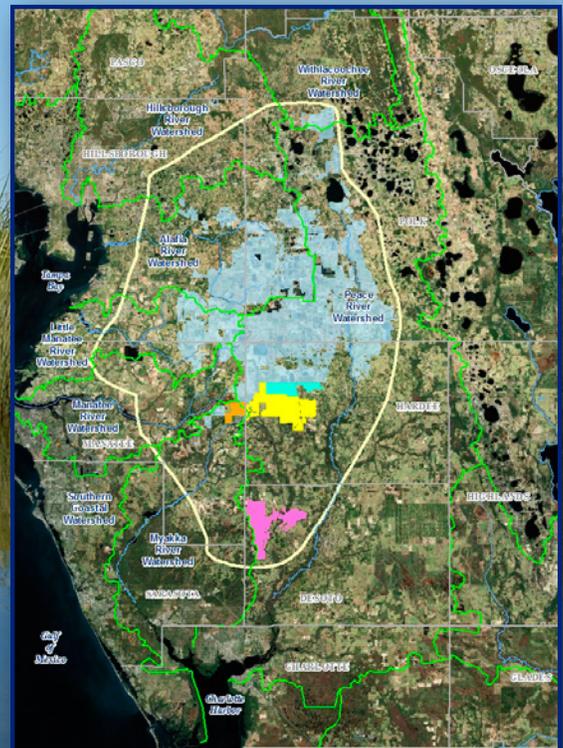


APPENDIX B

OFFSITE ALTERNATIVES SCREENING FOR THE FINAL AEIS ON PHOSPHATE MINING IN THE CFPD



Offsite Alternatives Screening for the Final AEIS on Phosphate Mining in the CFPD

PREPARED FOR: U.S. Army Corps of Engineers, Jacksonville District
COPY TO: U.S. Environmental Protection Agency
Florida Department of Environmental Protection
PREPARED BY: CH2M HILL
DATE: December 2, 2012
Revised February 7, 2013
PROJECT NUMBER: 418237.07.01

1.0 Introduction

The range of alternatives identified by the U.S. Army Corps of Engineers (USACE), including alternatives proposed by the permit Applicants and alternatives suggested by others during the scoping period and in comments on the Draft Areawide Environmental Impact Statement (AEIS) on Phosphate Mining in the Central Florida Phosphate District (CFPD), are discussed in the following paragraphs. Review of these alternatives within the AEIS will assist the USACE in making decisions regarding the four pending applications for phosphate mining projects within the CFPD. The alternatives that the USACE identified, based on input from multiple sources and its independent judgment, are grouped into five major categories that follow the USACE Regulatory Program National Environmental Policy Act (NEPA) Implementation Procedures for permit application decision options: issue the permit, issue with modifications or conditions, or deny the permit. The five major categories of alternatives are:

1. The No Action Alternative (as defined by Title 33, Code of Federal Regulations [33 CFR] Part 325, Appendix B, Paragraph 9.b.5(b)) – no construction requiring a USACE permit.
2. The Applicants' Preferred Alternatives – as described in their Clean Water Act Section 404 permit applications.
3. Offsite Alternatives – alternative locations for one or more mining projects, within the CFPD, other than the Applicants' Preferred Alternatives.
4. Onsite Alternatives – modifications to the Applicants' Preferred Alternatives, such as buffer areas, to avoid or minimize impacts (discussed in detail in Chapter 5).
5. Functional Alternatives – mining technology alternatives that would avoid and/or minimize impacts such as alternative means of transporting phosphate rock to the beneficiation plant or alternative means of extracting the phosphate rock.

This appendix provides the details of the Tier 1 and Tier 2 screening approach used to evaluate the offsite alternatives (category 3 above) for potential inclusion for more detailed analysis in Chapter 4.

The overall screening process included the following steps to facilitate the identification of possible alternatives:

- Step 1: Conduct Tier 1 screening to eliminate areas not available for mining.
- Step 2: Identify minimum alternative areas that would be reasonable for consideration as alternative mine sites.
- Step 3: Conduct screening for legal ordinances that preclude mining operations.
- Step 4: Identify Tier 2 criteria to be used to evaluate environmental conditions on the remaining alternatives.
- Step 5: Develop and apply decision analysis processes to prioritize Tier 2 criteria.

- Step 6: Apply Tier 2 screening criteria; complete alternative screening to evaluate and compare environmental conditions for the remaining alternatives.
- Step 7: Review for residential setbacks.
- Step 8: Apply prospecting data for each remaining alternative. This last screening step results in the final remaining reasonable offsite alternatives for more detailed analysis in Chapter 4.

2.0 Step 1: Conduct Tier 1 Screening to Eliminate Areas Not Available for Mining

The purpose of this initial screening step was to remove from further consideration any land areas within the CFPD that are not viable for phosphate mining. Based on comments received during the scoping period, a number of geographic information system (GIS) data layers were evaluated to determine their potential use as screening criteria. Considering the requirements for viable mining opportunities and the difficulty of obtaining access to certain lands, exclusionary criteria (defined as Tier 1 criteria) were chosen to identify areas where the expectation of future mining would not be reasonable. The data layers representing these exclusionary criteria and the source of the data for each are summarized in Table 1. In the Tier 1 screening process (illustrated in Figure 1), the lands within each of the indicated GIS layers were sequentially removed from consideration as prospective offsite alternatives.

The following descriptions and figures illustrate the individual Tier 1 screening criteria used to identify areas to be eliminated from further evaluation.

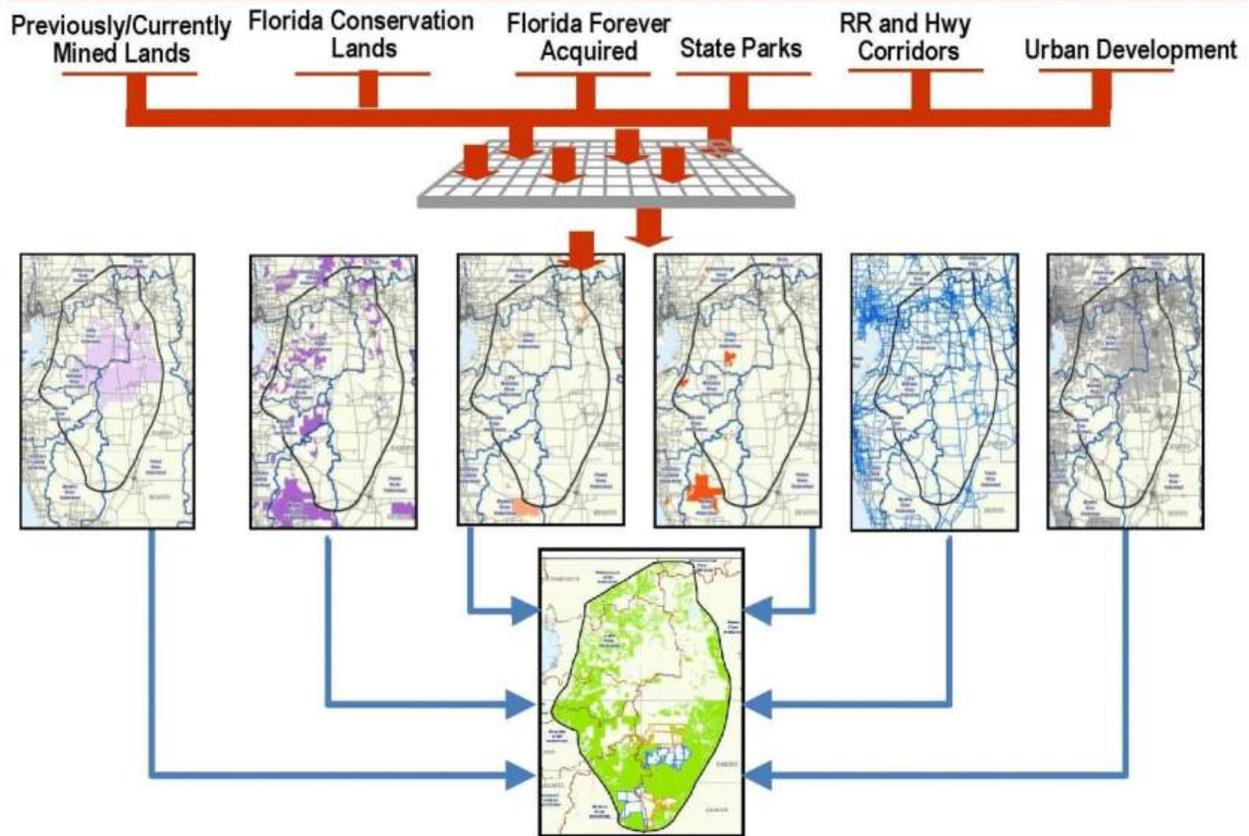
2.1 Mandatory and Non-Mandatory Phosphate Mine Boundaries

The previously/currently mined lands area is represented by the mandatory and non-mandatory phosphate mine boundaries layer (see Figure 2) from the Florida Department of Environmental Protection (FDEP). This data layer contains the boundaries of all active and inactive mandatory and non-mandatory phosphate mines within Florida as of 2009. These areas have already been mined, are currently being mined, are in some stage of reclamation, or are already approved for mining in the future and therefore are not available as alternatives for evaluation in this process. Non-mandatory phosphate mine boundaries were reviewed for additional exclusion criteria in this evaluation, but have not been included in this screening process because they overlapped with other Tier 1 screening criteria. Therefore, inclusion of the non-mandatory phosphate mine layer was considered redundant. The total area removed by this screening step is 327,379 acres.

Table 1. GIS Mapping Layers Used as Tier 1 Screening Criteria

Criterion or GIS Data Layer Name	Data Layer Source
Mandatory and Non-Mandatory Phosphate Mine Boundaries	FDEP
Florida Conservation Lands	Florida Natural Areas Inventory (FNAI)
Florida Forever - Acquired	FNAI
Florida State Parks	Florida Park Service
Railroad Corridors	U.S. Department of Transportation
Federal Highway System Corridors	Florida Department of Transportation (FDOT) and Florida Railroad Commission
Urban Development, Element 1: Florida Developed Lands	FNAI
Urban Development, Element 2: Existing Cities or Other Governmental Boundaries	Southwest Florida Water Management District (SWFWMD), 2010
Urban Development, Element 3: Level 1 Florida Land Use and Cover Classification System (FLUCCS) Urban Built-Up	SWFWMD, 2010

Tier 1 GIS Screening of All CFPD



2

CFPD Area With Tier 1 Criteria Areas Removed

Figure 1. Conceptual Flow Diagram of the Tier 1 Screening Approach

2.2 Florida Conservation Lands

The Florida Conservation Lands layer (see Figure 3) consists of public (and some private) lands that the FNAI has identified as having natural resource value and that are being managed at least partially for conservation purposes. Because these are primarily publicly owned lands purchased because of their high habitat value, it is not reasonable to expect mining to be allowed on most of these properties. The total area removed from further evaluation by this screening step is 101,048 acres.

2.3 Florida Forever Acquisition Lands

The Florida Forever Acquisitions layer (see Figure 4) consists of parcels that have been purchased using Florida Forever funding. Most of these parcels will also be incorporated into the FNAI's Florida Conservation Lands data layer, either as new managed areas (that is, conservation lands) or additions to existing managed areas. These are generally publicly owned lands purchased because of their high habitat value; therefore, it is not reasonable to expect mining to be allowed in these areas. The total area removed by this screening step is 285 acres.

2.4 Florida State Parks

The Florida State Parks layer (see Figure 5) contains Florida State Park geographic boundaries and associated information. These are generally publicly owned lands purchased because of their high habitat value; therefore, it is not reasonable to expect mining to be allowed in these areas. The total area removed by this screening step is 4,431 acres.

2.5 Railroad and Highway Corridors

The railroad and highway corridors layers (see Figure 6) contain the subset of The Rail Network and the subset of the Federal-Aid Highway System within the CFPD. These existing railroad and highway corridors would not be reasonably mineable. The total area removed by this screening step, which includes a 200-foot buffer along each rail or highway corridor, is 29,889 acres.

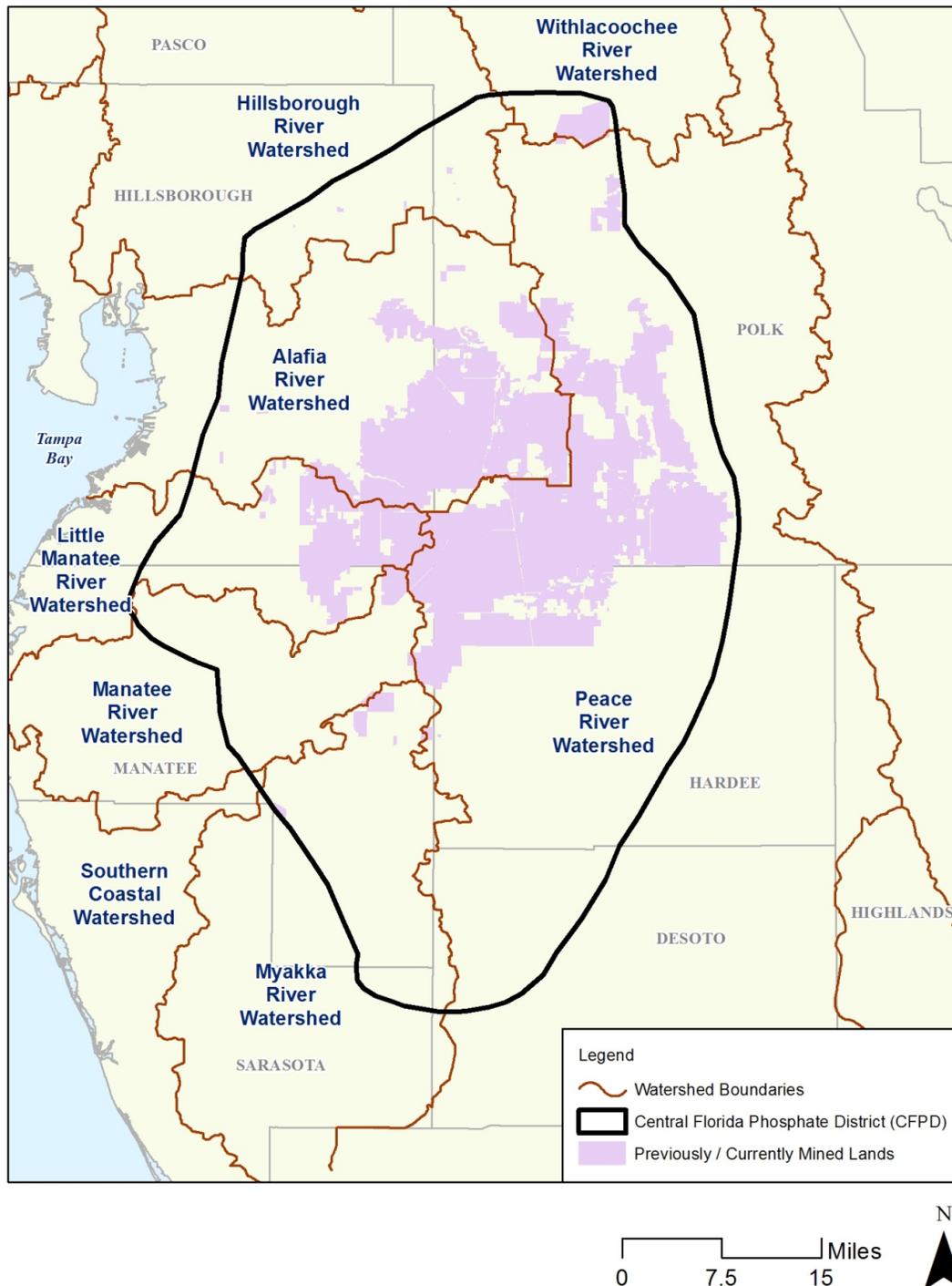


Figure 2. Tier 1 Overlay – Mandatory and Non-Mandatory Phosphate Mine Areas Previously Permitted

