VALLEY JUNCTION MINE
NONMETALLIC MINING RECLAMATION PLAN

Valley Sand, LLC
La Grange Township and Lincoln Township
Monroe County, Wisconsin

Prepared for:

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October 2018

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Introduction

This Nonmetallic Mining Reclamation Plan is prepared for the proposed Valley Sand, LLC (Valley Sand) project located in La Grange Township and Lincoln Township, Monroe County, Wisconsin. This plan has been prepared by Summit Envirosolutions, Inc. (Summit) on behalf of Valley Sand in general accordance with Wisconsin Statute Chapter 295, Wisconsin Administrative Code Chapter NR 135, and Monroe County Code Article II, *Nonmetallic Mining Reclamation*. A completed Monroe County *Application for Reclamation Permit for New or Reopened Nonmetallic Mining Sites* is included in Appendix 1.

Valley Sand is proposing a nonmetallic mine and industrial sand processing facility on thirteen parcels in La Grange and Lincoln Townships, Monroe County, Wisconsin. The site consists of approximately 520 acres; the area of site disturbance, including processing areas, excavation, and reclamation, is approximately 200 acres.

Twelve phases of mining, ranging from approximately 8 to 25 acres per phase, are planned within the site, with an estimated total production of approximately 29 million tons of raw sandstone. The mine lifetime is expected to be approximately 20 to 25 years, depending on market conditions.

Prior to mining, erosion control and stormwater Best Management Practices (BMPs) will be installed. A paved access driveway, wet and dry processing facilities, stormwater and makeup

water ponds, and a rail siding will be constructed. The excavated resource material will be transported via overland conveyor or haul truck to the wet processing plant, located in the northeastern area of the site. Once the material has been washed and sorted, it will be moved by conveyor to the drying plant, where it will be dried and sized to end-product specifications. After processing, the marketable proppant sand will be loaded onto rail cars on the siding and then transported off-site by rail, or onto haul trucks until the rail is installed. Non-marketable material will be returned to the proposed mine site and utilized as reclamation material.

Contemporaneous reclamation with an adaptive management process will be used throughout the life of the project. The post-mining land use of reclaimed areas will be Emergent Wetland, a shallow vegetated littoral zone, and an open water lake. Standard performance criteria based on documentation of revegetation will be used to evaluate the success of the reclamation to the post-mining land use.

The following site information and reclamation plan are submitted on behalf of Valley Sand to supply information regarding reclamation as required by the Monroe County Code, Article II, *Nonmetallic Mining Reclamation.*

1.0 Site Information

1.1 Site Location

The proposed Valley Junction Mine site occupies approximately 520 acres, of which approximately 200 acres are proposed for processing areas, excavating sandstone, and reclamation. The proposed mine site is in the Townships of La Grange and Lincoln, between Warrens and Wyeville, Wisconsin. The site is west of County Highway N, west and southwest of Concord Avenue, and is adjacent to the Union Pacific Railroad right of way within Section 1 of Township 18 North, Range 1 West and Section 36 of Township 19 North, Range 1 West, Monroe County, Wisconsin (Figure 1).

The proposed mine site will be owned by the property owners listed in Table 1 below; parcel boundaries are depicted on Figure 2. *Purchase Agreements* and/or *Lease and Lifting Agreements* between Valley Sand and the property owners are presented in Appendix 2.

Table 1. Mine Site Property Owners

Property Tax Parcel ID	Owner Name(s)	Owner Address	Approx. Area (Acres)	Legal Description	Figure 2 ID, Township
024-00857-2000	Eddie Gebhardt Cranberry LLC	27696 Concord Ave. Warrens, WI 54666	76.53	LOT 1 of 11CSM147 #459124, being part of the SE ¼ of the NW ¼ & NE ¼ of the NW ¼ & NW ¼ of the NW ¼ & SW ¼ of the NE ¼, Section 36, T19N R1W	1 Lincoln
024-00856-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the NW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	2 Lincoln
024-00860-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	NW ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	3 Lincoln
024-00859-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	NE ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	4 Lincoln
024-00865-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	28.0	Part of the NW ¼ of the SE ¼ Lying W of the RR, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	5 Lincoln
024-00861-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	6 Lincoln
024-00862-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SE ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	7 Lincoln
024-00868-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the SE ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	8 Lincoln
024-00869-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	18.5	Part of the SE ¼ of the SE ¼ Lying W of RR, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	9 Lincoln
020-00008-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	39.97	NW ¼ of the NW ¼, Section 1, T18N R1W; also an easement 33' in width for ingress and egress	10 La Grange

020-00001-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	35.44	The NE ¼ of the NE ¼ Fract, Exc the W 715' of the N 306'; Also Exc. A Parcel Com at NW Cor, then S 20 Rods , then E 4 Rods, then N 20 Rods, then W to POB; Section 1, T 18N R1W; also an easement 33' in width for ingress and egress	11 La Grange
020-00009-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.3	SW ¼ of the NW ¼, Section 1, T 18N R1W; also an easement 33' in width for ingress and egress	12 La Grange
020-00006-0000	Dale D. Storkel & Sandra L. Hansen	7379 County Highway N, Warrens, WI 54666	40.65	SE ¼ of the NE ¼, Section 1, T18N R1W	13 La Grange
		Approximate Total Site Acreage	519.4		

Adjacent properties within 660 feet of the proposed mine property boundary are shaded on Figure 3. A listing of the adjacent properties, owners, and property descriptions is included in Appendix 3.

1.2 Topography and Drainage

The proposed Valley Junction Mine site consists of cropped agricultural fields, mixed deciduous forest, and planted coniferous groves. Wetlands, which cover approximately forty percent of the mine property parcels along the western side and southeastern corner, will not be disturbed by mine activity (excavation, transportation, or processing). The site is relatively flat, with an elevation of approximately 950 feet (above mean sea level) AMSL on the western half, rising to 970 feet AMSL in a slight ridge running north-south across the middle of the property, and falling to 950 feet AMSL in the southeast portion of the site.

The site is in the Upper Lemonweir River Watershed (Hydrologic Unit Code 0707000315) of the Lower Wisconsin Basin. Due to low topographic relief across the site, drainage patterns are minor and variable and are shown on Figure 4. The western half of the site drains generally west toward an unnamed tributary (Water Body Identification Code [WBIC] 5024205) of Brandy Creek which flows south along the western property boundary, and enters Brandy Creek (WBIC 1327500) at the southwest corner of the site. The eastern half of the site drains south and east toward unnamed human-made cranberry bogs (WBIC 1332900 and 1330200). Brandy Creek is not designated an Outstanding Resource Water, Exceptional Resource Water, Priority Navigable Waterway, or Impaired Water. Figure 5 presents five-foot topographic contours of the site based on the United States Geological Survey (USGS) National Elevation Dataset, 2013.

1.3 Geology

The local bedrock geology is comprised of Cambrian-aged sandstone consisting primarily of the Mount Simon Formation. A generalized bedrock geology map adapted from the *Bedrock Geology of Wisconsin, West Central Sheet,* originally published by the Wisconsin Geological and Natural History Survey (WGNHS), is presented on Figure 6.

Summit advanced three test borings (VJ-1 through VJ-3) on the site, in addition to the five previously-advanced borings by 6 Star LLC. Test boring locations are depicted on Figure 6. Summit's observations of test drilling activities were consistent with the distribution and descriptions of the mapped geologic formations. The sandstone deposit that Summit observed at the site appears to be quartz arenite sandstone with rare accessory mineral grains with interbedded shale (beds and lamina). Sand grain size ranged from very fine to very coarse, consistent with the graded bedding known to occur in the Mount Simon Formation, and was generally poorly to moderately sorted. Roundness ranged from sub-angular to well rounded.

Summit's lithologic logs and logs prepared for samples summited to Summit's lab are included in Appendix 4.

1.4 Wetlands

A wetland delineation was completed in July 2018 for the Valley Junction mine properties by Ingraham Technical Services, Inc. Delineated wetlands are located on the mine site property in areas that will not be disturbed by mine activities (excavation, processing, and transportation) and are shown on Figure 7. See Appendix 5 for a copy of the completed delineation. A 75-foot buffer will be maintained between active mine areas and wetlands, per Wisconsin Admin. Code Chapter NR 115.

Reclamation of the mining phases will create an approximately 160-acre lake with 10:1 shoreline seeded with Emergent Wetland species, and planted out to 2-foot depth with a live siltation construction system and reed clump installations. The two types of reclamation planting will create a transition zone between the open water lake and the existing wetlands on the remainder of the project site.

1.5 Structures and Water Wells

One residence, with garage and outbuildings, is located on the farthest southeast mine site property (Storkel and Hansen). Eight off-site residences appear to be within ¼ mile of the mine property boundary, and are indicated on Figure 3. A 100-foot buffer will be maintained between off-site residences and mining or processing activities. No known utilities are located within the

proposed active mining area; a 50-foot buffer will be maintained along property boundaries and town roads, protecting easements.

Private potable water wells are projected to exist for the eight residences within ¼ mile of the mine property boundary (noted on Figure 3). A 100-foot buffer will be maintained between off-site potable water wells and mining or processing activities.

See Section 2.2 for a discussion of regional water table quantity and quality monitoring.

1.6 Groundwater

The regional water table aquifer is predicted to be present beneath the proposed mine site at an elevation of approximately 940 feet AMSL, based on the observation of surface water in area cranberry operations. A groundwater contour map is presented on Figure 8. Groundwater was not observed at the base of the three Geoprobe test borings advanced by Summit to depths of 9 to 12 feet below ground surface (959, 948, and 946 feet AMSL).

A high-capacity well (ID 2595), permitted for 450 gallons per minute (GPM), is located on the northernmost mine site property, and is currently used in growing cranberries. This well may provide water for wash plant processing, if it is necessary to supplement water pumped from the makeup water pond and excavation area. The High-Capacity Well Construction Report is included in Appendix 6.

According to the WDNR Water Withdrawal and High Capacity Well Viewer database, one permitted high-capacity well and two permitted surface water withdrawals are located within one-half mile of the mine site property.

- High Capacity Well 2809, permitted for 450 (GPM) to Whiskey Creek Cranberry Co.: SE ¼ of the SW ¼, Section 25, T19N R1W.
- Surface Water Withdrawal, permitted to Whiskey Creek Cranberry Co. (same location as above); withdrawals for 2012 through 2015 ranged between 73 million and 197 million gallons per year.
- Surface Water Withdrawal, permitted to Joseph Miller Co.: entire Section 2, T18N, R1W; withdrawals for 2011 through 2015 ranged between 67 million and 262 million gallons per year.

The Well Construction Report for the off-site high-capacity well is included in Appendix 6. See Section 2.2 for a discussion of regional water table quantity and quality monitoring.

1.7 Soils

Soil type identification for the Valley Junction site mining area is depicted on Figure 9. The excavation area includes the twelve mining phases indicated on Figure 10. The soils, as identified by the Natural Resources Conservation Service (NRCS) Web Soil Survey database, are listed in Table 2. Soil types found on the proposed mining area of the Valley Junction site are described in detail in the Custom Soil Resource Report, included as Appendix 7.

Table 2. NRCS Soil Resources for Valley Junction Mining Area

Map Unit Symbol	NRCS Soil Series Name	Acres	Percent of Mining Area
434B	Bilson sandy loam, 1 to 6 percent slopes	0.2	0.1
466A	Bilmod sandy loam, lake terrace, 0 to 3 percent slopes	13.6	6.8
498A	Hoop sandy loam, loamy substratum, 0 to 3 percent slopes	2.5	1.3
551B	Impact sand, 2 to 6 percent slopes	9.9	5.0
561B	Tarr sand, 1 to 6 percent slopes	36.1	18.1
561C	Tarr sand, 6 to 15 percent slopes	35.0	17.6
596A	Tint sand, lake plain, 0 to 3 percent slopes	59.0	29.6
1233F	Boone-Tarr sands, 15 to 50 percent slopes	16.6	8.4
1548A	Majik, cool Ponycreek complex, lake plain, 0 to 3 percent slopes	26.1	13.1
	Total Mining Area	**199.2**	**100**

Nine soil types are represented in the proposed mining area, with A horizon depths of 3 to 9 inches, and B horizon depths of 18 to 28 inches. Sandy soils dominate the site, covering over 90 percent of the mine area, with sandy loam comprising the remainder of the A and B horizons. Seven percent (14 acres) of the mining area has a soil type (466A - Bilmod sandy loam) classified as prime farmland.

A and B horizon volumes for the proposed mining area were calculated using NRCS soil descriptions (Appendix 7). It is estimated that Phases 1 through 12 contain approximately 148,000 cubic yards of A horizon soils and approximately 608,000 cubic yards of B horizon soils.

A and B horizon soils will be will be isolated and stockpiled with vegetative stabilization during each phase, or will be used for contemporaneous reclamation of the 10:1 sloping lakeshore.

1.8 Threatened and Endangered Species

The Wisconsin DNR Natural Heritage Inventory (NHI) database was reviewed on February 6, 2018 for the occurrence of threatened and endangered species specific to the proposed Valley Junction project site. The Endangered Resources Preliminary Assessment resulted in a determination that, "further actions are required to ensure compliance" with state and/or federal endangered species laws or to help conserve Wisconsin's endangered resources.

An Endangered Resources Review for the mine site properties was requested from the WDNR by Summit, and was received on April 3, 2018. Two species were recorded as endangered resources within the project area and/or the surrounding area.

- Karner Blue Butterfly (*Lycaeides melissa samuelis)*
  The project is located within the Karner Blue Butterfly (KBB) High Potential Range (HPR). Suitable habitat and the host plant (wild lupine) may be present at the project site.
  Required Measures to comply with endangered species laws:
  Wild lupine *(Lupinus perennis)* surveys must be conducted by a qualified botanist prior to any ground disturbance at the site, and survey forms will need to be submitted to the WDNR. Additional surveys may be required to determine the presence of the KBB; if present, measures to avoid impacts to the KBB must be coordinated with the U.S. Fish and Wildlife Services or the WDNR HCP Coordinator. See Appendix 8 for details about required surveys and submittals.

- Blanding's Turtle (*Emydoidea blandingii*)
  Suitable habitat for the Blanding's Turtle may be present within the project site.
  Recommended Measures to help conserve Wisconsin's endangered resources:
  Avoid impacts to wetlands and water bodies at all times; Install and maintain WDNR Amphibian and Reptile Exclusion Fencing during appropriate times of the year. See Appendix 8 for details on the dates of active and nesting seasons.

A copy of the complete Endangered Resources Review (ERR Log #18-129) is included in Appendix 8.

The Bald Eagle (*Haliaeetus leucocephalus*) is separately protected by the *Bald and Golden Eagle Protection Act*, although not included in the NHI database or the Endangered Resources Review; Bald Eagles are not recorded as nesting in the Townships of La Grange or Lincoln in Monroe County as of July 2017 (Appendix 8).

1.9 Landscape, Land Cover, and Wildlife Habitat

The site is located within the Central Sand Plains Ecological Landscape (WDNR), a relatively level, sandy, glacial plain in south central Wisconsin, dominated by the lakebed of former Glacial Lake Wisconsin. The original historic vegetative cover for the area is recorded to be: mixed coniferous-deciduous forest of beech, hemlock, sugar maple, yellow birch, white and red pine; wetland vegetation of swamp conifers, including white cedar, black spruce, tamarack, and hemlock; and deciduous forest of mixed white, black, and bur oaks (Finley, 1976).

The natural sandy pine and oak barrens and sand prairie of the region are interspersed with extensive areas of wetlands, and now include pine plantations and cropped agriculture, particularly commercial cranberry production. Of the approximately 197 acres included in the projected mining area at the Valley Junction site, approximately 79 acres (40%) are currently used for agricultural cropland, approximately 40 acres (20%) are planted conifer forests, and approximately 78 acres (40%) are mixed deciduous forest, with red maple, beech, and black oak.

Sixty percent of the mineable acreage has wildlife habitats that are highly managed—agricultural cropland and pine plantation. Species are limited to those capable of co-existing with human activities, such as White-tailed Deer, North American Raccoon, Striped Skunk, Wild Turkey, Ring-Necked Pheasant, and a variety of small rodents, reptiles, and song birds.

The mixed deciduous forest on the west side of the mineable acreage marks a transition zone between the wetlands to the north and west and the managed agricultural areas (including humanmade cranberry ponds) to the east. The limited size of forest remnants restricts the variety of wildlife, but could support species listed above plus the Wood Turtles, Snowshoe Hare, and American Woodcock. A wide variety of reptiles, amphibians, birds, and insects likely inhabit the wetlands that are west of the mine area; a 75-foot buffer will be maintained between delineated wetlands and site disturbance, and conservation Best Management Practices (BMPs) will be installed for their protection.

The proposed final land use of the mine area into a lake with shoreline Emergent Wetlands and a vegetation-protected littoral zone will result in approximately 55 acres of new wetlands, approximately 5 acres of shallow habitats for amphibians and wading birds, and approximately 160 acres of deeper open water for waterfowl and fish habitat.

1.10 Cultural and Historical Resources

Prior to site disturbance, a qualified professional will access and research the Wisconsin Historic Preservation Database (including the Archaeological Sites Inventory, the Archaeological Reports Inventory, and the Architecture and History Inventory) for any previously identified

archaeological and/or architecturally historic cultural resources within or adjacent to the project area, to include Sections 36 in Township 19 North, Range 1 West and Section 1 in Township 18 North, Range 1 West, Monroe County. The results of the database research will determine whether additional cultural and historical resource assessment are necessary under Wisconsin law.

2.0 Mine Plan

2.1 Area, Setbacks, and Hours of Operation

The site consists of approximately 520 acres; mining and contemporaneous reclamation is proposed for approximately 200 acres in twelve phases (Figure 10). The remaining approximately 320 acres on the site include property setbacks, wetland buffers, railroad transport areas, and areas without mineable resource.

The numbering order of phases identify their estimated operational sequence. The phases represent smaller, manageable parcels that will isolate and limit site disturbance at any one time. This approach will accelerate the reclamation in a measured and managed manner for the life of the mine. The processing area, including wet plant, dry plant, stockpiles and a transload area will be constructed in Phase 1 along the northeast edge of the mine site.

Setbacks of 50 feet will be maintained from from property boundaries and 100 feet from off-site residential buildings. Delineated wetlands will have a 75-foot buffer unless specific documentation is provided indicating that the wetland protection requirements of NR 135.07 can be met with a reduced buffer. Access to the mine processing area and the active mining area will be by a paved driveway off of Concord Avenue, crossing the railroad track at the current entrance to the Eddie Gebhardt Cranberry Farm.

Sand processing will take place within an enclosed space, allowing for four-season processing. Hours of operation will be limited to between 6 a.m. and 2 a.m. the next day, Monday through Saturday a.m., and between 6 a.m. and 6 p.m. on Saturday. Site operation, except for equipment maintenance, will not be conducted on Saturdays after 6 p.m., Sundays, or legal holidays.

2.2 Groundwater Management

The regional water table aquifer is predicted to be present beneath the proposed mine site at depths ranging from approximately 15 to 30 feet.

Prior to the commencement of mining, baseline groundwater elevation and groundwater base flow will be collected from a network of groundwater monitoring wells installed by Summit at the mine site. Monitoring well locations will be selected by a professional hydrogeologist to

optimize the evaluation of up-gradient and down-gradient groundwater conditions. The monitoring wells will be instrumented with pressure transducers and telemetry to enable remote access to continuous, 15-minute data. Additional wells will be installed based on the actual gradients, flow direction, and groundwater velocities that are calculated using the continuous data stream.

A map depicting the mine site groundwater elevation data will be prepared, using the baseline hydrogeological data recorded from the monitoring well network. This map will be provided to the County prior to project commencement. A revision of the mine site groundwater elevation map will be made annually as mining progresses and as additional data are recorded; this map will be included in the annual site report.

Baseline samples from the monitoring wells will be collected and tested for pH, arsenic, turbidity, Total Suspended Solids, chlorides, nitrates, specific conductivity, acrylamide, and other toxic substances that may reasonably be believed to be present in the area or geological deposit, as directed by the Monroe County Land Conservation Department.

Groundwater samples from the monitoring wells will be collected and analyzed for the same list of parameters on a quarterly basis during the first two years of mine site operation, and twice a year in subsequent years. Analysis of the monitoring well samples shall be conducted at the expense of the Operator by an independent, licensed, third-party laboratory approved by the Monroe County Land Conservation Department. Results of the groundwater monitoring analysis will be included in the annual site report.

Owners of potable water wells within ¼ mile of the mine site boundary will be offered groundwater sample collection and analysis for the same list of parameters, as part of the baseline testing. Owners of potable wells included in the baseline sampling will be offered comparable testing on an annual basis. Testing of neighborhood wells will require approval of the property owners. Results of the groundwater monitoring analysis will be included in the annual site report.

2.3 Surface Water and Stormwater Management

Stormwater on the proposed project site is regulated by the WDNR and Monroe County. Mine operations shall be conducted in a manner that assures compliance with applicable water quality and stormwater management requirements. Erosion control and stormwater management will be implemented in accordance with the conditions of the State of Wisconsin *General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System WPDES Permit No. WI-B046515-6.* Specific erosion control devices utilized will be determined by referencing the Channel Erosion Control Matrix and Slope Erosion Matrix from the Wisconsin Department of Transportation Facilities Development Manual (Appendix 9, or current edition).

A site-specific Storm Water Pollution Prevention Plan (SWPPP) will be prepared to supplement this Reclamation Plan. The SWPPP and SWPPP Summary will be prepared and submitted for approval to the DNR as part of compliance with WPDES Permit No. WI-B046515-6. The SWPPP and SWPPP Summary will be provided to Monroe County prior to commencement of mine activities. The general approach to stormwater management is summarized in the text below.

Prior to clearing, construction, or mining within a drainage area, potential off-site receiving areas will be protected by the installation and construction of the appropriate erosion control BMPs and stormwater facilities. Erosion control BMPs and stormwater ponds will be installed per the guidelines provided in the current WDNR Conservation Practice Standards (Appendix 9).

2.3.1 General Stormwater Design Approach

It is the intent of the Operator and Site Manager to maximize infiltration and evaporation of stormwater on-site, and to use stormwater as part of the make-up processing water. Stormwater from areas of active mine operation will be internally drained on site. In addition to the internally-drained stormwater management system for the site, stormwater controls will be installed to prevent discharge of runoff to the waters of the state. Multiple, multi-stage stormwater treatment ponds will be located on site with the ability to control a 100-year, 24-hour rainfall event, keeping off-site discharges consistent with pre-mining conditions.

Stormwater ponds will be sited at lower elevations across the project and are not expected to penetrate the bedrock surface. Additionally, the ponds will be located a minimum of 500 feet from navigable waters.

2.3.2 Mining Site

The following WDNR Conservation Practice Standards will be followed in managing stormwater on the mine site (a copy of each can be found in Appendix 9, or current edition):

- Wet Detention Pond (1001)
- Infiltration Basin (1003) along with Site Evaluation for Stormwater Infiltration (1002)
- Vegetated Infiltration Swale (1005)
- Infiltration Trench (1007).

Stormwater facilities will be built in advance of site disturbance. Diversion channels will be utilized to route off-site stormwater runoff away from the mine and stormwater treatment where possible**.** Stormwater treatment facilities will be constructed at approximately the lowest part of each phase, enabling runoff to flow into the facilities either through natural methods or

via man-made swales that direct flow. Facilities will be sized based on the area of land disturbed, to accept and treat the runoff from the 100-year, 24-hour event.

