GTAC
GOGEBIC TACONITE

July 28, 2013

Wisconsin Department of Natural Resources
ATTN: Larry Lynch
101 South Webster Street
PO Box 7921
Madison, WI 53707-7921

Dear Secretary Stepp:

Re: Bulk Sample Plan
Response to Comments dated July 2, 2013
Wisconsin Statutes 295.45

This letter serves to transmit to your office responses to comments dated July 2, 2013. Several changes are included within the Bulk Sampling Plan and will be summarized below:

1) Access Road 6 is proposed to provide access to Bulk Sample Sites 1, 2 and 5. By constructing Access Road 6, traffic on Access Road 3 (the former Tyler Forks Mine railroad grade) will be limited. In addition, a wetland identified on the Access Road to Bulk Sample Site 1 will be avoided. The Access Roads to Bulk Sample Sites 1 and 2 have steep grades and Access Road 6 provides more gentler grades to transport the samples.

2) Blasting may not be performed to collect a Bulk Sample. Consulting geologists have reviewed the existing disturbances and the rock samples that were left behind by the activity in 1960. A volume estimate indicates that there is sufficient sample available to supply the testing needed. A volume of 800 tons is estimated to be removed from Bulk Sample Site 1 and 800 tons from a combination of Bulk Sample Sites 2 and 4.

3) Bulk Sample Site 5 will use a hydraulic pick hammer to break an 800 ton sample. The site is located on the Pence member, which is a bedded slate.

4) Blasting plans remain in the Narrative addressing comments dated July 2, 2013.

5) A wetland survey report is attached.

6) A landowner letter from RGGS acknowledging the Right of Entry for Gogebic Taconite, LLC.

Included in this submittal, you will find:

- A Narrative addressing comments dated July 2, 2013.
- A revised Map 1 – Bulk Sample Sites illustrating the location of Access Road 6
- Map 2 – Access Road 6 illustrating in the road in more detail
- Revised Figure 1 – Plan View Site 1
- Figure 1-1- Cross Sections Site 1
- Revised Figure 2 – Plan View Site 2
- Figure 2-1 – Cross Sections Site 2
- Figure 2-2 – Cross Sections Site 2
- Revised Figure 3A – Plan View Site 3A
- Revised Figure 4 – Plan View Site 4
- Figure 4-1 – Cross Sections Site 4
- Revised Figure 5 – Plan View Site 5
- Figure 5-1 – Cross Sections Site 5

We look forward to discussing the project in more detail with your staff. Any questions should be directed to our Hurley office at (715) 561-2601. Our mailing address is:

Gogebic Taconite, LLC
402 Silver Street
Hurley, WI 54534

Sincerely,

Timothy J Myers
Engineer

No Blasting Option

A different approach is being proposed to collecting the bulk samples. The original submittal described activities to clear the sample sites of the rocks broken during the 1960 bulk sampling activity. That option remains valid. However, an attempt to collect an adequate bulk sample from the existing broken rocks will be made. If successful, blasting would not be required.

In 1960, US Steel Corporation performed bulk sampling activities on the site. Material was collected from 4 disturbances representing 2 samples from the Plymouth Member and 2 samples from the Norrie member of the Ironwood Formation. Reclamation activities were not conducted on the site.

Records indicated that 100 tons of sample were shipped from each pit, totaling 400 tons overall. The material was shipped by railroad from a siding in Mellen, WI. Test results from that activity have been reviewed for application for modern mill design. Since the testing was performed in a time that taconite processing was in a new technology stage, many of the current testing requirements did not exist. To perform the modern testing requirement, an additional 800 tons per sample horizon is needed to conduct current testing requirements.

Material that had been broken during the 1960 bulk sampling campaign was recently reviewed by a blasting consultant and geologist. The opinion was that even though the existing material has been exposed to weathering for the past 50 years, the rock samples collected from the existing permits would be sufficient to demonstrate the grinding characteristics needed for designing a modern concentrating mill.

There are many advantages to using the existing samples including:

- Fewer sample sites opened. Bulk Sample Site 3A would not be used in this “No Blasting” proposal;
- Fewer sample tons required. Fewer trucks would be used to transport the material to the laboratory;
- No blasting exposure to workers, the public or adjacent land owners;
- The ability to regrade and revegetate the existing disturbances to blend into the surrounding terrain.

The procedure for recovering a sample from the existing bulk sample site will follow similar steps described in the June 18, 2013 Bulk Sampling Submittal:

The property has been enrolled in the Managed Forestland Program with Wisconsin DNR. As found at Wisconsin Statutes 77.83 (2)(a), the land is open to the public for

hunting, fishing, hiking, sight-seeing and cross-country skiing. All other activities on these lands, including camping, biking, and operation of unauthorized motorized vehicles, are prohibited.

A safety perimeter will be established approximately 300 feet outside of the proposed activity area. The area will be marked with Danger Signs to alert the general public that an industrial activity is occurring nearby. A safety fence will be erected around the disturbance to further protect the public from ongoing activities on the site.

Vegetation will be removed from the proposed disturbance. Any marketable material will be recovered for commercial use such as a lumber mill raw product, pulp mill raw product or biofuel. Any remaining woody material will be disposed of in compliance with existing rules and regulations such as mulching.

Stormwater drainage control will be established by the utilization of berms, diversion ditches, hay bales, sand bag berms and/or sediment fence. When the conditions allow, up gradient surface runoff may be directed away from the site by diversion ditches or berms.

Soils material will be removed from the disturbed areas and stockpiled for later use in reclamation of the site. Any material deemed as topsoil will be segregated and reserved for application during the regrading activities. Due to the previous disturbances on these sites, topsoil, if any, would have been intermixed with other materials. Any soils layer encountered will be maintained in stockpiles separate from bedrock materials.

Bulk Sample Site 1 contains the Plymouth Member of the Ironwood Formation. In this bulk sample site, there is an estimated 2,500 tons of sample remaining. This sample consists of larger rock (12 to 18 inch diameter). The rock sample from this site can be selectively collected by an excavator and loaded on a truck for transportation from the site. No preparation is expected for collecting this sample.

Bulk Sample Sites 2 and 4 contain the Norrie Member of the Ironwood Formation. In these bulk sample sites, the available material is estimated to be 1,470 tons in Bulk Sample Site 2 and 2,200 tons in Bulk Sample Site 4. The remaining rock sizes are smaller (2 to 12 inch diameter) than Bulk Sample Site 1. The smaller size is the result of the bedding of the iron formation in the Norrie Member being thin even bedded.

The sampling process will involve screening the material with a simple bar screen consisting of bars set at a prescribed opening width. Smaller material such as soils and smaller rocks will pass through the bars and the larger material will slide off the bars and deposit in a stockpile. The soils and smaller rocks will be saved for use during regrading and reclamation activities. The larger material will be used for the bulk sample.

Bulk Sample Site 5 will use a hydraulic rock hammer to break up material to create a bulk sample. The pit size will remain the same as the original submittal (200 feet long and 20 feet wide) and could yield 2,000 tons of material to select a sample from. The bar screen may be needed to provide an adequate sample of larger rocks.

The sample material will be loaded by heavy machinery into highway trucks for transport to the pilot plant facility. An alternative procedure will be the loading off-highway trucks at the pit and transporting the material to a staging area where the sample material will be transferred to highway trucks for transport to the pilot plant. Material will be transferred directly to the highway truck or the material may be placed on a pad to prevent contamination of the sample. The highway truck would then be loaded from the material stored on the pad. Stormwater control will be provided around the pad.

After the bulk sampling activity has been completed and no further sampling is required, the Department will be notified that backfilling will begin. Notification will be by email or Registered Mail. Backfilling will begin within 5 days of the notification to the Department. The excavation slopes will be graded to remove excessive grades. Backfilling will be performed with the available material with the goal to blend the disturbance into the existing ground contours. Stockpiled soils material will be applied to the regraded area before revegetation occurs.

Seeding will follow. See the Revegetation Plan.

If an adequate sample cannot be collected by the above plan, blasting would be required to create a sample. The discussion on blasting described in previous submittals would remain in effect.

I. Provide a more detailed description of the actual sampling procedures. For each bulk sampling location identify which member of the Ironwood Formation is being sampled, the approximate volume of material to be removed and the anticipated depth of excavation. Also include a representation of the approximate final site contours upon reclamation of the sites. Are any of the sites deep enough to intercept groundwater and if so, how will water such water be handled? Similarly, describe how water that accumulates in the sampled areas prior to reclamation will be handled. A wastewater discharge permit may be needed if the company intends to pump water from the excavations and discharge it to a waterway or groundwater.

RESPONSE:

An alternative sampling procedure is being proposed prior to drilling and blasting activities. A recent site visit with consulting engineers identified the rock in the existing bulk sample sites as being adequate for mill machinery testing. The first approach for collecting a bulk sample will be to collect ore samples from the Bulk Sample Sites without drilling and blasting activities.

The previously disturbed Bulk Sample Sites 1, 2 and 4 will be cleared of vegetative material and soils material will be stockpiled. The leftover bulk sample material will be screened through a 2-inch spacing grizzly screen and the oversized material will be collected as a bulk sample. If a sufficient volume of material is collected, drilling and blasting activities will not be required.

Bulk Sample Site 5 will be cleared of vegetative material and soils material will be stockpiled. The bedrock material in the Pence member is a layered slaty material. A hydraulic pick breaker will be used to break a useable sample without drilling and blasting. If a sufficient volume of material is collected, drilling and blasting activities will not be required.

A target of 400 tons from each member horizon is required to accomplish the equipment design.

The follow-up method if a large enough sample cannot be collected is to use drilling and blasting techniques.

Member of the Ironwood Formation to be sampled by Bulk Sample Site Number:

Bulk Sample Site 1	Plymouth member
Bulk Sample Site 2 lower pit	Norrie member
Bulk Sample Site 2 upper pit	Norrie member
Bulk Sample Site 3A	Plymouth member
Bulk Sample Site 4	Norrie member
Bulk Sample Site 5	Pence member

Approximate volume of material to be removed and the anticipated depth of excavation:

Each site will remove approximately 800 tons of material for a total of 4,000 tons for the project. Each site will have approximately 300 bank cubic yards of material removed. The anticipated depth of excavation will be an average of 8 feet.

Final site contours are provided with the attached Figures.

With no blasting, the average depth of excavation resulting from removing the existing broken rock will be 2.25 vertical feet. Materials will be backfilled to insure no vertical ledges are left after the project is completed.

If blasting were to occur and assuming a 30% swell factor, most of the sites will not have a change in post reclamation contours from the existing surface contours. The rock removed as a bulk sample will be replaced by the expanded volume of the blasted material.

Are any of the sites deep enough to intercept groundwater and if so, how will such water be handled?

Each site is located at or near the higher ground in the area. Site inspections of the area have not identified the presence of springs during the high flow period in May 2013.

If groundwater were encountered during the project excavation, the pit will be graded to allow gravity discharge to the perimeter silt fence.

Similarly, describe how water that accumulates in the sampled areas prior to reclamation will be handled. A wastewater discharge permit may be needed if the company intends to pump water from the excavations and discharge it to a waterway or groundwater.

By designing the excavation to be freely draining, the requirement for pumping is eliminated.

2. Provide additional detail regarding the blasting activity including the approximate number of holes per area, depth and diameter of the holes and what type of explosive materials are anticipated to be used. How will drilling water and cuttings be controlled during the drilling process? Describe any dust control measures that will be implemented during blasting. Describe safety procedures related to blasting including pre-blast notification and designation of restricted access areas.

RESPONSE:

Number of holes per area:

Bulk Sample Site 1	240 holes
Bulk Sample Site 2 lower pit	156 holes
Bulk Sample Site 2 upper pit	90 holes
Bulk Sample Site 3A	205 holes
Bulk Sample Site 4	180 holes
Bulk Sample Site 5	205 holes

Depth and diameter of the holes:

Holes will be 10 feet deep, 4-inch diameter

Type of explosive materials will be used:

ANFO prell will be used

Drilling water and cuttings controlled during drilling:

Compressed air will be used to flush the cuttings from the hole. The drill rig will be provided with a dust collection system. Cuttings will be reused to stem the hole.

Dust control measures implemented during blasting:

Dust control measures will not occur for the blasting activity. Dusts of fugitive emissions from the blasting activities are minimal as demonstrated in Attachment 1 (Air Emissions Estimates). The estimated maximum theoretical emissions from the blasting activity are less than 0.001 tons per year of particulate matter.

Safety procedures related to blasting including pre-blast notification and designation of restricted access areas:

Pre-Blast notifications will conform to the requirements of Wisconsin Statutes DPS 307 and the Town of Anderson blasting ordinance and any other local ordinance in place at the time of the blasting activity.

A restricted zone will be constructed at least 300 feet from each blast site. The zone will be marked by brightly colored construction fencing and/or posted signs to warn the general public of the restricted area.

Audible blasting alarms will be used. The alarms will consist of horns or sirens capable of broadcasting at least ¼ mile from the blasting site. Commercial truck or automobile horns will not be used. Warning signs describing the blasting signals will be posted to all entrances to the blast area.

3. The plan indicates salvageable soil will be stockpiled separately from the rock removed from the sites prior to sampling and stored on-site for use in reclamation. Describe measures which will be taken to minimize erosion of the topsoil during the temporary storage period.

RESPONSE:

Soil stockpile areas will be protected from erosion by seeding and mulching with a temporary seed mixture such as oats or annual rye. Soil stockpile areas may also be protected by covering with tarps.

4. Describe the loading and transportation process in more detail. What type of heavy machinery will be used to load the rock onto the trucks? What measures will be taken to control dust during the loading process? What size and approximately how many trucks will be needed to transport the rock? Will the transport trucks be covered? Provide additional detail about the alternative procedure for handling the rock described in the plan including a specific location for the staging area, any site preparation necessary for the working pad, drainage control measures, access routes and descriptions of the vehicles that would be used to move the rock from the sampling sites to the staging area.

RESPONSE:

What type of heavy machinery will be used to load the rock onto the trucks?

The trucks will be loaded with either an excavator or a wheel loader.

The excavator has the advantage of being able to work the excavation from positioning the machine on top of the broken material. It can also place material in the bed of the truck with more precision than a wheel loader.

A wheel loader can be used to excavate a larger volume of material quicker. It has to work the broken rock from the same level as the bottom of the broken rock.

What measures will be taken to control dust during the loading process?

The rock pile can be watered down before the loading process takes place. This would saturate smaller particles to prevent liberation into the air as dust. If loading activities occur in freezing weather, the use of water will be minimized.

What size and approximately how many trucks will be needed to transport the rock?

Two types of trucks will be used on the project.

Off Highway construction trucks will be 25 ton capacity articulated trucks. The trucks have up to three axles. These trucks will be used to bring the bulk sample to a staging area where they will dump on a constructed pad. The material would then be loaded onto highway trucks for delivery to the laboratory.

Highway trucks would be tractor trailer arrangements with a typical 5 axle arrangement. The highway trucks could haul directly from the pit to the final destination. Average payload for a highway truck will be 20 tons. It will take approximately 250 truck loads to deliver the material to the laboratory. It is expected to that 10 truck loads per day will leave the project for a period of approximately 5 weeks.

Will the transport trucks be covered?

The highway trucks will be covered. The off highway construction trucks are not covered. The highway trucks' ground speed will be controlled by the road conditions and is expected to be less than 10 miles per hour.

Provide additional detail about the alternative procedure for handling the rock described in the plan including a specific location for the staging area, any site preparation necessary for the working pad, drainage control measures, access routes and descriptions of the vehicles that would be used to move the rock from the sampling sites to the staging area.

Specific locations for the staging areas are found on Map 1: Bulk Sampling Plan map provided in the original submittal. Each site is a pre-existing disturbance adjacent to existing roads.

A working pad will be created with the purpose of preventing rock sample contamination from materials such as soils or gravels located at the transfer site. The working pad will be constructed by placing a geotextile materials such as woven road base fabric on the ground. Smaller diameter rock from the bulk sampling activity will be used to create a minimum 6-inch covering over the fabric. Other materials that could be used for a working pad would include concrete, plate steel or commercial gravel.

Drainage control would be accomplished by utilizing silt fence, hay bale dikes, earthen berms, sand bags and/or other temporary drainage control method.

Access routes are designated on Map 1: Bulk Sampling Plan Map.

If highway trucks cannot reach the sample pits due to site conditions, off highway trucks will be used to bring material to the staging areas. The material would be placed on a prepared pad and stockpiled until highway trucks could be scheduled. The material would be loaded by either a wheel loader or an excavator from the pad to the highway truck.

Refer to Figures 6 and 7 for an illustration of the Staging Areas.

5. Describe what precautions will be taken in regard to rock and water handling procedures if any of the sampling sites encounters rock with visible or known quantities of sulfide mineralization (e.g., the lower Yale Member).

RESPONSE:

The Yale member is not proposed for disturbance with this activity. The target zones are the Pence, Norrie and Plymouth members.

6. The letters from the landowners referenced on p. 6 of the plan were not included as part of the submittal. Please include them with your response to this letter.

RESPONSE:

The land owner's letter is attached to this submittal. All surface disturbances are located on lands controlled by RGGS Land and Minerals, LLC, L.P.

7. The bulk sampling plan indicates the sampling and revegetation will occur between July 2013 and November 2014. Roughly how long will it take to complete the sampling phase for a given site? Will all bulk sampling be completed before any reclamation activity begins or will reclamation of individual sites take place as soon as the sampling is completed for that site?

RESPONSE:

The project will open multiple areas at one time. The spread of equipment needed to accomplish this project will include bulldozers of various sizes, an excavator or wheel loader, a small blast hole drill, a water truck, portable light plants. The most efficient method to utilize this equipment is to have equipment preparing a site for the drill, a site that the drill is operating on, a site that is ready for blasting, a site ready for truck loading, a site that is completed and ready for backfill and a regraded site ready for seeding.

From start of activity to reclamation, the time to accomplish the bulk sampling activity can be as short as 7 days to as long as six weeks. If weather prevents the transportation of the samples, the schedule will be extended.

8. The sampling plan refers to a preliminary wetland inventory for the site. The wetland delineation information must be submitted to the Department. This information is needed in order for the Department to determine if any bulk sampling activities including access route maintenance or improvements will require a wetland general permit or individual permit, as required by s. 295.60(3)(b), Stats. Department approval will be required prior to any work that results in a discharge of dredged material or fill material into a wetland. We will also need specific information about of bulk sampling and access route activities that may be located in or adjacent to any streams or other water bodies in order to determine if any permits are needed for navigable water activities as required by s. 295.605(2), Stats. To evaluate the need for wetland and waterway permits, detailed information regarding anticipated road maintenance work in specific locations involving wetlands and drainageways, must be submitted.

RESPONSE:

A wetland inventory for the sites has been prepared and is attached to this letter. In summary, the wetland delineation identified one site on the access road to Bulk Sample Site 1 as having a wetland area. Steps have been taken to avoid the wetland by providing an alternative route into Bulk Sample Site No. 1.

Additional wetland areas were identified in locating the overland route for Access Road 6. These areas are addressed in the Wetlands and Waterways, LLC report included within this submittal.

9. Elements of the proposed bulk sampling activity including blasting, loading and hauling may generate air pollutants, notably fugitive emissions of particulate matter. Based on the information provided, the Department cannot determine if an air pollution control construction permit is required for this activity. These emissions, on a maximum theoretical basis, may exceed the permitting thresholds in ch. NR 406, Wis. Adm. Code. To facilitate our regulatory determination of the need for a permit, Gogebic Taconite must develop an estimate of total particulate matter emissions (including PM10 and PM2.5 emissions) for the activity based on the anticipated level of activity and the proposed methods. This estimate should be based on available emission factors in EPA document AP-42 01' other reliable sources of emission data for blasting, loading, road traffic and the other activities as applicable.

RESPONSE:

Provided as Attachment 1 are emission estimates for fugitive emissions as a result of blasting, loading, transfer of material and fugitive road dust; along with a minimal amount of combustion emissions as a result of operating temporary light towers powered by diesel engines. In all cases, the emission calculations are based on AP-42 emission factors. Key assumptions were already addressed in the responses to Questions 2 and 4 and are included in Attachment 1.

Based on the emission estimates provided in Attachment 1 and summarized in Table 1 the Bulk Sampling Plan activity qualifies for an exemption from Construction and Operating Permits based on actual emissions per s. NR 406.04(1q) and 407.03 (1m) of the Wisconsin Administrative Code (WAC). The bulk sampling emissions are less than the thresholds for a construction permit (Chapter 405 WAC) and for an operating permit (Chapter 406 WAC). The construction permit exemptions are provided at s. NR 406.04(1q) as follows:

"Sources Exempt Based on Controlled Actual Emissions. No construction permit is required for any emissions unit constructed, modified, replaced, relocated or reconstructed at a stationary source where all of the following criteria and requirements are met:

(a) The owner or operator of the stationary source has a facility-wide operation permit under ch. NR 407 or has submitted a timely and complete application for a facility-wide operation permit.

(b) Actual emissions from all of the constructed, modified, replaced, relocated, and reconstructed emissions units do not exceed any of the following levels:

1. *1,666 pounds in any month averaged over consecutive 12-month period for each of the following air contaminants: particulate matter, nitrogen oxide, sulfur dioxide, PM10, carbon monoxide and volatile organic compounds.*
2. *10 pounds in any month averaged over any consecutive 12-month period for lead.*

(c) None of the emissions units constructed, modified, replaced, relocated, or reconstructed requires a new BACT or LAER determination under ch. NR 445 as a result of the new project.

(d) None of the emissions units constructed, modified, replaced, relocated, or reconstructed are subject to new permitting requirements under ch. NR 405 (New Source Review) *or 408* (Non-Attainment New Source Review) *as a result of the project.*

(e) The owner or operator of the stationary source submits to the department a complete application for an operation permit revision, or an updated application for an operation permit, which include each new, modified, replaced, relocated, or reconstructed emissions unit, prior to commencing construction, modification, replacement, relocation, or reconstruction and does all of the following:

1. *In the operation permit revision application, or updated operation permit application, proposes monitoring of any control equipment used to limit actual emissions from any emissions unit being*

constructed, modified, replaced, relocated or reconstructed in accordance with the monitoring requirements in s. NR 439.055.

2. *Commences monitoring of any control equipment as proposed in subd. 1., and maintains any records necessary to demonstrate compliance with any applicable emission limitation, upon startup of any newly constructed, modified, replaced, relocated or reconstructed emissions unit.*

(f) The owner or operator of the source submits to the department a claim of exemption from construction permitting requirements. The exemption claim shall identify the emissions units which are being constructed, modified, replaced, relocated or reconstructed. The department shall respond to the claim of exemption submittal within 20 business days after receipt of the claim.

(g) Any newly constructed emissions unit is not subject to an emission limitation under section 111 or 112 of the Act (42 USC 7411 or 7412). Any modified, replaced, relocated or reconstructed emissions unit does not trigger any new emission limitation or other requirement for the emissions unit under section 111 or 112 of the Act (42 USC 7411 or 7412), excluding section 112(d)(5) or (r) (42 USC 7412(d)(5) or (r)).”

The proposed bulk sampling activities will meet the criteria above. Item (a) for submittal of a timely and complete application for a facility-wide operation permit is met with the filing of an exemption since the proposed bulk sampling activities emissions will also be below the threshold for operating permit as specified at s. NR 407.03(1m)(a), thus an operating permit application is not required.

Operating Permit exemptions are provided in s. NR 407.03(1m) as follows:

“FACILITIES EXEMPT BASED ON ACTUAL EMISSIONS.

(a) Any facility that is required to submit an annual emission inventory report under s. NR 438.03 is exempt from the requirement to obtain an operation permit following notification under par. (c), where all of the following criteria and requirements are met:

1. *The actual emissions of each air contaminant from the facility do not exceed any of the following levels:*
   a. *10 tons in any calendar year for each of the following air contaminants: particulate matter, nitrogen oxide, sulfur dioxide, PM10, carbon monoxide and volatile organic compounds.*
   b. *0.5 tons in any calendar year for lead.*
   c. *Any stack−appropriate thresholds for emissions points in columns (c), (d), (e) and (f) of Table A, B or C of ch. NR 445. If the facility is a source of incidental emissions under s. NR 445.11, this subdivision only applies to emissions of air contaminants which are listed as substances of concern in Table E of ch. NR 445.*
2. *The facility is not subject to a standard under section 111 or 112 or the Act (42 USC 7411 or 7412) except for a source subject solely to regulations or requirements under section 112(d)(5) or (r) of the Act (42 USC 7412 (d)(5) or (r)).*
3. *The owner or operator conducts monitoring and maintains records sufficient to demonstrate compliance with the requirements of this paragraph, including the calculation of annual facility−wide emissions. These records shall be maintained on site for at least 5 years, unless a longer period is required by statute or rule.*
4. *If a control device is used to limit actual emissions, the owner or operator uses a compliance monitoring method which is identified in s. NR 439.055.*

(b) Any facility that is not required to submit an annual emission inventory report under s. NR 438.03 is exempt from the requirement to obtain an operation permit where all of the criteria and requirements in par. (a) 1. to 4. are met.

