

# **Narrow-leaved Gentian Survey - Eagle Mine and Regional Area**

**2010 Update**

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## **1. Introduction**

Several Narrow-leaved Gentian (NLG) (*Gentiana linearis*) plants were found along the Salmon Trout River in the vicinity of the Eagle Project during the T & E baseline investigation in 2004 (WCR, 2005). The purpose of the original study in 2005 (Meier, 2005) was to determine the approximate distribution and populations of NLG in the general project area and adjacent areas of northern Marquette County and northeastern Baraga County. NLG is listed as a “facultative wetland” species in the State of Michigan, meaning that it can be found in very wet conditions along streams and also in dryer conditions on the upper fringe of wetlands. The Michigan Natural Features Inventory (MNFI) considers the NLG a species of “threatened” status.

The investigation and this report are intended to document where NLG were observed in 2010 and to be a general assessment of the numbers of plants found in each location. This was not an exhaustive investigation and the lack of a sighting in any particular area is not intended to infer that NLG do not exist in that area.

## **2. Study Area**

The study area included the fringe areas along the Yellow Dog River southeast of the Eagle Project site, the Main Branch Salmon Trout River, and several streams and wetlands to the west of the Eagle Project area to the Peshekee River (Figures 1, 2 and 3). Areas adjacent to the Triple A Road, West Branch Huron River Road, and the Peshekee Grade were investigated. Also included in the investigation area was the area around Harvey Lake (Section 31, T47N-R25W), located on the Sands Plain south of the City of Marquette, approximately 30 miles south of the Eagle Project site.

## **3. Results of Investigation**

The first half of 2010 was extremely dry and at the first of June 2010 precipitation for the year was about 5 inches less than normal, or about 35% less than normal. By the end of July 2010 precipitation for the year was just about normal. The precipitation during June and July 2010 was nearly double the historic amount. The flows in all area streams had recovered to average flows by the end of July 2010. The 2010 survey was conducted on July 26 and 29, 2010.

### **Yellow Dog River**

Flowering NLG plants were found in abundance (thousands) in all areas investigated along the Yellow Dog River. This included areas from 0.7 miles downstream to 0.6 miles upstream of the Trail 5 bridge on the left (north) side of the river (Figure 2). The

area in Section 24, T50N-R29W where NLG were sited in previous years was not investigated this year. The number of flowering plants in all other areas seemed to be about normal in the 2010 survey.

### **Salmon Trout River**

Flowering NLG were found in abundance (hundreds) along the Salmon Trout River in approximately the same areas where they were recorded by Wetland and Coastal Resources in 2004 (WCR, 2005), except that no NLG were found in the upstream north-south reach of the river (SW ¼ of the NE ¼ of Section 11, T50N-R29W), apparently because of flooding by beaver dams (Figure 4). There was standing water at the locations where NLG were previously observed.

### **Area to the West of the Eagle Project**

The investigation continued west of the Eagle Project area along the Triple A Road to the West Branch Huron River Road and then to the Peshekee Grade. These roads traverse northwestern Marquette County and northeastern Baraga County and then return to Marquette County at the Peshekee Grade (Figure 3). Flowering NLG were observed at several stream crossings and at other wetland areas along the road rights-of-way. There were normally at least ten to one hundred flowering plants at each location. They were observed in small borrow pits near the roads in wet areas and also at the drier fringe areas. The number of flowering NLG plants was approximately the same as in previous “good” years.

Approximately fifty NLG were observed south of Lake Arfelin in Sections 21 and 22, T49N-R30W (Figure 3). The bog in this area was slightly wetter than in previous years.

### **Harvey Lake**

Approximately 100 flowering NLG were observed along the south shore of Harvey Lake Section 31, T47N-R25W, although there is no standing water in the lake this year. The entire bottom of the lake has re-vegetated. The number of plants is down and the size has diminished over the past few years.