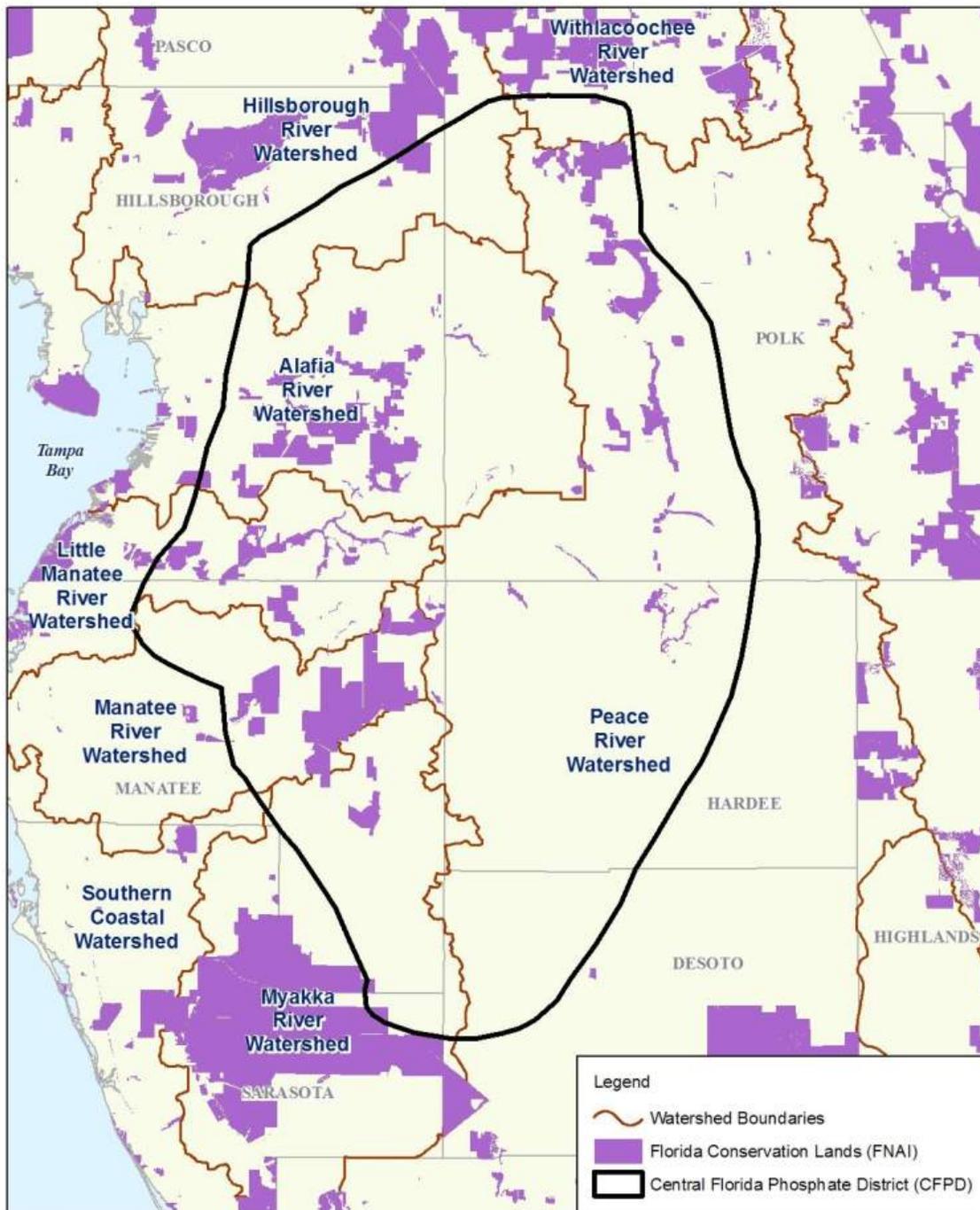


Figure 3. Tier 1 Overlay - Florida Conservation Lands

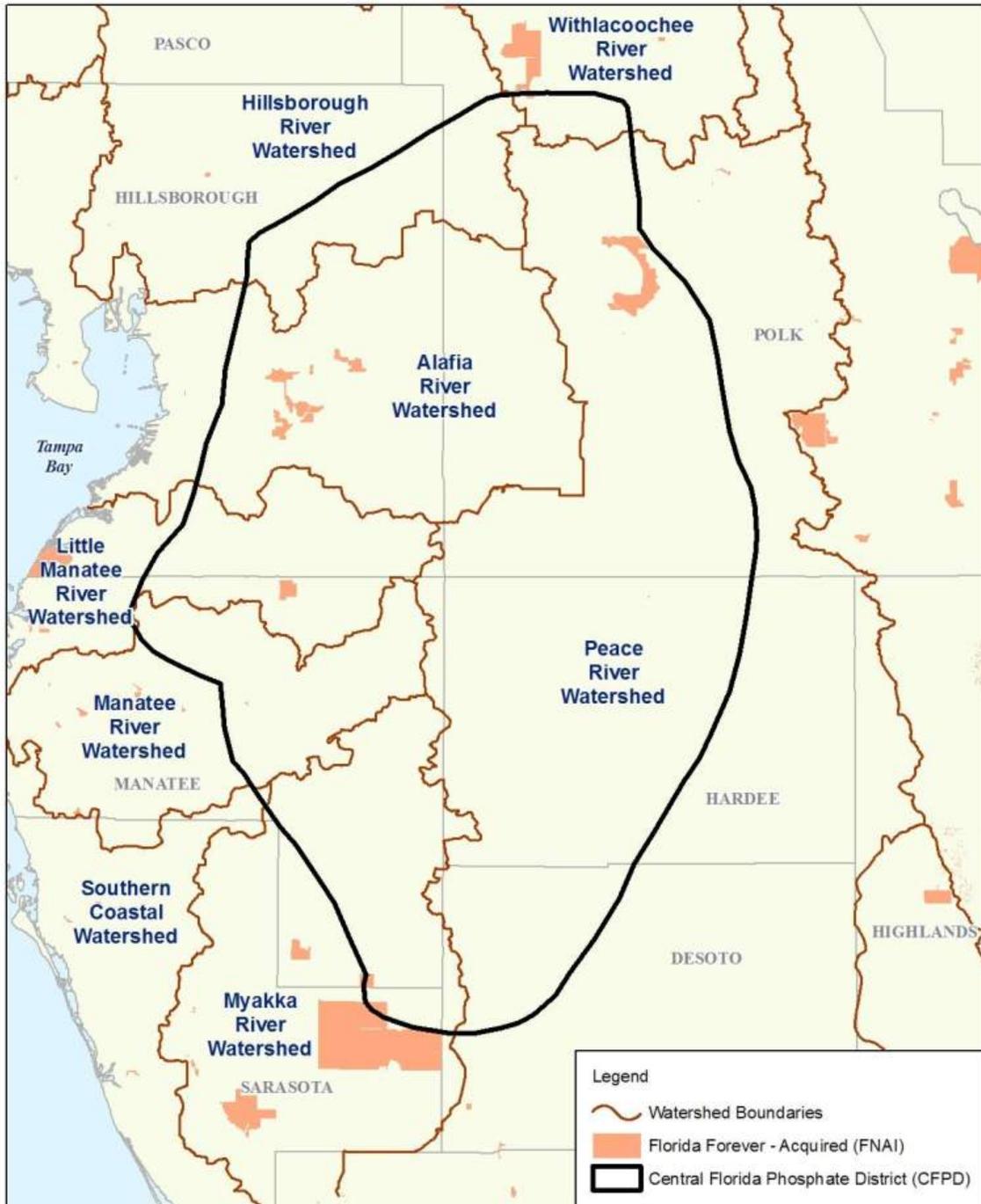


Figure 4. Tier 1 Overlay - Florida Forever Acquired Lands

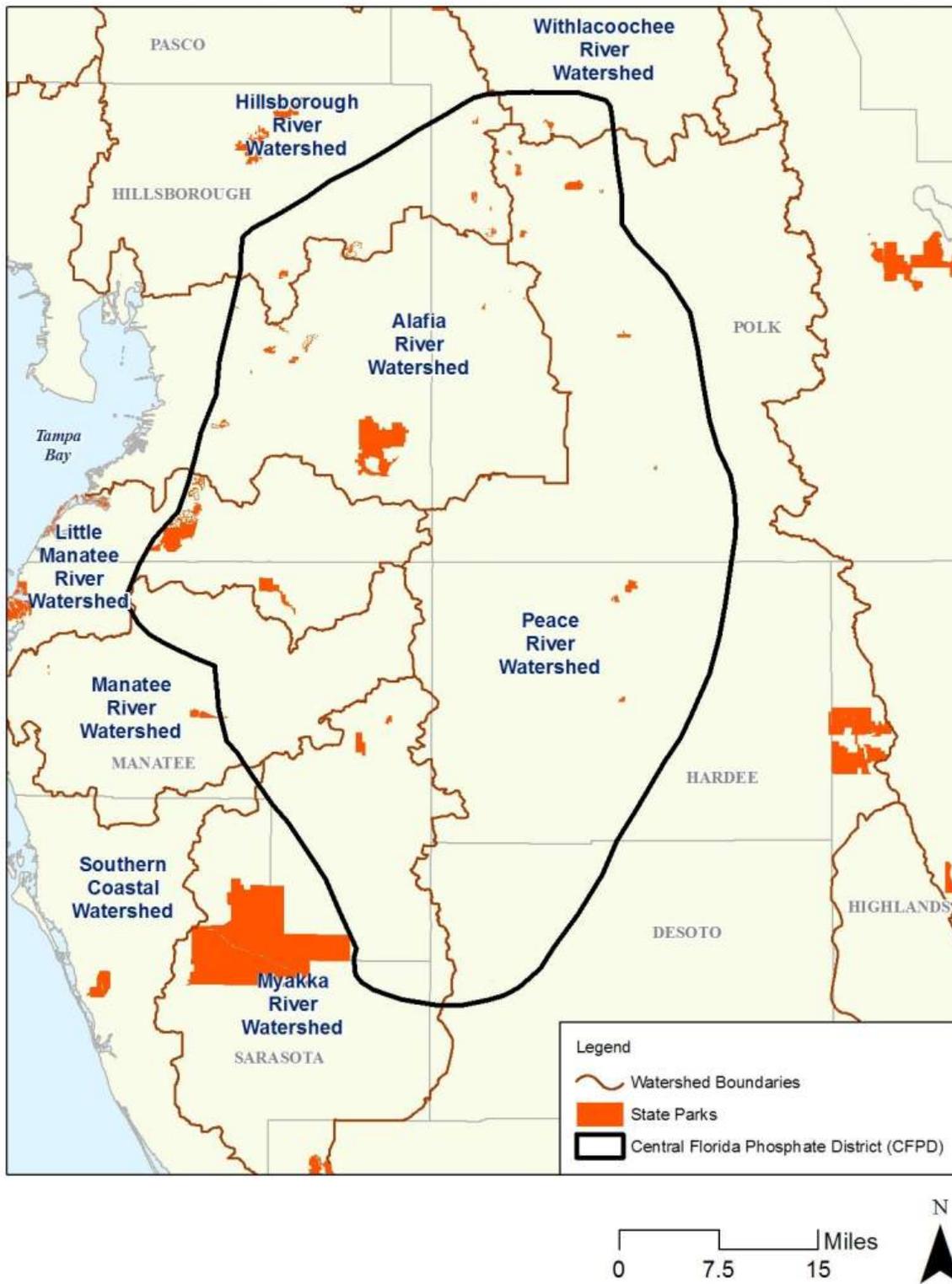


Figure 5. Tier 1 Overlay – Florida State Parks

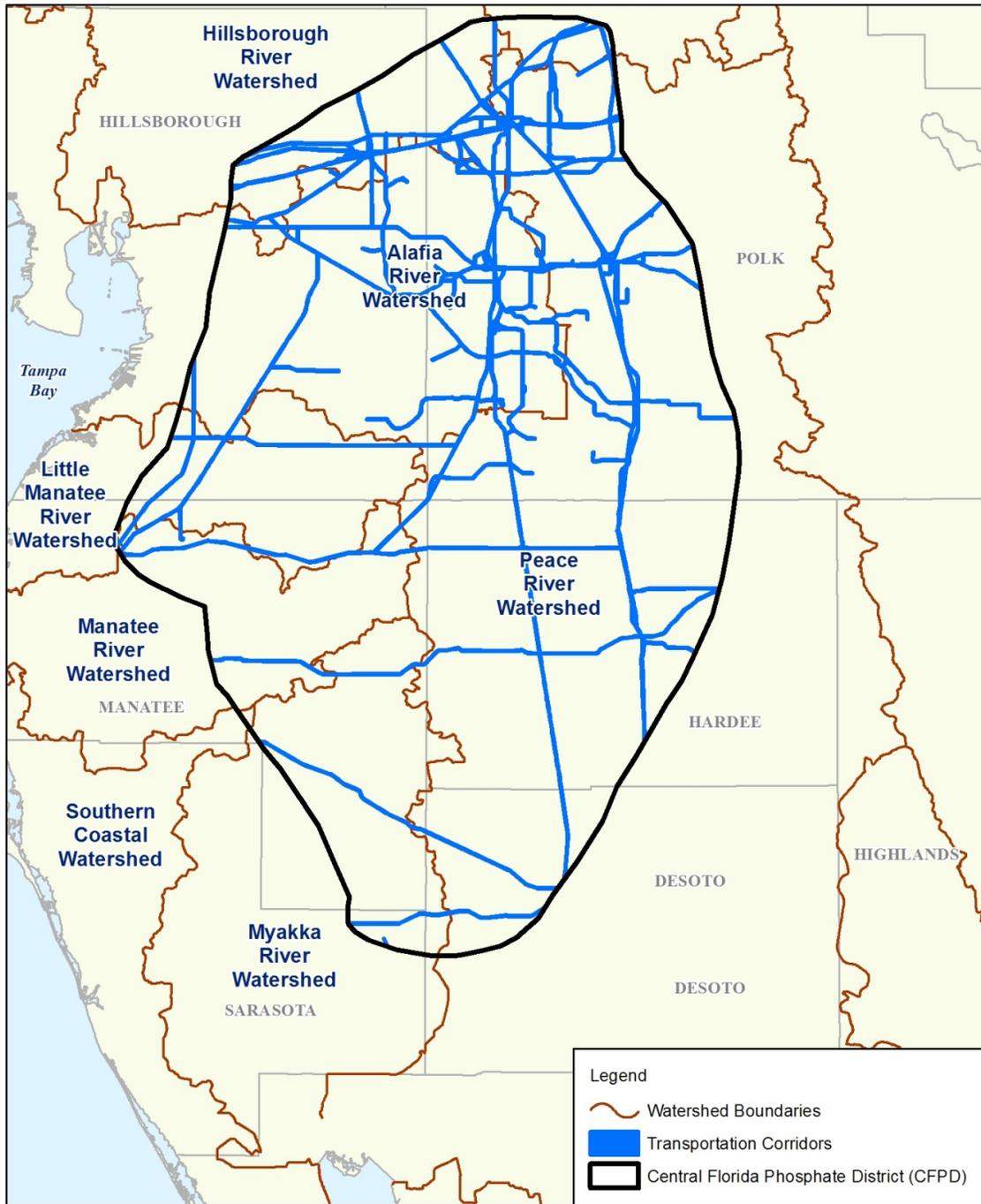


Figure 6. Tier 1 Overlay - Railroad and Major Highway Corridors

2.6 Urban Lands

The Urban Lands screening criteria (see Figure 7) used three different GIS data layers to identify urban and developed areas. The three data sets used were:

- The Florida Developed Lands layer
- A layer representing city, municipal, and township boundaries throughout the CFPD
- The SWFWMD 2010 FLUCCS data layers

The Florida Developed Lands layer was created in 2007 by FNAI to update the comprehensive FLUCCS land cover data layers previously completed between 1995 and 2004 by Florida's five water management districts. The FNAI defined developed lands as areas with buildings and other impermeable surfaces such as parking lots and roads and included most of FLUCCS Level 1: 1000 Urban and Built-up and 8000 Transportation, Communications, and Utilities as a baseline. The SWFWMD FLUCCS layer contains the different land uses within the SWFWMD region as of 2010, categorized according to the FDOT FLUCCS (FDOT, 1999). For this part of the screening, the Level I classification, the most general level, was used to identify the areas classified as urban and built-up. Urban and built-up land consists of areas of intensive use, with much of the land occupied by man-made structures. Included in this category are cities, towns, villages, strip developments along highways such as those occupied by malls, shopping centers, industrial and commercial complexes, and institutions that in some instances are isolated from urban areas such as hospitals and prisons. Other land uses sometimes associated with development, such as parks, golf courses, and agricultural lands, are not included as developed lands in this data layer but in the parks data layer. The total area removed by this screening step is 257,178 acres.

2.7 Aggregate of the Tier 1 GIS Screening Criteria

The aggregate of the areas removed from additional evaluation as potential alternative mining locations as a result of application of the Tier 1 screening criteria (Figures 2 through 7) is shown in Figure 8. The total area removed was 720,209 acres (see Table 2). Figure 9 shows the areas in the CFPD that remained under consideration for further evaluation for potential offsite alternative mining locations following Tier 1 screening. The remaining areas represent 628,524 acres, which was used to develop potential offsite alternatives to the Applicants' Preferred Alternatives.

Table 2. Acreages Removed from Further Consideration as Potential Alternatives by Tier 1 Screening

Screening Criterion	Acres
Prior, Current, and Permitted Mined Lands	327,379
Florida Conservation Lands	101,048
Florida Forever Acquired Lands	285
State Parks	4,431
Railroad and Highway Corridors	29,889
Urban Land Use	257,178
Total	720,209

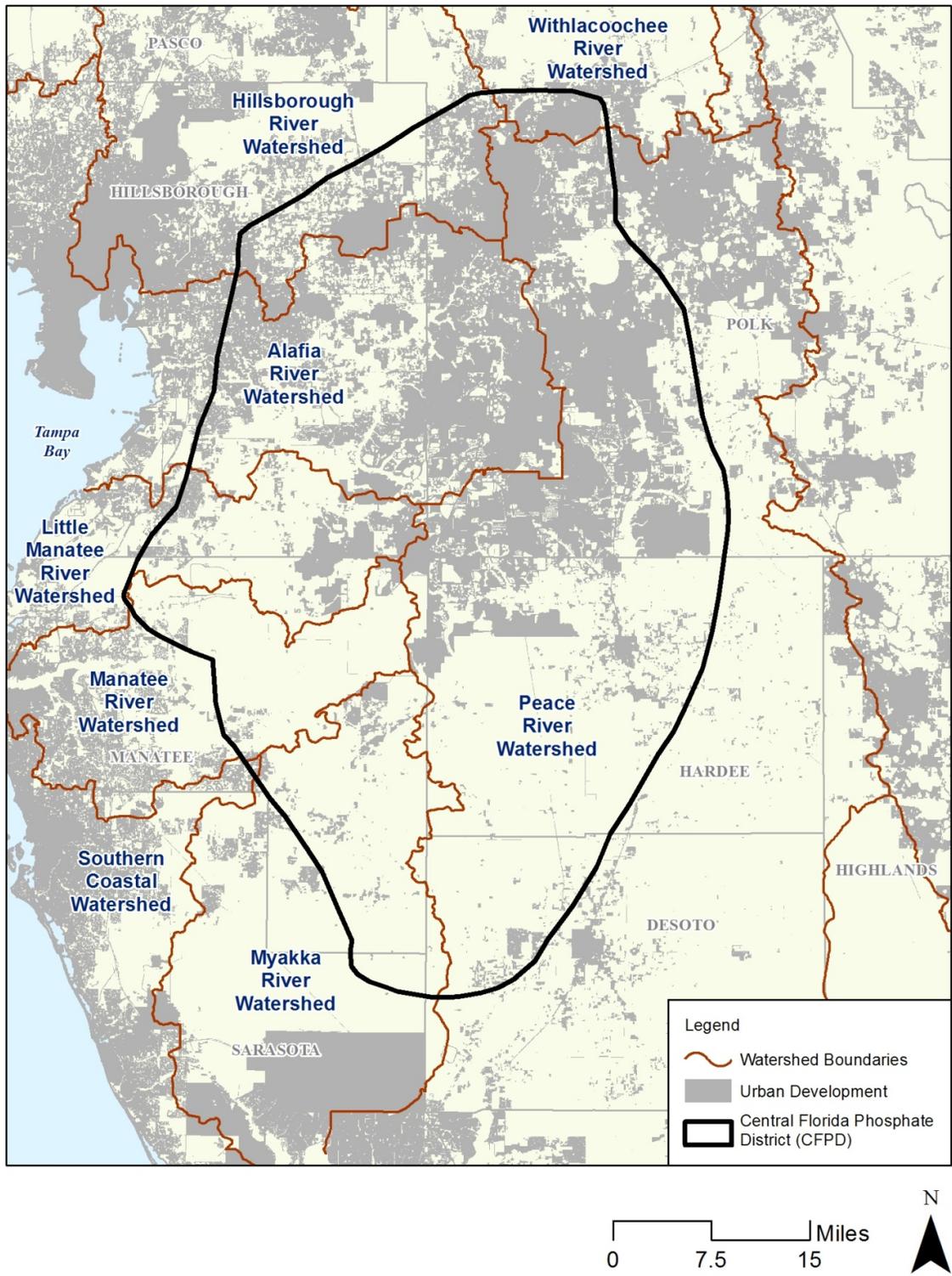


Figure 7. Tier 1 Overlay - Urban Lands

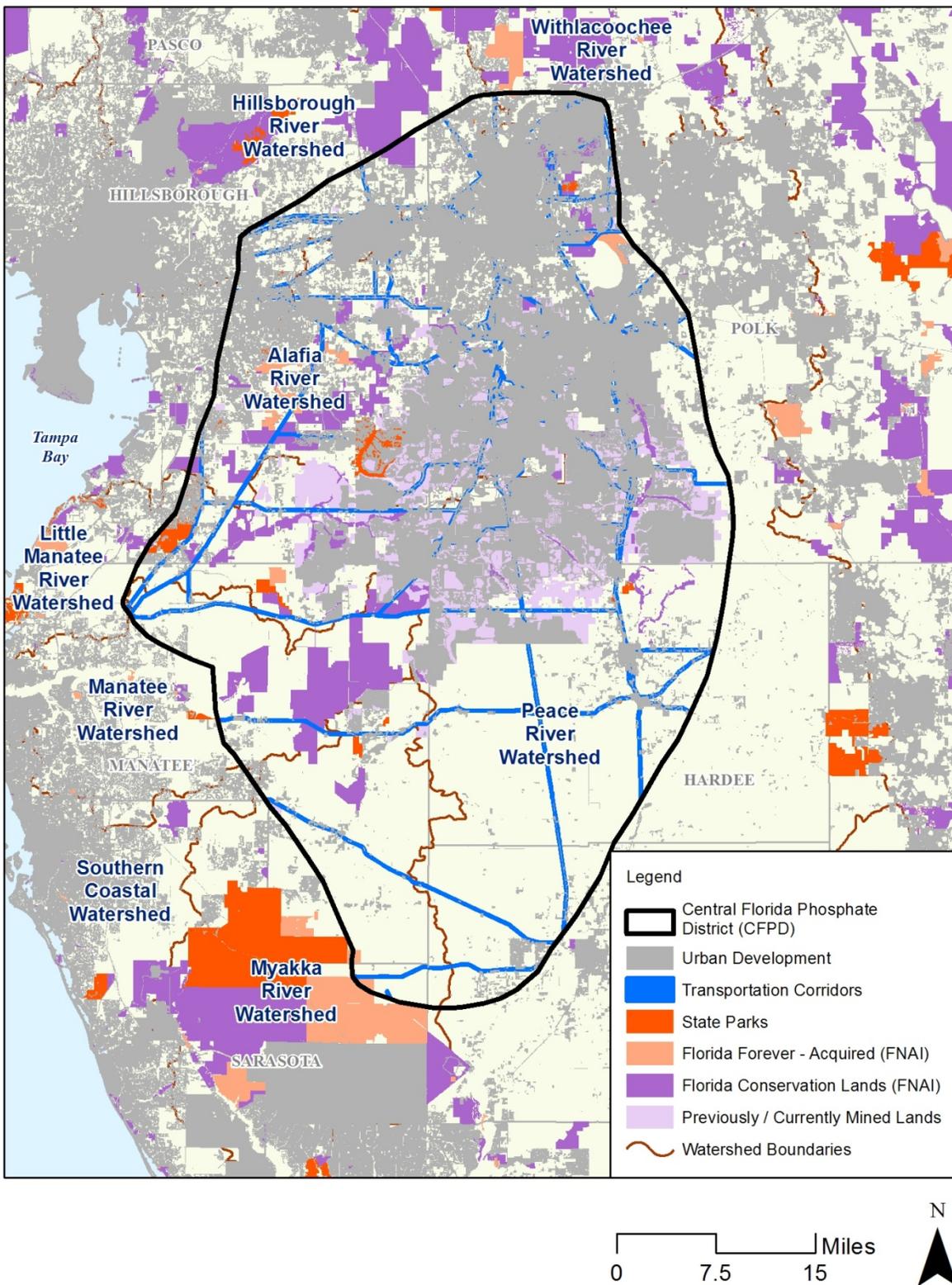


Figure 8. Tier 1 Overlays – Aggregate of All Tier 1 Criteria

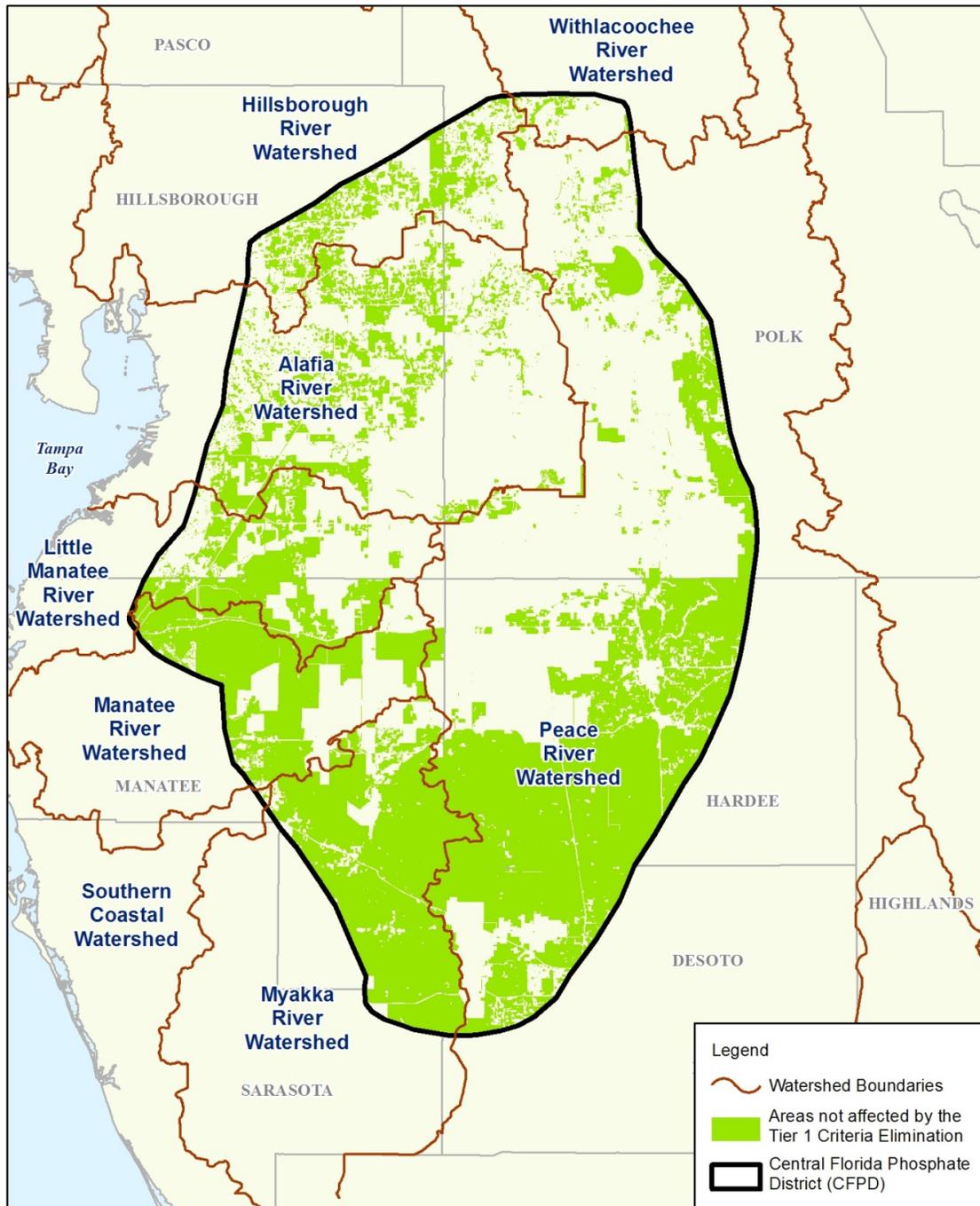


Figure 9. Areas Remaining in the CFPD for Consideration of Offsite Alternatives Following Tier 1 Screening