(c) 1. *The owner or operator of a facility required to submit an air emission inventory report under s. NR 438.03 shall notify the department of their intent to operate the facility under the exemption*

criteria in par. (a). A claim of exemption made under s. NR 406.04 (1q) from construction permit requirements shall satisfy this notification requirement.

2. *Any existing permit shall remain in effect until the permit is revoked or coverage under a general or registration permit is withdrawn. A notification under subd. 1. shall serve as a request for revocation of an individual permit or withdrawal from coverage under a general or registration permit.*
3. *A notification under subd. 1. shall serve as a request for withdrawal of any pending permit application.*

Note: An owner or operator exempt under this subsection is responsible for complying with all other applicable requirements in chs. NR 400 to 499.

As demonstrated in Table 1 the project does not trigger the New Source Review (NSR) Requirements at Chapter 405 WAC. The Bulk Sampling Plan activity will occur in a county deemed in attainment or unclassifiable for all criteria air pollutants, thus Chapter 408 WAC does not apply.

Table 1 s. NR 406.04(1q) and 407.03(1m) WAC/NSR Threshold Comparison

Pollutant	Uncontrolled Potential to Emit (tons per year)	Actual Emissions [(a)] (tons per year)	s. NR 406.04(1q) s. NR 407.03(1m) Thresholds [(b)] (tons per year)	NSR Significance Thresholds (tons per year)
CO	0.14	0.11	10	100
NO_X	0.30	0.16	10	40
PM	2.37	0.54	10	25
PM_{10}	0.67	0.19	10	15
$PM_{2.5}$	0.13	0.08	N/A	10
SO_2	0.02	0.01	10	40
VOC	0.02	0.01	10	40
Pb	0.00	0.00	0.06 / 0.5	0.6
CO_2e	10.3	5.2	N/A	100,000

[(a)] Actual emissions are based on controlled emission levels. Specifically, the use of a watering truck on haul routes (80% emission reduction) and light tower operation of no more than 12 hours per day (50% emission reduction).

[(b)] The emission thresholds under NR 406.04(1q) are 1,666 pounds per month averaged over 12 consecutive months, which is 9.996 tons per year, essentially equivalent to the less than 10 tons per year threshold specified at NR 407.03(1m). The only exception is for the pollutant lead, the threshold under NR 406.04(1q) is 10 pounds per month, or 0.06 tons per year, compared to 0.5 tons per year under NR 407.03(1m).

As discussed above, the GTAC Bulk Sampling Plan meets exemption thresholds under s. NR 406.04(1q) and 407.03 (1m). Additionally, the proposed project emissions are less than those listed in s. NR 445.11 Table E. This approach is corroborated by use of the Department form, "Notice of Intent Under the Actual Emissions Exemption ss. NR 406.04(1q) or NR 407.03(1m), Wis. Adm. Code Optional form (revised 9/07)." Thus, GTAC will submit a written claim of exemption as required by s. NR 406.04(1q) and 407.03(1m) for air quality related emissions associated with the Bulk Sampling Plan.

10. Additionally, given the documented occurrence of asbestiform minerals in ore bodies of similar nature in Minnesota and reports of similar minerals (amphiboles of the cummingtonite-grunerite series) in the vicinity of the proposed bulk sampling activity, it will also be necessary to evaluate the bulk sampling activity to determine whether regulation pertaining to control of asbestos emissions under Chapters NR 445 or NR 447, Wis. Adm. Code, is required. If these minerals are present or potentially present in an asbestiform habit within the excavated material, a percentage of the total emissions would likely be asbestos emissions. To calculate an estimate of the potential asbestos emissions, provide an estimate of the percentage, by weight, of the asbestiform mineral content of the material to be sampled and then calculate an estimated asbestos emission rate based on the total emission rate calculated above. This weight percent data for asbestos could be derived from actual measured quantities of asbestos in samples collected from the site or could be based on review of data from studies of similar deposits that may be present in other taconite mining areas of Minnesota or other parts of the upper Midwest.

RESPONSE:

Putting aside whether NR 445 would apply to the mining activities, NR 445 does not apply to the proposed bulk sampling activities because asbestiform minerals are not likely to be present in the Gogebic Iron Range near Mellen, WI. There are documented occurrences of amphibole minerals in the geology of this area but not all amphibole minerals are asbestiform minerals or asbestos. Based on our due diligence, the geologic conditions in the Gogebic Iron Range do not support the formation of asbestos. Based on research on the Mesabi Iron Range in MN by Ross et al. (2007) where the geology is similar to the Gogebic Iron Range near Mellen, WI no asbestos has been found in the portion of the Mesabi Iron Range where amphibole minerals are found. Based on the lack of geologic conditions that would favor the formation of asbestos and the absence of the presence of asbestos in the similar geology of the Mesabi Iron Range asbestos is not likely to be present in the Gogebic Iron Range.

We are not aware of any documented occurrence of asbestiform minerals in ore bodies in Minnesota. The references provide by Ann Coakley on July 10th to Tim Myers of Gogebic Taconite, acknowledge the presence of amphibole minerals in the Gogebic Iron Range but do not discuss the presence of asbestiform minerals or asbestos. Although there are deposits that contain amphibole minerals in Minnesota Ross et al. (2007) conducted an extensive survey of the amphibole at Peter Mitchell Pit, the only location on the Mesabi Iron Range in Minnesota where amphibole-containing ore is currently being mined, looking for occurrences of fibrous minerals. This work concluded that fibrous amphibole make up a “tiny fraction of one percent of the total rock mass” and “no asbestos of any type was found in the mine pit”.

Although the geology in parts of the Gogebic Iron Range are similar to the geology in parts of the Mesabi Iron Range and amphibole minerals may be present, based on the above discussion we do not expect asbestos or asbestiform minerals to be present in the Gogebic Iron Range near Mellen, WI. In any case, the estimated particulate emissions are below 5 tpy (see response to question 9). The note in NR 445.07 states “Owners and operators of facilities emitting less than 3 tons of volatile organic compounds and 5 tons particulate matter on an annual basis, or who engage in limited or no manufacturing activities, should refer to s. NR 445.11 prior to determining applicable requirements under this section. NR 445.11 reduces the list of HAPS for

sources with PM emissions less than 5 tpy to those in Table E. Asbestos is not listed in Table E. Therefore, NR 445 does not apply to the proposed bulk sampling activities.

NR 447 does not apply to the Bulk Sampling Plan for several reasons, including that no asbestos is expected to be present. In addition, the Bulk Sampling Plan does not fit into any of the categories regulated by NR 447. Asbestos is defined in NR 447.02 (4) as "Asbestos" means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite−grunerite (amosite), anthophyllite and actinolite−tremolite." As discussed above, asbestiform minerals are not likely to be present in the Gogebic Iron Range near Mellen, WI based on similar geology in Minnesota where studies have been conducted and asbestiform minerals have not been found. Therefore, NR 447 does not apply to the Bulk Sampling Plan.

NR 447 provides specific requirements for the following activities but the Gogebic Bulk Sampling does not meet the definition of any of these activities:

- NR 447.03 Asbestos mills
- NR 447.04 Roadways (constructed with asbestos)
- NR 447.05 Manufacturing (operations using commercial asbestos)
- NR 447.06, .07, .08 Demolition and renovation
- NR 447.09 Spraying
- NR 447.10 Fabricating (using commercial asbestos)
- NR 447.11 Insulating materials
- NR 447.12 Waste disposal for asbestos mills
- NR 447.13 Waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations
- NR 447.14 Inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations
- NR 447.15 Air cleaning
- NR 447.16 Reporting (for listed sources in 447)
- NR 447.17 Active waste disposal sites (applies to sites that receive wastes from sourced covered under 447.12, 447.13, or 447.18)
- NR 447.18 Operations that convert asbestos−containing waste material into non-asbestos (asbestos−free) material

Additional Considerations:

77.883 Managed Forestland Disturbance – The total disturbance to Managed Forestland for this project totals less than 5 acres. The disturbances are as follows:

Bulk Sample Site 1 - 0.59 Acres
Bulk Sample Site 2 – 0.85 Acres
Bulk Sample Site 3A – 0.00 Acres (located on a previously disturbed log landing)
Bulk Sample Site 4 – 1.11 Acres
Bulk Sample Site 5 – 0.64 Acres
New Access Road – 1.59 Acres

TOTAL - 4.78 Acres

New Road Construction – A new road is proposed to access Bulk Sample Sites 1 and 2. The location of a small wetland area on the access road to Bulk Sample Site 1 as well as the steep and damp conditions of the existing access roads to Bulk Sample Sites 1 and 2 have caused a concern in the original proposal. The proposed road will use 2,100 feet of existing roads and 1,740 feet of new construction.

The new road has been designed to follow existing contours and does not require drilling and blasting to construct.

Three culverts are proposed for the alternate access. Road sumps and ditches are proposed to accept surface drainage from the road surface.

Refer to the Typical Road Cross Section drawing for a general arrangement of the new road construction.

The new road will remain in place after the completion of the bulk sampling activities. The roads can be used to access timber on the property.

Archeology – The proposed access to Bulk Sample Sites 1 and 2 will utilize the existing road that is located through the Tyler's Fork Mine Site. The Tyler's Fork Mine last operated in the 1910's. Foundations and stockpiles are remaining visible in the area. The road use through the area will be provided with a commercial graveled road surface underlain by geotextile road fabric to provide a physical barrier between the existing ground and the road surface.

July 26, 2013

Wisconsin Department of Natural Resources
Mining Coordinator – WA/5
101 South Webster Street
PO Box 7921
Madison, WI 53707-7921

Dear Director:

Gogebic Taconite, LLC
Bulk Sampling, Exploration and Environmental Studies
Right of Entry

This letter serves to inform your agency that through the Option Agreement signed by RGGS Land and Minerals, Ltd., L.P. and Gogebic Taconite, LLC, the right to access the Optioned Lands and the right to perform Bulk Sampling, Exploration and Environmental Studies on the Optioned Lands has been granted to Gogebic Taconite, LLC.

The Optioned Lands include parcels in the following areas in Iron County, Wisconsin:
Sections 31, 32, and 33, Township 45 North, Range 1 West.
Sections 5 and 6, Township 44 North, Range 1 West.
The Optioned Lands include parcels in the following areas in Ashland County, Wisconsin
Sections 1, 2, 11, and 12, Township 44 North, Range 2 West.

The various roads that would be used in the Bulk Sampling and Exploration Activities are used for timber harvesting operations on the property. These roads are to be left in place for future activities. Therefore, the proposed reclamation of the bulk sampling sites and roads which will remain in the road system on the property meets the requirements of RGGS Land and Minerals, Ltd., L.P., the land owner.

The proposed reclamation of the bulk sampling sites by regrading and revegetation, conforming to the Wisconsin DNR reclamation standards, also meets the requirements of RRGS Land and Minerals, Ltd., L.P., the land owner.

Terry Villa

Terry Villa
RGGS Land & Minerals, LTD., L.P.
PO Box 1266
Virginia, MN 55792

Wetland Delineation Report

Gogebic Taconite, LLC

Bulk Sample Sites

Town of Anderson, Iron County, Wisconsin

and

Town of Morse, Ashland County, Wisconsin

July 26, 2013

WETLAND DELINEATION REPORT

GOGEBIC TACONITE, LLC
BULK SAMPLE SITES
TOWN OF ANDERSON, IRON COUNTY, WISCONSIN
AND
TOWN OF MORSE, ASHLAND COUNTY, WISCONSIN

July 26, 2013

Prepared for:

Mr. Tim Myers, P.E.
Chief Engineer
Gogebic Taconite, LLC
402 Silver Street
Hurley, Wisconsin 54534

Prepared By:

Wetlands and Waterways, LLC
5742 Warbonnet Lane
Hazelhurst, Wisconsin 54531
(715) 892-4211

Project Number: 007

Ann M. Michalski, PSS, PWS, CST
WDNR Professionally Assured Wetland Delineator

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Introduction

Gogebic Taconite, LLC contracted Wetlands and Waterways, LLC to delineate wetlands within five proposed bulk sample site areas and associated access routes at property located in Part of Township 44 North, Range 2 West, Town of Morse, Ashland County, Wisconsin and Part of Township 45 North, Range 1 West, Town of Anderson, Iron County, Wisconsin. See Figure 1 for the property location and local topography.

The portions of the property examined consist primarily of mature hardwood forest with existing forest roads throughout much of the area from historic logging and mining activities. Five proposed bulk sample sites were reviewed for this study. Several of the bulk sample sites are located in areas that were historically explored for taconite. Logging roads and/or old mining roads lead to each of the bulk sample sites and those access roads were reviewed as part of the delineation as well. The roads reviewed as part of this delineation are referred to as secondary access roads. One primary access road runs across the property from west to east. The primary access road is improved more so than the secondary access roads and will not require any alterations or permitting for purposes of accessing the bulk sample sites. Therefore, the primary access road is not included in this delineation.

Four of the bulk sample sites and the access roads located immediately adjacent to the sites were examined on May 24, 2013 by Ms. Ann Michalski, PSS, PWS, Wisconsin Department of Natural Resources (WDNR) Professionally Assured Wetland Delineator for areas meeting jurisdictional wetland criteria as specified in the 1987 Corps of Engineers Wetlands Delineation Manual and the Northcentral and Northeast Regional Supplement. A fifth bulk sample site was examined on June 19, 2013 by Ms. Michalski along with U.S. Army Corps of Engineers (USACOE) and WDNR personnel. A third site visit was conducted on July 8, 2013 to examine an alternate access route for Bulk Sample Sites 1 and 2.

The purpose of delineating the bulk sample sites was to identify wetlands to be avoided or permitted for temporary impacts associated with equipment transport to the bulk sample sites and proposed bulk sampling activities. Figure 2 shows the overall site layout, bulk sample site locations and existing access roads leading to the sites. Figures 2A through 2C show the locations of the bulk sample sites and associated secondary access roads in greater detail, as well as delineated wetlands. Representative data points were recorded at each sample site location and a Field Data Sheet was recorded for each location. The sample points are shown on Figures 2A through 2C and Field Data Sheets are included in Appendix A.

The five bulk sample sites reviewed were all located in uplands. Bulk Sample Site 2 had a small area of standing water at the time of the visit following some significant rain events. Vegetation was sparse in this area but soils were evaluated and indicated upland conditions. The standing water appeared to be temporary and soils did not indicate hydric conditions. The follow-up site visit with regulatory agencies confirmed that this area is upland and all concurred at that time. The secondary access routes to each bulk sample site were also evaluated and due to heavy rains

during the days and weeks prior to some of the site visits, there were areas of standing or flowing water but the routes were determined to be primarily located in uplands.

One wetland area (Wetland 1) was delineated along the existing secondary access road leading to Bulk Sample Site 1. Figure 2B shows the location of the wetland in relation to the access road and bulk sample site. In order to avoid impacts to this wetland, an alternative access route was evaluated on July 8, 2013 to find a more suitable upland route. Four wetlands (Wetlands 2 through 5) were delineated along that route during that site visit. Gogebic Taconite, LLC has adjusted their new access route around the delineated wetlands and has indicated these can be avoided.

Per the Wisconsin Wetland Inventory (WWI) classification system, the wetlands identified for this study are classified primarily as T3K (Forested, broad-leaved deciduous, palustrine, wet soil) wetlands with the exception of Wetland 5, which had virtually no vegetation and could only be classified as a F3K (Flat/unvegetated wet soil, mud, wet soil, palustrine) wetland although this classification is more appropriate for larger floodplain areas. This wetland is a very small, narrow seep with minimal vegetation that appears to potentially have been created from historic mining activities nearby. The Field Data Sheets classify Wetlands 1 through 4 according to the Cowardin ET AL 1979 classification system as a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous) and PSS1 (Palustrine, Scrub-shrub, Broad-Leaved Deciduous) wetlands. A drainageway flows northward through both Wetland 1 and Wetland 4 but by the second site visit on June 19th, the drainageway in Wetland 1 no longer had flowing or standing water present and the drainageway in Wetland 4 was not flowing at the time of the visit. Wetlands 2, 3 and 5 appear to be isolated although that determination should be made by regulatory staff.

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineers Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. Boundaries for areas identified as wetland were determined based on topographical changes, transitions from hydric soils and hydric vegetation to upland soils and upland vegetation and presence or lack of hydrology indicators. Regulatory personnel present at the site on June 19th reviewed the five bulk sample site locations and concurred with the findings of areas delineated up to that point.

Overall, the access routes and historic bulk sample site locations are considered Significantly Disturbed due to the clearing of trees and shrubs at one time and soil disturbances from historic road construction and bulk sample site disturbance. Most areas immediately adjacent to the roads and historic bulk sample sites were not considered Significantly Disturbed. The areas observed were not considered Problematic with the exception of shallow rock in some areas preventing full soil profile viewing.

Recent rainfall totals had been quite high prior to the first site visit and the year-to-date precipitation levels were much higher than normal. The National Weather Service historical precipitation data reviewed for Duluth, Minnesota, Rhinelander, Wisconsin and Marquette, Michigan indicated that the month-to-date precipitation levels were near normal but the year-to-date precipitation levels were much higher than normal (+3 to +4" above normal) at the time of the first site visit. Precipitation data for the July 8th site visit indicated that the month-to-date precipitation levels were slightly higher than normal and the year-to-date precipitation levels were much higher than normal (+4 to +5" above normal). The Palmer Drought Index also

indicated that as of May 25th, the area was "extremely moist" with a +4 value indicating very wet conditions and as of July 6th, the area was "moderately moist" with a +2.00 to +2.99 value.

Wetland 1 had standing and flowing water at the time of first site visit but by the July 8th site visit, wetlands only had saturated soils in the sample site locations. Primary hydrology indicators present at the time of the site visits varied between site visits and between wetlands but most wetland areas had primary hydrology indicators including high water table (A2), saturation (A3) and water-stained leaves (B9) and secondary hydrology indicators including geomorphic position (D2) and FAC-neutral test (D5).

Study Methods

Available topographic maps, survey maps, WWI maps, and the Ashland and Iron County Soil Survey maps were reviewed prior to visiting the property to identify potential wetland areas. The WWI is included as Figure 3. The combined Ashland and Iron County Soil Survey Map is included as Figure 4.

Examination of vegetation, soils and hydrology, as outlined in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Northcentral Regional Supplement, were used to characterize and determine wetland boundaries. The NRCS Field Indicators of Hydric Soils in the United States guide was also utilized to help identify hydric soils at the site. Wetland edges were marked with pink flagging labeled "Wetland Delineation" for the purposes of photos and wetland boundary documentation but flagging was then removed. The wetland edge was considered the highest extent of the jurisdictional wetland. Areas below the delineated wetland edge met required wetland criteria, while areas above did not. Wetland boundaries were located with a Trimble GeoXT 6000 Series GPS with sub-meter accuracy. The wetland boundaries and sample site locations are shown on Figures 2A, 2B and 2C with all wetlands identified occurring in the eastern portions of the study area. In the event that no wetlands were present within a bulk sample site, a representative sample site was chosen and a Field Data Sheet was completed.

In the location of the delineated wetlands, a sample transect was established in a representative wetland to upland transition zone. The transect was comprised of two sample points located along a line running perpendicular to the wetland edge, with one point in obvious wetland and one point in obvious upland. A field data form was completed for each of the upland and wetland sample points. Sample point locations for the wetland transects, as well as all bulk sample site sample points, were also located with a GPS and are shown on Figures 2A through 2C. A field data form was not completed for Bulk Sample Site 5 but the area was reviewed by USACOE and WDNR personnel on June 19th and confirmed to be upland. Field data forms are included in Appendix A.

Wetland classification was performed according to Cowardin and Wisconsin Wetland Inventory classification systems. Vegetation was identified using suitable keys (Eggers and Reed, 1987; Knopt, 1980; Courtenay/Zimmerman, 1972; Fassett, 1951; Chadde, 1998) and a plant's hydrophytic status was determined using the most recent Northcentral-Northeast Region – National Wetlands Plant List (U.S. Army Corps of Engineers, 2012).

Results

OFF-SITE SURVEY

The WWI/Hydric Soils map indicates some small wetland symbols (< 2 acres) in the vicinity of Bulk Sample Sites 1 and 2 and associated access roads. Based on observations during the site visits, the wetland symbols appear to be indicating the approximate location of nearby wetlands but not necessarily within the immediate study areas. The WWI also indicates a stream near Bulk Sample Site 2, but based on the map it appears this stream is located slightly further south than Bulk Sample Site 2. The Iron and Ashland County Soil Surveys indicate that the bulk sample sites consist primarily of moderately well to well drained upland soils.

The Ashland and Iron County Soil Surveys indicate that the following soil series are present within the study areas:

5351C – Gogebic Silt Loam, 6 to 18% slopes, Very Stony, Rocky - These soils consist primarily of moderately well drained silt loam soils overlying fine sandy loam and gravelly fine sandy loam soils. These soils are typically formed on convex or linear crests, side slopes, base slopes, nose slopes or head slopes of till plains with gently rolling to moderately steep terrain. These soils are classified as Frigid Alfic Oxyaquic Fragiorthods. These soils are not listed on the Wisconsin or National Hydric Soils lists.

5369D – Dishno-Gogebic-Peshekee-Rock Outcrop Complex, 18 to 35% slopes – These soils consist primarily of moderately well to well drained cobbly silt loam overlying cobbly loam or very stony loamy sand or sandy loam over bedrock. These soils are typically formed on convex or linear summits, backslopes, shoulders and footslopes of moraines with moderately steep to very steep terrain. These soils are classified as Frigid Oxyaquic Haplorthods, Alfic Oxyaquic Fragiorthods and Frigid Lithic Haplorthods. These soils are not listed on the Wisconsin or National Hydric Soils lists.

5369E – Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35 to 55% slopes - These soils consist primarily of well drained cobbly fine sandy loam and cobbly silt loam or very fine sandy loam overlying cobbly and/or gravelly soils over bedrock. These soils are typically formed on convex shoulders, backslopes, sideslopes and summits on hills and till plains with very steep to extremely steep terrain. These soils are classified as Frigid Fragic Haplorthods, Frigid Alfic Fragiothods and Frigid Lithic Haplorthods. These soils are not listed on the Wisconsin or National Hydric Soils lists.

The combined Ashland and Iron County Soil Survey map is included as Figure 4.

FIELD DELINEATION

Five wetland areas were delineated during the site visit. The following text describes the wetlands identified at the Site and the basis for determining the wetland boundaries. See

Appendix A for Wetland Data Forms. Refer to Figures 2A through 2C for the location of the delineated wetlands, the wetland sample transects and sample points within the bulk sample sites.

DELINEATED WETLAND BASINS

Wetland 1 is primarily a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous (T3K - Forested, broad-leaved deciduous, palustrine, wet soil)) wetland. A drainageway flows northward through this wetland. The drainageway was flowing with approximately 1 to 2 inches of water at the time of the delineation but when observed during a later visit on June 19th no flowing or standing water was observed.

The wetland soils consist primarily of sandy loam and loam soils with redoximporphic features overlying shallow rock. Upland soils consist primarily of loam soils overlying shallow rock. Due to the shallow rock, a full soil profile could not be viewed within the wetland or upland sample points but obvious transitions in hydrology and vegetation, as well as defined topographic breaks in most areas, were considered and most heavily evaluated in determining wetland boundaries.

Wetland 2 is primarily a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous (T3K - Forested, broad-leaved deciduous, palustrine, wet soil)) wetland. This wetland appears to be part of a wetland/non-wetland mosaic that extends north of the study area although the specific area delineated for purposes of this study was not identified as a mosaic type system. An old logging road runs through the southern edge of this wetland and likely resulted in an expansion of the wetland. Standing water was present in the rutted areas but the sample site, which was placed in a less disturbed area, did not have standing water but rather soil saturation and a high water table at the time of the visit.