Infiltration basins will be the primary treatment, with wet pond pre-treatment integrated into the stormwater management plan. The discharge from the wet ponds is proposed to be regulated through a two-stage outlet. In small events, a pipe will allow small flows to leave the pond, not cutting off flow to the receiving stream but slowing down and treating runoff for suspended solids. As events get larger, release rates will increase and a secondary weir will engage to allow flow to discharge to the infiltration basin.

Infiltration basins will also employ a staged outlet that slowly releases smaller storm events and gradually increases release rates through orifices, pipes, and weirs. The runoff for the 100-year, 24-hour event will pass safely through both the wet ponds and infiltration basins with freeboard. Automatic pressure transducers (instead of staff gauges) will be installed in stilling wells in the infiltration basin to collect continuous water level data. These data will be used to calculate infiltration rates within each infiltration basin. In the event that the expected rate of infiltration in any given basin decreases, the Site Manager will work with the County to implement changes to increase the infiltration rates to the original prescribed levels. This may include removal of sediment build-up in ponds, weirs, and piping. Records of measurements from the pressure transducers will be submitted to the County within the annual site report, or upon written request.

With a wet pond pretreatment and infiltration basin combination for stormwater management, runoff is slowed down and treated, infiltration is provided, and flow is not cut off to the tributary streams.

2.3.3 Processing Area

The processing and stockpile area will have a stormwater facility with infiltration as the primary treatment with wet pond pretreatment integrated into the SWPPP. The system will be designed to capture the runoff from the 100-year, 24-hour rainfall event, with wet pond(s) discharging through staged outlets to infiltration basins with another staged outlet. The wash plant will operate as a closed loop system; process water will not be discharged off-site.

2.3.4 Temporary Erosion Control Measures

Temporary erosion control measures employed at the site will follow current BMPs (WDNR Conservation Practice Standards are in parentheses; a copy of each is included in Appendix 9).

- Erosion bales and sediment logs will be placed as ditch checks in swales and ditches (Sediment Bale Barrier - 1055, Ditch Checks - 1062).
- Perimeter control and slope interruption products may be used to slow sediment-laden sheet runoff from small areas of disturbed soil (Interim Manufactured Perimeter Control and Slope Interruption Produces - 1071).
- Sediment traps and basins may be installed as necessary to intercept and retain sediment-laden runoff (Sediment Traps - 1063, Sediment Basins - 1064).
- Silt fence will be installed at the edges of berms and stockpiles and outside the active mine area, where it may not be protected by previously installed erosion control measures (Silt Fence - 1056).
- Seed and mulch will be applied on berms, permanent stockpiles, diversions, and channels located outside the active mine area, and on the mine area that is no longer active (Seeding - 1059, Mulching - 1058).
- Temporary erosion control seeding is discussed in Section 2.5.
- Final reclamation seeding is discussed in Section 3.4.
- Erosion mats will be placed in concentrated flow channels and on slopes greater than 4:1 (Channel Erosion Mat - 1053, Non-Channel Erosion Mat - 1052).
- Rock rip-rap will be placed where necessary as ditch checks, channel liners, and at inlet/outlet structures (Ditch Checks - 1062).

Erosion control BMPs will be inspected weekly and within 24 hours after rainfall events of one-half inch or greater during a 24-hour period until the drainage area has been either temporarily or permanently reclaimed. In the event of slope failures, failed seeding, or persistent erosion problems, additional BMPs will be assessed and applied where practicable. BMPs may include hydro seeding, silt fence, erosion control mats, turf reinforcement mats, water diversions, rock-lined chutes, slope breaks, soil stabilizers, and inlet protection.

2.4 Mineable Resource, Soil, and Overburden Management

A conceptual mine plan for the Valley Junction Mine is presented on Figure 10. The processing and stockpile areas of Phase 1 will remain throughout the mine lifetime; equipment will be removed and the acreage revegetated after active mining has ceased.

The total estimated tonnage for raw sandstone to be mined is approximately 29 million tons assuming an excavated depth of approximately 65 feet. The total overburden volume is estimated at 7.2 million cubic yards. Sandstone and overburden thicknesses were estimated using data from the lithologic logs (Appendix 4). The volume of material available for reclamation includes the stockpiled overburden and A and B horizons, plus non-marketable material from raw sand processing, and is estimated to be 13.1 million cubic yards.

Table 3 provides the estimated volumes for A and B horizons, sandstone overburden, mineable sandstone resource, and non-marketable material for each phase of mining. The Operator will decide the product specifications of mineable sandstone based on current market conditions (generally, U.S. Standard Sieve sizes 20 to 140). This decision may impact the volume and characteristics of the non-marketable material at any specific time during mining; for Table 3, twenty-five percent of the raw sandstone resource was projected to be non-marketable.

Table 3. Estimated Volumes by Phase

Phase	Acres	A and B Horizon (yd^3)	Overburden (yd^3)	Raw Sandstone (tons)	Non-Marketable Material (yd^3)	Reclamation Material (yd^3)
1	16.3	61,865	408,433	1,495,684	267,087	737,386
2	14.3	54,274	697,590	2,150,082	383,943	1,135,807
3	23.7	89,950	856,627	3,563,424	636,325	1,582,902
4	24.0	91,089	867,470	3,608,530	644,380	1,602,939
5	7.9	29,983	285,542	1,187,808	212,108	527,633
6	15.4	58,449	556,627	2,315,473	413,477	1,028,553
7	19.7	74,769	712,048	2,962,001	528,929	1,315,746
8	18.3	69,455	661,446	2,751,504	491,340	1,222,241
9	11.4	43,267	412,048	1,714,051	306,081	761,396
10	9.5	36,056	343,373	1,428,376	255,067	634,496
11	13.0	49,340	469,880	1,954,620	349,039	868,259
12	25.7	97,541	928,916	3,864,133	690,024	1,716,481
	199.2	756,039	7,200,000	28,995,688	5,177,801	13,133,840

Notes: 1) Conversion factor of 1.4 ton per cubic yard for sandstone; 2) Non-marketable material projected to be 25 percent of raw sandstone resource; 3) Reclamation material includes A and B horizons, overburden, and non-marketable material; 4) Phase 1 resource excavation completed at 10 feet above current water table aquifer in order to build processing area.

The life of the Valley Junction Mine is estimated to be 20 to 25 years, depending on market conditions. An approximate condensed timetable for mining operations appears in Table 4.

Table 4. Approximate Mine Timetable for Sandstone Excavation, Processing, and Reclamation

Year (approx.)	Begin Phase	Acres
2019	1	16.3
2020	2	14.3
2022	3	23.7
2025	4	24.0
2027	5	7.9
2028	6	15.4
2030	7	19.7
2032	8	18.3
2034	9	11.4
2035	10	9.5
2036	11	13.0
2037	12	25.7
2039	Estimated mine completion	

Notes:

- Table 4 assumes continuous mining and processing at approximately 1.5 million tons of raw sandstone resource per year.
- The processing, stockpile, and transload area will remain throughout the mine lifetime. Reclamation on Phase 2 will begin as soon as Phase 2 mining is complete, and will continue contemporaneously throughout the life of the mine. The maximum unreclaimed area at any one time during the estimated 20-year life of the mine would be: the area of the active phase, plus the area of interior shoreline from previous phases, plus the processing area.

Initial activity on the site (after installation of erosion prevention and pollution stormwater protection BMPs) will be construction of the access driveway to Phase 1. The processing area will be prepared by grading top soil into separate A- and B-horizon berms, stabilized by seeding and mulching. The overburden in Phase 1 will be temporarily stockpiled while the sandstone resource in Phase 1 is excavated to 10 feet above the current water table aquifer as measured by the on-site groundwater monitoring wells. The sandstone resource from Phase 1 will be temporarily stockpiled until the Phase 1 overburden is replaced and the processing area is constructed, consisting of wet and dry processing plants, sand storage area, transload rail spur, scale, and stormwater and settling ponds. A conceptual layout of the processing area is depicted

on Figure 11. Wet processing equipment may include conveyors, screeners, crushers, a hydrosizer, a water tank, a clarifier tank, a makeup water pond, and belt or plate presses.

Stormwater ponds and detention areas capable of managing a 100-year, 24-hour precipitation event will be constructed. The wet and dry processing facilities, sand stockpiles, and the water tank will be constructed on concrete slab. The remainder of the processing area will be surfaced with crushed aggregate (likely Prairie du Chien dolomite).

Excavation of Phase 2 will begin once stormwater BMPs are installed and material storage areas are constructed. Mining, processing, and contemporaneous reclamation is proposed to begin in Phase 2 and continue sequentially through the phases as numbered. A conveyor system or haul trucks will be used to move excavated material from the mine face to the wet processing plant. Sand will be screened to remove over-size material, which will be sent to a crusher and rescreened. Non-marketable material will be returned to the site, stored, and utilized in the reclamation process of that phase. Screened/crushed sand will be loaded into the hydrosizer via conveyor. Water from a storage pond will be pumped through the hydrosizer to sort the sand into various products. Sand at the desired size range will emerge from the hydrosizer and be moved via conveyor to the propane or natural gas-powered dry processing area. Non-marketable materials that have been wet-treated in the processing operations will be stockpiled for reuse as reclamation material as needed. No off-site wastes will be received at this facility.

Excavation is proposed to consist of eleven phases, ranging from approximately 8 to 24 acres. Contemporaneous reclamation of the mined areas will take place by mining to the proposed final lake contours. Reclamation and revegetation into wetland along the lake shore will begin once mining activities are complete in each phase.

Prior to beginning each phase, the timber (if present) on that area will be harvested. The slash material from timber harvest will be placed in composting windrows on site. Tree stumps will be ground and added to the composting material. This compost will be used as a soil supplement during the reclamation process.

A and B horizon soils and excavated overburden from Phase 2 will be used to create berms around the wet and dry processing plant and sand storage areas. Berms will be constructed with a 3:1 exterior slope. To the extent practicable, the A and B soil horizons will be isolated during the stripping operation and placed in separate berms. The berms will be labeled and stabilized with a protective starter vegetative cover. These berms will serve as both site screening and material storage for final reclamation.

Excavation of the raw sand resource in Phase 2 will proceed with conventional excavation equipment, until a depth of 10 feet above the current ground water level. A and B horizon soils from Phase 2 (and overburden, if any) will be excavated and temporarily stockpiled (isolated and

labeled by horizon, to the extent practicable) while the raw sand resource is excavated. Conventional excavation and/or clam shell excavator equipment will be used for mining below the water table until the pond created is deep enough to float a mining dredge. Raw, unprocessed sand will initially be moved by haul truck or conveyor system to the wet processing facility.

Reclamation of Phase 2 will begin once the final mining elevation has been reached. At this time, the shoreline (exterior edge of mining area) will be contoured with land-based excavator equipment. The overburden from Phase 2 plus non-marketable resource material will be used as fill material to establish the necessary grades of the Phase 2 reclaimed surface. The shoreline will be contoured at a 1:10 slope to a depth of approximately 5 feet from the water surface (creating a 50-foot wide shelf) and to 50 feet above the water surface. The A and B horizon soil horizons stripped in the beginning of Phase 3 will then be disked and raked onto the shoreline of Phase 2, with the A horizon soil returned to the uppermost position.

Mining and contemporaneous reclamation will continue in this sequence throughout the remaining phases: overburden material from each phase will be used with the non-marketable materials to create the reclaimed surface of that phase, and temporarily-stockpiled A and B horizon soils from the following phase phase will be layered by soil horizon onto the reclaimed shoreline surface.

Phase 5 will not become part of the lake area, but will be reclaimed to Emergent Wetland with 3:1 maximum exterior slopes. It is calculated that Phase 3 will have excess volume of A and B horizon soils from reclaiming its relatively short shoreline (less than 1,000 linear feet versus an area of 23.8 acres); the excess A and B horizons which will be stockpiled in vegetated berms to be used to raise the reclaimed elevation of Phase 5.

Phases 10, 11, and 12 will also be reclaimed to Emergent Wetland rather than open water; the longer exterior boundaries versus area of the phases will provide reclamation resource for the maximum 3:1 slopes along property boundaries. At the end of mine excavation, the wet and dry processing facilities, along with stormwater and makeup water ponds, will be removed. The high-capacity well will be returned to cranberry production.

2.5 Temporary Erosion Control Vegetation Plan

A temporary stabilization seed mix will be used to provide erosion and invasive species control where disturbed areas require vegetation and are not at final reclamation grade. Hay/straw mulch may be applied using a conventional blower and then seeded with a quick-cover annual wetland species, such as *Bidens cernua* (Nodding Bur-Marigold) or *Bidens Frondosa* (Common Beggar-Tick). Seeding for each disturbed area will be performed using drill seeding or hand spreading and will follow procedures described in Section 630 of the *Wisconsin Department of*

Transportation Standard Specification for Highway and Structure Construction (2018 Edition WisDOT Standard Specifications, Appendix 11, or current edition). The seed will be spread at a rate consistent with the manufacturer's recommendations. Areas will be mulched following procedures described in Section 627 of the WisDOT Standard Specifications (Appendix 11).

2.6 Proposed Elevations

The excavation of each mining phase will be completed to the limits of the dredge at the time of mining. Excavation within the littoral zone of the proposed lake will be shallower and contingent on reclamation material to achieve the 1:10 slope. The site will consist of an open water lake with a shallow vegetated littoral zone, surrounded by Emergent Wetlands. Mine boundaries will have a maximum final grade of 3:1.

2.7 Methods of Resource Removal

Mining will be accomplished to the extent practicable using earthmoving equipment such as skid steers, excavators, dozers, backhoes, vacuum and/or bucket dredges, front-end loaders, conveyors, and trucks. Machinery will utilize white noise back-up alarms. In general, conventional excavation will be used to facilitate the extraction of the sandstone and blasting is not currently anticipated; however, blasting may be necessary if tightly cemented sandstone deposits are encountered. Blasting, if required, will be completed in compliance with Federal, State, and local laws and ordinances. Blasting will be limited to between the hours of 10:00 a.m. and 2:00 p.m. and notice will be given to residents within half a mile of the mine site, a minimum of 48 hours prior to blasting.

Dust control will be implemented consistent with NR 415.075. Fugitive dust emissions will be limited by the moist condition of the excavated resource, lack of dry processing plant, enclosed processing operation, covered gravity-chute loading for rail cars, vegetated berms, and covered rail cars.

The Operator will install two moveable/mobile air quality monitors with removable filters "upwind" and "downwind" in order to determine the air quality as it moves on and off the site. The mine Operator shall work with Monroe County in placement of the monitors. At the direction of the Monroe County Land Conservation Department, the filters will be periodically sent to an independent, licensed laboratory to be analyzed, with costs paid by the Operator. Operator will submit copies of Construction and/or Operation Air Quality Permits required by the WDNR to Monroe County. Valley Junction Mine will not exceed the current National Ambient Air Quality Standards for $PM_{2.5}$ and PM_{10}.

2.8 Site Safety

Measures that address public safety on and off site, such as warning signs and fencing will be implemented per United States Department of Labor Mine Safety and Health Administration (MSHA). The property lines of the site will be clearly identified, fenced, and posted with warning signs at 50-foot intervals. The entrance will be posted and locked.

The Valley Junction Mine site will not pose any unusual safety concerns once it has been graded to final reclamation grades. The 10:1 slope for 50 feet above and below the lake surface level will provide a sufficient buffer zone before deeper water is reached. Unauthorized access will be prevented as it would for other private property.

2.9 Provision for Intermittent Mining

Intermittent mining may be conducted on the project site. In the event of intermittent cessation of mining operations, the Operator and Site Manager will implement provisions to monitor and manage open mining and processing areas using the BMPs applied during regular mine operation. Provisions will include maintenance of a reclamation financial insurance, stormwater facilities and systems, erosion controls, stockpiles, and monitoring of open mining areas. If a system failure occurs during an intermittent mining period, (e.g., structural failure of stormwater ponds or major erosion control failure with sediment deposition off site or into surface waters), the County will be notified within 24 hours of the observed failure.

2.9.1 Financial Assurance

The Operator will maintain financial assurance during any period of intermittent mining for all disturbed areas of the mine site that have not been reclaimed to their final land use.

2.9.2 Stormwater Management

Wet ponds and infiltration basins will be visually inspected monthly, and within 24 hours of precipitation events that produce one-half inch of rain or more during a 24-hour period, to ensure that basin volumes supply adequate storage for stormwater runoff. Water level data will be continuously recorded using pressure transducers installed in the infiltration basins, allowing for real-time calculation of infiltration rates. If the calculated infiltration rate in any given basin decreases, the Operator and Site Manager will work with the County to implement changes to increase infiltrations rates to the original prescribed levels.

Pipes, weirs, channel inlets, skimmer grates, and spillways will be inspected to ensure that they are free from blockage. Sediment will be removed from these areas as necessary.

Wet pond water quality inspections will be completed quarterly, using WDNR Quarterly Visual Inspection- Field Sheet Form 3400-176A (Appendix 10, or current edition). Diversion channels, man-made swales, and culverts will also be inspected quarterly to ensure they are free from blockage and/or adequately vegetated to control on-site water flow. Records of inspections and measurements from pressure transducers will be submitted to the County within the annual site report or upon written request.

2.9.3 Erosion Control

Erosion control BMPs will be inspected quarterly and within 24 hours of precipitation events that produce one-half inch of rain or more during a 24-hour period. Required maintenance on observed erosion controls (re-application, refinement, and/or replacement) will be implemented within two weeks of observation. Disturbed areas requiring vegetation maintenance will be stabilized in accordance with Section 2.5. Observations documented during inspections will be recorded and submitted to the County within the annual site report or upon written request.

Inspections will include observations of the following erosion controls:

- Erosion bales in swales and ditches;
- Silt fencing installed at the edges of berms, stockpiles, and outside of the active mine area;
- Seed and mulch applied on berms, stockpiles, diversion channels, and disturbed and inactive areas of the mine;
- Erosion matting on slopes and other concentrated flow areas; and
- Rock rip-rap used as ditch checks, channel liners, and at inlet/outlet structures.

2.9.4 Stockpiles and Berms

Mining and reclamation will be conducted contemporaneously, minimizing the stockpiling of sand on site. Temporary stockpiles on site will be processed and stored during intermittent mining periods. Raw product stockpiles will be processed and stored or re-shaped and re-positioned in a manner that will minimize potential runoff. Stockpiles and berms remaining on site during inactive mining periods will be inspected quarterly and within 24 hours of precipitation events that produce one-half inch of rain or more during a 24-hour period, to ensure mulched and/or vegetated areas meet the requirements of Section 627 of the WisDOT Standard Specifications (Appendix 11). Observations documented during inspection will be recorded and submitted to the County within the annual site report, or upon written request.

3.0 Post-Mining Land Use

The final site reclamation land use will be Emergent Wetland, a shallow vegetated littoral zone, and open water lake. Conceptual reclamation areas are shown on Figure 12. Site revegetation will also allow the transition of newly planted areas into the wetland buffers to increase the overall size of wetland habitat on the project site.

The *Monroe County Comprehensive Plan 2014* projects the Future Land Use of mine property parcels in La Grange Township as Rural Preservation, with a maximum of one new dwelling unit per 35 acres. Lincoln Township is currently unzoned with reference to Future Land Use. Mine property parcels in both townships are indicated as Eligible Farmland Preservation Parcels in Monroe County Farmland Preservation Plan 2014. The majority of the excavation area exhibits deep, sandy soils with very little loam; fourteen acres (7 percent) of the excavation area exhibits soils that could provide for prime farmland (See Section 1.7).

In addition to being adjacent to a large area of wetlands to the west, the site exhibits several conditions that indicate wetland as the appropriate reclamation land use: the water table is close to the ground surface, allowing necessary hydrology; the site does not receive stormwater inputs from off-site; the site is isolated from traffic and development; restoring the hydrology will not affect neighboring properties; and the site is upstream from invasive species stands.

Site reclamation and revegetation will follow an adaptive management process throughout the life of the mine and reclamation program. Adaptive management involves the continuous refinement of the reclamation process in order to achieve success against the performance criteria. This allows Valley Sand the option to take advantage of the latest scientific and technological techniques for accomplishing successful reclamation.

3.1 Site Stability

Site stability will be safeguarded through successful revegetation of reclaimed land. Stockpiles of suitable reclamation soils, including A horizon, B horizon, overburden, and clean processing materials, will be maintained in clearly marked segregated piles on stable ground clear of drainageways and depressions. Stockpiles will be treated as necessary to prevent the establishment of weeds and may be temporarily stabilized by seeding with native prairie seeds and an innocuous cover crop, such as annual rye.

Compacted soils with high bulk density can impair wetland plant root growth and soil microbial processes. Measures will be taken to minimize soil compaction, such use of prescribed paths by heavy machinery, swamp mats, and rehabilitation of compacted areas.

Emergent Wetland seed mix planting (as outlined in Section 3.2-3.4) will be completed on graded and tilled areas within 72 hours of A and B horizon soil reapplication as practicable, prior to the next growing season. If necessary, a cover crop of *Bidens cernua* (Nodding Bur-Marigold) or *Bidens Frondosa* (Common Beggar-Tick) may be planted to protect bare ground and discourage invasive species before the wetland seed mix is established.

Mulch may be applied to all seeded areas in accordance with WisDOT Standards (Appendix 11). Stabilization treatments requiring ongoing maintenance (e.g., silt fence) will not be used during final reclamation activities.

At a minimum, inspections will take place within 24 hours after every precipitation event that produces one-half inch of rain or more during a 24-hour period. Until vegetation is densely established, the stabilization treatments will be inspected weekly during the growing season. In the event of slope failures, failed seeding, or persistent erosion problems, additional BMPs will be assessed and applied. Mitigation of erosion damage, dependent on its severity, may include tillage operations, re-grading, placement of additional soil and re-seeding, or anchored straw bales.

3.2 Site Revegetation

The objective of site revegetation will be to reclaim disturbed acreage to a post-mining land use of Emergent Wetland, a shallow vegetated littoral zone, and open water lake. The shoreline of the lake will be contoured at a 1:10 slope to a depth of approximately 5 feet from the water surface (creating a 50-foot wide shelf) and to 50 feet above the water surface. The A and B horizon soil stockpiles will then be disked and raked onto the shoreline with the A horizon soil returned to the uppermost position. Preserving the integrity of the A and B horizon soils on the site will be a priority, since this has a strong impact on wetland revegetation success.

Mulching, seeding, and the establishment of permanent vegetation will be done in accordance with NRCS Codes 342 (Critical Area Planting), 658 (Wetland Creation), and 659 (Wetland Enhancement) [Appendix 11]. See Section 3.5 for criteria to be used to analyze successful reclamation.

No-till planting will be used to seed the reclaimed area above the water line with an Emergent Wetland Seed mix consistent with a locally-specified composition for shoreline restoration, such as detailed in Table 5.