## **4. Conclusion**

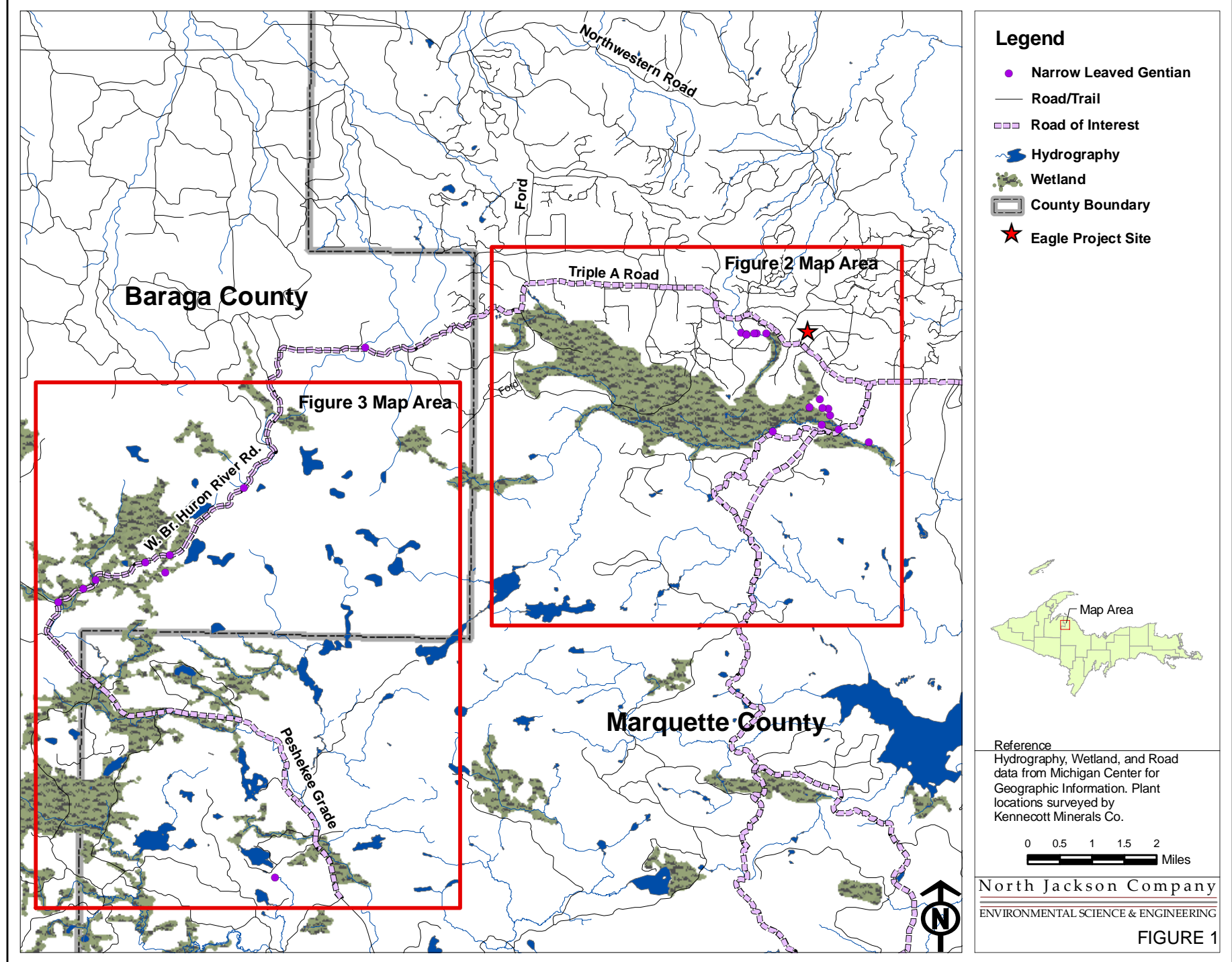
Flowering Narrow-leaved Gentian plants proliferate in northern Marquette County and northeastern Baraga County. NLG were consistently found along and near streams in both wet organic soil and in dry sand and gravel near wetlands again in the 2010 survey. NLG occur in the Eagle Project area as well as in other areas in the region away from the Eagle Project area.

