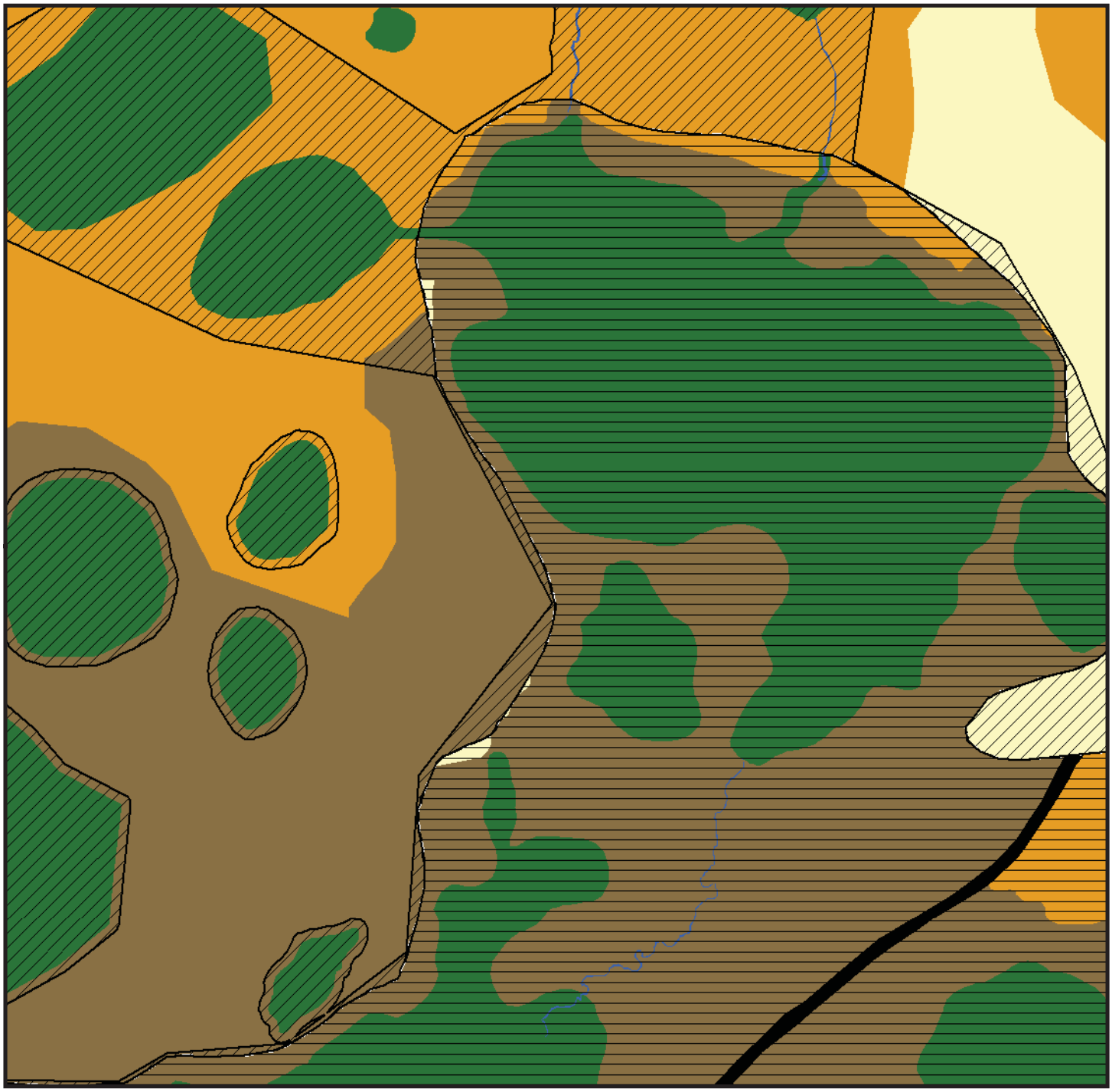
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

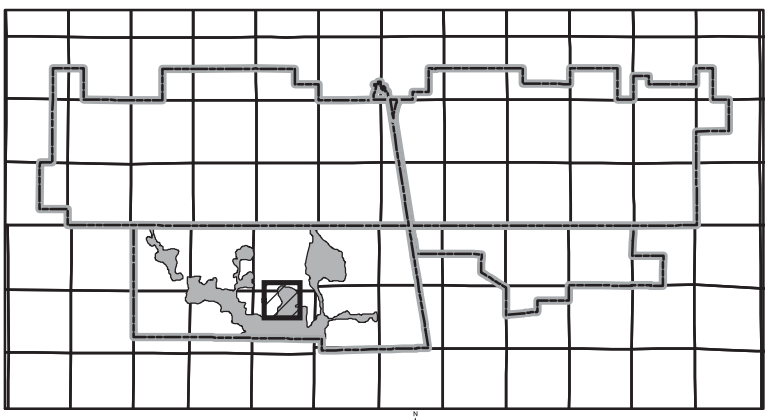
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 39 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

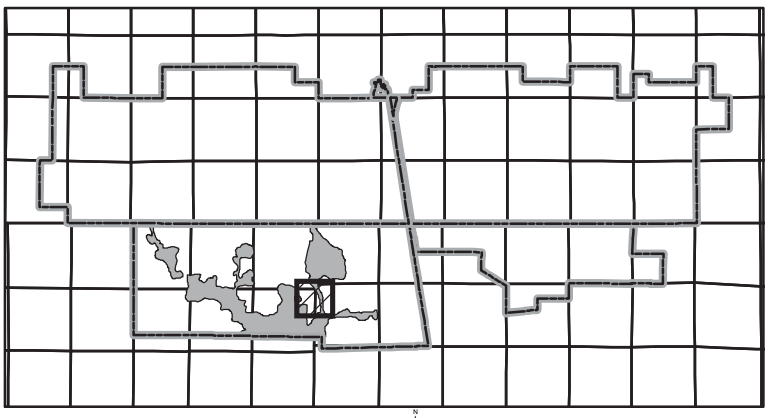
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 40 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

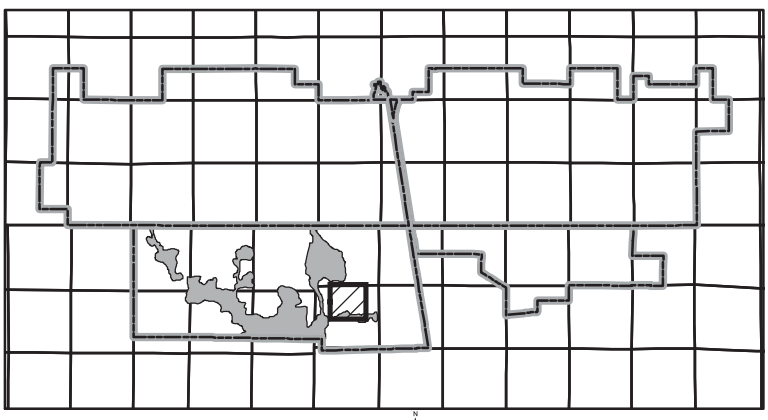
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 41 of 56

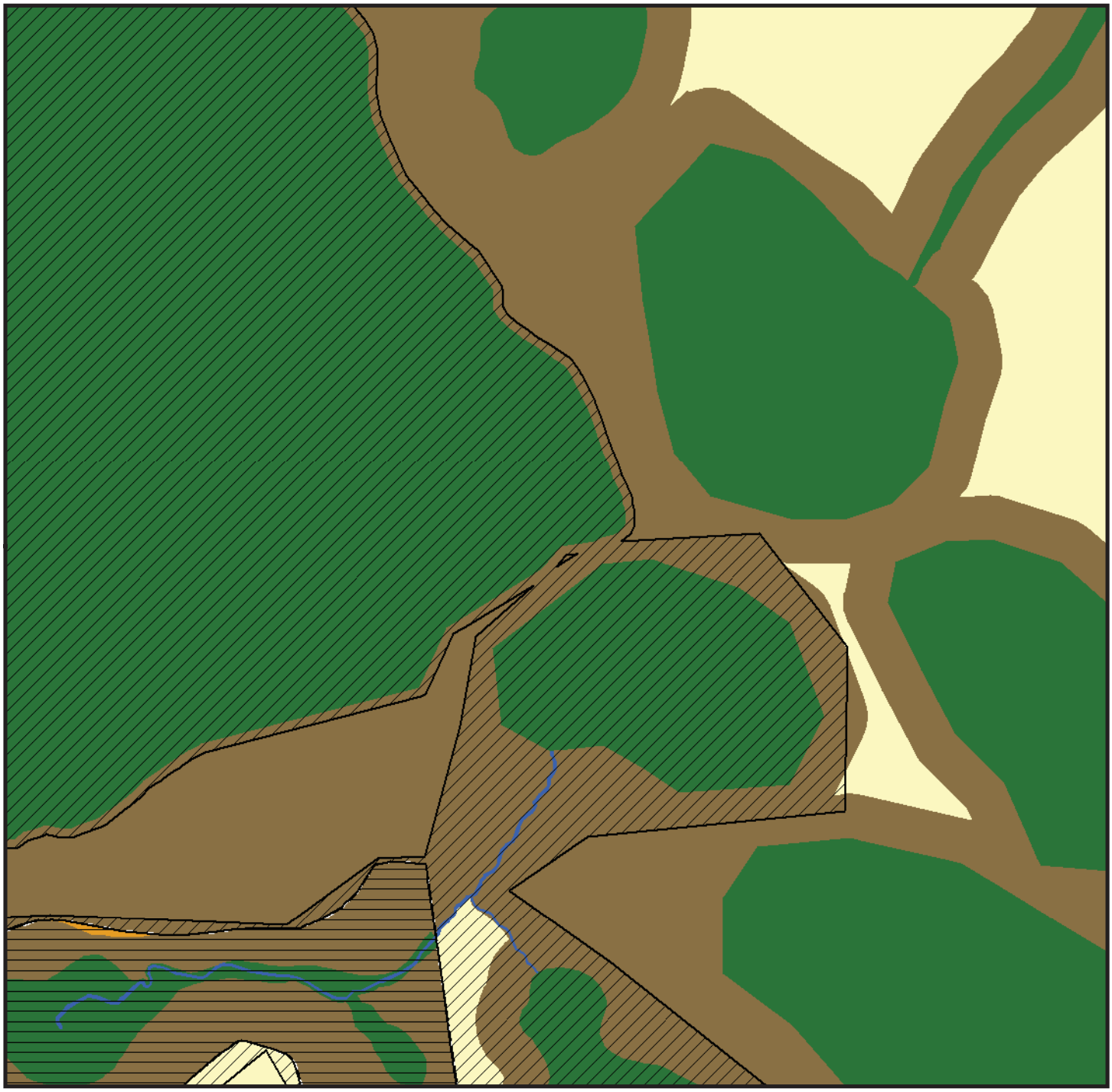
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

