

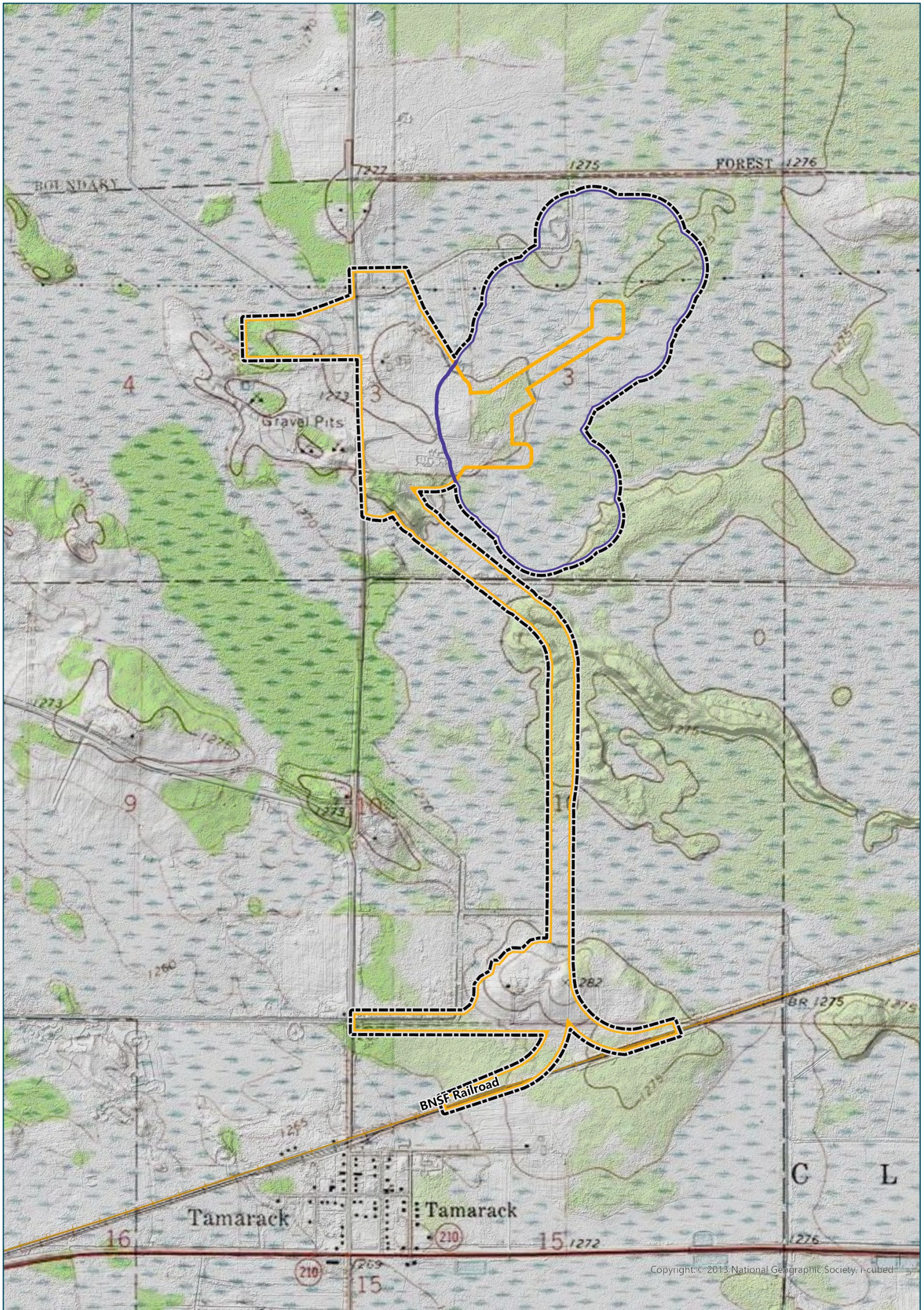
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



Figure 1 Project Location



Figure 2 USGS 7.5 Minute Map



 N
 0 1,073 Feet


-  Project Area
-  Surface Boundary
-  Underground Boundary
-  Railway

**USGS TOPOGRAPHIC MAP
 (7.5 MINUTE QUADRANGLE)**
 Tamarack Mining Project

Figure 3 Site Layout

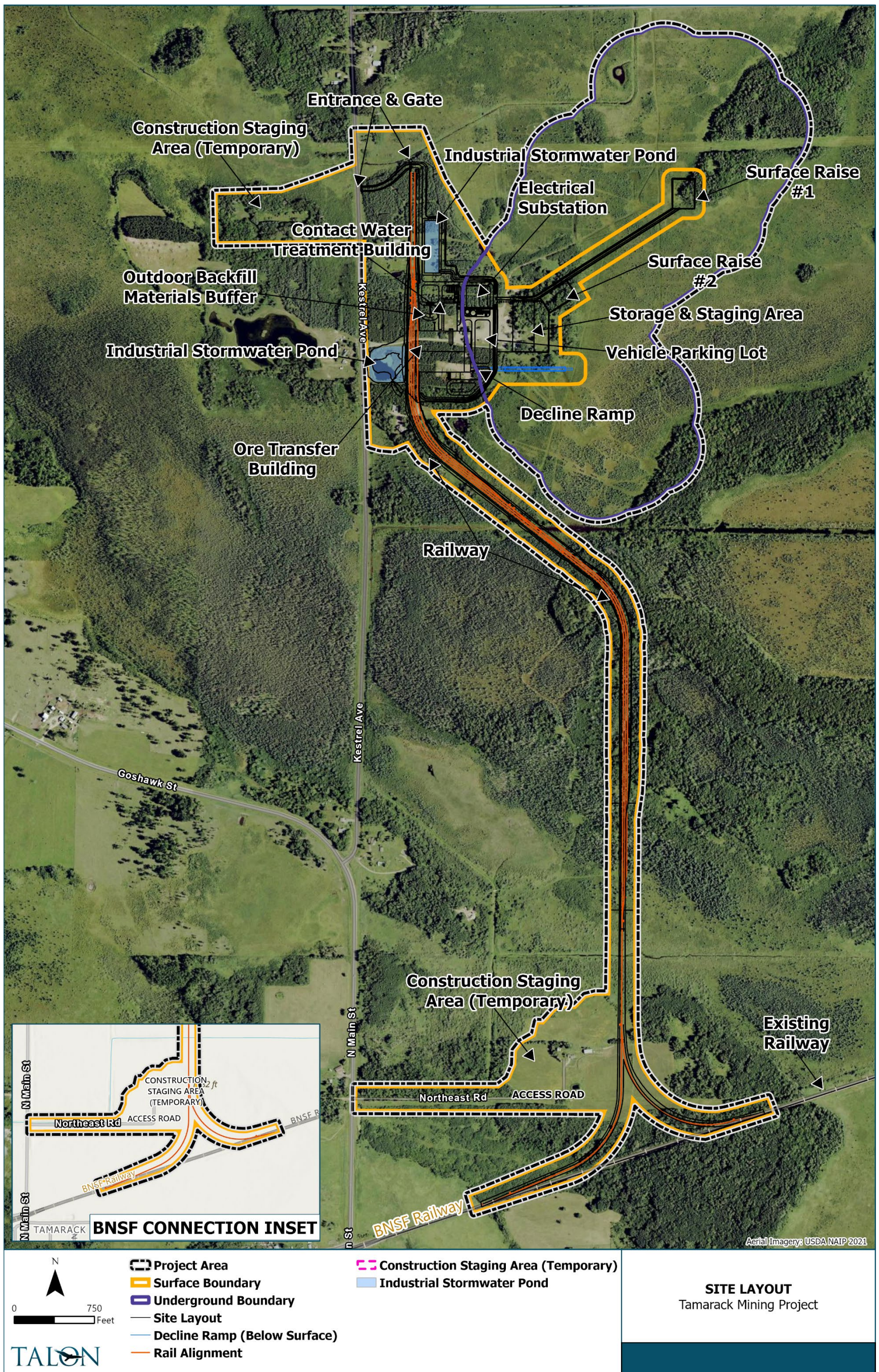
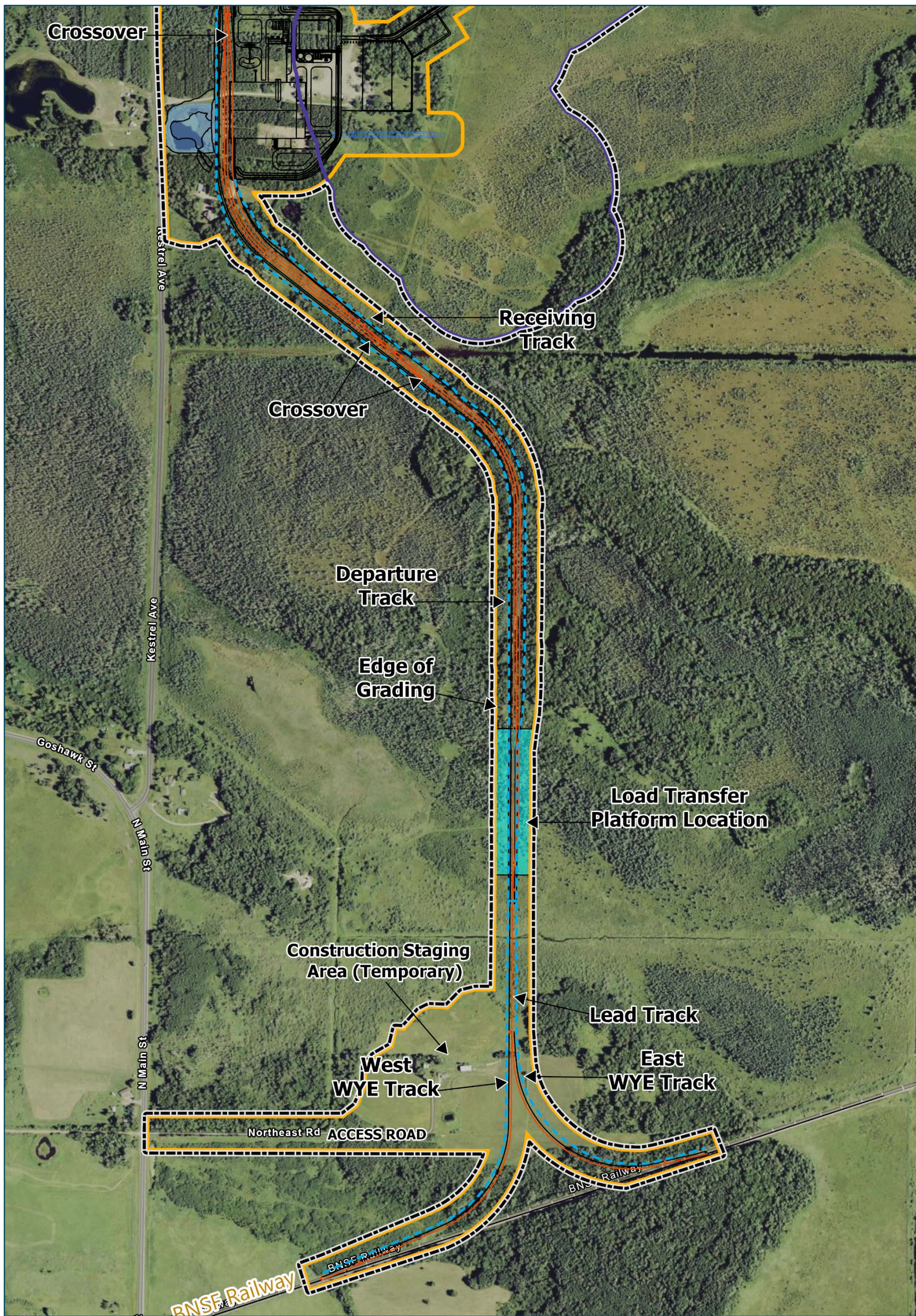
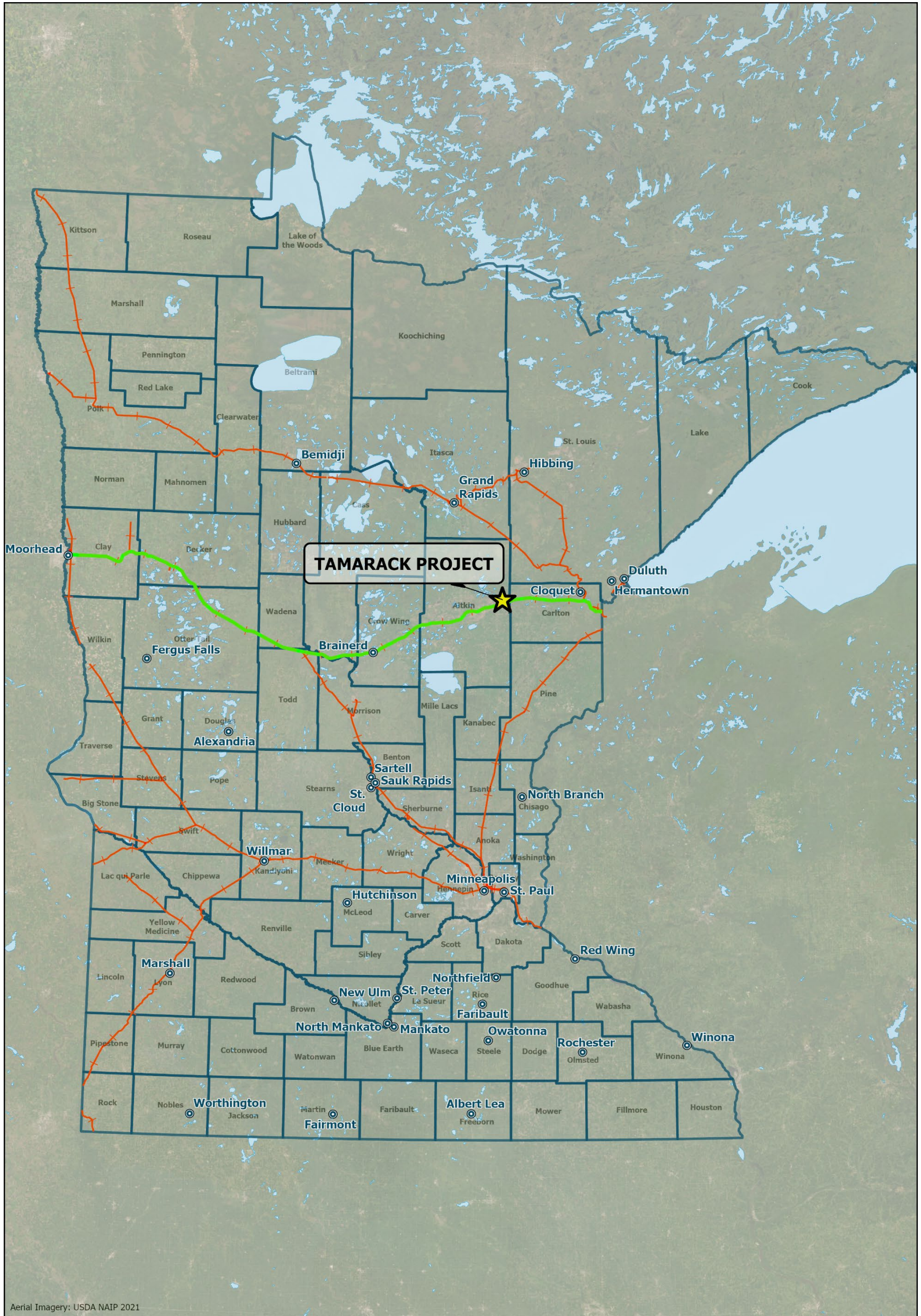