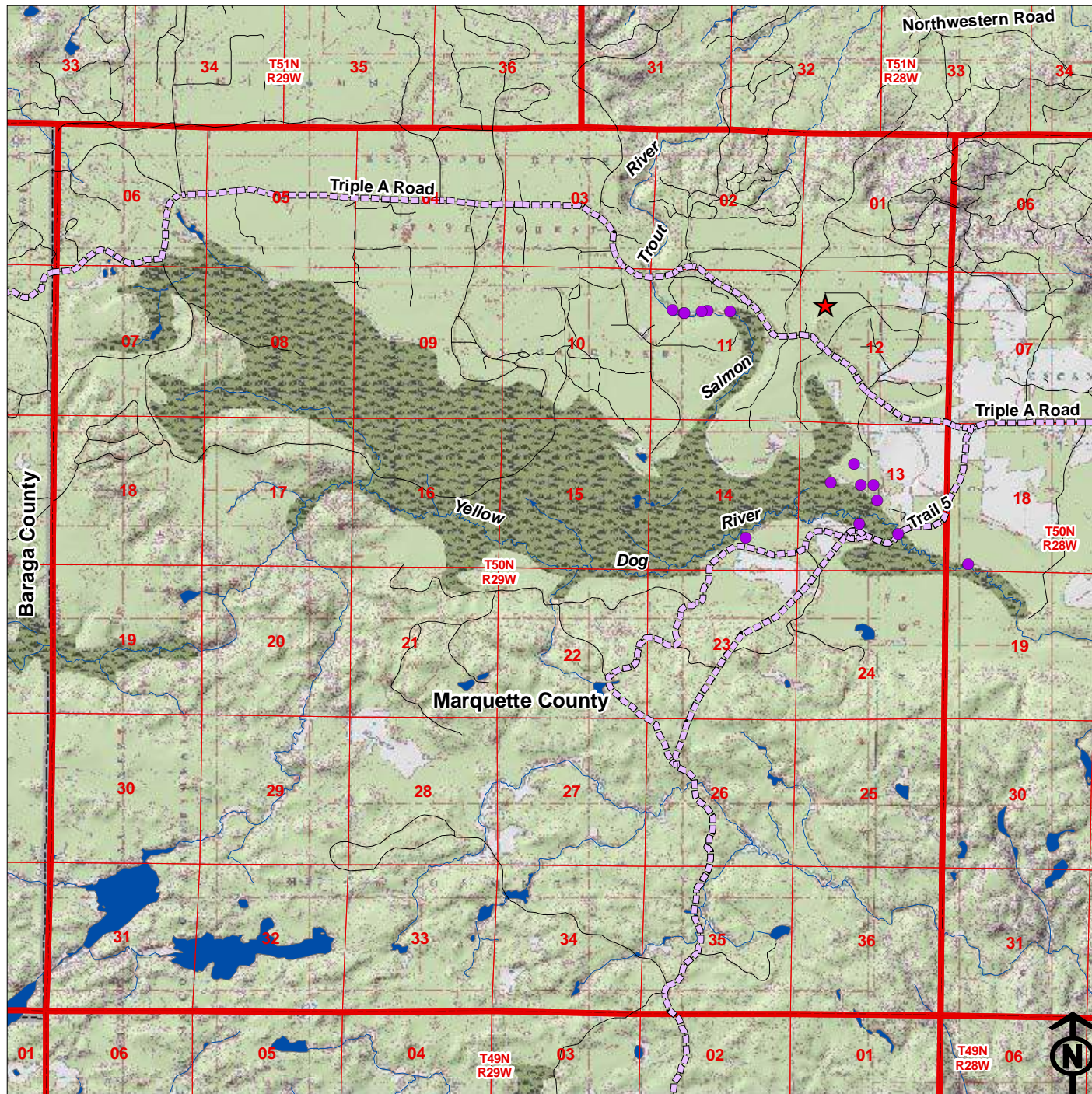
## **5. References**

Meier, John G., 2005. Narrow-leaved Gentian. Eagle Project Mining Permit Application, Volume IIF, Environmental Impact Assessment, Appendix F-2.

Meier, John G., and North Jackson Company. 2006. Narrow-leaved Gentian Study – 2006 Update, Marquette and Baraga Counties, Michigan.

Wetland and Coastal Resources (WCR). 2005. Threatened and Endangered Species Assessment. Eagle Project Mining Permit Application, Volume IIF, Environmental Impact Assessment, Appendix F-1.