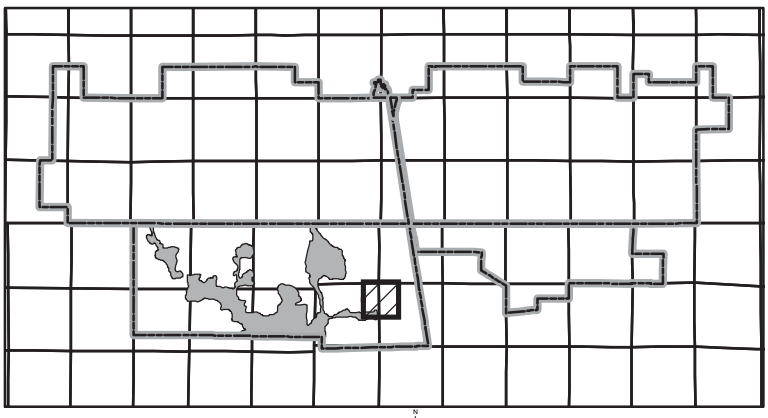
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 42 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

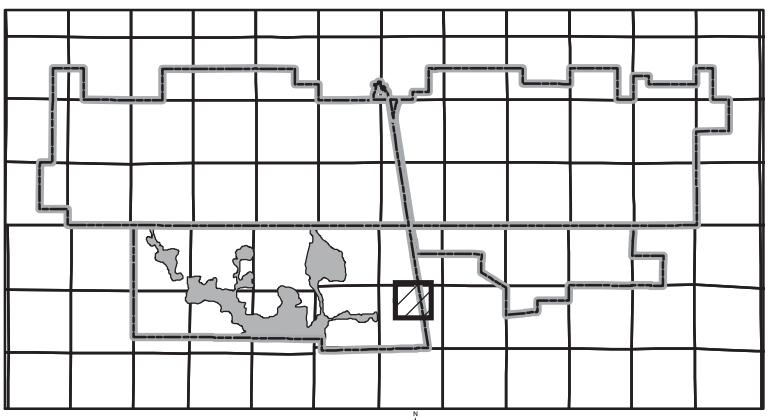
P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 43 of 56

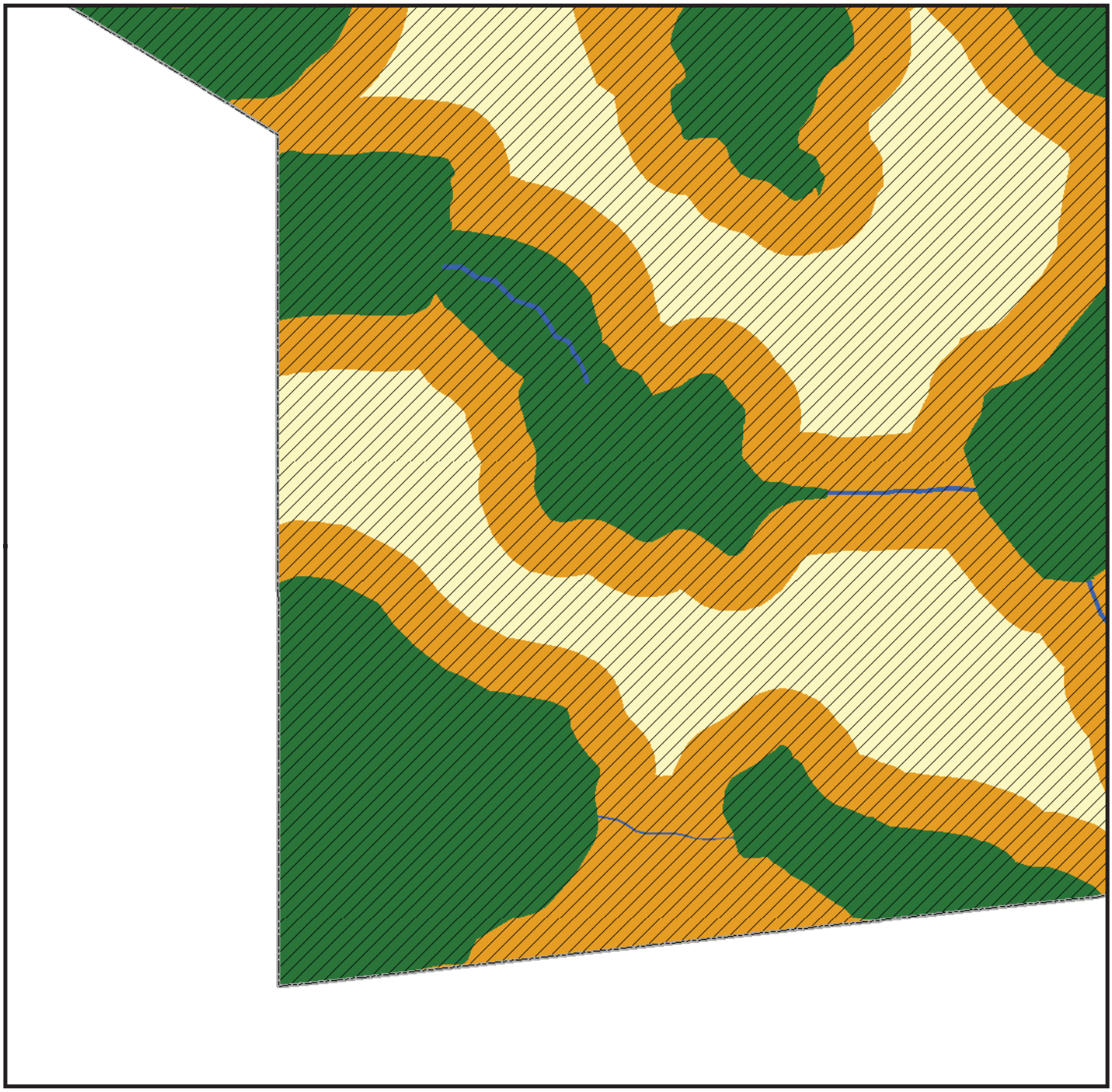
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

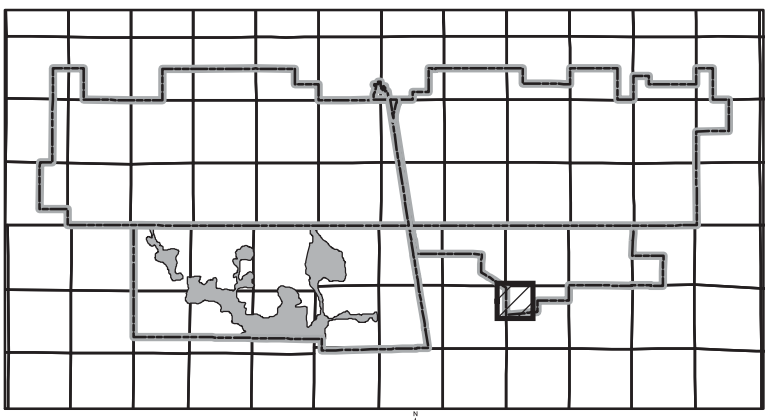
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 44 of 56

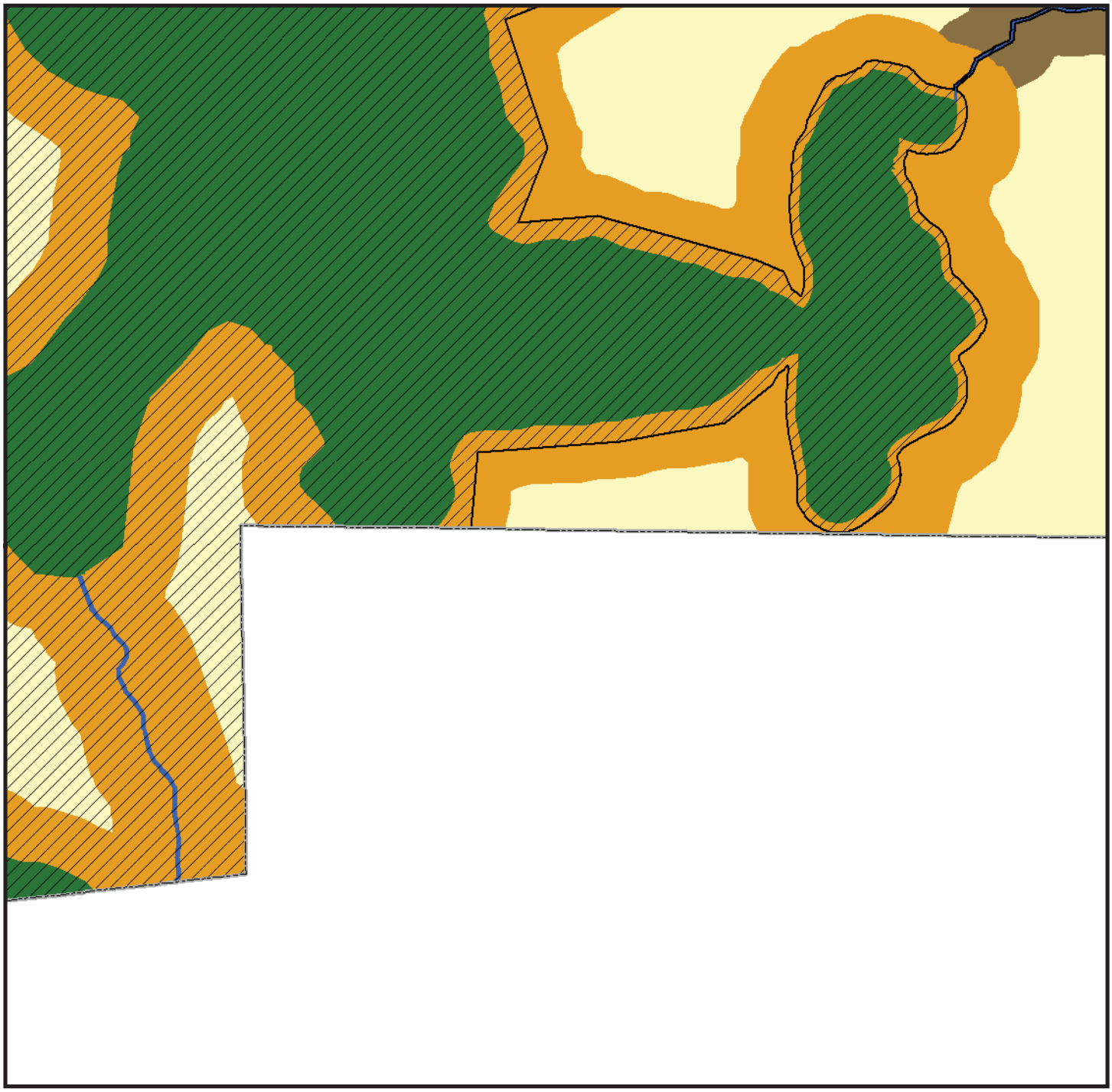
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

