EVALUATION OF PROPOSED GRAVEL PIT IN THE TOWN OF MILTON, WI

JANUARY 2013

PREPARED FOR THE

TOWN OF MILTON, WISCONSIN
PLANNING AND ZONING COMMITTEE

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TABLE OF CONTENTS

1 BACKGROUND 1
2 INFORMATION SOURCES 6
3 RESULTS 8
3.1 Water Resource Impacts Evaluation 8
3.2 Wetland and Habitat Issues 15
3.3 Adverse impact of dust 24
3.4 Adverse impacts of noise 27
4 CONCLUSIONS AND RECOMMENDATIONS 29

APPENDICES

APPENDIX A – POSSIBLE WILDLIFE SPECIES OF PROJECT AREA

APPENDIX B – RAPID WETLAND ASSESSMENT

APPENDIX C – EXAMPLE OF WISCONSIN AIR EMISSIONS INVENTORY REPORT

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1 BACKGROUND

Purpose

This report summarizes an evaluation of environmental issues associated with the Traynor gravel pit proposed for development in the Town of Milton, Wisconsin by BR Amon & Sons. This evaluation has been conducted by Montgomery Associates: Resource Solutions, LLC (MARS), Taylor Conservation, LLC, and Environmental Process Engineering and Compliance, LLC (EPEC) to support the Town of Milton's Conditional Use Permit process.

Overview of Proposed Pit

The proposed pit is on the Traynor property immediately west and north of a wetland that is part of the Storrs Lake Wildlife Area managed by the Wisconsin Department of Natural Resources (Figure 1). Areas proposed for mining are currently farmland and woodland. A sand and gravel ridge trending northeast to southwest on the Traynor property would be excavated in three phases (Figure 2). An access road would be constructed from the pit north to County Highway N, with construction of a new bridge across Otter Creek. The mining would be above the water table, and the mined area would be reclaimed for row crop agriculture. More details on the proposed pit are included in Appendix A.

Issues Evaluated

This study evaluated the following issues identified by the Town of Milton Planning and Zoning Committee:

1. Stormwater runoff and flood water storage
2. Maintenance of the hydrologic cycle, especially for the adjacent wetland
3. Filtration and storage of sediments, nutrients and toxic substances
4. Impacts to the wetland
5. Erosion issues affecting adjoining properties
6. Habitat for aquatic organisms
7. Habitat for resident and transient wildlife
8. Adverse impacts of dust on humans, animals and plants
9. Adverse impacts of noise

Stormwater, groundwater and erosion issues were evaluated by MARS, Taylor Conservation evaluated wetland and upland habitat issues, and EPEC evaluated noise and dust issues.

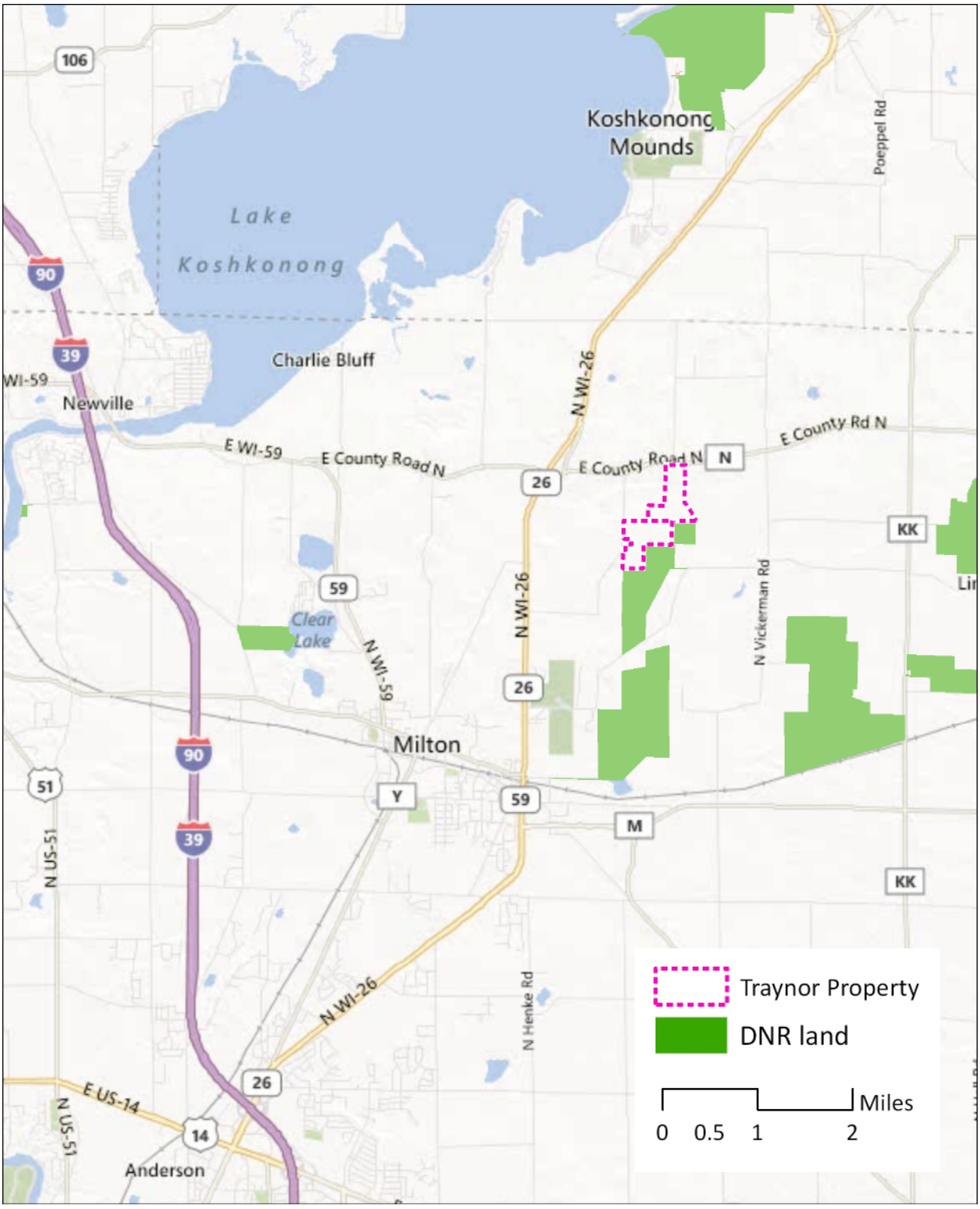

Figure 1. Location of proposed Traynor Pit.

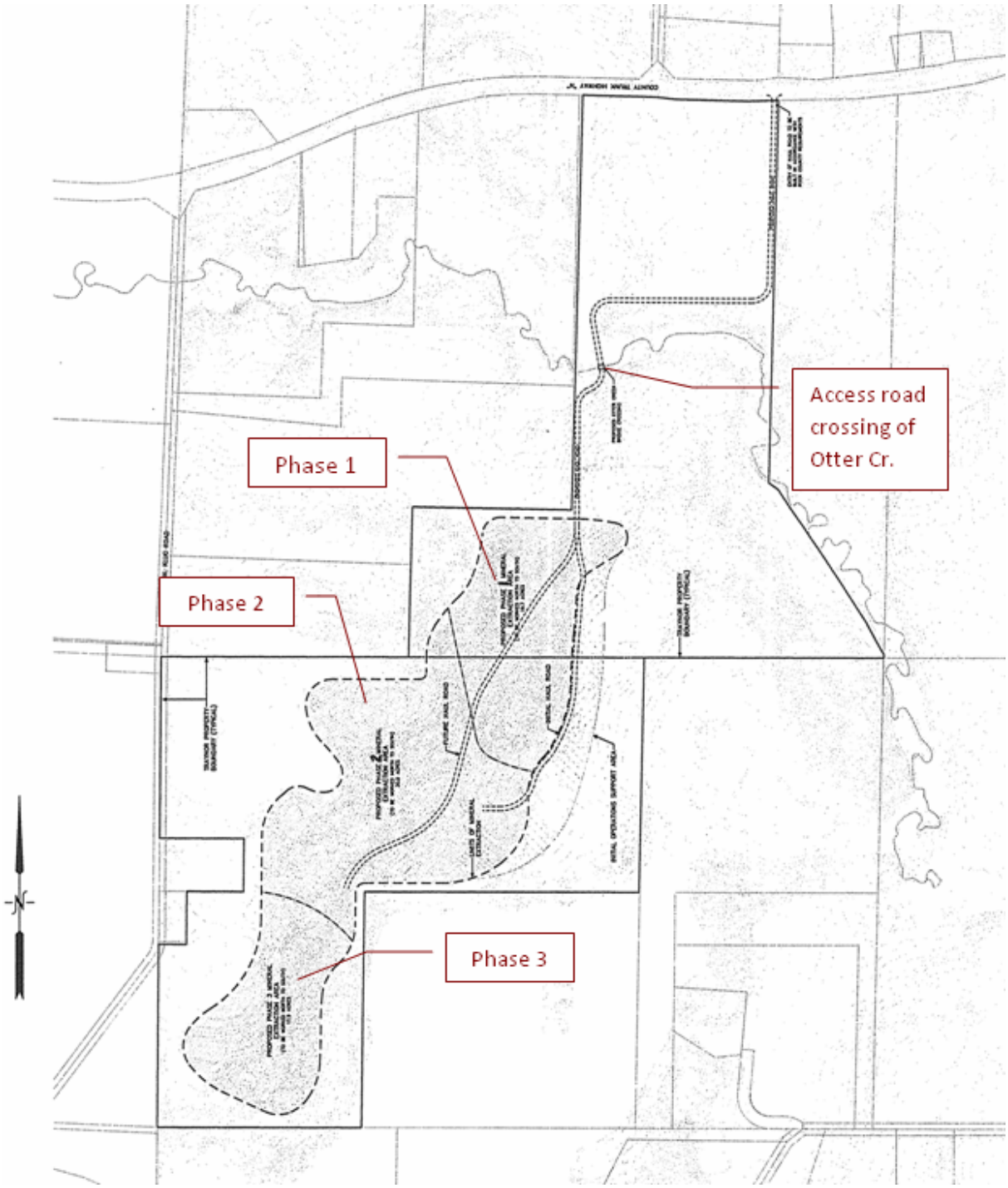

Figure 2. Proposed Traynor Pit location and phases. From BR Amon & Sons, Inc. "Revised Phasing and Access Plan", May 17, 2012. Not to scale.

Regulatory Requirements

In addition to the Town's conditional use permit, the applicant must obtain several permits from the State of Wisconsin and Rock County before mining can begin. Key requirements of the State and County related to water, natural resources, noise and dust issues for the proposed mine are summarized below.

Wisconsin Administrative Code Chapter NR135: non-metallic mine reclamation

Surface water and wetlands protection.

- Comply with water quality standards for surface waters and wetlands.
- Prevent pollution of waters of the state through runoff diversion and drainage before land disturbance and removal of topsoil.
- Do not adversely affect neighboring properties by diversion or channelization of runoff.