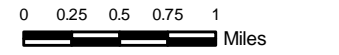




- Legend**
- Narrow Leaved Gentian
  - Road/Trail
  - Hydrography
  - Wetland
  - County Boundary
  - Town & Range Line
  - Section Line
  - ★ Eagle Project Site
  - Road of Interest

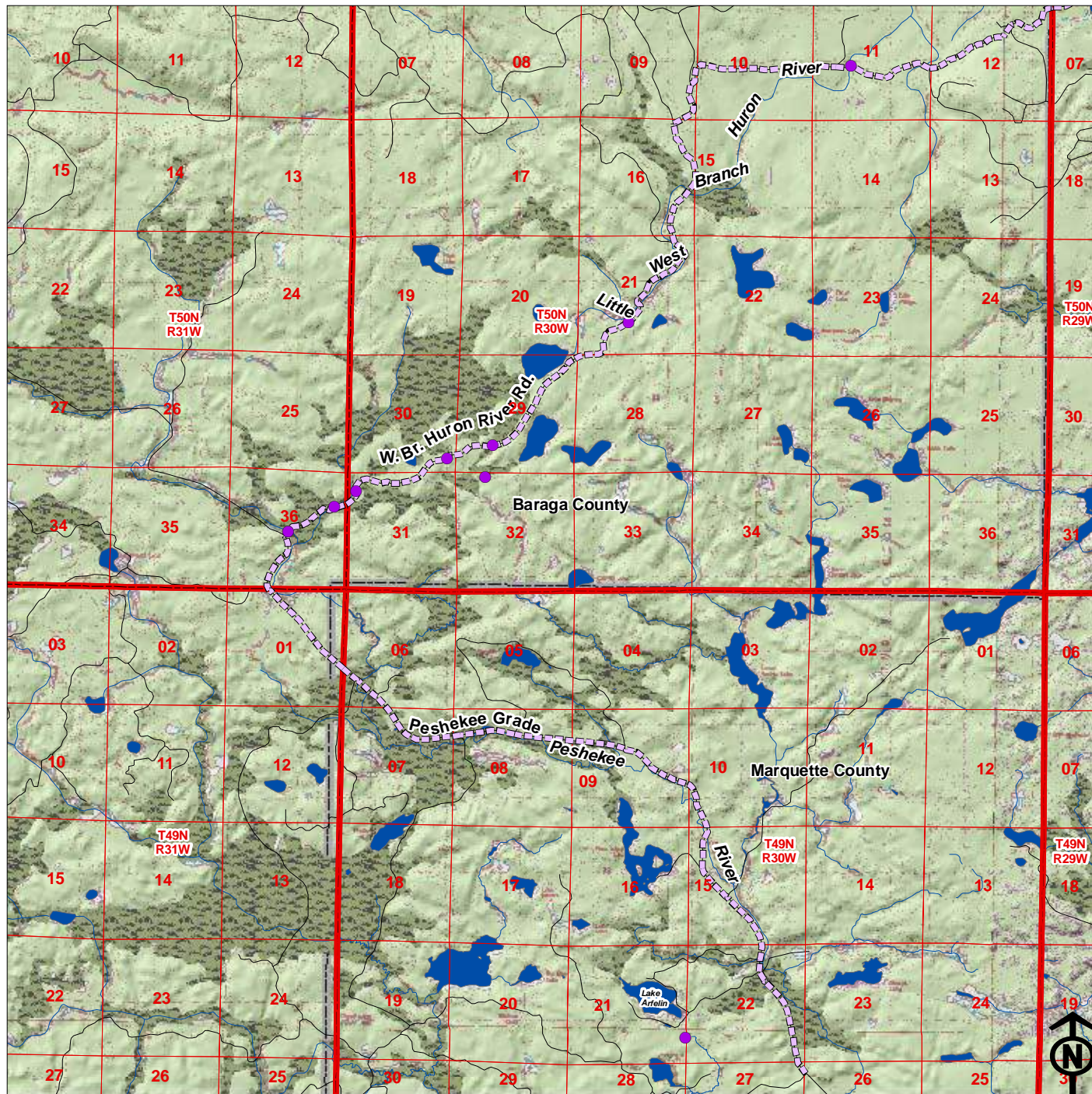


Reference  
 Hydrography, Wetland, and Road data from Michigan Center for Geographic Information. Plant locations surveyed by Kennecott Minerals Co.