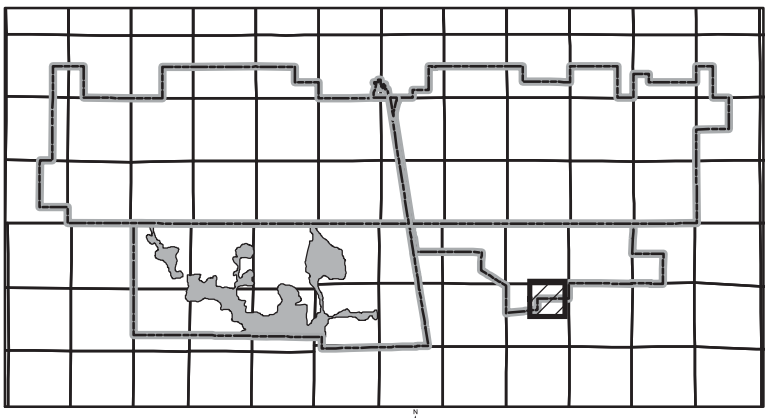
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 45 of 56

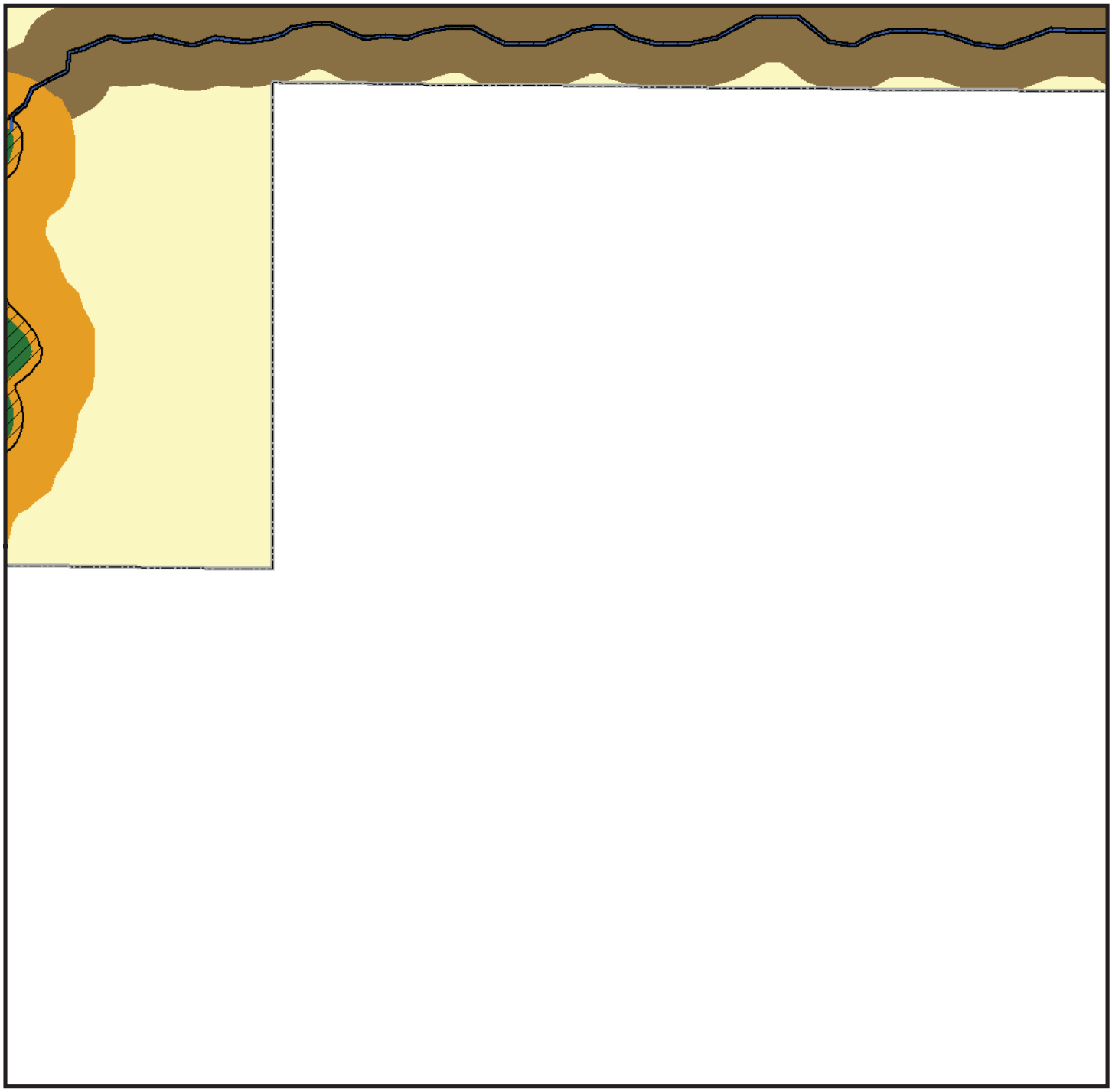
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

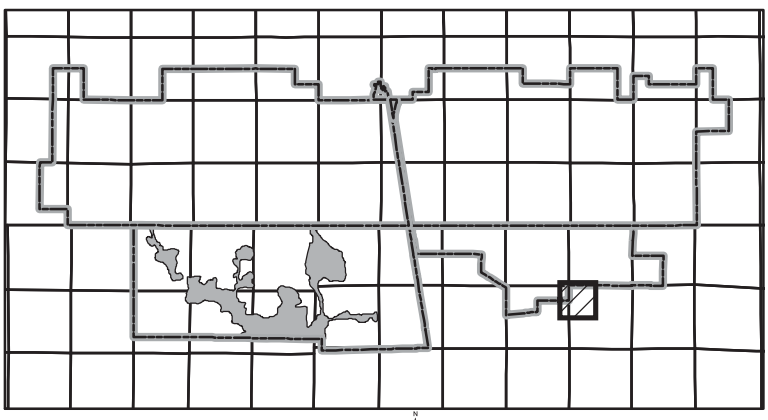


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 46 of 56

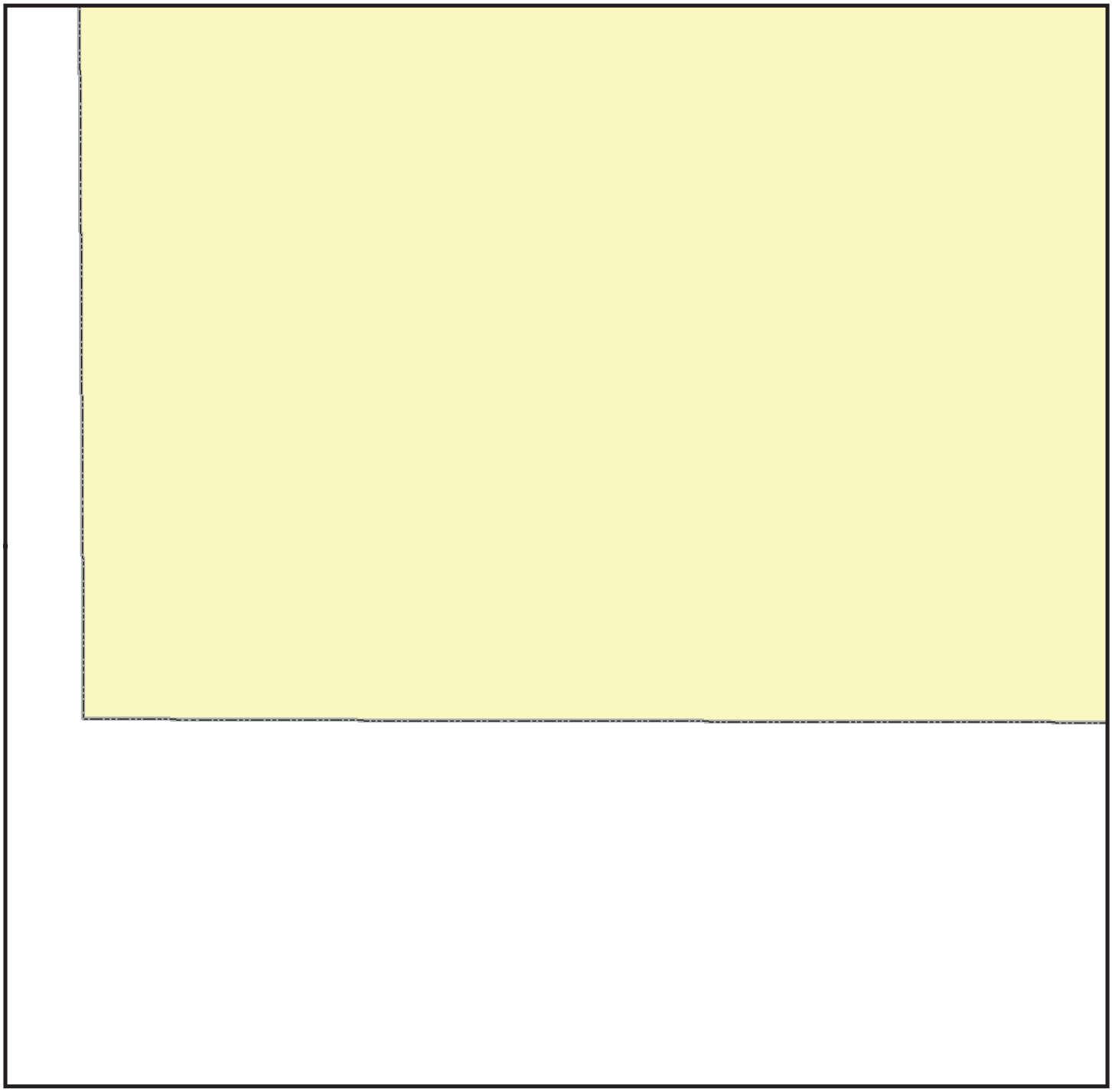
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