Figure 4 Railway Layout



 	Project Area Surface Boundary Underground Boundary Site Layout Rail Alignment	Industrial Stormwater Pond Decline Ramp (Below Surface) Edge of Grading	<p>RAILWAY LAYOUT Tamarack Mining Project</p>
	Load Transfer Platform Location		

Figure 5 Rail Routes



Aerial Imagery: USDA NAIP 2021

 N
 0 40 Miles


-  Tamarack Project
-  Minnesota County Boundaries
-  Initial Carrier Likely Rail Route
-  BNSF Rail Network
-  Major Minnesota Cities

RAIL ROUTES
Tamarack Mining Project

Figure 6 Surface Drainage

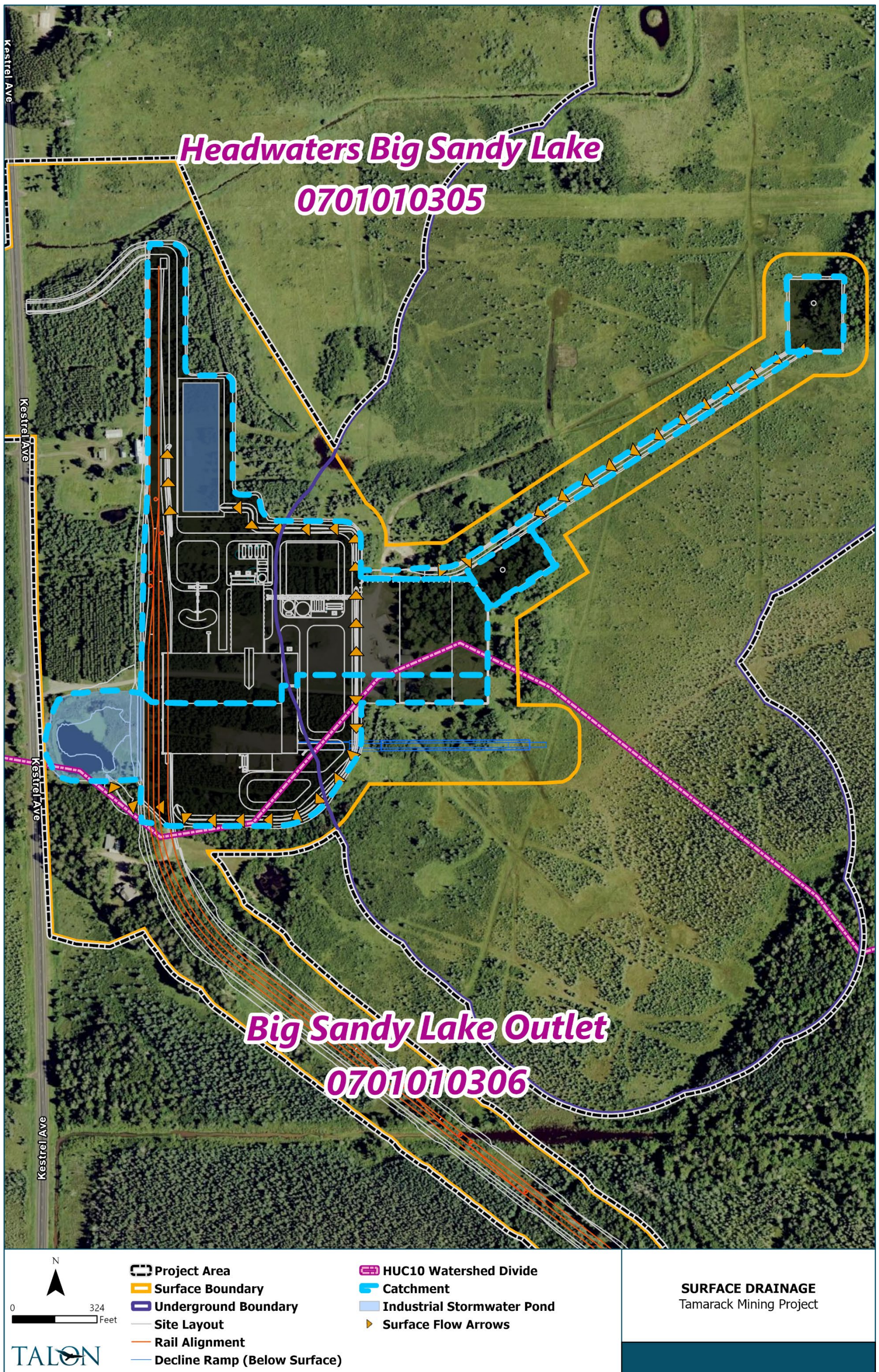


Figure 8 Water Treatment Plant Discharge Route

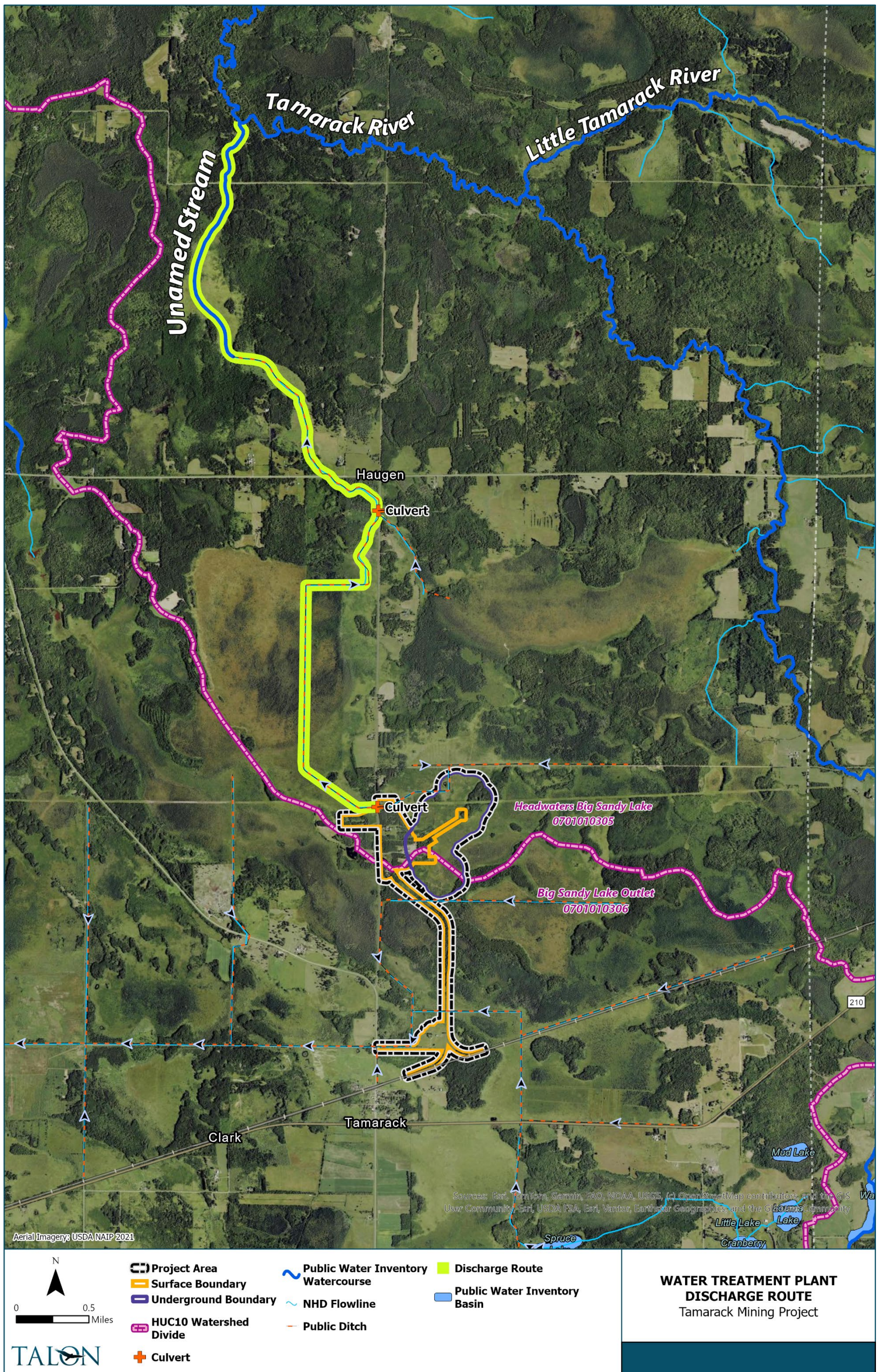