Table 5. Conceptual Emergent Wetland Seed Mix

	Common Name	Scientific Name	Approx. Seeding Rate in pounds/acre PLS
Grasses	American Sloughgrass	*Bechmannia syzigachne*	0.72
	American Manna Grass	*Glyceria grandis*	0.27
Sedges & Rushes	Bottlebrush Sedge	*Carex comosa*	0.18
	Lake Sedge	*Carex lacustris*	0.06
	Tussock Sedge	*Carex stricta*	0.20
	Spike Rush	*Eleocharis acicularis*	0.12
	Great Spike Rush	*Eleocharis palustris*	0.12
	Torrey's Rush	*Juncus torreyi*	0.04
	Three Square Rush	*Scirpus americanus*	0.24
	Woolgrass	*Scirpus cyperinus*	0.05
	River Bulrush	*Scirpus fluviatilis*	0.80
	Softstem Bulrush	*Scirpus Validus*	0.46
Forbs	Sweet Flag	*Acorus americanus*	0.20
	Northern Water Plantain	*Alisma triviale*	0.40
	Swamp Milkweed	*Asclepias incarnate*	0.30
	Common Arrowhead	*Sagittaria latifolia*	0.32
	Giant Bur Reed	*Sparganium eurycarpus*	0.50
Total to equal 5 pounds per acre, equivalent to 110 seeds per square foot			

PLS: Pure Live Seed

The native wetland species will benefit from the effect of the Tussock Sedge (*Carex stricta*) in creating a matrix that will improve stabilization, weed competition, and root structure soil profile.

Baseline requirements for wetland restoration include:

1. The seed mix shall contain a minimum of 15 species, including 4 native wetland forbs and 8 native wetland sedges.
2. The seed mix shall consist of at least 40% sedges by weight, with a maximum of 25% grasses by weight.
3. All seed shall be provided on a Pure Live Seed (PLS) basis.
4. Wetland seed mixes will be selected to match the soil conditions on the site to be planted.
5. Wetland shall be seeded using seeders designed for handling wetland seeds and planting them evenly and efficiently.

6. All wetland seed shall be from genetic stock originating in Wisconsin or Minnesota to ensure adaptability to the local climatic conditions.
7. Wetland seeding shall take place between February 15 and June 15 or between September 15 and December 15. A temporary stabilization seed mix (per Section 2.5) may be used as a cover crop if a mine phase reaches reclamation grade before or after the wetland seeding dates.

In addition to the seeding above the waterline, revegetation will include live siltation construction and reed clump installation in the first 20 linear feet of water from the average lake shoreline. Planting for live siltation and reed clump installation will follow the NRCS specifications concerning shoreline protection, using native species in recommended spacing and alignment (See Appendix 12).

3.3 Vegetative Management Plan

Vegetation management (invasive species removal) must be performed on a regular schedule for the first five years to assure vegetative reclamation. Records of management activities will be documented by the Operator and will be submitted to Monroe County in the annual site report, or upon written request.

Years 1 and 2 after wetland seeding:

Conduct invasive species survey/removal twice per year, in mid-summer and in early fall.

Invasive species may include, but not be limited to:

Giant Reed (*Arundo donax)*
Canada Thistle (*Cirsium arvense)*
Purple Loosestrife *(Lythrum salicaria)*
Reed Canarygrass (*Phalaris arundinacea*)
Common Reed (*Phragmites australis*)
Narrow-leaved Cattail (*Typha angustifolia*)
Hybrid Cattail (*Typha x glauca*)

Invasive species removal may be accomplished through hand-pulling of all above- and below-ground stems, roots, and flower masses prior to seed development.

Years 3-5 after wetland seeding:

Conduct invasive species removal once per summer, in early summer (prior to seed development). Additional management shall be at the discretion of the County to ensure continued success of the wetland restoration.

3.4 Monitoring Requirements and Success Criteria

Annual vegetative monitoring will begin in the first year after substantial completion of the reclamation activities in each designated phase and will continue for five years. Monitoring requires the measurement of specific ecological indicators of plant community recovery, in order to check the response of revegetated plant communities. Records of monitoring activities and results will be documented by the Operator and will be submitted to Monroe County in the annual site report, or upon written request.

All vegetation monitoring and data analysis shall be done by independent firms not associated with the mining company. Individuals performing the wetland sampling shall be experienced wetland ecologists who can identify wetland species vegetatively as seedling and small plants. Monroe County shall have the right to review all field data collected by the vendor and review it for consistency and accuracy to the degree possible.

Vegetation sampling transects for collection of monitoring data will be field located. The transect end points will be surveyed by GPS and permanently marked with ground flush steel rebar rod.

Two sampling techniques will be used for the Emergent Wetland acreage during the monitoring period of five years.

First two growing seasons: Sampling will measure Presence (the occurrence of a given species within a defined area) using a transect grid to record all species, both wetland and non-wetland, using a 1/10 square meter quadrat. A quadrat is a square box or circular hoop that can be laid above or around the vegetation to be measured.

This sampling will be used to determine the early success of germination and seedling survival. If the results of the early vegetation sampling indicate poor germination, re-seeding will be done either at the fall of the first growing season or in the spring or fall of the second growing season.

Third through fifth growing seasons: Sampling will measure the Estimated Cover (proportion of ground covered by an individual species as a percentage of the total area) by the transect point method. A measuring tape will be strung along the transect and records will be made of species occurring at defined intervals along the tape. All species encountered at that exact

point along the transect shall be documented. Multiple species may be present due to overlapping leaves at the same point.

The following criteria will be used to evaluate the success of the Emergent Wetland cover type:

First and Second Growing Seasons

1. The number of quadrats to be sampled shall be 50 per each ten acres of wetland seeding.
2. At least 75% of all quadrats must have at least one wetland species present in the first growing season; 85% of all quadrats must have at least one wetland species present in the second growing season.
3. At least 60% of all individual wetland species in the wetland seed mix must be detected during sampling in the first growing season; 75% of all individual wetland species in the wetland seed mix must be detected in the second growing season.
4. Perennial weed species must outnumber perennial wetland species by at least a three-to-one ratio, calculated by adding up the total occurrences of all wetland species and comparing it to the total occurrences of all perennial weed species.

If the above criteria are not met in the first and second growing seasons, the County will work with the Operator to take the appropriate action to over-seed or re-seed the planting. Over-seeding will be the preferred action if seeding density is below standards, but weeds are not dominant. Re-seeding after killing all vegetation (by mechanical methods) on the subject area shall be the preferred action if perennial weeds are dominant and are deemed to be sufficiently established as to compromise the potential for a successful wetland restoration.

Third through Fifth Growing Seasons

1. Using the transect point Estimated Cover method, a total of 50 transect points shall be sampled each year per each ten acres of wetland seeding in the third, fourth, and fifth growing seasons.
2. At least 50% cover of wetland species shall be present in the third growing season.
3. At least 60% cover of wetland species shall be present by the fourth growing season.
4. At least 70% cover of wetland species shall be present by the fifth growing season.
5. The combined maximum areal coverage of invasive species in the revegetated areas shall be no more than 20%.

In the fifth year, if the above criteria have been met, the wetland planting shall be considered successful, and shall be accepted by the County as complete.

3.5 Contingency Plans

The Operator will prepare a contingency plan for areas in final land use that are in substantial non-compliance with the performance criteria established for the land cover type. Substantial non-compliance is defined to occur when the measured performance of the monitored variable for which quantitative performance criteria have been established are not being met or anticipated to be met for Section 3.4 of this Reclamation Plan. Contingency plans will be delivered to Monroe County after poor and non-performance areas are acknowledged during annual monitoring reviews and a non-performances trend is shown in the monitoring data. Additional monitoring and reporting will be provided to document the resolution of vegetation or soil management non-performance.

3.6 Landscape Restoration Costs

Landscape restoration costs and overall maximum reclamation estimates are summarized in Table 6. The largest potential area that could be unreclaimed on the Valley Junction Mine site at one time would be when Phase 4 is in process: the interior shoreline of Phases 2 and 3 would need to be reclaimed, in addition to the shoreline of Phase 4.

Landscape restoration for the approximately 6.4 acres of this area—including earthwork and grading, soil preparation, mulch, seed mix, no-till drill seeding, littoral zone planting, erosion control, invasive species control, and monitoring—is estimated to total $2,764,540. Note that earthwork and grading account for over 95 percent of the estimated costs. Additional reclamation costs, including the removal of processing buildings and stormwater pond reclamation, are estimated to be $211,000. The total maximum financial assurance for the Valley Junction Mine site is estimated to be $2,975,540.

These estimates are based on current material costs and are to be used only as a general guideline for determining reclamation financial assurance. Accurate assessment of the necessary financial assurance will need to be done annually as mine activity proceeds, and will depend on mine progress, potential updated reclamation requirements, and market costs for materials and labor.

Table 6. Proposed Reclamation Financial Assurance*

Reclamation Item	Item Description	Item Unit Cost	Units	Number of Units	Reclamation Cost ($)
Earthwork Grading to 10:1 slope along 4,000 feet of shoreline	A and B horizons Phase 1 (stockpiled) and Phase 4	$2.10	cubic yard	1,285,000	2,698,500
Revegetation Wetland seeding of 4.6 acres 4,000-foot shoreline x 50 feet Littoral zone planting of 1.8 acres 4,000-foot shoreline x 20 feet	Revegetation (soil prep and discing)	$600	acre	6.4	3,840
	Weed-free mulch, approx. 5 tons/acre	$150	ton	6.4	4,800
	Wetland Seed Mix (5 lb./acre)	$1,200	acre	4.6	5,520
	No-till drill seeding	$300	acre	4.6	1,380
	Live siltation construction/reed clump installation (including plants)	$25,000	acre	1.8	45,000
	Invasive species removal	$500	acre	6.4	3,200
	Vegetation Monitoring	$300	acre	4.6	1380
Removal of Processing Plants and Equipment		$100,000	each	2	200,000
Stormwater Ponds	Removal	$5,500	each	2	11,000
Erosion Control Materials	Silt fencing, sediment bale barriers	$200	acre	4.6	920
				Total Estimated Financial Assurance:	**$2,975,540**

*Estimated financial assurance based on largest potential area needing reclamation, which would be during Phase 4.

An annual reclamation report and activities plan will be prepared and submitted 90 days from end of year. The report will be developed to meet the requirements of NR 135.36 and will include information to document:

- The extent of current mine development.
- The existing groundwater elevations, as recorded quarterly at the groundwater monitoring wells.
- An updated mine site groundwater elevation map.
- The results of the following items, as completed during the reporting period:
    - Groundwater and stormwater monitoring analysis
    - Reclamation and stormwater site inspections period (including intermittent mining periods)
    - Vegetation management and monitoring activities
- The reclamation and stormwater management activities planned during the next calendar year.
- Reevaluation of financial assurance based on the past year's operation.

This report and activity plan will be used by the Mine Operator and regulatory authorities to: systematically record, plan, and schedule construction activities that will be used to meet reclamation performance standards; schedule operational inspections and maintenance activities; and systematically document for the public site conditions and current compliance with permit conditions.

These proposed final post mine land uses comply with applicable current federal, state and local laws.

4.0 References

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Wisconsin Geological and Natural History Survey, West Central Sheet, 1988.

5.0 Certification of Reclamation Plan

The owner hereby certifies that reclamation will be carried out in accordance with the reclamation plan and that the post mining land use complies with federal, state, and local laws in effect at the time of the submittal.

x Richard George October 9, 2018

Richard George
Agent for Site Owners/Operator

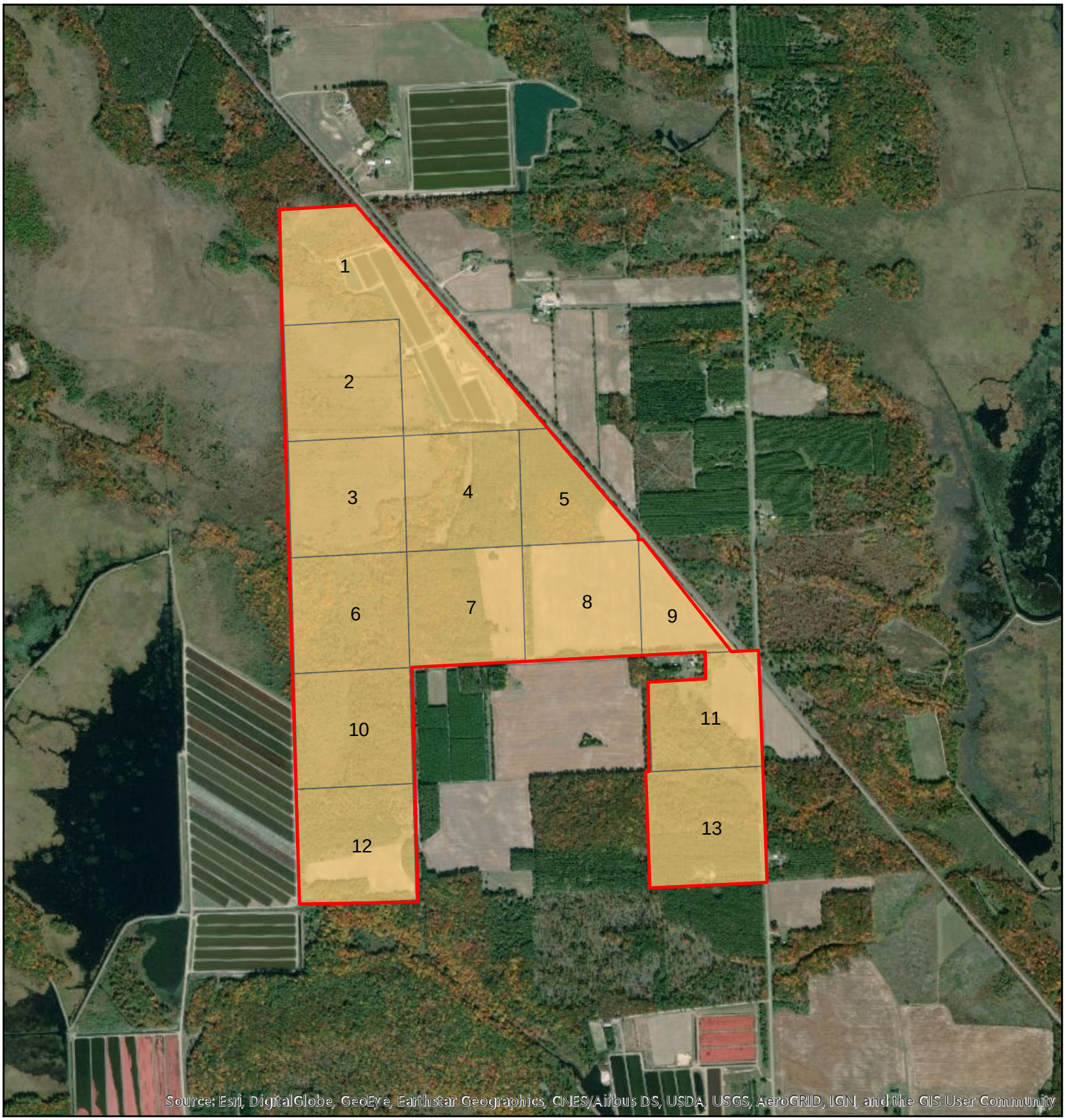
SITE LOCATION

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

FIGURE 1

File: 20180912_figures
Summit Project No.: 2313-0001
Plot Date: 9/12/2018
Arc Operator: JED
Reviewed by: NRTB



Legend

Approximate Site Boundary

Mining Parcel

Note: See Table 1 for parcel information

N
W E
S

0 1,000 2,000 Feet

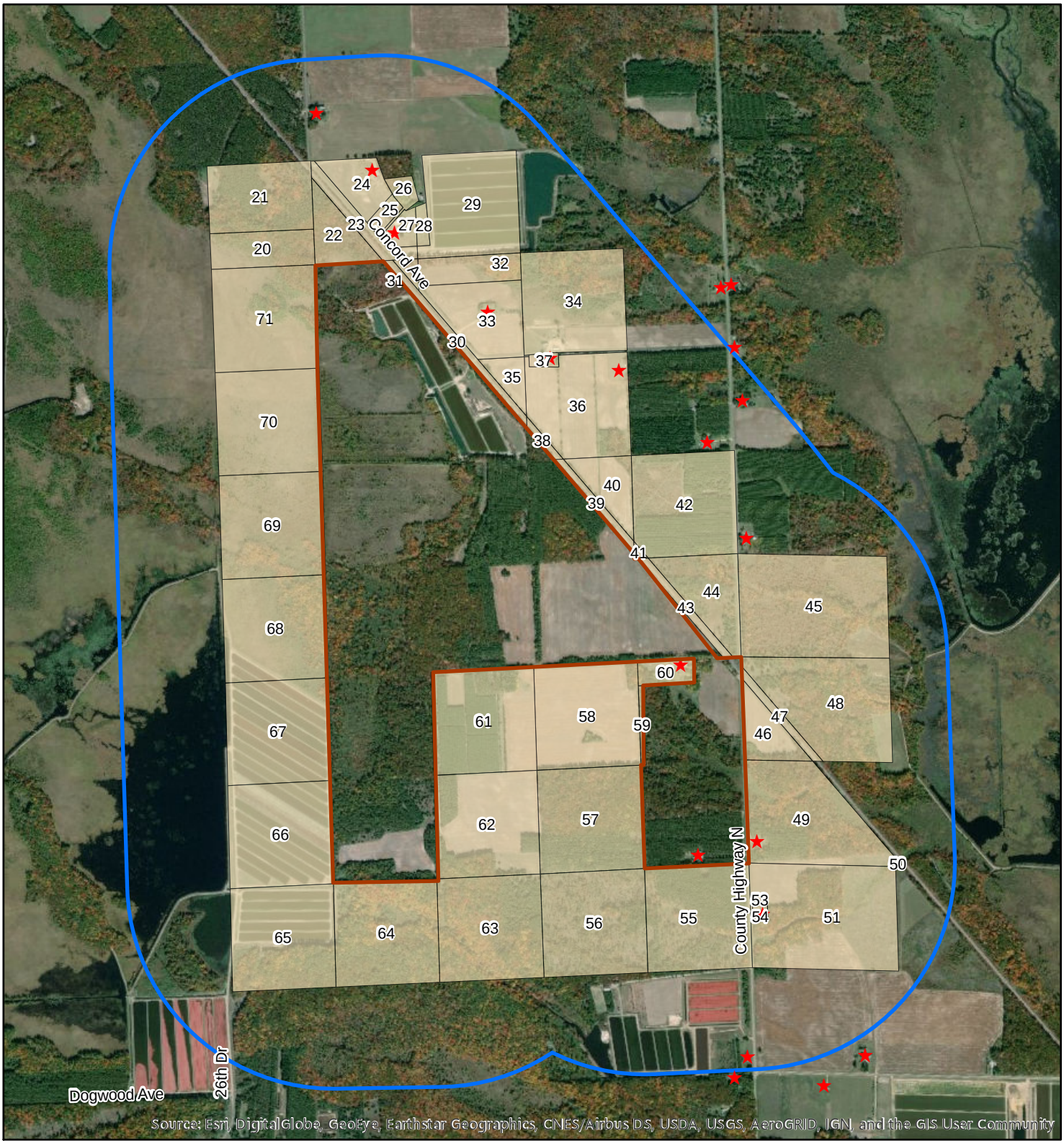
MINE SITE PROPERTIES

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

FIGURE 2

File: 20180912_figures
Summit Project No.: 2313-0001
Plot Date: 9/12/2018
Arc Operator: JED
Reviewed by: NRTB



Legend

- Property
- Residence/Well
- Half-Mile Buffer
- Adjacent Parcel

N
W E
S

Note: See Appendix 3 for parcel information

0 1,000 2,000 Feet

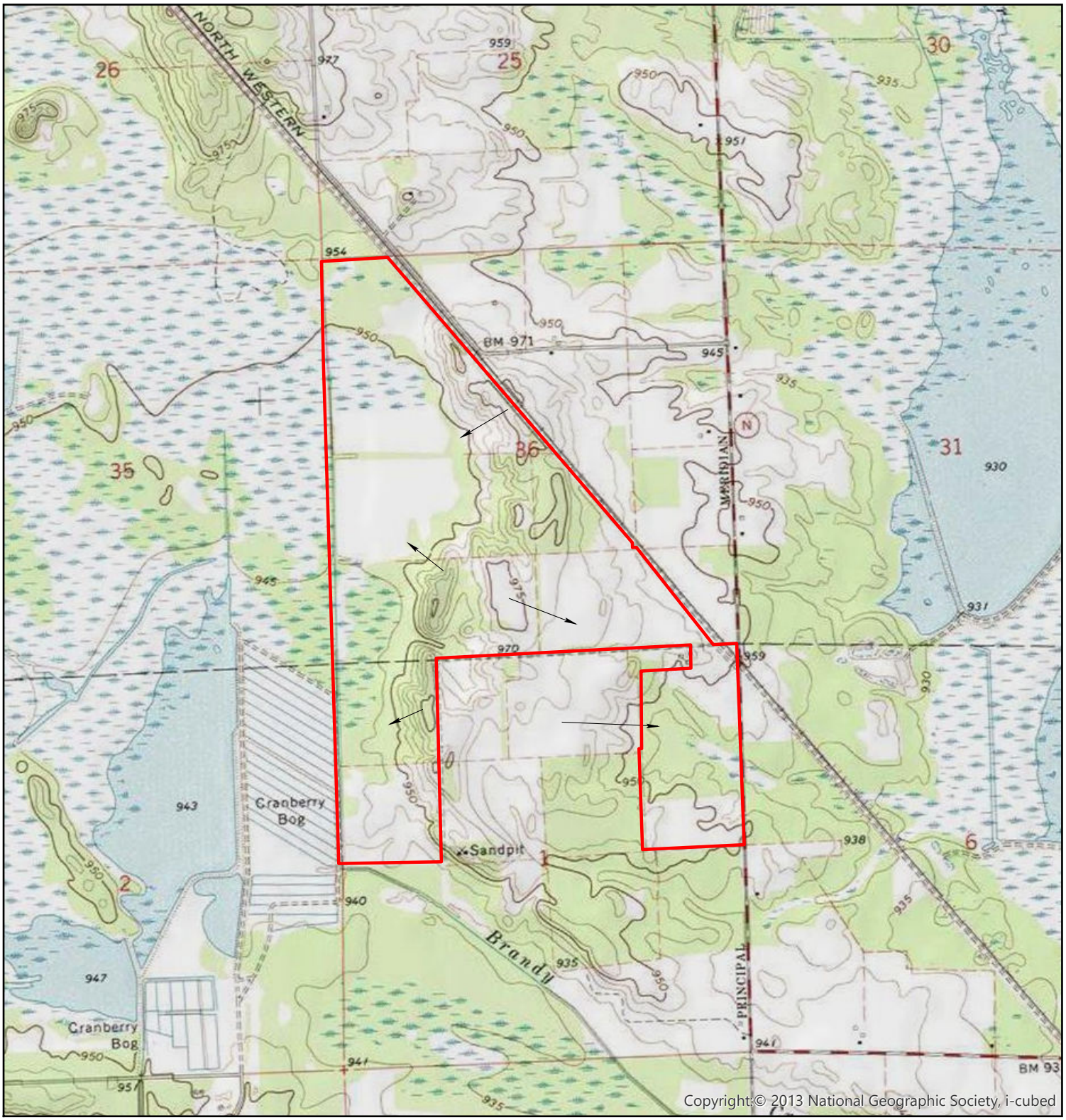
ADJACENT PROPERTIES, RESIDENCES & WELLS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 3

file: 20180912_figures
project no.: 2113-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Legend