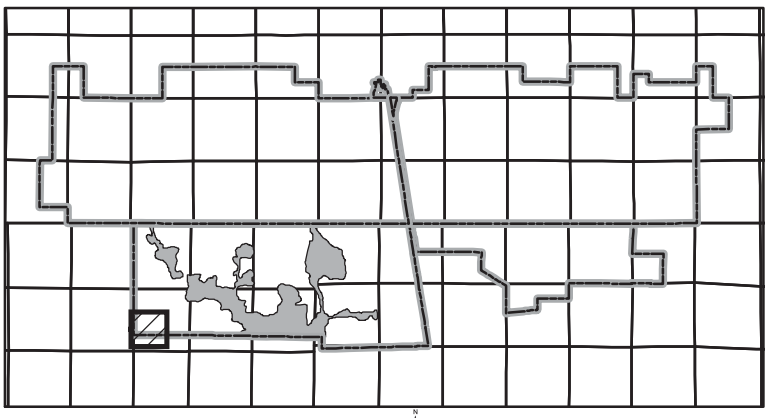
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 47 of 56

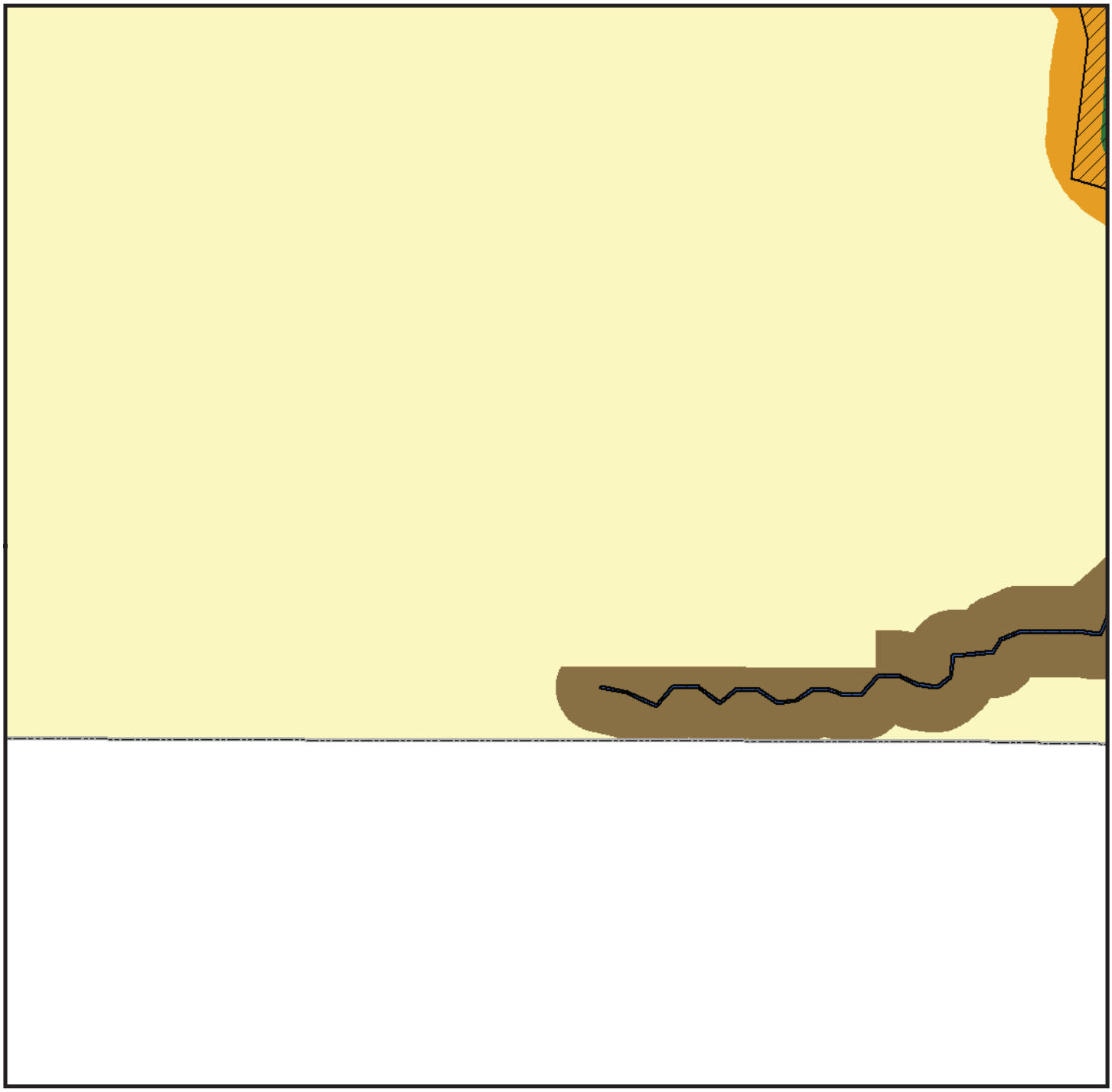
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

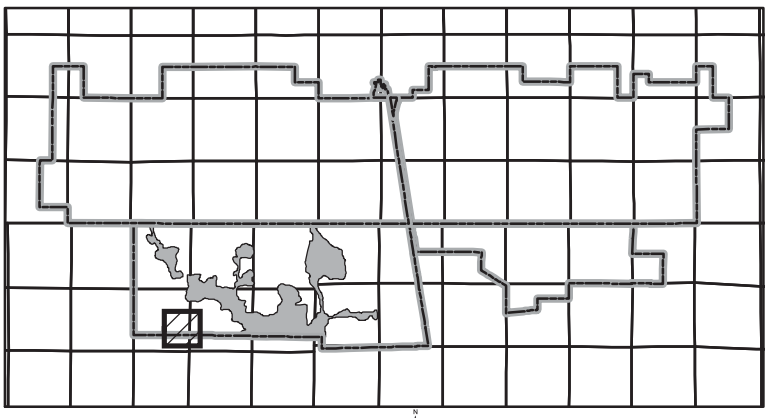


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 48 of 56

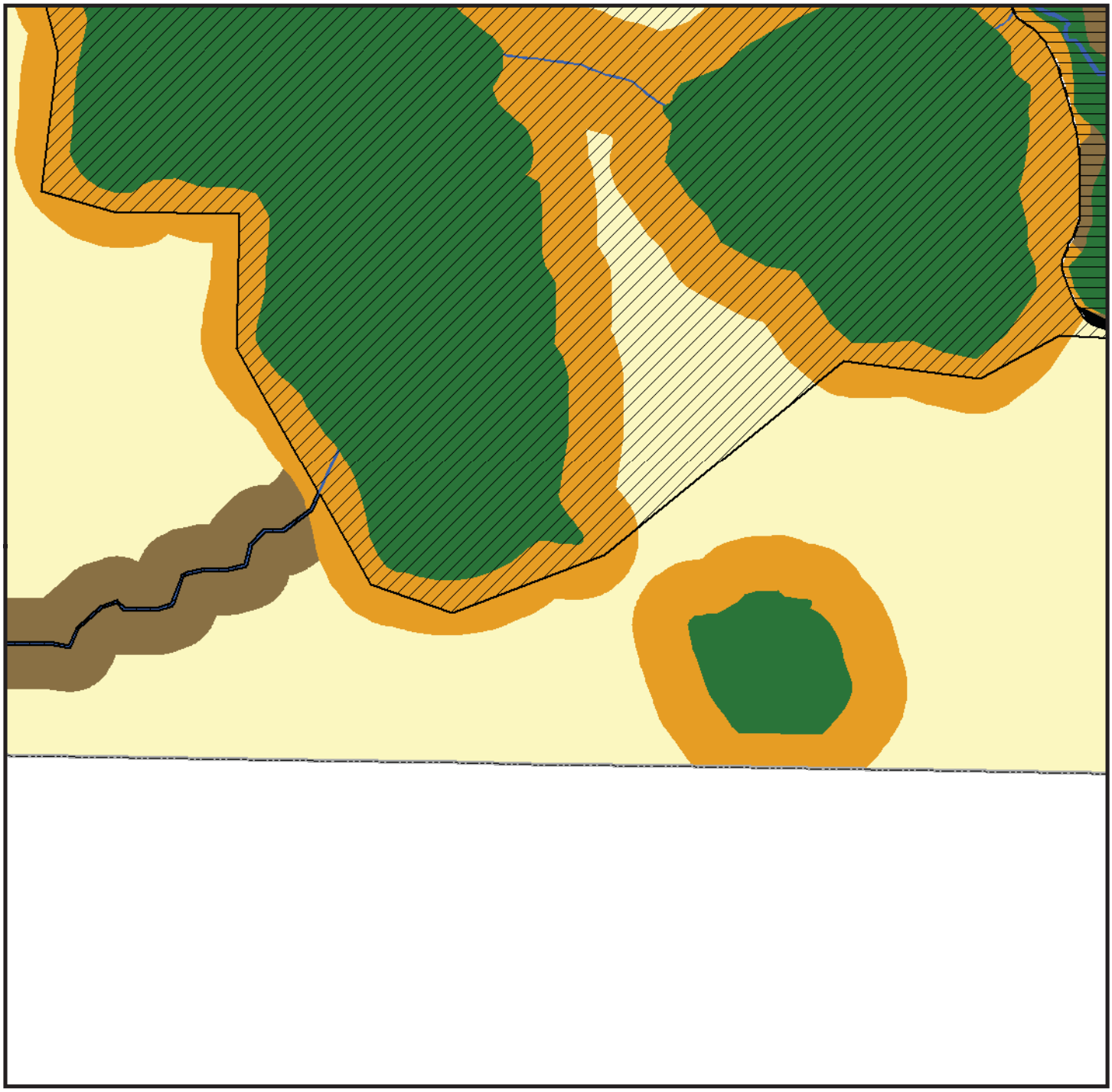
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