Figure 9 Depth to Water

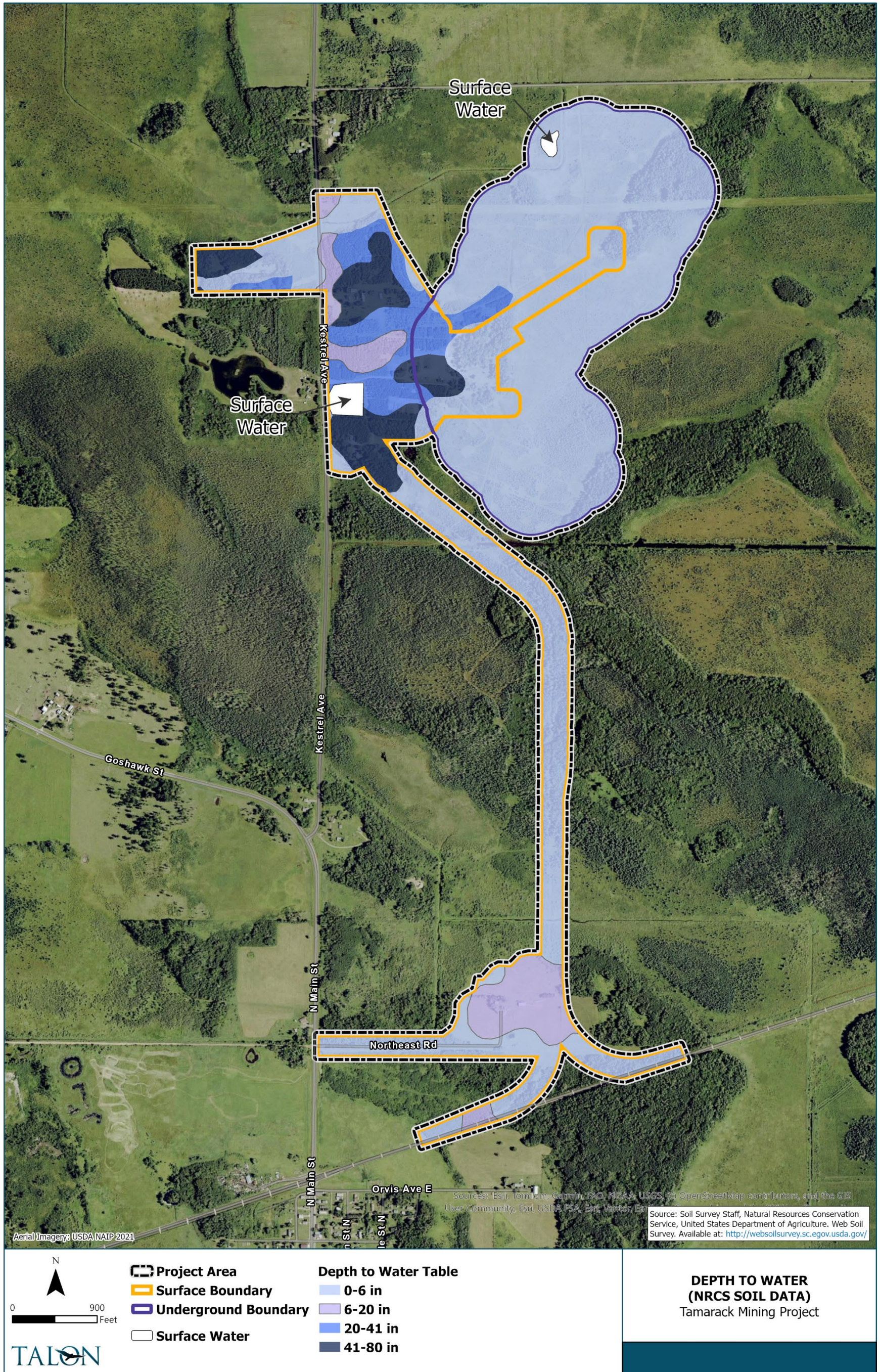
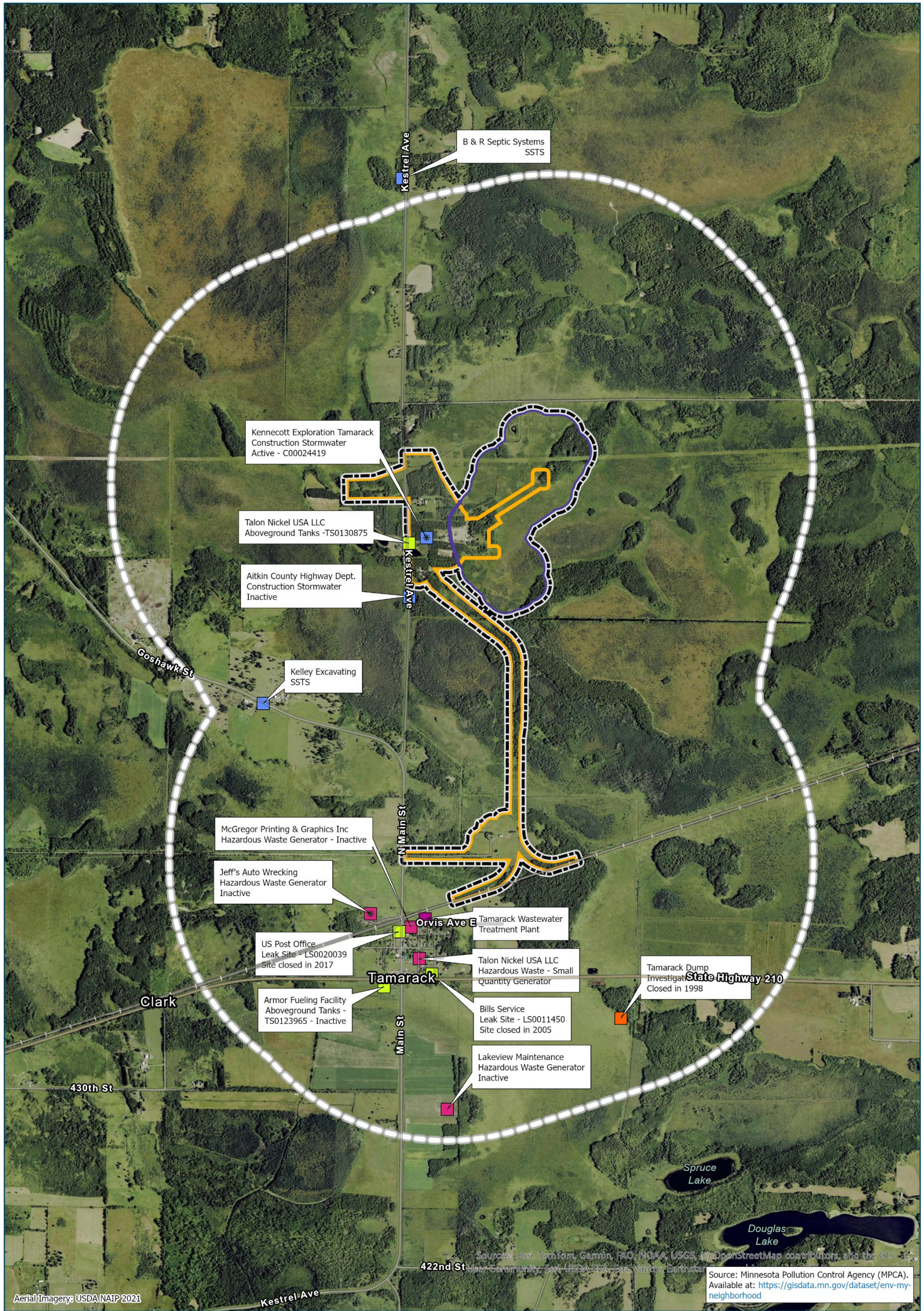


Figure 10 Contamination and Hazardous Waste



Aerial Imagery: USDA NAIP 2021

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, USDA, EPA, Esri, Yahoo!, Earthstar

Source: Minnesota Pollution Control Agency (MPCA). Available at: <https://gisdata.mn.gov/dataset/env-my-neighborhood>

 	Project Area	Hazardous Waste; Hazardous Waste, Small Quantity
	Surface Boundary	Investigation and Cleanup
	Underground Boundary	Tanks and Leaks
	Project Area 1 mile Buffer	Water Quality
		Wastewater, Municipal NPDES/SDS Permit
	* Indicates approximate location	