The wetland soils consist primarily of silt soils with redoximporphic features overlying shallow rock. Upland soils consist primarily of silt soils overlying sandy soil. The wetland/upland boundary had relatively obvious transitions in hydrology, vegetation and soil, as well as a defined topographic break.

Wetland 3 is primarily a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous (T3K - Forested, broad-leaved deciduous, palustrine, wet soil)) wetland. This wetland appears to be isolated and not directly connected to any other wetland or waterway although this should be determined by regulatory staff. This wetland had saturation to the soil surface and a high water table at the time of the visit

The wetland soils consist primarily of silt and silt loam soils with redoximorphic features. Upland soils consist primarily of silt soils overlying sandy soil. The wetland/upland boundary had relatively obvious transitions in hydrology, vegetation and soil, as well as defined topographic breaks.

Wetland 4 is primarily a PFO1 (Palustrine, Forested, Broad-Leaved Deciduous (T3K - Forested, broad-leaved deciduous, palustrine, wet soil)) wetland. A drainageway flows northward through this wetland. However, the drainageway was not flowing at the time of the visit. Based on

observations of soils and vegetation, portions of the drainageway appear to be narrow "upland" drainages that only have water present for short periods following a precipitation event.

The wetland soils consist primarily of silt loam soils with redoximporphic features overlying rock. Upland soils consist primarily of loam soils lacking redoximorphic features. This wetland also had relatively obvious transitions in hydrology, soils and vegetation, as well as defined topographic breaks in most areas. An old logging road runs through the northern edge of the delineated wetland area and that location was considered Significantly Disturbed although the rest of the wetland area examined appeared to be in a relatively natural state.

Wetland 5 is primarily a narrow seep and wetland classification was not quite applicable due to very minimal vegetation present. The wetland area appears to be isolated and originates at a rocky interface along a hillside to the south. It is possible that this wetland may be created by water flowing out of a historic mining cavity in the hillside but the specific history of the specific area is unknown. An old logging road runs through the northern edge of the delineated wetland area and that location was considered Significantly Disturbed although the rest of the wetland area examined appeared to be in a relatively natural state.

The wetland soils consist primarily of black silt overlying reduced silt with redoximporphic features. Upland soils consist primarily of silt loam soils overlying silt loam mixed with rock. Transitions in hydrology and soils were very evident although vegetation was sparse and topographic breaks were not as evident as in other areas evaluated during the site visit.

The dominant vegetation found in the wetland sample site location includes the following:

Scientific Name	**Common Name**	**Indicator**
Abies balsamea	Balsam Fir	FAC
Acer saccharum	Sugar Maple	FACU
Betula alleghaniensis	Yellow Birch	FAC
Carex crinita	Fringed Sedge	OBL
Carex gracillima	Graceful Sedge	FACU
Corylus americana	American Hazelnut	FACU
Dryopteris intermedia	Evergreen Wood Fern	FAC
Equisetum arvense	Common Horsetail	FAC
Fraxinus nigra	Black Ash	FACW
Impatiens capensis	Orange Jewelweed	FACW
Onoclea sensibilis	Sensitive Fern	FACW
Ostrya virginiana	Ironwood	FACU
Ranunculus acris	Tall Buttercup	FAC
Ribes americanum	Wild Black Currant	FACW
Solidago gigantea	Giant Goldenrod	FACW

The dominant vegetation found in the upland sample site locations at this site includes the following:

Scientific Name	Common Name	Indicator
Abies balsamea	Balsam Fir	FAC
Acer rubrum	Red Maple	FAC
Acer saccharum	Sugar Maple	FACU
Allium tricoccum	Wild Leek	FACU
Aralia nudicaulis	Wild Sarsaparilla	FACU
Betula alleghaniensis	Yellow Birch	FAC
Betula papyrifera	White Birch	FACU
Cardamine concatenata	Cutleaf Toothwort	FACU
Carex pensylvanica	Pennsylvania Sedge	UPL
Caulophyllum thalictroides	Blue Cohosh	UPL
Corylus americana	American Hazelnut	FACU
Dryopteris intermedia	Evergreen Wood Fern	FAC
Erythronium americanum	Yellow Trout-Lily	UPL
Fraxinus nigra	Black Ash	FACW
Hieracium aurantiacum	Orange Hawkweed	UPL
Maianthemum canadense	Canada Mayflower	FACU
Osmunda claytoniana	Interrupted Fern	FAC
Ostrya virginiana	Ironwood	FACU
Phegopteris connectilis	Northern Beech Fern	FACU
Populus tremula	Quaking Aspen	FAC
Prunus serotina	Black Cherry	FACU
Pteridium aqualinum	Bracken Fern	FACU
Quercus rubra	Northern Red Oak	FACU
Ribes cynosbati	Prickly Wild Gooseberry	FACU
Tilia americana	American Basswood	FACU

The wetland edges were identified based on the transition from upland vegetation to wetland vegetation and differences in soil and hydrology observed at upland and wetland sample points.

Conclusions

Five bulk sample sites and associated secondary access roads were examined on various dates between May 24 and July 8, 2013 for areas meeting jurisdictional wetland criteria as specified in the 1987 Corps of Engineers Wetlands Delineation Manual and the Northcentral and Northeast Regional Supplement. The purpose of delineating the bulk sample sites was to identify wetlands to be avoided or permitted for temporary impacts associated with equipment transport to the sites and proposed bulk sampling activities. The attached Figure 2 shows the overall site layout, bulk sample site locations and existing forest roads leading to those sites. Figures 2A through 2C show the bulk sample sites, associated access routes, delineated wetlands and wetland sample locations.

Four of the bulk sample sites and the access roads located immediately adjacent to the sites were examined on May 24, 2013 by Ms. Ann Michalski, PSS, PWS, Wisconsin Department of Natural Resources (WDNR) Professionally Assured Wetland Delineator for areas meeting jurisdictional wetland criteria as specified in the 1987 Corps of Engineers Wetlands Delineation Manual and the Northcentral and Northeast Regional Supplement. A fifth bulk sample site was examined on June 19, 2013 by Ms. Michalski along with U.S. Army Corps of Engineers (USACOE) and WDNR personnel. A third site visit was conducted on July 8, 2013 to examine an alternate access route for Bulk Sample Sites 1 and 2.

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineers Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. The areas identified as wetland were primarily identified based on topographical changes, transitions from hydric soils and hydric vegetation to upland soils and upland vegetation and presence or lack of hydrology indicators. Best professional judgment was also applied based on many years of conducting wetland delineations in northern Wisconsin. Regulatory personnel present at the site on June 19th reviewed the five bulk sample site locations and concurred with the findings of the wetland delineation up to that point.

Overall, the access routes and historic bulk sample site locations are considered Significantly Disturbed due to the clearing of trees and shrubs at one time and soil disturbances from historic road construction and bulk sample site disturbance. Areas immediately adjacent to the roads and historic bulk sample sites were not considered disturbed. Most areas observed were not considered Problematic with regards to identifying wetland boundaries with the exception of shallow rock in some areas preventing full soil profile viewing.

The five bulk sample sites reviewed were all determined to be located in upland areas. Bulk Sample Site 2 had a small area of standing water at the time of the visit following some significant rain events. Vegetation was sparse in this area but soils were evaluated and indicated upland conditions. The standing water appeared to be temporary and soils did not indicate hydric conditions. The follow up site visit with regulatory agencies confirmed that this area is upland and all concurred at that time. The secondary access routes to each bulk sample site were also evaluated and due to heavy rains during the days and weeks prior to some of the site visits,

there were areas of standing or flowing water although the majority of the access routes were determined to be located in upland areas.

One wetland area (Wetland 1) was delineated along the existing secondary access road leading to Bulk Sample Site 1. Figure 2B shows the location of the wetland in relation to the access road and bulk sample site. In order to avoid wetlands, an alternative access route was evaluated at a later date to find a route into Bulk Sample Site 1 that could avoid wetland impacts. Four wetlands (Wetlands 2 through 5) were delineated along that route during that site visit. Gogebic Taconite, LLC has since adjusted the new route slightly south of Wetlands 4 and 5 and have indicated all identified wetlands can be avoided.

The findings of this wetland delineation report are only valid for the site conditions which existed at the time of this investigation. All wetland boundaries and jurisdictional determinations have been subject to verification by USACOE, St. Paul District.

The final authority for wetland boundaries and permit requirements rests with the government agencies which have jurisdiction over this project. Findings of this wetland delineation are subject to revision based upon natural or induced changes in weather, vegetation management, land use, topography, surface water flow, subsurface drainage, stormwater management, within or near the project site which may affect the soils, hydrology, or vegetative community on the project site.

This report provides a description of existing wetland conditions within the project area and does not include quantification of any temporary or permanent impacts to wetlands or waterbodies. Such impacts would require review and approval from all appropriate agencies. Activities which impact or potentially impact jurisdictional wetlands are currently regulated at several levels of government. Federal (USACE), State (WDNR) and local government agencies may all be involved in reviewing a single project. To avoid potential penalties and project delays it is necessary to acquire necessary permits and approvals from all jurisdictional agencies before initiating activities in wetlands. It is important to obtain a USACOE jurisdictional determination (JD) on the wetland boundaries prior to proceeding with activities on the property.

References

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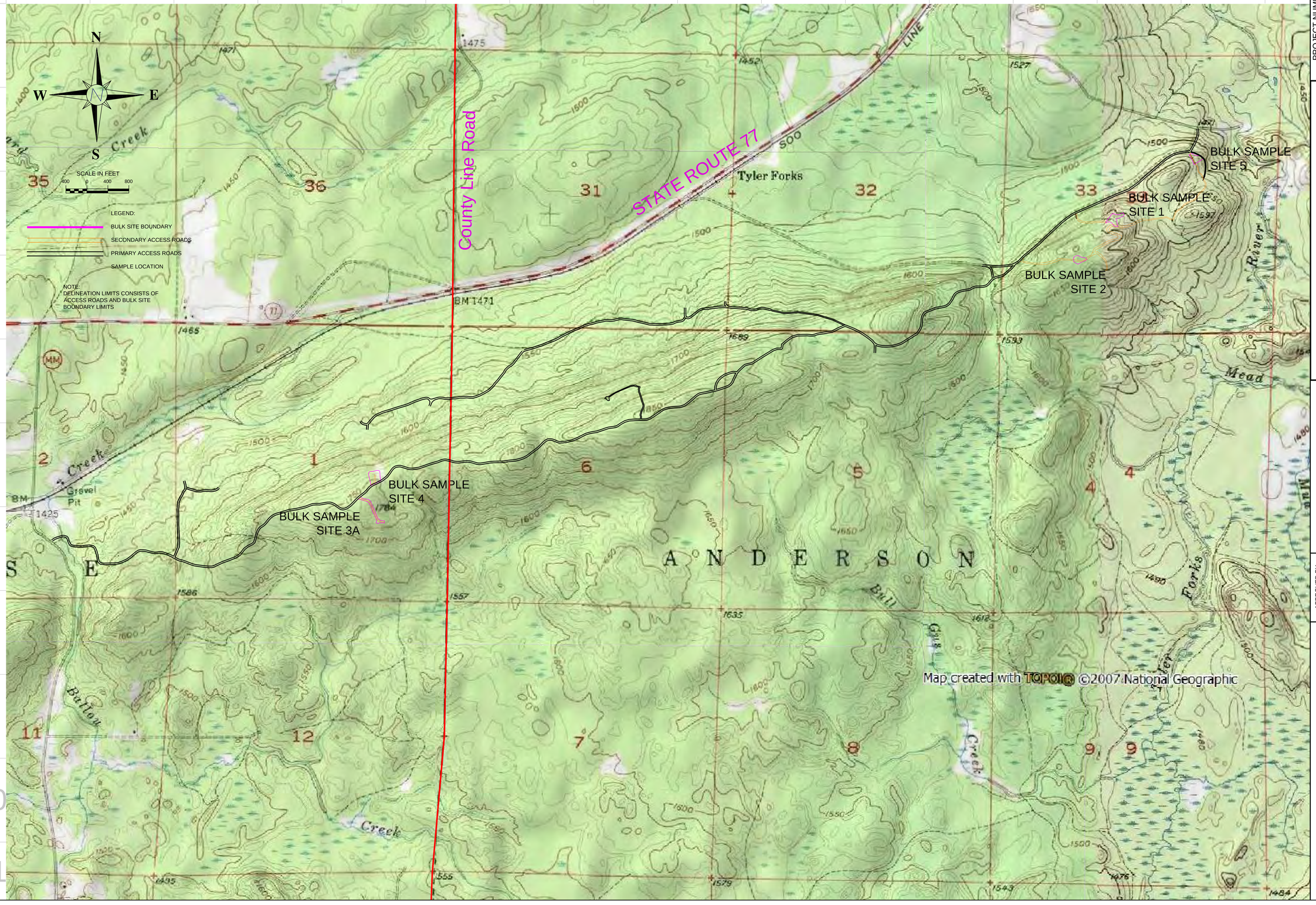

PROJECT NUMBER: 007

FIGURE NO. 1

Wetlands & Waterways LLC

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APPROVED BY: AMM

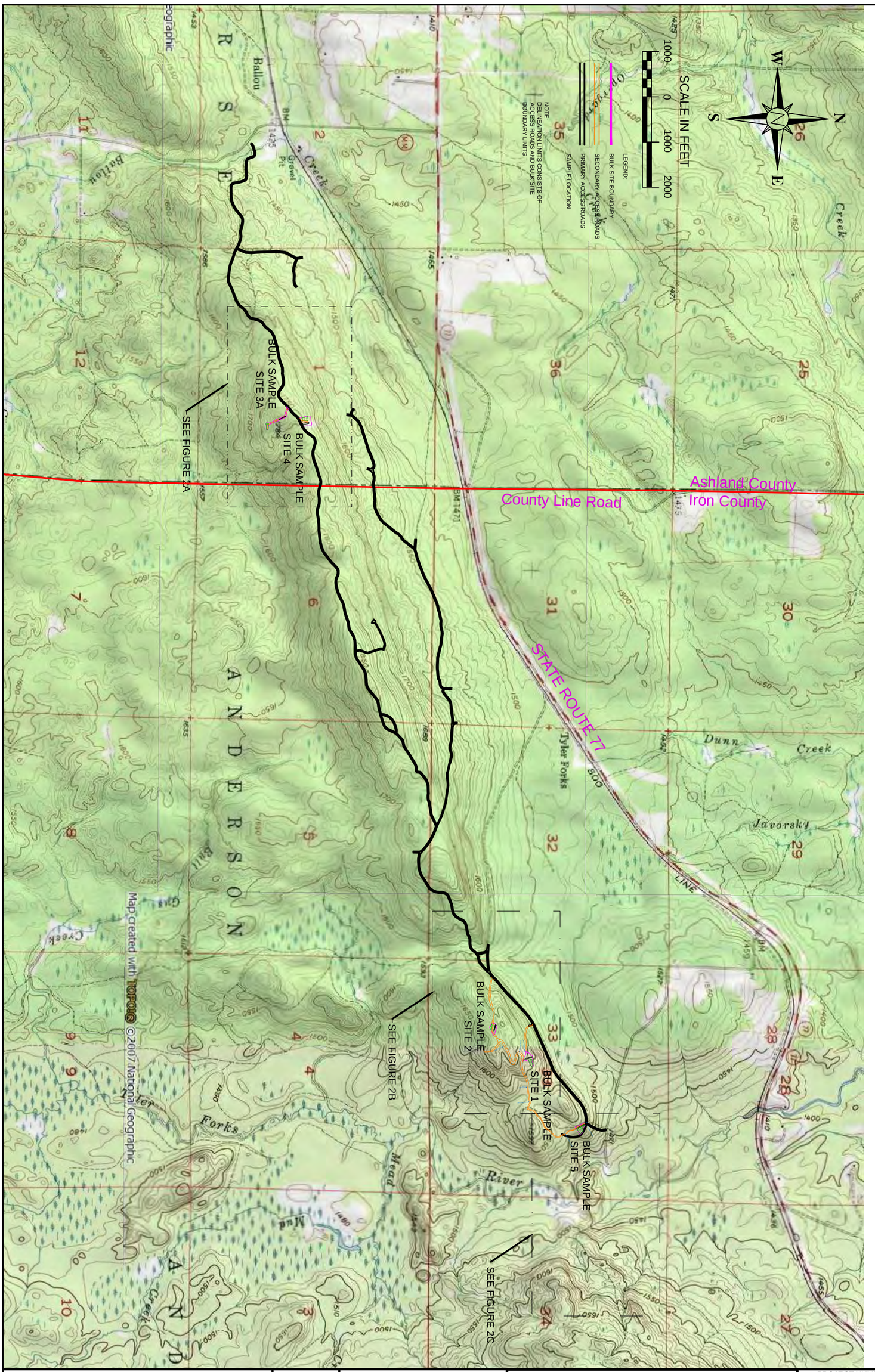
DRAWN BY: NLB

DATE: 4/16/11

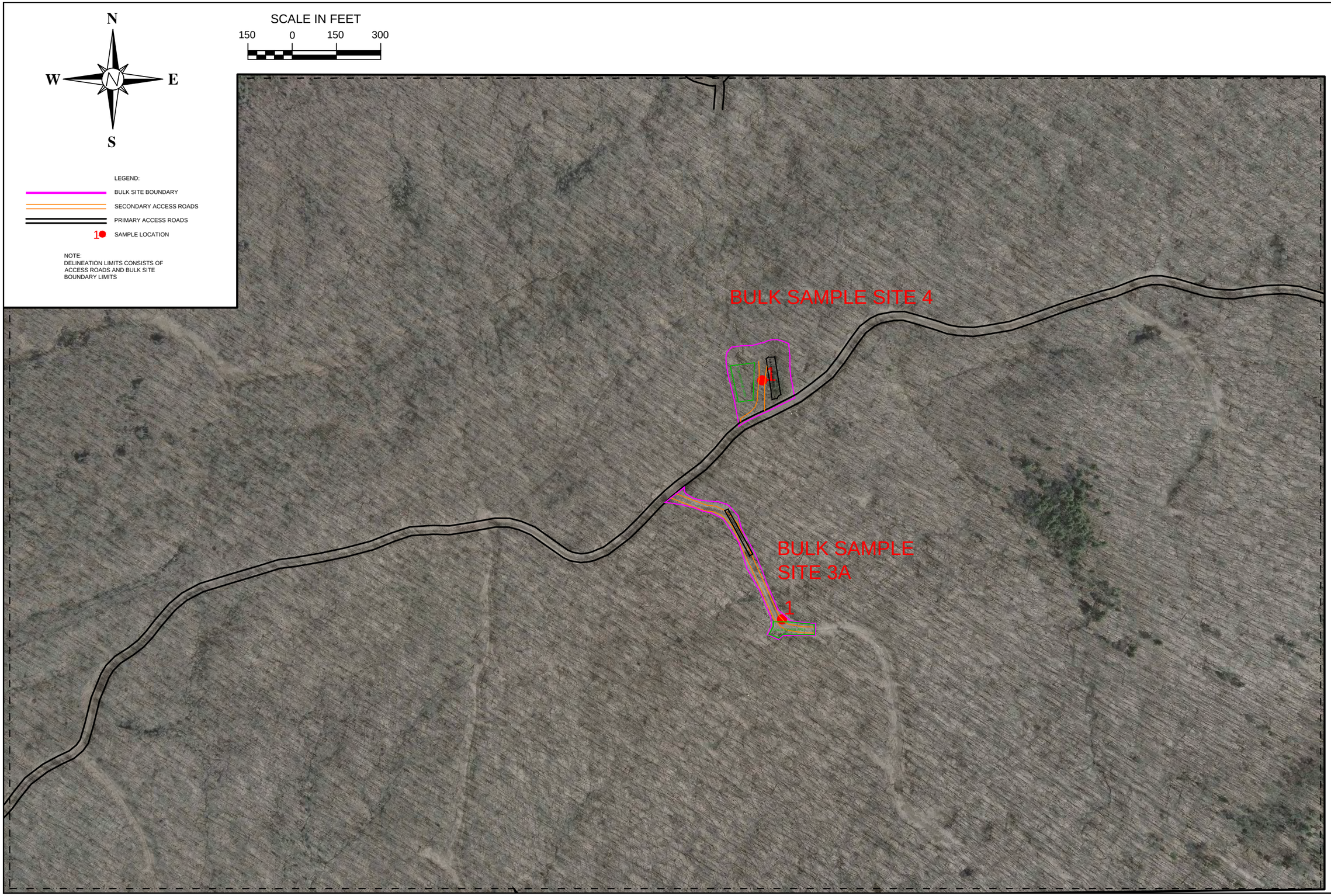
SCALE: 1"=800'

SITE LOCATION & LOCAL TOPOGRAPHY

GOGEBIC TACONITE, LLC
ASHLAND AND IRON COUNTY
WISCONSIN



SITE LOCATION MAP BULK SAMPLE SITES	APPROVED BY: AMM DRAWN BY: NLB	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 129
GOGEBIC TACONITE, LLC TOWN OF MORSE & ANDERSON, ASHLAND & IRON COUNTY, WISCONSIN	DATE: 5-26-13 SCALE: 1"=2000'			FIGURE NO. 2



PROJECT NUMBER: 129

FIGURE NO. 2A

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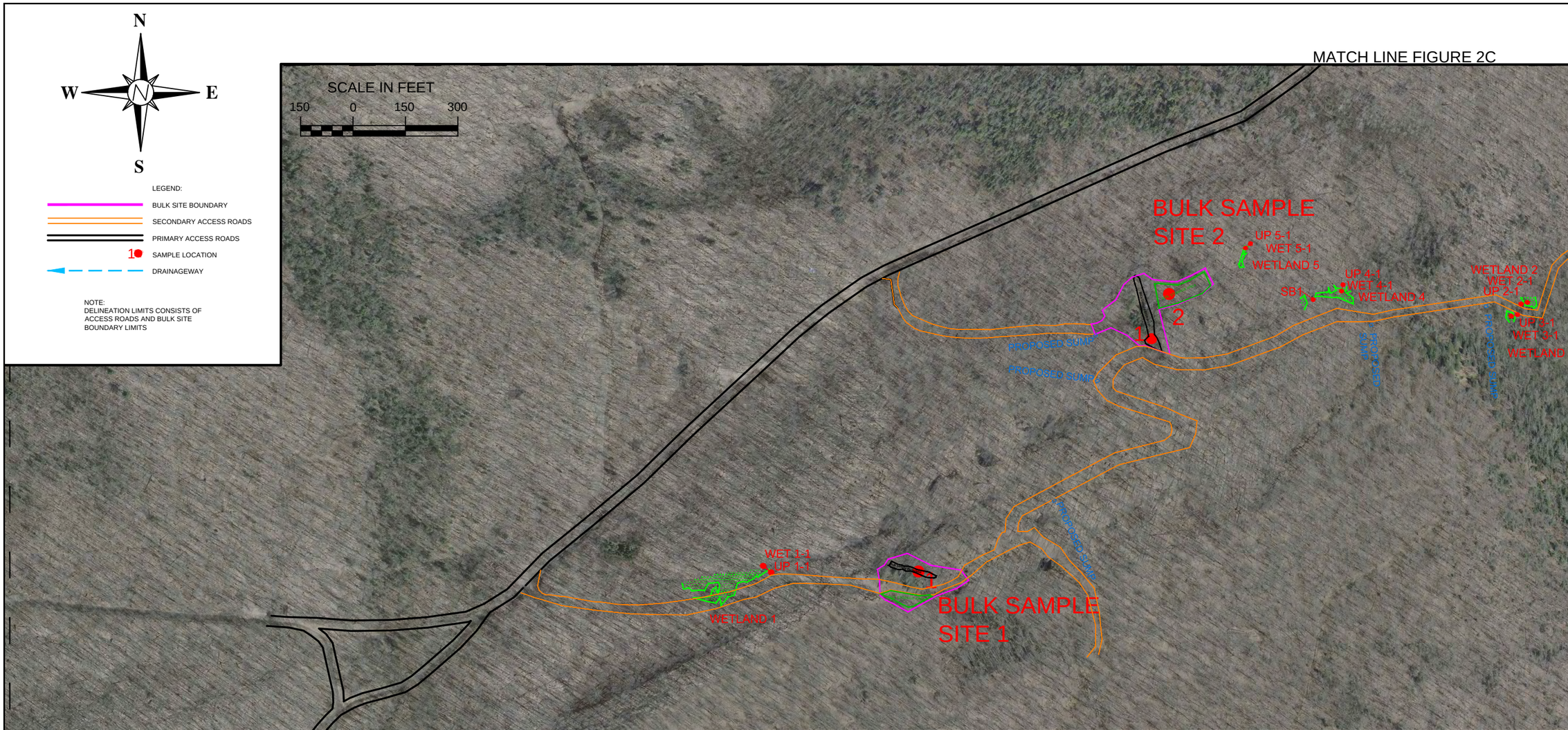
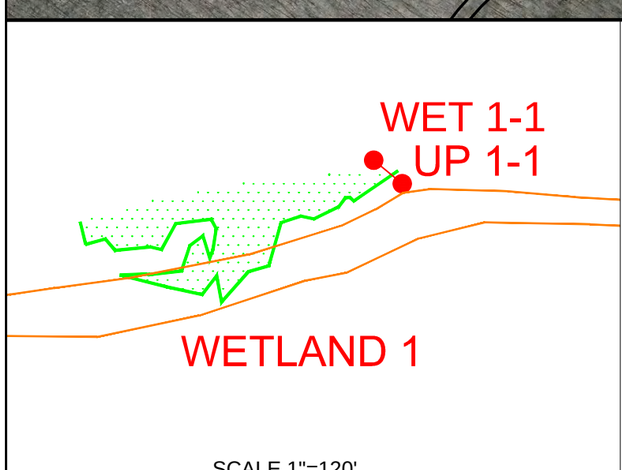
DATE: 5-26-13