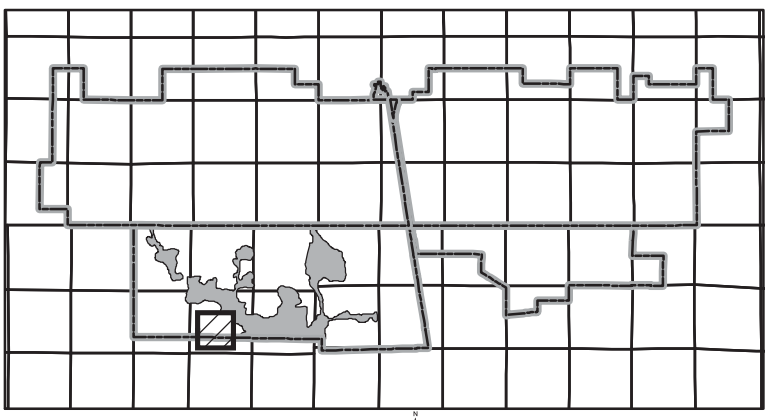
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 49 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

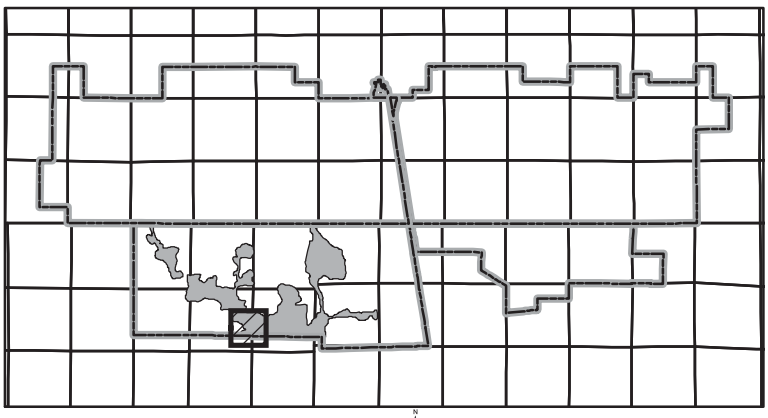
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 50 of 56

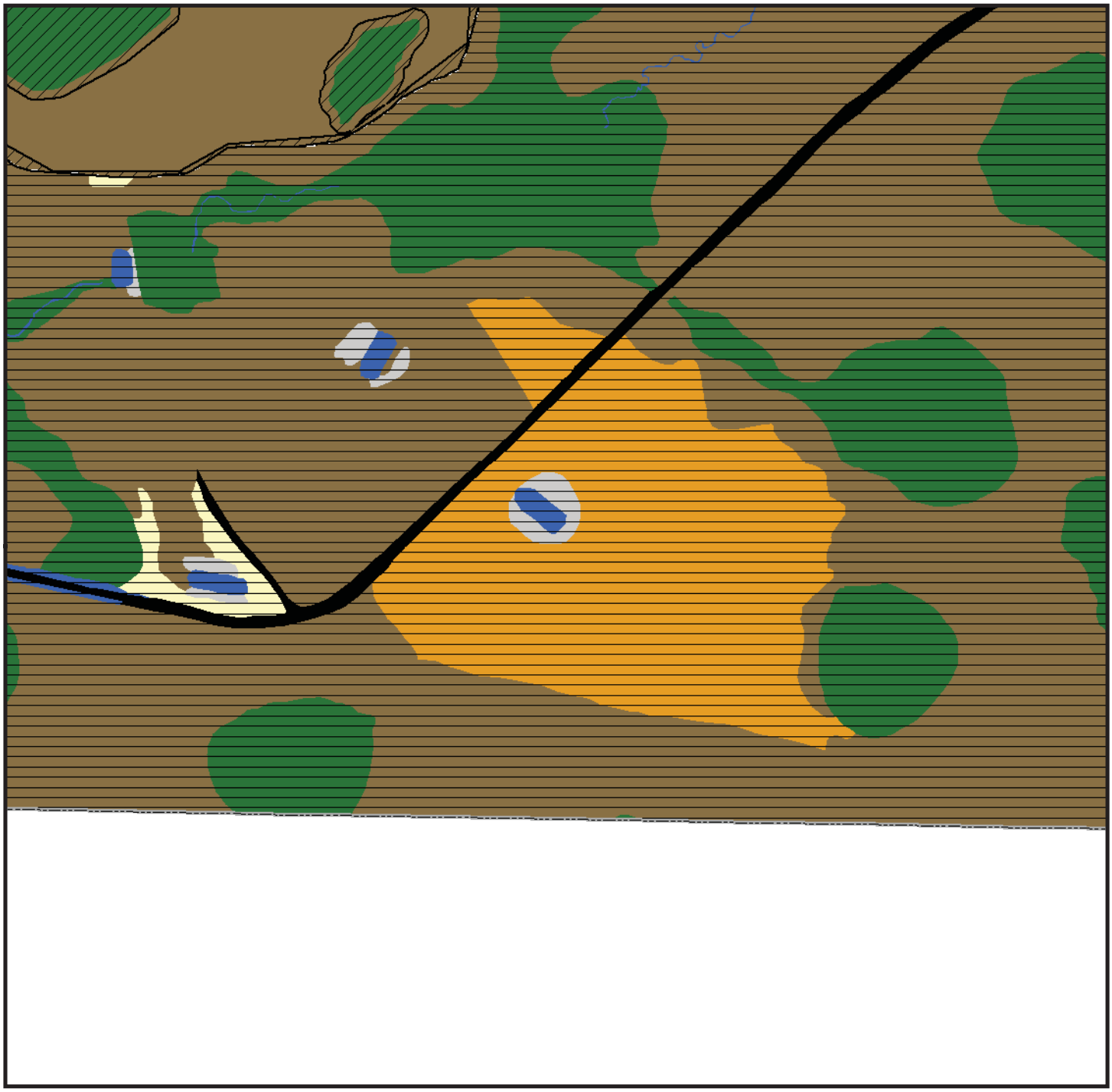
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

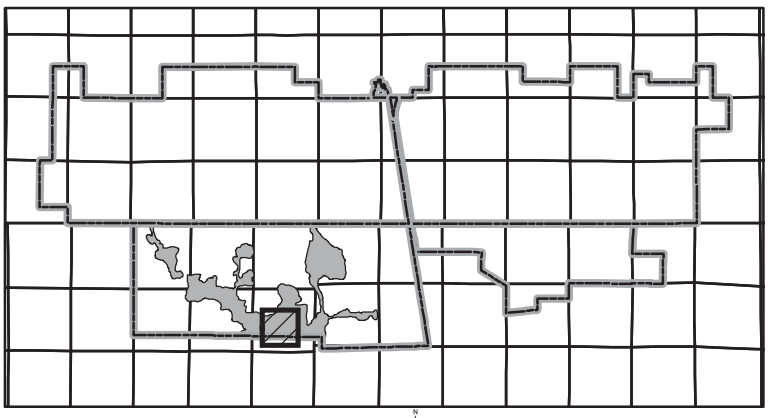


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 51 of 56

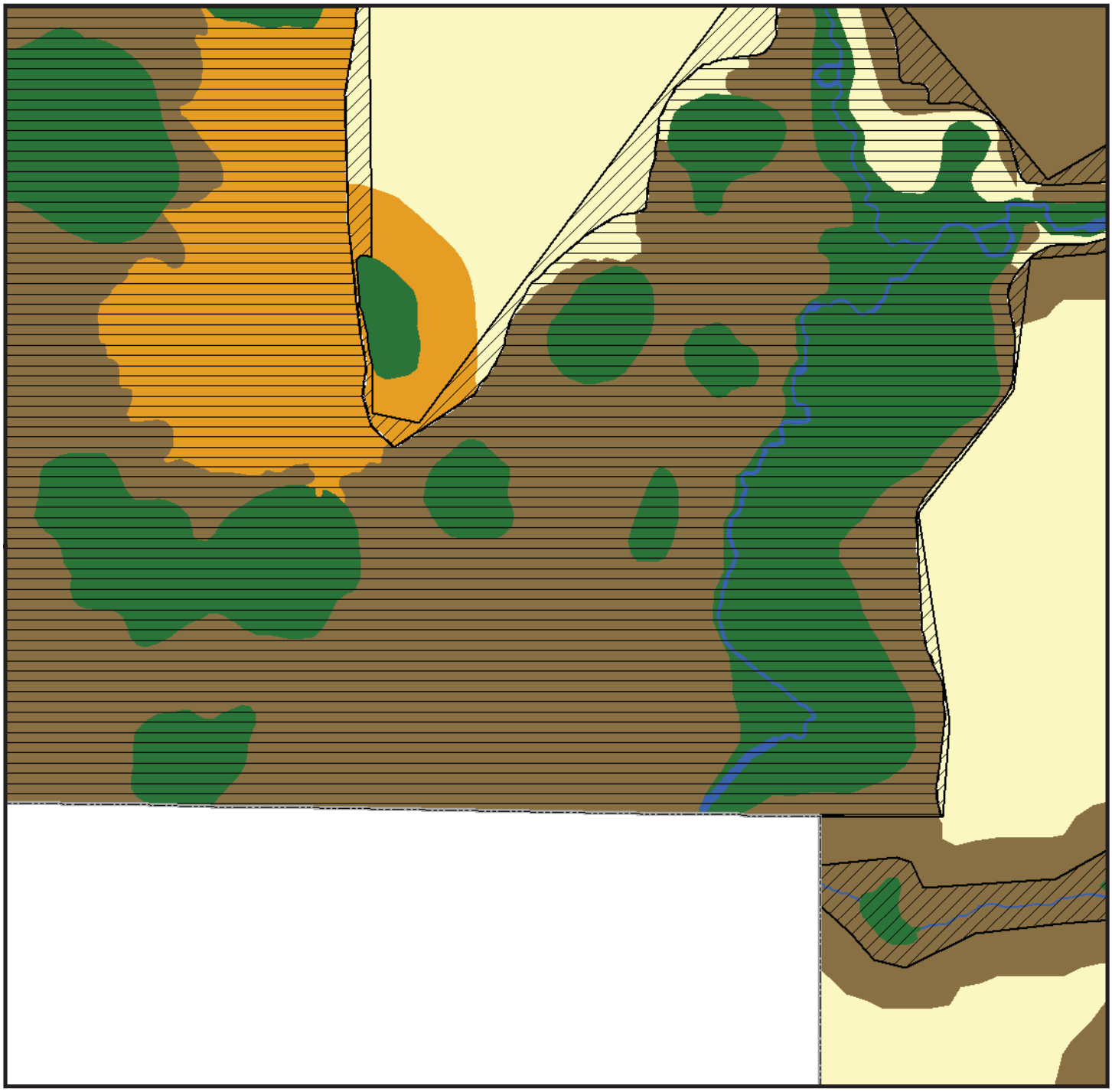
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