Groundwater protection

- Do not cause permanent lowering of the water table.
- Do not cause groundwater quality standards in NR140 to be exceeded.

Topsoil management

- Replace topsoil after final grading has been completed.

Final grading and stabilization

- Grade final slopes no steeper than 3:1, unless otherwise approved.
- Stabilize with vegetation areas affected by the mining.

Wisconsin Administrative Code Chapter NR216: stormwater and discharge general permit WI-0046515-5

- Direct drainage to seep into the soil within the mining site, to the extent practicable.
- Contain within the site stormwater from events up to the 10-year, 24-hour storm.
- Use sediment control practices to reduce the amount of sediment discharged to surface waters and wetlands.
- Use pollution prevention practices to prevent contamination from fuel and other potential contaminants, to the extent practicable.
- Test wastewater to ensure minimization of impacts to groundwater and surface water, as detailed in the general permit.
- Conduct annual inspections by a qualified individual to document compliance with permit requirements.

Wisconsin Statues Chapter 30

- Obtain a permit from WDNR for construction of the temporary bridge across Otter Creek in a manner that minimizes impact to the creek and wetlands.

Wisconsin Administrative Code Chapter NR116: floodplain management

- Design the bridge across Otter Creek to avoid obstruction of flood flows and to prevent an increase in the upstream flood elevation.

WDNR NR 406 Air Permit

- Obtain a Construction permit from WDNR
- Maintain safe and healthful conditions
- Prevent / control air pollution and noise impacts
- Use Fugitive Dust Control Plan to minimize particulate impacts from mining operations and vehicle traffic
- Use Best Management Practices and Pollution Prevention strategies to minimize particulate emissions from sand extraction and processing

Rock County shoreland zoning

- Obtain a Conditional Use Permit from the County
- Maintain safe and healthful conditions.
- Prevent / control water pollution and flooding.

Rock County nonmetallic mine reclamation

- Minimize the area of disturbance.
- Install all necessary erosion and stormwater controls before disturbing the surface of the mining site and removing topsoil.
- Reclaim portions of the site while mining activities continue on other portions of the site.
- Restore habitat to a condition at least as suitable as that existed before the lands were affected by mining when the reclamation plan requires habitat restoration, to the extent practicable.

Rock County floodplain zoning

- Design the bridge across Otter Creek to avoid obstruction of flood flows and to prevent an increase in the upstream flood elevation.

2 INFORMATION SOURCES

Information used during this evaluation includes the following:

- BR Amon & Sons, Inc.'s Operational Plan for the Traynor Gravel Pit, revised May 21, 2012
- BR Amon & Sons, Inc.'s response to Planning and Zoning Committee questions, dated July 5, 2012
- BR Amon & Sons, Inc.'s drawings, prepared by Farris, Hansen & Associates, Inc. (included in Appendix A):
    - Location and Features Plan (November 11, 2011)
    - Operations Plan (November 11, 2011)
    - Revised Phasing and Access Plan (May 17, 2012)
    - Drainage Plan (November 11, 2011)
    - Final Reclamation Plan (November 11, 2011)
- Observations from site visits by Scott Taylor of Taylor Conservation and Steve Gaffield of Montgomery Associates
- Phone conference with Mike Ettner of BR Amon & Sons, Inc. on December 4, 2012
- Phone conference with Andrew Baker of the Rock County Land Conservation Department on January 11, 2013
- "Workbook to Preserve the Serenity of our Community and our surrounding Natural Treasures" from the Friends & Neighbors of Klug Road & Storrs Lake Wildlife Area
- 2010 aerial photograph from the National Agriculture Imagery Program (NAIP)
- USGS digital topographic quadrangle maps with 10-foot elevation contours
- Wisconsin Geological and Natural History Survey Open-File Report 2002-02. "Delineation of zones of contribution for municipal wells in Rock County, Wisconsin: Final report".
- Phone conference with Mike Foy, Wildlife Manager with Wisconsin Department of Natural Resources, December 17th, 2012.
- Wisconsin Breeding Bird Atlas, Milton & Lima Center Quads, Wisconsin Society for Ornithology.
- Wisconsin Wildlife Primer, Wildlife Habits and Habitats, Wisconsin Department of Natural Resources.
- Snakes of Wisconsin, Wisconsin Department of Natural Resources.
- Turtles & Lizards of Wisconsin, Wisconsin Department of Natural Resources.
- Amphibians of Wisconsin, Wisconsin Department of Natural Resources.
- Wisconsin Natural Heritage Working List, Wisconsin Department of Natural Resources.

- Wisconsin Wildlife Action Plan, Species of Greatest Conservation Need, Wisconsin Department of Natural Resources.
- "PUBL-AM- 268 98, Nonmetallic Mining Guidance for the Development of the 1998 Air Emissions Inventory (1999)."
- WDNR Air Permit Database
- WDNR NR438 Air Emission Inventory: 2011 Air Emission Inventory Statewide Report.xls
- Phone conference with Mark McDermaid, WDNR Green Tier Program Director
- WDNR Air Program Fact Sheet: Wisconsin Air Toxics Rule (NR 445), revised September 2012.

3 RESULTS

3.1 WATER RESOURCE IMPACTS EVALUATION

Evaluation of water resource issues was completed by Montgomery Associates: Resource Solutions, LLC.

Storm and flood water storage

The Planning and Zoning Committee asked if the proposed mine would result in an increase in stormwater runoff to the adjacent wetland. To address this question, we reviewed the changes in the landscape that would occur during active mining and after reclamation of the property.

Existing Conditions

The wetland in the State Wildlife Area immediately east of the Traynor property drains northeast to Otter Creek, and the wetland's watershed is approximately 760 acres (Figure 3). Agriculture is the dominant land use in the watershed (Figure 4). By comparison, the area of the proposed gravel pit is 68 acres, according to BR Amon & Sons' Operation Plan. This represents 9% of the wetland's watershed.

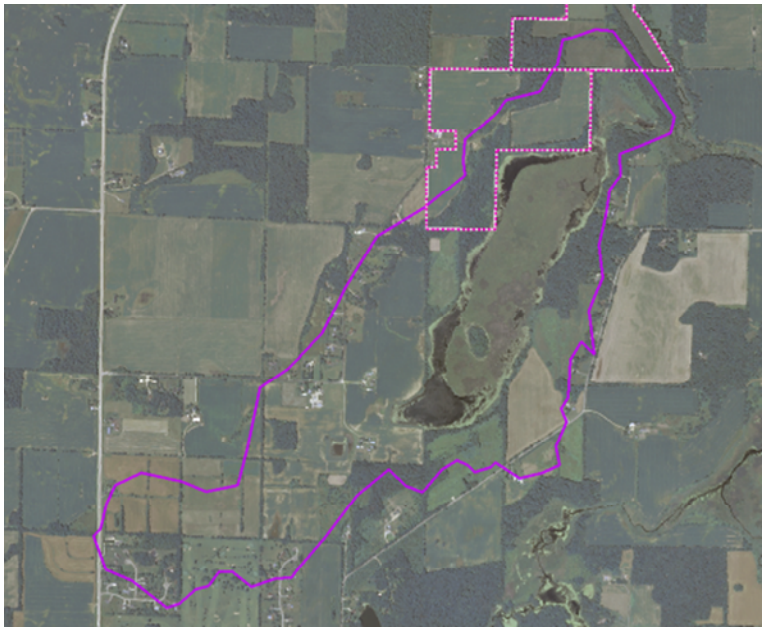

Figure 3. Storr's Lake Marsh watershed.

The existing ridge on the Traynor property divides surface runoff the drains east toward the State Wildlife Area wetland and west onto the agricultural fields along Klug Road (Figure 5). Observations during a site visit indicate that the forested ridge generate little stormwater runoff; the forested hillside soils are very sandy and likely have a high infiltration rate, only one gulley was observed on the hillside facing the wetland and it contained no bare soil that would indicate frequent scouring, and little evidence of overland runoff was observed where the wooded hillside borders the wetland. The existing agricultural fields almost certainly generate more stormwater runoff than the wooded areas. However, no edge-of-field gulleys were observed, and the wooded buffer between the agricultural field and the wetland showed no indication of concentrated runoff.

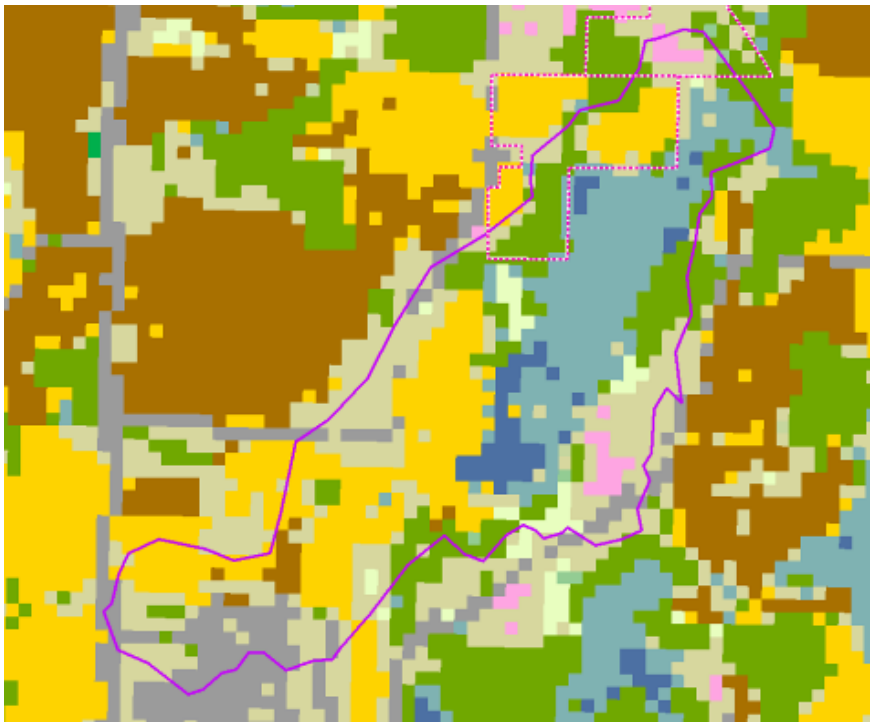

Figure 4. Landcover in Storr's Lake Marsh watershed. Blue indicates open water and wetlands. Green indicates woodlands. Gray and yellow indicate agricultural land.