CONTAMINATION AND HAZARDOUS WASTE
Tamarack Mining Project

Figure 11 Zoning and Land Use

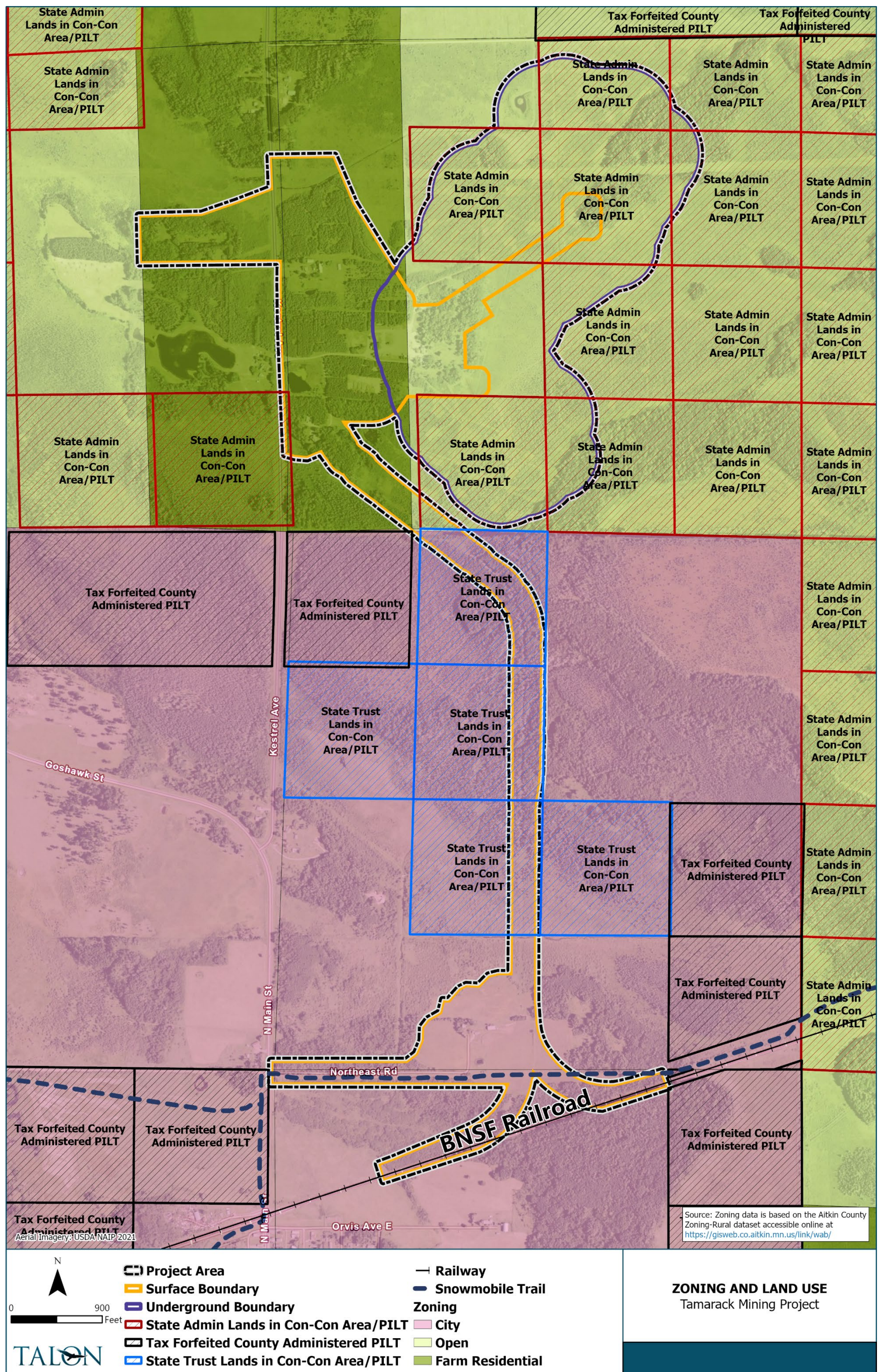
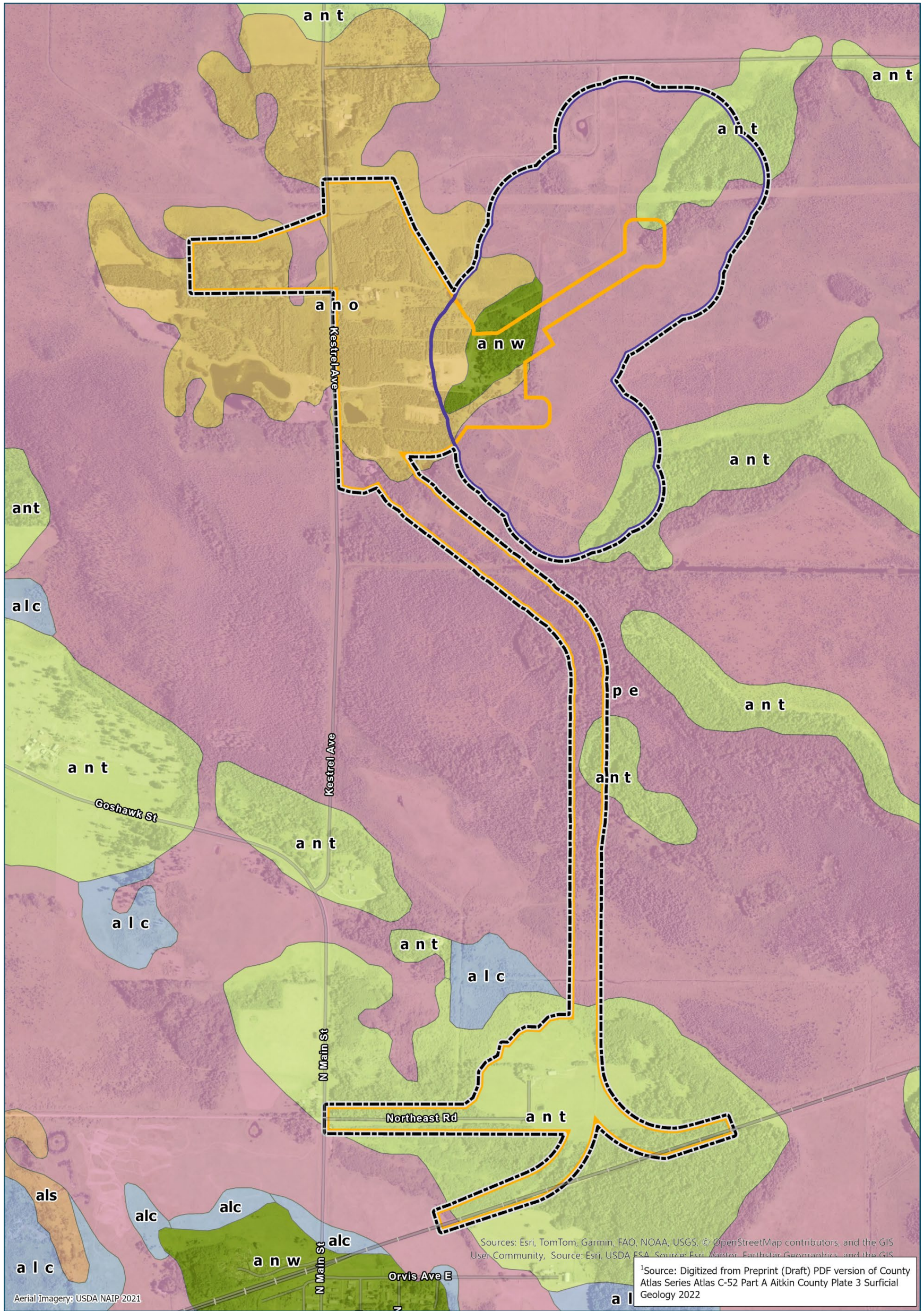


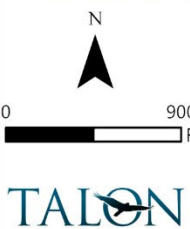
Figure 12 Surficial Geology



Aerial Imagery: USDA NAIP 2021

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, USDA FSA, Source: Esri, Mapbox, Earthstar Geographics, and the GIS

¹Source: Digitized from Preprint (Draft) PDF version of County Atlas Series Atlas C-52 Part A Aitkin County Plate 3 Surficial Geology 2022

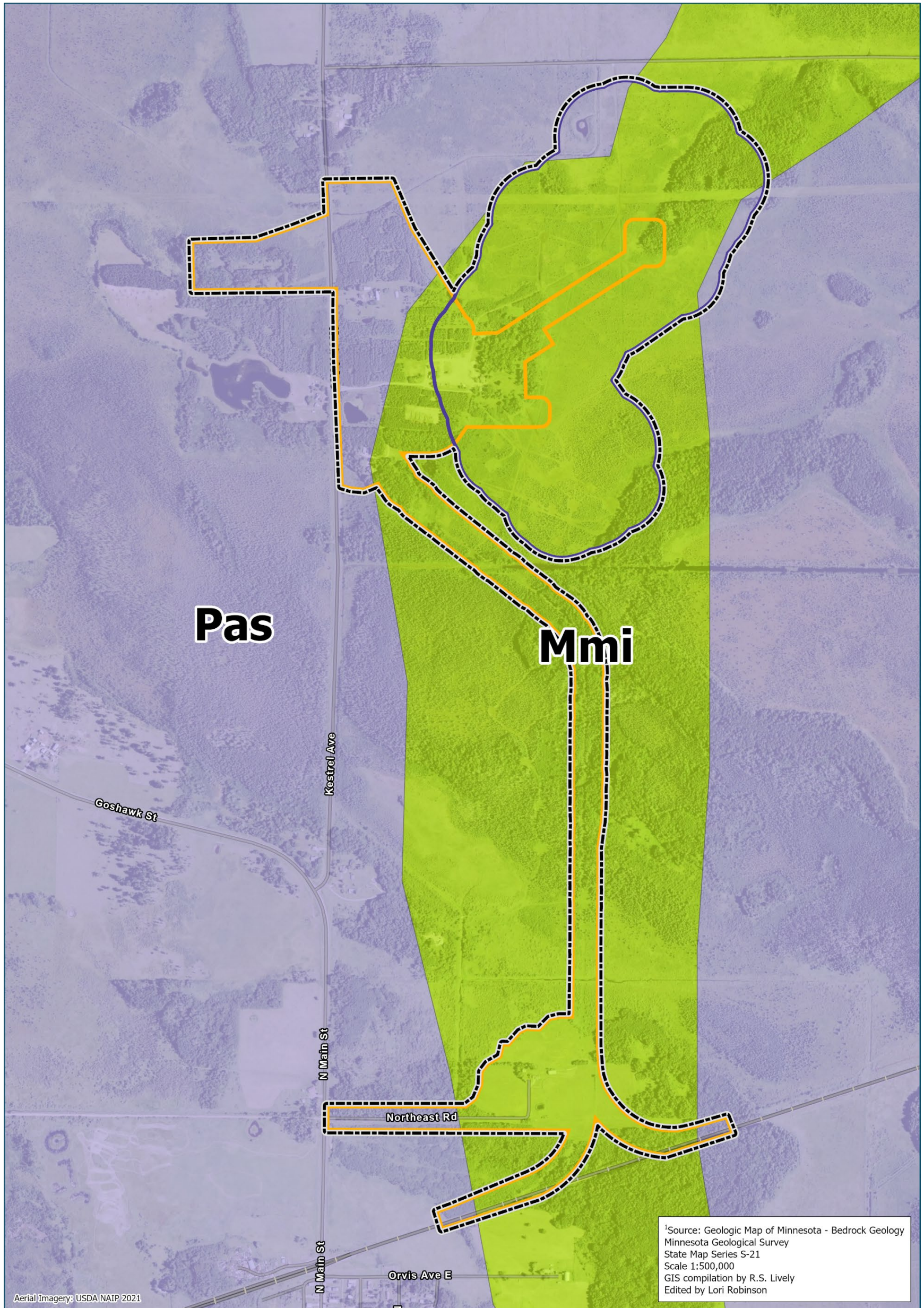


- Project Area
- Surface Boundary
- Underground Boundary
- Surficial Geology¹**
- pe - Peat and other organic sediment