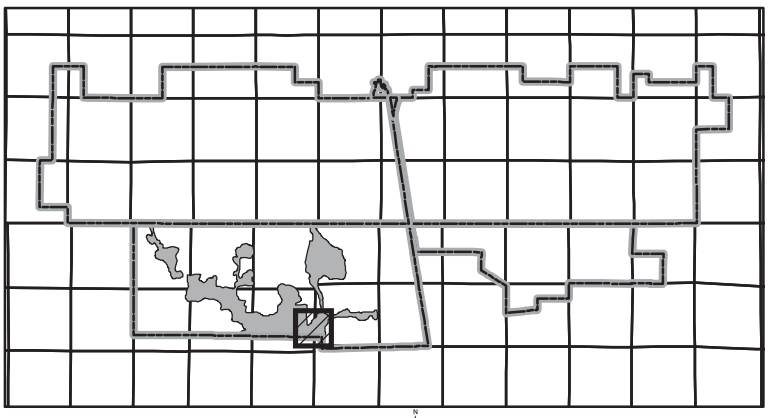


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 52 of 56

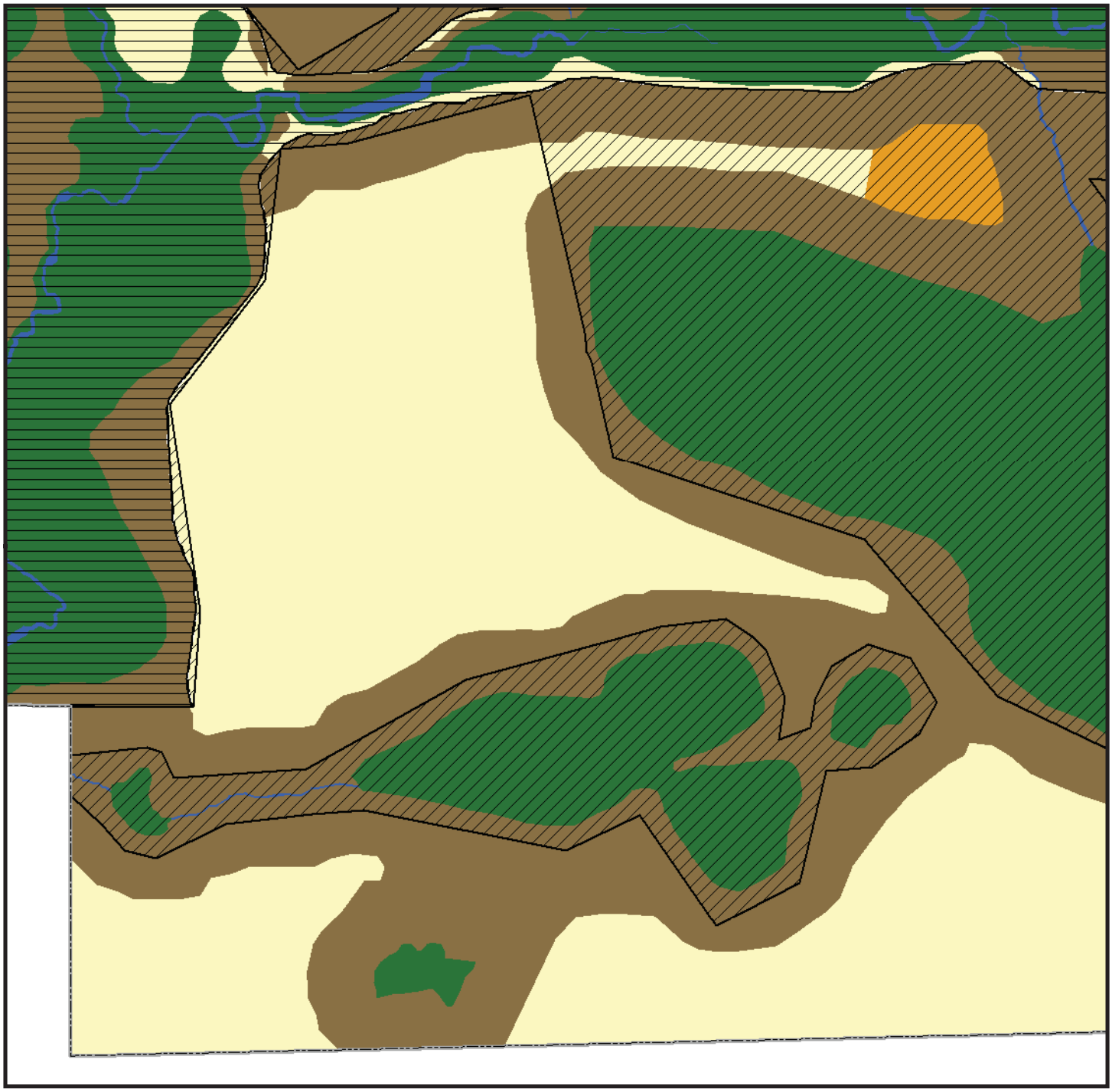
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

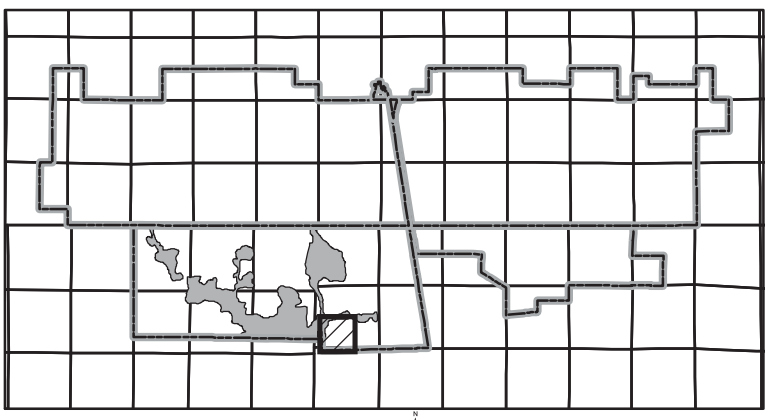
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 53 of 56

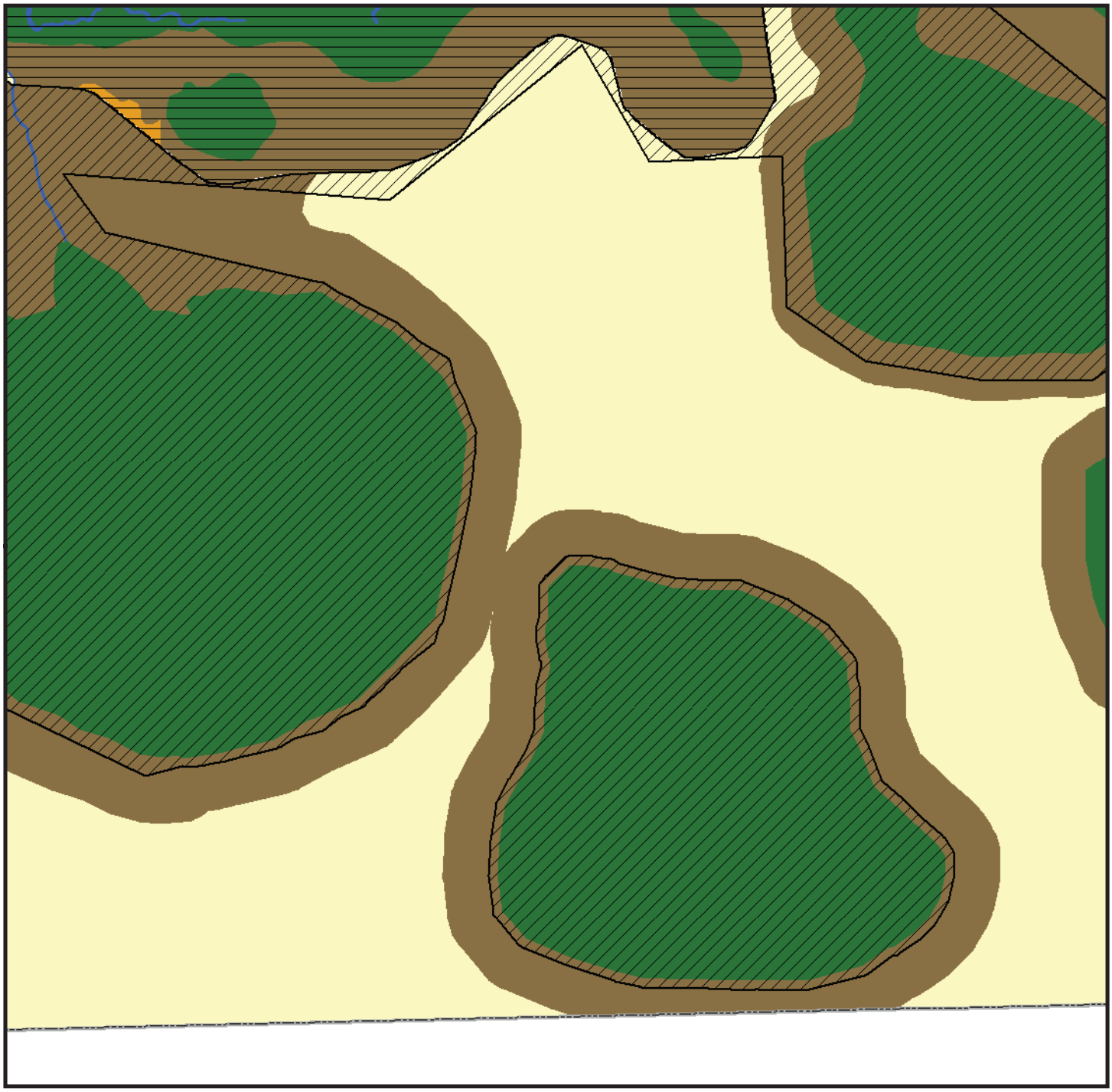
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400