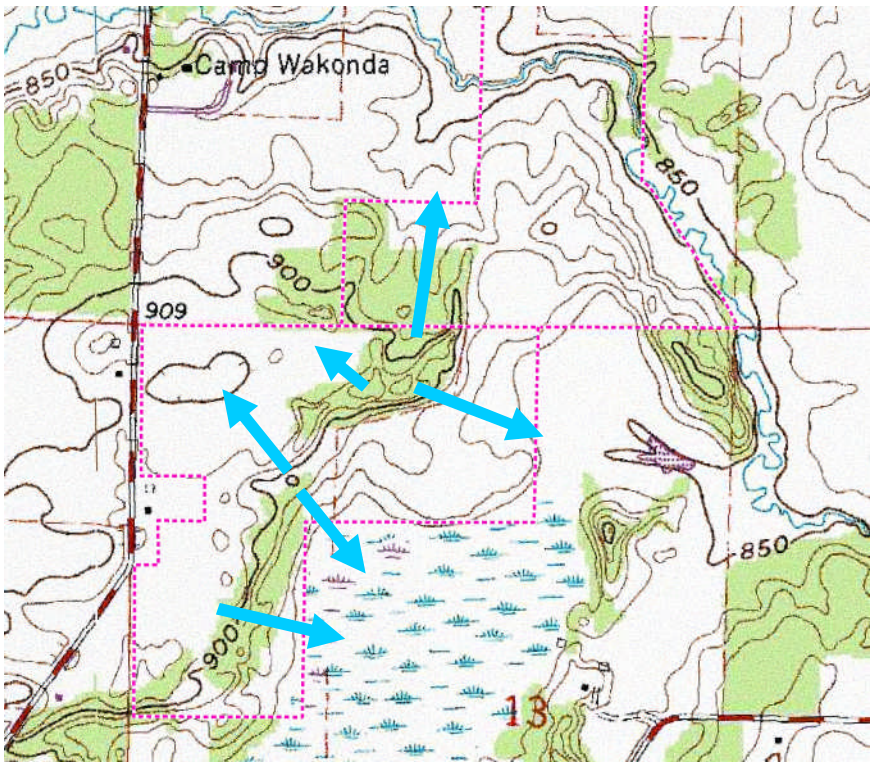

Figure 5. Existing topography and drainage on the Traynor property.

Conditions During Mine Operation

During operation of the mine, the potential for stormwater runoff from the mine site depends on the details of how the excavation is staged. Bare soil areas on the hillside will generate more runoff and sediment than under existing conditions, however, such runoff can be captured in low areas of the pit and prevented from draining offsite. The Operations Plan indicates that such a strategy will be employed. The access road and operations support / equipment storage area on the east side of the pit will be in areas that are currently under cultivation, so the amount of runoff and sediment generated in those areas is not likely to significantly increase. In addition, portions of agricultural fields on the east and north sides of the project area will be included in the pit (Figure 6), and this will reduce the area of cropland that drains east to the wetland and north to Otter Creek, as long as the excavation is constructed to trap runoff.

Each of the three phases of the pit will have an overflow location that includes a sediment / infiltration basin (Figure 7). The State discharge permit (general permit WI-0046515-5) requires no discharge from the pit up to 10-year, 24-hour storm event. Given the sandy nature of the soils and their high infiltration capacity, it is unlikely that overflow would occur from the pit as it approaches its final grade. During development of each phase, it will be important to create basins that are deep enough to retain runoff on-site.

Conditions After Reclamation

After the mining is completed, the pit will be reclaimed for farming, and it will discharge to the east and north in the same locations as the overflow points shown on Figure 7. The sediment basins will be filled and leveled as part of reclamation to maintain drainage of the cropland. The area of woodland that will be removed by mining and reclaimed as agricultural land is approximately 41 acres, or 5% of the Storrs Lake watershed. Because cropland generates more stormwater runoff than forest, there could be a small increase in runoff volume to Storrs Lake of up to a few percent. Runoff volume changes on this scale are typically considered to have minimal effects on downstream aquatic resources.

In addition to the overall amount of stormwater runoff, another consideration is how and where this runoff is routed to the wetland to the east and Otter Creek to the north. Increased erosion and sediment deposition is possible at the locations where stormwater discharges from the new farmland. This can be minimized by maintaining vegetated buffers between the reclaimed mine site and the wetland, allowing water to spread out, slow down, and drop sediment before reaching the wetland. Field observations suggest that this preventive measure is feasible, because the existing agricultural fields have not generated gulleys or other signs of concentrated flow and sediment discharge to the wetland.

The proposed pit is not in a floodplain area on FEMA Flood Insurance Rate Maps and is therefore not in an area that provides floodwater storage. However, FEMA maps do show a floodplain along Otter Creek in the location of the proposed access road bridge. State and County floodplain regulations require that construction of the bridge avoids any obstruction of flood flows or rise in upstream flood elevation. In order to obtain approval to construct the bridge, the applicant will need to demonstrate that the bridge will not have a floodplain impact.

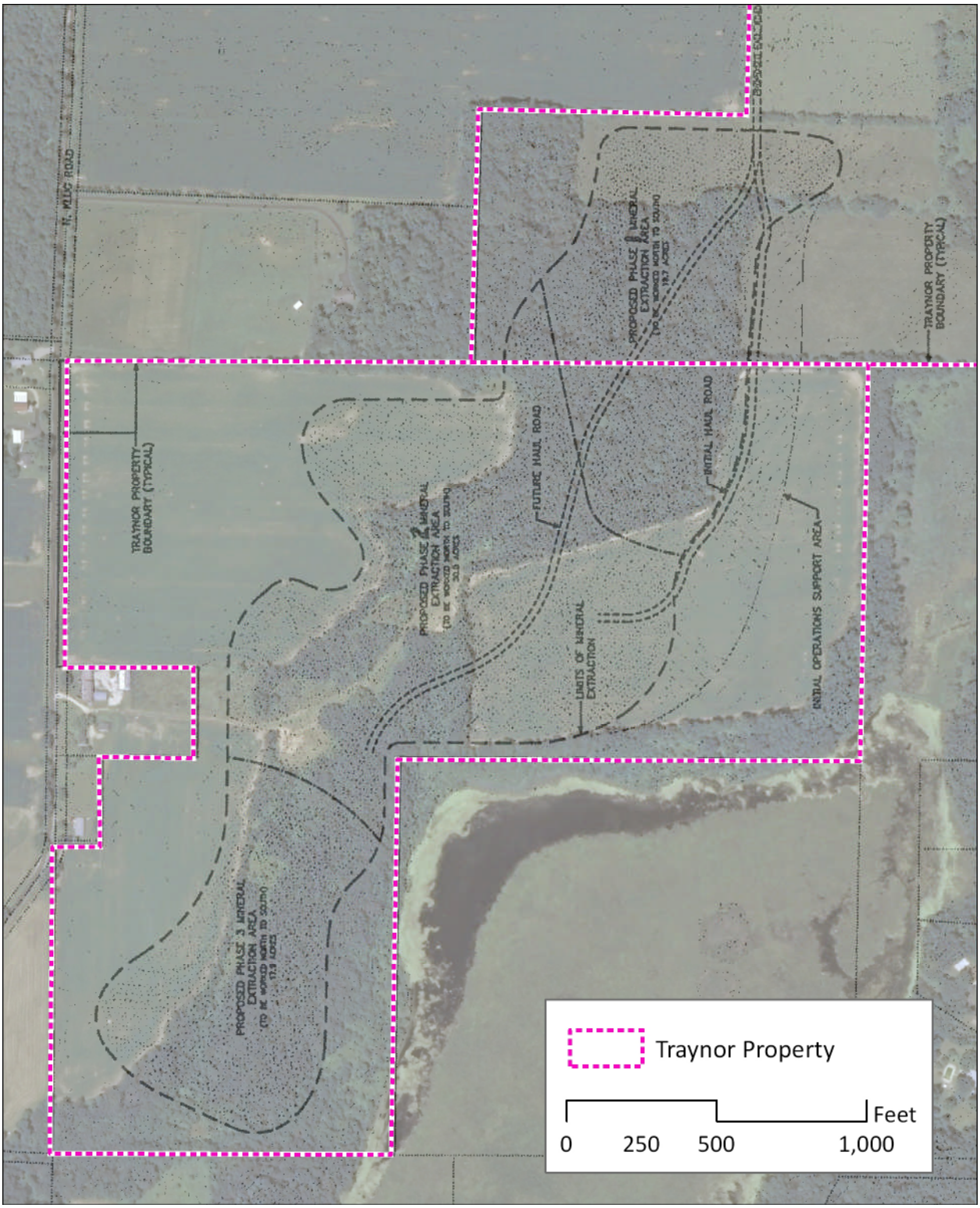

Figure 6. Extent of proposed mine showing areas of woodland and agricultural land. Arrows show sediment trap and overflow locations.

Figure 7. Reclamation plan showing final grades, sediment basins (to be filled in during reclamation), and stormwater drainage (arrows).

Maintenance of hydrologic cycles (functionality of onsite springs)

The Planning and Zoning Committee asked if the proposed mine would impact the water in the adjacent wetland or springs feeding the wetland. To address this question, we have summarized available information on the existing groundwater conditions and evaluated potential changes due to the proposed mine.

Existing conditions

The regional groundwater flow direction in the Milton area is northwest toward the Rock River and Otter Creek, based on the WGNHS modeling study of Rock Co. The local flow direction at the Traynor property may be more complicated due to the influence of local topography. It is possible that groundwater flows eastward toward the wetland and/or northward toward Otter Creek. Without groundwater monitoring wells at the property, it is not possible to determine the groundwater flow direction with confidence. However, it is likely that some water that recharges the water table at the Traynor property flows to the wetland.

No springs were observed along the margin of the wetland adjacent to the Traynor property. However, groundwater discharge is commonly not visible as a defined spring, occurring as diffuse seepage through the bed of a lake or wetland.

Observations of soil conditions in several locations of the wooded hillside using a hand-held soil probe indicate that the shallow soil is very sandy and loose. Thus, the groundwater recharge rate in this area is likely to be quite high even though the surface slope is significant. This conclusion is supported by the scarcity of well defined drainageways on the hillside and lack of indication of concentrated stormwater discharge at the edge of the wetland.

Proposed conditions

Groundwater recharge is not likely to change substantially either during active mining or after reclamation. During mining, the lack of vegetation will reduce the loss of precipitation through plant transpiration, and runoff will be contained within the pit where it will either infiltrate to groundwater or evaporate. It is unlikely that significant volumes of runoff will pond on the surface of the pit long enough for major evaporation loss; because the soil has a low silt and clay content, it will not compact much due to equipment traffic.

After reclamation, it is uncertain whether the recharge rate will differ from existing conditions. Differences in recharge rates of forest and agricultural land is the topic of ongoing research in Wisconsin. Given the sandy nature of the soil, it is likely that any change in recharge rate on the Traynor property would be small. Because the Traynor property is a small fraction of the entire watershed of the wetland, it is therefore likely than any change in groundwater flow to the wetland would be quite small.

Because the pit will not reach the water table, no impact on the groundwater flow direction or gradient is expected. Excavation above the water table would not disrupt groundwater flow paths to springs, if any are present.

Erosion, filtration and storage of sediments, nutrients and toxic substances

The Planning and Zoning Committee asked about impacts on neighboring properties and water resources related to erosion, sedimentation, toxic substances used by the mining operation, and nutrients.