- als - Glacial Lakes Aitkin II and Upham II member, sand and silt near-shore or shallow-water deposits
- alc - Glacial Lakes Aitkin II and Upham II member, fine-grained silt and clay lake sediment
- ano - Nelson Lake Member, Outwash deposits
- ant - Nelson Lake Member, Till deposits
- anw - Nelson Lake Member, Wave-washed till deposits

SURFICIAL GEOLOGY
Tamarack Mining Project

Figure 13 Bedrock Geology






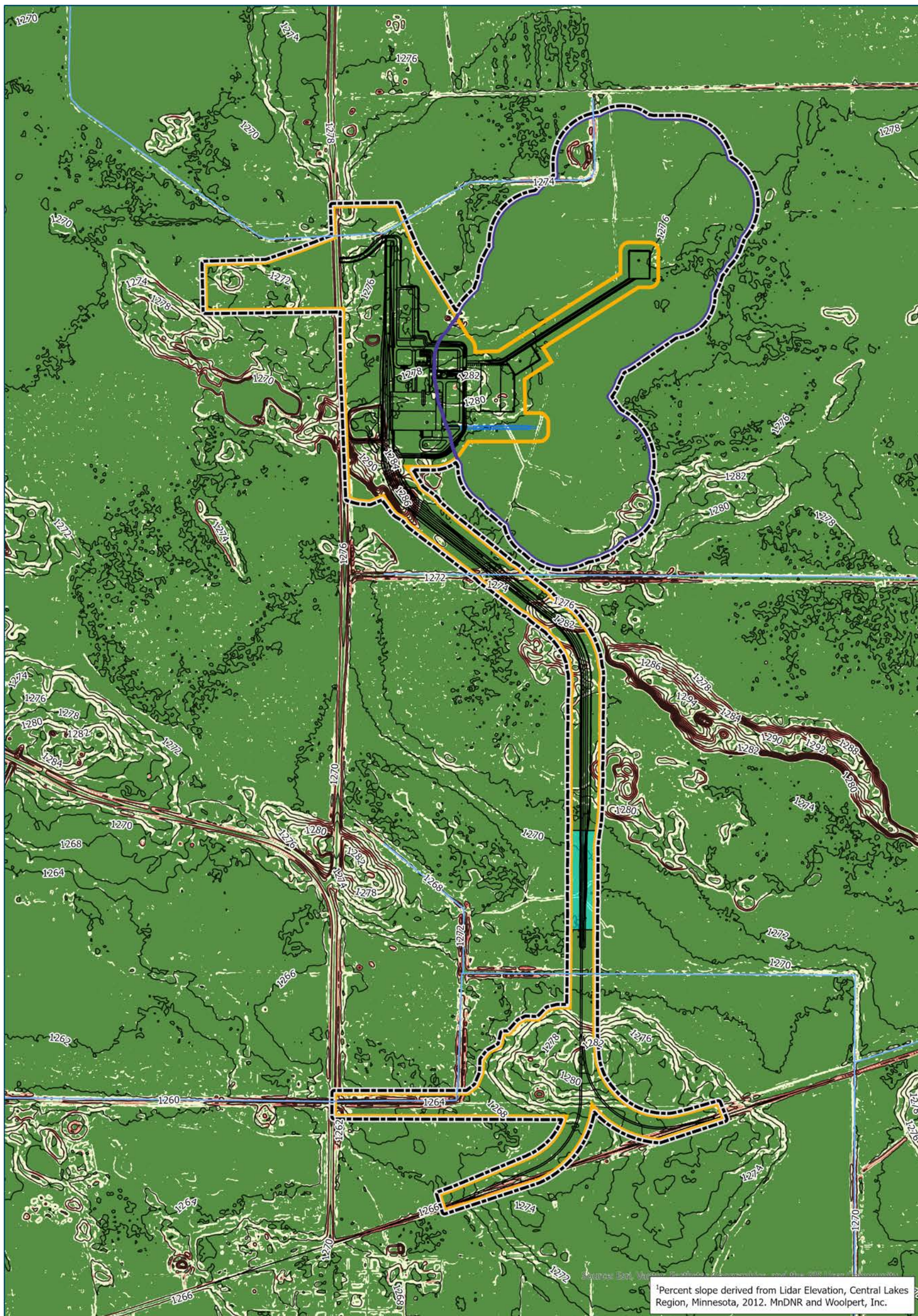
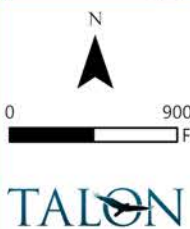
  	<p>Project Area</p> <p>Surface Boundary</p> <p>Underground Boundary</p>	<p>North Shore Volcanic Group -lower sequence, reversed and unknown polarity¹</p> <p>Mmi - Mafic intrusive stock; diabase, diorite, pyroxenite, gabbro</p>	<p>Animikie Group¹</p> <p>Pas - Virginia, Thompson, Rove Formations, mudstone and graywacke</p>	<p>BEDROCK GEOLOGY Tamarack Mining Project</p>
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Figure 14 Topographic Relief In Project Area



¹Percent slope derived from Lidar Elevation, Central Lakes Region, Minnesota, 2012. MnDNR and Woolpert, Inc.



- Project Area
- Surface Boundary
- Underground Boundary
- Load Transfer Platform Location

- Contour 2-Foot Interval
- Site Layout
- NHD Flowline
- Decline Ramp (Below Surface)