South Pasture Mine

South Pasture Extension

No Mine Boundary

Planned Habitat Areas

Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-

Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200

300

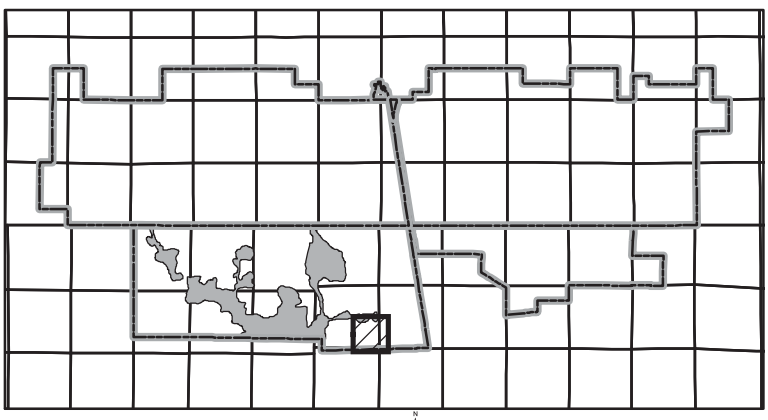
400

500

600

700

800



0 100 200 400 Feet

1 in = 400 feet

Sheet 54 of 56

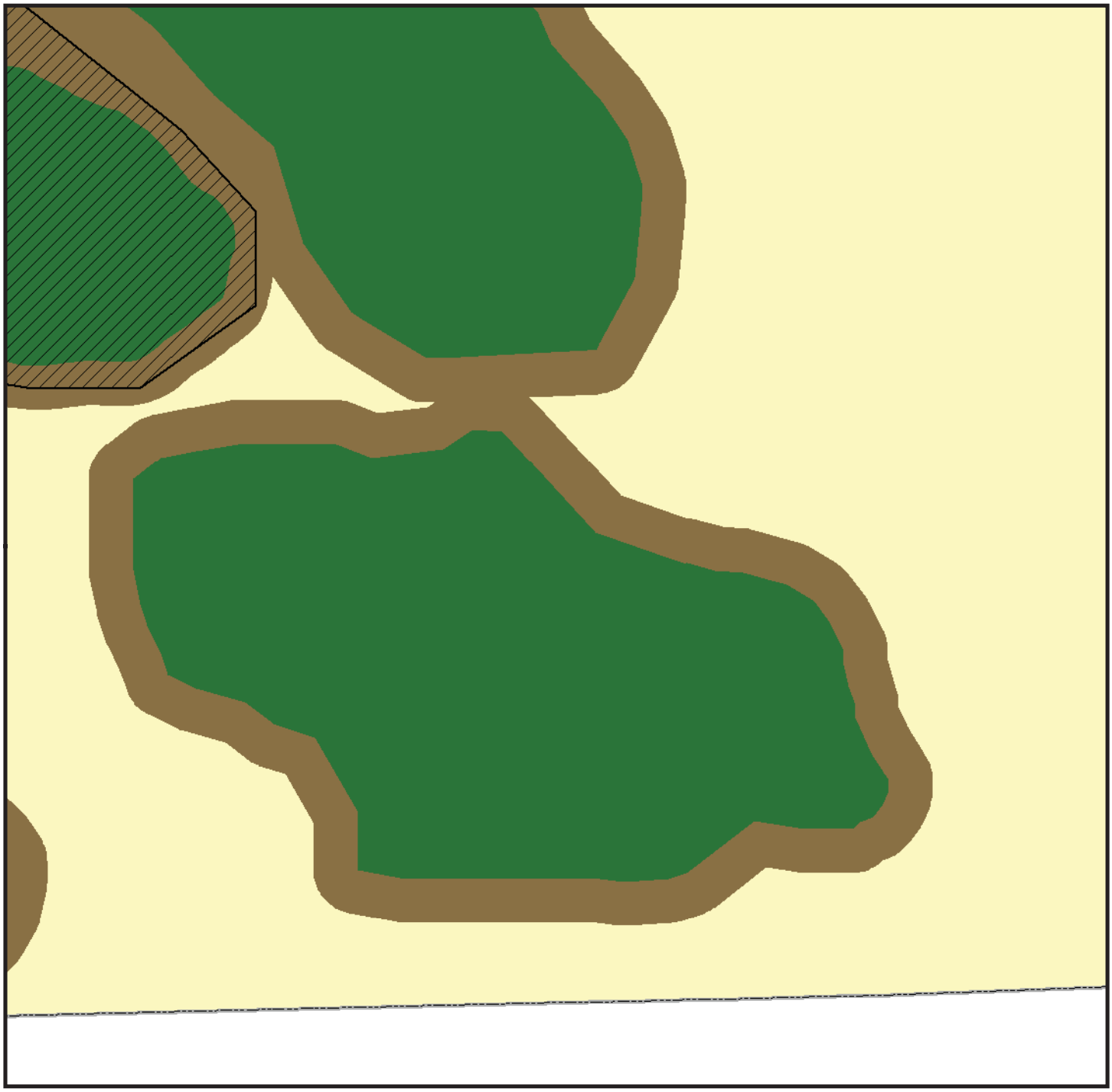
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

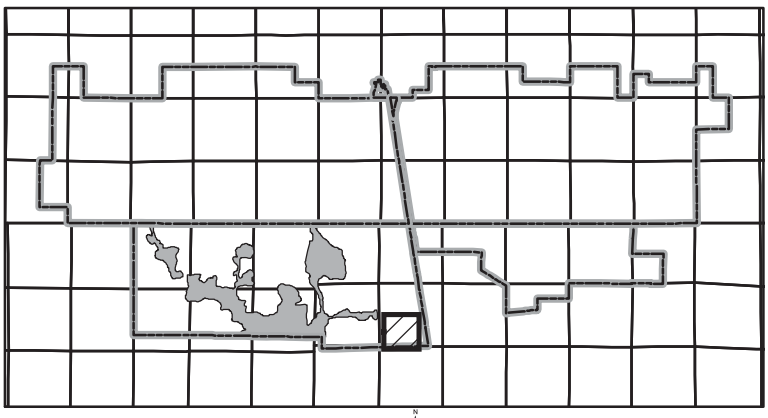


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 55 of 56

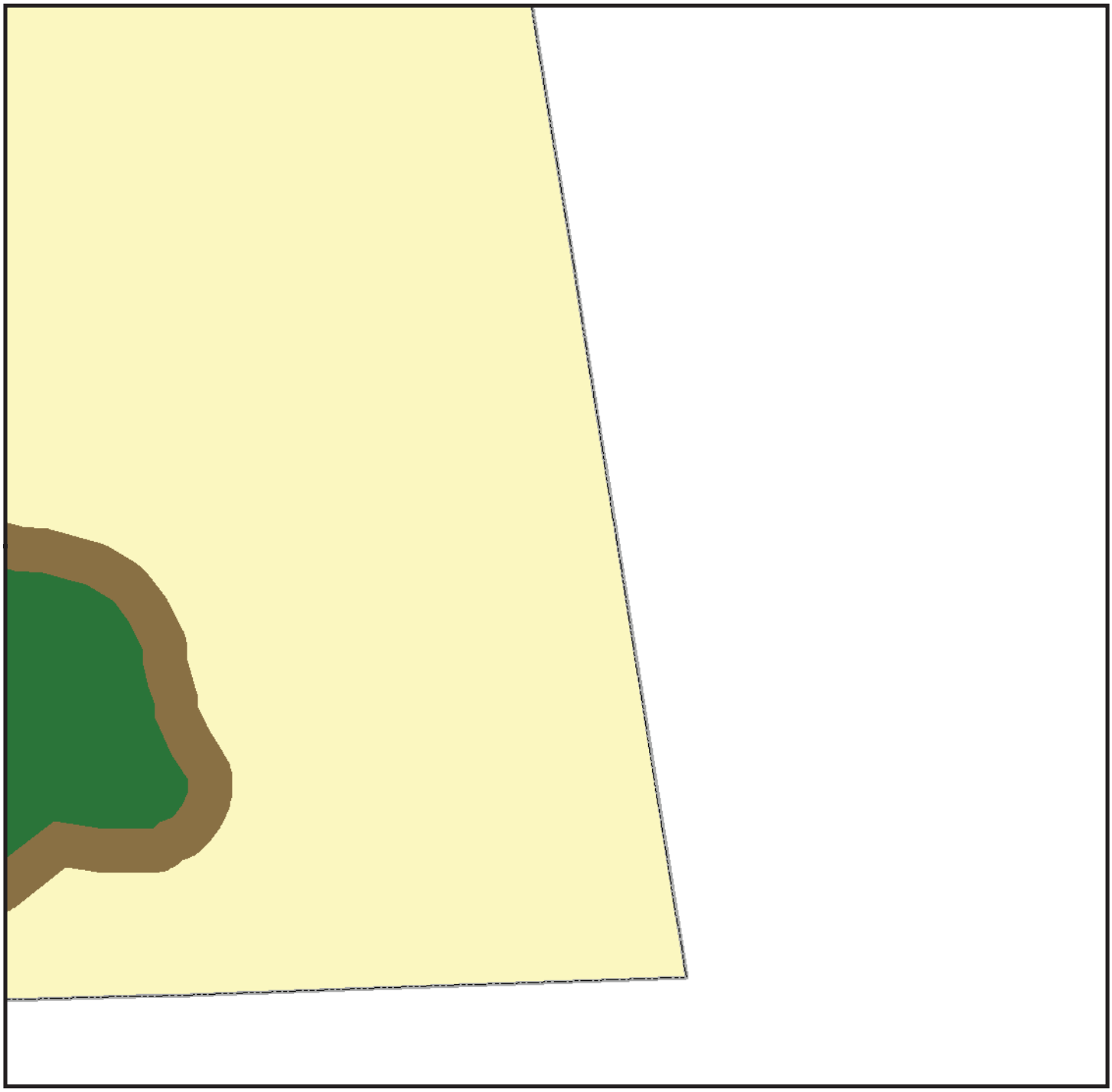
Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2
PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

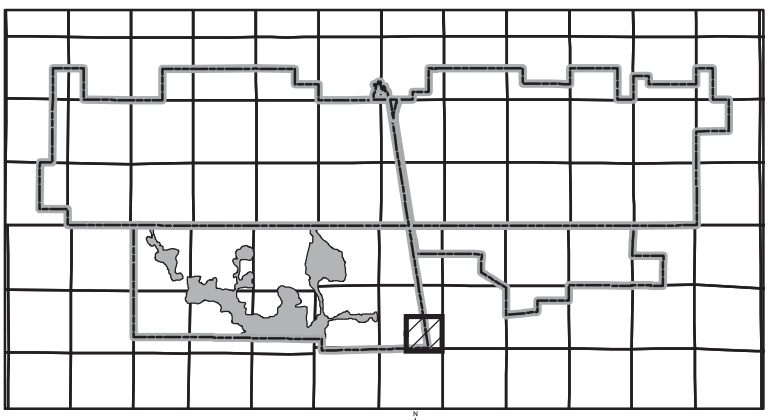


South Pasture Mine
South Pasture Extension
No Mine Boundary
Planned Habitat Areas
Immediate Protection Level 1 - South Pasture Extension - 1094.7 ac. +/-
Post-Reclamation Protection Level 1 (includes Temporary Disturbance) - 2205.0 ac. +/-