Sediment

The greatest risk of release of sediment from the pit is during the active mining phases, when large areas of soil will be bare. The sediment traps shown on Figure 7 are intended to capture runoff and sediment within the mine pit and prevent release of sediment offsite. As noted above, the State discharge permit requires that all runoff for events up to the 10-year, 24-hour storm be captured within the mine with no overflow to adjacent properties. It is permissible for releases of runoff and sediment to occur during larger storms.

We estimated runoff volumes from the pit for the 10-year and 100-year storms using the Natural Resource Conservation Service curve number method and compared them to the approximate volume of the sediment traps shown on the BR Amon drawing set (Table 1). The proposed sediment traps are likely to be adequate to capture runoff from the 10-year event, as required. Larger events are likely to overflow the sediment traps, because the runoff volume will be larger than the storage volume in the basins. This would result in discharge of stormwater and sediment toward the wetland to the east and Otter Creek to the north. Even with overflow, the basins are likely to trap a significant portion of the sediment, because sand is heavy enough to rapidly settle to the bottom of water pooled in the sediment basins. Stormwater that overflows the basins would have potential to scour soil as it flows toward the wetland and Otter Creek, picking up additional sediment. The vegetated buffer between the pit and the wetland would remove some sediment, however it is likely that sediment would reach the wetland and creek during these infrequent, large events.

Table 1. Runoff and sediment basin volume comparison

Sediment Basin	Phase 1	Phase 2	Phase 3
Watershed characteristics			
Drainage area (ac) [1]	19.7	39	8.9
Runoff curve number [2]	77	77	77
10-yr, 24-hr storm			
Precipitation Depth (in)	4.1	4.1	4.1
Runoff depth (in)	1.9	1.9	1.9
Runoff volume (ac-ft)	**3.1**	**6.1**	**1.4**
100-yr, 24-hr storm			
Precipitation Depth (in)	6.0	6.0	6.0
Runoff depth (in)	3.5	3.5	3.5
Runoff Volume (ac-ft)	**5.7**	**11.3**	**2.6**
Approximate basin storage			
Basin depth (ft)	5	8	7
Averarage basin length (ft)	350	500	250
Average basin width (ft)	100	100	75
Storage volume (ac-ft)	**4.0**	**9.2**	**3.0**

[1] A curve number of 77 corresponds to bare soil for Hydrologic Soil Group A (e.g. sandy soils).

[2] Approximately ½ of the Phase 3 pit area will drain north to the Phase 2 sediment basin, and ½ will drain south to the Phase 3 sediment basin.

Another potential source of sediment is the topsoil stockpile proposed along the eastern side of the site. The operations plan calls for temporary seeding of this stockpile to prevent sediment loss, and this is an effective measure if the vegetation cover is thick and maintained as necessary. The initial period when the stockpile is created and vegetation cover has not yet been established presents the greatest risk. Additional erosion control measures, such as a silt fence along the eastern side of the stockpile, would be effective during this interim period. However, the operation plan does not specify such additional erosion control measures.

Nutrients

After reclamation of the pit to farmland, a small increase in nitrogen and phosphorus loading groundwater, the wetland and Otter Creek is likely due to the use of fertilizer and/or manure on agricultural land that is currently woodland. Because the land to be converted from woodland to agriculture makes up only 5% of the Storrs Lake watershed, any nutrient load increase should be very minor.

Toxic Substances

The State stormwater and discharge permit requires pollution prevention measures to minimize the risk of contaminating groundwater and surface water. Sources of toxic substances at the proposed pit are fuel, oil and hydraulic fluid for the mining equipment, including front end loaders, trucks and a crusher. Based on information in the BR Amon operation plan and a phone conversation with project manager Mike Ettner, fuel for equipment will either be stored in tanks located on the property or in tanker trucks stored in another location. Tanks at the site will have secondary containment to minimize the spread of an fuel spills, and staff on-site will be trained in spill response. While there would be some risk of spills from the mining equipment, this risk is comparable to that for spills from farming equipment and related fuel storage tanks which are prevalent in this agricultural area. A review of the Wisconsin Department of Natural Resources Bureau for Remediation and Redevelopment Tracking System (BRRTS) found only one reported spill incident in Wisconsin at facilities operated by BR Amon & Sons, Inc. during the past 10 years.

3.2 WETLAND AND HABITAT ISSUES

Scott Taylor of Taylor Conservation, LLC completed a field evaluation of the wetlands and habitats of the project area on November 30th, 2012

Purpose of Habitat Study

To create a sand and gravel pit, B.R. Amon & Sons, Inc. proposes destruction of approximately 45 acres of natural habitats and 29 acres of crop fields on the Traynor property. The natural habitats are mostly wooded areas, including 21 acres of recently logged woods, however they also contain small areas of open grass and dense brush. Small portions (< ¼ acre) of a wetland alongside Otter Creek will also be impacted by construction of a bridge and haul road to serve the gravel pit.

The Town of Milton wishes to understand the potential impact of habitat destruction and sand and gravel extraction activity on habitat for resident and transient wildlife in the project area and on habitat for aquatic organisms in Otter Creek and in the nearby wetlands of the Storr's Lake Wildlife

Area. The purpose of this study is to provide this understanding through field evaluation of the habitats of the quarry site, review of literature on the wildlife of the greater area and query of the Wisconsin Department of Natural Resource's Natural Heritage Inventory database. A list of wildlife species that are possibly be found in the project area was compiled based on a review of the information sources listed in Section 2 and is included in Appendix A.

This study asks two principal questions: (1) what habitat values will be lost if a gravel pit is excavated and access roads are built and (2) how will the habitat destruction and sand extraction activity affect wildlife in the surrounding landscape, particularly wildlife of the nearby Storr's Lake Wildlife Area and Otter Creek.

Habitats of Surrounding Landscape

The value of a habitat is partly determined by its size and the degree of connectivity to other habitats in the surrounding landscape. Connected habitats often support more variety and abundance of animals since they allow animals to travel extensively, which may be necessary to meet their needs for food, water, space and screening cover. The project area woods are directly connected to a relatively large wetland complex of Storr's Lake Wildlife Area east of the site. This wetland is connected to other large wetlands via the narrow Otter Creek corridor. Otherwise the project area woods are surrounded by crop fields, the predominant land cover type in the surrounding landscape, which are relatively low value habitat.

The Wisconsin Bird Conservation Initiative has identified 88 landscapes, known as Important Bird Areas, in Wisconsin containing critical bird habitats. The project area, which sits roughly 3 miles from the nearest shoreline of Lake Koshkonong, lies close to but outside of the Greater Lake Koshkonong IBA. This IBA includes Lake Koshkonong and the large wetland complexes alongside it, including those of the Koshkonong Wildlife Area and Fair Meadows State Natural Area. These wetlands serve as important staging areas for waterfowl migrations; they also support many birds of high conservation priority in Wisconsin, such as black tern, least bittern, marsh wren and yellow-headed blackbird. It is likely that the wetlands of Storr's Lake Wildlife Area perform similar functions.

Natural Heritage Inventory Database Search Results

Upon the request of Taylor Conservation LLC, the Wisconsin DNR completed an Endangered Resources Review for the gravel pit and haul road project area and surrounding landscape. They searched the database of the Natural Heritage Inventory for records of state or federal Endangered, Threatened or Special Concern species.

NHI data, which includes specific locations of endangered species, are considered sensitive and are not subject to Wisconsin's Open Records Law. Therefore the results of the review were not included in this report, which may become available to the public. However the results were provided to the chairperson of the Town of Milton Planning & Zoning Committee.

The NHI database showed records for rare plant and animal species both within the Traynor property and the surrounding landscape. The DNR's Endangered Resources Review includes guidance for practices that can avoid harm to the rare species while completing the project.

Habitats of Project Area

There were five major wildlife habitats in the project area: (1) **crop fields**, of which there were 5 that most recently contained corn, soybeans and grass hay, (2) **oak woods**, (3) **recently logged woods** (4) **wet meadow** (a wetland) at the proposed Otter Creek bridge crossing and (5) the **stream channel** of Otter Creek.

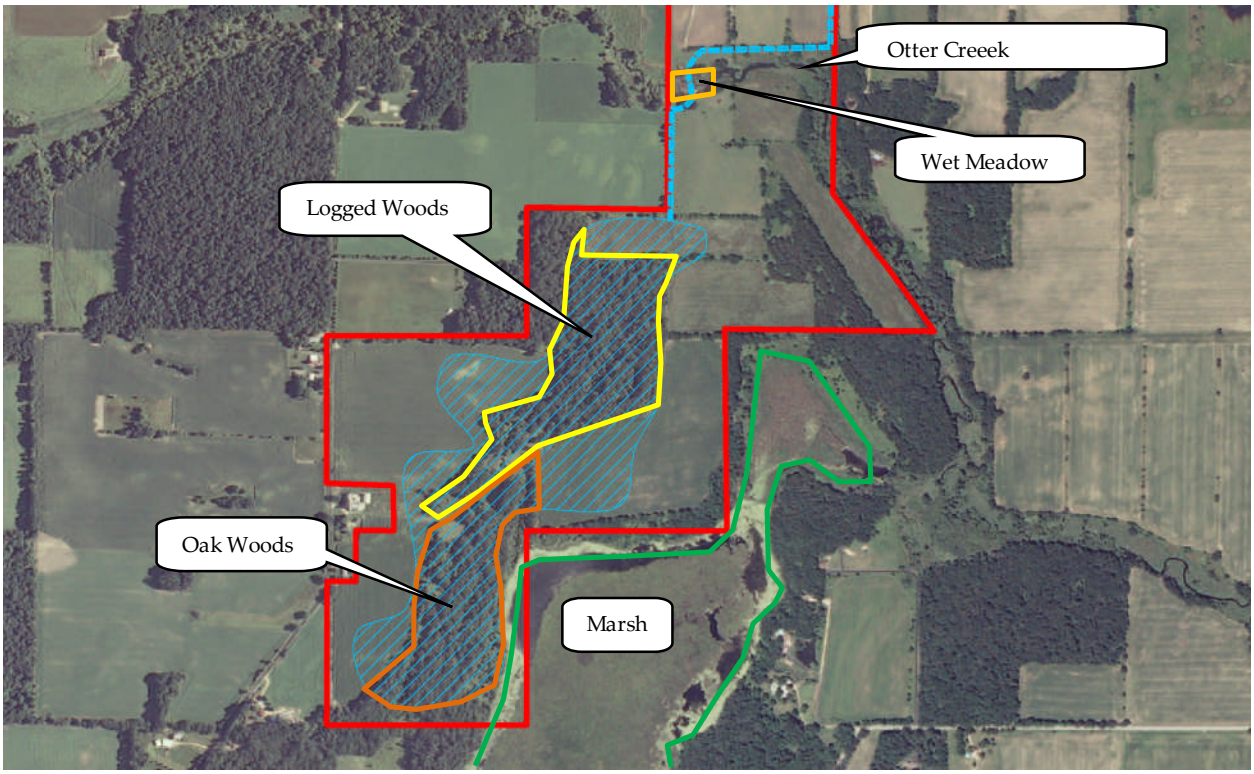

Figure 8. Major habitat types in proposed project area.