Approximate Site Boundary

Drainage

N W E S

0 1,000 2,000 Feet

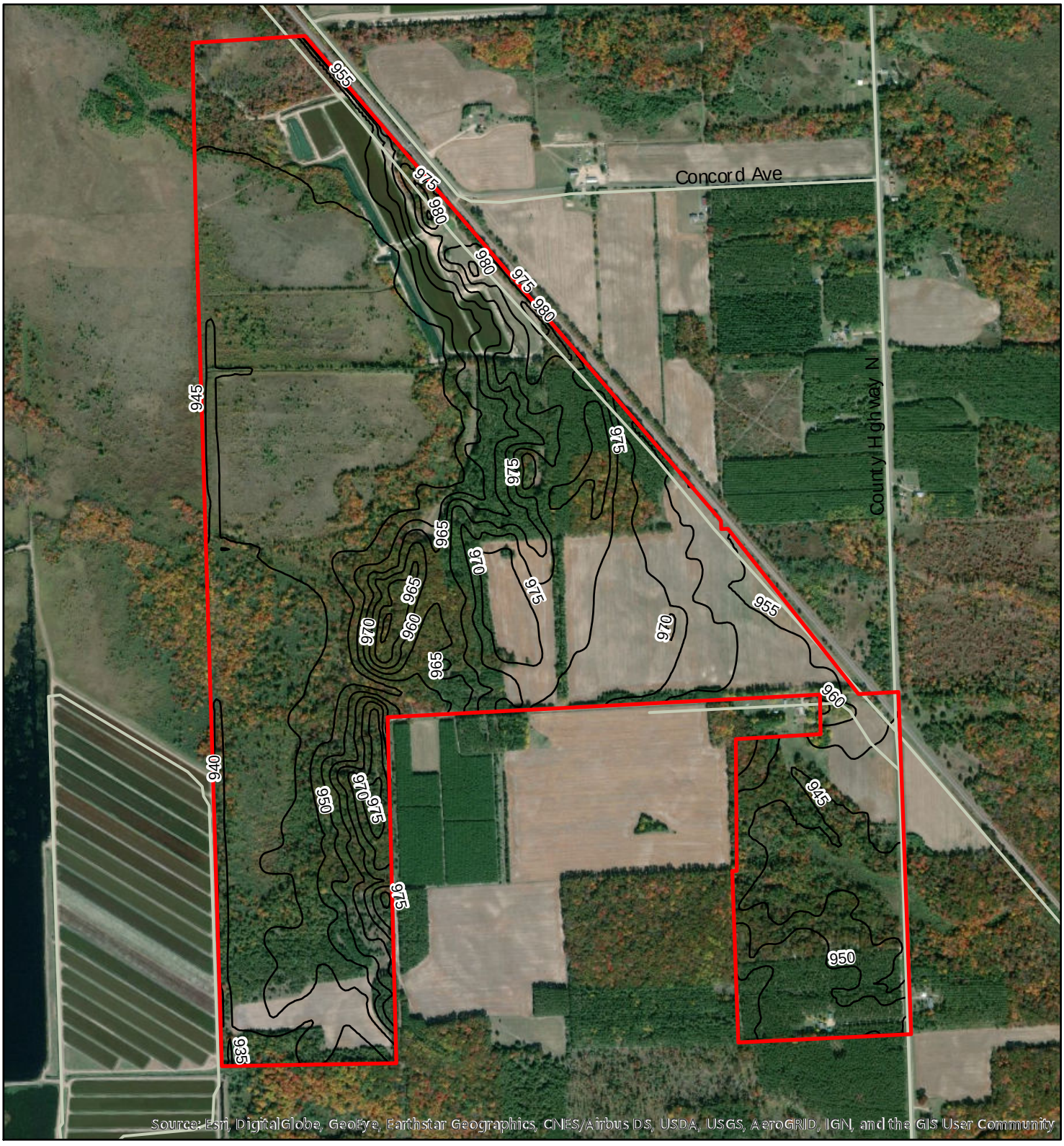
TOPOGRAPHY AND DRAINAGE

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

FIGURE 4

File: 20180912_figures
Summit Project No.: 2313-0001
Plot Date: 9/12/2018
Arc Operator: JED
Reviewed by: NRTB



Legend

Property

5-Foot Contour

N

W E

S

0 1,000 2,000 Feet

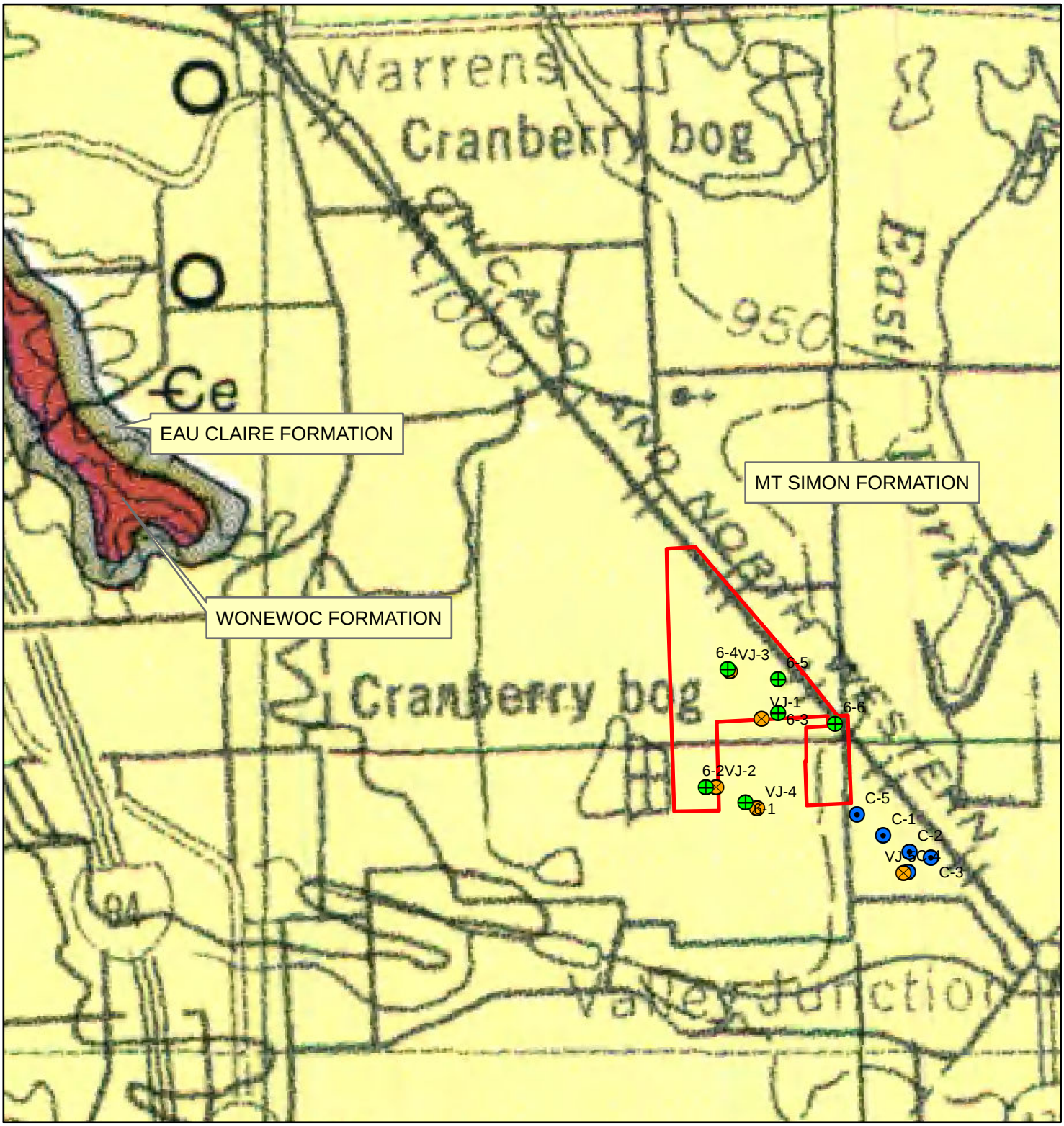
EXISTING 5-FOOT CONTOURS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 5

file: 20180912
project no.: 2313-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Map adapted from Bedrock Geology of Wisconsin - West Central Sheet, B. A. Brown 1988.

Legend

- Approximate Site Boundary
- 6 Star Boring
- Geoprobe Boring
- Christensen Boring

N W E S

Note: See Appendix 4 for lithologic logs

0 0.5 1 Miles

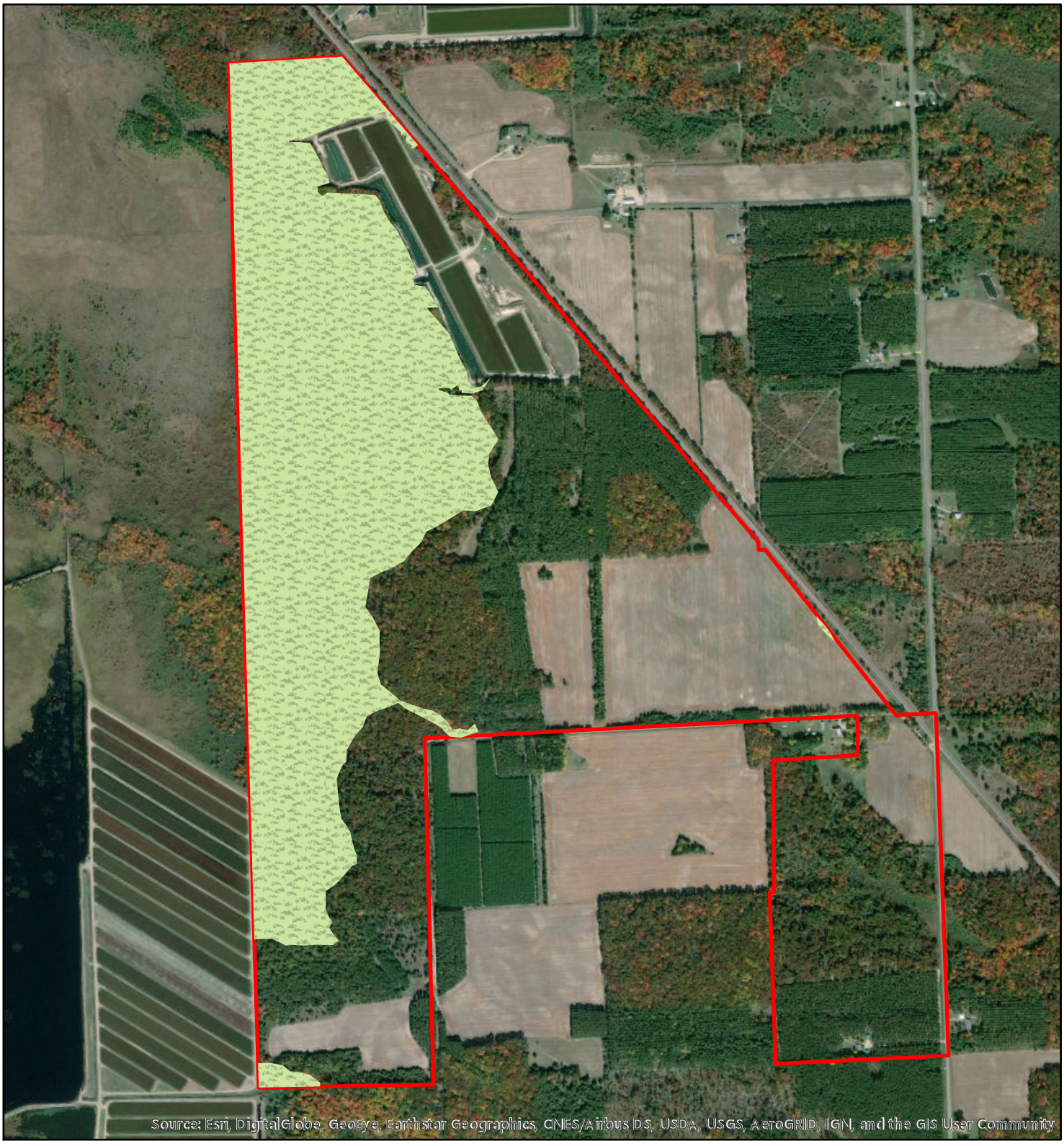
BEDROCK GEOLOGY & TEST BORINGS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 6

file: 20180912_figures
project no.: 2113-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Legend

Delineated Wetland

Property

N

W E

S

0 500 1,000 Feet

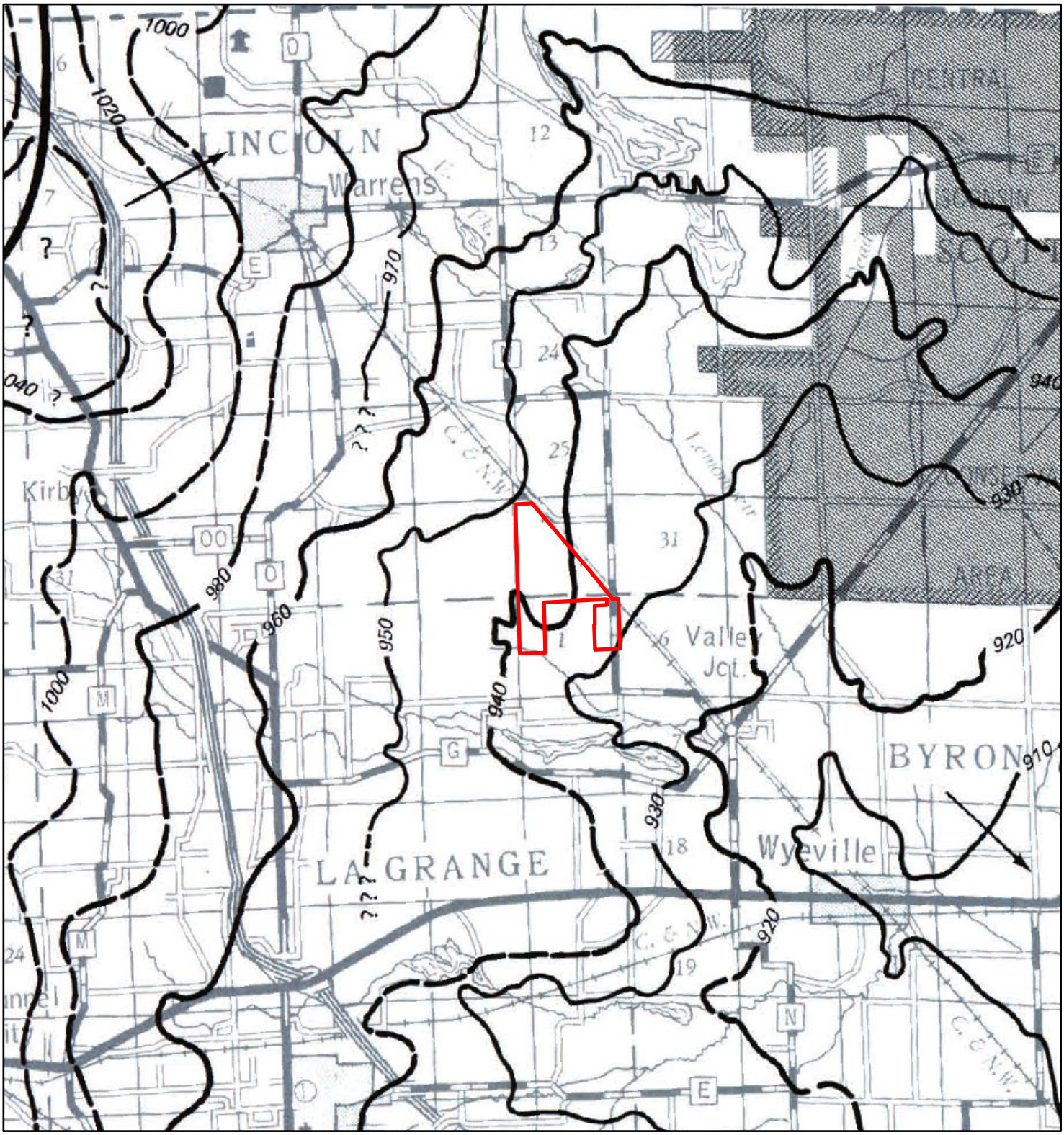
WETLANDS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 7

file: 20180912_figures
project no.: 2145-0002
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Map adapted from Water Table Elevation, WGNHS, Lippelt, 1981

Legend

Approximate Property Boundary

N
W E
S

0 1 2 Miles

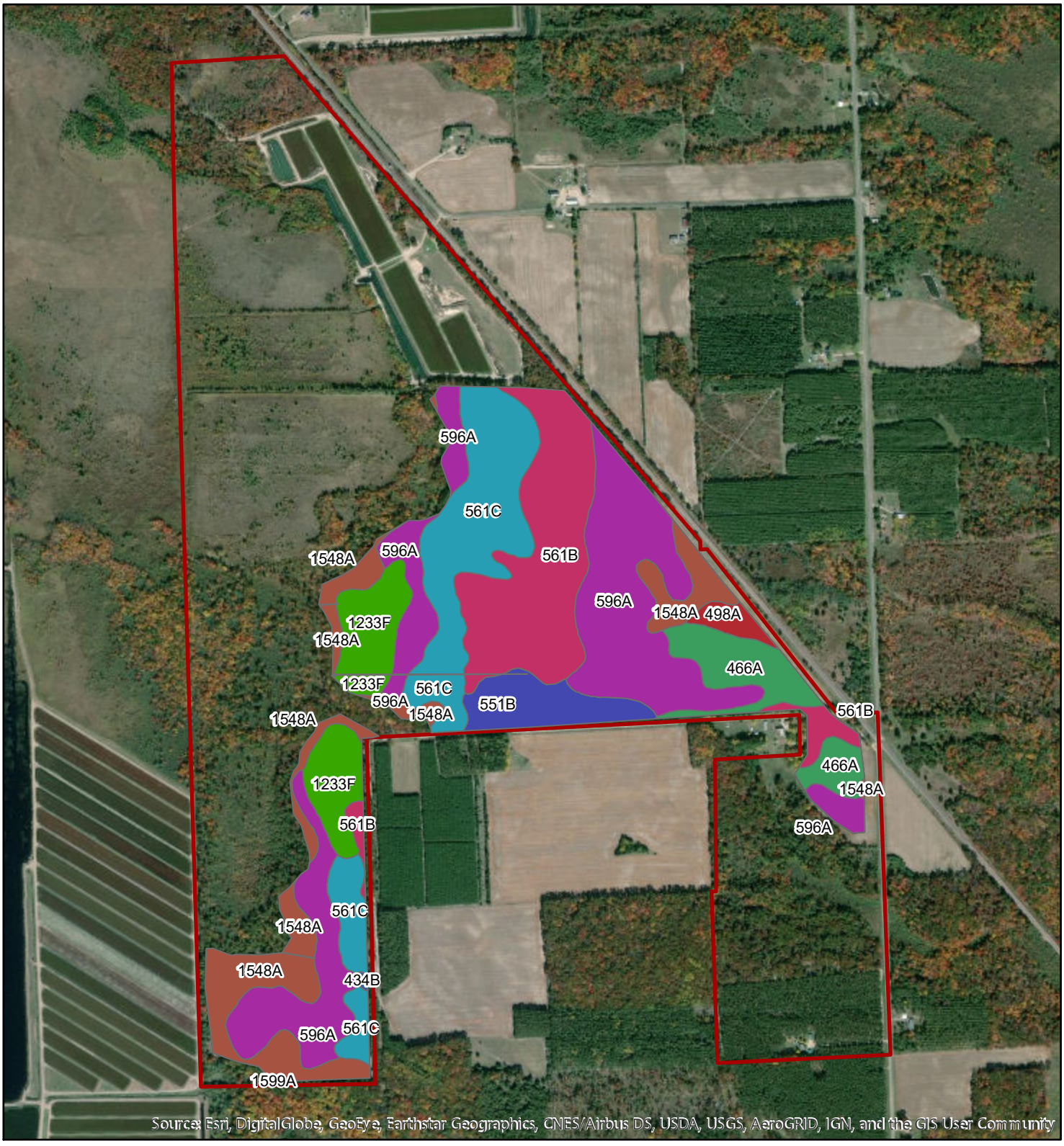
GROUNDWATER CONTOURS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 8

file: 20180912_figures
project no.: 2313-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Legend

Approximate Property Boundary

N
W E
S

Note: See Table 2 and Appendix 7 for soil unit descriptions

0 1,000 2,000 Feet

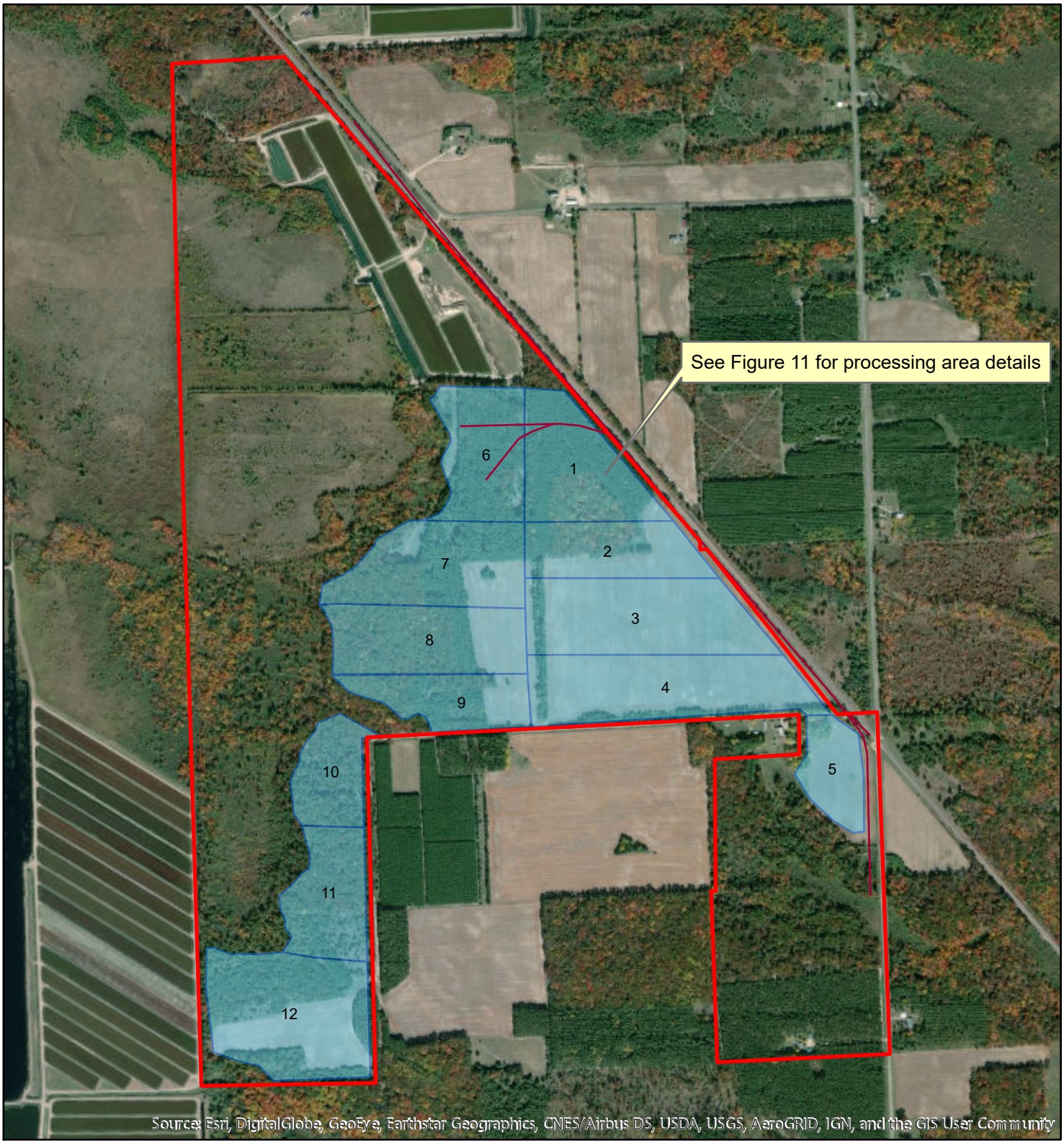
SOILS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 9

file: 20180912_figures
project no.: 2113-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Legend