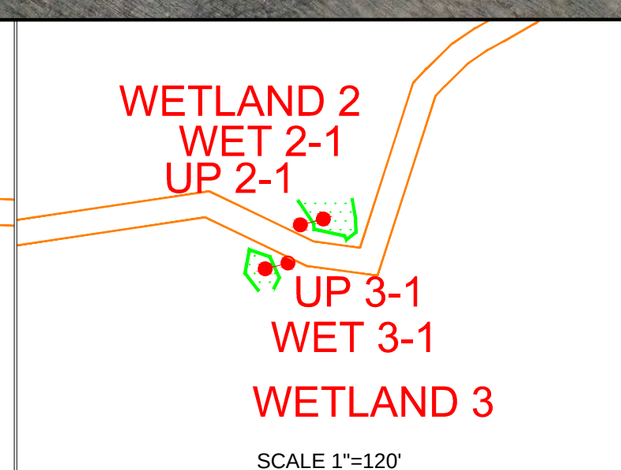
SCALE: 1"=300'

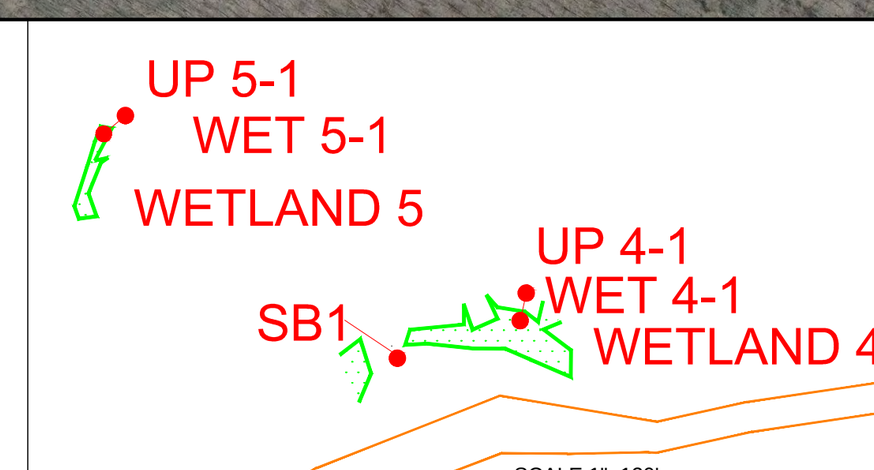
WETLAND LOCATION MAP
BULK SAMPLE SITE 3 & 4

GOGEBIC TACONITE, LLC
SEC.1, T44N, R2W, TOWN OF MORSE, ASHLAND COUNTY, WISCONSIN









MATCH LINE FIGURE 2C

PROJECT NUMBER: 129

FIGURE NO. **2B**

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APPROVED BY: AMM

DRAWN BY: NLB

DATE: 5-26-13

SCALE: NOTED

WETLAND LOCATION MAP
BULK SAMPLE SITE 1 & 2

GOGEBIC TACONITE, LLC
SEC.33, T45N, R1W, TOWN OF ANDERSON, IRON COUNTY, WISCONSIN

PROJECT NUMBER: 129

FIGURE NO. 2C

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APPROVED BY: AMM

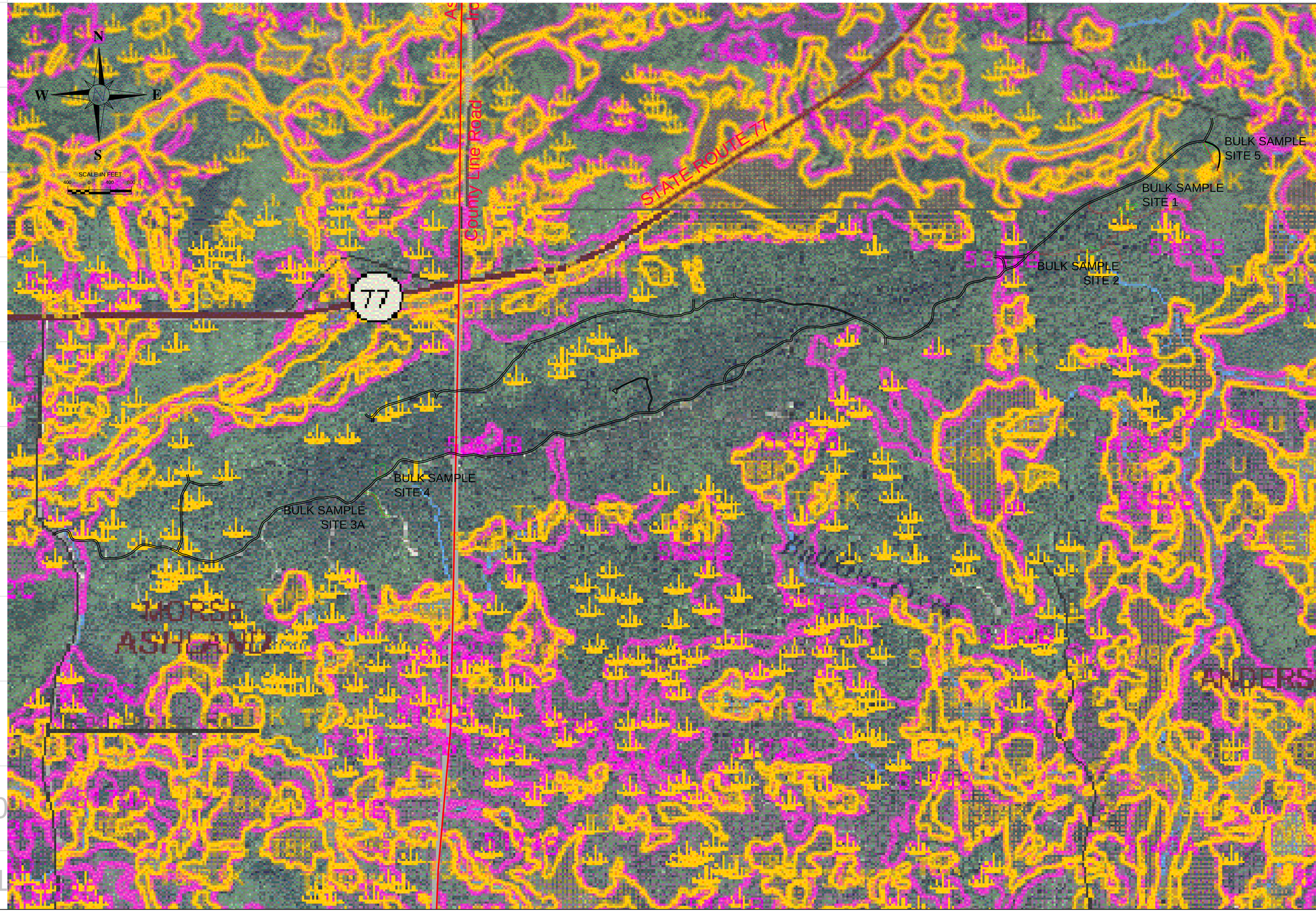
DRAWN BY: NLB

DATE: 5-26-13

SCALE: 1"=300'

WETLAND LOCATION MAP
BULK SAMPLE SITE 5

GOGEBIC TACONITE, LLC
SEC.33, T45N, R1W, TOWN OF ANDERSON, IRON COUNTY, WISCONSIN



PROJECT NUMBER: 007

FIGURE NO. 3

Wetlands & Waterways LLC

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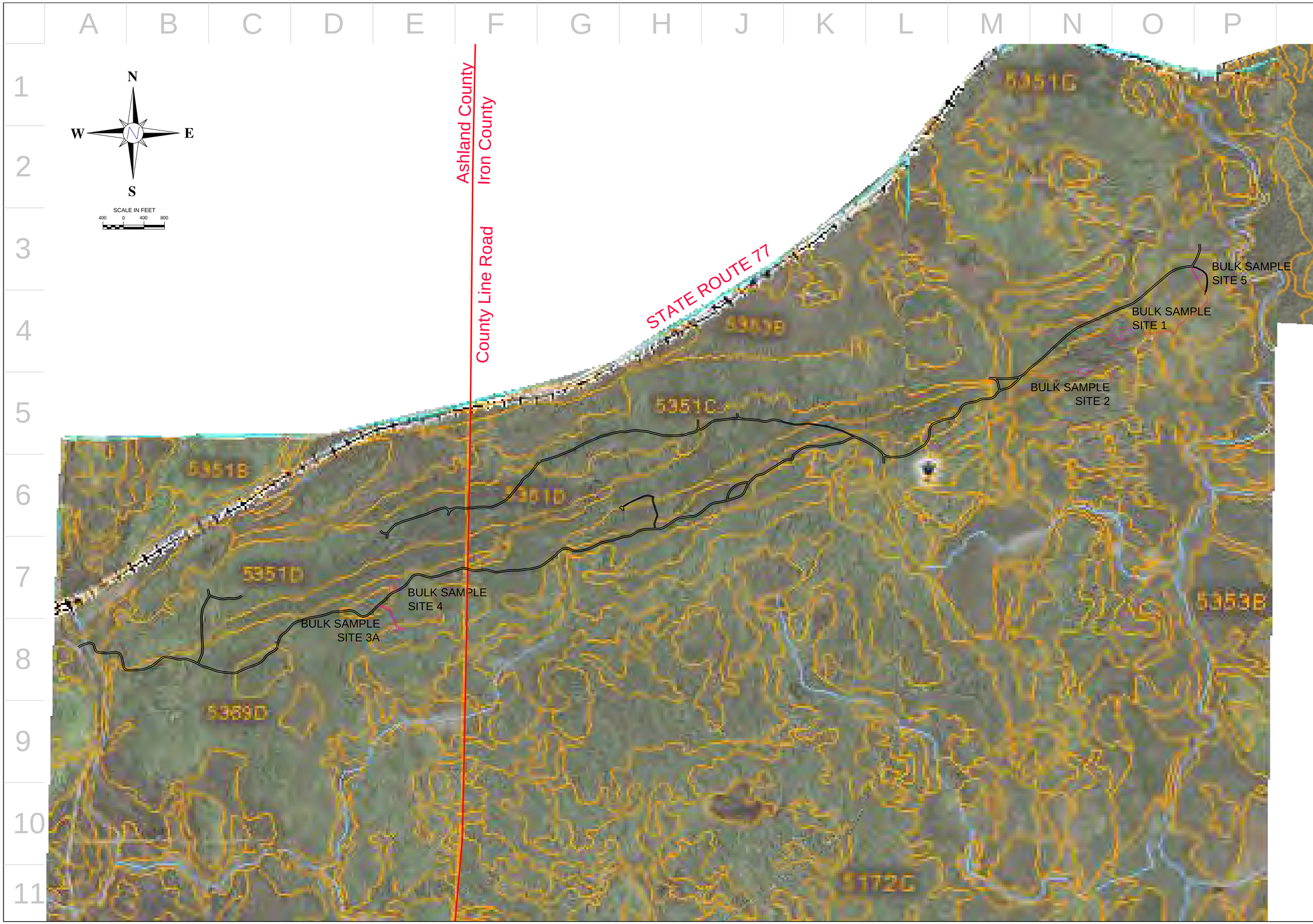
DRAWN BY: NLB

DATE: 4/16/11

SCALE: 1"=800'

WISCONSIN WETLAND INVENTORY MAP

GOGEBIC TACONITE, LLC
ASHLAND AND IRON COUNTY
WISCONSIN



PROJECT NUMBER: 007

FIGURE NO. 4

Wetlands & Waterways LLC

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APPROVED BY: AMM

DRAWN BY: NLB

DATE: 4/16/11

SCALE: 1"=800'

SOIL SURVEY MAP

GOGEBIC TACONITE, LLC
ASHLAND AND IRON COUNTY
WISCONSIN

APPENDIX A – FIELD DATA SHEETS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Site 1-SB1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): summit **Local relief (concave, convex, none):** convex **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.331281 **Long.:** 90.501730 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

The original bulk sample site could be considered significantly disturbed but this sample site is a reference site located immediately adjacent to the bulk sample site and this specific location does not appear to have been disturbed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Site 1-SB1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	60	☑	80.0%	FACU
2. Betula alleghaniensis	15	☑	20.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	75	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	25	☑	71.4%	FACU
2. Betula alleghaniensis	10	☑	28.6%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	35	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Cardamine concatenata	15	☑	37.5%	FACU
2. Carex pensylvanica	15	☑	37.5%	UPL
3. Maianthemum canadense	5	☐	12.5%	FACU
4. Allium tricoccum	5	☐	12.5%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	40	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	25	x 3 =	75	
FACU species	110	x 4 =	440	
UPL species	15	x 5 =	75	
Column Totals:	150	(A)	590	(B)

Prevalence Index = B/A = 3.933

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Site 1-SB1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-5	7.5YR	3/2	100%	-	-	-	-	-	Sandy Loam	
5-20+	7.5YR	3/4	100%	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features observed

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Site 2-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333057 **Long.:** 499220 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☑ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetation, soil and hydrology are significantly disturbed from the historic bulk sample site in this location. All vegetation was cleared from this area at one time. Soils are also disturbed from mining activities. Hydrology could also be considered altered due to a change in topography that makes this location the lowest point in the landscape where water pools after heavy precipitation. Although this location has standing water and FAC species present, it was determined that this location is not a wetland based on high chroma soils and observations of reference sites. This site was observed during a follow up site visit and all indications of hydrology were absent and some upland herbaceous vegetation was starting to emerge. Soils could be considered problematic due to shallow rock preventing full soil profile viewing but topographic position, vegetation and lack of hydrology indicators were observed to make a determination here. The site conditions are considered the normal circumstance due to the time since the activities occurred.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	3
Water Table Present?	Yes ◉ No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water was present at the time of the visit but precipitation had been much higher than normal in the days and weeks prior and standing water is common over rock after a heavy rainfall event but typically infiltrates quickly. This site was dry during a follow up site visit and no signs of hydrology were observed.

VEGETATION - Use scientific names of plants

Sampling Point: Site 2-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Abies balsamea	15	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	15		= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Betula alleghaniensis	20	☑	66.7%	FAC
2. Abies balsamea	10	☑	33.3%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	30		= Total Cover	

Woody Vine Stratum (Plot size: 30 ' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	45	(A)	135	(B)

Prevalence Index = B/A = 3.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

This location meets the dominance test only due to FAC species which can also occur in uplands.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Site 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-11	7.5YR	3/4	100%	-	-	-	-	-	Sandy Loam	
11+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 11

Hydric Soil Present? Yes ○ No ◉

Remarks:

Shallow rock prevented full soil profile viewing but observations of soils with high chroma and a follow up site visit determined this area is upland, along with best professional judgment and concurrence from regulatory agencies. No redox features were observed.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Site 2-2**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): summit **Local relief (concave, convex, none):** convex **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333310 **Long.:** 90.499084 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

Although a historic bulk sample site is located in this area, this sample site is representative of the areas surrounding that site and is not disturbed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Site 2-2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	60	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	25	☑	71.4%	FACU
2. Ostrya virginiana	10	☑	28.6%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	35	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Acer saccharum	30	☑	60.0%	FACU
2. Corylus americana	10	☑	20.0%	FACU
3. Maianthemum canadense	10	☑	20.0%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	50	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	145	x 4 =	580	
UPL species	0	x 5 =	0	
Column Totals:	145	(A)	580	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Site 2-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	7.5YR	3/2	100%	-	-	-	-	-	Loam	
6-20+	7.5YR	3/3	100%	-	-	-	-	-	Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features observed

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Morse, Ashland Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Site 3A -1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 1 **T.** T44N **R.** R2W

Landform (hillslope, terrace, etc.): summit **Local relief (concave, convex, none):** convex **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.317317 **Long.:** 90.554784 **Datum:** WGS84

Soil Map Unit Name: Dishno-Gogebic-Peshekee-Rock Outcrop Complex, 18-35%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetation, soil and hydrology are significantly disturbed from historic silvicultural roads in this location. All woody vegetation was cleared from this area at one time. Soils are also disturbed and are likely different soil profiles than prior to grading activities. Hydrology is likely unaltered from its original condition given the topographic position of this site which is high and sheds stormwater readily. Soils are naturally problematic due to shallow rock preventing full soil profile viewing. Topographic position, upland vegetation and lack of hydrology indicators were most heavily considered in making a determination in this location. The current conditions are considered the normal circumstance due to the time since activities occurred.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Site 3A -1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Hieracium aurantiacum	50	☑	71.4%	UPL
2. Fragaria virginiana	15	☑	21.4%	FACU
3. Populus tremula	5	☐	7.1%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	70		= Total Cover	

Woody Vine Stratum (Plot size: 30 ' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	15	x 4 =	60	
UPL species	50	x 5 =	250	
Column Totals:	70	(A)	325	(B)

Prevalence Index = B/A = 4.643

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Site 3A -1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-4	7.5YR	3/3	100%	-	-	-	-	-	Loam	
4+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 4

Hydric Soil Present? Yes ○ No ◉

Remarks:

Shallow rock prevented full soil profile viewing but observations of topography, a dominance of upland vegetation and lack of hydrology indicators was used to help make a determination in this location.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Morse, Ashland Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Site 4-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 1 **T.** T44N **R.** R2W

Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.319511 **Long.:** 90.554909 **Datum:** WGS84

Soil Map Unit Name: Dishno-Gogebic-Peshekee-Rock Outcrop Complex, 18-35%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetation, soil and hydrology are significantly disturbed from historic bulk sampling in this location at one time. However this specific location is a reference site adjacent to the original bulk sample site and was relatively natural. The bulk sample site had a few inches of soil and some vegetation that was observed and all indicated upland. Soils could be considered problematic to due shallow rock preventing full soil profile viewing but topographic location, upland vegetation and lack of hydrology along with best professional judgement was used to make a determination here.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Site 4-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	30	☑	37.5%	FACU
2. Betula alleghaniensis	25	☑	31.3%	FAC
3. Populus tremula	15	☐	18.8%	FAC
4. Betula papyrifera	10	☐	12.5%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	30	☑	75.0%	FACU
2. Betula alleghaniensis	10	☑	25.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Erythronium americanum	40	☑	57.1%	UPL
2. Maianthemum canadense	15	☑	21.4%	FACU
3. Allium tricoccum	10	☐	14.3%	FACU
4. Ribes cynosbati	5	☐	7.1%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	70	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	50	x 3 =	150	
FACU species	100	x 4 =	400	
UPL species	40	x 5 =	200	
Column Totals:	190	(A)	750	(B)

Prevalence Index = B/A = 3.947

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Site 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-5	7.5YR	2.5/2	100%	-	-	-	-	-	Sandy Loam	
5+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 5

Hydric Soil Present? Yes ○ No ◉

Remarks:

Shallow rock prevented full soil profile viewing but observations of topography, a dominance of upland vegetation and lack of hydrology indicators was used to make a determination here.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Wet 1-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Toeslope/swale **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.331237 **Long.:** 90.503552 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

This specific location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Soils overall could be considered problematic due to shallow rock that prevents full soil profile viewing. Soils in areas of flowing water can often be problematic due to oxygenation preventing redox features from forming but this are did have redox features present.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 1	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Wet 1-1

Tree Stratum (Plot size: 15' x 240')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	25	☑	50.0%	FACU
2. Betula alleghaniensis	25	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 10'x90')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size: 5' x 20')				
1. Ribes americanum	10	☑	43.5%	FACW
2. Acer saccharum	10	☑	43.5%	FACU
3. Dryopteris intermedia	3	☐	13.0%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	23	= Total Cover		

Woody Vine Stratum (Plot size: 15' x 240')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	28	x 3 =	84	
FACU species	35	x 4 =	140	
UPL species	0	x 5 =	0	
Column Totals:	73	(A)	244	(B)

Prevalence Index = B/A = 3.342

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☑ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

vegetation is problematic due to limited vegetation and upland tree species present

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-6	7.5YR	2.5/1	95%	7.5YR	4/3	5%	C	M	Sandy Loam	
6-9	7.5YR	4/3	75%	7.5YR	2/1	25%	C	M	Loam	manganese masses
9-12	7.5YR	3/3	100%	-	-	-	-	-	Sandy Loam	
12+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☑ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes ◉ No ○

Remarks:

Shallow rock prevented full soil profile viewing but observations of topography, vegetation transitions and presence or lack of hydrology indicators were used to help determine wetland boundaries.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 24-May-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Up 1-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): backslope **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.331210 **Long.:** 90.503528 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This specific location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Soils overall could be considered problematic due to shallow rock that prevents full soil profile viewing. However, distinct topographic breaks, vegetation transitions and hydrology indicators were more heavily evaluated to determine wetland/upland boundaries. Best professional judgment based on extensive experience working in Ashland and Iron Counties was applied.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Up 1-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	50	☑	76.9%	FACU
2. Betula alleghaniensis	15	☑	23.1%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	65	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	15	☑	60.0%	FACU
2. Betula alleghaniensis	10	☑	40.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Allium tricoccum	70	☑	66.7%	FACU
2. Acer saccharum	15	☐	14.3%	FACU
3. Cardamine concatenata	15	☐	14.3%	FACU
4. Betula alleghaniensis	5	☐	4.8%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	105	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	40.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	165	x 4 =	660	
UPL species	0	x 5 =	0	
Column Totals:	195	(A)	750	(B)

Prevalence Index = B/A = 3.846

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-5	7.5YR	3/2	100%	-	-	-	-	-	Loam	
5-6	7.5YR	3/3	100%	-	-	-	-	-	Loam	
6+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks:

Shallow rock prevented full soil profile viewing but observations of topography, vegetation transitions and presence or lack of hydrology indicators was used to help determine wetland boundaries.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Wet 2-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333406 **Long.:** 90.494938 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Rock was present at 12 inches below the soil surface, preventing full soil profile viewing but this was not considered a difficult situation because hydric soils were evident in the upper 12 inches of the soil profile.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Wet 2-1

Tree Stratum (Plot size: 50' x 50')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	30	☑	60.0%	FACU
2. Fraxinus nigra	20	☑	40.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	15	☑	60.0%	FACU
2. Fraxinus nigra	10	☑	40.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Fraxinus nigra	15	☑	28.3%	FACW
2. Solidago gigantea	10	☑	18.9%	FACW
3. Carex crinita	10	☑	18.9%	OBL
4. Dryopteris intermedia	5	☐	9.4%	FAC
5. Ranunculus acris	5	☐	9.4%	FAC
6. Onoclea sensibilis	5	☐	9.4%	FACW
7. Acer saccharum	3	☐	5.7%	FACU
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	53	= Total Cover		

Woody Vine Stratum (Plot size: 50'x50')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	71.4%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	60	x 2 =	120	
FAC species	10	x 3 =	30	
FACU species	48	x 4 =	192	
UPL species	0	x 5 =	0	
Column Totals:	128	(A)	352	(B)

Prevalence Index = B/A = 2.750

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

Some upland vegetation was present in this wetland but hydric vegetation was dominant.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	4/2	70%	7.5YR	4/4	30%	C	M	silt	
12+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes ◉ No ○

Remarks:

Shallow rock prevented full soil profile viewing but the upper 12 inches met hydric soil indicators and observations of topography, vegetation transitions and presence of hydrology indicators were used to help determine wetland boundaries.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Up 2-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): sadde **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333324 **Long.:** 90.495004 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Up 2-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	25	☑	35.7%	FACU
2. Acer rubrum	15	☑	21.4%	FAC
3. Quercus rubra	15	☑	21.4%	FACU
4. Ostrya virginiana	15	☑	21.4%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	70	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Ostrya virginiana	15	☑	33.3%	FACU
2. Corylus americana	15	☑	33.3%	FACU
3. Acer saccharum	10	☑	22.2%	FACU
4. Abies balsamea	5	☐	11.1%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Pteridium aquilinum	40	☑	32.0%	FACU
2. Quercus rubra	20	☑	16.0%	FACU
3. Acer saccharum	15	☑	12.0%	FACU
4. Maianthemum canadense	15	☑	12.0%	FACU
5. Onoclea sensibilis	10	☐	8.0%	FACW
6. Prunus serotina	10	☐	8.0%	FACU
7. Fraxinus nigra	5	☐	4.0%	FACW
8. Osmunda claytoniana	5	☐	4.0%	FAC
9. Phegopteris connectilis	5	☐	4.0%	FACU
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	125	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	11	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	9.1%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	25	x 3 =	75	
FACU species	200	x 4 =	800	
UPL species	0	x 5 =	0	
Column Totals:	240	(A)	905	(B)

Prevalence Index = B/A = 3.771

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Redox Features Type [1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%	-	-	-	-	-	silt	
3-4	10YR	4/2	100%	-	-	-	-	-	Sandy Loam	
4-20+	10YR	3/4	100%	-	-	-	-	-	sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Wet 3-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333265 **Long.:** 90.495120 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Wet 3-1

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus nigra	25	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Fraxinus nigra	50	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Fraxinus nigra	40	☑	53.3%	FACW
2. Onoclea sensibilis	10	☐	13.3%	FACW
3. Dryopteris intermedia	10	☐	13.3%	FAC
4. Corylus americana	5	☐	6.7%	FACU
5. Acer saccharum	5	☐	6.7%	FACU
6. Abies balsamea	5	☐	6.7%	FAC
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	75	= Total Cover		

Woody Vine Stratum (Plot size: 30' x 30')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	125	x 2 =	250	
FAC species	15	x 3 =	45	
FACU species	10	x 4 =	40	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	335	(B)

Prevalence Index = B/A = 2.233

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%	-	-	-	-	-	silt	
4-11	10YR	4/2	70%	7.5YR	4/6	30%	C	M	Silt Loam	
11-20+	7.5YR	3/4	100%	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Up 3-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Saddle **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333299 **Long.:** 90.495057 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Up 3-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	25	☑	35.7%	FACU
2. Acer rubrum	15	☑	21.4%	FAC
3. Quercus rubra	15	☑	21.4%	FACU
4. Ostrya virginiana	15	☑	21.4%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	70	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Ostrya virginiana	15	☑	33.3%	FACU
2. Corylus americana	15	☑	33.3%	FACU
3. Acer saccharum	10	☑	22.2%	FACU
4. Abies balsamea	5	☐	11.1%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	45	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Pteridium aquilinum	40	☑	32.0%	FACU
2. Quercus rubra	20	☑	16.0%	FACU
3. Acer saccharum	15	☑	12.0%	FACU
4. Maianthemum canadense	15	☑	12.0%	FACU
5. Onoclea sensibilis	10	☐	8.0%	FACW
6. Prunus serotina	10	☐	8.0%	FACU
7. Fraxinus nigra	5	☐	4.0%	FACW
8. Osmunda claytoniana	5	☐	4.0%	FAC
9. Phegopteris connectilis	5	☐	4.0%	FACU
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	125	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	11	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	9.1%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	25	x 3 =	75	
FACU species	200	x 4 =	800	
UPL species	0	x 5 =	0	
Column Totals:	240	(A)	905	(B)

Prevalence Index = B/A = 3.771

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Redox Features Type [1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%	-	-	-	-	-	silt	
3-4	10YR	4/2	100%	-	-	-	-	-	Sandy Loam	
4-20+	10YR	3/4	100%	-	-	-	-	-	sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Wet 4-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** concave **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333433 **Long.:** 90.497063 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Rock was present at 14 inches below the soil surface, preventing full soil profile viewing but this was not considered problematic.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Wet 4-1

Tree Stratum (Plot size: 100' x 35')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Fraxinus nigra	30	☑	60.0%	FACW
2. Ostrya virginiana	20	☑	40.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Fraxinus nigra	10	☑	50.0%	FACW
2. Acer saccharum	10	☑	50.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	20	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Carex gracillima	40	☑	32.0%	FACU
2. Impatiens capensis	15	☑	12.0%	FACW
3. Carex crinita	15	☑	12.0%	OBL
4. Solidago gigantea	15	☑	12.0%	FACW
5. Equisetum arvense	15	☑	12.0%	FAC
6. Fraxinus nigra	15	☑	12.0%	FACW
7. Ranunculus acris	10	☐	8.0%	FAC
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	125	= Total Cover		

Woody Vine Stratum (Plot size: 100' x 35')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	10	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	70.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	15	x 1 =	15	
FACW species	85	x 2 =	170	
FAC species	25	x 3 =	75	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column Totals:	195	(A)	540	(B)

Prevalence Index = B/A = 2.769

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

Some upland vegetation was present in this wetland but hydric vegetation was dominant.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%	-	-	-	-	-	Silt Loam	
3-9	10YR	3/2	80%	7.5YR	4/6	20%	C	M	Silt Loam	
9-14	10YR	4/3	80%	7.5YR	4/6	20%	C	M	Silt Loam	
14+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 14

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Up 4-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): sideslope **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333500 **Long.:** 90.497054 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Rock was present at 13 inches below the soil surface, preventing full soil profile viewing but this was not considered a difficult situation since the upper 12 inches of the soil profile was observed and determined to be upland soils

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Up 4-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	70	☑	87.5%	FACU
2. Ostrya virginiana	10	☐	12.5%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	50	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Acer saccharum	25	☑	38.5%	FACU
2. Tilia americana	15	☑	23.1%	FACU
3. Ostrya virginiana	5	☐	7.7%	FACU
4. Fraxinus nigra	5	☐	7.7%	FACW
5. Corylus americana	5	☐	7.7%	FACU
6. Aralia nudicaulis	5	☐	7.7%	FACU
7. Caulophyllum thalictroides	5	☐	7.7%	UPL
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	65	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	0	x 3 =	0	
FACU species	185	x 4 =	740	
UPL species	5	x 5 =	25	
Column Totals:	195	(A)	775	(B)

Prevalence Index = B/A = 3.974

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-7	7.5YR	3/2	100%	-	-	-	-	-	Silt Loam	
7-13	7.5YR	3/4	100%	-	-	-	-	-	Silt Loam	
13+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 13

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Wet 5-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): seep **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333736 **Long.:** 90.498149 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities. Vegetation could be considered problematic in this location due to very sparse vegetation although obvious hydric soils and wetland hydrology were present.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Wet 5-1

Tree Stratum (Plot size: 60' x 10')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 60' x 10')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	3	☐	75.0%	FACU
2. Fraxinus nigra	1	☐	25.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	4		= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	0		= Total Cover	

Woody Vine Stratum (Plot size: 60' x 10')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	0	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	1	x 2 =	2	
FAC species	0	x 3 =	0	
FACU species	3	x 4 =	12	
UPL species	0	x 5 =	0	
Column Totals:	4	(A)	14	(B)

Prevalence Index = B/A = 3.500

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☑ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation is assumed here due to evident wetland soils and hydrology

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 5-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	7.5YR	2.5/1	100%	-	-	-	-	-	Silt Loam	
6-12	7.5YR	4/2	70%	7.5YR	3/4	30%	C	M	Silt Loam	
12-20+	7.5YR	3/2	70%	7.5YR	3/4	30%	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **Up 5-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): sideslope **Local relief (concave, convex, none):** convex **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333782 **Long.:** 90.498108 **Datum:** WGS84

Soil Map Unit Name: Michigamme-Schweitzer-Peshekee-Rock Outcrop Complex, 35-55%, very stony **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was not disturbed but an old logging road nearby would be considered significantly disturbed by historic activities.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: Up 5-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	60	☑	80.0%	FACU
2. Betula alleghaniensis	15	☑	20.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	75	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer saccharum	40	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	40	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Acer saccharum	25	☑	71.4%	FACU
2. Tilia americana	5	☐	14.3%	FACU
3. Dryopteris intermedia	5	☐	14.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	35	= Total Cover		

Woody Vine Stratum (Plot size: 30 ' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	130	x 4 =	520	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	580	(B)

Prevalence Index = B/A = 3.867

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 5-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-10	7.5YR	3/2	100%	-	-	-	-	-	Silt Loam	
10-20+	7.5YR	3/4	100%	-	-	-	-	-	Silt Loam	Rocky

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Gogebic Taconite Bulk Sample Sites **City/County:** Town of Anderson, Iron Co. **Sampling Date:** 08-Jul-13

Applicant/Owner: Gogebic Taconite **State:** WI **Sampling Point:** **SB-1**

Investigator(s): Ann Michalski, WDNR Prof. Assured **Section, Township, Range: S.** 33 **T.** T45N **R.** R1W

Landform (hillslope, terrace, etc.): sideslope/drainageway **Local relief (concave, convex, none):** concave **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 46.333407 **Long.:** 90.497387 **Datum:** WGS84

Soil Map Unit Name: Gogebic Silt Loam, 18 to 35% slopes, very stony, rocky **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This specific sample location was evaluated because it appears to be an upland drainageway that only flows or has water present immediately after precipication events and is otherwise dry. Upland soils and vegetation were present but this area may be considered a wetland connection by regulatory staff. Rock was present at 12 inches but this area was not considered problematic since the upper 12 inches of the soil profile was observable.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: SB-1

Tree Stratum (Plot size: 21' x 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size: 21' x 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharum	25	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	25		= Total Cover	

Herb Stratum (Plot size: 21' x 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	0		= Total Cover	

Woody Vine Stratum (Plot size: 21' x 5')	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	25	x 4 =	100	
UPL species	0	x 5 =	0	
Column Totals:	25	(A)	100	(B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SB-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	7.5YR	3/2	100%	-	-	-	-	-	Silt Loam	
6-12	7.5YR	3/4	100%	-	-	-	-	-	Silt Loam	
12+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

APPENDIX B – SITE PHOTOGRAPHS

Gogebic Taconite, LLC
Site Photos

Bulk Sample Site 1

Bulk Sample Site 1

Bulk Sample Site 1 - Wetland 1-1

Bulk Sample Site 1 - Upland 1-1

Gogebic Taconite, LLC
Site Photos

Bulk Sample Site 1 - Wetland 1 Crossing Road

Bulk Sample Site 1 - Wetland 1 Drainageway

Wetland 2 - Looking South

Wetland 2 - Looking West

Gogebic Taconite, LLC
Site Photos

Wetland 2 - Looking West

Wetland 3 - Looking South

Wetland 4 - Drainageway

Wetland 4 - Looking East

Gogebic Taconite, LLC
Site Photos

Wetland 4 - Looking South

Wetland 4 - Looking West

Drainage at Wetland 4

Wetland 5 - Looking North

Gogebic Taconite, LLC
Site Photos

Wetland 5 - Looking South

Wetland 5 - Looking South

Bulk Sample Site 2

Bulk Sample Site 2

Gogebic Taconite, LLC
Site Photos

Bulk Sample Site 2

Bulk Sample Site 3A

Bulk Sample Site 3A

Bulk Sample Site 3A

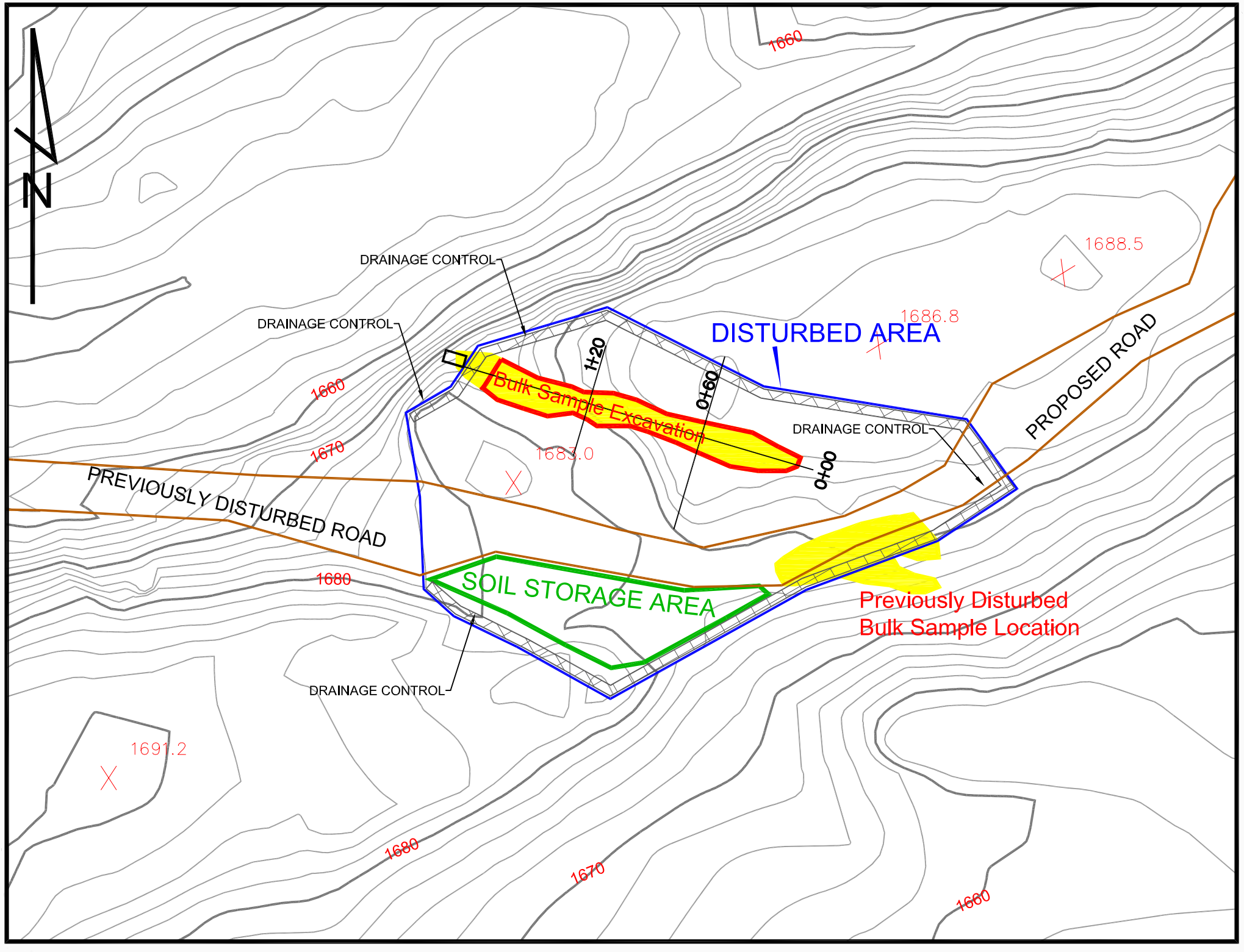
Gogebic Taconite, LLC
Site Photos

Bulk Sample Site 4

Bulk Sample Site 4

Bulk Sample Site 5

Bulk Sample Site 5



SITE LOCATION
Township 45 North, Range 1 West
NE SW Section 33

Disturbed Acreage 0.59 Acres

Existing Pit Outline Copied
from Historic Documents

GTAC
GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

FIGURE 1

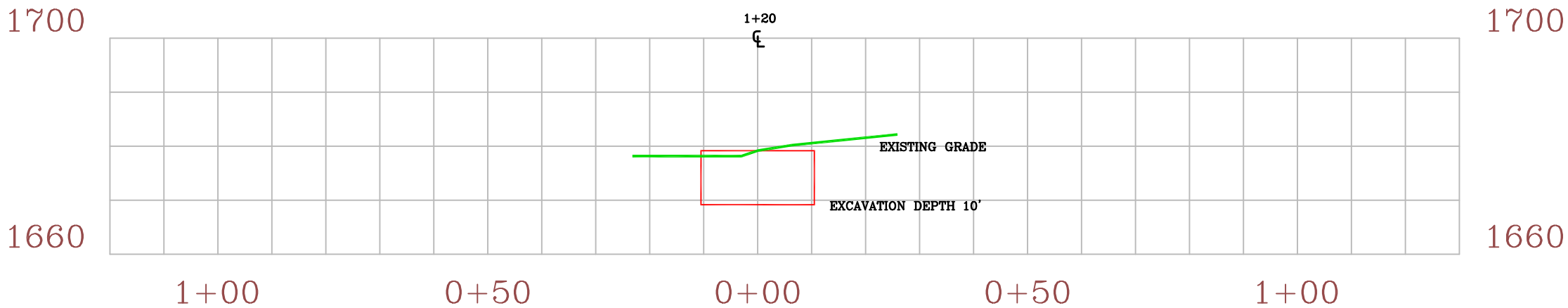
PLAN VIEW SITE No. 1

0 50' 100' 150'

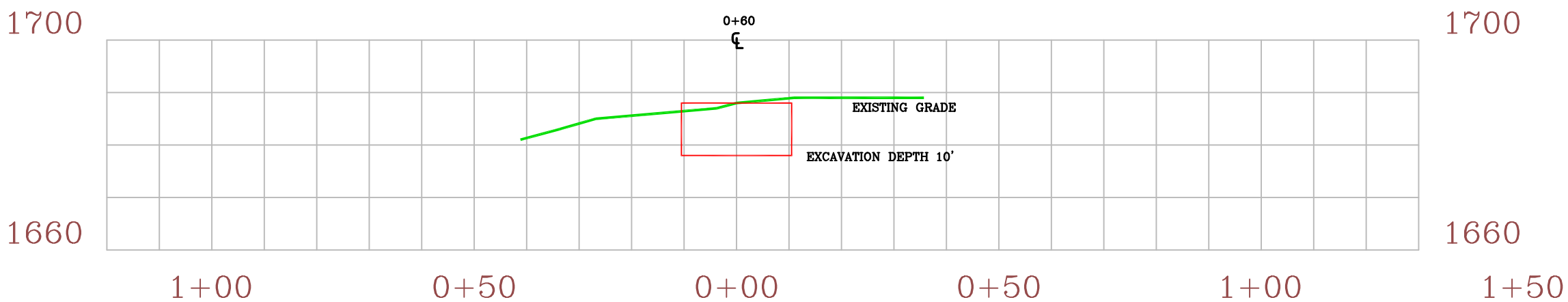
SCALE: 1"= 50'

By: TJM	Project:
Date: 07-25-2013	
Drawing: Bulk Sampling Site Plan 2013-0725	
Path: T:\ENGR FILES\BULK	

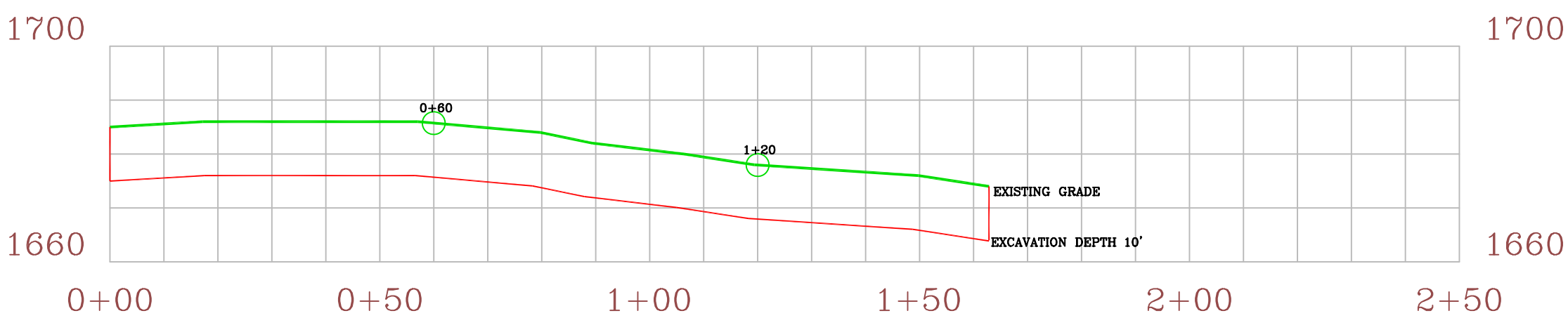
Mapping based on 2 foot surface contours



Bulk Sample Site 1 – 1+20 Cross Section



Bulk Sample Site 1 – 0+60 Cross Section



Bulk Sample Site 1 – Baseline

NOTE: Regrade Contours will follow original grade contours due to broken rock swell factor.