The wet meadow and stream channel occupied a very small part (<1 acre) of the project area; however they are included since they will be the sites of impacts associated with bridge and haul road construction. The **marsh**, which occupied the Storr's Lake Wildlife Area, was not in the project area but will still be discussed.

Crop Fields

The crop fields, of which approximately 29 acres will be directly impacted by the project, were planted to row-crops – soybeans and corn – in 2012. However two fields contained grass that had been recently cut.

Row-crop fields, which require annual tillage, are generally poor wildlife habitat since they offer little protective cover from the time of harvest until the following year's crop forms a dense canopy.

Tillage and herbicide applications destroy annual weeds that would otherwise provide cover and food in the form of seed crops. However, waterfowl (geese and sandhill cranes), game birds (turkey) and white-tail deer forage on waste grain in crop fields. During late winter/early spring snow-melt, geese will often roost on temporary ponds in crop fields after foraging on waste grain.

Figure 9. Hay Field

Grassy fields can be excellent habitat for ground-nesting songbirds, small mammals, snakes and game birds like pheasant and quail. However, hay fields might be harvested too early (late-May) and often for songbirds to successfully raise their young. In addition, removal of protective cover by mowing exposes small mammals and snakes to excessive predation by such predators as hawks, owls, fox and coyote. While this benefits the predators temporarily, it may lead to the decline of prey populations.

Oak Woods

The oak woods covered 24 acres and were comprised of a dense population of large (>16 inch in diameter) white oaks and bur oaks. Large numbers of younger, smaller trees of American elm, black cherry and box elder, among other less common species, intermingled with the oaks. The woods occupied rugged, hilly terrain. The soils were sandy and stony on the high ground and loamy on the low areas close to the marsh.

This habitat included several minor (too small to map) habitats, including grassy meadows, sapling/shrub thickets and brushy forest edges. These minor habitats provide different types of nesting cover – thick brush, tall grass – and food sources – berries, grass and weed seeds – than the oak woods and should therefore increase the overall wildlife species diversity of this area.

Figure 10. Oak Woods

The oak woods form excellent wildlife habitat. Oaks produce acorns which, being rich in protein and fat, are a critical food source for deer, turkey and squirrels as they prepare for winter. This is especially true of white and bur oaks whose acorns are "sweeter" (lower in tannins) than red oaks and therefore more palatable. Also, oak canopies and bark support high abundance and variety of invertebrates, which provide songbirds the bulk of their diet during the spring nesting season.

The relatively old age of the oaks results in high numbers of standing dead trees (aka snags), decay cavities in old trees and large, fallen logs. Snags and decay cavities provide nesting sites for birds (chickadees, tree swallows, yellow-bellied sapsuckers), small mammals (flying squirrels, chipmunks) and bats. Snags and fallen

logs are colonized by insects, which become food sources for woodpeckers, chipmunks and white-footed mice, among other animals. Fallen logs also harbor salamander and frogs, which might migrate from the nearby wetland after breeding and seek cool moist environments on the forest floor.

The dense, complex forest canopy created by a mixture of old oaks, younger hardwoods and brush at ground level, creates an abundance of nesting and foraging sites for songbirds. Also the proximity of the forest to the wetland might enhance songbird abundance due to production of invertebrates, a critical songbird food source, in shallow water.

The light, sandy soils of the hills and knolls of the oak woods provide good burrowing conditions for woodchuck, whose burrows are also used by red fox, grey fox, opossum and chipmunk. Numerous active burrows were noted during the field inventory.

Few wildlife were directly observed however the woods were laced with deer trails. In addition, much deer scat was noted along trails, suggesting recent heavy use, and the leaf litter was disturbed in many areas, probably the result of scratching for acorns by both deer and turkey.

Recently Logged Woods
This habitat covered 21 acres and was a former mature forest, probably an oak forest, that was logged heavily within the last 2 years. This area now just holds small, scattered trees and dense brush. Topography was rugged and hilly, like the oak woods. Disturbed soil from timber harvesting equipment gave rise to dense growth of weeds.

In spite of nearly complete removal of the forest canopy, this area still provides significant wildlife habitat values. The dense re-growth of saplings and brush provides thick cover over most of the area. This provides excellent habitat for deer, ruffed grouse, woodcock, and numerous songbirds, like catbird, eastern towhee and brown thrasher. Moreover, rank growth of blackberry and black raspberry shrubs in full sun will provide heavy berry crops for consumption by a wide variety of birds and mammals.

Figure 11. Logged Woods

The high spots on hills and knolls possessed sandy soil, and would therefore provide ideal burrowing conditions for woodchuck, red fox and other mammals.

Wet Meadow
This habitat, which was a wetland adjoining Otter Creek, was small (<1 acre) and heavily grazed, for it was part of a larger pasture. The site consisted of bare, trampled ground and sparse cover of weeds and grasses.

Un-grazed land by the creek on the neighboring property supported reed canary grass, a common invasive lowland grass, and little else, suggesting the wet meadow would also be dominated by reed canary grass if cattle were excluded.

Figure 12. Wet Meadow

Occupying low ground, the wet meadow must receive floodwater from Otter Creek frequently. However the absence of dense grasses and wildflowers due to grazing diminishes its ability to trap sediment and pollutants in floodwaters or in runoff from uplands, which are key functions of flood-prone, stream-side wetlands. Moreover the soil of the wet meadow itself is vulnerable to erosion due to lack of protective plant cover. Gully erosion was noted on the grazed and trampled slopes leading down to the wet meadow.

With sparse plant cover and frequent use by cattle, the wet meadow offers little habitat value. However, some ground-feeding birds, like robins, brown-headed cowbirds and European starlings, might be attracted to exposed soil to search for worms and other invertebrates.

Stream Channel

Otter Creek, which was evaluated at the proposed bridge crossing, is a relatively small stream (channel width: 6-15 feet; depth: 1-2 feet). The stream channel bottom consisted of sand, silt and cobbles and almost completely lacked rooted aquatic plants. The backwater areas on the channel margins possessed finer silt on the channel bottom.

There was no bank vegetation since the wet meadow (described above) was heavily grazed; portions of the stream-side land were eroding into the channel.

The value of this segment of Otter Creek is limited by sediment washing into the channel from grazed stream banks and by absence of overhanging bank vegetation. The sediment buries rocks and gravel and thereby discourages aquatic invertebrates who serve as food for fish. Lack of over-hanging bank vegetation deprives fish, like brown trout, of cover from predators, like great blue herons and belted kingfishers.

Otter Creek is not listed as a trout stream or Exceptional or Outstanding Resource waterway by WDNR. However it is fed by a series of large wetland complexes upstream. It must therefore benefit from a steady flow of relatively clean water, although it surely also receives significant volumes of silty, nutrient-rich runoff from the many crop fields in its watershed.

Figure 13. Stream Channel

Marsh

The marsh was an open, grassy habitat of approximately 157 acres. The investigator inspected a small section of the marsh immediately east of the oak woods. Identification of marsh plants was difficult since the fieldwork was done in late November after most plants had died back. Nonetheless reed canary grass, cattails and water smartweed were clearly the dominant plants. River bulrush and wool grass were also noted. Other common marsh plant species that would be expected on this site are tussock sedge, lake sedge, bur reed, arrowhead, softstem bulrush and green bulrush.

Figure 14. Marsh

Little surface water was noted in the marsh, but water levels should have been low following a year so dry as 2012. In a year of normal rainfall there would probably have been large pools of water deeper than 1 foot. The size and water depth of the marsh would provide habitat for significant populations of waterfowl, like mallard, blue wing teal, Canada geese, and wading birds, like least bittern and sandhill crane. The marsh should also support muskrat and its primary predator, mink. The DNR wildlife manager for this property, Mike Foy, indicated there were no data for wildlife populations on this property.

Discussion

Habitat Values Lost

The most significant habitat loss resulting from gravel pit development will be the destruction of approximately 24 acres of oak forest. The mature white oaks and bur oaks provide important food sources, in the form of acorns for consumption by turkey, deer and other animals, and in the form of invertebrates, which thrive on the bark and foliage of oaks, for consumption by migratory and resident songbirds. Mature oak forests are relatively common in the surrounding landscape; however their numbers are dwindling as oaks are harvested for timber.

The logged woods provide somewhat lower habitat value than the oak woods since they were stripped of mature oaks. However they provide dense brushy cover valuable for many species of birds and mammals. Extensive areas of thick brush are not common on the surrounding landscape; therefore loss of this area could diminish some local wildlife populations, like woodcock, catbird, eastern towhee and brown thrasher.

The oak woods, which form a band approximately 500 feet wide along the marsh of Storr's Lake Wildlife Area, provide a buffer to the marsh against the impacts of human activities on the surrounding uplands. The woods absorb and filter cropland runoff and rainfall, thereby protecting the marsh from sediment and nutrient-laden runoff. They also provide habitat for marsh animals that require undisturbed upland areas for parts of their life cycles. For example, many frogs and amphibians migrate to moist, shady forests after breeding in wetlands. Most turtles leave wetlands to excavate nests on sandy uplands, of the kind observed on the high areas of the oak woods. Loss of the oak woods will certainly result in loss of these important ecological functions.

Construction of the proposed bridge and haul road through the wet meadow and across Otter Creek will probably only result in minor harm to stream and wetland habitats. The amount of unavoidable wetland fill will probably be small (< ¼ acre) since the wetland crossing is less than 200 feet long. Moreover, already disturbed by cattle grazing, the wetland provides only moderate habitat value to begin with (see attached "Rapid Assessment of Wetland Functional Values").

The impact to aquatic habitat of Otter Creek from proposed haul road and bridge construction should be negligible, provided erosion control measures and sound bridge design guidelines are followed. Erosion control and a properly designed bridge will prevent sedimentation or obstruction of stream flow in the stream, both of which could harm aquatic invertebrates, fish and other forms of aquatic life. Permits, and attendant performance standards, for wetland fill and bridge construction should establish proper procedures.

No rare plant communities, e.g. prairie or savanna remnants, were noted in the project area. However, it is possible that rare or uncommon plants were present but not observed (the field observation was done on November 30th, after the end of the growing season). Judging from the prevalence of invasive plants, e.g. garlic mustard and honeysuckle, in the oak forest and logged woods, these areas may possess relatively little floristic integrity and may not support significant rare plant communities.

Neither the oak woods nor the logged woods were large enough to provide good breeding habitat for forest interior songbirds. Forest interior songbirds are a group of species that rely on large forest blocks for successful reproduction since they are vulnerable to edge-dwelling nest predators, e.g. brown-headed cowbirds, blue-jays and raccoons, which commonly penetrate 300-600 feet into the forest. While these songbirds may still occur, and breed, in the project area, their populations are not likely to thrive. Hence destruction of these forests will probably not adversely affect forest interior songbird populations of the greater landscape.

Impact to Surrounding Landscape

Complete destruction of habitat will undeniably harm wildlife that directly depended on the lost habitat for at least part of their life cycle. But how will it impact the viability of wildlife populations of the greater landscape, and in particular those of the nearby Storr's Lake Wildlife Area marsh? Are there similar habitats close by that wildlife populations will still be able to rely on?