- Mine Property Boundary
- Phase
- Rail Spur

N
W E
S

0 1,000 2,000 Feet

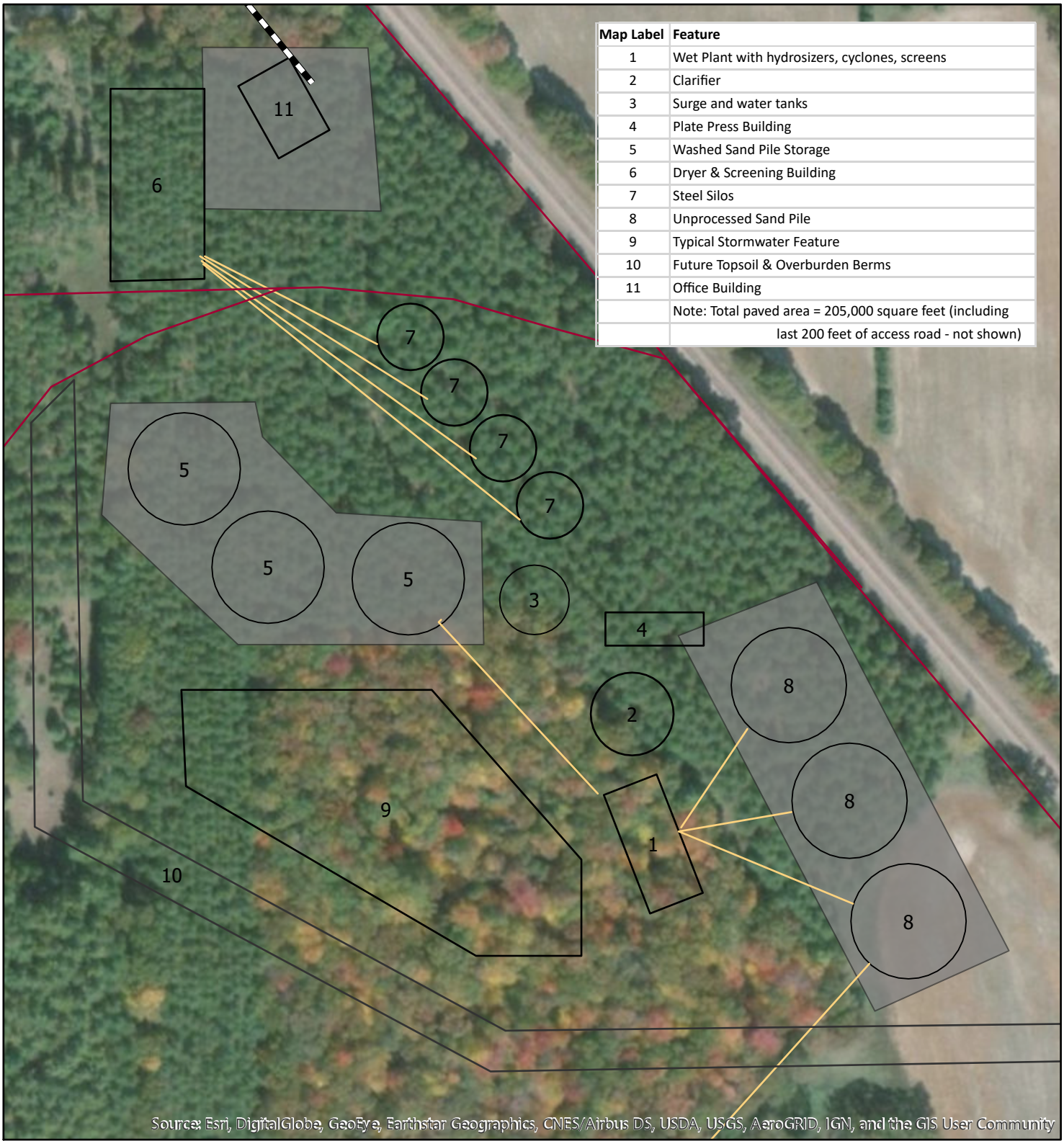
CONCEPTUAL MINE PLAN

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 10

file: 20180912_figures
project no.: 2313-0001
plot date: 9/12/18
arc operator: jed
reviewed by: nrtb



Map Label	Feature
1	Wet Plant with hydrosizers, cyclones, screens
2	Clarifier
3	Surge and water tanks
4	Plate Press Building
5	Washed Sand Pile Storage
6	Dryer & Screening Building
7	Steel Silos
8	Unprocessed Sand Pile
9	Typical Stormwater Feature
10	Future Topsoil & Overburden Berms
11	Office Building
	Note: Total paved area = 205,000 square feet (including
	last 200 feet of access road - not shown)

Legend

- Paved Area
- Conveyor
- Rail Spur
- Access Road

N
W E
S

0 200 400 Feet

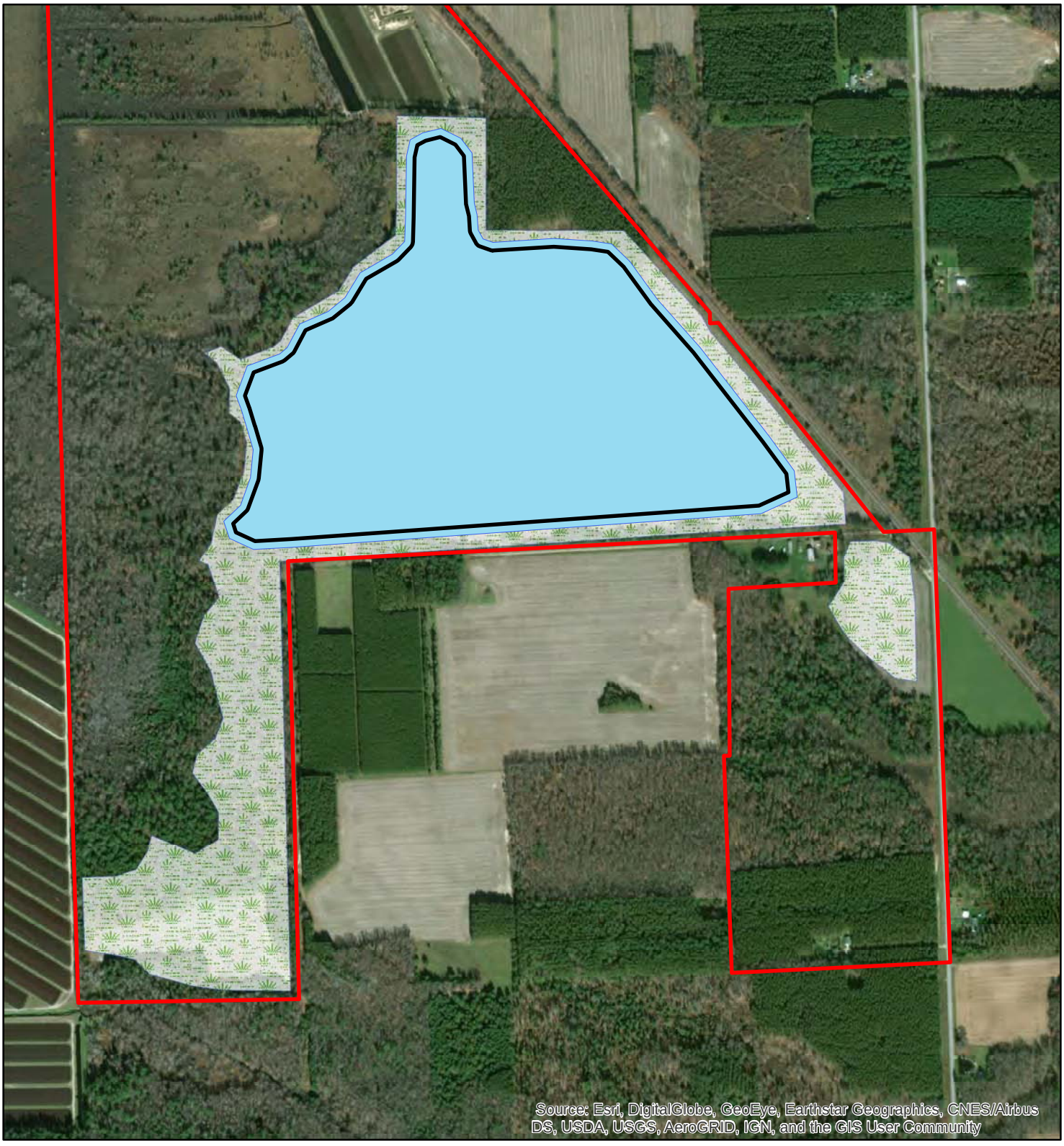
CONCEPTUAL PROCESSING AREA

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 11

file: phases.mxd
project no.: 2313-0001
plot date: 2/27/18
arc operator: jed
reviewed by: nrtb



Legend

- Property
- New Lake
- New Wetland
- 5-foot Contour

N
W E
S

0 500 1,000 Feet

CONCEPTUAL RECLAMATION AREAS

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 12

file:reclamation.mxd
project no.: 2313-0001
plot date: 2/27/18
arc operator: jed
reviewed by: nrtb

Appendix 1

Monroe County Application for Reclamation Permit for New or Re-opened Nonmetallic Mining Sites

Monroe County
Land Conservation Department
820 Industrial Drive, Suite 3
Sparta WI 54656
(608) 269-8976

APPLICATION FOR RECLAMATION PERMIT FOR NEW OR REOPENED NONMETALLIC MINING SITES
Form NM-02 Date – 1/17

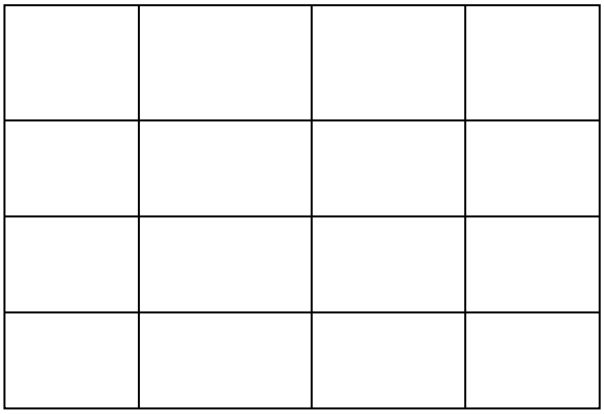
PLEASE COMPLETE ALL INFORMATION ON THIS APPLICATION. PRINT OR TYPE. Use of this form is required for any nonmetallic mining reclamation permit application filed pursuant to Chapter NR 135, Wis. Adm. Code. Monroe County will not consider your application unless you complete and submit all information required by this application form.

1. **Applicant/Operator**
Valley Sand, LLC
Address
N6494 First Street
City, State, Zip Code
Waupaca, WI 54981
Telephone No. (Include area code)
(262)391-5139

2. **Property Owners/Lessors (if different from Applicant/Operator)**
Address
City, State, Zip Code
Telephone No. (Include area code)
(Additional owner/lessor information can be submitted on separate sheet)

3. **Property Description: Provide the complete legal description of the property on which the mine is located (example: N ½ , NE ¼, Section 3, T29N, R6E)**
See Table 1, attached
Town, ~~City, Village of~~ La Grange and Lincoln, County of MONROE
Tax Parcel Number(s) See Table 1, attached
Total Site Acreage 519.4

4. **General Location Map - draw the location of the site on the section map below. Include roads and any other pertinent information, and label ¼ ¼ section points. Alternatively, attach a plat map, topographic map or other map of sufficient detail to enable access to the site by public roads**



See Figures 1 and 2.

5. **Project Information: Please provide a brief description of the general location (including surrounding land use) and the nature of the nonmetallic mine (type of deposit, proposed frequency and expected duration of mining activity).**

Valley Sand is proposing a nonmetallic mine and industrial sand processing facility on thirteen parcels in La Grange and Lincoln Townships. The site consists of approx. 520 acres, and the area of site disturbance, including processing area, excavation, and reclamation, is approx. 230 acres. Eleven phases of mining, ranging from 10 to 24 acres per phase, are planned within the site, with an estimated total production of approx. 30 million tons of raw sandstone. The mine lifetime is expected to be approx. 20 to 25 years. Current land use on and near the site includes agric. cropland, cranberry farming, coniferous plantations, and mixed deciduous forest. Reclamation of disturbed acreage will follow the permitted Non-Metallic Mining Reclamation Plan, and result in a new 160-acre lake, with littoral zone vegetation surrounded by Emergent Wetland plantings.

6. Reclamation Plan: A reclamation plan conforming to s. NR 135.19, Wis. Adm. Code must be submitted with this permit application, including any previous regulatory approvals so long as they meet the reclamation standards of subch. II of NR 135 as allowed under ss. NR 135.21(1)(d) and (e), Wis. Adm. Code.

I hereby certify, as a duly authorized representative or agent, that the operator, Valley Sand, LLC (name of operator), will provide, as a condition of the reclamation permit, financial assurance as required by s. NR 135.40, Wis. Adm. Code, upon granting of the reclamation permit and before mining begins.

I also certify that, if applicable, the land owner or lessor has been provided with a copy of the reclamation plan as required by s. NR 135.19(6)(b), Wis. Adm. Code and a signed certification from the landowner indicating their concurrence with the reclamation is attached to this application.

Signature of Applicant or Duly Authorized Agent

x Richard George

Richard George, Authorized Agent

Date Signed

October 9, 2018

7. Fees:

Acres currently undisturbed that will be activated January 1, 2017 through December 31, 2017 _____ **acres**

Total fee for 2017 (includes DNR fee) (see table below) = **$** _____

I hereby certify that the information contained herein is true and accurate. I also certify that I am entitled to apply for a permit, or that I am the duly authorized representative or agent of an applicant who is entitled to apply for a permit.

Signature of Applicant or Duly Authorized Agent

x Richard George

Richard George, Authorized Agent

Date Signed

October 9, 2018

FEE SCHEDULE

Mine Size, Unreclaimed Acres	2017 Monroe Co. Fee	Wisconsin DNR's Annual Fee	Total Annual Fee 2017
1 to 5 acres	$150	$35	$185
6 to 10 acres	$300	$70	$370
11 to 15 acres	$450	$105	$555
16 to 25 acres	$600	$140	$740
26 to 50 acres	$700	$160	$860
51 acres or larger	$750	$175	$925

MAKE CHECKS PAYABLE TO: MONROE COUNTY LAND CONSERVATION DEPT.

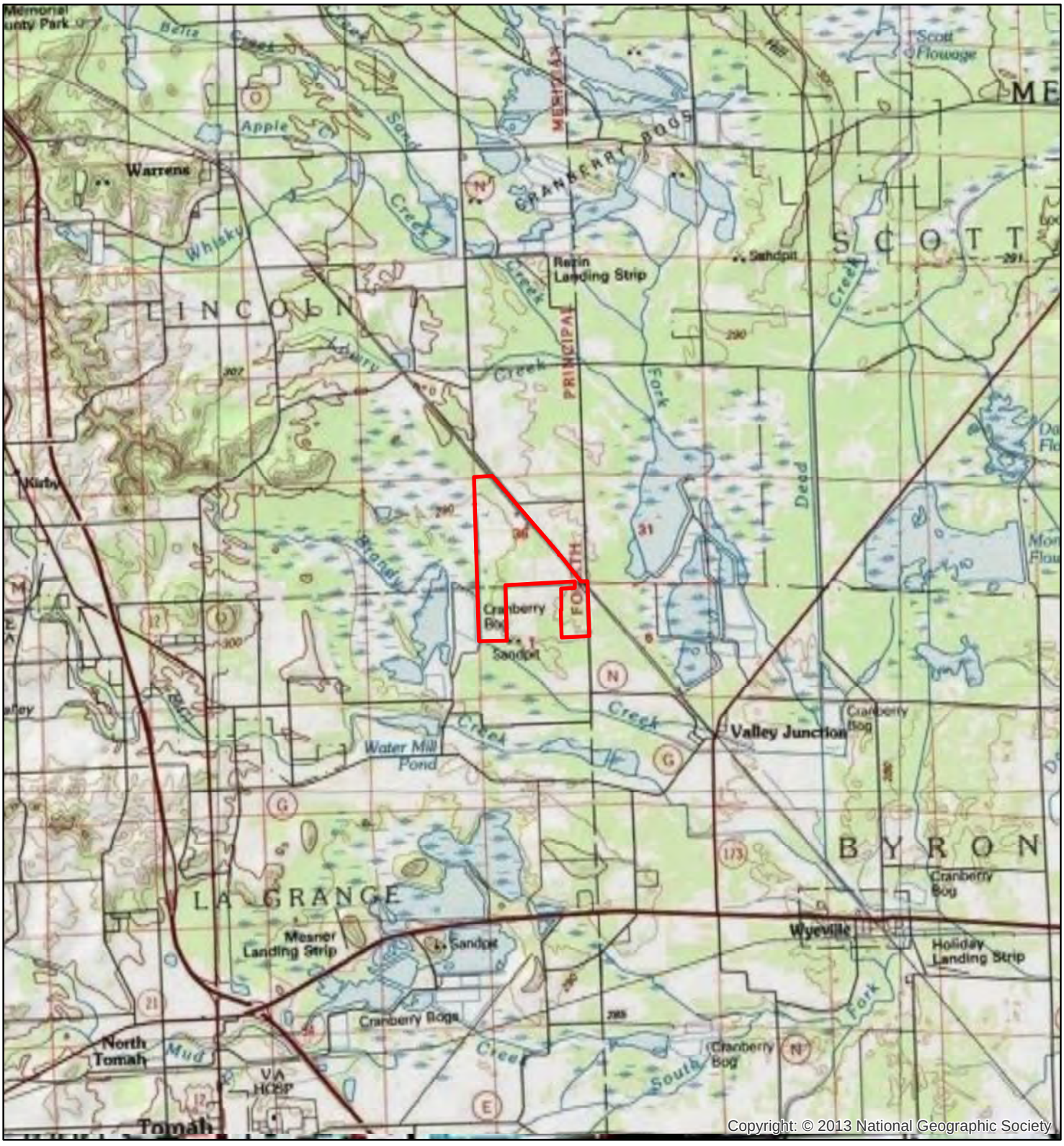
LEAVE BLANK - FOR RECEIVING AGENCY USE ONLY

Permit No.	**Date Received** **Date Application Was Complete**
Date Reclamation Plan Received: **Received By:**	**Date Financial Assurance Received:** **Received By:** **Amount**

Table 1. Mine Site Property Owners

Property Tax Parcel ID	Owner Name(s)	Owner Address	Approx. Area (Acres)	Legal Description	Figure 2 ID, Township
024-00857-2000	Eddie Gebhardt Cranberry LLC	27696 Concord Ave. Warrens, WI 54666	76.53	LOT 1 of 11CSM147 #459124, being part of the SE ¼ of the NW ¼ & NE ¼ of the NW ¼ & NW ¼ of the NW ¼ & SW ¼ of the NE ¼, Section 36, T19N R1W	1 Lincoln
024-00856-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the NW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	2 Lincoln
024-00860-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	NW ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	3 Lincoln
024-00859-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	NE ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	4 Lincoln
024-00865-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	28.0	Part of the NW ¼ of the SE ¼ Lying W of the RR, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	5 Lincoln
024-00861-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	6 Lincoln
024-00862-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SE ¼ of the SW ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	7 Lincoln
024-00868-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.0	SW ¼ of the SE ¼, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	8 Lincoln
024-00869-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	18.5	Part of the SE ¼ of the SE ¼ Lying W of RR, Section 36, T19N R1W; also an easement 33' in width for ingress and egress	9 Lincoln

020-00008-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	39.97	NW ¼ of the NW ¼, Section 1, T18N R1W; also an easement 33' in width for ingress and egress	10 La Grange
020-00001-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	35.44	The NE ¼ of the NE ¼ Fract, Exc the W 715' of the N 306'; Also Exc. A Parcel Com at NW Cor, then S 20 Rods , then E 4 Rods, then N 20 Rods, then W to POB; Section 1, T 18N R1W; also an easement 33' in width for ingress and egress	11 La Grange
020-00009-0000	6 Star LLC	c/o Nancy Bushing 12911 County Highway N Tomah, WI 54666	40.3	SW ¼ of the NW ¼, Section 1, T 18N R1W; also an easement 33' in width for ingress and egress	12 La Grange
020-00006-0000	Dale D. Storkel & Sandra L. Hansen	7379 County Highway N, Warrens, WI 54666	40.65	SE ¼ of the NE ¼, Section 1, T18N R1W	13 La Grange
		Approximate Total Site Acreage	519.4		



Legend

Approximate Property Boundary

N
W E
S

0 1 2 Miles

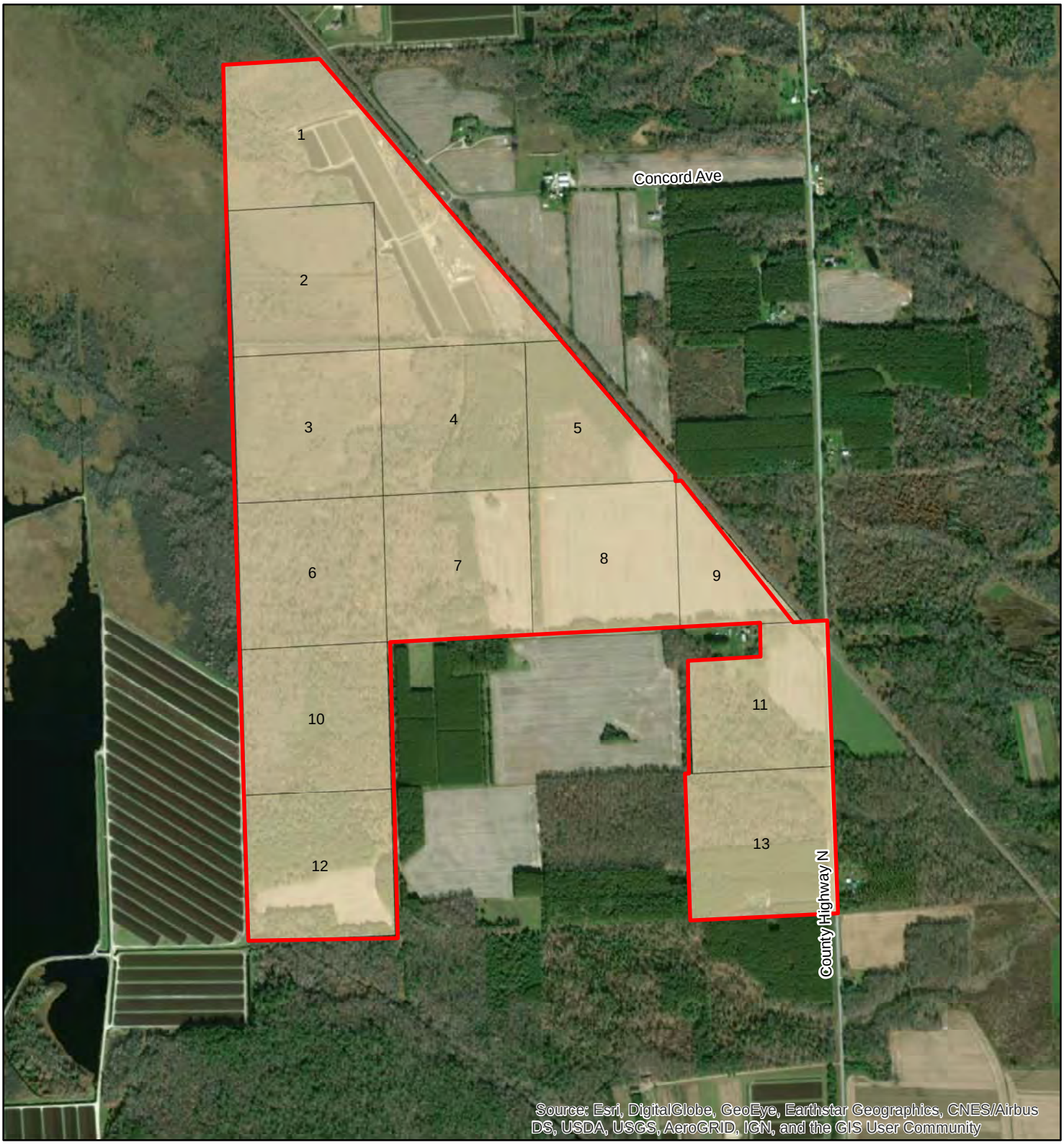
SITE LOCATION

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 1

file: figure1.mxd
project no.: 2145-0002
plot date: 2/27/18
arc operator: jed
reviewed by: nrtb



Legend

Approximate Site Boundary

Mining Parcel

N
W E
S

Note: See Table 1 for parcel information

0 500 1,000 Feet

MINE SITE PROPERTIES

Valley Sand LLC
Monroe County, Wisconsin

Summit Envirosolutions

Figure 2

file: mineproperties.mxd
project no.: 2145-0002
plot date: 2/27/18
arc operator: jed
reviewed by: nrtb

Appendix 2

Lease and Lifting Agreements with Property Owners

Purchase Agreement

December 15, 2017

Norman Pestka Construction Inc. (NPCI) the buyer, agrees to pay 6 Star, LLC (6 Star) the seller, $6,000.00 to secure the right to purchase 6 Star's property in Section 1, T18-N-R01W, La Grange Township, Monroe County (114.2 acres) and Section 36, T19N-R01W, Lincoln Township, Monroe County (286.5 acres).