Other Habitat Restoration

Post Reclamation Land Use

200
300
400
500
600
700
800



0 100 200 400 Feet

1 in = 400 feet

Sheet 56 of 56

Mosaic

SOUTH PASTURE EXTENSION

Mosaic Fertilizer, LLC

FIGURE 2 PROPOSED PROTECTION LEVELS TO UPDATE THE CMP

P:\0010CFI\005-South Pasture Misc. Services\GIS\PROTECTION LEVELS 8X11 400

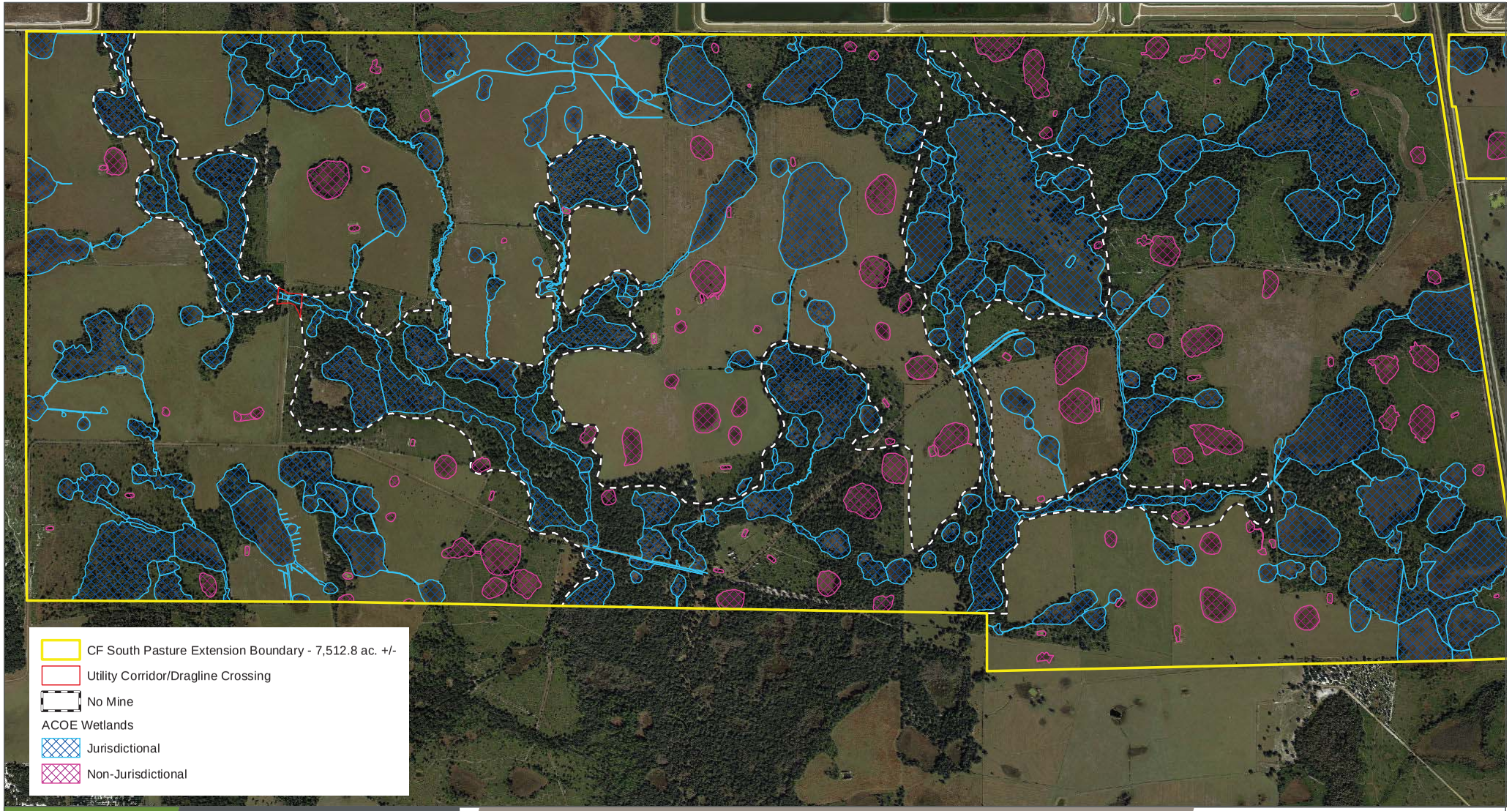


Image:2013
Data Source:
CF Industries
Cardno ENTRIX

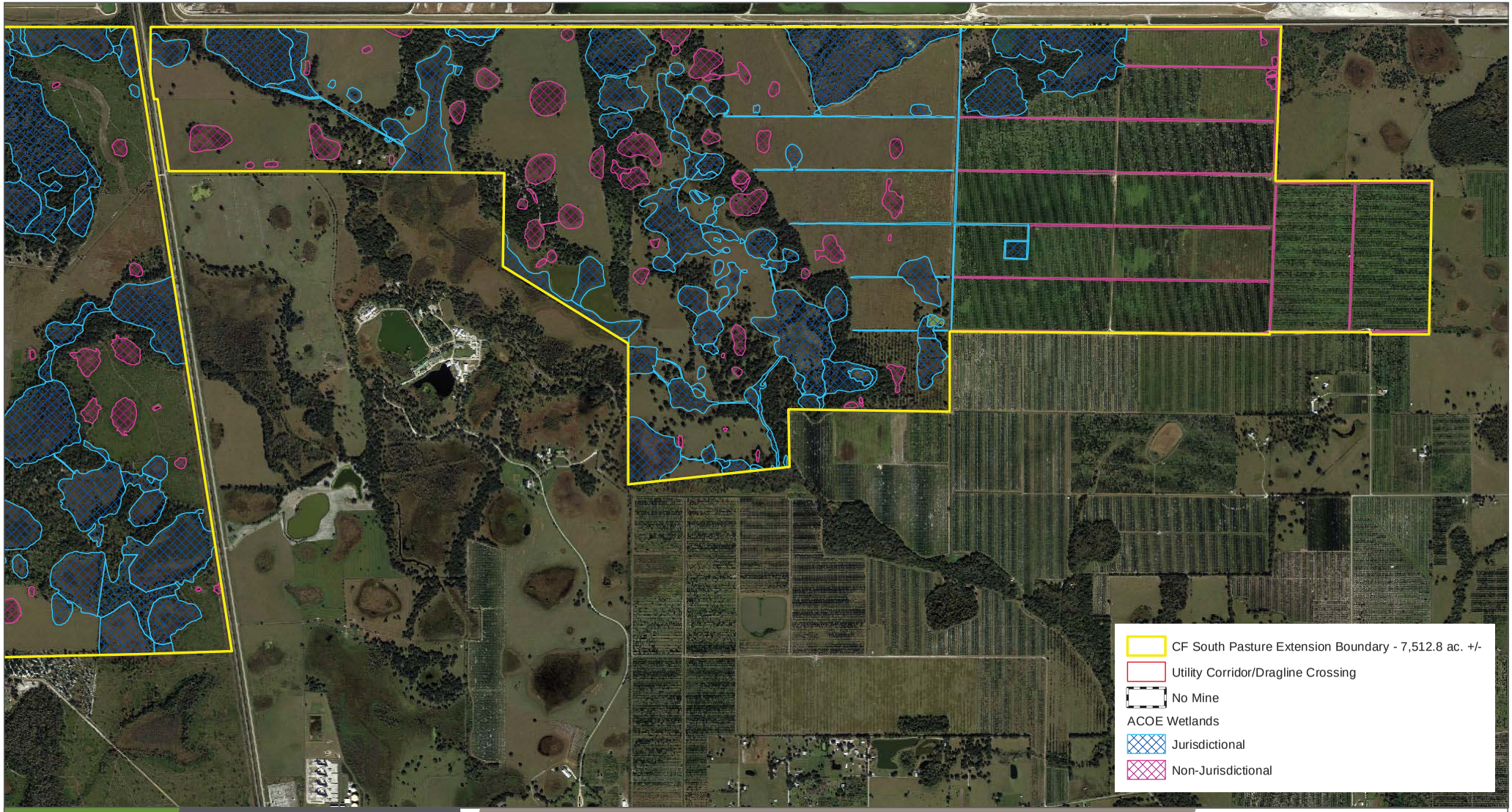
0 1,500 3,000 Feet
0 457 914 Meters

Figure 3A
ACOE Jurisdictional / Non-Jurisdictional Wetlands

Compensatory Mitigation Plan
CF Industries South Pasture Extension
Hardee County, FL

Cardno ENTRIX
3905 Crescent Park Drive, Riverview, FL 33578 USA
Phone (+1) 813-664-4500 Fax (+1) 813-664-0440
www.cardnoentrix.com

Date Created: 9/24/2013 Date Revised: 9/24/2013 File Path: Q:\UnitedStates\Florida\Tampa\06750411\ACOE RAI 2013\arcmap\ACOE_JD_Wetlands_West_B_lbf_20130924.mxd
GIS Analyst: lauren.federsel



N

Image:2013
Data Source:
CF Industries
Cardno ENTRIX

0 1,500 3,000 Feet

0 457 914 Meters

Figure 3B
ACOE Jurisdictional / Non-Jurisdictional Wetlands

Compensatory Mitigation Plan
CF Industries South Pasture Extension
Hardee County, FL

Cardno ENTRIX
3905 Crescent Park Drive, Riverview, FL 33578 USA
Phone (+1) 813-664-4500 Fax (+1) 813-664-0440
www.cardnoentrix.com

Date Created: 9/24/2013 Date Revised: 9/24/2013 File Path: Q:\UnitedStates\Florida\Tampa\06750411\ACOE RAI 2013\arcmap\ACOE_JD_Wetlands_East_B_ltlf_20130924.mxd
GIS Analyst: lauren.federsel