The surrounding landscape is dominated by cropland. However there are 4 other woodlots 20 acres or larger within one mile of the project area. Whether the other woodlots contain large populations of oaks, which are critical to wildlife, is unknown. Nonetheless, it is likely several similar habitats are

close by and that loss of the oak woods and logged woods will not result in loss of populations of common forest-dependent wildlife in the surrounding landscape.

The ecological value of forest adjacent to marsh was outlined above. The marsh of Storr's Lake Wildlife Area is bordered by strips of forest, ranging from 100-800 feet wide, along approximately 40% of its periphery. The oak woods of the project area comprise approximately 20% of this forested marsh periphery, or 8% of the total marsh periphery. Hence there will still be substantial amounts of forest on the marsh edge following destruction of the oak woods in the project area. However it will remove one of the widest (500-700 feet) belts of forest alongside the marsh.

Although the marsh of Storr's Lake Wildlife Area is beyond the project area limits, surface water runoff from rain events larger than the 10-year event will be allowed to flow into the marsh from at least two outlets at the gravel pit (Figure 6). Runoff would certainly carry sediment from the pit; it would also have potential to cut gullies and rills on the slope to the marsh. Hence there is a strong possibility of sedimentation and nutrient enrichment of the marsh. These forces encourage the spread of invasive exotic plants like reed canary grass and hybrid cattails, which outcompete native plants that wildlife relies on. However, since gravel pit sediments are not likely to contain excessive nutrient levels (as compared to cropland sediments) nutrient enrichment will probably not be great enough to significantly impact marsh vegetation.

If the gravel pit is reclaimed for cropland, as proposed, the marsh will receive larger volumes of nutrient-rich cropland runoff after gravel pit closure than it currently receives. Moreover the new cropland will be close to the marsh – probably within 50 feet – diminishing opportunities for filtration of runoff by a wide vegetated buffer. However, the amount of new cropland will be approximately 45 acres, which is a fraction of the cropland already draining into the marsh from within the 760-acre watershed. Hence this additional cropland runoff is not likely to significantly alter marsh ecology.

In addition to runoff impacts, marsh wildlife will experience indirect impacts from the gravel pit. As outlined above, there are probably many marsh animals – turtles, frogs, salamanders – that inhabit the oak woods seasonally. These animals will lose seasonal habitat. In addition, forest animals – songbirds, raccoons, bats – that forage in the marsh will probably decrease in number, producing unpredictable changes to marsh ecology.

Finally, the noise and activity associated with sand and gravel extraction will certainly discourage animals from nesting and foraging in parts of the marsh close to the project area. Mike Foy, WDNR wildlife manager for Storr's Lake Wildlife Area, indicated that wading birds, like egrets, herons and cranes would be most likely to abandon the marsh initially. However he also stated that many species of waterfowl can be expected to adapt to the activity once they realize it does not threaten them. He also stated that, in general, wildlife in this landscape are successful because they have adapted to human activity. Although some wildlife may leave the marsh due to the gravel pit, Mr. Foy does not believe it is likely that any species will be permanently lost, since most will either adapt or return once the pit is shut down.

3.3 ADVERSE IMPACT OF DUST

Evaluation of dust issues was completed by Environmental Process Engineering and Compliance, LLC.

The following overview of nonmetallic mine processing stages includes a description of potential air pollution emission sources, methods nonmetallic mines use to minimize their environmental impact to air quality, and references to the State of Wisconsin regulatory framework for environmental protection of air quality standards.

Mine Processes

Sand and gravel mines incorporate the following stages of extraction and processing:

- Sand Extraction & Transfer
- Sand Storage & Dewatering
- Sand Drying & Processing
- Rail Car or Truck Load-Out
- Vehicle Traffic/Product Shipment
- Fugitive Dust Control & Site Management

"Dry-Processing" or "Wet-Processing" methods are used to extract silica sand from the deposit and transferred to a storage pile for further processing. Currently all mining operations proposed for the Traynor pit use "dry processing" methods. "Dry-processing" methods can include use of back hoes and front end loaders, feeders, open or closed-top conveyors, plug flow pneumatic, screw feeders and other mechanical processing equipment. Although not proposed for the City of Milton site, "Wet-Processing" methods can include extraction methods using gravel pit slurry pumps or dredges to transport slurried sand to cyclones, screws, de-slimers, clarifiers or other mechanical dewatering devices, plus sand drying equipment..

Sand in stockpiles typically has a moisture content greater than 1.5% by weight, and is stored until it is appropriately dewatered for further processing. Sand can be transferred from the stockpile with front-end loaders into hoppers feeding conveyors to the processing equipment. Sand is processed into various sized fractions that are defined by sieve sizes using sand screens. The sand system processing equipment can include silos, bucket elevators, conveyors, aerators, bins, screens, hoppers and other equipment. Sands are classified based on these size fractions or "cuts" which define a range of sand size based on sieve size.

Emissions Profiles & Pollution Prevention Strategies in Sand Mining Operations

Primary pollutants of concern from silica sand mining operations is silica as Total Suspended Particulate Matter (TSP) or PM10, Particulate Matter with a diameter of less than 10 microns in size. Sand mining operations have reported that they are implementing Best Management Practices (BMPs) to minimize their environmental impact and are supporting participation in the WDNR

Green Tier Program. The following summary was compiled from a review of existing nonmetallic mine permit conditions and known operations of nonmetallic mining processes in Wisconsin.

Blasting – No blasting is expected at this site, only mining of unconsolidated soils.

Drilling – No drilling is expected at this site.

Sand Storage/Dewatering – The sand moisture content can be monitored in the sand; information from nonmetallic mine dust plans state that "moisture content of no less than 1.5% is adequate to prevent the creation of airborne fugitive dust".

Sand Dryer & Burner – No sand drying equipment is proposed for this site. (The drying process would create emissions from the combustion of natural gas or propane in the burner heaters, and particulate that is controlled with a baghouse or scrubber.)

Truck loading and hauling – Truck loading at gravel pits is commonly accomplished by front-end loaders. Sands and gravel can be transported off-site with open or closed top trucks. No rail car loading is proposed for this site. Travel roads can be paved with asphalt and swept based on need. Speed limits (<10 mile per hour) can be established for haul vehicles exceeding a certain weight (>4 tons). Winter weather fugitive dust control can be addressed using surface crusting agents, wetting agents, and compaction aids/dust suppressants.

Wisconsin Department of Natural Resources (WDNR) Air Pollution Control Program

The Wisconsin Department of Natural Resources (WDNR) Air Pollution Control Program is designed to establish a system of regulations and assist industrial operations with compliance Federal and State Air Quality Regulations. Industrial manufacturing facilities are required to estimate their emissions and apply for permits or permit exemptions as defined in the construction permit requirements under s. NR 406, Wis. Adm. Code. Nonmetallic mines in Wisconsin are commonly permitted as a "Synthetic Minor, Non Part – Air Permit Holder" with a Fugitive Dust Plan required. Smaller sand mining operations (<250,000 tons per year) can apply for a General Permit that streamlines the permitting process and establishes uniform standards across all mining operations. Periodic inspections and record keeping requirements are defined in air permit conditions.

Wisconsin Administrative Code NR 415.075(2) - Fugitive Dust Plans

Section NR 415.075(2), Wis. Adm. Code, defines specific requirements for fugitive dust control for nonmetallic mines including implementation of a "Best Management Practices for Fugitive Dust Control Plan." This plan can be included as a permit condition in either "Synthetic Minor, Non Part – Air Permit Holder" permits or facilities covered by General Permits. This plan must be reviewed annually to determine if updates or revisions are needed. The plan defines Best Management Practices used for process equipment, dust collection equipment preventative maintenance and inspection frequencies.

The guidance includes the following provisions:

- "Even though some equipment and activities are allowed up to 20% opacity at the source, no visible emissions of dust should ever be allowed to cross the property boundary." (page 1)
- "In the event that excessive dust is generated at the facility, operations creating the dust problem shall be shut down until they can be rectified. At that time, operation may recommence. An investigation as to the cause of the excessive dust shall be conducted, and the plan revised to avoid any future fugitive dust emissions." (page 3)

Wisconsin Administrative Code NR 438
An estimate of emissions from sand mining operations is reported to the WDNR as part of the Air Emission Inventory (AEI) Program as defined in s. NR438, Wis. Adm. Code.

The Inventory program provides a comprehensive reporting mechanism that includes:

- Descriptions of processes that emit regulated pollutants
- Descriptions of stack locations, airflows, exhaust temperatures from regulated processes
- Annual and Maximum Hourly Production Thruputs

Emissions are reported in comprehensive databases on the WDNR website and sorted into industrial groupings by common industrial source categories.

Sand mines are classified under the following Industrial Source Categories:

NAICS Code – 212322 Industrial Sand Mining
SIC Code - Industrial Sand Mining 1446
SIC Code - Silica Sand Mining 14469910

The WDNR publishes the AEI Reports annually; a table of reported emissions from facilities with SIC Codes 1446 for 2011 is included in Appendix C as an example of how this information is reported and available to the public.

Primary contributions of emissions are reported from fugitive dust and sand dryer fuel combustion of either natural gas or propane. Emission factors that are used to calculate these emissions must be reviewed and approved by WDNR staff on an annual basis.

Wisconsin Administrative Code NR 445 Hazardous Air Pollutant Rules & Potential Impacts on Vineyard
The State of Wisconsin regulates air toxics, also known as hazardous air pollutants (HAPs), to protect people from air emissions that are known or suspected to cause cancer or other serious health problems. These problems include asthma, respiratory damage, kidney failure, heart failure, infertility, and birth defects. Wisconsin's air toxics rule (NR 445) sets emission standards for about 550 HAPs and applies to facilities with air emissions in Wisconsin. Facilities must identify air toxics, quantify emissions, and reduce or control emissions where necessary.

As part of the WDNR air permit review process, facilities must demonstrate compliance with the property-line standards. Toxic compounds, and potential impacts on surrounding areas, are regulated under this rule and review process, and limitations can be included in air permit conditions.

Information obtained from the Friends and Neighbors of Klug Road and Storrs Lake Wildlife Area included references on the impacts of dust on vineyards. Their references state that dust deposits can inhibit leaf respiration and photosynthesis, and that dusty conditions are favorable for pest mites that can impact vines.

No information on how specific dust levels affect vineyards was found for this study. However, it is our understanding that the inert nature of silica dust that would be generated by the mining operation does not pose a chemical risk to the vineyard or other plants. Thick deposits of dust could have the physical or biological impacts referenced in the impact study, however the Fugitive Dust Control Plan requirement preventing visible dust migration offsite appears to be a reasonable precaution to prevent such impacts.

Particulate & Total Suspended Particulate (TSP) Monitoring

The WDNR maintains and operates an extensive network of pollutant monitoring devices for Total Suspended Particulates (TSP) and Particulate Materials less than 10 microns in size (PM_{10}).