- Slope Percent < 3%
- Slope Percent 3% - 9%
- Slope Percent > 9%

TOPOGRAPHIC RELIEF IN PROJECT AREA
Tamarack Mining Project

Figure 15 Soils

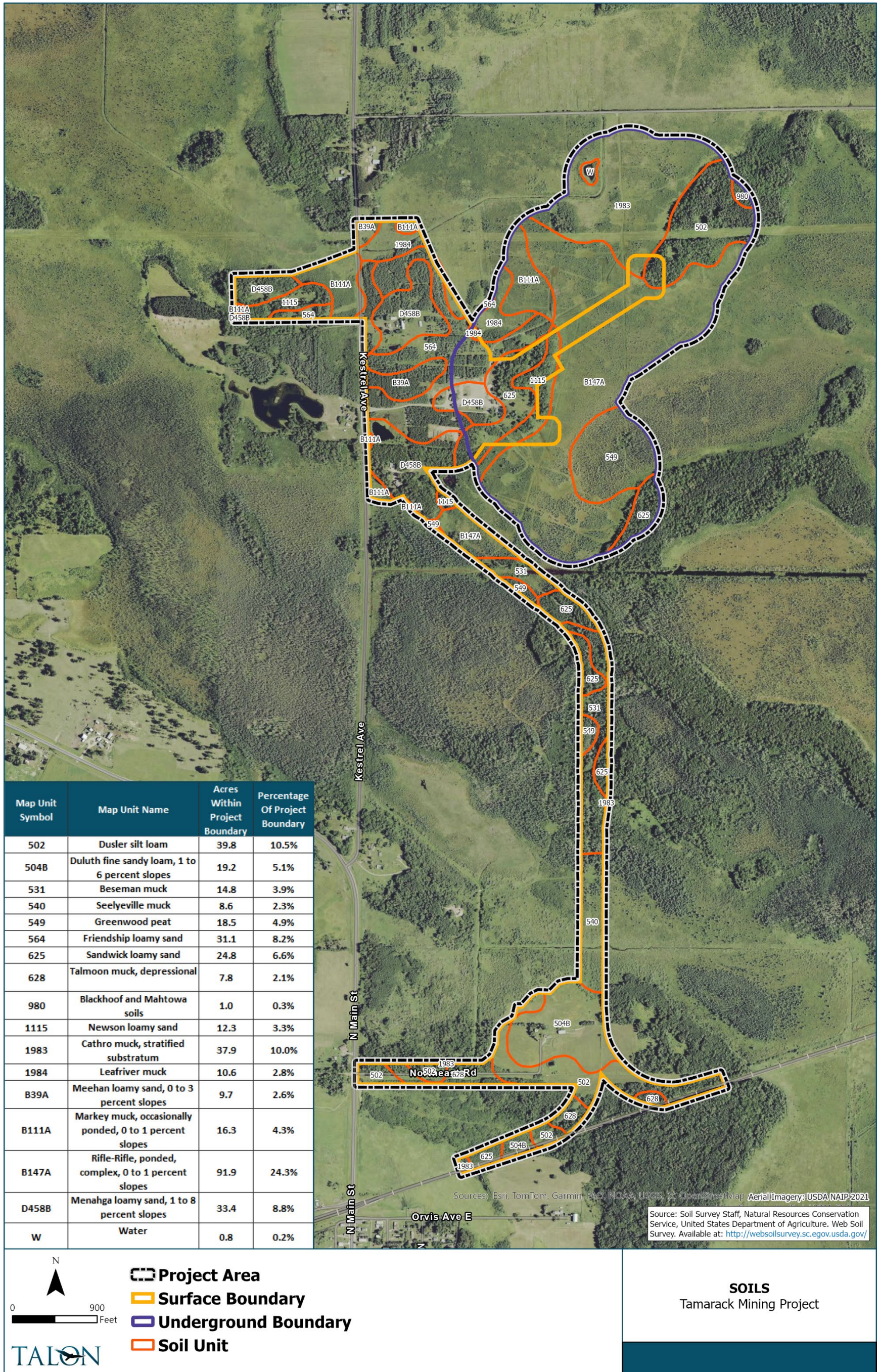
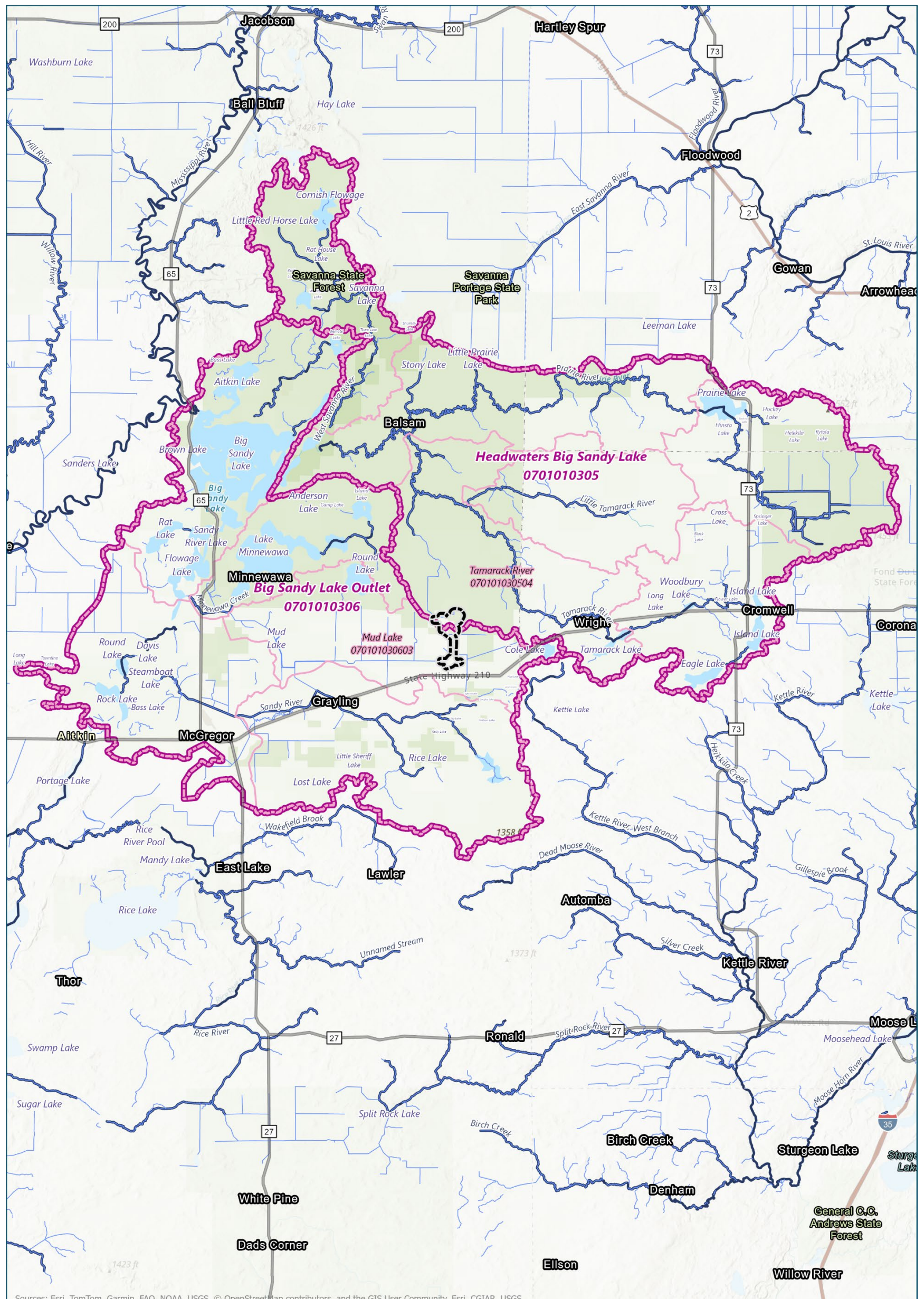


Figure 16 USGS Hydrologic Level 10 and 12 Watersheds



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, CGIAR, USGS

Project Area (dashed black line)

HUC10 Watershed Divide (thick pink line)

HUC12 Watershed Divide (thin pink line)

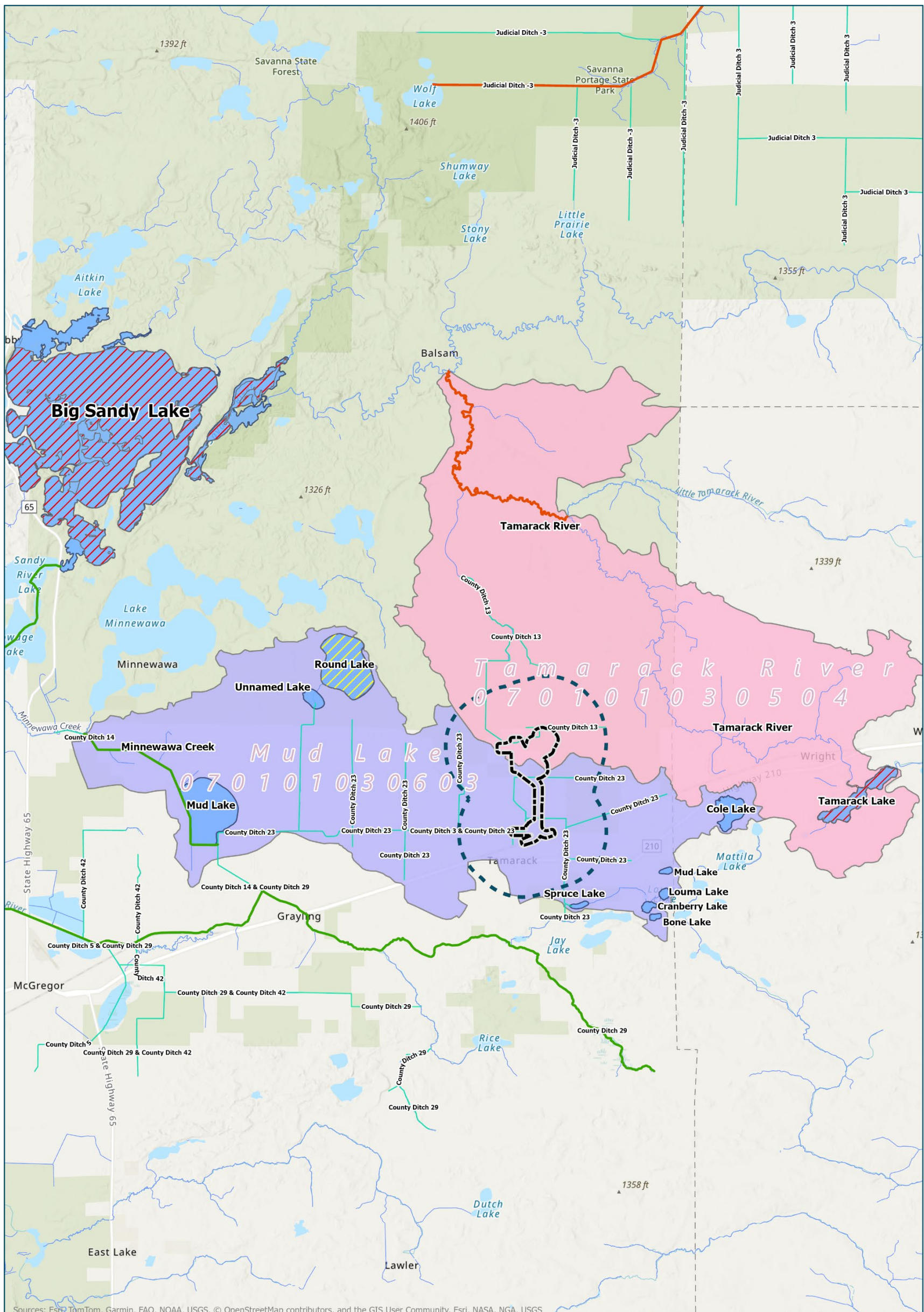
NHD Flowline (blue line)

Public Water Course Delineations (wavy blue line)

U.S. GEOLOGICAL SURVEY
HYDROLOGIC LEVEL 10 AND 12
WATERSHEDS
 Tamarack Mining Project



Figure 17 Surface Waters In HUC 12 Tamarack River AND MUD Lake Watersheds



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, NASA, NGA, USGS

 TALON	Project Area Project Area-1 Mile Buffer	Impaired Lakes Hg-F Hg-F; Nutrients Public Water Course NHD Flowline	HUC12 Watersheds Mud Lake Tamarack River Public Water Basin	
	Impaired Streams E.coli FishesBio; InvertBio Public Ditch			