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

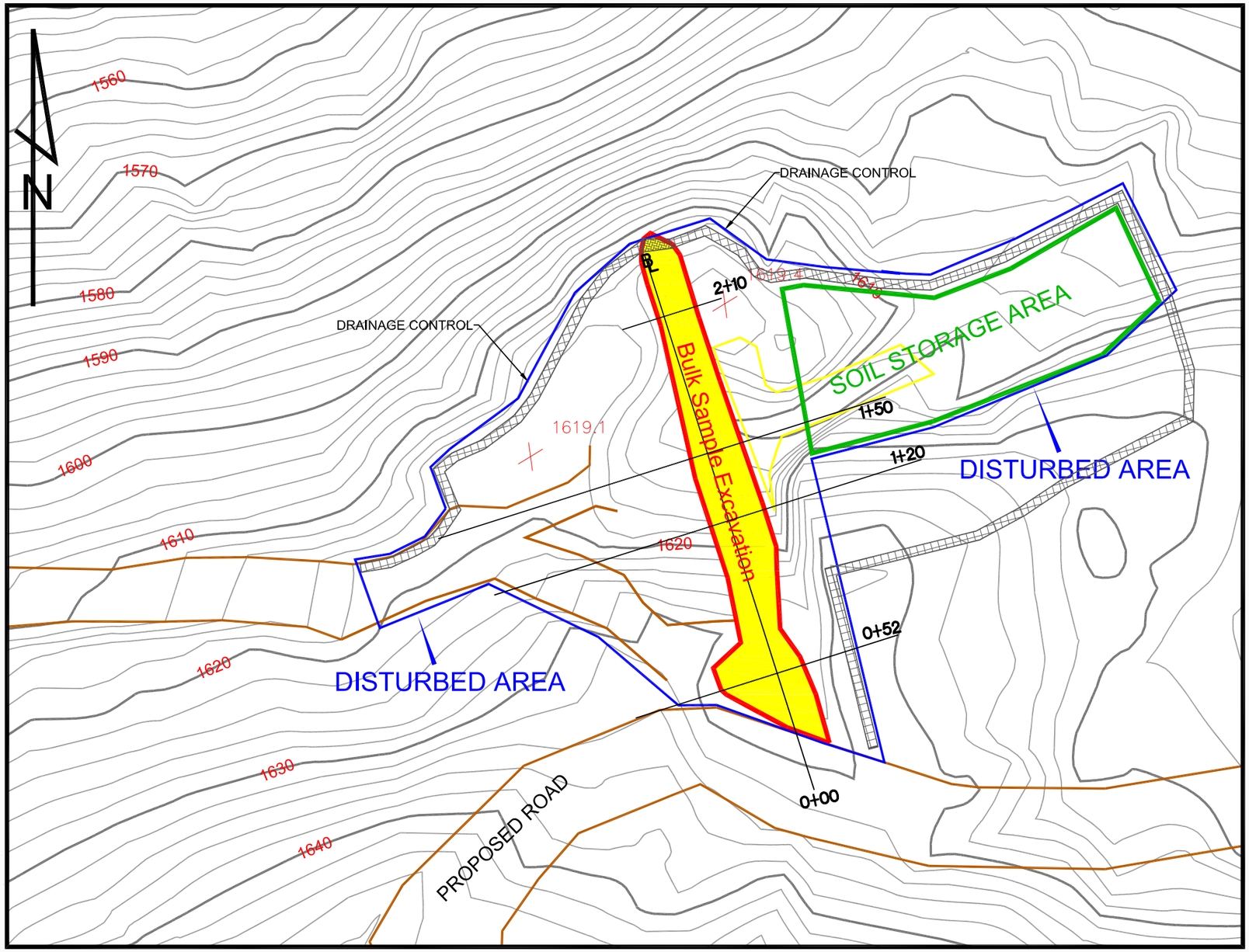
FIGURE 1-1

CROSS SECTIONS SITE 1

0 25' 50' 75'

SCALE: 1"= 25'

By: TJM	Project:
Date: 07-26-2013	
Drawing: Site 1 Cross Sections	
Path: T:\ENGR FILES\BULK	



SITE LOCATION
Township 45 North, Range 1 West
NE SW Section 33

Disturbed Acreage 0.85 Acres

Existing Pit Outline Copied
from Historic Documents

Mapping based on 2 foot surface contours

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

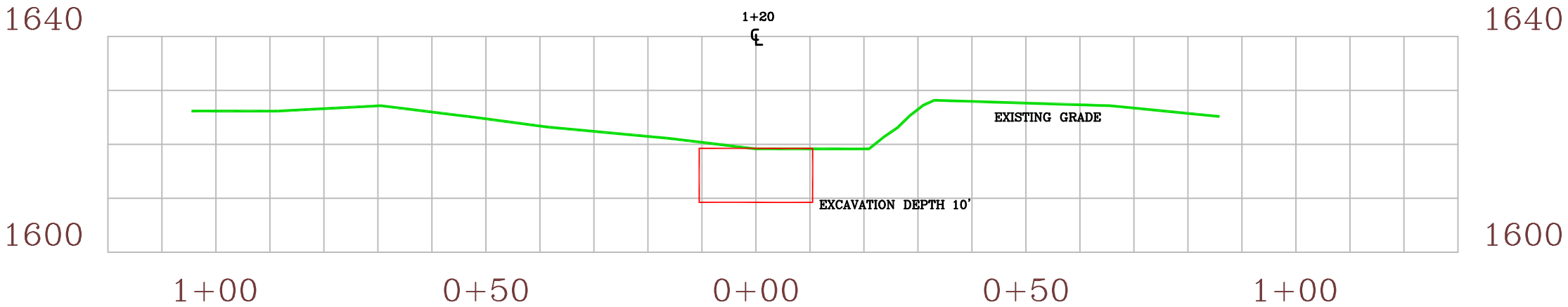
FIGURE 2

PLAN VIEW SITE No. 2

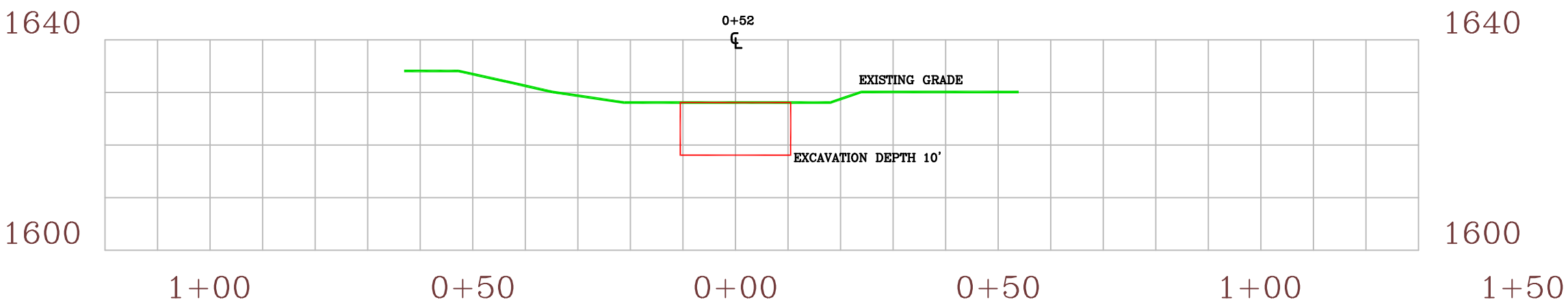
0 50' 100' 150'

SCALE: 1"= 50'

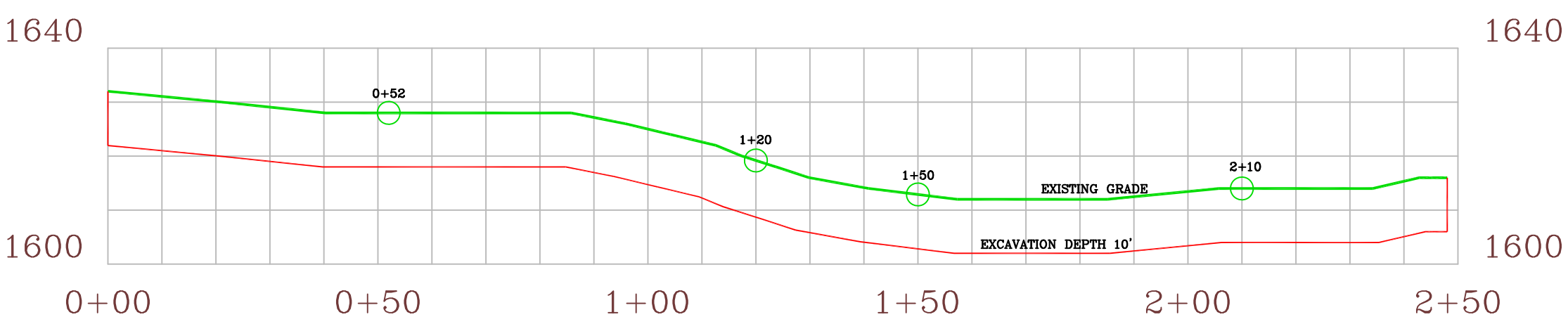
By: TJM	Project:
Date: 07-25-2013	
Drawing: Bulk Sampling Site Plan 2013-0725	
Path: T:\ENGR FILES\BULK	



Bulk Sample Site 2 – 1+20 Cross Section



Bulk Sample Site 2 – 0+52 Cross Section



Bulk Sample Site 2 – Baseline

NOTE: Regrade Contours will follow original grade contours due to broken rock swell factor.

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

FIGURE 2-1

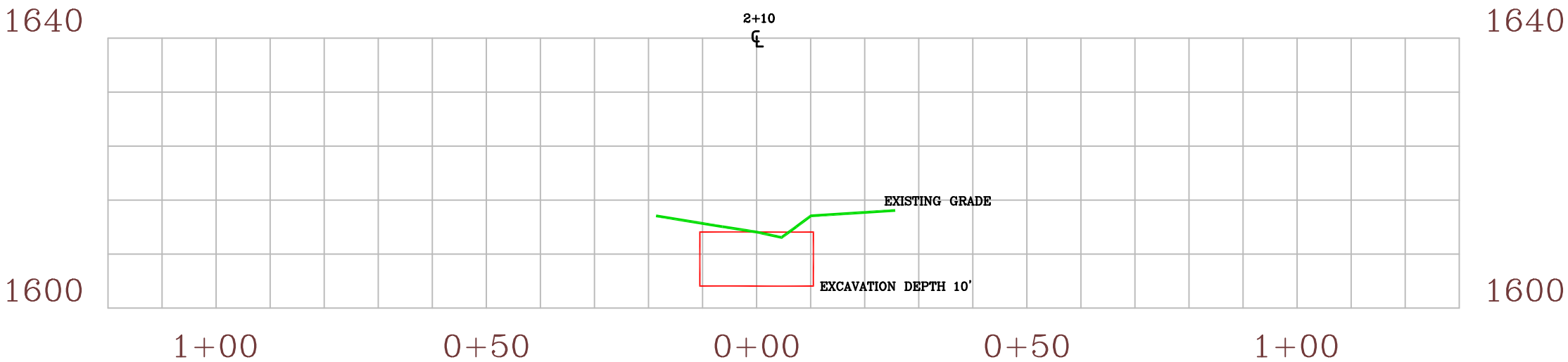
CROSS SECTIONS SITE 2

0 25' 50' 75'

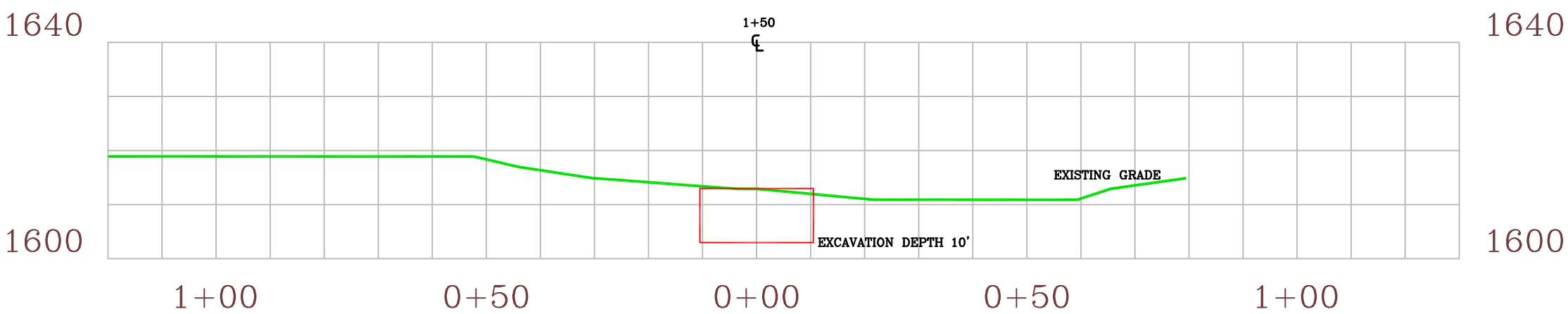
SCALE: 1"= 25'

By: JJS	Project:
Date: 07-26-2013	
Drawing: Site 2 Cross Sections	
Path: T:\ENGR FILES\BULK	

NOTE: Regrade Contours will follow original grade contours due to broken rock swell factor.



Bulk Sample Site 2 – 2+10 Cross Section



Bulk Sample Site 2 – 1+50 Cross Section

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

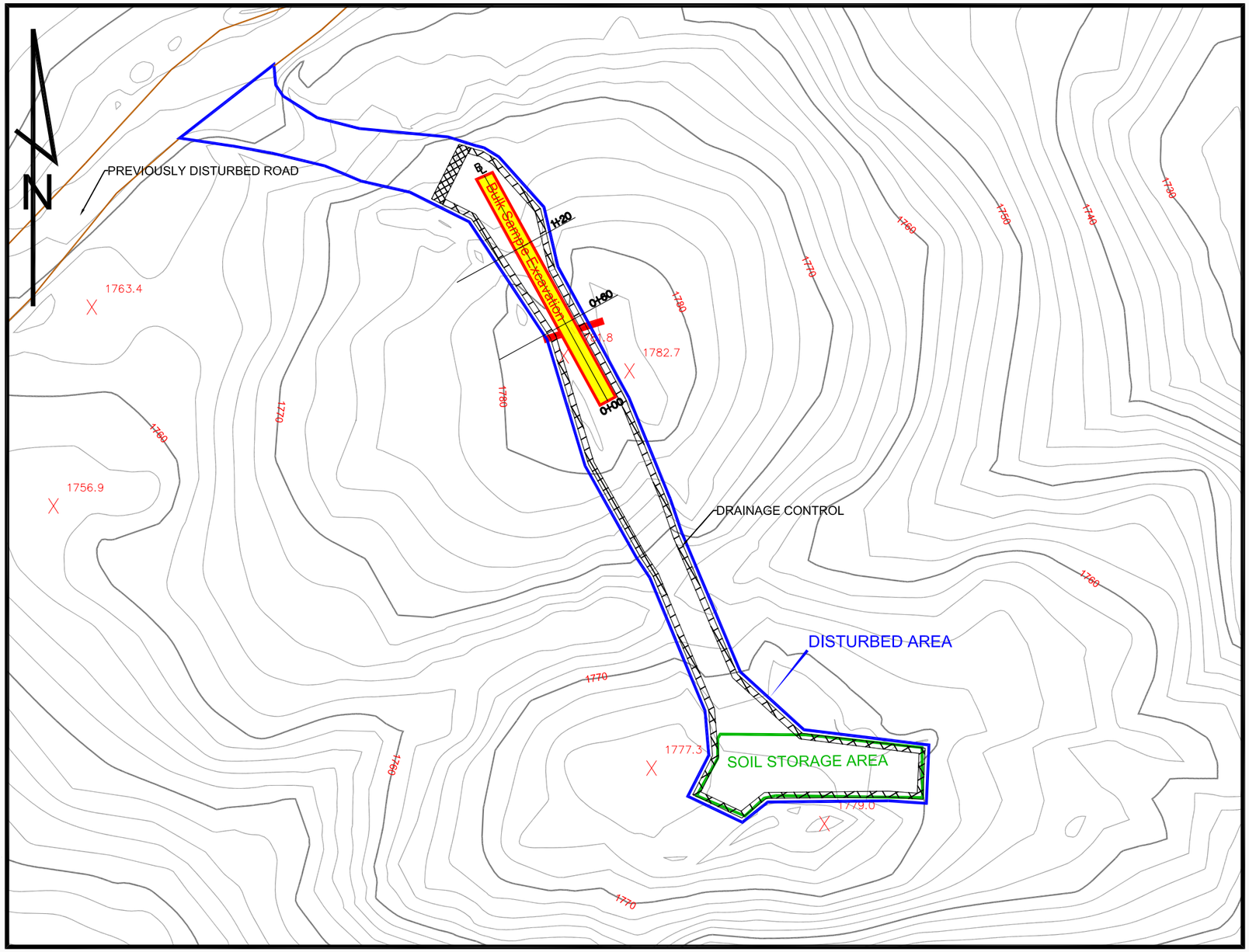
FIGURE 2-2

CROSS SECTIONS SITE 2

0 25' 50' 75'

SCALE: 1"= 25'

By: JJS	Project:
Date: 07-26-2013	
Drawing: Site 2 Cross Sections	
Path: T:\ENGR FILES\BULK	



SITE LOCATION

Township 44 North, Range 2 West
NW SE Section 1

Disturbed Acreage 0.71 Acres

Mapping based on 2 foot surface contours

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

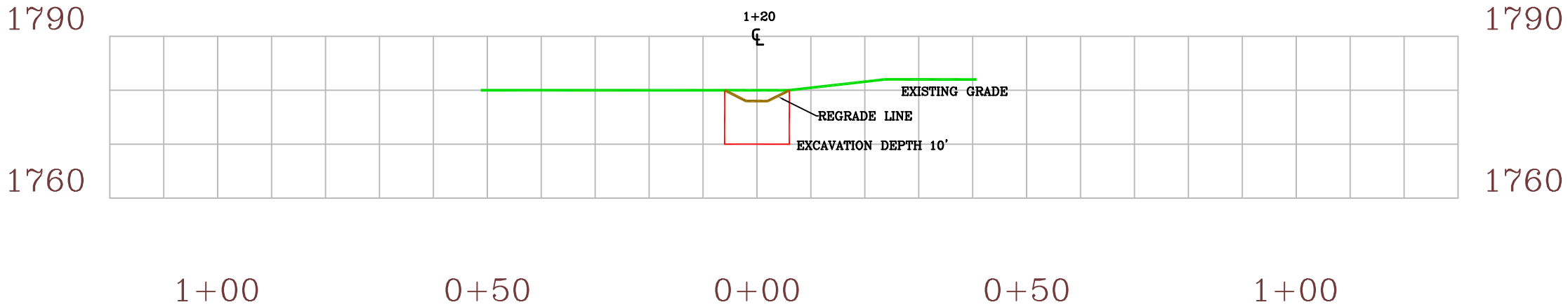
FIGURE 3A

PLAN VIEW SITE No. 3A

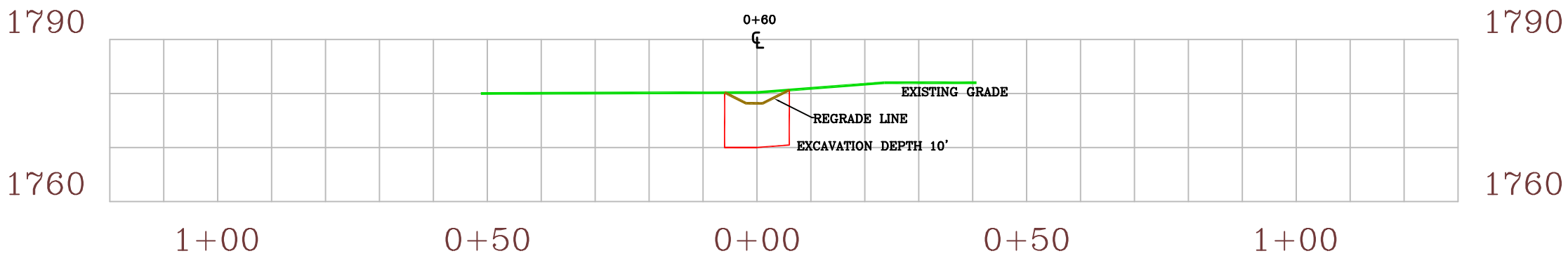
0 80' 160' 240'

SCALE: 1"= 80'

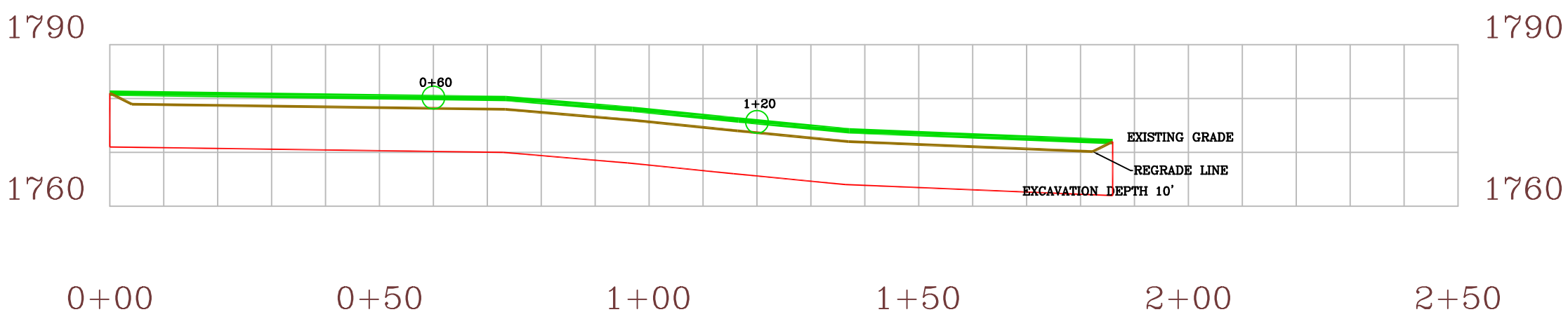
By: TJM	Project:
Date: 05-14-2013	
Drawing: Bulk Sampling Site Plan 2013-0514	
Path: T:\ENGR FILES\BULK	



Bulk Sample Site 3A – 1+20 Cross Section



Bulk Sample Site 3A – 0+60 Cross Section



Bulk Sample Site 3A – Baseline

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

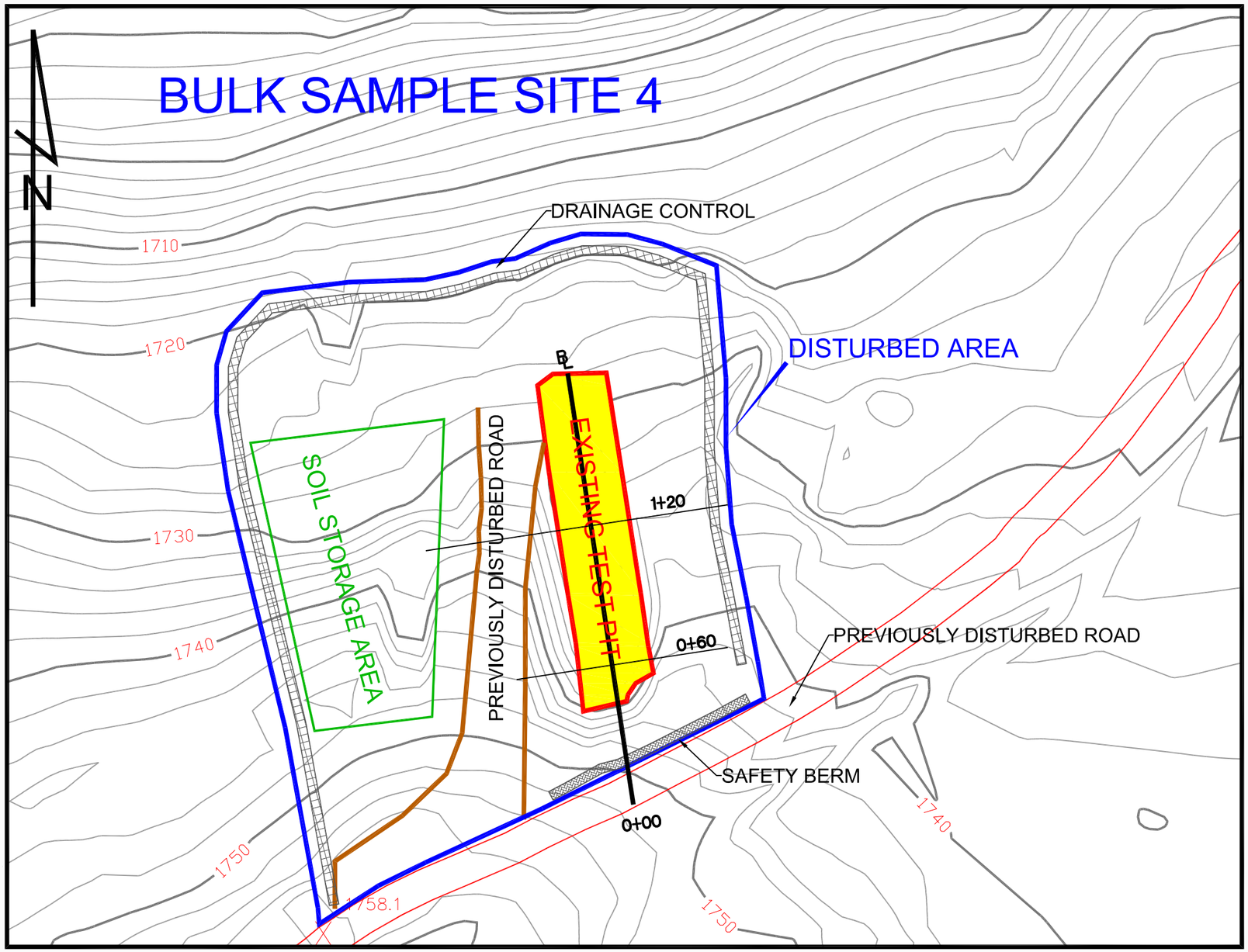
FIGURE 3A-1

CROSS SECTIONS SITE 3A

0 25' 50' 75'

SCALE: 1"= 25'

By: JJS	Project:
Date: 07-26-2013	
Drawing: Site 3A Cross Sections	
Path: T:\ENGR FILES\BULK	



SITE LOCATION
Township 44 North, Range 2 West
NW SE Section 1

Disturbed Acreage 1.11 Acres

Existing Pit Outline Copied
from Historic Documents

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

FIGURE 4

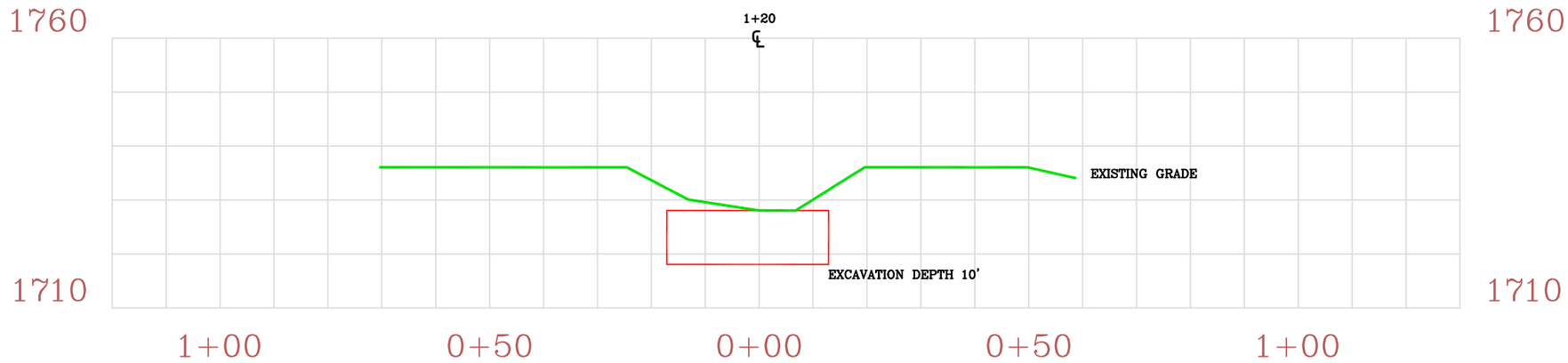
PLAN VIEW SITE No. 4

0 50' 100' 150'