3.0 Step 2: Identify Minimum Size Areas that Would Be Reasonable for Consideration as Alternative Mine Sites

The potential for an alternative to meet the purpose and need is based not only on the presence of suitable phosphate ore, but also on the likelihood that a selected mine tract would be of sufficient size to support a mining operation. This step identifies the minimum land area on which it is considered feasible to establish a stand-alone mine. That area includes the required infrastructure, clay settling areas [CSAs], and either access to an existing beneficiation plant or justification for construction of a new plant. Following the Tier 1 evaluation, additional GIS data were used to identify parcels of land in the CFPD that (1) were the minimum size to support a mining operation and (2) were potentially available for acquisition based on the number of land owners, a large number of which might affect the ability to acquire these parcels.

From discussions with the FDEP, as well as with the Applicants, and through a review of prior mining parcels, there are three categories of mineable locations that could be considered for alternative mining sites. The first category consists of relatively small parcels referred to as “infill” parcels. These are generally lands that are acquired after the primary mine area has been purchased, planned, permitted, and in many cases mined to some level of completion. It was determined that mine permits have been issued for infill parcels as small as a few acres to hundreds of acres. However, areas where these small parcels had been permitted typically had one or more common boundaries with an existing mine and had access to an existing beneficiation plant within 10 miles (Chapter 3 discusses the basis for this constraint in Section 3.1.5). Using the 54,000 acres Four Corners Lonesome Mine as an example, over the past 10 years approximately 1,000 acres have been added to this mine. The infill parcels ranged from less than 1 acre to over 300 acres; none could have been reasonably considered as stand-alone mine sites because of their small size. Therefore, this category of infill parcels was not considered to be a reasonable alternative.

The second category of potentially mineable parcels is called satellite parcels. These are also small parcels, but do not adjoin existing operating mines; they must be within 10 miles of an existing beneficiation plant and be accessible through a corridor available to the operator for required infrastructure to connect with that plant. These smaller parcels that would not meet these criteria would also not be of a reasonable size to consider as an alternative to one of the Applicants’ Preferred Alternatives.

The third category includes large contiguous sites of sufficient size to support a new stand-alone mine site or justify an extension of an existing mine. Discussion with the Applicants and the FDEP indicated that a single parcel would need to be on the order of 600 acres to be sufficient to support 2 to 3 years of mining, although it might not accommodate the area needed for a CSA. Individually, these smaller parcels would not be sufficient to warrant the investment in a new beneficiation plant and related infrastructure. However, combinations of these 600-acre parcels, if they could be acquired, might reasonably comprise an area that could form the basis for the third size category; that is, one large enough to be evaluated as an alternative to one or more of the Applicants’ Preferred Alternative locations. Land ownership, along with other factors such as suitable phosphate ore, is an important consideration that affects whether sufficient parcels can be obtained or mineral rights acquired to meet the needs for an economically feasible mining operation. Because mining companies do not have the right of eminent domain, they must be able to acquire the properties or obtain lease agreements through negotiation with each property owner. Experience with prior acquisition of land by mining and other land acquisition companies (Rayonier, 2012, personal communication; McCuen, 2012, personal communication) has demonstrated that if more than 10 land owners own a parcel, the negotiation for the land generally is unsuccessful, usually because of unwilling sellers or land prices that make the acquisition uneconomical. To locate parcels that might reasonably be acquired to form larger, mineable areas, GIS screening was used to identify 600-acre polygons that remained after the Tier 1 screening and that had 10 or fewer land owners. This screening indicated more than 500 polygons (shapes of aggregated, potentially mineable parcels) of approximately 600 acres each that had 10 or fewer land owners (see Figure 10). These polygons were then combined to form potential alternatives to the Applicants’ Preferred Alternatives in the CFPD.

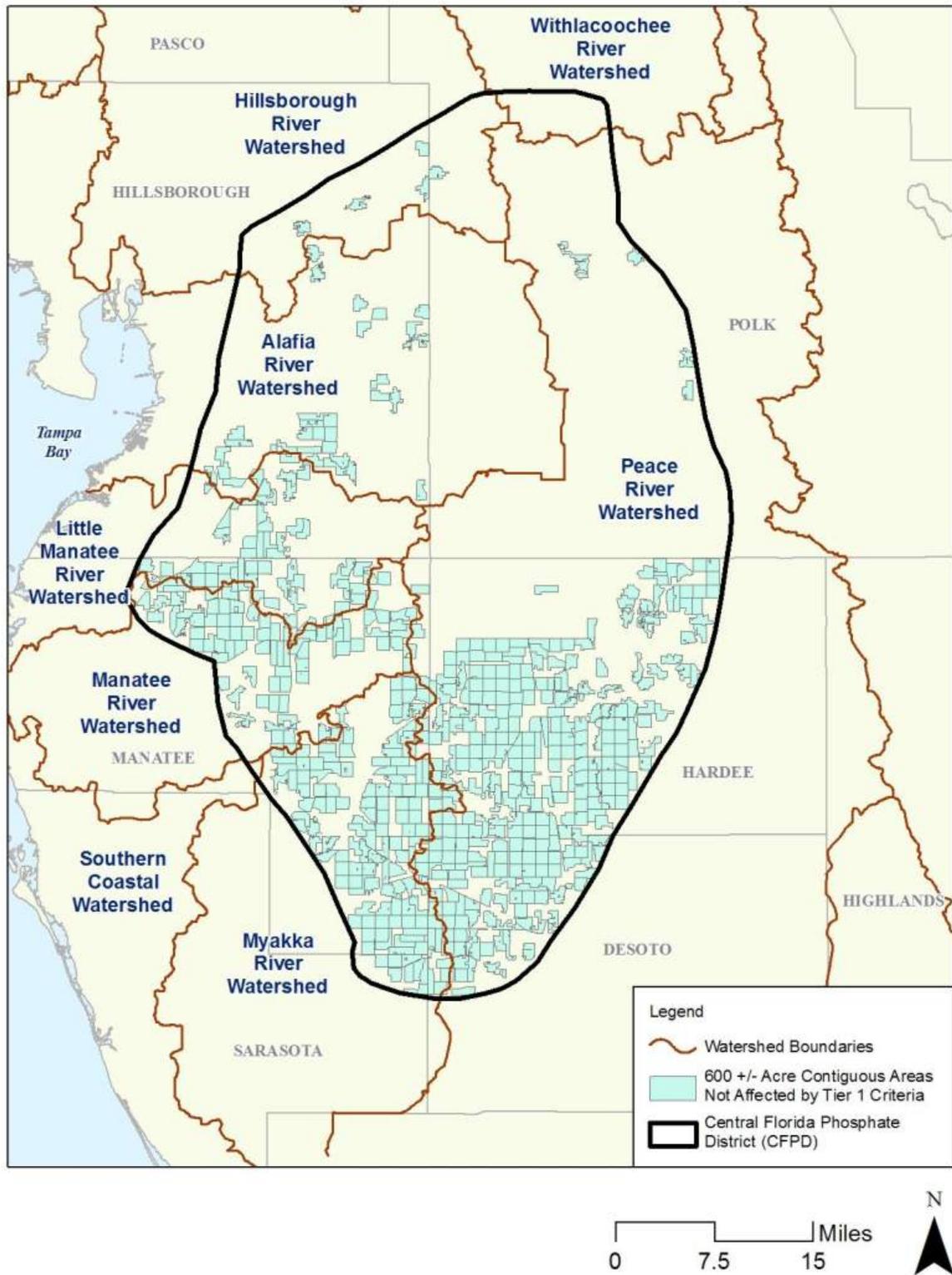


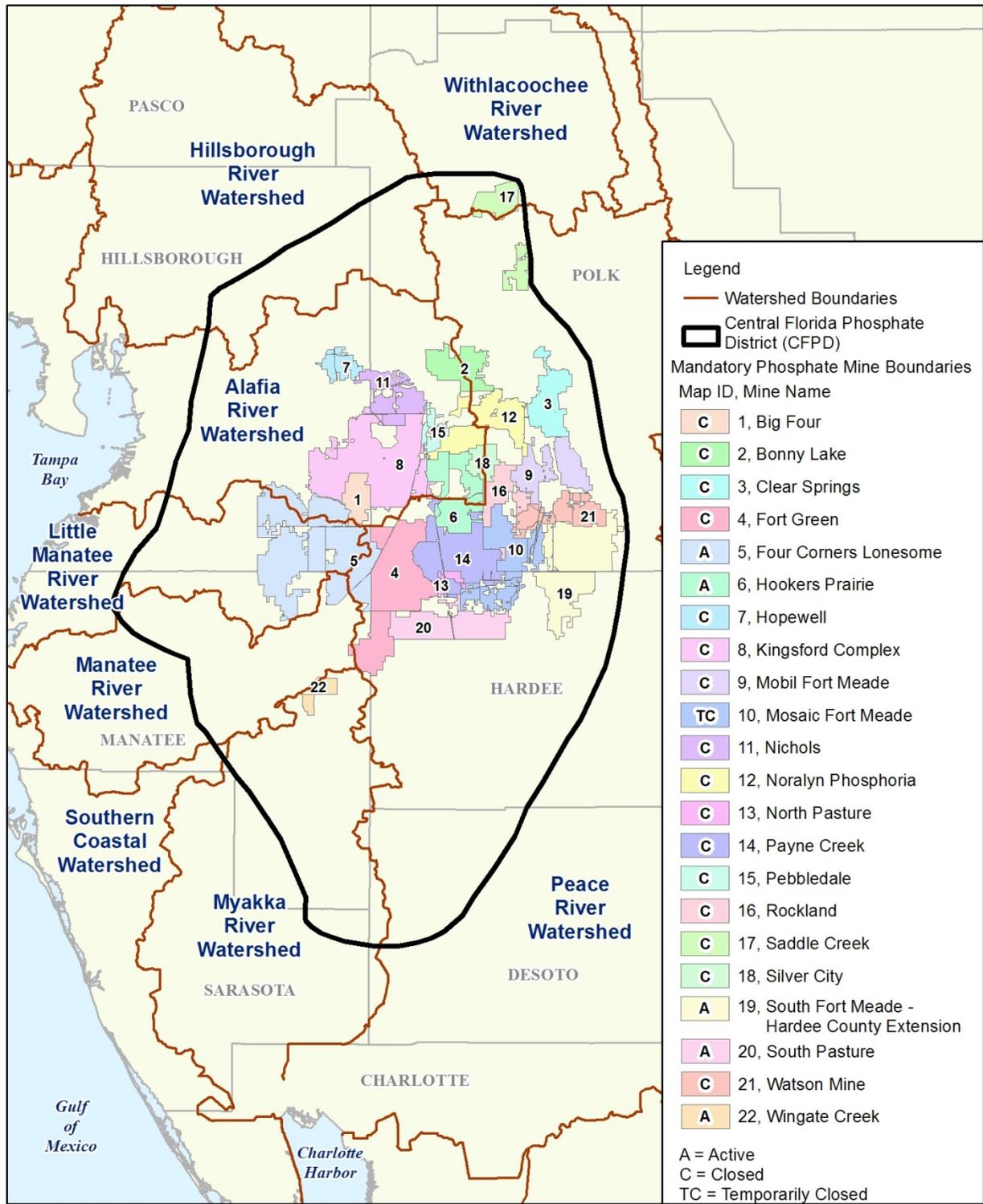
Figure 10. Preliminary Suite of 600-acre Polygons for Identification of Potential Offsite Alternatives

To determine the minimum area that might be reasonable, through combining the remaining 600-acre parcels into a single mine alternative, the USACE performed a survey to examine the size of current and past stand-alone mines with beneficiation plants in the CFPD (Figure 2-15, FDEP, 2007c). The acreages of these mines (historically and currently permitted, including both Mandatory and non-Mandatory areas) are shown in Table 3. The previously and currently permitted mines since 1975 are shown in Figure 11. The average acreage of the mines operating since the mandatory mining program began (July 1, 1975) is 11,581. Each of these mines (some of which represent mergers with other mines) has, or previously had, its own beneficiation plant. Therefore, the USACE determined that a tract of land significantly larger than 600 acres would be necessary to support a stand-alone mine due to the size of the necessary infrastructure and the major investment costs associated with a new beneficiation plant. Mosaic, for example, estimates construction and startup costs of approximately \$900 million for its beneficiation plant and infrastructure for the Ona Mine. CF Industries operates the nation's most recently constructed phosphate rock mine and ore beneficiation plant in Hardee County, with construction costs alone estimated at \$135 million (CF Industries, 2010b).

To understand the minimum acreage that might be required for a reasonable stand-alone mining tract, which would then be used to develop alternatives to the Applicants' Preferred Alternatives, the USACE evaluated a reasonable, minimum size alternative that could be used for mining in the CFPD by combining multiple 600-acre parcels, as described above. To facilitate the review, the following assumptions were made:

- The uninterrupted operation of the beneficiation plant supporting a mine is dependent on the number of operational draglines. Typically, phosphate mining operations include two or more draglines, both for the efficiency of the operation and for backup to ensure there is sufficient ore to support beneficiation plants operating at normal capacity. For estimating a reasonable mine size, it was assumed that two draglines would be operating, each mining approximately 180 acres per year (FIPR Institute, 2013) for an annual total mining rate of 360 acres per year. The size of a mine must also incorporate the required infrastructure, in addition to the dragline, including utility corridors and, unless an existing CSA were adjacent and available, a new, initial CSA. A new stand-alone mine would need sufficient size to provide for a new beneficiation plant, while a satellite mine or mine extension would need to be contiguous or in proximity of the existing Wingate East or South Pasture Extension beneficiation plants.
- Approximately 9,000 tons of phosphate rock was estimated to be available per acre. This value was averaged from the reported range of pebble rock in the CFPD of 3,000 to 15,000 tons per acre (Scott and Cathcart, 1989) and also is the value reported by the FIPR Institute (2013). This value is nearly twice the reported recoverable reserves reported by CF Industries (109.6 million tons on 22,200 acres) in its 2008 Annual Report.

Using these assumptions, production by two draglines would provide approximately 3.2 million tons of rock per year to the beneficiation plant, which is reasonably within range of the 3.5 to 3.6 million tons per year reportedly beneficiated by CF Industries at the South Pasture Mine. Production of 3.2 million tons per year would be expected to be sufficient to support the capital investment of a small beneficiation plant operation with a mine life of approximately 22.4 years. From this analysis, the USACE determined that tracts of land of approximately 8,100 acres would be required for a stand-alone mine (22 years x 360 acres per year = 8,064 acres) supporting the operation of a small beneficiation plant. This is within range of the production rate for the CF Industries Hardee County plant (3.6 million tons per year), but less than the production rate of the existing beneficiation plant and the one associated with Mosaic's Preferred Alternatives (6 million tons per year maximum rate at 85 percent capacity). The 8,100 acres is also smaller than the average 11,437 acres per mine seen in Table 3, indicating that 8,100 acres, while meeting the NEPA requirement for evaluating potential alternatives to the locations of the Applicants' Preferred Alternatives, is substantially smaller than the average size mine historically considered for mining in the CFPD. Combining the 600-acre parcels into reasonable areas (minimum of 8,100 acres) for potential mining alternatives provides flexibility for analyzing alternatives to the Applicants' Preferred Alternatives because they either: (1) if within 10 miles of an existing beneficiation plant, they may provide alternatives to mine expansions without necessarily creating the need for an additional plant, (2) if greater than 10 miles from an existing beneficiation plan, they provide alternatives that could support a small beneficiation plant, or (3) may be combined to provide alternatives that account for the economics of a larger mine and beneficiation plant or to account for site-specific situations where the actual reserves are less than the reserved levels assumed in this analysis.



Source: FDEP, 2012a; Updated: Allen, personal communication, 2013

Figure 11. Previously and Currently Permitted Mines in the CFPD

Table 3. Historically Permitted Phosphate Mines in the CFPD

Mine Name	Mandatory/Non-Mandatory	Mine Company ^a	Acres
Big Four	Mandatory	Mosaic	5,962
Bonny Lake	Mandatory	Mosaic	5,093
	Non-Mandatory	Mosaic	5,140
Clear Springs	Mandatory	Mosaic	6,825
	Non-Mandatory	Mosaic	4,235
Fort Green	Mandatory	Mosaic	30,648
	Non-Mandatory	Mosaic	653
Four Corners Lonesome	Mandatory	Mosaic	51,670
Hookers Prairie	Mandatory	Mosaic	8,465
	Non-Mandatory	Mosaic	6,062
Hopewell	Mandatory	Mosaic	2,661
	Non-Mandatory	Mosaic	1,451
Kingsford Complex	Mandatory	Mosaic	23,833
	Non-Mandatory	Mosaic	14,080
Mobil Fort Meade	Mandatory	MobilExxon	6,042
	Non-Mandatory	MobilExxon	7,212
Mosaic Fort Meade	Mandatory	Mosaic	16,689
	Non-Mandatory	Mosaic	1,842
Nichols	Mandatory	Mosaic	7,382
	Non-Mandatory	Mosaic	3,154
Norallyn Phosphoria	Mandatory	Mosaic	7,041
	Non-Mandatory	Mosaic	9,331
North and South Pasture	Mandatory	CF Industries Inc	16,046
Payne Creek	Mandatory	Mosaic	12,775
	Non-Mandatory	Mosaic	9,011
Pebbledale	Mandatory	Mosaic	2,334
	Non-Mandatory	Mosaic	1,147
Rockland	Mandatory	US Agri Chemicals	3,993
	Non-Mandatory	US Agri Chemicals	3,583
Saddle Creek	Mandatory	Williams Company	5,245
	Non-Mandatory	Williams Company	4,718
Silver City	Mandatory	Estech Inc	1,625
	Non-Mandatory	Estech Inc	2,934
South Fort Meade	Mandatory	Mosaic	17,078
	Non-Mandatory	Mosaic	200
Watson Mine	Mandatory	Estech Inc	5,650
	Non-Mandatory	Estech Inc	5,116
Wingate Creek	Mandatory	Mosaic	3,128
		Mandatory Phosphate Average	11,437

^aThis is the current company of record.