**SURFACE WATERS IN HUC 12
 TAMARACK RIVER AND MUD LAKE
 WATERSHEDS**
 Tamarack Mining Project

Figure 18 Surface Waters

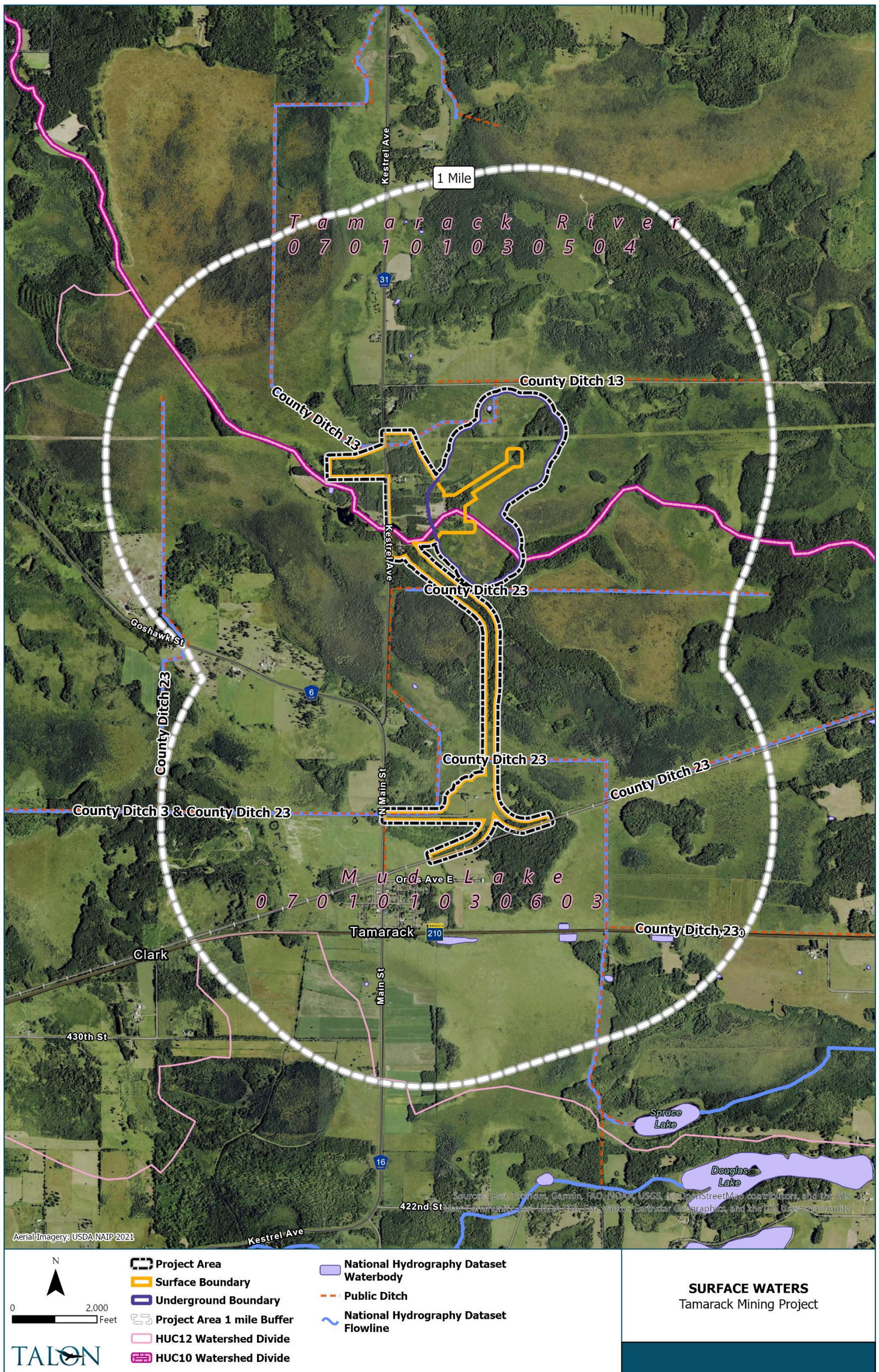


Figure 20 Wetlands

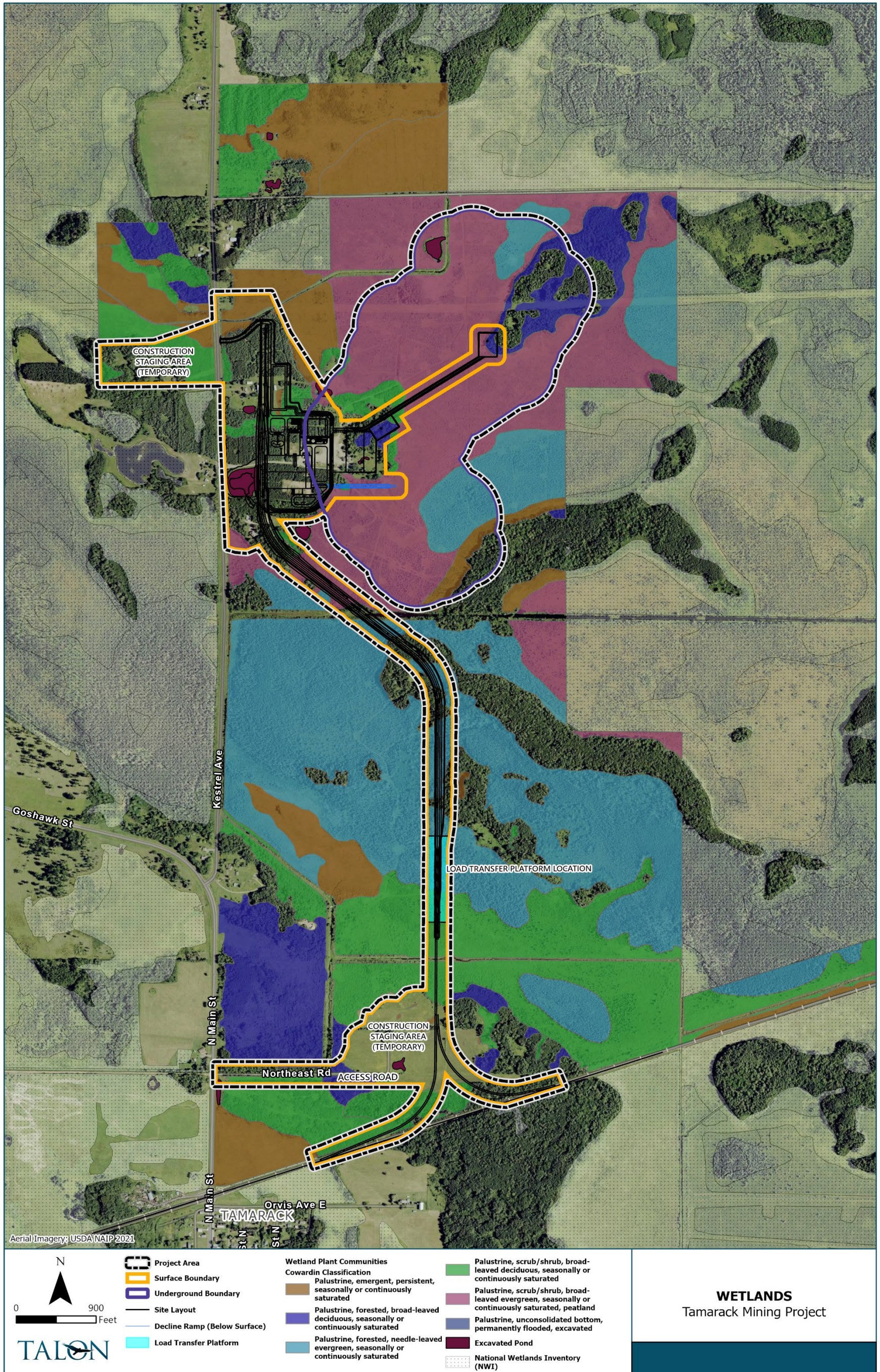


Figure 21 Cultural Resources

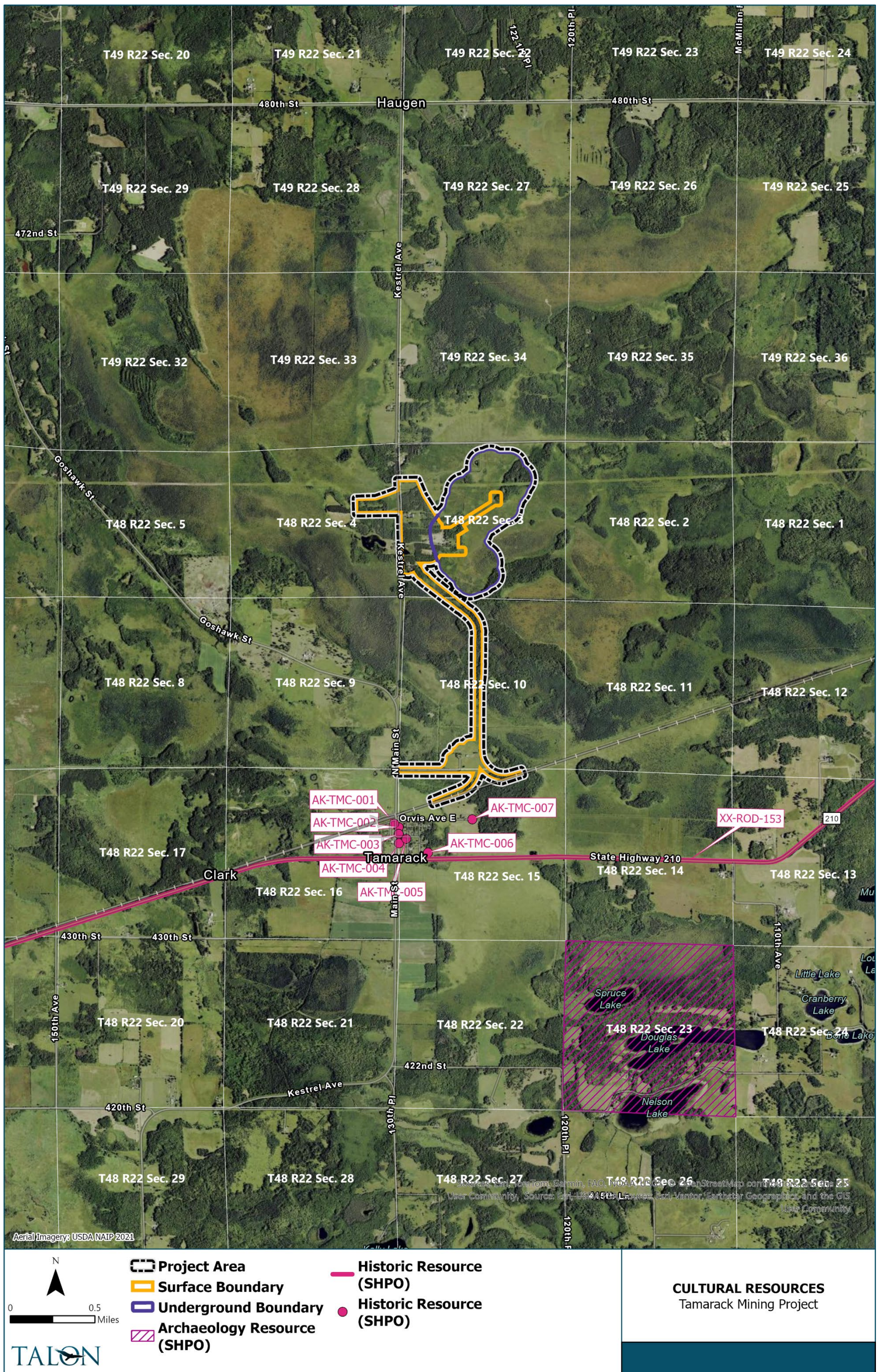


Figure 22 Sensitive Ecological Resources

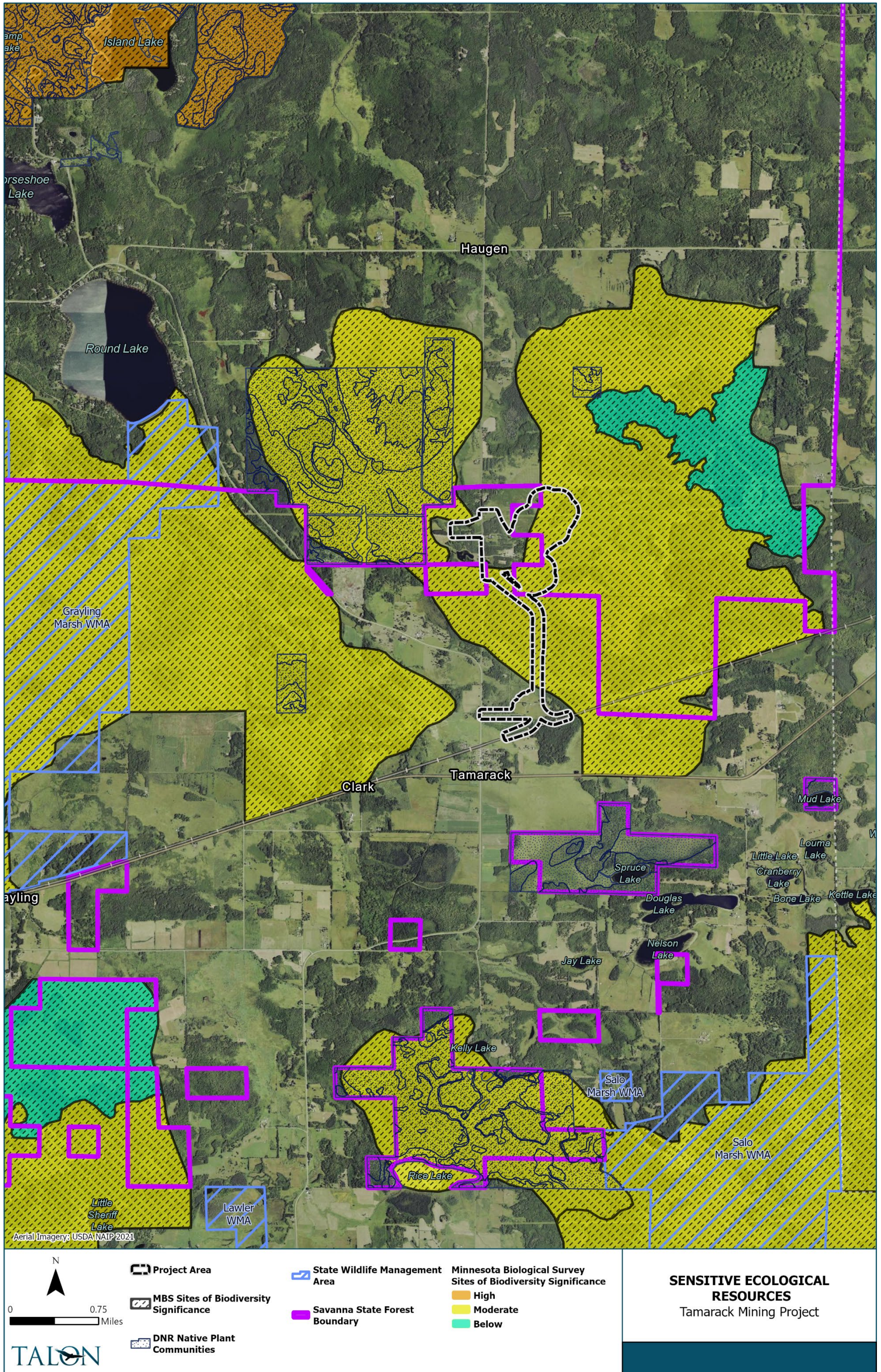


Figure 23 Site Layout and Wetland Delineation