NPCI secures the right to purchase the 400.7 acres for a period of 12 months with an option to extend an additional 6 months. The purchase price shall be the sum

of $7,000.00 per acre - 286 ac ($ 7,000.00) per non wetland acre and the sum of $2,200.00 per acre – 121 ac ($ 2,200.00) per wetland acre.

This contract is null and void if $6,000.00 non-refundable deposit is not received by seller and wetland acreage has not been determined by a qualified and accredited Engincer within 6 months of this contract. Wisconsin DNR must approve wetland delineation. Buyer will pay the cost of the wetland delineation.

Upon approval of NR-135 and local Township license to mine, buyer shall pay seller the sum of Three Hundred Thousand Dollars ($300,000.00), which is non-refundable and will come off the purchase price. The balance of the purchase price ($2,000,000.00) shall be due and payable within 2 years. Simple interest of 6% percent shall apply to the balance due until paid.

A royalty on sand produced, finished, sold and shipped via rail or truck will be paid to the seller at the rate of $0.30 cents per ton. The royalty will be paid by buyer to seller for a period of 24 months on one million ton or pay $286,000.00.

6 Star will have access to crop land until property is sold.
6 Star will have hunting rights until property is sold. 6 Star must provide liability insurance.
NPCI will pay 100% of timber value to 6 Star per appraisal.
NPCI will pay to withdraw from MFL.
Walnut trees to be removed and returned to 6 Star, LLC. – N/C
Lee Storkel will retain easement over Section 1, La Grange Township for access to his property
This agreement does not include 289.4 acres owned by Lee Storkel.

Dale D. Storkel

Lee F. Storkel

Susan M. Storkel

Brian Storkel
DEAN

Sue K. Pfaff

Steve Wykoski

Nancy L. Bushing- 6 Star, LLC- Mng. Mbr.

Norman F. Pestka- NPCI- President

STATE OF WISCONSIN
COUNTY OF MONROE

The foregoing instrument was acknowledged before me this 15th day of December, 2017 by:

Notary Public: Monroe County
My commission expires: 8-16-19

Purchase Agreement

12/15/2017

I, Norman Pestka, agree to pay Dale D. Storkel and Sandra L. Hansen of 7379 County Highway N, Warrens, WI 54666, $1,000.00 to drill test holes on their property of 40.65 acres in the Town of La Grange, Monroe County, Wisconsin.

Mr. Norman Pestka has the right of first refusal to purchase the 40.65 Acres for the period of 12 months with the option to extend for an additional 6 months for the sum of $7,000.00 per acre for non-wet land and $2,000.00 per acre for wet land, plus improvements on said property at assessed value.

Timber rights ~~shared 50/50~~ 100% to NPC to take out of MFL (seller/buyer). Storkel/Hansen can occupy the residence for up to three years after closing. D.S S.H

This contract is null and void if $1,000.00 is not received and or no drilling has been completed within 6 months of this contract.

Dale D. Storkel, Seller

Sandra L. Hansen, Seller

Norman Pestka, Purchaser

Steve Wykoski, Witness

STATE OF WISCONSIN

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of December, 2017 by

_____.

_____

Notary Public:

My Commission Expires:

Appendix 3

Property Owners within 660 Feet of Mine Parcel Boundary

Properties within 660 Feet of Proposed Valley Junction Site

Valley Sand, LLC

Townships of Byron, La Grange, and Lincoln

Monroe County, Wisconsin

Property Tax Parcel ID	Owner Name(s)	Owner Address	Area (Acres)	Legal Description	Figure 3 ID, Township
025-00634-0000	Monroe County Forest Lands	14345 County Highway B, Suite 5 Sparta, WI 54656	14.0	PART OF THE SE1/4 OF SE1/4 DESC IN 4CSM276 - #353834; Section 26 T19N R1W	20 Lincoln
024-00633-0000	David Lee LLC	3180 Lakeshore Dr., Apt 2A Chicago, IL 60657	26.0	PART OF THE SE1/4 OF SE1/4; Section 26 T19N R1W	21 Lincoln
024-00593-0000	David Lee LLC	3180 Lakeshore Dr., Apt 2A Chicago, IL 60657	15.0	PART OF THE SW1/4 OF SW1/4, LYING SOUTHWESTERLY OF THE R.R.; Section 25 T19N R1W	22 Lincoln
024-00594-0000	Union Pacific	1400 Douglas St. Omaha, NE 68179	2.0	PART OF THE SW1/4 OF SW1/4; Section 25 T19N R1W	23 Lincoln
024-00592-5200	Roy A Gunn, Sr.	27474 Concord Ave. Warrens, WI 54666	10.0	PART OF THE SW1/4 OF SW1/4 BEING LOT 4 OF 14 CSM'S 182 #501890; Section 25 T19N R1W	24 Lincoln
024-00592-5000	Whiskey Creek Cranberry LLC	101 Grant St. Warrens, WI 54666	2.41	PART OF THE SW1/4 OF SW1/4 BEING LOT 3 OF 14 CSM'S 182 #501890; Section 25 T19N R1W	25 Lincoln
024-00592-0000	Gary Herritz Family Trust & Kathleen Herritz Family Trust	27570 Concord Ave. Warrens, WI 54666	3.0	PART OF THE SW1/4 OF SW1/4 (ALSO DESC. IN VOLUME 5 OF CSM - PAGE 167 - #367168; Section 25 T19N R1W	26 Lincoln
024-00592-5700	Keith R & Debra J Pearson	27580 Concord Ave. Warrens, WI 54666	4.27	PART OF THE SW1/4 OF SW1/4 BEING PRT OF LOT 2 OF 11 CSM'S 93 #455735; Section 25 T19N R1W	27 Lincoln
024-00595-2500	Keith R and Debra J Pearson	27580 Concord Ave. Warrens, WI 54666	1.36	LOT 2 OF 11CSM93 #455735, BEING PRT OF THE SE1/4 OF SW1/4; Section 25 T19N R1W	28 Lincoln

024-00595-0000	Whiskey Creek Cranberry LLC	101 Grant St. Warrens, WI 54666	37.26	SE1/4 OF SW1/4, EXC 3 PARCELS; Section 25 T19N R1W	29 Lincoln
024-00858-0000	Western Wisconsin Railway Company	c/o Union Pacific Railroad 1400 Douglas St. Omaha, NE 68179	6.28	100' WIDE STRIP BEING PART OF THE SE1/4 OF NW1/4 (2.435 AC), NE1/4 OF NW1/4 (2.422 AC), NW1/4 OF NW1/4 (1.420 AC); Section 36 T19N R1W	30 Lincoln
024-00854-2000	Edwin Gebhardt Irrevocable Living Trust	3040 Butler Rd. Warrens, WI 54666	1.525	PART OF THE NW1/4 OF NW1/4, LYING NE OF RR; Section 36 T19N R1W	31 Lincoln
024-00852-1000	Edwin Gebhardt Irrevocable Living Trust	3040 Butler Rd. Warrens, WI 54666	10.59	NE1/4 OF NW1/4, BEING THE N 350.09'; Section 36 T19N R1W	32 Lincoln
024-00852-0000	Eddie J Gebhardt	27696 Concord Ave. Warrens, WI 54666	24.54	NE1/4 OF NW1/4 EXC RR & LDS IN 11 CSM'S 147, & EXC N 350.09'; Section 36 T19N R1W	33 Lincoln
024-00848-0000	Edwin Gebhardt Irrevocable Living Trust	3040 Butler Rd. Warrens, WI 54666	39.1	PART OF NW-NE, LYING NORTH OF TOWN ROAD; Section 36 T19n R1W	34 Lincoln
024-00857-0000	Chad & Selena Meacham	27873 Concord Ave. Warrens, WI 54666	4.36	SE1/4 OF NW1/4 EXC RR & EXC 11 CSM'S 147; Section 36 T19N R1W	35 Lincoln
024-00849-0000	Chad & Selena Meacham	27873 Concord Ave. Warrens, WI 54666	35.81	SW1/4 OF NE1/4, EXC RR & EXC 11CSM147 & EXC LOT 1 16CSM178 #528486; Section 36 T19N R1W	36 Lincoln
024-00849-1000	Edwin M and Judith M Beghardt	3040 Butler Rd. Warrens, WI 54666	1.5	LOT 1 OF 16CSM178 #528486, BEING PART OF THE NW1/4 OF NE1/4 & PART OF THE SW1/4 OF NE1/4; Section 36 T19N R1W	37 Lincoln
024-00850-0000	Chicago and North Western Transportation	1700 Farnam St, Fl 10 S. Omaha, NE 68102-2010	1.43	PART OF THE SW1/4 OF NE1/4 SEE 11 CSM'S 147; Section 36 T19N R1W	38 Lincoln
024-00867-0000	Western Wisconsin Railway Company	c/o Union Pacific Railroad 1400 Douglas St. Omaha, NE 68179	3.42	Part of the NW ¼ of SE ¼, being a 100’ wide strip for RR, Section 36 T19N R1W	39 Lincoln
024-00866-0000	Chad & Selena Meacham	27873 Concord Ave.	11.0	PART OF THE NW1/4 OF SE1/4, LYING N & E OF THE RAILROAD; Section 36 T19N R1W	40 Lincoln

		Warrens, WI 54666			
024-00863-5000	Western Wisconsin Railway Company	c/o Union Pacific Railroad 1400 Douglas St. Omaha, NE 68179	0.42	Part of the NE ¼ of SE ¼, being a 100' wide strip for RR, Section 36, T19N R1W	41 Lincoln
024-00863-0000	James C Eagleson	9682 Enterprise Rd. Tomah, WI 54660	39.94	NE1/4 OF SE1/4, EXCEPT LAND DEEDED TO WESTERN WI RR IN 25D-449 & 31D-61; Section 36 T19N R1W	42 Lincoln
024-00871-0000	Western Wisconsin Railway Company	c/o Union Pacific Railroad 1400 Douglas St. Omaha, NE 68179	3.85	PART OF THE SE1/4 OF SE1/4; Section 36 T19N R1W	43 Lincoln
024-00870-0000	Frederick Lenz	110 W. Brownell St. Tomah, WI 54660	18.5	PART OF THE SE1/4 OF SE1/4, LYING EAST OF THE RAILROAD; Section 36 T19N R1W	44 Lincoln
036-00285-0000	Valley Corporation	c/o Ed Grygleski 7845 State Highway 173 Tomah, WI 54660	57.72	SW1/4 OF SW1/4, FRACTIONAL; Section 31 T19N R1E	45 Scott
006-00100-0000	Susan M Storkel	7366 County Highway N Warrens, WI 54666	10.37	NW1/4 OF NW1/4, FRACT, LYING S & W OF RR, EXCEPT FOR THE RR; Section 6 T18N R1E	46 Byron
006-00100-5000	Western Wisconsin Railway Company	c/o Union Pacific Railroad 1400 Douglas St. Omaha, NE 68179	3.44	PART OF THE NW1/4 OF NW1/4, FRACT; Section 6 T18N R1E	47 Byron
006-00099-0000	Valley Corporation	c/o Ed Grygleski 7845 State Highway 173 Tomah, WI 54660	44.01	NW1/4 OF NW1/4, FRACT, EXC LYING S & W OF RR & EXC RR; Section 6, T18N R1E	48 Byron
006-00101-0000	Susan M Storkel	7366 County Highway N Warrens, WI 54666	43.07	SW1/4 OF NW1/4, FRACT, LYING S & W OF RR, EXC FOR THE RR; Section 6, T18N R1E	49 Byron
005-00104-0000	Susan M Storkel	7366 County Highway N Warrens, WI 54666	0.13	SE1/4 OF NW1/4, LYING S & W OF THE RR; Section 6, T18N R1E	50 Byron
006-00110-0000	Wayne Christensen &	5837 County Highway N Warrens, WI 54666	84.4	Lot 1 of 28CSM003 #668935, Being part of the SW ¼ of SW ¼, Fract & NW ¼ of SW ¼, Fract, Section 6 T18N R1E	51 Byron

	Lori Allen				
006-00107-9900	Wayne Christensen & Lori Allen	5837 County Highway N Warrens, WI 54666	0.17	Fraction NW ¼ of SW ¼, Section 6 T18N R1E	52 Byron
006-00109-0000	Wayne Christensen	5837 County Highway N Warrens, WI 54666	0.5	PART OF THE NW1/4 OF SW1/4, FRACT AS DESC IN 3 CSM94 - #327460; Section 6 T18N R1E	53 Byron
006-00108-0000	Wayne Christensen	5837 County Highway N Warrens, WI 54666	0.5	PART OF THE NW1/4 OF SW1/4, FRACT AS DESC IN 2 CSM'S 57 #302011; Section 6, T18N R1E	54 Byron
020-00015-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	41.14	NE1/4 OF SE1/4; Section 1, T18N R1W	55 La Grange
020-00016-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.82	NW1/4 OF SE1/4; Section 1, T18N R1W	56 La Grange
020-00005-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.77	SW1/4 OF NE1/4; Section 1, T18N R1W	57 La Gr8nge
020-00004-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.57	NW1/4 OF NE1/4; Section 1, T18N R1W	58 La Grange
020-00003-0000	Reorganized Church of Jesus Christ of the Latter Day Saints	702 E. Montgomery St. Sparta, WI 54656	0.5	PART OF THE NE1/4 OF NE1/4, FRACT, COM AT NW COR OF NE-NE, TH S 20 RODS, TH E 4 RODS, TH N 20 RODS, TH W 4 RODS TO POB; Section 1, T18N R1W	59 La Grange
020-00002-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	4.56	THE WEST 715' OF THE N 306' OF THE NE1/4 OF NE1/4, FRACT, EXC EVERGREEN CEMETERY; Section 1, T18N R1W	60 La Grange
020-00007-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.12	NE1/4 OF NW1/4; Section 1, T18N R1W	61 La Grange
020-00010-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.39	SE1/4 OF NW1/4; Section 1, T18N R1W	62 La Grange
020-00011-0000	Lee & Monika Storkel	7083 County Highway N Warrens, WI 54666	40.57	NE1/4 OF SW1/4; Section 1, T18N R1W	63 La Grange

020-00012-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	40.42	NW1/4 OF SW1/4; Section 1, T18N R1W	64 La Grange
020-00033-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	40.24	NE1/4 OF SE1/4; Section 2, T18N R1W	65 La Grange
020-00023-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	40.19	SE1/4 OF NE1/4; Section 2, T18N R1W	66 La Grange
020-00020-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	39.92	NE1/4 OF NE1/;, Section 2, T18N R1W	67 La Grange
024-00845-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	40.0	SE1/4 OF SE1/4; Section 35, T19N R1W	68 Lincoln
024-00842-0000	Joseph Miller Co.	P.O. Box 628 Tomah, WI 54660	40.0	NE1/4 OF SE1/4; Section 35, T19N R1W	69 Lincoln
024-00833-0000	Salzwedel Cranberry Marsh LLC	23400 Boxelder Ave. Warrens, WI 54666	40.0	SE1/4 OF NE1/4; Section 35, T19N R1W	70 Lincoln
024-00830-0000	David Lee LLC	3180 Lakeshore Dr. Apt 2A Chicago, IL 60657	40.0	NE1/4 OF NE1/4; Section 35, T19N R1W	71 Lincoln

Appendix 4

Lithologic Logs

Summit Envirosolutions, Inc.
1210 East 115th Street
Burnsville, MN 55337

Project Name	: Carbo - Valley Junction
Summit Project No.	: 2105-0024
Project Location	: Valley Junction, Wisconsin
County	: Monroe
Description performed by:	Brian Gulbranson
Surface grade elevation:	~969 ft amsl*

LITHOLOGIC LOG: VJ-1

Date	: 7/20/17
Drilling Firm	: Thein Well Company
Drilling Method	: Geoprobe
Sample Method	: Macro Core
Weather	: ~70 °F, mostly cloudy

Depth in feet	ELEV (ft amsl)	GRAPHIC LOG	DESCRIPTION
0			0' - 1.25': Topsoil, dark brown.
			1.25' - 2.5': Silty sand, brown.
	965		2.5' - 3': Sand, unconsolidated, reddish-brown, fine upper- to very coarse lower-grained, subangular to well rounded, frosted, poorly sorted, some accessories, clay-sized grain coatings.
5			3' - 8.5': Sand, unconsolidated, buff-white, fine lower- to medium upper-grained, subangular to well rounded, polished to frosted, well sorted, rare accessories, one inch brown silty sand layer at 3.5 feet, two inch brown silty sand layers at 4.5 and 6 feet.
	960		8.5' - 9.5': Sandstone, firm, white, very fine upper- to coarse upper-grained, subangular to well rounded, frosted, bimodal sorting, rare prefractures, trace silt.

End of Boring at 9.5 feet.
Location: 44.073940° N, 90.444870° W
*Elevation estimated using Monroe County, WI LIDAR Dataset

Summit Envirosolutions, Inc.
1210 East 115th Street
Burnsville, MN 55337

Project Name : Carbo - Valley Junction
Summit Project No. : 2105-0024
Project Location : Valley Junction, Wisconsin
County : Monroe
Description performed by: Brian Gulbranson
Surface grade elevation: ~961 ft amsl*

LITHOLOGIC LOG: VJ-2

Date : 7/20/17
Drilling Firm : Thein Well Company
Drilling Method : Geoprobe
Sample Method : Macro Core
Weather : ~75 °F, partly cloudy

Depth in feet	ELEV (ft amsl)	GRAPHIC LOG	DESCRIPTION
0	960		0' - 0.5': Topsoil, dark brown.
			0.5' - 5': Sand, unconsolidated, brown, very fine upper- to coarse lower-grained, subrounded to well rounded, polished to frosted, moderately sorted, trace accessories, rare inclusions, trace pebbles.
5	955		5' - 9': Sandstone, soft, yellow, very fine upper- to medium lower-grained, predominantly very fine lower to fine lower, subangular to well rounded, frosted, bimodal sorting, rare accessories, rare inclusions, hard red sandstone layer at 6 feet.
10	950		9' - 12.5': Sandstone, firm, yellowish-orange, fine lower- to coarse upper-grained, rare very coarse lower, subrounded to well rounded, frosted, moderately sorted, rare accessories, rare inclusions, rare prefractures, minor clay-sized grain coatings, hard red sandstone layer at 9 feet.

End of Boring at 12.5 feet.
Location: 44.068397° N, 90.450297° W
*Elevation estimated using Monroe County, WI LIDAR Dataset

Summit Envirosolutions, Inc.
1210 East 115th Street
Burnsville, MN 55337

Project Name	: Carbo - Valley Junction
Summit Project No.	: 2105-0024
Project Location	: Valley Junction, Wisconsin
County	: Monroe
Description performed by:	Brian Gulbranson
Surface grade elevation:	~957 ft amsl*

LITHOLOGIC LOG: VJ-3

Date	: 7/20/17
Drilling Firm	: Thein Well Company
Drilling Method	: Geoprobe
Sample Method	: Macro Core
Weather	: ~80 °F, partly cloudy

Depth in feet	ELEV (ft amsl)	GRAPHIC LOG	DESCRIPTION
0			0' - 1': Topsoil, black.
	955		1' - 4.5': Sand, unconsolidated, brown, very fine lower- to coarse upper-grained, subangular to well rounded, frosted, bimodal sorting, rare accessories, rare inclusions, trace silt.
5			4.5' - 9': Sandstone, soft, white, fine lower- to coarse lower-grained, predominantly fine lower to fine upper, subrounded to well rounded, polished to frosted, bimodal sorting, rare accessories, rare inclusions, rare prefractures.
	950		
10			9' - 11': Sandstone, soft, buff, fine upper- to coarse upper-grained, subrounded to well rounded, frosted, moderately sorted, rare accessories, rare inclusions, rare prefractures, green shale lamina at 10.5 feet.

End of Boring at 11 feet.
Location: 44.077925° N, 90.448331° W
*Elevation estimated using Monroe County, WI LIDAR Dataset

Appendix 5

Wetland Delineation Report by Ingraham Technical Services, Inc.