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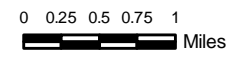
FIGURE 2



- Legend**
- Narrow Leaved Gentian
  - Road/Trail
  - Hydrography
  - Wetland
  - County Boundary
  - Town & Range Line
  - Section Line
  - Road of Interest

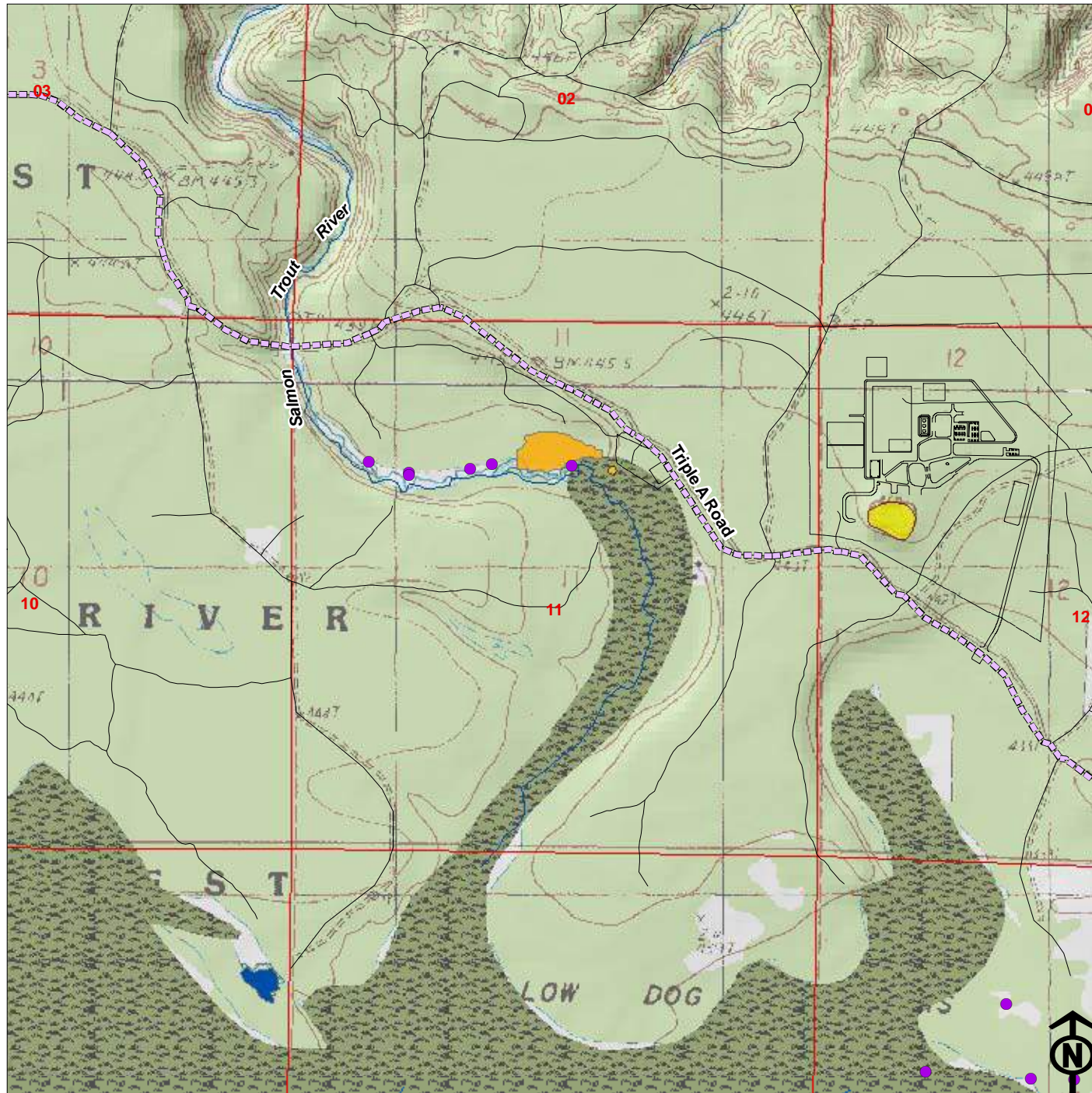


Reference  
 Hydrography, Wetland, and Road data from Michigan Center for Geographic Information. Plant locations surveyed by Kennecott Minerals Co.



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FIGURE 3

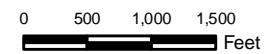


**Legend**

- Narrow Leaved Gentian
- Road/Trail
- Hydrography
- Wetland
- Section Line
- Orange shape Ore Body
- Yellow shape Outcrop
- Eagle Project Site
- Road of Interest



Reference  
 Hydrography, Wetland, and Road data from Michigan Center for Geographic Information. Plant locations surveyed by Kennecott Minerals Co.



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FIGURE 4