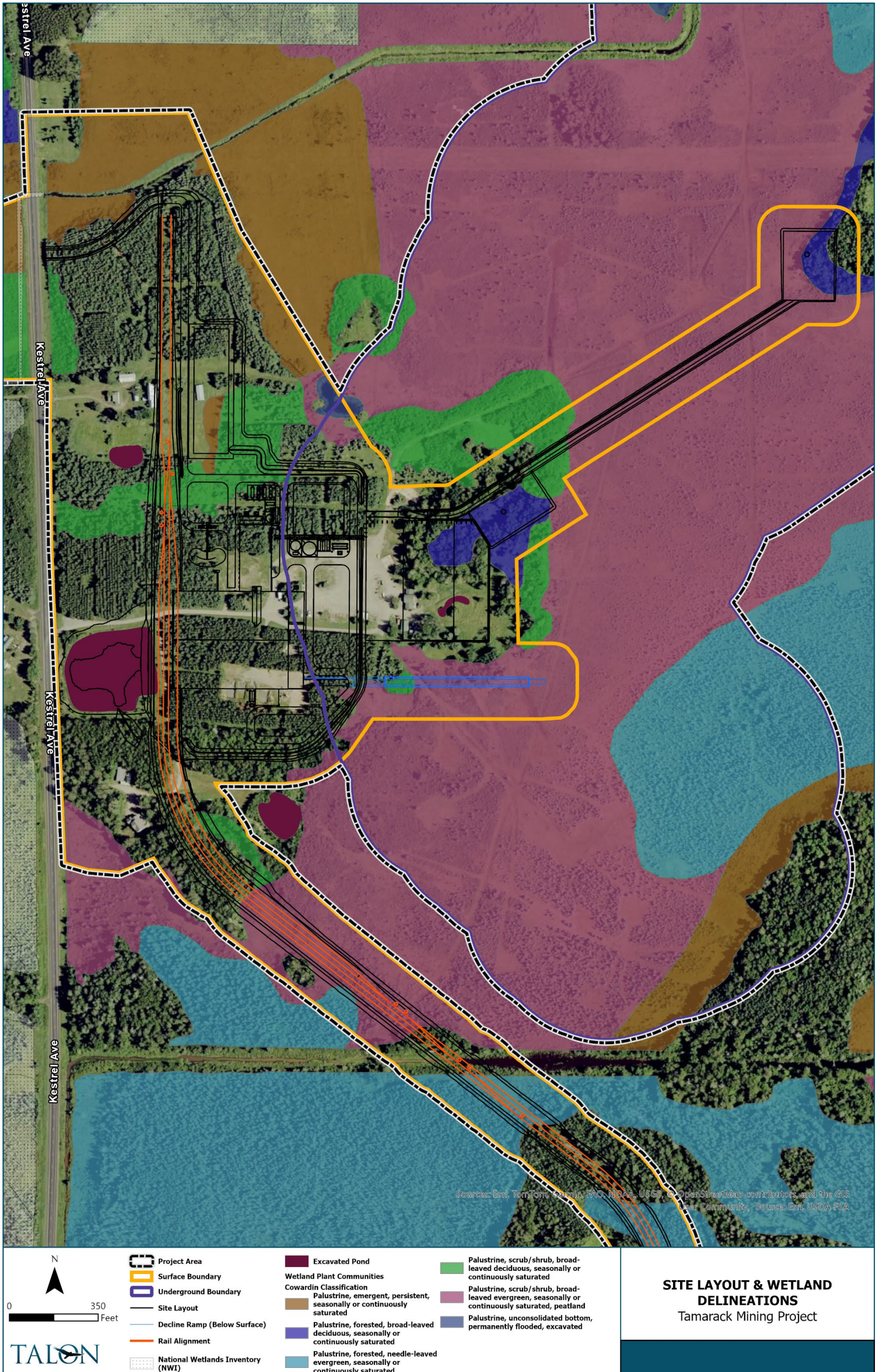
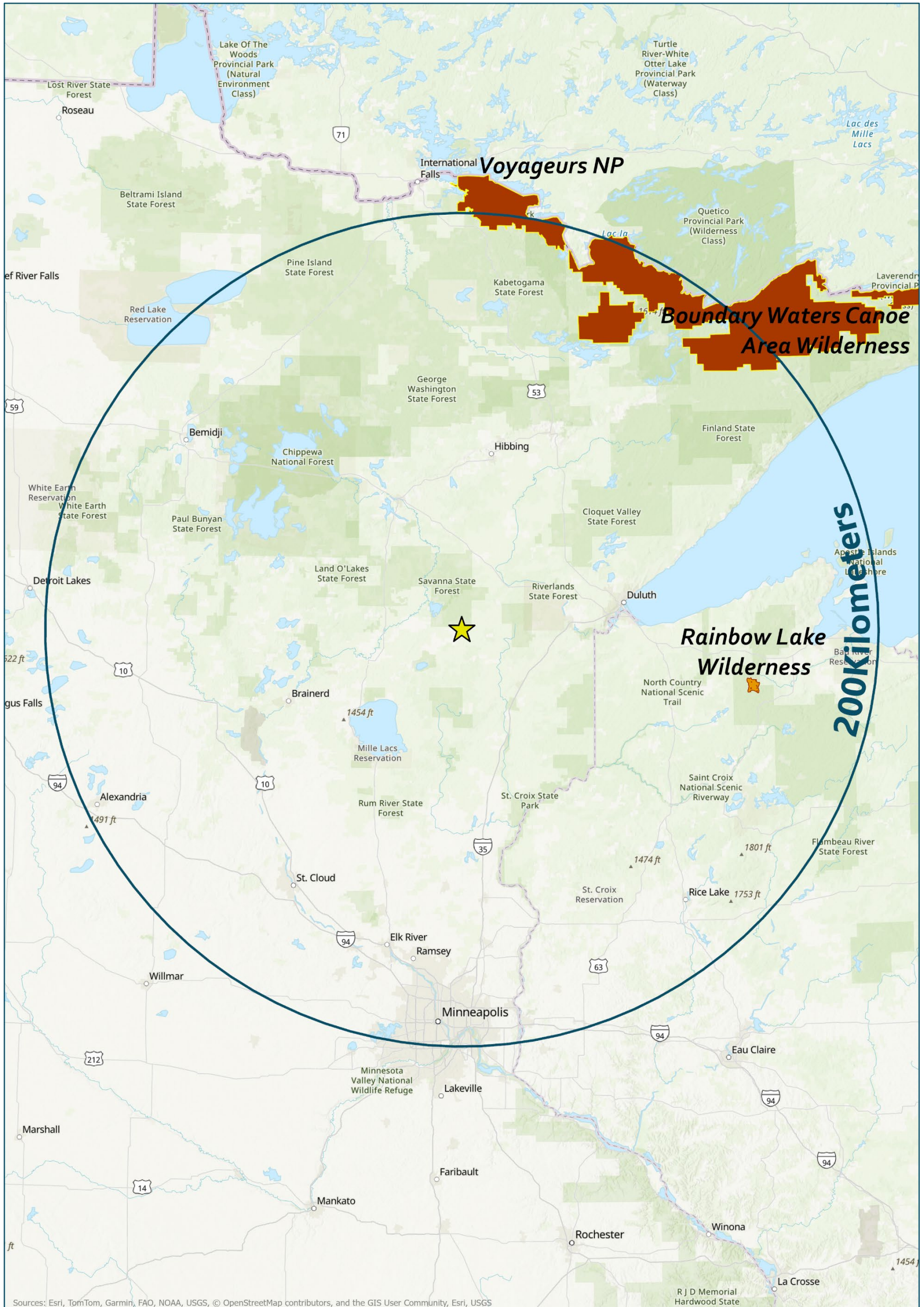





Figure 24 EPA Class 1 Designated Areas




Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, USGS







 **Tamarack Project Location**

 **Class 1 Radius (200km)**

Class 1 Area Type

 **Class 1: Mandatory Federal Area**

 **Class 1: NOT protected for visibility**

U.S. EPA
CLASS 1 DESIGNATED AREAS
 Tamarack Mining Project