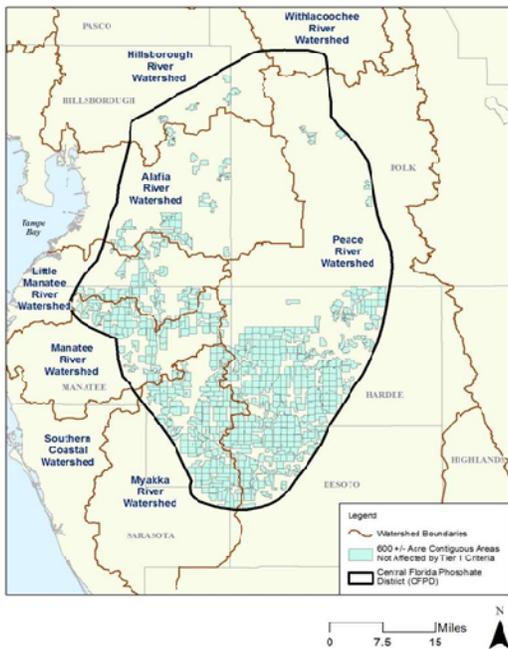
Source: FDEP, 2012a

Therefore, the USACE determined that a minimum alternative size of 8,100 acres would provide a minimum viable size that would be reasonable for purposes of evaluating alternatives. Tracts of land substantially less than 8,100 acres would not be considered suitable for a stand-alone mine. However, these tracts may be considered as extension or satellite parcels if they are adjacent to existing operating mines or are within 10 miles of an existing beneficiation plant.

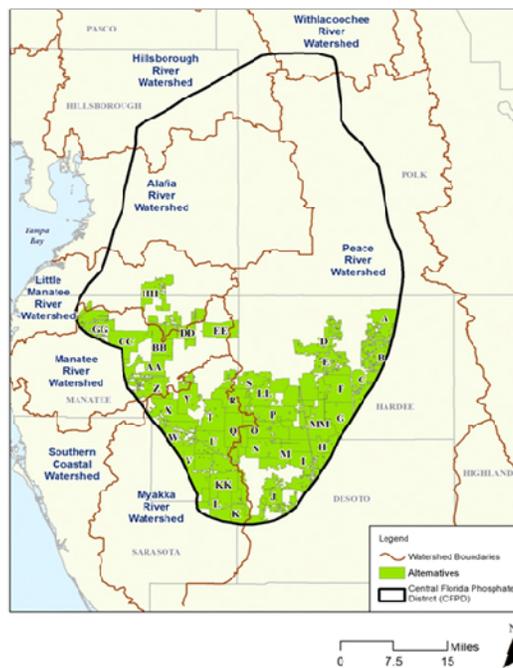
Although the 8,100 acre minimum mine size was developed for this Tier 2 screening approach, it is possible that on a case-by-case basis, it would not be practicable for every alternative to be of a sufficient size to provide for the beneficiation plant facilities, possible need for an initial CSA, related mine infrastructure needs, setbacks, and onsite avoidance requirements. While the 8,100-acre minimum serves as an effective initial screening approach, the amount of recoverable phosphate from any given site depends largely on the geology and presence/absence of phosphate ore in sufficient quantity and quality, which varies considerably in the southern reaches of the CFPD.

To identify alternative tracts of land in the CFPD of 8,100 acres or more, a GIS overlay was generated that used reasonable boundaries of major roads, water bodies, and other physical features to combine the contiguous 600-acre polygons shown in Figure 10 into 8,100-acre minimum size offsite alternatives. This process of forming these alternatives is summarized in Figure 12. In cases where 600-acre polygons were separated from other areas, such as the isolated outliers seen in the northwestern portion of the CFPD in Figure 10, such that an 8,100-acre alternative could not be reasonably created, the 600-acre polygon was eliminated from the suite of polygons for developing alternatives.

The results of the GIS process described above to develop individual alternatives of a minimum size of 8,100 acres resulted in a set of 39 alternatives that could be considered offsite alternatives to the Applicants' Preferred Alternatives. The total area of these 39 alternatives is 380,409 acres. These preliminary offsite alternatives were assigned letters from A to MM and are shown in Figure 13. Following an update of Tier 1 data for the Final AEIS, it was determined that three of the alternatives (FF, II, and JJ) were less than 8,100 acres and that, based on size and locations that were too far from an existing beneficiation plant, could not be reasonably considered as part of an extension to a mine associated with the Applicants' Preferred Alternatives. Therefore, these alternatives were eliminated and are not included in Figure 13. It was also confirmed that II and JJ, which are just below the 8,100-acre threshold, would still be eliminated if retained for Tier 2 screening because at that stage in the process they would have the two highest percentages of land that is labeled as Federal Emergency Management Agency/National Hydrography Dataset (FEMA/NHD), or floodplain and surface water. The total acreage represented by the remaining 36 alternatives is 330,423 acres.



**CFPD Area With
600-Acre Polygons**



**Contiguous Polygons to
Form Offsite Alternatives
for Screening**

Figure 12. Development of Offsite Alternatives from the 600-acre Polygons

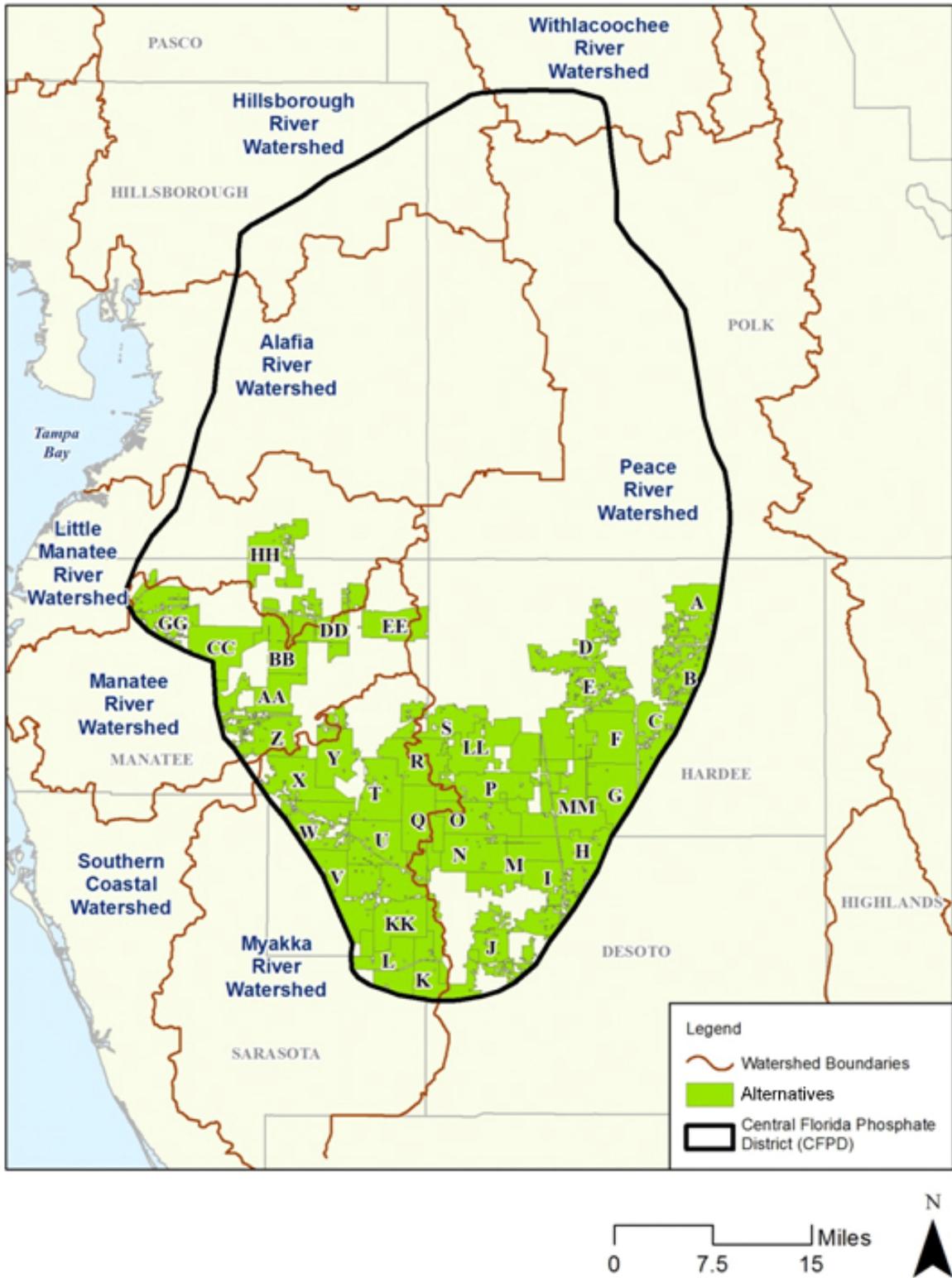


Figure 13. Preliminary Offsite Alternatives

4.0 Step 3: Conduct Screening for Legal Ordinances that Preclude Mining Operations

The purpose of this step was to identify existing legal impediments (such as zoning decisions or local ordinances) that would preclude mining on one or more of the alternatives. The specific ordinances for Manatee and Sarasota Counties are discussed below.

4.1 Manatee County Ordinance

Manatee County has a specific ordinance that effectively precludes phosphate mining or related operations. This ordinance is *Manatee County Ordinance Number 04-39*, filed in 2004 (Manatee County, 2004). This ordinance, known as “The Manatee County Phosphate Mining Code,” includes several sections that are directly relevant to potential use of land areas for mining activities. Section E of this ordinance imposes specific restrictions.

Parts 2 and 3 of Section E, Mining Restrictions, of *Manatee County Ordinance Number 04-39* state the following:

Section 2: “With the exception of temporary crossings...phosphate mining activities below the 25-year floodplain elevation shall be prohibited, unless the applicant can demonstrate through competent and substantial evidence that mining activities could occur in the 25-year floodplain and that the floodplain system could be reclaimed or recreated without adverse effects to water quality, water quantity or natural habitats therein,” and

Section 3: “There shall be no mining activities...in wetlands that are functionally integrated with 25-year floodplains or perennial streams unless the applicant can demonstrate through competent and substantial evidence that mining could occur in such wetlands and that they could be reclaimed or recreated without adverse effects to water quality, water quantity, or natural habitats or species therein.”

Section G; Special Protection for Watersheds, includes two further restrictions as follows:

Section 1. “Because the watershed of the Lake Manatee Reservoir, the watershed of the Evers reservoir, and the watershed of the Peace River occupy such a critical role in maintaining the health safety and welfare of the people of Manatee County, the region and the State, no master plans or operating permits shall be approved that would allow mining activities in such watersheds, except where an applicant demonstrates, with competent and substantial evidence, that such mining activity will not cause a degradation of water quality and will not cause adverse impacts on water quantity within the affected watershed,” and

Section 3: “No clay settling areas or beneficiation plants shall be located within any such watershed, and no processing of phosphate ore shall occur within any such watershed.”

Two specific Manatee County reservoir overlays are provided in Figure 14, which identifies the boundaries within which mining activities would be restricted based on the ordinance. This figure also identifies the alternatives under consideration that are partially or completely within those overlay boundaries. This figure illustrates that some or all of 9 alternatives (R, S, Y, Z, AA, BB, CC, DD, and EE) would be affected by the Manatee County restrictions.

4.2 Sarasota County Ordinance

Sarasota County has specific ordinances that effectively preclude phosphate mining or related operations in certain areas of the County. The Sarasota County Comprehensive Plan, the Sarasota County Zoning Regulation, and Sarasota County Code Chapter 54, Article X (Mining) include sections that are relevant to the potential use of land areas for phosphate mining activities. Specifically:

Section 54 – 289 – Standards Part (One) D: “Zoning. No mining activities shall be undertaken on land unless it is been zoned Open Use Mining (OUM), in accordance with the Sarasota County Zoning Ordinance (Appendix A to this code). Application for OUM zoning, unless previously obtained, shall be made concurrent with an application for Master Mining Plan approval.

Section 4.5.3 of the County's Zoning Regulations states: Open Use Mining District (OUM).

A. the OUM District provides for mining activities and associated uses.

B. this District is used to implement the comprehensive plan within areas designated as rural on the future land use map. It should not be applied outside the rural area or in areas of special environmental significance, including but not limited to, the watersheds of Cow Pen Slough, the Myakka River, and the Braden River.

These requirements effectively preclude phosphate mining in areas of the Myakka River watershed that lie within the boundary of Sarasota County. Using the screening step based on the Sarasota County ordinance described above and following confirmation of the locations designated as OUM it was determined that Alternatives K and L would be affected by this ordinance. As a result, these alternatives were eliminated from further consideration.

4.3 Combining Fragmented Alternatives

There are instances in this screening step, and in one or more of the steps that follow, where excluding the area affected by the particular criterion results in an alternative that is smaller than 8,100 acres and could be excluded from further alternatives analysis. However, to be conservative in retaining as broad a representation of alternatives as reasonable, where these smaller areas were adjacent to another alternative and could be combined to form a potential mineable area that exceeded 8,100 acres, the area of the two alternatives was combined into a new alternative. Where these could not be combined, they were excluded as an alternative even though they might be used in the future if they met the requirements for an extension, as described above, or provided infill areas for current or future permitted mines.

Because of the substantial portion of the overlay that affected Alternatives Y, Z, AA, BB, CC, DD, and EE, no such recombination was considered reasonable. However, minor modifications in the boundary of Alternatives R and S were made to form a new modified alternative, S-2, and retain this area as a potential alternative for further evaluation. There was found to be no reasonable basis for recombining K and L after screening for the Sarasota County ordinance because of the exclusion of most of the area by the county ordinance; therefore, these two alternatives were eliminated from further consideration. Figure 15 illustrates the areas in the CFPD that remain under consideration as offsite alternatives after the removal (or modification of boundaries) of 10 alternatives due to restrictions by ordinances.

Step 3 represents a reduction from 36 to 26 alternatives. The total area remaining under consideration as offsite alternatives after this step is 266,622 acres.

5.0 Alternatives Step 4: Identify Tier 2 Criteria to be Used to Evaluate Environmental Conditions on the Remaining Alternatives

It was determined that the most reasonable means for comparing the potential alternatives was through GIS-based data readily available for the CFPD from federal, state, or local agencies. This approach allowed comparison of features among the alternatives and provided a basis for sequentially screening these alternatives to identify reasonable alternatives for more detailed analysis.

Considering comments received during scoping that certain areas (such as wetlands, streams, floodplains, and residential property conflicts) should be avoided if possible, multiple GIS data layers were evaluated for their potential to serve as screening criteria to evaluate conditions on the remaining 26 alternatives. Tier 2 criteria selected for this step included the GIS layers indicated in Table 4. The descriptions and graphical representations of the data layers are provided in the following sections.

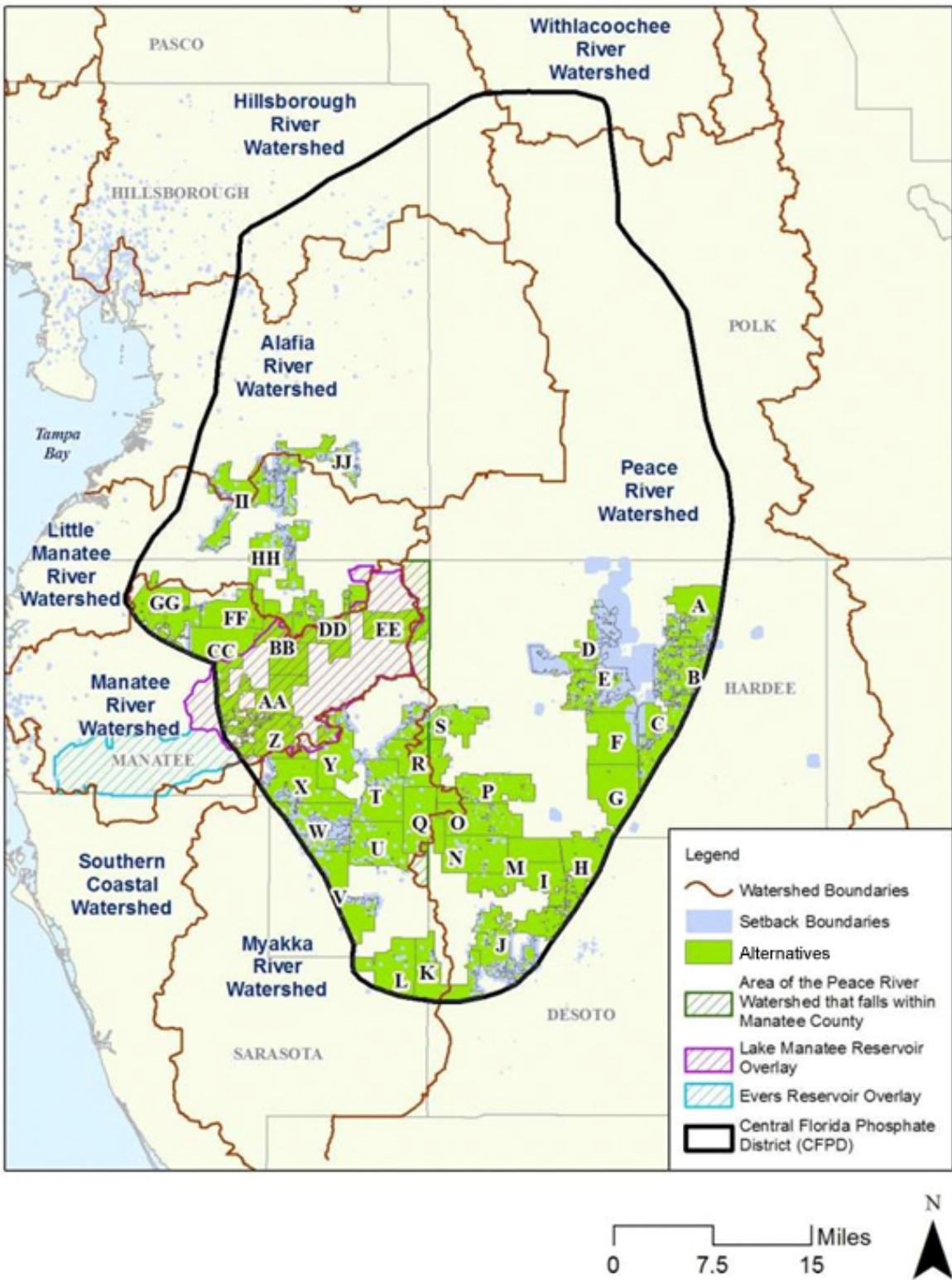


Figure 14. Overlay - Manatee County Phosphate Restrictions

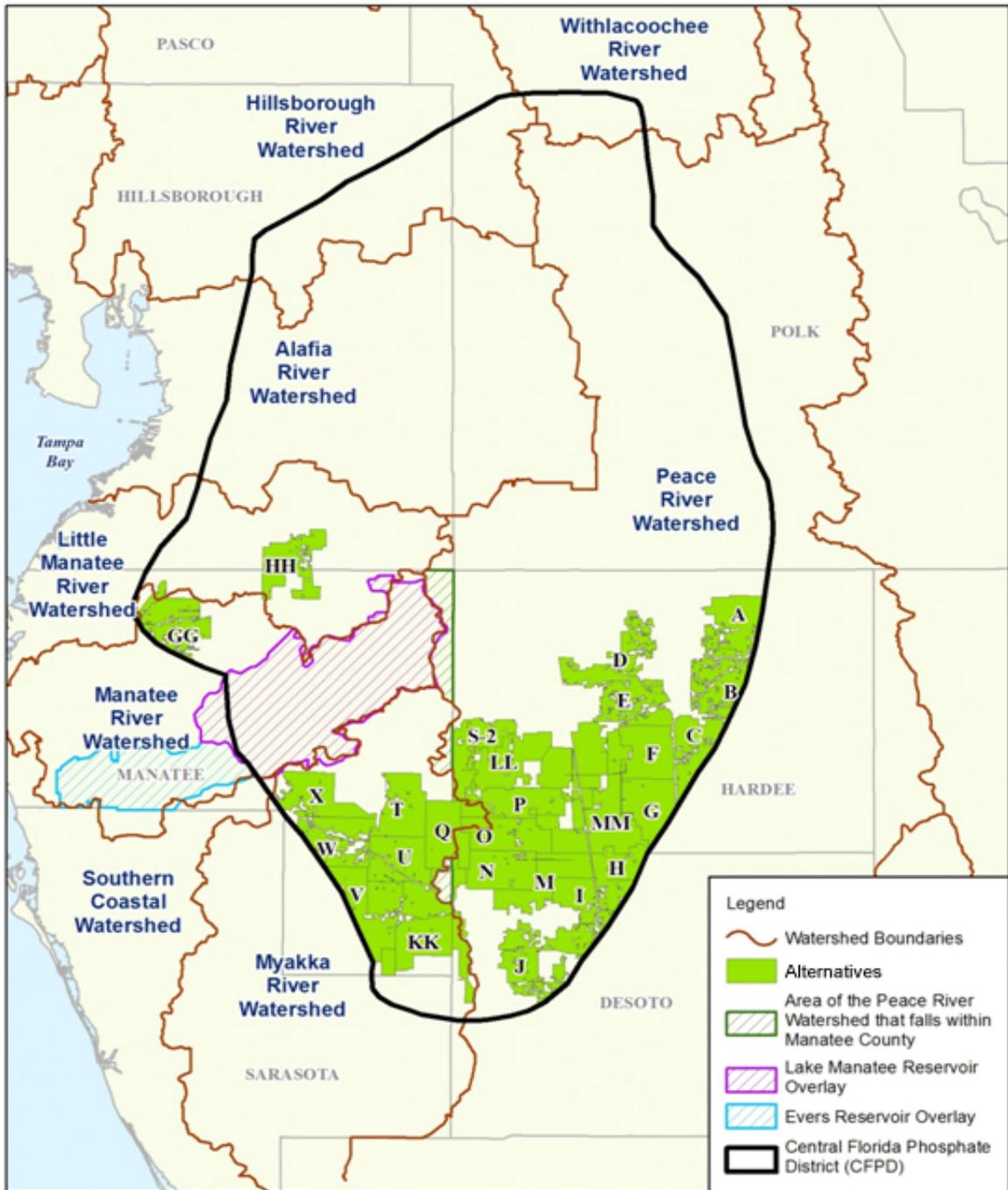


Figure 15. Offsite Alternatives Remaining after Screening for Ordinance Restrictions