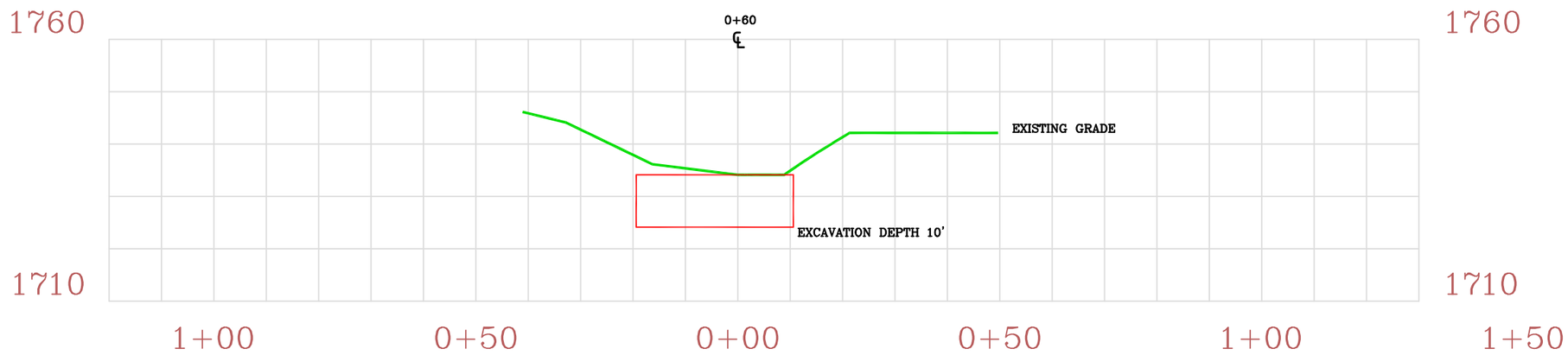
SCALE: 1"= 50'

By: TJM	Project:
Date: 07-26-2013	
Drawing: Bulk Sampling Site Plan 2013-0726	
Path: T:\ENGR FILES\BULK	

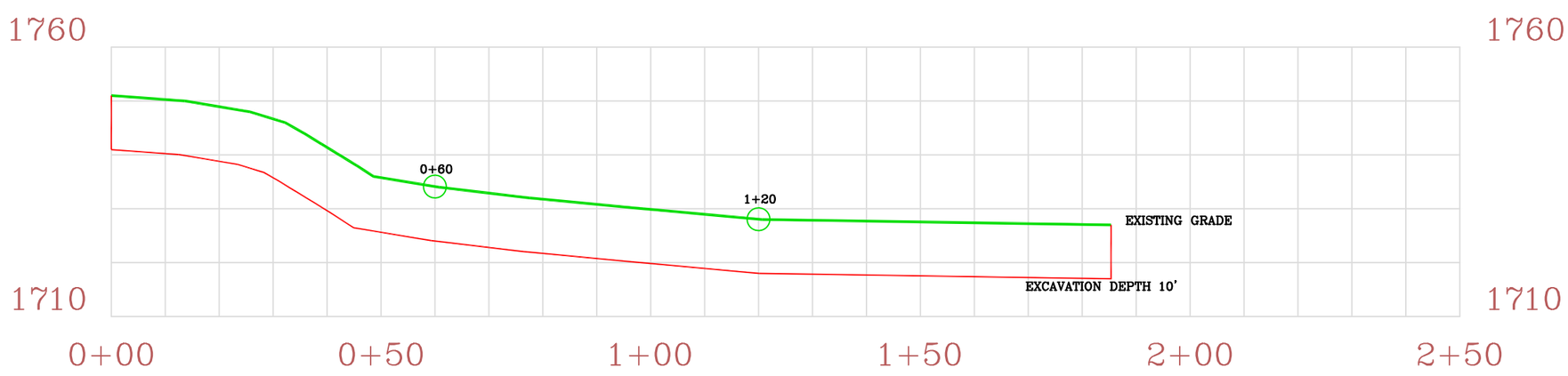
Mapping based on 2 foot surface contours



Bulk Sample Site 4 – 1+20 Cross Section



Bulk Sample Site 4 – 0+60 Cross Section



Bulk Sample Site 4 – Baseline

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

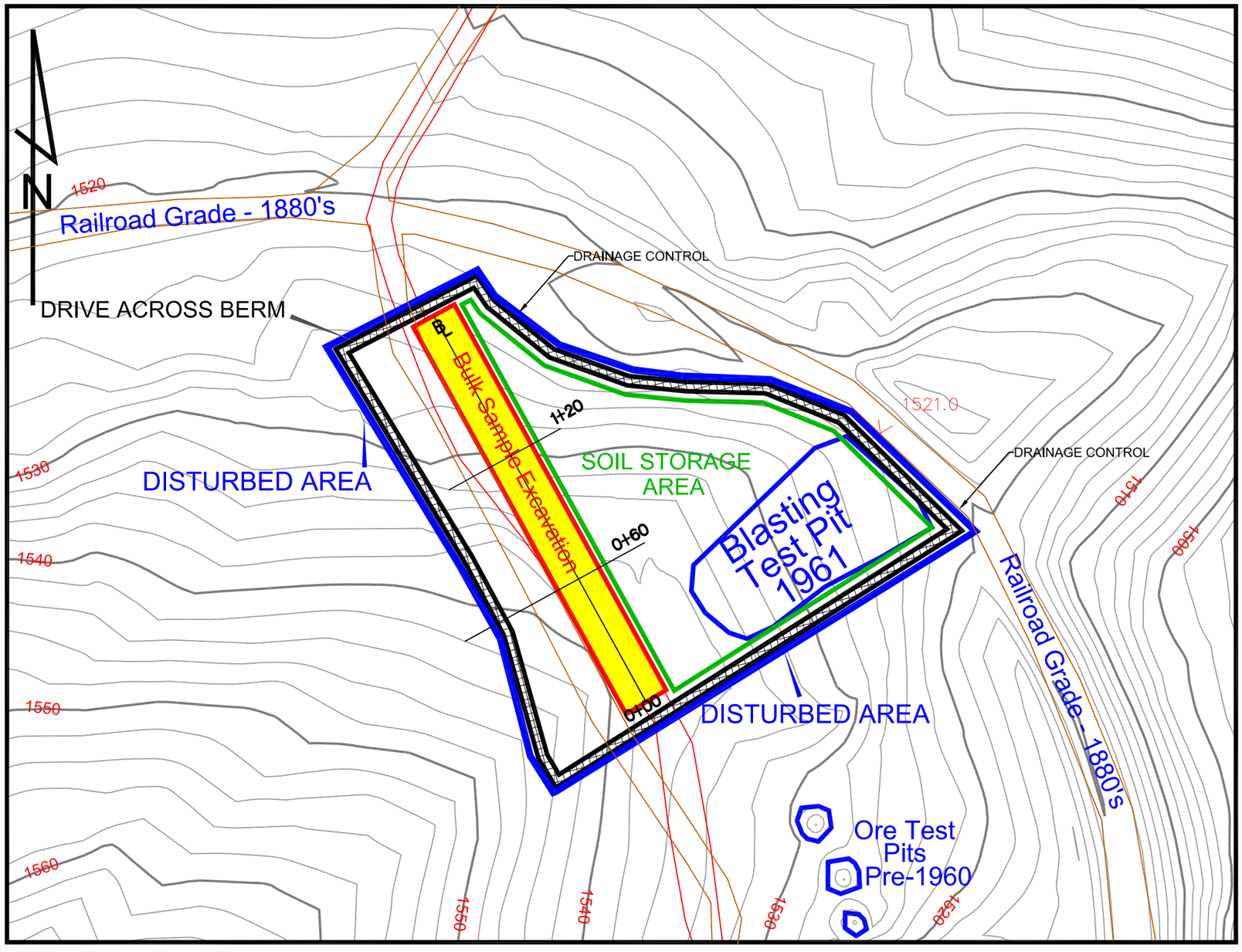
FIGURE 4-1

CROSS SECTIONS SITE 4

0 25′ 50′ 75′

SCALE: 1"= 25'

By: TJM	Project:
Date: 07-26-2013	
Drawing: Site 4 Cross Sections	
Path: T:\ENGR FILES\BULK	



SITE LOCATION
Township 45 North, Range 1 West
SW NE Section 33

Disturbed Acreage 0.64 Acres

Existing Blast Test Pit Outline
Copied from Historic Documents

Mapping based on 2 foot surface contours

GTAC GOGEBIC TACONITE

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

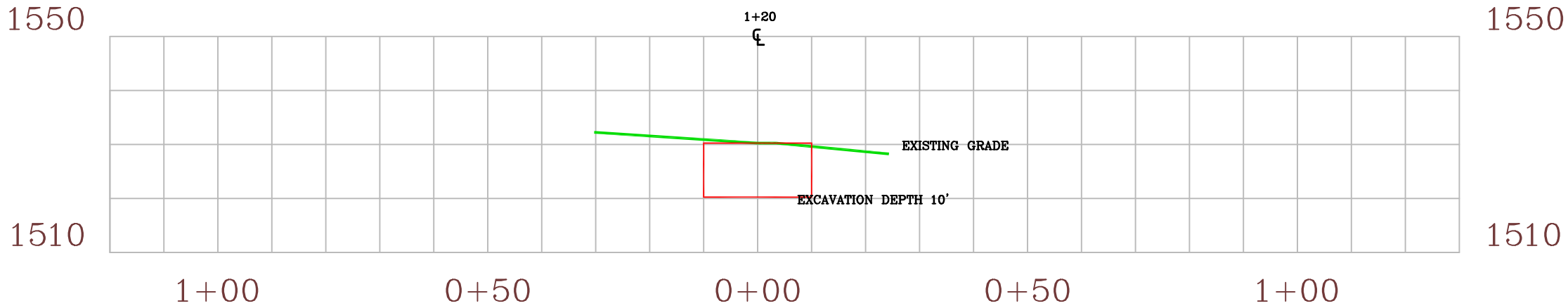
FIGURE 5

PLAN VIEW SITE No. 5

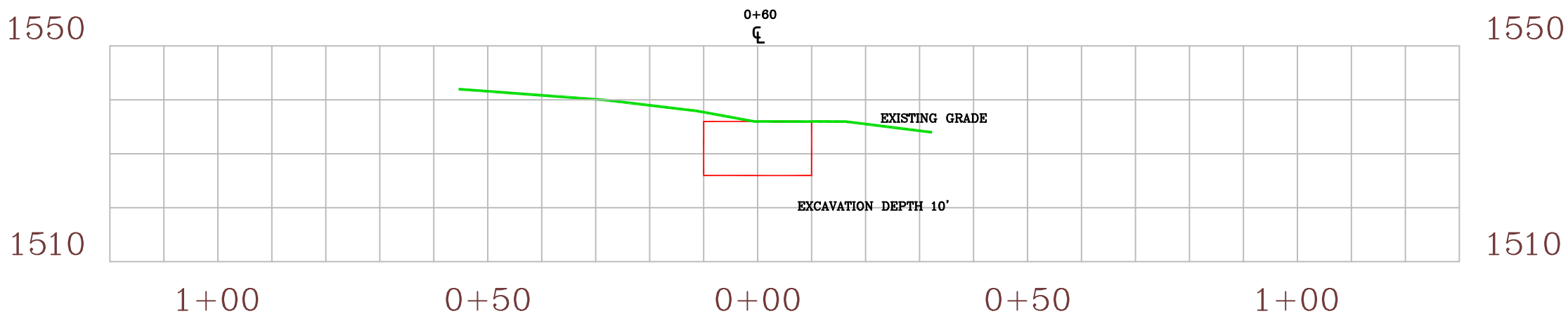
0 50' 100' 150'

SCALE: 1"= 50'

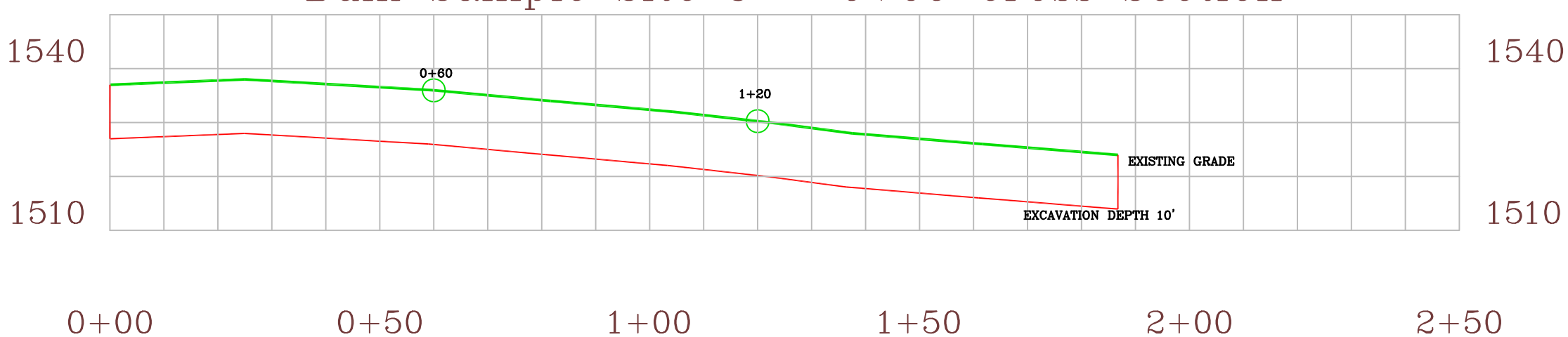
By: TJM	Project:
Date: 07-26-2013	
Drawing: Bulk Sampling Site Plan 2013-0725	
Path: T:\ENGR FILES\BULK	



Bulk Sample Site 5 – 1+20 Cross Section



Bulk Sample Site 5 – 0+60 Cross Section



Bulk Sample Site 5 – Baseline

NOTE: Regrade Contours will follow original grade contours due to broken rock swell factor.

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

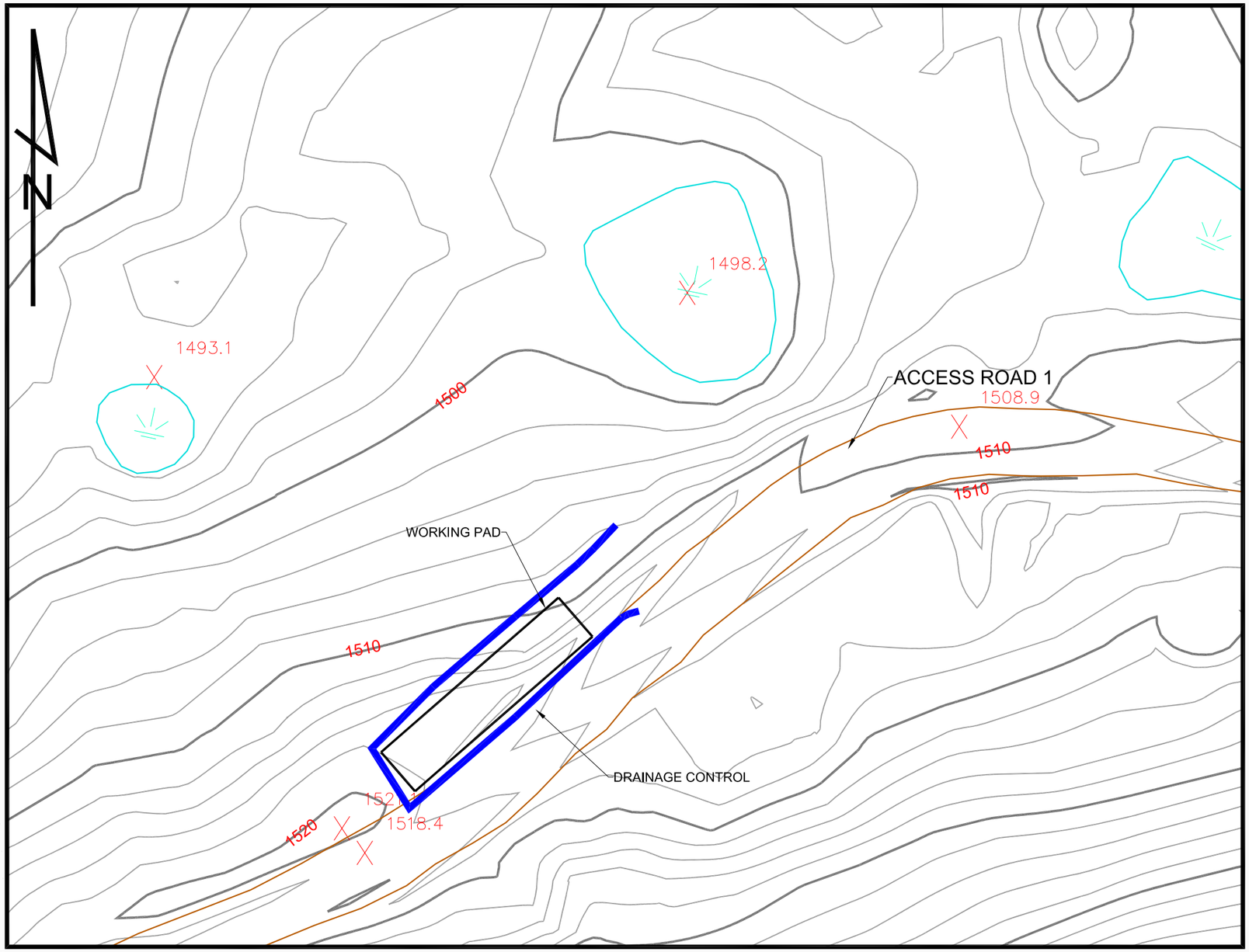
FIGURE 5-1

CROSS SECTIONS SITE 5

0 25′ 50′ 75′

SCALE: 1"= 25'

By: JJS	Project:
Date: 07-26-2013	
Drawing: Site 5 Cross Sections	
Path: T:\ENGR FILES\BULK	



SITE LOCATION
Township 44 North, Range 2 West
SE SE Section 2

Gogebic Taconite
402 Silver Street
Hurley, WI 54534

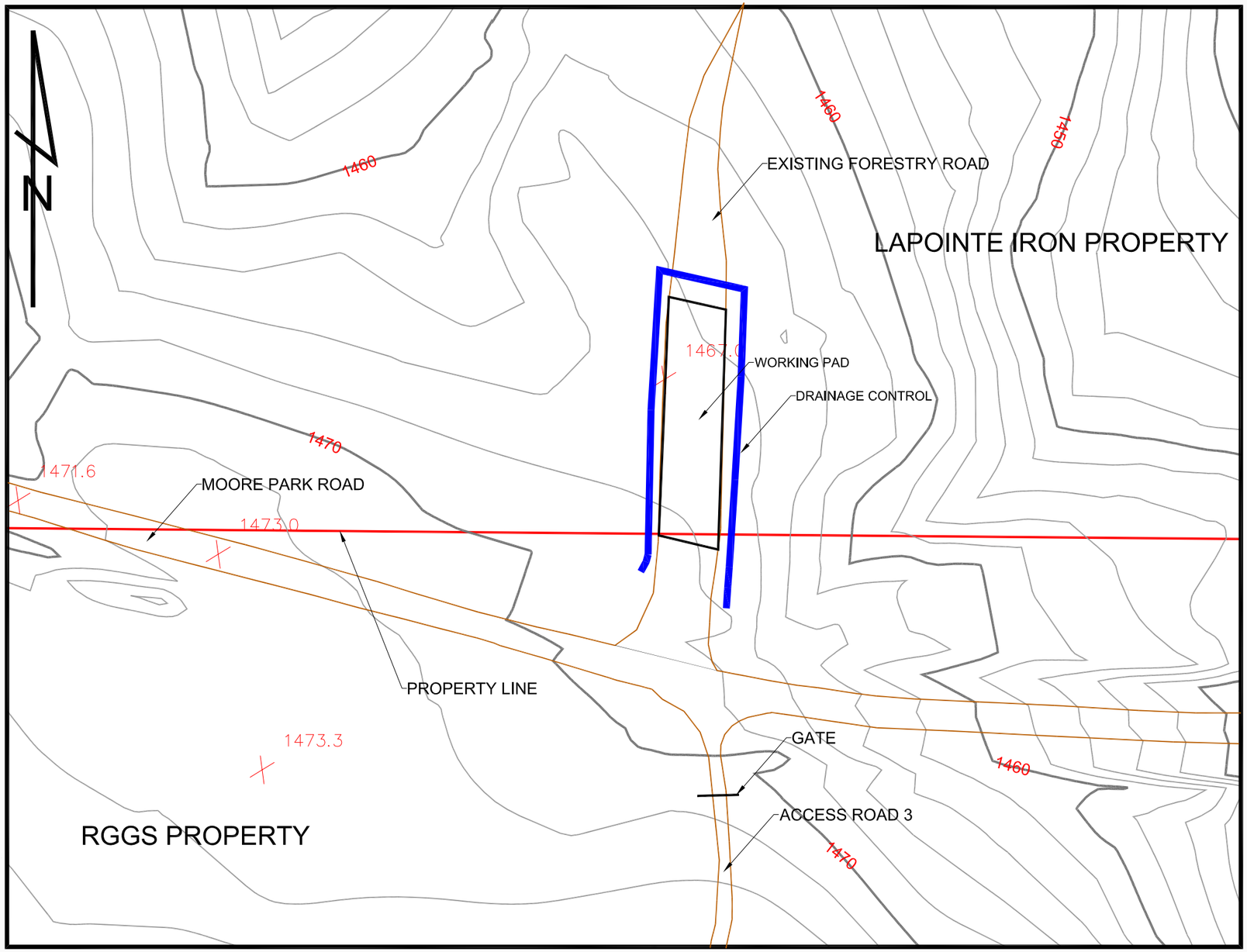
BULK SAMPLING APPLICATION
FIGURE 6
PLAN VIEW WEST STAGING AREA

0 50' 100' 150'

SCALE: 1"= 50'

By: TJM	Project:
Date: 07-25-2013	
Drawing: Bulk Sampling Site Plan 2013-0725	
Path: T:\ENGR FILES\BULK	