Wetland Delineation Report

Valley Junction Mine Project
Monroe County, Wisconsin

Prepared for:

Norm Pestka
Valley Sand, LLC
N6494 First Street
Waupaca, WI 54981

September 2018

Prepared by:

Ingraham Technical Services, Inc.
19775 55th Avenue
Chippewa Fall, WI 54729

Ingraham Technical Services, Inc

19775 55th Avenue Chippewa Falls WI 54729
kerry@ingrahamtechnicalservices.com
715.271.4916

ITS

September 6, 2018

RE: Wetland Delineation Report
Valley Junction Mine Project
Monroe County, Wisconsin

Mr. Norm Pestka
Valley Sand, LLC
N6494 First Street
Waupaca, WI 54981

Dear Mr. Pestka,

Please find enclosed the Wetland Delineation Report for the Valley Junction Mine Project in the Town of Lincoln and La Grange, Monroe County, Wisconsin. The report presents the results of the field delineation for wetlands performed between June 28 and July 25th, 2018 completed by Kerry Ingraham. The field delineation included on-site identification, classification, and boundary determination of wetland basins following the 1987 U.S. Army Corps of Engineers *Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral Northeast Region* (USACE, version 2.0)

If permits are required for this project, the Wisconsin Department of Natural Resources will need to review this report. I will be happy to assist you with this and be available for a field review for agency approval.

Thank you for the opportunity to provide wetland services. Ingraham Technical Services is pleased to provide you with this information for your records and review. If you have any questions, please contact me directly at 715.271.4916 or via e-mail at kerry@ingrahamtechnicalservices.com

Sincerely,

Kerry Ingraham
Wetland Scientist

Wetland Delineation Report

Valley Sand, LLC
Valley Junction Mine Project
Monroe County, Wisconsin

Prepared by:
Kerry Ingraham
Ingraham Technical Services
19775 55th Avenue
Chippewa Falls WI 54729

The procedures described in this report and the field methods used constitute an official wetland delineation in accordance with the 1987 U.S Army Corps of Engineers *Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (version 2).

The field delineation was completed by Kerry Ingraham. The methodology meets the standards and criteria described in the manual and conforms to the application standards and regulations in force at the time of the fieldwork was completed. The results reflect conditions present at the time of the delineation.

I hereby certify that this report was prepared by me.

Prepared by: _____ 9/6/2018

Kerry Ingraham Date
Ingraham Technical Services

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Introduction

Ingraham Technical Services performed a wetland delineation for Valley Sand, LLC on approximately 443 acres in Monroe County, Wisconsin. The project, Valley Junction Mine is a proposed nonmetallic mine and industrial processing facility located in La Grange Township (Section 1, Township 18 North, Range 1 West) and Lincoln Township (Section 36, Township 19 North, Range 1 West -**Figure 1**).

The purpose of this study was to investigate the project area, identify areas meeting the technical criteria for wetlands, delineate the jurisdictional extent of the wetland basin, and classify the wetland habitat. This report describes the methodology and results of the field delineation performed between June 20th and July 25th, 2018.

The wetland delineation was performed by Kerry Ingraham, Environmental Scientist/President Ingraham Technical Services, Chippewa Falls, Wisconsin. Ms. Ingraham has been performing wetland delineations for the past eight years. She has a Bachelor of Science in Horticulture from University of Wisconsin-Madison and has completed the following Wisconsin Department of Natural Resources trainings: Basic Wetland Delineation (2005), Critical Methods (2008, 2016, 2017, 2018), Advanced Wetland Delineation (2013), Basic Hydric Soils (2014), Plant ID: Grasses, Sedges, & Rushes (2014).

Methods

According to the US Army Corps of Engineers, wetlands are, "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. This wetland delineation followed methods outlined in the *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral Northeast Region* (Version 2.0) where the presence of a wetland is determined based on three hydric criteria - vegetation, soils, and hydrology. The boundary of a wetland is where these hydric criteria give way to upland features.

The delineation procedures in the Corps *Manual* (*i.e.*, the Routine Onsite Determination Method), in combination with wetland indicators and guidance provided in the *Regional Supplement* were applied for this delineation. Where differences in the two documents occur, the *Regional Supplement* takes precedence over the Corps *Manual* for applications in the Northcentral Northeast Region (USACE 2012).

Phase One: Resource Review

A review of was performed which provided information on soils, topography and where wetlands have been identified or are likely to occur. The following resources were reviewed:

- Aerial Photograph/Project Location (**Figure 1-2**)
- Topographic Map, Wisconsin Department Natural Resources (WDNR) Surface Water Data Viewer (**Figure 3**)
- WDNR Wisconsin Wetland Inventory (WWI) Map for Wetlands (**Figure 4**)

- Natural Resources Conservation Service (NRCS) Soil Survey for Monroe County (**Figure 5 and Appendix E**)
- NRCS Hydric Rating by Map Unit (**Figure 6)**
- Historic Aerial Photographs **(Appendix C)**
- Climate Data, National Oceanic and Atmospheric Administration **(Appendix D)**
- Reclamation Plan, Summit Envirosolutions, Inc.

Phase Two: Field Review

The field review identified wetland and upland features within the project limits followed by the establishment of transects perpendicular to the wetland edge. The wetland boundary was identified where wetland features gave way to upland features.

The wetland boundary is determined in the field by identifying the presence/absence of hydrophytic vegetation, hydric soils and hydrology required to establish and support a wetland. The three wetland criteria were analyzed using the following methods:

Hydrophytic (Wetland) Vegetation:
Wetland plant species nomenclature follows the *US Army Corps of Engineers National Wetland Plant List: 2018 Update of Wetland Ratings.* Wetland vegetation data was collected using nested circular sample plot sizes of 5-feet for the herbaceous stratum, 15-feet for sapling/shrub stratum, and 30-feet for the tree and woody vine stratums.

Hydric (Wetland) Soils:
Soils are observed for hydric soil characteristics. Soils were examined in cores taken with a core auger and pits dug with a tile spade. Soil profiles were observed at a depth necessary to confirm hydric soil characteristics. Soil profile depths are typically within 16-20 inches below ground surface to allow for: (1) observation of an adequate portion of the soil profile to determine presence/absence of hydric soil characteristics; (2) observation of hydrology including depth to water table and saturated soils; and, (3) identification of disturbances (*e.g.* buried horizon, plow line, etc.). Soil color determinations were made using MUNSELL Soil Color Charts (2009). Site soil characteristics were compared to those mapped and described in the Soil Survey for Monroe County (USDA Web Soil Survey). Hydric soil characteristics were compared to those identified in the *Regional Supplement* (USACE 2012) and the most recent version of the Natural Resources Conservation Service (NRCS) publication *Field Indicators of Hydric Soils in the United States, Version 7.0* (USDA 2012).

Hydrology:
Primary and secondary indicators of hydrology were identified in the field to determine the presence or absence of wetland hydrology. Subsurface wetland hydrology indicators were examined using the soil cores and/or soil pits as deep as 20 inches to confirm soil saturation in the upper 12 inches of the soil profile.

Field Records:
The transects were documented at two sample points and one boundary marking. The sample points (Upland and Wetland) were analyzed and the boundary was identified between those points. The sample points were recorded on Wetland Determination Data Forms (**Appendix A**). Each data sheet is referenced to a sample location along the identified wetland boundary by the

Sample Point ID number. Numbers ending in "W" identify data collected within the wetland basin. Numbers ending in "U" identify data collected outside the wetland basin.

Wetland boundaries were located and marked with white "Wetland Boundary" pin flags. Fluorescent pink flags were used to identify upland and wetland sample points. The wetland edge is considered the highest extent of the wetland basin; areas above the boundary fail to meet the three required wetland parameters while areas below the edge meet the wetland parameters required by the field delineation methodology.

The sample points and boundary flags were surveyed in the field with the use of a Trimble R1 GNSS Receiver. The accuracy of this instrument is less than one meter of variance in the horizontal plane.

Results

The project site consists of approximately 430 acres on 11 continuous parcels of land. The site is located west of County Highway N, west and southwest of Concord Avenue, and is adjacent to the Union Pacific Railroad (UPRR) right of way. The site fall is located within Section 1 of Township 18 North, Range 1 West and Section 36 of Township 19 North, Range 1 West, La Grange Township and Lincoln Township, Monroe County, Wisconsin (**Figure 2).**

The project site consists of cropped agricultural fields, planted conifers, mixed deciduous forests, wetlands and commercial cranberry bogs. It is located in the Upper Lemonweir River Watershed (Hydrologic Unit Code 0707000315) of the Lower River Wisconsin Basin.

Historical Aerial Photograph Review: A review of historical aerial photographs was completed to gain an understanding of the historical changes to land use, topography, drainage or other factors influencing the presence of wetlands. Aerial photographs from 1938, 1999, 2005, 2010 and 2013 were reviewed (Appendix C).

The results of the review indicate that the upland areas of the site have been used for agricultural or forest products purposes since the late 1930s. The 1938 photograph shows that three farmsteads were located on the upland areas of the site. The upland areas show crops or potential forest areas in small fields (40 acres). Much of the western part of the site shows what appears to be wetland features in similar locations to present. North-south drainage channels exist along the western site boundary and onsite in the northwestern wetland.

The 1999 aerial photograph shows the presence of cranberry bogs on the northeast corner of the site adjacent to the UPRR line and intersection of Concord Ave. In addition to the bogs, water supply channels where also dredged onsite east-west through the wetland complex prior to 1999. Two east-west channels are visible in the 1999 photo (to present). A large series of cranberry bogs were constructed offsite along the southwest boundary of the site adjacent to Brandy Creek.

Several aerial photographs were reviewed from 1999 to the present. The wetland area along the western site areas appear similar to previous photos. The upland portions of the property appear to be agricultural or forest crop lands. No significant changes to land use or drainage appears in the 1999 to current photographs.

Site Geology: The shallow bedrock geology and soils were determined based on a review of the Bedrock Geology of Wisconsin, West Central Sheet, originally published by the Wisconsin Geological and Natural History Survey (WGNHS). The local bedrock geology is comprised of Cambrian-aged sandstone consisting primarily of the Mount Simon Formation. The Valley Mine

Reclamation Plan Narrative prepared by Summit Envirosolutions (Summit) presented the findings of exploratory borings on the site. Bedrock was encountered within 10 feet of the ground surface at all locations explored. Summit describes the upper geologic unit as: "The sandstone deposit that Summit observed at the site appears to be quartz arenite sandstone with rare accessory mineral grains with interbedded shale (beds and lamina). Sand grain size ranged from very fine to very coarse, consistent with the graded bedding known to occur in the Mount Simon Formation, and was generally poorly to moderately sorted. Roundness ranged from sub-angular to well rounded."

Site Topography and Drainage: The topography of the site is generally defined by a slight ridge running north-south through the approximate middle of the project site. Elevations along the ridge vary from 950 to 975 ft NGVD. The ground surface slopes gently toward the east from the ridge. The topography slopes more steeply from the ridge toward the west. The slope transitions into a large wetland complex which exists along the western side of much of the project site and beyond. The elevation of the wetland complex on the site ranges from approximately 940 to 950 ft. NVGD.

The drainage of the site is reflective of a local divide with drainage flowing east and west from the top of the slight ridge. In general, the western half of the site drains west into the wetland complex and toward an unnamed tributary (Water Body identification Code [WBIC] 5024205) of Brandy Creek which flows south along the western boundary of the project site and enters Brandy Creek (WBIC 1327500) at the southwest corner of the site. Drainage from the ridge toward the west generally occurs in sheet flow patterns except for occasional dips in the ridge that cause more concentrated flows. Once runoff enters the wetland complex, it infiltrates or is directed by historical drainage channels constructed as early as prior to 1938.

Drainage patterns in the eastern half and southwestern portion of the project site are minor and variable due to low topographic relief. In General, the drainage on the eastern half of the site flows east into ditches within the railroad right of way (**Figure 3**).

Wetland Information: The Wisconsin Wetland Inventory (WWI) identifies wetlands on the western half of the project site. These wetland communities are classified as forest, shrub, and emergent wetlands. Commercial cranberry bogs are located in the northern portion of the project site (**Figure 4**).

Soils: The NRCS Soil Survey of Monroe County show soils within the project limits to be primarily sand and sandy loam (**Figure 5, and Appendix E**). The NRCS Hydric Rating Map show seven soils within the project limits to range from hydric to predominantly nonhydric. (**Figure 6**). Soils encountered in the field review for this wetland delineation are identified below in Table 1:

Table 1
Soils Encountered in the Field Review

Soil	Drainage Class	Taxonomic Classification (Subgroup)	% Hydric by Map Unit	Sample Point
Bilmond sandy Loam, lake terrace, 0 to 3 percent slopes (466A)	Moderately well drained	Mollic Hapludalfs	0	10-U
Hoop sandy Loam, loamy substratum, 0 to 3 percent slopes (498A)	Somewhat poorly drained	Aquic Argiudolls	3	10-W
Tarr sand, 6-15 percent slopes (561C)	Excessively drained	Typic Quartzipsamments	0	8-U
Tint sand, lake plain, 0 to 3 percent slopes (596A)	Moderately well drained	Typic Quartzipsamments	6	1-U, 2-U, 7-U, 8-W, 9-U
Boone-Tar sands, 15-50 percent slopes (1233F)	Excessively drained	Typic Quartzipsamments	0	3-U, 4-U, 5-U, 6-U
Majik, cool-Ponycreek complex, lake plain, 0 to 3 percent slopes (1548A)	Somewhat poorly drained	Aquic Quartzipsamments and Humaqueptic Psammaquents	42	1-W, 2-W, 3-W, 4-W, 5-W, 6-W, 7-W

Wetland Classification and Description

The delineation was performed during the active growing season. It was conducted under slightly warmer than normal temperatures and slightly above normal precipitation as compared to the historic average for the region according to the National Climatic Data Center (NCDC) (**Appendix D**).

A total of 8 wetlands and one commercial cranberry bog were delineated on the site. They were arbitrarily numbered for reference purposes (Wetland 1-8).

Wetland 1 is located in the southwest corner of the site and is contiguous to Brandy Creek to the south. A large cranberry bog complex exists to the west of the wetland beyond the unnamed drainage ditch (WBIC 5024205). Drainage flows from a field located northeast of the wetland. A small pocket of historical emergent wetland exists in the west central part of the wetland.

Wetlands 2 through 7 are a continuous group of wetland communities along the western project boundary. Drainage flows west into an unnamed drainage ditch (WBIC 5024205) which flows south into Brandy Creek. An unnamed lake (WBIC 5589447) lies to the west of the ditch, beyond the project boundary. Forest and shrub wetlands occupy areas higher in elevation to the east, transitioning to wet meadow wetlands at lower elevation to the west. The size of this wetland community complex is approximately 150 acres in size and extends beyond the project boundary.

The commercial cranberry bog lies adjacent to the east of Wetland 7 in the northern portion of the project site. An upland berm separates Wetland 7 and the cranberry bog.

Wetland 8 is located in a cropped soybean field adjacent to the rail road right of way on the eastern boundary of the project site. Drainage occurs from the cropland and flows from west to east toward drainage ditches located adjacent to the UPRR line.

Data sheets were completed for 9 upland/wetland transects. (**Appendix A**). Locations are shown on **Figure 7**. Relevant photographs of the site are included in **Appendix B** and will be retained on file at Ingraham Technical Services. A summary of the hydrology and hydric soil indicators for the wetland sample points are shown in **Table 2.** Wetland characteristics are shown in **Table 3**. A narrative describing each of the wetlands is provided below.

Table 2
Wetland Sample Point Summary

Sample Point	Primary Wetland Hydrology Indicator	Secondary Wetland Hydrology Indicator	Hydric Soil Indicators
1-W	Saturation (A3)	FAC-Neutral Test (D5)	Sandy Mucky Mineral (S1)
2-W	Saturation (A3) Oxidized rhizospheres on living roots (C3)	Microtopographic relief (D4)	Sandy Mucky Mineral (S1)
3-W	Oxidized rhizospheres on living roots (C3)		Sandy Mucky Mineral (S1)
4-W	Saturation (A3)	Other: buttressed tree roots	Sandy Mucky Mineral (S1)
5-W		Drainage pattern (B10) Dry-season water table (C2) Geomorphic Position (D2)	Sandy Mucky Mineral (S1) Dark Surface (A7)
6-W	Saturation (A3) Oxidized rhizospheres on living roots (C3)	FAC-Neutral (D5)	Sandy Mucky Mineral (S1)
7-W	Saturation (A3)	FAC-Neutral Test (D5)	Sandy Mucky Mineral (S1)
8-W	Other: buttressed tree roots	Dry-season water table (C2)	Sandy Mucky Mineral (S1)
10-W	Sparsely vegetated concave surface (B8)	Surface soil cracks (B6) Stunted or stressed plants (D1) Geomorphic position (D2) FAC-Neutral Test (D5)	Coast Prairie Redox (A16)

Table 3
Wetland Characteristics

Wetland Basin	Sample Point No.	WWI Classification	Cowardin Classification	Circular 39 Classification	Eggers & Reed Classification
1	1-W	T3/5K	PFO1J	Type 1: Seasonally Flooded Basin or Flat	Floodplain Forest
2	2-W	T5K	PFO1J	Type 1: Seasonally Flooded Basin or Flat	Floodplain Forest
3	3-W	T3/5K	PFO14J	Type 1: Seasonally Flooded Basin or Flat	Floodplain Forest
4	4-W	T5/S3K	PFO2/SS1J	Type 1: Seasonally Flooded Basin or Flat/Type 6: Shrub Swamp	Floodplain Forest/Shrub-Carr
5	5-W	E1K	PEM1J	Type 2 – Wet Meadow	Fresh (Wet) Meadow
6	6-W	T5/S3K	PFO2/SS1J	Type 1: Seasonally Flooded Basin or Flat/Type 6: Shrub Swamp	Floodplain Forest/Shrub-Carr
	7-W	T5/S3K	PFO2/SS1J	Type 1: Seasonally Flooded Basin or Flat/Type 6: Shrub Swamp	Floodplain Forest/Shrub-Carr
7	8-W	T5K	PFO3J	Type 7: Wooded Swamp	Lowland Hardwood Swamp
8	10-W	E2K	PEM1J	Type 2 – Wet Meadow	Fresh (Wet) Meadow
Cranberry Bog		S6Kc	PSS3Jh	Type 8 - Bog	Open Bog

Wetland 1: Floodplain Forest (Type 1, PFO1J, T3/5K)

Wetland 1 is located in the southwest corner of the project. Water from Wetland 1 flows south into Brandy Creek. Wetland 1 is located within the floodplain of Brandy Creek. It is classified as a floodplain forest and is approximately 1.25 acres in size.

The dominant vegetation at sample point 1-W is quaking aspen (*Populus tremuloides* – FAC), buckthorn (*Rhamnus cathartica* – FAC), sensitive fern (*Onoclea sensibilis* - FACW) and cottongrass bulrush (*Scirpus cyperinus* – OBL).

The soils in Wetland 1 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 1 had one primary wetland hydrology indicator, saturation (A3) and one secondary wetland indicator, FAC-neutral Test (D5). Saturation was encountered at 12 inches below ground surface and water table was encountered at 16 inches below the ground surface. The hydrology in Wetland 1 is naturally problematic as it is seasonal.

The adjacent upland is cropped farm lands planted with soybeans. No hydric soil or hydrology indicators were observed at the upland sample point (1-U). Dominant vegetation at SP 1-U was red raspberry (*Rubus idaeus* – FAC). Saturation and water table were not observed.

Wetland 2: Floodplain Forest (Type 1, PFO1J, T5K)

Wetland 2 is located north of Wetland 1, on the south end of the wetland complex (Wetland 2 – 7) along the western project boundary. Wetland 2 is classified as a floodplain forest.

The dominant vegetation at sample point 2-W was red maple (*Acer rubrum* – FAC), white pine (*Pinus strobus* – FACU) and buckthorn (*Rhamnus cathartica* – FAC).

The soils in Wetland 2 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 2 had two primary wetland hydrology indicators, saturation (A3) and oxidized rhizospheres on living roots (C3). It had one secondary wetland indicator, microtopographic relief (D4). Saturation was encountered at 12 inches below ground surface. Water table was not encountered. The hydrology in Wetland 2 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods dominated by white pine (*Pinus strobus* – FACU) and red oak (*Quercus rubra* – FACU). No hydric soil or hydrology indicators were observed at the upland sample point (2-U). Saturation and water table were not observed.

Wetland 3: Floodplain Forest (Type 1, PFO14J, T3/5K)

Wetland 3 is located north of Wetland 2, on the south end of the wetland complex (Wetland 2 – 7) along the western project boundary. Wetland 3 is classified as a floodplain forest.

The dominant vegetation at sample point 3-W was white pine (*Quercus rubra* – FACU), buckthorn (*Rhamnus cathartica* – FAC), velvetleaf blueberry (*Vaccinium myrtilloides* – FACW), and cinnamon fern (*Osmundastrum cinnamomeum* – FACW).

The soils in Wetland 3 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 3 had one primary wetland hydrology indicator, oxidized rhizospheres on living roots (C3) and had no secondary wetland indicator. Saturation was encountered at 18 inches below ground surface. Water table was not encountered. The hydrology in Wetland 3 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods on a hillside dominated by red oak (*Quercus rubra* – FACU), white pine (*Pinus strobus* – FACU) and Pennsylvania sedge (*Carex pensylvanica* – UPL). No hydric soil or hydrology indicators were observed at the upland sample point (3-U). Saturation and water table were not observed.

Wetland 4: Floodplain Forest/ Shrub-Carr (Type 1/Type 6, PFO2/SS1J, T5/S3K)

Wetland 4 is located north of Wetland 3, on the south end of the wetland complex (Wetland 2 – 7) along the western project boundary. Wetland 4 is classified as a floodplain forest/shrub-carr.

The dominant vegetation at sample point 4-W was red oak (*Quercus rubra* – FACU), red maple (*Acer rubrum* – FAC), white pine (*Pinus strobus* – FACU), velvet-leaf blueberry (*Vaccinium myrtilloides* – FACW) and cinnamon fern (*Osmundastrum cinnamomeum* – FACW).

The soils in Wetland 4 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 4 had one primary wetland hydrology indicator, saturation (A3) and one secondary wetland indicator, other: buttressed tree roots. Saturation was encountered at 9 inches below ground surface. Water table was encountered at 20 inches below soil surface. The hydrology in Wetland 4 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods on a hillside dominated by white oak (*Quercus alba* – FACU), red maple (*Acer rubrum* – FAC), white pine (*Pinus strobus* – FACU) and velvet-leaf blueberry (*Vaccinium myrtilloides* – FACW). At SP 4-U, the soils met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral. No hydrology indicators were observed at the upland sample point. Saturation and water table were not observed.

Wetland 5: Fresh (Wet) Meadow (Type 2, PEM1J, E1K)

Wetland 5 is located north of Wetland 4, approximately midway in the wetland complex (Wetland 2 – 7) along the western project boundary. Wetland 5 is not identified as a wetland on the WDNR WWI Map, but the area is shown to have partially hydric soils (Majik, cool-Ponycreek complex, lake plain, 0 to 3 percent slopes, 1548A). In addition, topography shows a narrow drainageway where water flows into Wetland 6 lying west and north of Wetland 5.

Wetland 5 is classified as a fresh (wet) meadow. The dominant vegetation in the wetland basin (sample point 5-W) was lakebank sedge (*Carex lacustris* – OBL) and cottongrass bulrush (*Scirpus cyperinus* – OBL). Tree and shrub species within the wetland sample point are dominated by white pine (*Pinus strobus* – FACU) and buckthorn (*Rhamnus cathartica* – FAC). The tree and shrub stratums were most prevalent where the elevation was higher than the herbaceous stratum in the wetland basin.