Table 4. Tier 2 Screening Criteria GIS Layers

GIS Data Layer	GIS Data Layer Source
Proposed Integrated Habitat Network (IHN)	FDEP
Level 1 FLUCCS Wetlands	SWFWMD, 2010
Hydric Soils	Natural Resources Conservation Service (NRCS)
Florida Forever - Proposed for Acquisition	FNAI
FEMA 100-Year Floodplain	Florida Geographic Data Library (FGDL)
NHD Water Bodies	U.S. Geological Survey (USGS)
Residential Setbacks	See Table 10 for Dimensions Applied

6.0 Step 5: Develop and Apply Decision Analysis Process to Prioritize Tier 2 Criteria

The purpose of this step was to develop and apply a decision analysis process to prioritize Tier 2 criteria (based on the GIS data layers) that could be used to evaluate conditions on the remaining 26 alternatives for evaluation of potential alternatives to be carried forward for more detailed analysis. Decision analysis is an approach to support decision making that may include multiple variables that affect preferences among one or more alternatives. The USACE, along with the AEIS cooperating agencies (the USEPA and the FDEP), evaluated the use of the environmental GIS layers as Tier 2 criteria for their applicability, value, and limitations in comparing the environmental conditions in the remaining alternatives. The result was the combination of certain data layers because they had sufficient overlap that they effectively represented different metrics for similar resources (see Table 4). Four data layers were combined into two data overlays:

- The FLUCCS Wetlands was combined with Hydric Soils.
- The FEMA 100-year Floodplain was combined with the NHD Water Bodies

The USACE and cooperating agencies then determined a relative weight for each criterion, ranking them from the most to least important. All values were then averaged to prioritize the sequence for applying Tier 2 environmental screening criteria in the alternatives evaluation. This process avoided double-counting data layers that overlapped with other layers, with the highest priority criterion screened first, followed by the second highest, and so forth. In order of decreasing importance, as determined by the agencies, the priority screening sequence was as follows:

- Wetlands and Hydric Soils
- Florida Forever Proposed Lands
- FEMA 100-Year Floodplain and NHD Water Bodies
- Integrated Habitat Network

After the environmental criteria screening was completed, the USACE added a screening component to include the requirements for mining setbacks from residential areas.

7.0 Step 6: Apply Tier 2 Screening Criteria; Complete Alternative Screening to Evaluate and Compare Environmental Conditions for Remaining Alternatives

This step, similar to the Tier 1 screening, involved sequential application of the GIS overlays representing each of the Tier 2 criteria to evaluate environmental resources on the remaining 26 alternatives. Where the area affected by the particular criterion was a fraction of the overall alternative, an evaluation was performed to determine whether to eliminate the entire alternative, to retain a portion of the alternative, or to combine adjacent alternatives as a re-labeled alternative. This screening process is summarized in Figure 16.

7.1 Wetlands/Hydric Soils Screening

The screening of the remaining alternatives began with a review of wetland areas as defined by the 2010 Level 1 through 6 FLUCCS codes and the NRCS layers for hydric soils. Wetlands according to this data layer are those areas where the surface of the land is at or near the water table for most days of the year, and which are able to support various species of aquatic and hydrophytic vegetation. The FLUCCS data layer is not specific to wetlands under federal jurisdiction and may include some wetlands that are outside USACE jurisdiction. For more accurate classification, the National Wetlands Inventory (NWI) and low altitude aerial photography were used. Included in the Wetlands sub-class are Coniferous, Deciduous, and Mixed Forests, along with non-forested (emergent vegetation) and non-vegetated wetlands (tidal flats and shorelines). The NRCS mapped information depicting the distribution of hydric soil categories; these maps identify soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils were reviewed because they typically correspond to wetlands and similar habitats.

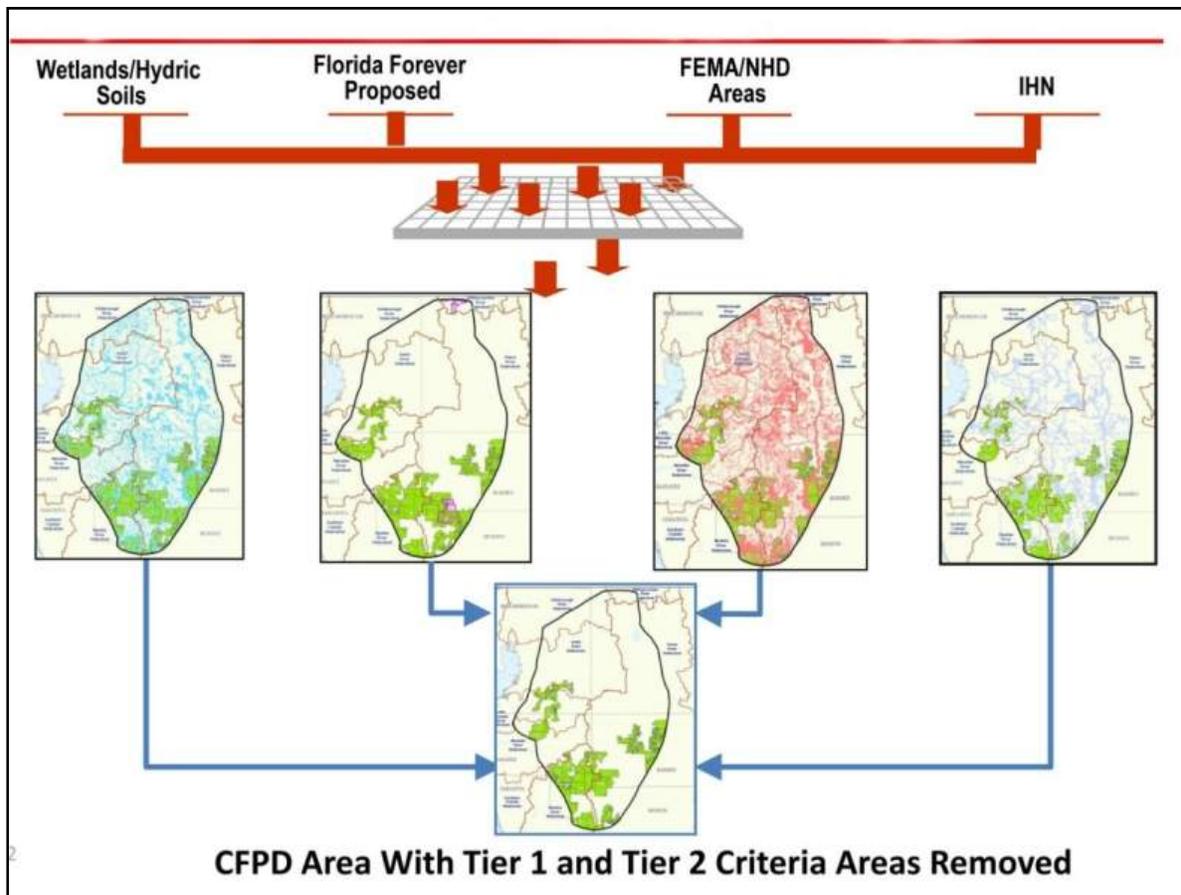


Figure 16. Flow Diagram of the Tier 2 Screening Approach

Figure 17 illustrates the locations of wetlands/hydric soils in the CFPD and Table 5 provides a ranking of alternatives based on acres of wetland/hydric soils in each alternative. Figure 18 provides the percentage of wetland/hydric soils in sequence from the alternative with the greatest percentage to the alternative with the least percentage. The percentages of onsite wetlands/hydric soils in the alternatives range from approximately 20 to 54 percent, with no clear “break point” or criterion evident that could be used to identify high quality resources or portions of alternatives that warranted exclusion from consideration as a reasonable mining alternative.

To obtain better resolution for the wetland/hydric soil screening, a further analysis using 2010 Level 1 through 6 FLUCCS code data was applied to forested wetlands because forested wetlands have higher mitigation time lag and risk values and may be more difficult to restore than emergent wetlands. The alternatives were compared again based on the prevalence of forested wetlands in each alternative (see Table 6 and Figure 19).

Alternatives F and G have substantially greater percentages of forested wetlands than the other alternatives. Reducing the size of these alternatives to avoid the forested wetlands would reduce the alternative sizes by 3,029 and 3,205 acres, respectively, resulting in sites that are too small for stand-alone mines. Additionally, these alternatives are not near the Wingate East or South Pasture Extension beneficiation plants. These alternatives were also ranked first and third for total percentage of wetlands overall and include forested and other wetlands in the Peace River mainstem corridor. Mining these alternatives would be more likely to impact unique habitats or higher quality natural areas.

On this basis, Alternatives F and G (totaling 17,249 acres) were eliminated from further analysis and are not considered reasonable alternatives. Figure 20 illustrates the CFPD and remaining alternatives with the removal of Alternatives F and G.

8.0 Florida Forever Proposed Lands

The next level of screening alternatives was for those areas designated by the state as proposed for future acquisition under the Florida Forever program (see Figure 21). These lands have been proposed for acquisition because of outstanding natural resources, opportunity for natural resource-based recreation, or historical and archaeological resources. However, these areas may not be currently managed for their resource value. These resources reflect a broad range of possible areas for avoidance of impacts from mining. Table 7 lists the acreage and percentages for each alternative affected by this criterion, and Figure 22 illustrates the ranking of these alternatives from highest to lowest percentage of acres that are represented by the Florida Forever layer.

As the figures show, seven of the alternatives include proposed Florida Forever lands. For Alternatives M, MM, I, N, and O, the percentages of the alternative areas that are proposed Florida Forever lands ranged from 8 to 48 percent. After removal of the proposed Florida Forever acres, Alternative MM was found to be too small (less than 8,100 acres) and too fragmented to justify its use as a stand-alone mine site. Although its proximity to Alternative LL suggested that it might have value as infill acreage or extension if LL were considered for mining, Alternative MM was eliminated from further consideration as an alternative.

When the proposed Florida Forever lands were removed from Alternatives I and M, neither one (at 6,026 and 2,700 acres, respectively) was large enough to be a stand-alone mine site, nor is either alternative near the Wingate East or South Pasture Extension beneficiation plants. This precluded their consideration individually as alternative locations for mining expansion. Additionally, there was no connectivity between the two alternatives so they could not be combined. The smaller size of the alternatives, lack of connection between the two, and (as noted previously) high forested wetland acreage in Alternative M (1,642 acres of 2,990 total wetland acres), provided a basis for eliminating Alternatives I and M from further consideration.

A similar review for Alternatives N and O identified an opportunity to remove the areas designated as proposed Florida Forever lands, combine the remaining portions of these two alternatives into a single continuous tract, and retain this new alternative, labeled N-2. Figure 23 shows the CFPD with Alternatives I and M eliminated and the new combined alternative labeled N-2. This new alternative provides a total of 15,447 acres retained for further evaluation. Elimination of Alternatives I and M and portions of N and O resulted in elimination of 21,305 acres from further evaluation.

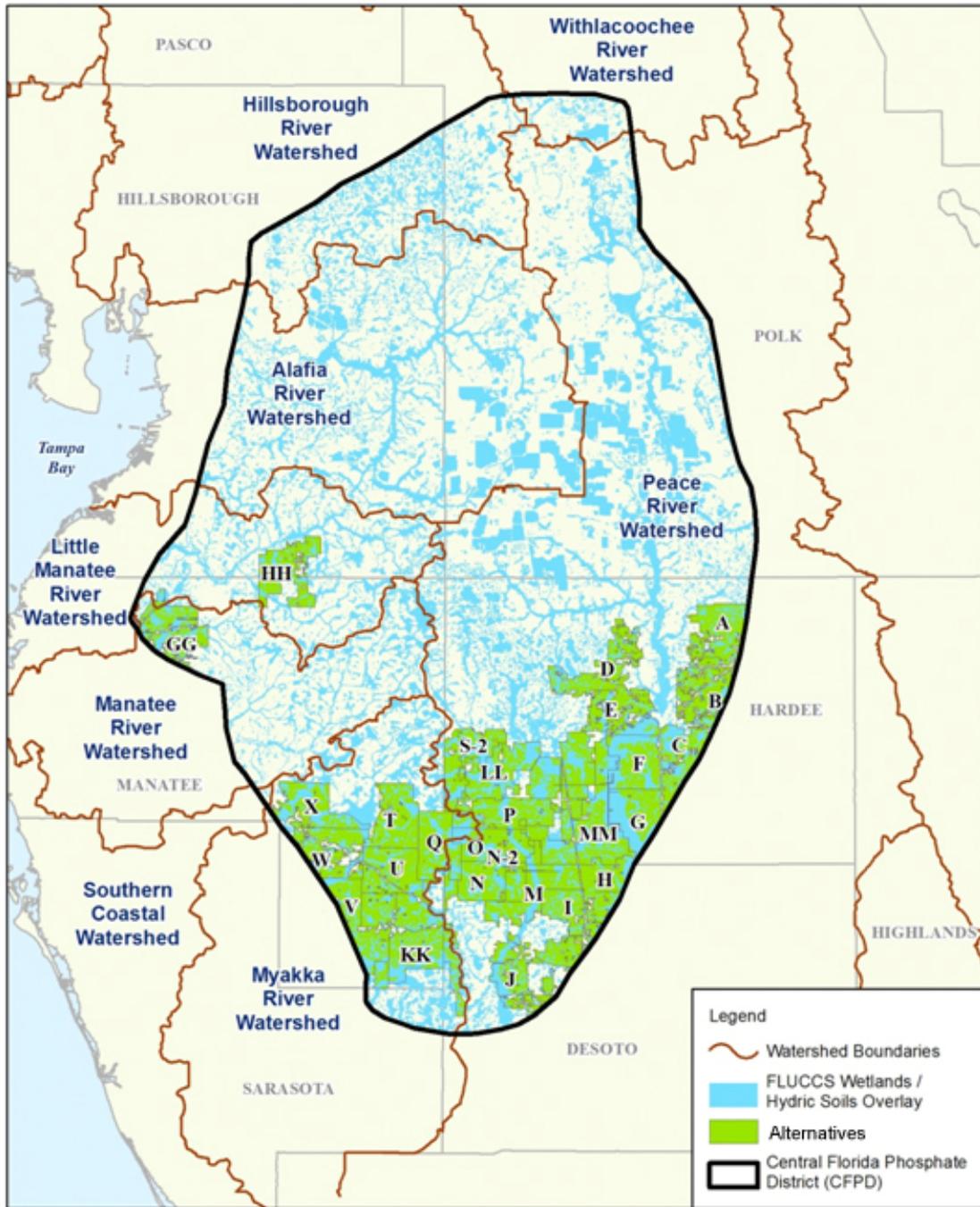


Figure 17. Tier 2 Overlay – Wetlands/Hydric Soils

Table 5. Ranking of Alternatives Based on Wetlands/Hydric Soils Coverage

Site ID	Total Acreage	Wetland/Hydric Soils Acreage	Percentage of Wetland/Hydric Soils
G	8,965	4,837	54
F	8,984	4,140	46
X	8,766	3,685	42
LL	25,025	10,455	42
C	8,810	3,666	42
GG	9,700	3,967	41
S-2	8,227	3,274	40
KK	24,134	9,235	38
J	8,827	3,307	37
MM	14,804	5,545	37
O	8,973	3,188	36
E	8,816	3,043	35
V	9,023	3,082	34
P	9,003	3,021	34
M	8,938	2,930	33
W	8,619	2,570	30
H	8,957	2,647	30
Q	8,998	2,658	30
N	8,915	2,474	28
D	8,918	2,410	27
T	9,016	2,381	26
HH	8,958	2,281	25
U	8,788	2,159	25
A	8,964	2,198	25
I	8,711	2,119	24
B	8,710	1,710	20

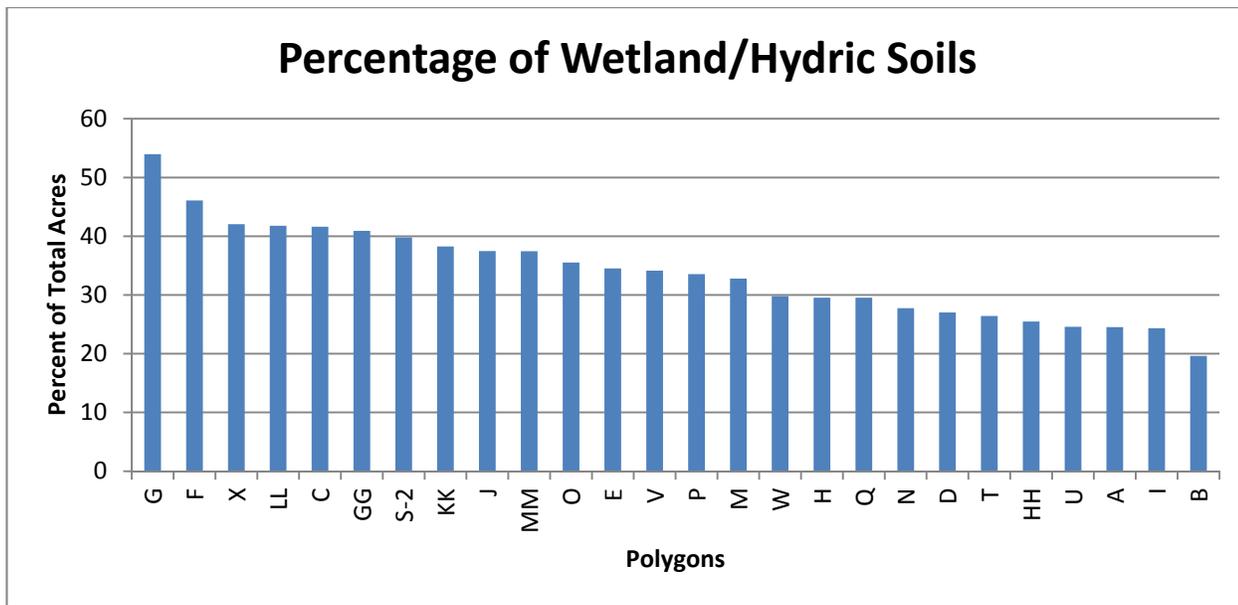


Figure 18. Ranking of Alternatives Based on Wetlands/Hydric Soils Overlay

Site ID	Total Acreage	Forested Wetland Acreage	Percentage of Forested Wetlands
G	8,965	3,205	36
F	8,984	3,030	34
LL	25,025	6,259	25
S-2	8,227	1,832	22
E	8,816	1,911	22
GG	9,700	1,950	20
MM	14,804	2,916	20
M	8,938	1,642	18
H	8,957	1,566	17
C	8,810	1,513	17
O	8,973	1,398	16
J	8,827	1,365	15
P	9,003	1,195	13
W	8,619	876	10
HH	8,958	847	9
V	9,023	849	9
KK	24,134	2,257	9
X	8,766	817	9

Table 6. Ranking of Alternatives Based on Overlay of Forested Wetlands

Site ID	Total Acreage	Forested Wetland Acreage	Percentage of Forested Wetlands
U	8,788	809	9
B	8,710	709	8
N	8,915	638	7
A	8,964	599	7
D	8,918	579	6
T	9,016	586	6
Q	8,998	466	5
I	8,711	179	2