SITE LOCATION
Township 45 North, Range 1 West
NW NE Section 33



Gogebic Taconite
402 Silver Street
Hurley, WI 54534

BULK SAMPLING APPLICATION

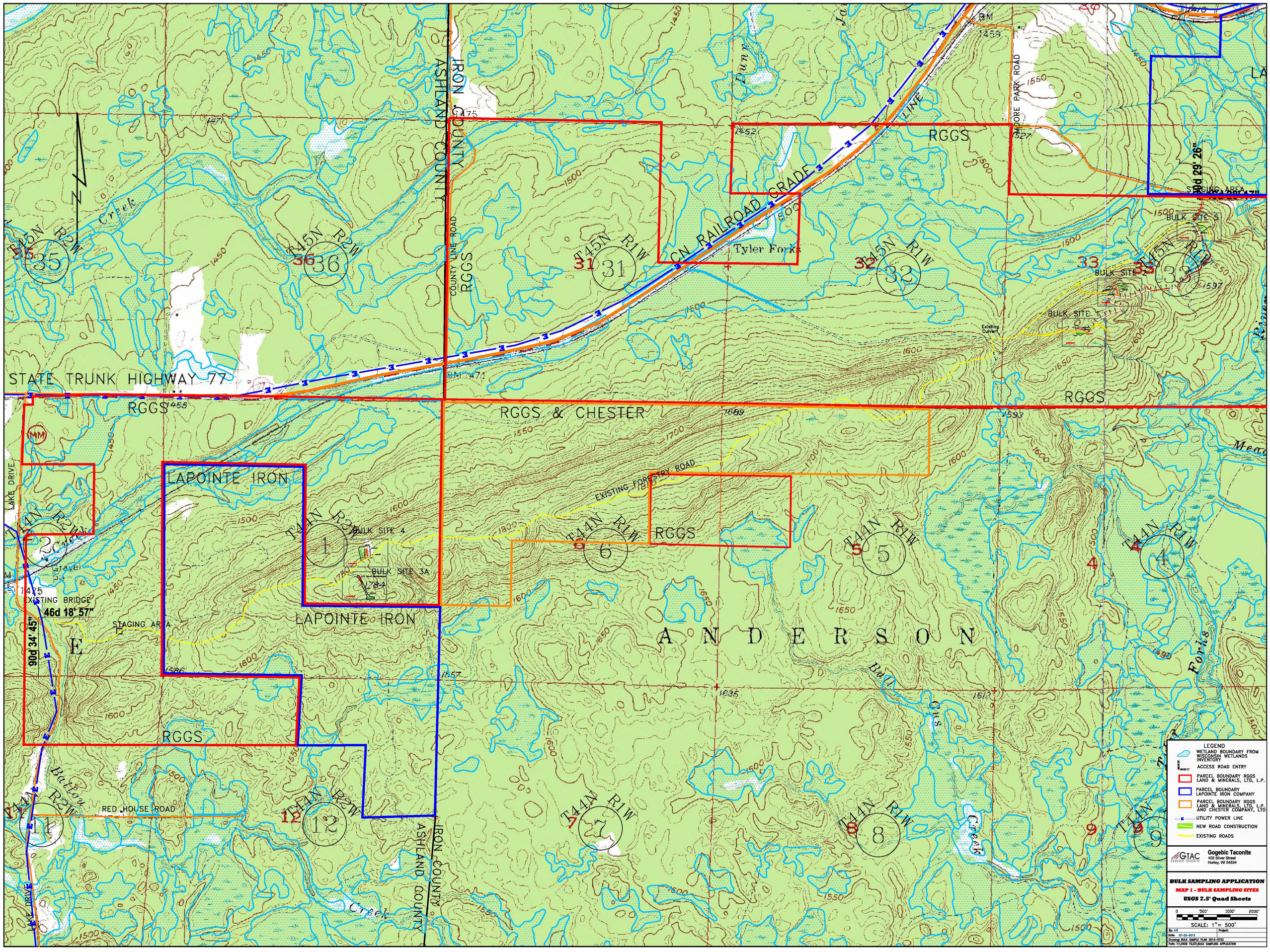
FIGURE 7

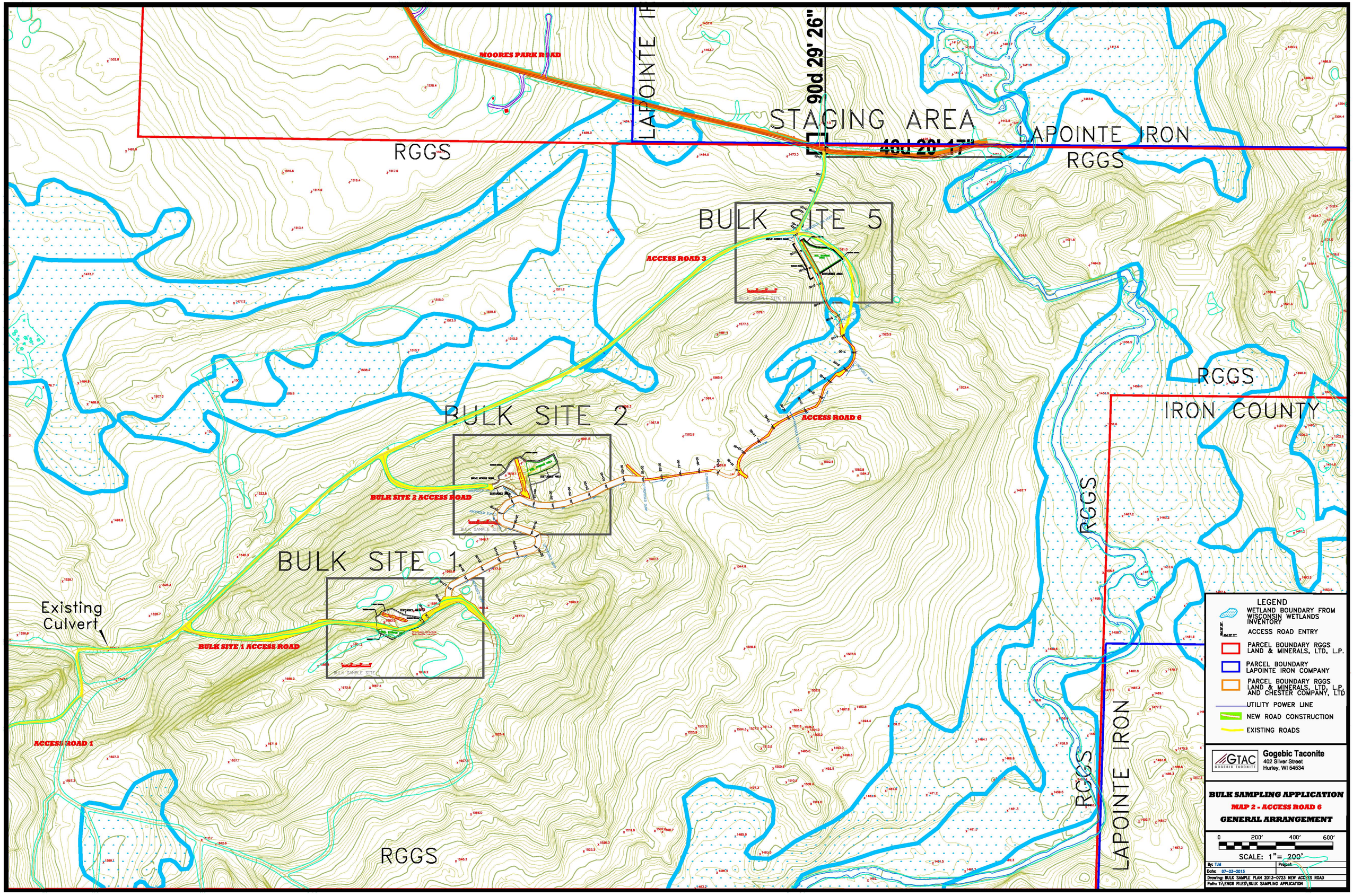
PLAN VIEW EAST STAGING AREA

0 50' 100' 150'

SCALE: 1"= 50'

By: TJM	Project:
Date: 07-25-2013	
Drawing: Bulk Sampling Site Plan 2013-0725	
Path: T:\ENGR FILES\BULK	


STATE TRUNK HIGHWAY 77
ASHLAND COUNTY
IRON COUNTY
COUNTY LINE ROAD
CN RAILROAD GRADE
LINE
Tyler Forks
MOORE PARK ROAD
RGGS
RGGS & CHESTER
LAPOINTE IRON
EXISTING FORESTRY ROAD
BULK SITE 1
BULK SITE 3A
BULK SITE 4
BULK SITE 5
STAGING AREA
EXISTING BRIDGE
46d 18' 57"
90d 34' 45"
Gravel Pit
RED HOUSE ROAD
LAKE DRIVE
Bull Creek
Bull Cls Creek
Battern Creek
Tyler Forks
ANDERSON
T45N R2W
T45N R1W
T44N R2W
T44N R1W
LEGEND
WETLAND BOUNDARY FROM WISCONSIN WETLANDS INVENTORY
ACCESS ROAD ENTRY
PARCEL BOUNDARY RGGS LAND & MINERALS, LTD, L.P.
PARCEL BOUNDARY LAPOINTE IRON COMPANY
PARCEL BOUNDARY RGGS LAND & MINERALS, LTD, L.P. AND CHESTER COMPANY, LTD
UTILITY POWER LINE
NEW ROAD CONSTRUCTION
EXISTING ROADS
GTAC
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
BULK SAMPLING APPLICATION
MAP 1 - BULK SAMPLING SITES
USGS 7.5' Quad Sheets
0 500' 1000' 2000'
SCALE: 1"= 500'
By: JJS
Project:
Date: 07-23-2013
Drawing: BULK SAMPLE PLAN 2013-0723
Path: T:\DNGR FILES\BULK SAMPLING APPLICATION


MOORES PARK ROAD
LAPOINTE IR
90d 29' 26"
STAGING AREA
40d 20' 17"
LAPOINTE IRON
RGGS
RGGS
BULK SITE 5
ACCESS ROAD 3
RGGS
IRON COUNTY
ACCESS ROAD 6
BULK SITE 2
BULK SITE 2 ACCESS ROAD
BULK SITE 1
Existing Culvert
BULK SITE 1 ACCESS ROAD
ACCESS ROAD 1
RGGS
RGGS
LAPOINTE IRON
LEGEND
WETLAND BOUNDARY FROM WISCONSIN WETLANDS INVENTORY
ACCESS ROAD ENTRY
PARCEL BOUNDARY RGGS LAND & MINERALS, LTD, L.P.
PARCEL BOUNDARY LAPOINTE IRON COMPANY
PARCEL BOUNDARY RGGS LAND & MINERALS, LTD, L.P. AND CHESTER COMPANY, LTD
UTILITY POWER LINE
NEW ROAD CONSTRUCTION
EXISTING ROADS
GTAC GOGEBIC TACONITE
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
BULK SAMPLING APPLICATION
MAP 2 - ACCESS ROAD 6
GENERAL ARRANGEMENT
0 200' 400' 600'
SCALE: 1"= 200'
By: TJM
Project:
Date: 07-23-2013
Drawing: BULK SAMPLE PLAN 2013-0723 NEW ACCESS ROAD
Path: T:\ENGR FILES\BULK SAMPLING APPLICATION

Attachments

Attachment 1

Question 9. Air Emission Estimates

Pollutant	Uncontrolled Potential to Emit (PTE) (ton/yr)	Actual Emissions[a] (ton/yr)	s. NR 406.04(1q) s. NR 407.03(1m) Thresholds (tons per year) [b]	NSR Significance Thresholds (tons per year)
PM	2.37	0.54	10	25
PM10	0.67	0.19	10	15
PM2.5	0.13	0.08	N/A	10
CO	0.14	0.11	10	100
SO2	0.02	0.01	10	40
VOC	0.02	0.01	10	40
NOx	0.30	0.16	10	40
Pb	0.00	0.00	0.06 / 0.5	0.6
CO2	10.32	5.16	N/A	100,000

[a] Actual emissions are based on controlled emission levels. Specifically, the use of a watering truck on haul routes (80% emission reduction) and light tower operation of no more than 12 hours per day (50% emission reduction).

[b] The emission thresholds under NR 406.04(1q) are 1,666 pounds per month averaged over 12 consecutive months, which is 9.996 tons per year, essentially equivalent to the 10 tons per year limit under NR 407.03(1m). The only exception is lead, where the threshold under NR 406.04(1q) is 10 pounds per month, or 0.06 tons per year, compared to 0.5 tons per year under NR 407.03(1m).

Criteria EI Inputs

indicates input value

Throughputs

Material / Process	Daily Capacities	Scheduled Up Time	Operating Hours	Annual Capacities	Maximum Hourly Rate	Notes
	ton/day	day/year	hours/day	ton/yr	ton/hr	
Ore Sample	182	22	24	4,000	7.58	Total for all five sites (800 tons per site)
Ore Transloading				2,400		Occurs at three of five sites
Backfill and Soil Fill	0	NA	NA	9,100	0	Total for all five sites, assuming 1 ton per cubic yard

Blasting

Detonators:	1076		Provided by GTAC
Explosive per hole (lb):	4.5		Provided by GTAC
Total explosive (lb):	4,842		
Total extraction area:	20314	ft^2	Provided by GTAC
Blasts per year:	1,076		
Area per blast:	19	ft^2	

Truck Traffic Emissions

Vehicle & Site	**Truck Capacity (tons)**	**No. of Trucks (trucks/yr)**	**Miles Traveled per Truck (miles/truck)**	**Mileage (VMT/yr)**	**Comments**
Haul trucks - Site 1	26	31	1.14	35	Off-road trucks, distance to public road provided by GTAC
Haul trucks - Site 2	26	31	1.56	48	Off-road trucks, distance to public road provided by GTAC
Haul trucks - Site 3A	20	40	2.70	108	Highway trucks, distance to public road provided by GTAC
Haul trucks - Site 4	20	40	2.82	113	Highway trucks, distance to public road provided by GTAC
Haul trucks - Site 5	26	31	0.20	6	Off-road trucks, distance to public road provided by GTAC
Employee trucks - All sites	NA	220	1.68	370	5 employee vehicles/shift, 12 hr/shift, 2 shifts/day
Water/supply trucks - All sites	NA	44	1.68	74	1 truck/day

Diesel Engines

EU Description	hp	gal/day	gal/hr	hr/yr	hp-hr/yr	Notes
Light Tower	34	48	2	528	17952	Conservatively assumed 24 hr/day with Caterpillar's largest light tower:
						Maxi-light ML20, 4x1250 watt http://www.cat.com/cda/layout?m=660875&x=7

Ref. No.	Stack No.	EU	Unit Name	Pollutant	Maximum Annual Rate	Units	Emission Factor, (lb/unit)	Emission Factor Units	Uncontrolled Potential to Emit (PTE), (ton/yr)	Control Factor, (%)	Controlled Potential to Emit (PTE), (ton/yr)
5			Blasting	PM	1,076	blasts/year	0.0011	lb/blast	6.18E-04	0	6.18E-04
				PM10	1,076	blasts/year	0.0006	lb/blast	3.21E-04	0	3.21E-04
				PM2.5	1,076	blasts/year	0.00003	lb/blast	1.85E-05	0	1.85E-05
				SO2	2.4	ton/yr	2	lb/ton ANFO	2.42E-03	0	2.42E-03
				NOx	2.4	ton/yr	17	lb/ton ANFO	2.06E-02	0	2.06E-02
				CO	2.4	ton/yr	67	lb/ton ANFO	8.11E-02	0	8.11E-02
4			Ore Drilling	PM	4,000	ton ore/yr	0.00008	lb/ton	1.60E-04	0	1.60E-04
				PM10	4,000	ton ore/yr	0.00008	lb/ton	1.60E-04	0	1.60E-04
				PM2.5	4,000	ton ore/yr	0.00008	lb/ton	1.60E-04	0	1.60E-04
3			Truck loading - excavation site	PM	4,000	ton ore/yr	0.003329	lb/ton ore	6.66E-03	0	6.66E-03
				PM10	4,000	ton ore/yr	0.001574	lb/ton ore	3.15E-03	0	3.15E-03
				PM2.5	4,000	ton ore/yr	0.000238	lb/ton ore	4.77E-04	0	4.77E-04
3			Truck unloading - transfer pad	PM	2,400	ton ore/yr	0.003329	lb/ton ore	3.99E-03	0	3.99E-03
				PM10	2,400	ton ore/yr	0.001574	lb/ton ore	1.89E-03	0	1.89E-03
				PM2.5	2,400	ton ore/yr	0.000238	lb/ton ore	2.86E-04	0	2.86E-04
3			Truck loading - transfer pad	PM	2,400	ton ore/yr	0.0033	lb/ton ore	3.99E-03	0	3.99E-03
				PM10	2,400	ton ore/yr	0.0016	lb/ton ore	1.89E-03	0	1.89E-03
				PM2.5	2,400	ton ore/yr	0.0002	lb/ton ore	2.86E-04	0	2.86E-04
6			Backfill	PM	9,100	ton/yr	1.20E-02	lb/ton	5.46E-02	0	5.46E-02
				PM10	9,100	ton/yr	1.20E-02	lb/ton	5.46E-02	0	5.46E-02
				PM2.5	9,100	ton/yr	1.20E-02	lb/ton	5.46E-02	0	5.46E-02
2			Haul Trucks - Site 1	PM	35	VMT/yr	9.4350	lb/VMT	1.65E-01	80	3.31E-02
				PM10	35	VMT/yr	2.3523	lb/VMT	4.13E-02	80	8.25E-03
				PM2.5	35	VMT/yr	0.2352	lb/VMT	4.13E-03	80	8.25E-04
2			Haul Trucks - Site 2	PM	48	VMT/yr	9.4350	lb/VMT	2.26E-01	80	4.53E-02
				PM10	48	VMT/yr	2.3523	lb/VMT	5.65E-02	80	1.13E-02
				PM2.5	48	VMT/yr	0.2352	lb/VMT	5.65E-03	80	1.13E-03
1			Haul Trucks - Site 3A	PM	108	VMT/yr	8.4728	lb/VMT	4.58E-01	80	9.15E-02
				PM10	108	VMT/yr	2.1124	lb/VMT	1.14E-01	80	2.28E-02
				PM2.5	108	VMT/yr	0.2112	lb/VMT	1.14E-02	80	2.28E-03
1			Haul Trucks - Site 4	PM	113	VMT/yr	8.4728	lb/VMT	4.78E-01	80	9.56E-02
				PM10	113	VMT/yr	2.1124	lb/VMT	1.19E-01	80	2.38E-02
				PM2.5	113	VMT/yr	0.2112	lb/VMT	1.19E-02	80	2.38E-03
2			Haul Trucks - Site 5	PM	6	VMT/yr	9.4350	lb/VMT	2.90E-02	80	5.81E-03
				PM10	6	VMT/yr	2.3523	lb/VMT	7.24E-03	80	1.45E-03
				PM2.5	6	VMT/yr	0.2352	lb/VMT	7.24E-04	80	1.45E-04
8			Water Trucks - All Sites	PM	74	VMT/yr	8.3017	lb/VMT	3.08E-01	80	6.15E-02
				PM10	74	VMT/yr	2.1974	lb/VMT	8.14E-02	80	1.63E-02
				PM2.5	74	VMT/yr	0.2197	lb/VMT	8.14E-03	80	1.63E-03
9			Employee Vehicles - All Sites	PM	370	VMT/yr	3.3527	lb/VMT	6.21E-01	80	1.24E-01
				PM10	370	VMT/yr	0.8874	lb/VMT	1.64E-01	80	3.29E-02
				PM2.5	370	VMT/yr	0.0887	lb/VMT	1.64E-02	80	3.29E-03
7			Light Tower	PM	17,952	hp-hr/yr	0.0022	lb/hp-hr	1.97E-02	50	9.87E-03
				PM10	17,952	hp-hr/yr	0.0022	lb/hp-hr	1.97E-02	50	9.87E-03
				PM2.5	17,952	hp-hr/yr	0.0022	lb/hp-hr	1.97E-02	50	9.87E-03
				SO2	17,952	hp-hr/yr	0.0021	lb/hp-hr	1.84E-02	50	9.20E-03
				NOx	17,952	hp-hr/yr	0.0310	lb/hp-hr	2.78E-01	50	1.39E-01
				CO	17,952	hp-hr/yr	0.0067	lb/hp-hr	6.00E-02	50	3.00E-02
				VOC	17,952	hp-hr/yr	0.0025	lb/hp-hr	2.22E-02	50	1.11E-02
				CO2	17,952	hp-hr/yr	1.1500	lb/hp-hr	1.03E+01	50	5.16E+00

TOTAL PM EMISSIONS	PM		2.37	0.54
TOTAL PM10 EMISSIONS	PM10		0.67	0.19
TOTAL PM2.5 EMISSIONS	PM2.5		0.13	0.08
TOTAL CO EMISSIONS	CO		0.14	0.11
TOTAL SO2 EMISSIONS	SO2		0.02	0.01
TOTAL VOC EMISSIONS	VOC		0.02	0.01
TOTAL NOx EMISSIONS	NOx		0.30	0.16
TOTAL CO2 EMISSIONS	CO2		10.3	5.2

Emission Inventory References

Ref #	Emission Unit ID	Emission Unit(s)	Pollutant	Emission Factor	Units	Emission Factor References / Assumptions / Equations
1		Truck traffic - highway haul trucks	PM	8.47	lb/VMT	Emission factor based on AP-42, 5th Ed. (11/06), Section 13.2.2 'Unpaved Roads' Base case assumes no controls. With watering, assumes control efficiency: 80%. E=k(s/12)a(W/3)b k, a, and b are empirical constants E = size-specific emission factor (lb/VMT) s = surface material silt content (%) = 4.3%, average for taconite service roads W = mean vehicle weight (tons) = 50 ton (40 ton empty, 60 ton full) from GTAC
			PM10	2.11	lb/VMT	
			PM2.5	0.21	lb/VMT	
2		Truck traffic - off road haul trucks	PM	9.43	lb/VMT	Emission factor based on AP-42, 5th Ed. (11/06), Section 13.2.2 'Unpaved Roads' Base case assumes no controls. With watering, assumes control efficiency: 80%. E=k(s/12)a(W/3)b k, a, and b are empirical constants E = size-specific emission factor (lb/VMT) s = surface material silt content (%) = 4.3%, average for taconite surface road W = mean vehicle weight (tons) = 63.5 ton (50.5 ton empty, 76.5 ton full) from GTAC
			PM10	2.35	lb/VMT	
			PM2.5	0.24	lb/VMT	
3		Sample material drops	PM	0.0033	lb/ton ore	Emission Factors from AP-42, 5th Ed.(11/2006), Section 13.2.4 'Aggregate Handling and Storage Piles' Equation (1): E=k(0.0032)[(U/5)1.3/(M/2)1.4] (lb/ton) E = emission factor k = particle size multiplier (dimensionless) (0.053 for <2.5um, 0.35 for <10um, and k = 0.74 for <30um) U = mean wind speed, miles per hour [mph] = 7.2 mph (6.25 knots), mean wind speed for Hibbing Airport meteorological data for 2001-2004. M = material moisture content (%) = 2.2% (for pellet ore)
			PM10	0.0016	lb/ton ore	
			PM2.5	0.0002	lb/ton ore	
4		Drilling	PM	0.00008	lb/ton	AP-42, 5th Ed., Table 11.19.2-2 'Wet Drilling - Unfragmented Stone' [SCC 3-05-020-10]. Assume PM10 = PM = PM2.5 (No PM or PM2.5 in AP-42)
			PM 10	0.00008	lb/ton	
			PM 2.5	0.00008	lb/ton	
5		Blasting	PM	0.00115	lb/blast	AP-42 Section 11.9 Western Surface Coal Mining, Oct 1998. This is the most appropriate section of AP-42 for PM emissions from blasting. PM (lb/blast)=0.000014(A)^1.5, Table 11.9-1 for blasting A=horizontal area (ft2), with blasting depth </=70 ft PM10=0.52*PM PM2.5=0.03*PM
			PM10	0.00060	lb/blast	
			PM2.5	0.00003	lb/blast	
			SO2	2	lb/ton ANFO	AP-42 Section 13.3 Explosives Detonation, Table 13.3-1, Feb 1980. ANFO factors used.
			NOx	17	lb/ton ANFO	
			CO	67	lb/ton ANFO	
6		Backfill and soil fill	PM	0.012	lb/ton	AP-42, Table 11.9-4 'Overburden replacement' Assume PM10 = PM = PM2.5 (No PM or PM2.5 in AP-42)
			PM10	0.012	lb/ton	
			PM2.5	0.012	lb/ton	
7		Diesel engine	PM	0.00220	lb/hp-hr	AP-42 Section 3.3 Gasoline and Diesel Engines, Oct 1998. Assume PM10 = PM = PM2.5 VOC based on TOC factor 24-hour operation (maximum uncontrolled) Controlled operation based on 12/hr per day (50% reduction)
			PM10	0.00220	lb/hp-hr	
			PM2.5	0.00220	lb/hp-hr	
			SO2	0.00205	lb/hp-hr	
			NOx	0.031	lb/hp-hr	
			CO	0.00668	lb/hp-hr	
			VOC	0.00247	lb/hp-hr	
			CO2	1.15	lb/hp-hr	
8		Truck traffic - water	PM	8.3017338	lb/VMT	Emission factor based on AP-42, 5th Ed. (11/06), Section 13.2.2 'Unpaved Roads' Dirt road. Assumed control efficiency for surface treatment: 80%. E=k(s/12)a(W/3)b k, a, and b are empirical constants E = size-specific emission factor (lb/VMT) s = surface material silt content (%) = 5.8%, average for taconite mining and processing service road W = mean vehicle weight (tons) = 30 ton, based on 20 ton empty and 40 ton full (17 ton for 4000gal water)
			PM10	2.1974213	lb/VMT	
			PM2.5	0.2197421	lb/VMT	
9		Truck traffic - employees	PM	3.3526733	lb/VMT	Emission factor based on AP-42, 5th Ed. (11/06), Section 13.2.2 'Unpaved Roads' Dirt road. Assumed control efficiency for surface treatment: 80%. E=k(s/12)a(W/3)b k, a, and b are empirical constants E = size-specific emission factor (lb/VMT) s = surface material silt content (%) = 5.8%, average for taconite mining and processing service road W = mean vehicle weight (tons) = 4 ton (estimate)
			PM10	0.8874334	lb/VMT	
			PM2.5	0.0887433	lb/VMT	