The soils in Wetland 5 met the technical criteria for hydric soil indicators S1 – Sandy Mucky Mineral and A7 – Dark Surface.

Wetland 5 had no primary wetland hydrology indicators and three secondary wetland indicators, drainage pattern (B10), dry season water table (C2), and geomorphic position (D2). Saturation was encountered at 14 inches below ground surface. Water table was encountered at 18 inches below soil surface. The hydrology in Wetland 5 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods on a hillside dominated by white oak (*Quercus alb*a – FACU), red oak (*Quercus rubra* – FACU), buckthorn (*Rhamnus cathartica* – FAC) and Pennsylvania sedge (*Carex pensylvanica* – FACU). No hydric soil or hydrology indicators were observed at the upland sample point (5-U). Saturation and water table were not observed.

Wetland 6: Floodplain Forest/ Shrub-Carr (Type 1/Type 6, PFO2/SS1J, T5/S3K)

Wetland 6 is located west and north of Wetland 5, within the wetland complex (Wetlands 2 – 7) along the western project boundary. It is classified as a floodplain forest/shrub-carr. Sample points 6 and 7 were taken in Wetland 6.

The dominant vegetation was buckthorn (*Rhamnus cathartica* – FAC) and red maple (*Acer rubrum* – FAC). The herb stratum at 6-W was clubmoss and at 7-W was lakebank sedge (*Carex lacustris* – OBL)

The soils in Wetland 6 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 6 had two primary wetland hydrology indicators and one secondary wetland indicator. The primary wetland indicators at sample point 6-W saturation (A3) and oxidized rhizospheres on living roots (C3) and saturation (A3) at 7-W. Wetland 6 had one secondary wetland indicator, FAC-neutral test (D5) at sample points 6-W and 7-W. Saturation was encountered at 12 inches below soil surface and water table at 18 inches below soil surface at sample point 6-W. Saturation was encountered at 12 inches below soil surface and water table at 16 inches below soil surface at sample point 7-W. The hydrology in Wetland 6 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods dominated by red maple (*Acer rubrum* – FAC), red oak (*Quercus rubra* – FACU), buckthorn (*Rhamnus cathartica* – FAC). The herb stratum consisted of Pennsylvania sedge (*Carex pensylvanica* – UPL) at sample point 6-U and Timothy grass (*Phleum pretense* – FACU) at sample point 7-U.

Wetland 7: Floodplain Forest (Type 1, PFO1J, T5K)

Wetland 7 is located north of Wetland 6, on the north end of the wetland complex (Wetland 2 – 7) along the western project boundary. The majority the wetland lies between a commercial cranberry bog to the east and a wet meadow wetland to the west. Wetland 7 is classified as a floodplain forest.

The dominant vegetation at sample point 8-W was red maple (*Acer rubrum* – FAC), buckthorn (*Rhamnus cathartica* – FAC) and red raspberry (*Rubus idaeus* – FAC).

The soils in Wetland 7 met the technical criteria for hydric soil indicator S1 – Sandy Mucky Mineral.

Wetland 7 had no primary wetland hydrology indicators and two secondary wetland indicators, dry season water table (C2) and other: buttressed tree roots. Saturation was encountered at 14 inches below ground surface. Water table was encountered at 20 inches below soil surface. The hydrology in Wetland 7 is naturally problematic as it is seasonal.

The adjacent upland is mixed deciduous woods dominated by red maple (*Acer rubrum* – FAC), red oak (*Quercus rubra* – FACU) and dwarf blueberry (*Vaccinium angustifolium* – FACU) and Pennsylvania sedge (*Carex pensylvanica* – UPL). No hydric soil or hydrology indicators were observed at the upland sample point (8-U). Saturation and water table were not observed.

Wetland 8: Fresh (Wet) Meadow (Type 2, PEM1J, E2K)

Wetland 8 is located in a cropped soybean field adjacent to the rail road right of way on the eastern boundary of the project boundary. A wet meadow wetland lies to the east of the rail road right of way. Wetland 8 is classified as a fresh (wet) meadow.

The dominant vegetation at sample point 810-W was reed canary grass (*Phalaris arundinacea* – FACW and chufa (*Cyperus esculentus* - FACW). Soybeans planted in the wetland basin were few in number and appeared stressed (stunted and light green in color)

The soils in Wetland 8 met the technical criteria for hydric soil indicator A16 – Coast Prairie redox.

Wetland 8 had one primary wetland hydrology indicator, sparsely vegetated concave surface (B8) and four secondary wetland hydrology indicators, surface soil cracks (B6), stunted or stressed plants (D1), geomorphic position (D2), and FAC-neutral test (D5). Saturation and water table were not encountered. The hydrology in Wetland 7 is naturally problematic as it is seasonal.

The adjacent upland is cropped soybeans that were dark green in color, dense in number and taller than the wetland basin. No hydric soil or hydrology indicators were observed at the upland sample point (10-U). Saturation and water table were not observed.

Cranberry Bog: Open Bog (Type 8; PSS3Jh; S6Kc)

Commercial cranberry bogs are located in the northern portion of the project site, east of Wetland 7. An upland berm lies between the bogs and Wetland 7. The WWI Map identifies the bogs as an S6Kc, scrub/shrub cranberry bog. The soils are identified as "Psamaquents, nearly level". No sample points were taken in the cranberry bogs as the boundary was well defined.

Other Area Investigated

Sample Point 9-U is located northwest of Wetland 8. This area was investigated because it contained scattered sedges (*Scirpus cyperinusus* – OBL, *Cyperus esculentus* – FACW). The dominant vegetation in this area was hydrophytic but did not have any hydric soil indicators or wetland hydrology. The area appeared to have been mechanically disturbed in the past.

Regulatory Considerations

Wetlands in the project area are regulated by agencies at the local, state, and federal levels including the USACE and the EPA at the federal level and the WDNR at the state level. Construction plans that propose any direct alteration or indirect impact to wetlands or watercourses within the project area will require permits from the appropriate regulatory agencies. Violation of the wetland regulations can result in substantial civil and/or criminal penalties.

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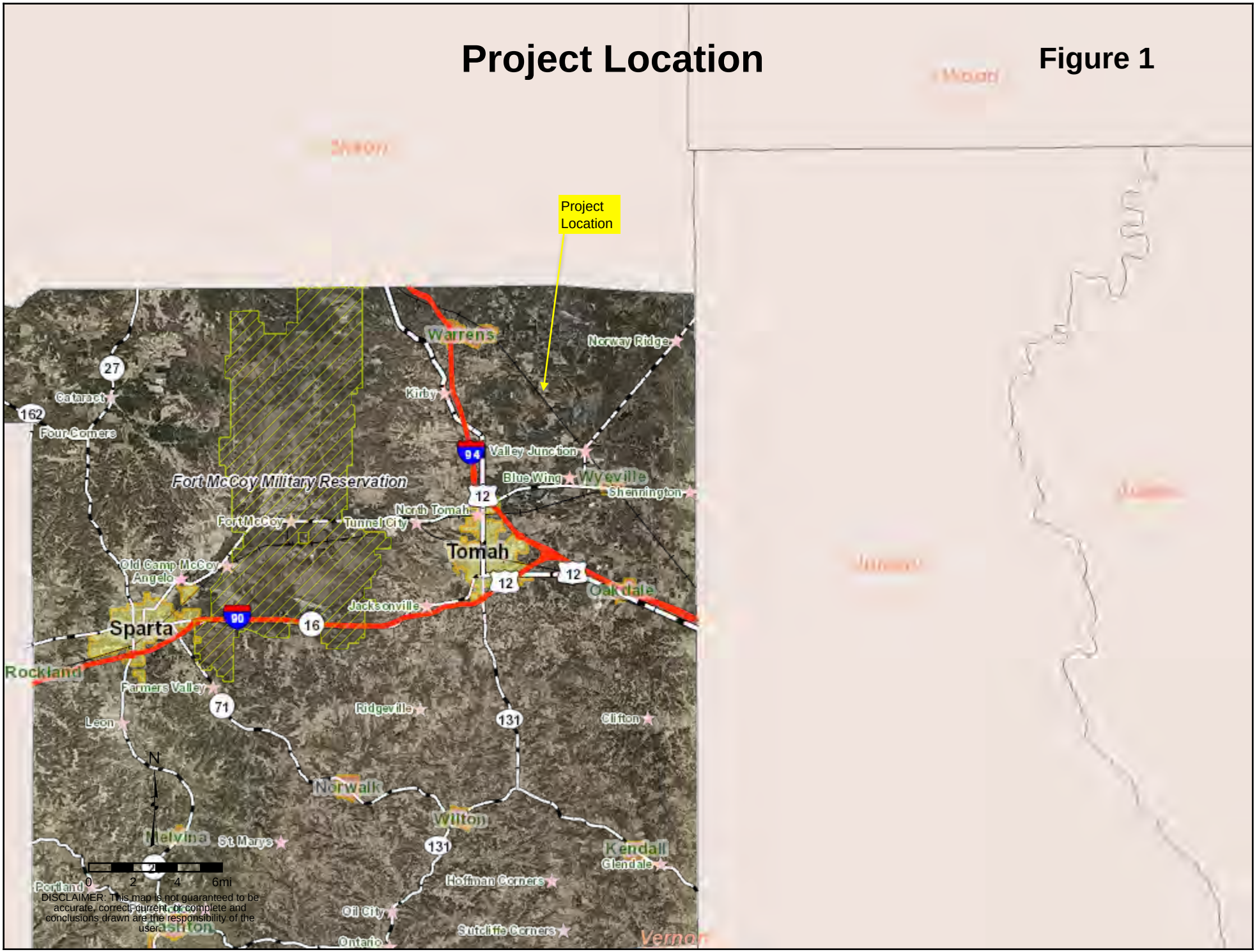
List of Figures

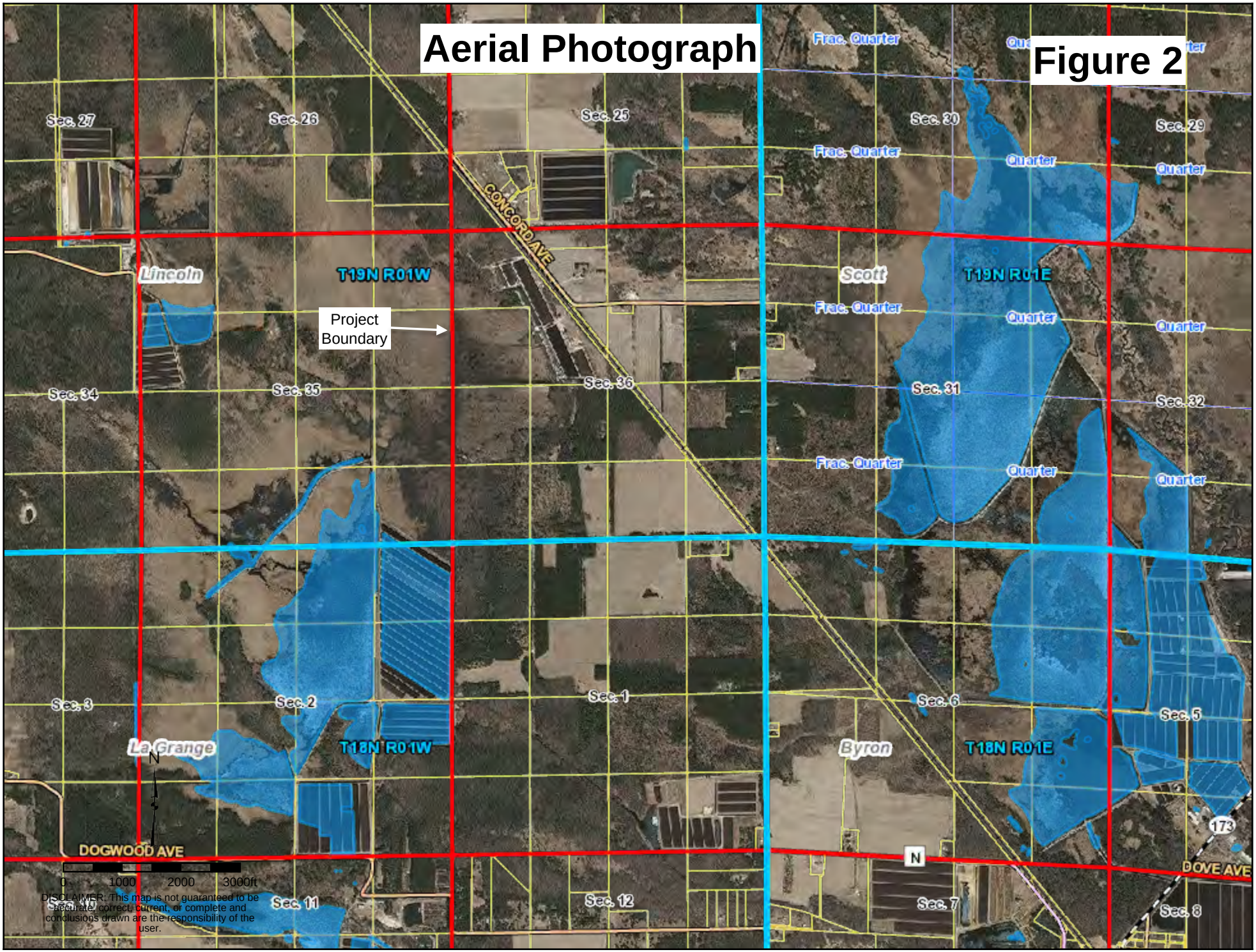
Project Location

Figure 1



Aerial Photograph

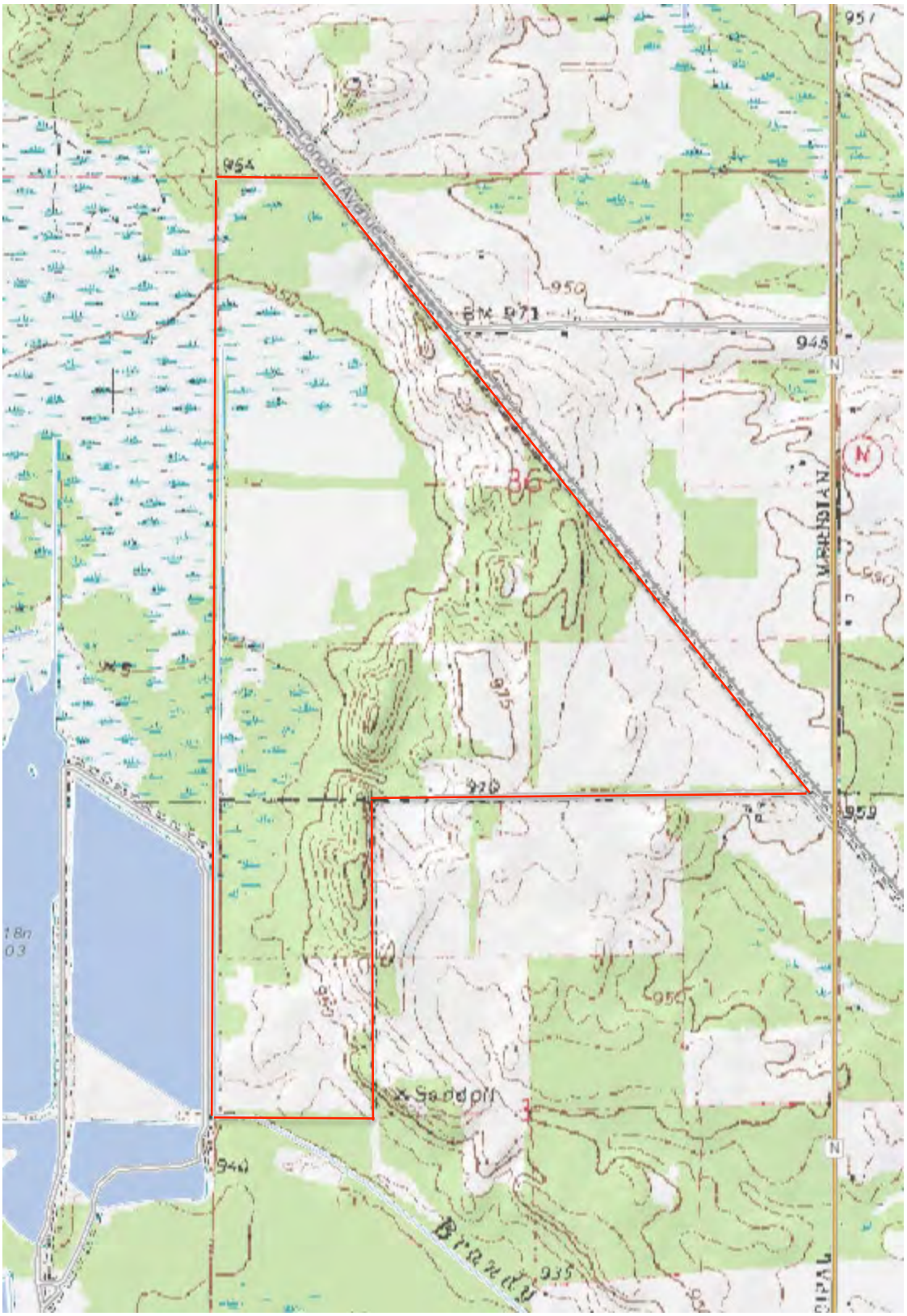
Figure 2



WISCONSIN DEPT. OF NATURAL RESOURCES

Topographic Map

Figure 3



Legend

- Municipality
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- Intermittent Streams
- Lakes and Open water
- 24K USGS Quad Index - Level 7 - 16
- Project Boundary

0.5 0 0.25 0.5 Miles

1: 15,840

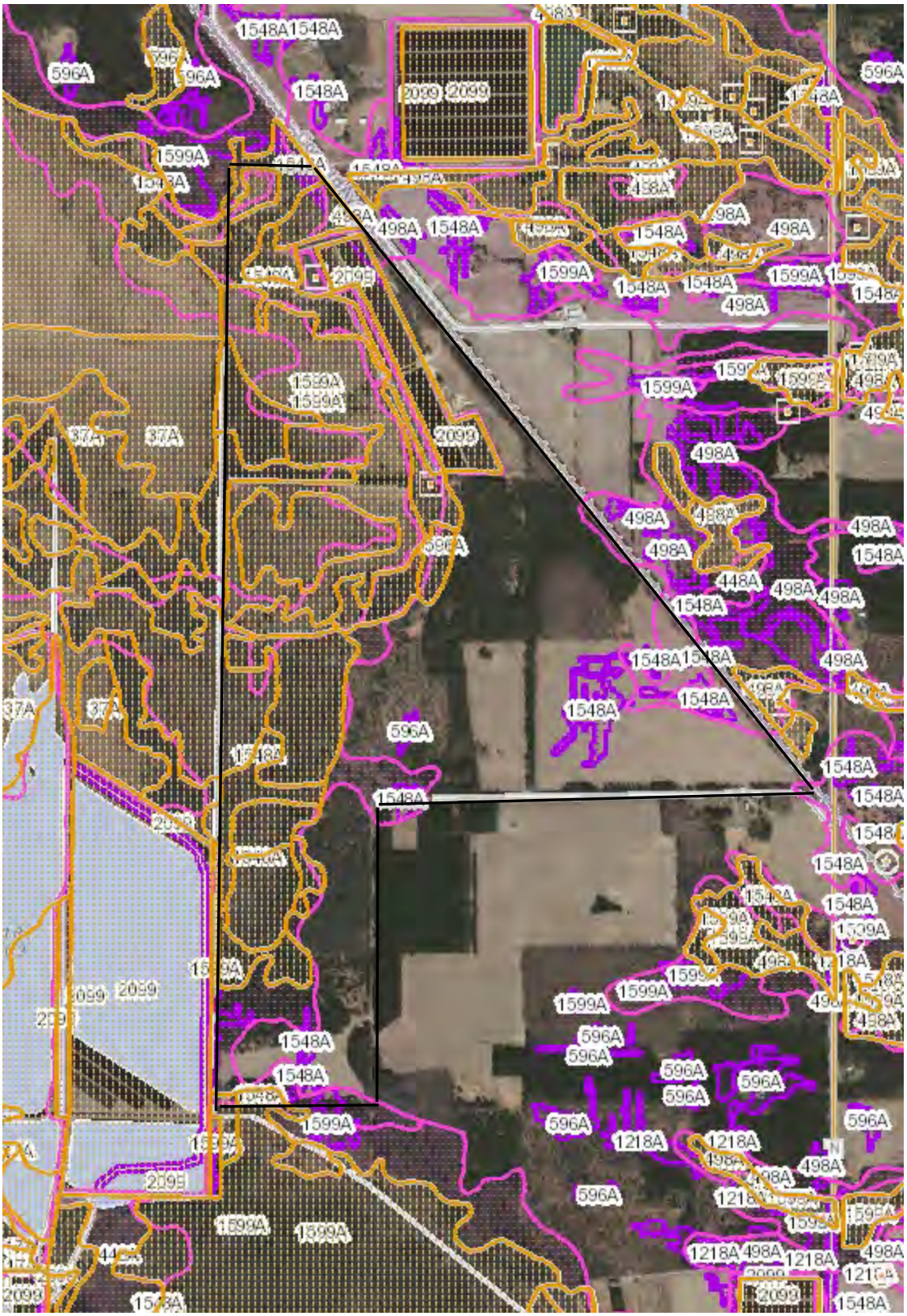
NAD_1983_HARN_Wisconsin_TM

Notes

WISCONSIN DEPT. OF NATURAL RESOURCES

Wetland Map

Figure 4



Legend

- Wetland Identifications and Confirmations
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  - Dammed pond
  - Excavated pond
  - Filled excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
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  - Wetland
  - Upland
- Filled Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
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  - US Highway
- County and Local Roads
  - County HWY
  - Local Road

0.5 0 0.25 0.5 Miles

1: 15,840

NAD_1983_HARN_Wisconsin_TM

Notes

Project Boundary

Soil Map—Monroe County, Wisconsin

Figure 5

90° 27' 56" W — 90° 25' 24" W

44° 5' 58" N — 44° 2' 58" N

703100 — 703600 — 704100 — 704600 — 705100 — 705600 — 706100

4885800 — 4885300 — 4884800 — 4884300 — 4883800 — 4883300 — 4882800 — 4882300 — 4881800 — 4881300 — 4880800

Project Boundary

Concord Ave

County Hwy N

Dogwood Ave

Domino Rd

Lemonweir River

2099 596A 596A 498A 498A 1548A 498A 596A W 1599A 1599A 498A 233C 466A 2099 W 2016 37A 596A W 466A 466A 498A 561B W 596A 596A 448A 596A W 1548A 466A 1548A W 498A 561C 17A 596A 1233F 596A 37A W 466A 466A 596A 561B W W 1548A 1233F 551B 551B 561C 596A W 1548A 561B 596A 596A 1548A W 2099 556A 561B 1599A 596A 434B 2022 498A 596A 1599A 17A 448A 1599A 596A 498A 561C 561B 2099 1548A 1548A 2099 596A 434B 1548A W W 561B 596A 1548A 466A 466A 1548A

Map Scale: 1:15,500 if printed on B portrait (11" x 17") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84