Percentage of Forested Wetlands

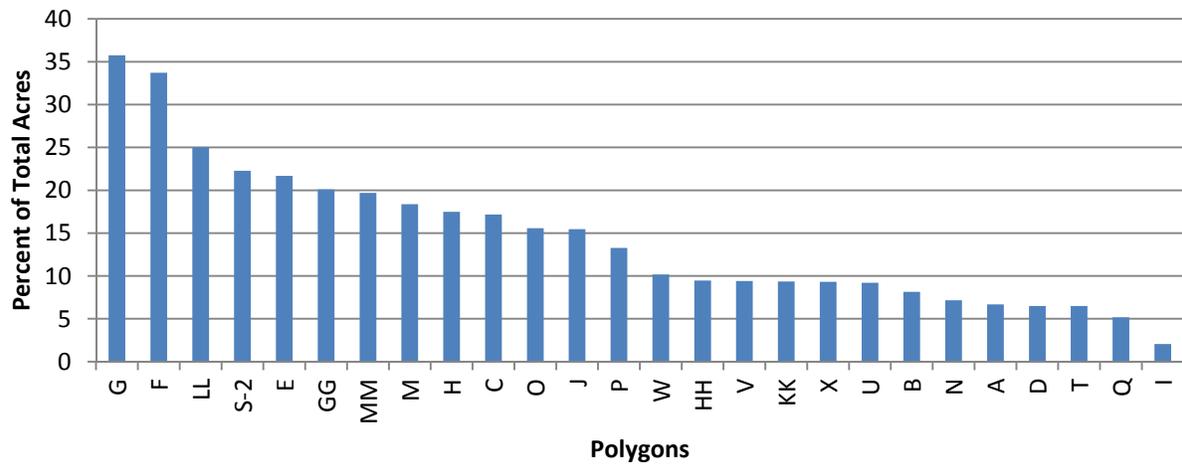


Figure 19. Ranking of Alternatives Based on Forested Wetlands Overlay

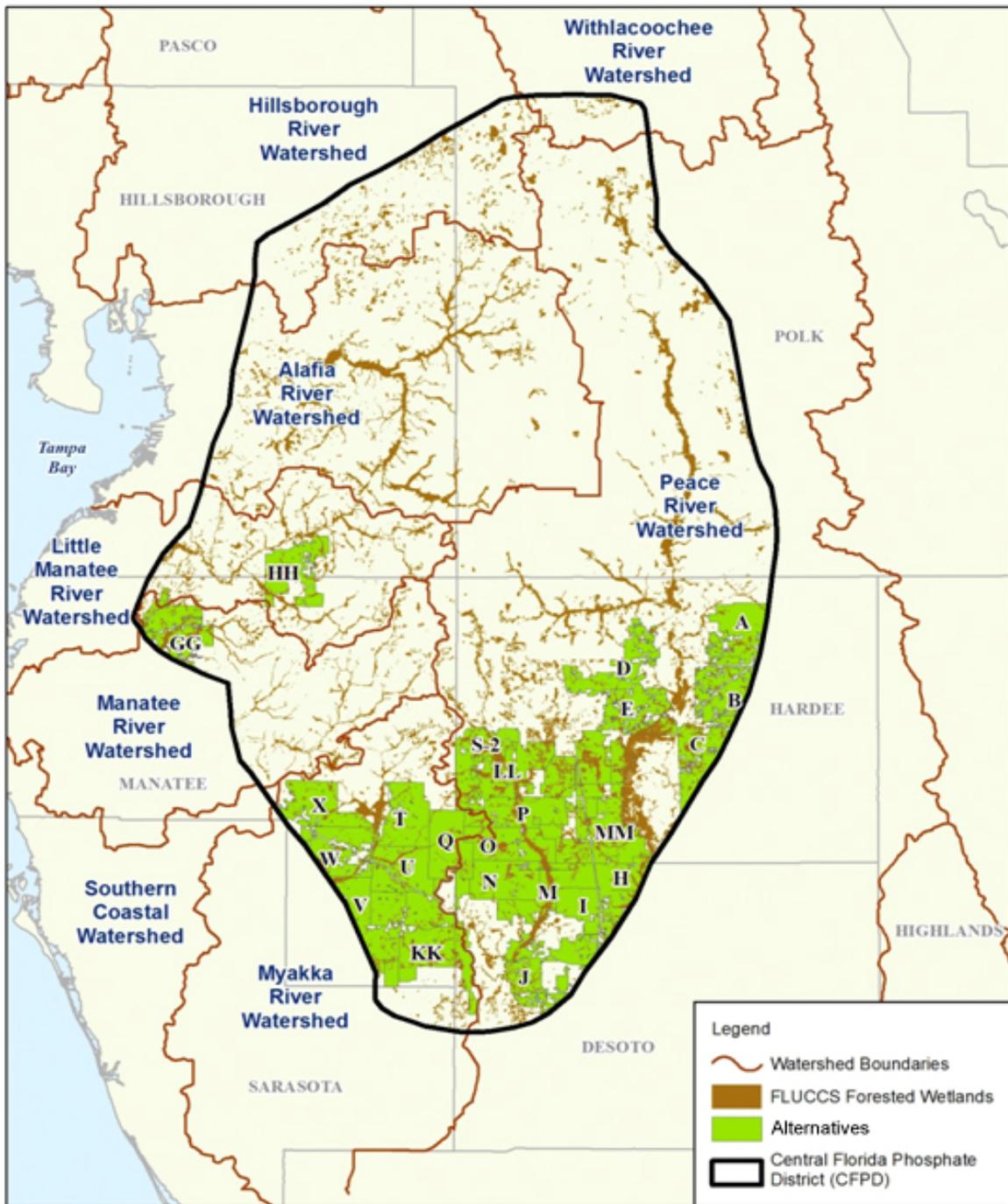


Figure 20. CFPD and the Offsite Alternatives Remaining after Wetlands/Hydric Soils and Forested Wetlands Screening

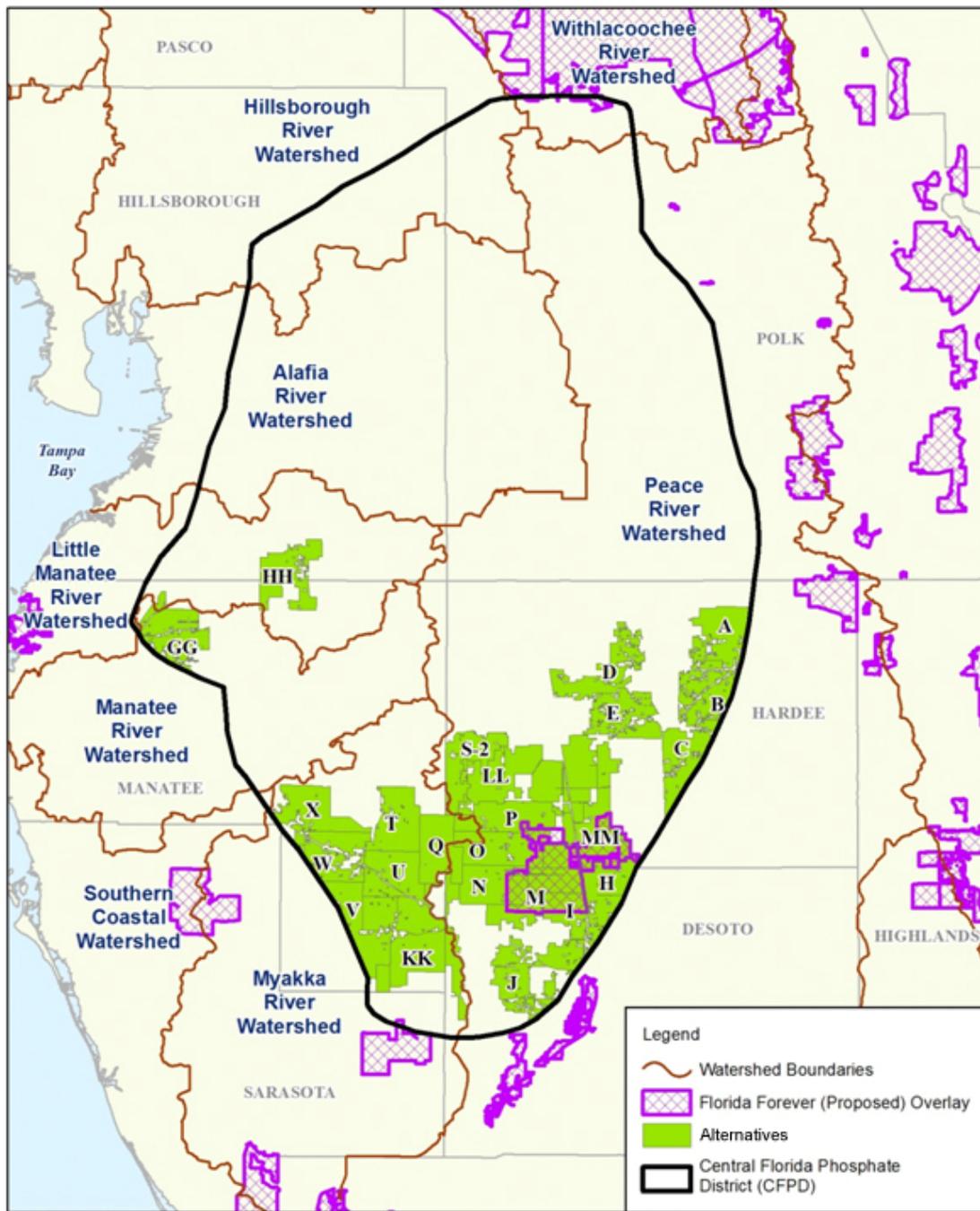


Figure 21. Tier 2 Overlay – Florida Forever Proposed Lands

Table 7. Ranking of Alternatives Based on Overlay of Florida Forever Proposed Acreage			
Site ID	Total Acreage	Florida Forever (Proposed) Acreage	Percentage of Florida Forever (Proposed)
M	8,938	4,281	48
MM	14,804	5,747	39
I	8,711	1,977	23
N	8,915	1,702	19
O	8,973	744	8
H	8,957	111	1
P	9,003	80	1
V	9,023	0	0
HH	8,958	0	0
A	8,964	0	0
GG	9,700	0	0
U	8,788	0	0
W	8,619	0	0
E	8,816	0	0
KK	24,134	0	0
D	8,918	0	0
C	8,810	0	0
X	8,766	0	0
J	8,827	0	0
LL	25,025	0	0
T	9,016	0	0
S-2	8,227	0	0
B	8,710	0	0
Q	8,998	0	0

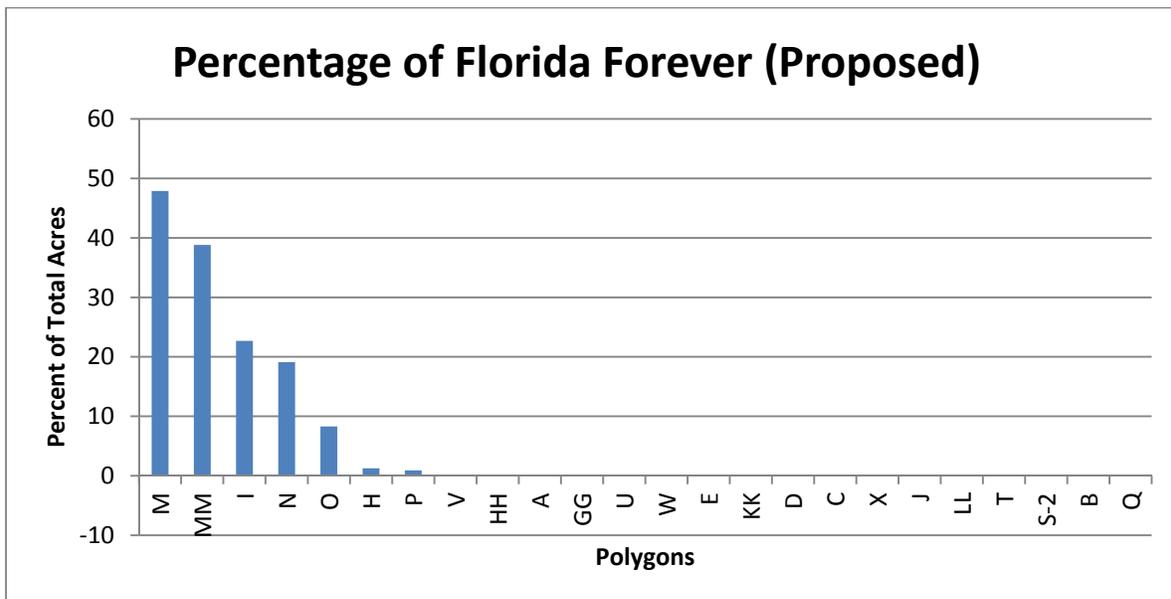


Figure 22. Ranking of Alternatives Based on Percent of Proposed Florida Forever Lands

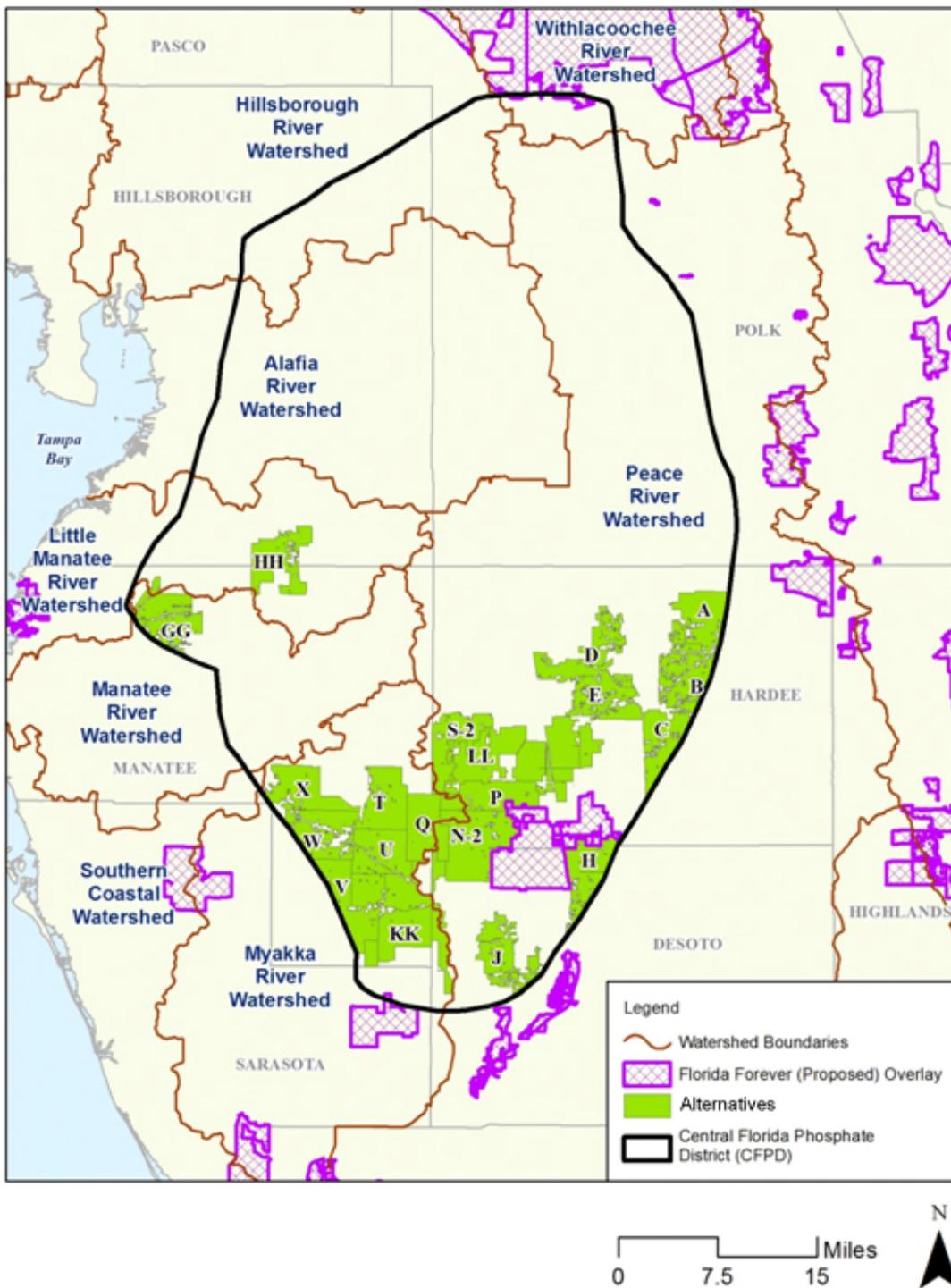


Figure 23. CFPD and the Offsite Alternatives Remaining after Florida Forever Acquisition Lands Screening

9.0 FEMA 100-year Floodplain and NHD Water

The next level of screening included the analysis of two datasets – the FEMA 1996 Digital Flood Insurance Rate Maps (DFIRM) and the USGS NHD – to identify the 100-year floodplain and open water areas, respectively (see Figure 24). The FEMA DFIRM data provide a general representation of the locations of Special Flood Hazard Areas and zones of possible flood inundation risks, including the 100-year floodplain. The USGS NHD contains features such as lakes, ponds, streams, rivers, canals, dams, and stream gages. For this analysis, the features in the NHD identified as canals, rivers, lakes, ponds, and streams were classified as open water.

Table 8 lists the acreage and percentages for each alternative affected by this criterion. Figure 25 ranks the alternatives from greatest to least percentage of FEMA 100-year floodplain and NHD water bodies. As the table and figure indicate, the percentages of FEMA 100-year floodplain and open water as defined by the NHD in the alternatives ranged from approximately 1 to 18 percent, with no clear “break point” or criterion evident that could be used to identify high quality resources or portions of alternatives that warranted exclusion from consideration as a reasonable mining alternative. Therefore, none of the alternatives were eliminated through screening for the FEMA/NHD criteria.

Table 8. Ranking of Alternatives Based on FEMA Floodplain and NHD Waters Acreages

Site ID	Total Acreage	FEMA/NHD Acreage	Percentage of FEMA /NHD
N-2	14,649	2,621	18
GG	9,700	1,591	16
A	8,964	1,162	13
J	8,827	1,021	12
V	9,023	817	9
S-2	8,227	592	7
U	8,788	599	7
KK	24,134	1,639	7
LL	25,025	1,635	7
T	9,016	582	6
P	9,003	455	5
X	8,766	411	5
B	8,710	317	4
W	8,619	253	3
D	8,918	247	3
Q	8,998	237	3
C	8,810	191	2
H	8,957	158	2
E	8,816	139	2
HH	8,958	104	1