TSP monitors are used by the WDNR, governmental authorities, and private institutions to demonstrate compliance with both Federal Ambient Air Quality Standards, State of Wisconsin Regulations and Codes, and the State Implementation Plan with the Environmental Protection Agency (EPA).

3.4 ADVERSE IMPACTS OF NOISE

Evaluation of noise issues was completed by Environmental Process Engineering and Compliance, LLC.

Sources of noise at the proposed gravel pit could include earthmoving activities, process equipment, and vehicle traffic. Potential impacts of noise include changes in wildlife use of the wetland (addressed above) and creation of a nuisance to neighbors to the west and north of the proposed pit.

Noise regulations are codified in both State and municipal code, however local ordinances are typically the primary regulatory control over mine noise. DNR air permits can contain general requirements about noise mitigation but typically do not include specific noise level requirements or entail detailed analysis of noise and mitigation measures. "Maximum Permissible Sound Levels" (MPSV) are typically included in municipal ordinances and can be set for defined regions. Typical codified MPSVs are 80 decibels during daytime hours and 65 decibels during evening hours.

The BR Amon & Sons, Inc. Operations Plan states that the noise level at the property line will remain below 85 decibels "most of the time", with exceptions for occasional activities such as use of scrapers

and placement of topsoil stockpiles near the property line. The Operations Plan notes that 85 decibels is louder than a sander (80 decibels) and quieter than a lawn mower (100 decibels).

Calculation of actual noise levels for the pit and determination of mitigation measures required to meet noise limits will require more detailed information on the specific equipment that will be used in different locations of the pit. A qualified engineer can use this information in a computer model to produce a sound contour map showing noise levels in different locations. The modeling can also evaluate the effectiveness of berms and other noise reduction measures. The Town of Milton could require such an engineering study as a condition of approval.

Potential noise mitigation measures include housings around major process motors and fans, and berms engineered at the mine perimeter. The locations of the proposed pit closest to neighboring residences, to the west along Klug Road, will either have existing woodlands between the pit and property line or are locations proposed for topsoil stockpiles / berms shown on the Locations and Features Plan. Both the woodlands and the topsoil storage berms should somewhat reduce noise levels in these locations.

Monitoring noise levels after the mine has been constructed and is in operation is possible and can be made a permit requirement. Hand held meters can be used to monitor noise next to process equipment or at locations around the property.

4 CONCLUSIONS AND RECOMMENDATIONS

Water Resource Issues

1. The topsoil stockpile should have an erosion control measure, such as a silt fence, around its perimeter. The Operations Plan calls for seeding the stockpile to provide vegetation cover, which is an effective long-term erosion control measure. However, the period when the stockpile is being constructed and before the vegetation is established poses a significant risk of sediment discharge to the wetland. This soil will be finer grained than the sand and gravel that will be mined, so it would be more easily carried to the wetland by stormwater. It is also likely to be more nutrient rich than the underlying sand and gravel, so its impact on the wetland vegetation could be significant.
2. BR Amon & Sons, Inc. should notify the Town of Milton and the Rock County Land Conservation Department that erosion control measures, including the silt fence (or other perimeter control) and sediment traps, are in place before proceeding with mineral extraction. Notification should include as-built drawings documenting the construction of these measures. The Rock County Land Conservation Department will inspect the site to confirm that these erosion and stormwater controls are in place before the mining proceeds.
3. During mine operation, an increase in stormwater runoff and sediment loading is likely for large, rare storms, because the State discharge permit does not require stormwater runoff control for storms larger than the 10-year event. This could impact vegetation immediately downstream of the three locations where stormwater could overflow the mine. The overall impact on the wetland is expected to be minor, because it already receives runoff and sediment from an agricultural watershed.
4. Reclamation of existing wooded areas to agricultural land will create approximately 41 additional acres of agricultural land draining to the wetland and Otter Creek. This will likely cause a long-term increase in the stormwater runoff volume discharging to the wetland and creek. However, this increase should be limited to a few percent, because the area of woodlands to be reclaimed as agricultural land is only 5% of the wetland's watershed. This degree of hydrologic alteration is generally considered to have minor impacts.
5. The proposed bridge across Otter Creek is located in a floodplain shown on the FEMA Flood Insurance Rate Map. State and County floodplain regulations will require that the bridge be designed to avoid obstructing flood flows or raising the flood elevation. Therefore, no significant floodplain impacts are expected.
6. No springs were observed on or adjacent to the Traynor property, however it is likely that some of the water that infiltrates the soil on the Traynor property recharges groundwater that flows to the wetland through diffuse seepage into the marsh. Changes in groundwater flow to the wetland during mining or after reclamation are expected to be minor. Due to the sandy nature of the soils, recharge rates are likely to remain high during and after mining. In addition, the proposed mine area is only a small portion of the total watershed area supplying groundwater to the wetland.

7. Future use of the reclaimed mine area for agriculture would likely result in a minor increase in nutrient discharge to groundwater, the wetland, and Otter Creek.
8. The risk of spills of toxic substances such as fuel for mining equipment is minor and comparable to the risk associated with the farming equipment that is used now throughout much of the wetland's watershed.

Wetland and Habitat Issues

1. **Short-term Habitat Impacts within Project Area:** A high value wildlife habitat – 26 acres of oak woods – and a lower value habitat – 21 acres of logged woods – will be destroyed.
2. **Long-term Habitat Impacts within Project Area:** Long-term impacts depend on what type of land cover the gravel pit is reclaimed to. If it is reclaimed to cropland, the loss of wildlife habitat in oak woods and logged woods is permanent. If it is reclaimed to forest, the habitat values can be restored over a period of several decades in the oak woods but more quickly in the logged woods. If it is reclaimed to grassland, a different set of habitat values – one that favors grassland wildlife over forest wildlife – will be created within several years. Note that Rock County could require forest or grassland restoration of some or all of the gravel pit site under its Shoreland Zoning or Non-Metallic Mining ordinances.
3. **Short-term Habitat Impacts to Marsh & Surrounding Landscape:** The human activity and noise associated with the gravel pit may diminish wildlife use of the marsh of Storr's Lake Wildlife Area. However wildlife could quickly resume use of the marsh once they realize gravel pit activity does not threaten them.
4. **Long-term Habitat Impacts to Marsh & Surrounding Landscape:** Because of the likely dependence of some marsh animals on the oak woods, their numbers in the marsh will probably decrease due to loss of the oak woods. However, given the existence of other forests alongside the marsh that provide similar habitat as the oak woods, significant loss of these animals from the marsh is not likely.

Dust and Noise Issues

1. The Wisconsin DNR New Source Construction Permit evaluation and issuance process is designed to prevent significant dust impacts. DNR will review the potential impacts of sand mining activities and establish limits on allowable limits that are intended to maintain air quality levels that protect human health and not exceed the ambient air quality standards. Conditions on hours of operation, production thruput, and emissions limitations will be established and agreed to by the WDNR and the mine.
2. During mine operation, a minor increase in fugitive dust beyond property boundaries is likely, especially during active mining months of summer and fall. These impacts can be minimized with the development and implementation of a Fugitive Dust Control Plan, which will be required by the DNR.
3. Additional site conditions to limit noticeable impacts (i.e. dust buildup on cars, buildings, or surrounding properties) can be incorporated into the municipal ordinances or in the Town's Conditional Use Permit.

4. Recordkeeping and reporting are required by the DNR air permit to demonstrate continued compliance with the permit conditions. In addition, The Town of Milton can have discussions with the DNR about adding a Total Suspended Particulate monitoring site to the mine property line or other location to monitor actual dust levels during mine operation.
5. Because silica sand is considered to be an inert compound, it is unlikely that it would have chemical impacts on the vineyard or other agricultural operations. Thick deposits of dust could affect leaf respiration and photosynthesis, but no specific thresholds for impacts were found during research for this study. The Fugitive Dust Control Plan will prohibit visible migration of dust onto adjacent properties and provides reasonable precautions to minimize such impacts.
6. Future use of the reclaimed mine area for agriculture would likely result in a minor increase in particulate emissions to surface waters, the wetland, and Otter Creek.
7. Town of Milton requirements are likely to be the primary regulatory control over noise. Site conditions, Maximum Permissible South Levels, and noise mitigation strategies can be incorporated into the municipal ordinances, or in the Town's Conditional Use Permit. DNR air permits can include general noise requirements, including hours of allowed activities, engineering controls, and infrastructure locations, but they typically do not include much site specific detail or specific noise level requirements.
8. Mining equipment and crushing operations have potential to create a significant noise. The BR Amon & Sons Operations Plan states that offsite noise will be limited to 85 decibels most of the time. Typical municipal noise ordinances require compliance with noise levels ranging from 65 - 80 decibels depending on the time of day and physical location.
9. If the Town desires more information on specific noise levels that can be expected adjacent to the mine, it can require BR Amon & Sons to commission a engineering study to create an Engineered Sound Contour Map of the mine and surrounding area. The study could also evaluate the effectiveness of noise mitigation measures such as engineered berms near the property line. Such a study will require more specific information about the type and locations of equipment to be used in the pit than is available at this time.
10. Monitoring noise during operation of the pit is possible using hand held equipment. The Town could require sound monitoring if site specific information about compliance with permitted noise levels is desired.

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APPENDIX A – POSSIBLE WILDLIFE SPECIES OF PROJECT AREA

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APPENDIX A – POSSIBLE WILDLIFE SPECIES OF PROJECT AREA

Special Concern = Species about which some problem of distribution or abundance is suspected but not yet proved.

Threatened = A species which appear likely, within the foreseeable future, on the basis of scientific evidence to become endangered.

SGCN (Species of Greatest Conservation Need) = A species whose population is currently secure but is experiencing population declines.