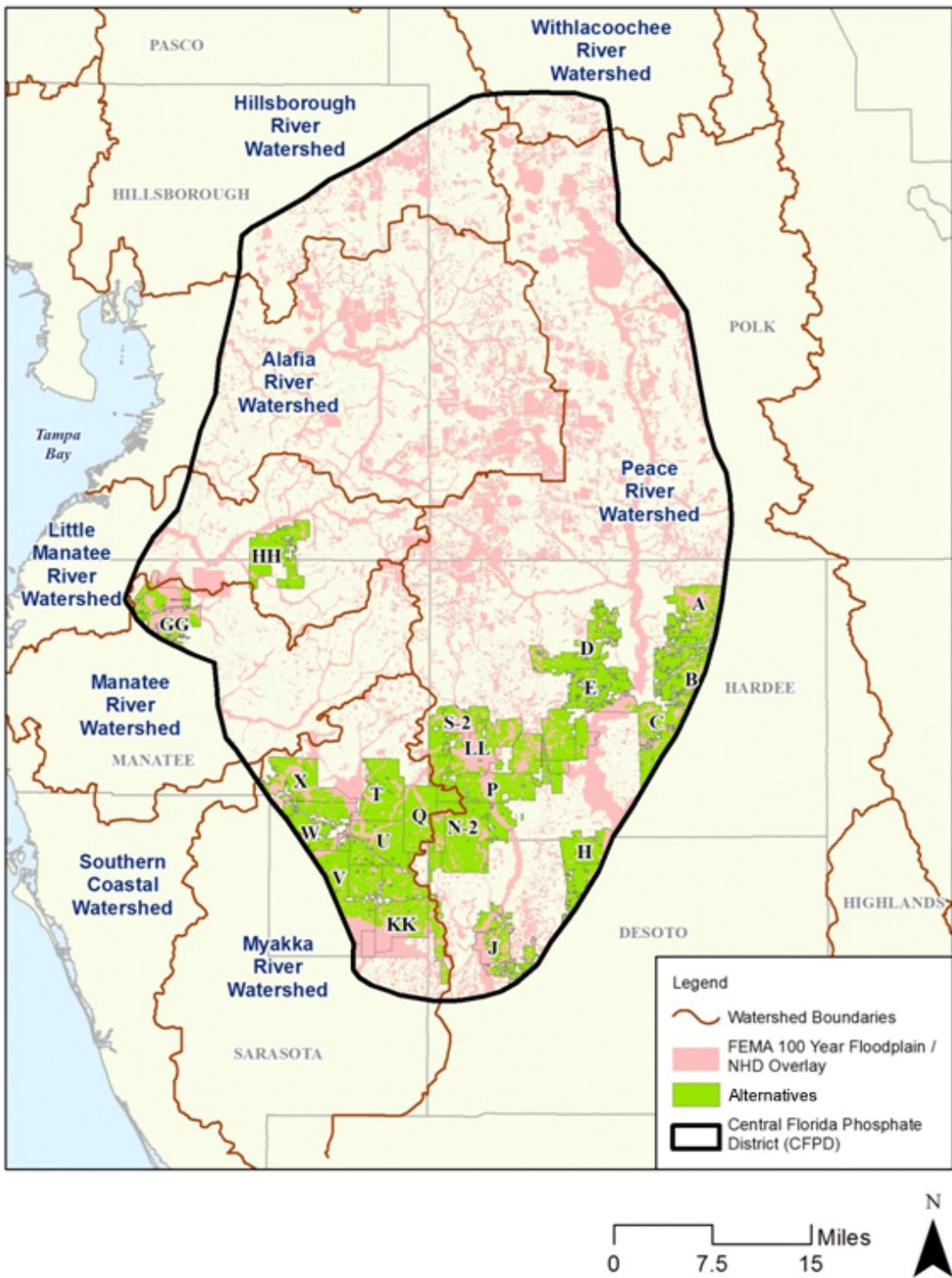


Figure 24. Tier 2 Overlay - FEMA 100-Year Floodplain and NHD Waters

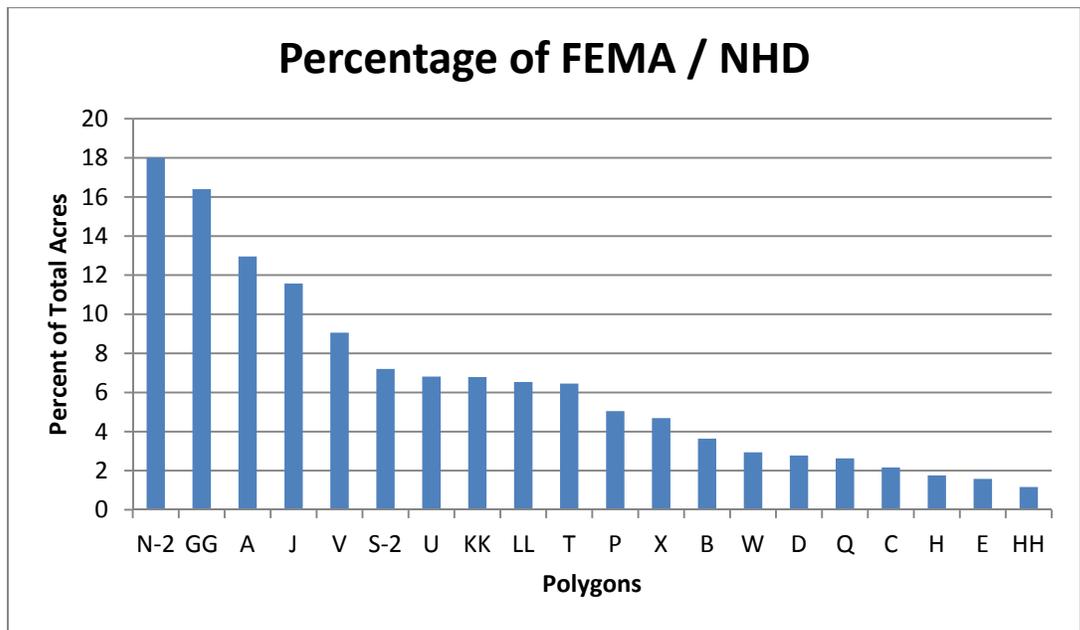


Figure 25. Ranking of Alternatives Based on Percent of FEMA/NHD Coverages

10.0 Integrated Habitat Network

The final level of screening that was conducted was for the IHN Corridors data layer (see Figure 26), designed by FDEP to be a guide for reclaiming or preserving mined phosphate lands throughout the southern CFPD. Although the coverage consists of largely undisturbed lands in the riverine floodplains (core lands) and adjacent reclaimed "buffer" lands, much of the IHN that has not been placed in conservation easements has been converted to agriculture, pasture, or otherwise modified land uses that afford lower habitat value than undisturbed habitat. The IHN Corridors, including the core lands and buffer lands (which complement and enhance the habitat value of the core lands), benefit water quality and quantity in the surrounding area and serve as upland habitat connections between the mining region's rivers and significant environmental features outside the mining region. Conservation of these areas is considered by the state as an important part of the goal to protect and increase habitat corridors in the region and the state, and therefore the presence of a high percentage of IHN coverage could indicate unique habitats or high quality natural areas. Adoption of the IHN concept is strictly voluntary, but it has gained wide acceptance and virtually unanimous implementation in the Central Florida phosphate mining industry. Table 9 lists the acreage and percentages for each alternative affected by this criterion. Figure 27 ranks the alternatives from greatest to least percentage of IHN areas.

The percentage of IHN coverage on the alternatives ranges from 0 to 23 percent, with Alternative H containing a substantially higher percent of acreage affected by the IHN than all other alternatives. Therefore, Alternative H was eliminated from further consideration as a stand-alone mine but could have value in the future for nearby mines for infill parcels. Figure 28 shows the CFPD with Alternative H eliminated, resulting in the removal of 18,141 acres from further consideration.

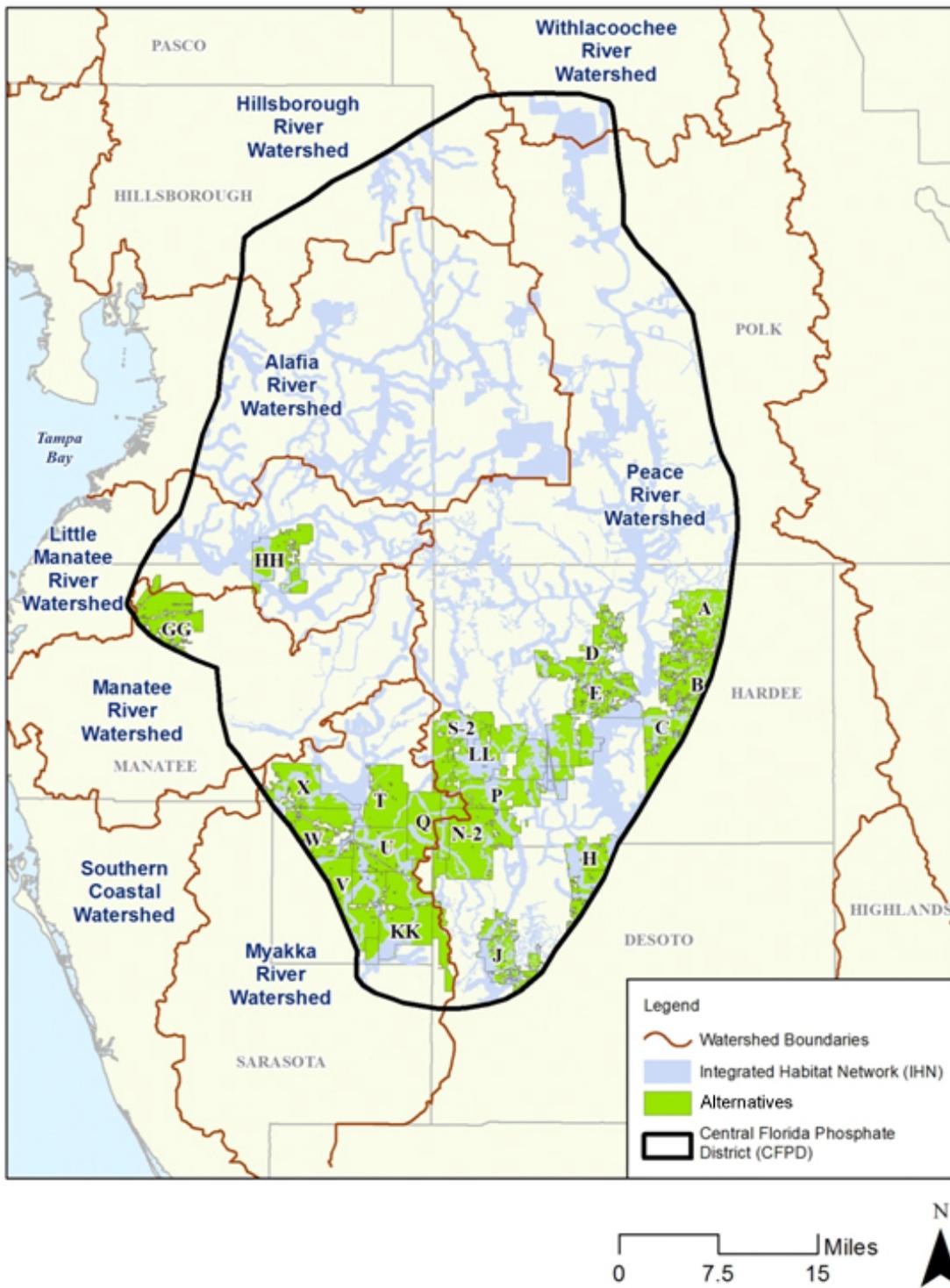


Figure 26. Tier 2 Overlay - Integrated Habitat Network

Table 9. Ranking of Alternatives Based on Overlay of Integrated Habitat Network

Site ID	Total Acreage	IHN Acreage	Percentage of IHN
H	8,957	2,039	23
HH	8,958	1,169	13
U	8,788	1,070	12
D	8,918	1,062	12
LL	25,025	2,956	12
E	8,816	824	9
P	9,003	829	9
Q	8,998	702	8
KK	24,134	1,533	6
V	9,023	546	6
N-2	12,028	675	6
C	8,810	491	6
B	8,710	430	5
X	8,766	281	3
A	8,964	215	2
J	8,827	195	2
S-2	8,227	104	1
T	9,016	74	1
W	8,619	0	0
GG	9,700	0	0

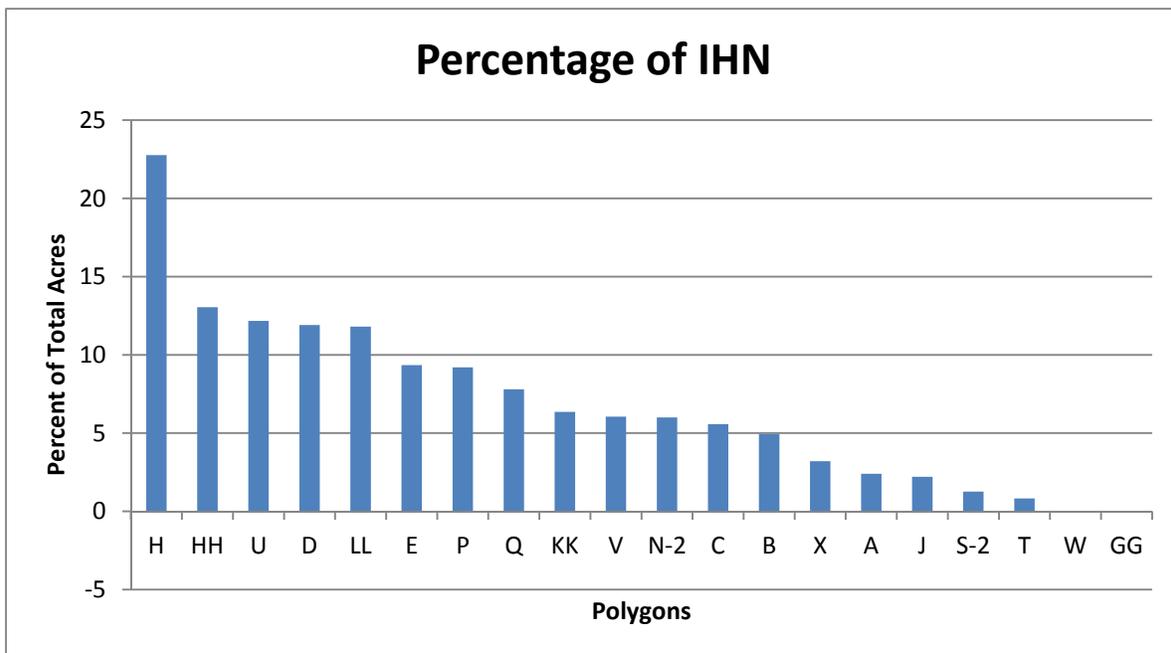


Figure 27. Ranking of Alternatives Based on Integrated Habitat Network

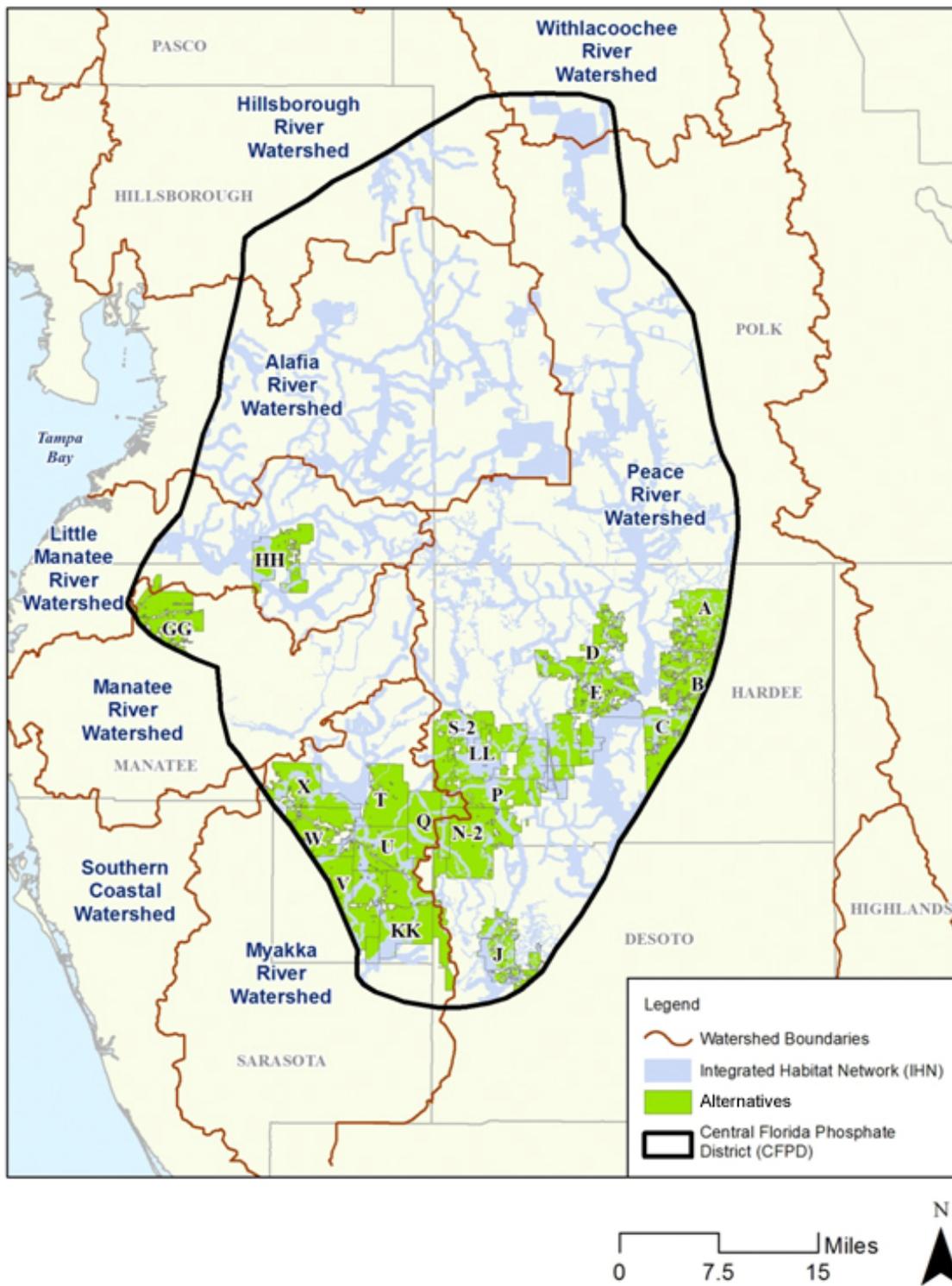


Figure 28. CFPD and the Offsite Alternatives Remaining after IHN Screening

11.0 Step 7: Review for Residential Setbacks

The Tier 2 environmental criteria screening process eliminated a total of six alternatives (F, G, I, M, II, JJ, and MM) and portions of one alternative that was redesignated from former Alternatives N and O into Alternative N-2, representing a total removal of 57,477 acres from further consideration.

Following Tier 2 environmental screening, an additional review was completed to assess the influence of residential and other setbacks, as defined by the applicable county ordinances or regulations, on identifying reasonable alternatives. The residential setbacks in the counties where there were remaining alternatives after Tier 1 and Tier 2 screening are shown in Figure 29. Alternatives affected by residential setbacks would reduce the mineable area. The USACE has determined that if mineable area is reduced to less than 8,100 acres, it would be too small for a stand-alone mine, although it could be an extension if within 10 miles of a beneficiation plant and would provide area needed for required mining infrastructure. The second effect is that the areas removed may produce pockets of inaccessible land scattered within the alternative, thereby reducing the feasibility of developing the infrastructure or corridors required for mining. The details of the regulations affecting these setbacks were reviewed in this analysis and are summarized in Table 10.

Regulatory Setback Requirements	Setbacks Used In Alternatives Review
DeSoto County Regulation: Land development regulations, Article 1, Section 14602 C	
500 ft from the property line of a church, public park boundary, or cemetery.	500 ft from the property line of a church, public park boundary, or cemetery if data available.
1,000 ft from the property line of any school.	1,000 ft from the property line of any school.
1,000 ft from the closest portion of a permitted dwelling unit existing at the time of the Phosphate Mining Master Plan approval, or two hundred (200) ft from the property line of that portion of the adjacent property whose property tax folio number's legal description contains the dwelling unit, whichever is the greater setback distance.	1,000 ft from the closest portion of a dwelling unit if data available or 200 ft from property line.
500 ft from the boundary or survey line of an officially designated historical site which is not located within the mine boundary.	500 ft from the boundary or survey line of designated historic site if data available.
Hardee County Municipal Code, Mining Regulations Section 3.14.02 Part A (01).	
500 ft from a public park boundary, cemetery, historical site, or permanent buildings (including Mobile Homes or Manufactured Housing) used for residential, commercial, church or public purposes	500 ft from a public park boundary, cemetery, historical site, or permanent buildings (including Mobile Homes or Manufactured Housing) used for residential, commercial, church or public purposes, where data are available.
Hillsborough County: Article VIII Operating Standards; Section 8.02.08	
500 ft from the property line of a public park boundary or cemetery.	500 ft from the property line of a public park boundary or cemetery where data are available.
500 ft from the boundary or survey line of an officially designated historical site which is not located within the mine boundary.	500 ft from the boundary or survey line of an officially designated historical site which is not located within the mine boundary, where data are available
1,000 ft from the closest portion of a dwelling unit, or 200 ft from the property line of that portion of the adjacent property whose property tax folio number's legal description contains the dwelling unit, whichever provides the greater setback distance.	1,000 ft from the closest portion of a dwelling unit if data available or 200 ft from property line.
500 ft from the property line of a church or school.	500 ft from the property line of a church or school.

Table 10. Setback Criteria for Phosphate Mine Operating Permits

Regulatory Setback Requirements	Setbacks Used In Alternatives Review
200 ft from any existing public right-of-way, or public easement for drainage, utility or public road purposes.	Data not available
Manatee County: County Ordinance 81-22	
1,000 ft from any church, school, or habitable structure existing at the time of application for Master mining Plan approval.	1,000 ft from any church, school, or habitable structure existing at the time of application for Master mining Plan approval.
500 ft of any uncontrolled area of applicant's property line	Data not available
200 ft of any uncontrolled right-of-way	Data not available
1,000 ft of any wetlands or groves on adjoining property not owned by the applicant	1,000 ft of any wetlands or groves on adjoining property not owned by the applicant

The results of the removal of acreages that would be restricted from mining as a result of the county urban and residential setbacks are summarized in Table 11. The distribution from greatest to lowest percentage of total acres lost in these alternatives as a result of the setbacks is illustrated in Figure 30. As these data indicate, many of the alternatives are smaller than the 8,100 acres considered the minimum size reasonable for further consideration as an alternative. Alternatives less than 8,100 acres include A, B, C, D, E, J, T, U, V, W, X, HH, and S-2. However, as in previous screening steps, it is reasonable to combine some of these smaller alternatives to provide reasonable alternatives at this stage in the screening. These include combining Alternatives A and B to form Alternative A-2, combining Alternatives Q and T to form Alternative Q-2, combining Alternatives U and V to form Alternative U-2, and combining Alternatives W and X to form Alternative W-2. Thus, the alternatives removed based upon urban and residential setbacks would include Alternatives C, D, E, J, HH, and S-2; these alternatives are not included for further evaluation in the AEIS.

Alternative GG has a wide expanse of residential development and associated setbacks along its southeastern half. Alternative GG is not near the Wingate East or South Pasture Extension beneficiation plants and thus is not suitable for consideration as an alternative location for mining expansion. These constraints to mining and corridor development, combined with the great distance from any current or proposed beneficiation plants, eliminated Alternative GG from further evaluation.

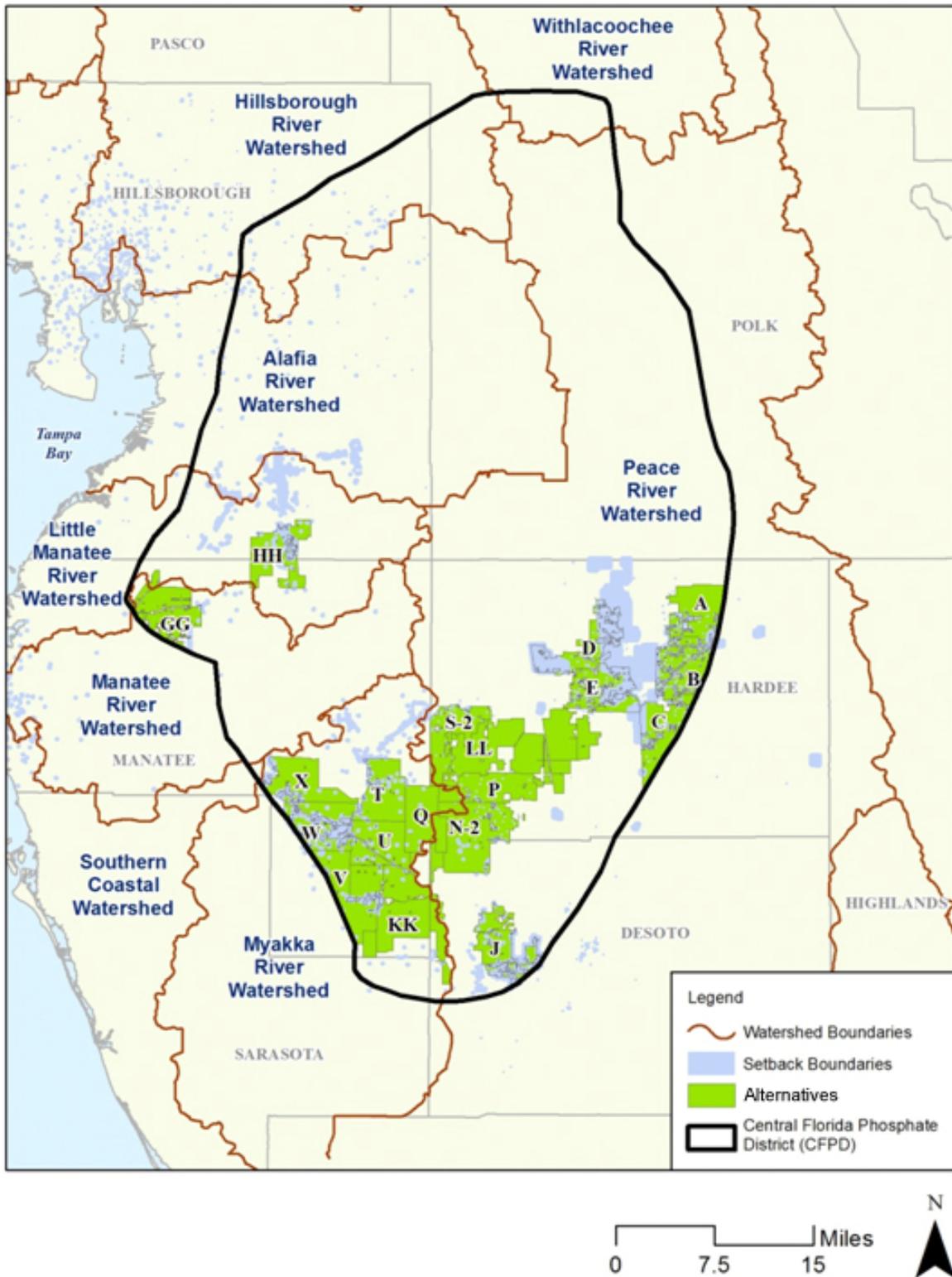


Figure 29. Overlay of County Setback Areas for Phosphate Mines

Table 11. Ranking of Alternatives Based on Regulatory Setbacks				
SITE ID	Previous Acreage	Acreage Change Due to Setback	Remaining Acreage After Setback	Percent Change (reduction in available land)
Site D	8,918	5,961	2,957	67
Site W	8,619	4,052	4,566	47
Site E	8,816	4,114	4,702	47
Site J	8,827	3,414	5,413	39
Site B	8,710	2,836	5,874	33
Site HH	8,958	2,210	6,748	25
Site C	8,810	2,071	6,739	24
Site T	9,016	1,950	7,066	22
Site U	8,788	1,420	7,367	16
Site V	9,023	1,416	7,607	16
Site X	8,766	1,339	7,427	15
Site A	8,964	1,287	7,677	14
Site N-2	14,645	1,393	13,251	10
Site S-2	8,227	710	7,517	9
Site Q	8,734	509	8,225	6
Site P	9,003	369	8,634	4
Site KK	22,471	819	21,652	4
Site GG	9,700	221	9,479	2
Site LL	25,025	55	24,970	0

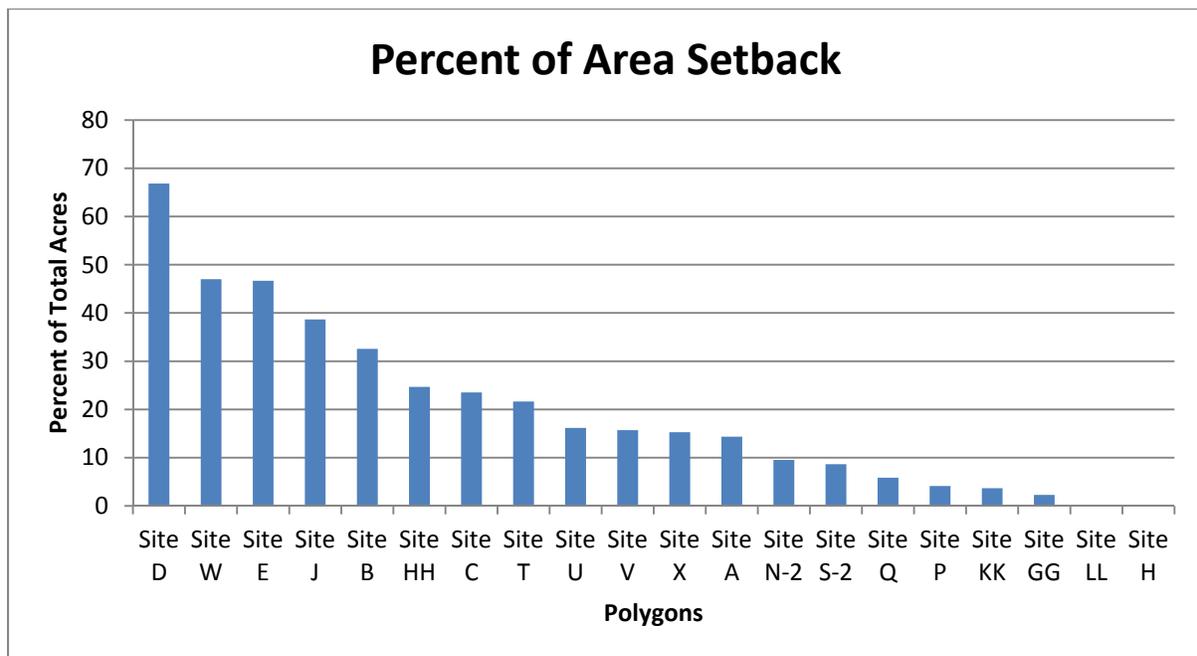


Figure 30. Ranking of Alternatives Based on Setbacks

This last screening step resulted in the removal of 64,181 acres from further consideration with the elimination of Alternatives C, D, E, J, GG, HH, and S-2. Figure 31 illustrates the remaining offsite alternatives with these alternatives eliminated.

12.0 Step 8: Apply Prospecting Data for Each Remaining Alternative

Following publication of the Draft AEIS, Mosaic provided prospecting data that could be used to evaluate the viability of mining in certain areas that could also exclude some alternatives from further consideration. While the CFPD represents an area with high potential for economically mineable phosphate rock, the quantity and quality of phosphate is not uniform. As mining has moved toward the southern extension of the CFPD, more areas have been surveyed. The ore body must meet minimum criteria for physical, chemical, and economic characteristics to be considered a proven reserve suitable for economical mining development (Stonegate Agricom Ltd., 2013; Mosaic, 2012). Ideally, these proven reserves are determined by drilling into the ore body using the spatial distribution of two holes per 40-acre block (Mosaic, 2012).

The percent of phosphate in the matrix analyzed and the percent of impurities contained may vary considerably, but there are widely accepted standards for an ore body to be considered economically acceptable. Two of the most important criteria are bone phosphate of lime (BPL) and minor element ratio or metal ratio (MER) (Stonegate Agricom Ltd., 2013). BPL defines a phosphate grade or the amount by weight percent of calcium phosphate in the ore body. In general, plants do not process phosphate rock with a grade lower than 60 BPL. Similarly, the MER refers to contaminants that, when present in the rock greater than a certain percent, cause disruptive effects in manufacturing of fertilizer. According to current requirements, the MER value cannot exceed 0.096 percent (Stonegate Agricom Ltd., 2013; Mosaic, 2012).

There are also a certain number of tests and borings that may be required to meet the requirements under the US Bureau of Mines and the USGS Principles for Defining Reserves (USGS, 1980). Such tests and borings may result in a commitment for a mine company to declare the reserves in a given area as measured or proven for economic purposes. Based on the data provided by the Applicants for most (but not all) of the alternatives evaluated above, those alternatives with sufficient prospecting borings that met both the BPL and MER criteria described above for acceptable quantity or quality of ore were retained for further evaluation. The data provided by Mosaic (2012) are summarized in Table 12. The information shown in Table 12 indicates the available data on BPL and MER from which prospecting data have been obtained for each offsite alternative.

The data in Table 12 are provided for individual alternative sites. Table 13 provides the evaluations of how these results affect alternatives that have been retained so far in screening, including some that were merged as a result of residential setbacks.

As the data in Table 13 indicate, only Alternatives A-2, W-2, KK, and LL provide suitable prospecting data, or have no data for exclusion, and can be carried forward as reasonable alternatives for continued evaluation in the AEIS.

Figure 32 illustrates the remaining alternatives, after Tier 1 and 2 screening, that are carried forward for more detailed analysis in Chapter 4 along with the Applicants' Preferred Alternatives and the No Action Alternative. Table 14 provides a comparison of representative data for all alternatives, including the Applicants' Preferred Alternatives. Tier 1 screening removed a total of 704,974 acres and Tier 2 screening removed a total of 121,658 acres.

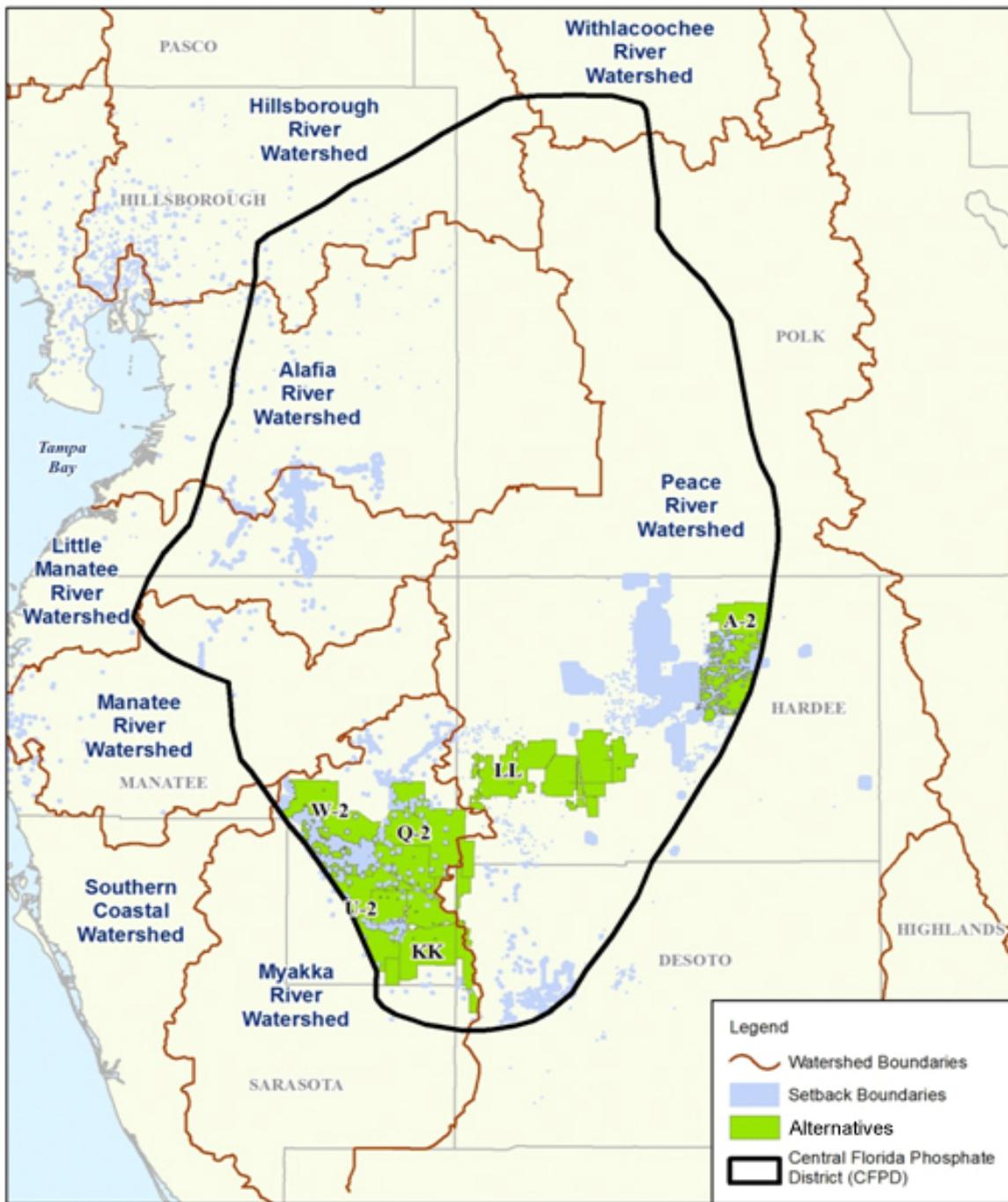


Figure 31. Remaining Alternatives After Screening for County Regulatory Setbacks

Table 12. Summary of Available Ore Prospecting Data for Offsite Alternatives^a

Site ID	Total Site Acreage	Borings Surveyed	BPL	MER	Eliminate Alternative	Basis
A ^b	7,676	192	63.3	0.091	No	Meets Criteria
B ^b	5,874	No Data	No Data	No Data	No	No Data
N-2	13,251	19	61.6	0.130	Yes	Fails MER
P	8,634	158	60.2	0.117	Yes	Fails MER
Q ^c	8,225	45	61.5	0.113	Yes	Fails MER
T ^c	7,065	3	63.4	0.102	Yes	Fails MER
U ^d	7,367	4	62.6	0.091	No	Meets Criteria
V ^d	7,607	23	58.0	0.112	Yes	Fails BPL and MER
W ^e	4,566	No Data	No Data	No Data	No	No Data
X ^e	7,427	No Data	No Data	No Data	No	No Data
KK	21,652	No Data	No Data	No Data	No	No Data
LL	24,970	No Data	No Data	No Data	No	No Data

^aProspecting data provided for specific alternatives, some of which were combined in a previous step

^bA and B combined to create Alternative A-2.

^cQ and T combined to create Alternative Q-2. Combined borings considered sufficient for evaluation.

^dU and V combined to create Alternative U-2. Combined borings considered sufficient for evaluation.

^eW and X combined to create Alternative W-2

Table 13. Summary of Available Ore Prospecting Data for Remaining Offsite Alternatives after Merging Based on Setbacks^a

Site ID	Total Site Acreage	Borings Surveyed	BPL	MER	Eliminate Alternative	Basis
A-2 ^b	8,189	192	63.3	0.091	No	Meets criteria
N-2	13,251	19	61.6	0.130	Yes	Fails MER
P	8,634	158	60.2	0.117	Yes	Fails MER
Q-2	15,291	48	61.5/63.4	0.113/0.102	Yes	Fails MER
U-2	14,974	27	62.6/58.0	0.091/0.112	Yes	Half of alternative fails BPL and MER
W-2	9,719	No Data	No Data	No Data	No	No data
KK	24,509	No Data	No Data	No Data	No	No Data
LL	25,231	No Data	No Data	No Data	No	No Data

^aFor combined alternatives, the values for borings are added and analyses evaluated separately.

^bData available only for Alternative A.

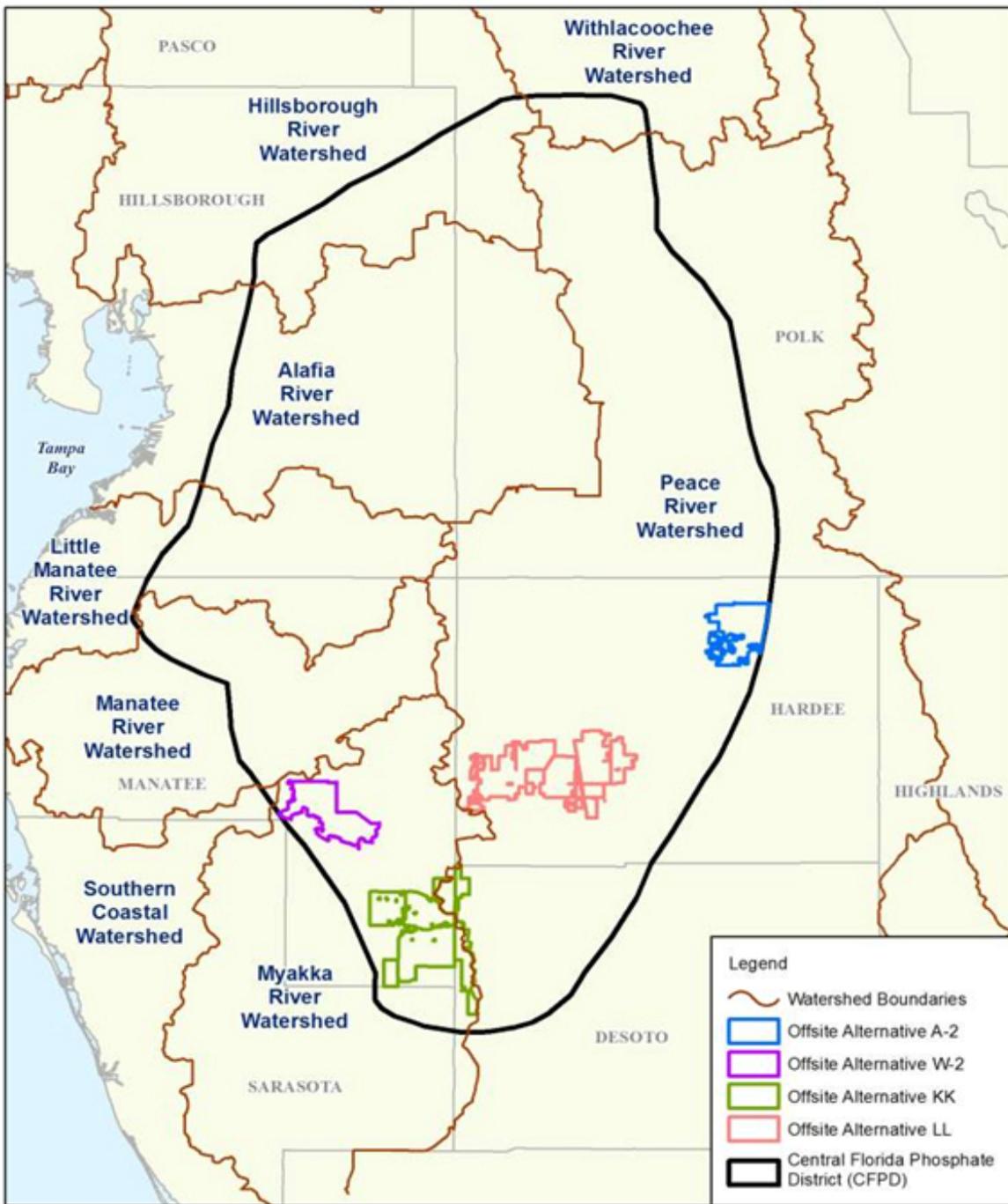


Figure 32. Summary of All Offsite Alternatives to be Carried Forward for More Detailed Analysis

Table 14. Alternatives to be Assessed in More Detail^a

Alternative Number	Site Name	Current Size	Wetland/ Hydric Soils Acreage	Forested Wetlands Acreage	Florida Forever Proposed Acreage	FEMA/ NHD Acreage	IHN Acreage
1	No Action	N/A	N/A	N/A	N/A	N/A	N/A
2	Desoto Mine	18,287	5,710	2,762	0	722	586
3	Ona Mine	22,320	8,773	3,680	0	425	1,716
4	Wingate East Mine	3,685	1,260	258	0	27	152
5	South Pasture Mine Extension	7,513	3,293	1,555	0	86	676
6	Pine Level/ Keys Tract (Site KK)	24,509	9,270	2,250	0	1,646	1,588
7	Pioneer Tract (Site LL)	25,231	10,509	6,259	0	1,656	3,001
8	Site A-2	8,189	1,949	492	0	1,114	183
9	Site W-2	9,719	3,803	826	0	378	261
Average		14,932	5,571	2,260	0	757	1,129
Max		25,231	10,509	6,259	0	1,656	3,001
Min		3,685	1,260	258	0	27	152
Total		119,453	44,567	18,082	0	6,054	7,902

^aAreas shown for screening criteria are based on GIS analyses and may not agree with ground-truthed data provided by Applicants and do not represent USACE-approved jurisdictional determinations.