Mammals

Mammal Species	**Oak Woods**	**Logged Woods**	**Wet Meadow**	**Crop Fields**	**Marsh**	**Special Concern, Threatened, Endangered or SGCN?**
Cottontail rabbit	X	X				
Coyote	X	X	X	X	X	
Eastern chipmunk	X	X				
Eastern red bat	X		X			Special Concern, SGCN
Eastern mole	X	X	X	X	X	
Franklin's ground squirrel	X (grassy openings)	X		X (grass)		Special Concern, SGCN
Gray fox	X	X				
Gray squirrel	X	X				
Least weasel	X	X		X	X	
Little brown bat	X	X	X	X	X	Threatened
Meadow vole				X	X	
Mink					X	
Muskrat					X	
Northern long-eared bat	X		X			Special Concern, SGCN
Oppossum	X	X	X	X	X	
Raccoon	X	X	X	X	X	
Red fox	X	X	X	X		
Shorttail shrew	X	X	X	X	X	
Southern flying squirrel	X					
Striped skunk	X	X	X	X	X	
Thirteen-lined ground squirrel				X		
Water shrew			X		X	Special Concern, SGCN
White-footed mouse	X	X		X		

Mammal Species	Oak Woods	Logged Woods	Wet Meadow	Crop Fields	Marsh	Special Concern, Threatened, Endangered or SGCN?
White-tailed deer	X	X		X	X	
Woodchuck	X	X				
Woodland vole	X	X				Special Concern, SGCN

Birds

Bird Species	Oak Woods	Logged Woods	Wet Meadow	Crop Fields	Marsh	Threatened, Endangered or SGCN?
American crow	X	X	X	X		
American goldfinch	X	X				
American kestrel	X	X	X	X		
American robin	X	X	X	X		
Barred owl	X					
Black tern					X	Special Concern, SGCN
Black-capped chickadee	X					
Blue jay	X	X	X			
Blue-gray gnatcatcher	X					
Blue-winged teal					X	Special Concern, SGCN
Brown thrasher	X	X				Special Concern, SGCN
Brown-headed cowbird	X	X	X			
Canada goose				X	X	
Cedar waxwing	X	X				
Chipping sparrow	X	X	X			
Common grackle	X	X	X			
Common yellow throat					X	

Bird Species	Oak Woods	Logged Woods	Wet Meadow	Crop Fields	Marsh	Threatened, Endangered or SGCN?
Cooper's hawk	X	X	X	X		
Downy woodpecker	X					
Eastern bluebird	X					
Eastern kingbird	X	X	X			
Eastern meadowlark				X (grass)		Special Concern, SGCN
Eastern Phoebe	X	X				
Eastern screech owl	X					
Eastern wood-pewee	X					
European starling	X	X	X	X		
Grasshopper sparrow				X (grass)		Special Concern, SGCN
Gray catbird	X	X				
Great horned owl	X					
Hairy woodpecker	X					
Horned lark	X	X	X			
House sparrow	X	X	X	X		
House wren	X	X				
Indigo bunting	X	X				
Killdeer			X	X		
Least bittern					X	Special Concern
Mallard					X	
Marsh wren					X	
Mourning dove	X	X	X	X		
Northern cardinal	X	X				
Northern Flicker	X					
Pied-billed grebe					X	
Purple martin	X	X				

Bird Species	Oak Woods	Logged Woods	Wet Meadow	Crop Fields	Marsh	Threatened, Endangered or SGCN?
Red tailed hawk	X	X	X	X		
Red-bellied woodpecker	X					
Ring-necked pheasant				X (grass)		
Rose-breasted grosbeak	X	X				
Ruffed grouse	X	X				
Sandhill crane					X	
Savannah sparrow				X (grass)		
Sedge wren					X	
Song sparrow	X	X			X	
Swamp Sparrow					X	
Tree swallow	X					
Turkey	X	X		X		
Vesper sparrow				X (grass)		Special Concern, SGCN
Warbling vireo	X					
White-eyed vireo	X	X				
Woodcock	X	X				Special Concern, SGCN
Wood duck	X				X	
Yellow warbler	X					
Yellow-bellied sapsucker	X					
Yellow-billed cuckoo	X	X				Special Concern, SGCN

Snakes

Snake Species	Oak Woods	Logged Woods	Wet Meadow	Crop Fields	Marsh	Threatened, Endangered or SGCN?
Common	X	X	X	X (grass)	X	

gartersnake						
Common watersnake			X (creek)			
DeKay's brownsnake	X	X	X	X (grass)	X	
Eastern hog-nosed snake	X	X		X (grass)		
Eastern milksnake	X	X		X (grass)	X	
Northern red-bellied snake	X	X	X	X (grass)	X	
Plains Gartersnake	X	X	X	X (grass)	X	Special Concern
Smooth greensnake	X	X		X (grass)	X	
Western foxsnake				X (grass)	X	

Amphibians

Amphibian Species	**Oak Woods**	**Logged Woods**	**Wet Meadow**	**Crop Fields**	**Marsh**	**Threatened, Endangered or SGCN?**
Blue-spotted salamander	X		X	X (grass)	X	
Bullfrog			X		X	
Cope's gray treefrog	X		X		X	
Eastern American toad	X	X	X	X (grass)	X	
Eastern gray treefrog	X		X		X	
Eastern tiger salamander	X		X	X	X	
Four-toed salamander	X	X	X	X (grass)	X	Special Concern
Green frog	X		X		X	
Mudpuppy			X			SGCN
Northern leopard frog	X	X	X	X (grass)	X	
Northern spring peeper	X		X		X	
Pickerel frog	X		X		X	Special Concern, SGCN
Western chorus frog	X		X	X (grass)	X	
Wood frog	X		X		X	

Turtles & Lizard

Turtle & Lizard Species	**Oak Woods**	**Logged Woods**	**Wet Meadow**	**Crop Fields**	**Marsh**	**Threatened, Endangered or SGCN?**
Blanding's turtle	X	X	X	X	X	Threatened, SGCN
Common musk turtle			X		X	
Easternspiny softshell turtle			X			
Five-lined skink	X	X				
Painted turtle			X		X	
Snapping turtle			X		X	

APPENDIX B – RAPID WETLAND ASSESSMENT

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January, 2001

File or Docket Number

Wisconsin Department of Natural Resources

RAPID ASSESSMENT METHODOLOGY FOR EVALUATING WETLAND FUNCTIONAL VALUES

GENERAL INFORMATION

Name of Wetland/Owner:
Location: County Rock ; NE¼,SW¼, Section 12, Township 4N, Range 13E
Project Name: D.R. Amon + Sons, Inc. Gravel Pit
Evaluator(s): Scott Taylor
Date(s) of Site Visit(s): November 30th, 2012

Description of seasonality limitations of this inspection due to time of year of the evaluation and/or current hydrologic and climatologic conditions (e.g. after heavy rains, snow or ice cover, during drought year, during spring flood, during bird migration):

WETLAND DESCRIPTION

Wisconsin Wetlands Inventory classification: E1Kg					
Wetland Type:	shallow open water	deep marsh	shallow marsh	seasonally flooded basin	bog
	floodplain forest	alder thicket	sedge meadow	coniferous swamp	fen
	(wet meadow)	shrub-carr	low prairie	hardwood swamp	
Estimated size of wetland in acres: 1 acre					

SUMMARY OF FUNCTIONAL VALUES

Based on the results of the attached functional assessment, rate the significance of each of the functional values for the subject wetland and check the appropriate box. Complete the table as a summary.

FUNCTION	SIGNIFICANCE				
	Low	Medium	High	Exceptional	N/A
Floral Diversity	X				
Wildlife Habitat		X			
Fishery Habitat	X				
Flood/Stormwater Attenuation			X		
Water Quality Protection			X		
Shoreline Protection		X			
Groundwater		X			
Aesthetics/Recreation/Education		X			

List any Special Features/"Red Flags":

SITE DESCRIPTION

I. HYDROLOGIC SETTING

A. Describe the geomorphology of the wetland:

_ Depressional (includes slopes, potholes, small lakes, kettles, etc.)

X Riverine

_ Lake Fringe

_ Extensive Peatland

B. **Y N** Has the wetland hydrology been altered by ditching, tiles, dams, culverts, well pumping, diversion of surface flow, or changes to runoff within the watershed (circle those that apply)?

No

C. **Y N** Does the wetland have an inlet, outlet, or both (circle those that apply)?

No defined inlet or outlet.

D. **Y N** Is there any field evidence of wetland hydrology such as buttressed tree trunks, adventitious roots, drift lines, water marks, water stained leaves, soil mottling/gleying, organic soils layer, or oxidized rhizospheres (circle those that apply)?

There were bare depressions that suggested recent ponded water; there were low chroma soil colors and redox concentrations within 10 inches of the surface.

E. **Y N** Does the wetland have standing water, and if so what is the average depth in inches? " Approximately how much of the wetland is inundated?

No standing water was observed; however approximately ½ of the wetland would probably be inundated following a common flood event.

F. How is the hydroperiod (seasonal water level pattern) of the wetland classified?

_ Permanently Flooded

X Seasonally Flooded (water absent at end of growing season)

_ Saturated (surface water seldom present)

_ Artificially Flooded

_ Artificially Drained

G. **Y N** Is the wetland a navigable body of water or is a portion of the wetland below the ordinary highwater mark of a navigable water body? List any surface waters associated with the wetland or in proximity to the wetland (note approximate distance from the wetland and navigability determination).Note if there is a surface water connection to other wetlands.

No

II. VEGETATION

A. Identify the vegetation communities present and the dominant species.

- floating leaved community dominated by:
- submerged aquatic community dominated by:
- emergent community dominated by:
- shrub community dominated by:
- deciduous broad-leaved tree community dominated by:
- coniferous tree community dominated by:

- open sphagnum mat or bog
- sedge meadow/wet prairie community dominated by:
- other (explain): **The entire wetland was heavily grazed and trampled by cattle; very few plants could be reliably identified. Kentucky bluegrass and smartweed (*Persicaria amphibium*) were noted. The neighboring property, which lay at the same elevation and was not grazed, was completely dominated by reed canary grass.**

B. Other plant species identified during site visit:

None

III. SOILS

A. NRCS Soil Map Classification: **Sebewa silt loam (Se)**
B. Field description:
_ Organic (histosol)? If so, is it a muck or a peat?
_ Mineral soil? **Yes**
● Mottling, gleying, sulfidic materials, iron or manganese concretions, organic streaking (circle those that apply) **Redox concentrations**
● Soil Description:

0-3": 10 YR 2/1 Silt loam
3-8": 10 YR 4/2 Loamy sand (Redox-10 YR 4/6)
8-14": 10 YR 2/1 Silt loam

● Depth of mottling/gleying: **see profile description above**
● Depth of A Horizon: **see profile description above**
● Munsell Color of matrix and mottles
-Matrix below the A horizon (10"depth): **see profile description above**
-Mottles: **see profile description above**

IV. SURROUNDING LAND USES

A. What is the estimated area of the wetland watershed in acres?

24 square miles

B. What are the surrounding land uses?

LAND-USE	ESTIMATED % OF WETLAND WATERSHED
Developed (Industrial/Commercial/Residential)	**10%**
Agricultural/cropland	**58%**
Agricultural/grazing	**5%**
Forested	**12%**
Grassed recreation areas/parks	**0%**
Old field	**5%**
Highways or roads	**5%**
Other (specify): Wetland	**5%**

V. SITE SKETCH

See figure on page 9.

FUNCTIONAL ASSESSMENT

The following assessment requires the evaluator to examine site conditions that provide evidence that a given functional value is present and to assess the significance of the wetland to perform those functions. Positive answers to questions indicate the presence of factors important for the function. The questions are not definitive and are only provided to guide the evaluation. After completing each section, the evaluator should consider the factors observed and use best professional judgement to rate the significance. The ratings should be recorded on page 1 of the assessment.

SPECIAL FEATURES/"RED FLAGS"

1. **Y N** Is the wetland in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code)?

   No

_ Cold water community as defined in s. NR 102.04(3)(b), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes

_ Lakes Michigan and Superior and the Mississippi River

_ State or federal designated wild and scenic river

_ Designated state riverway

_ Designated state scenic urban waterway

_ Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study

_ Calcareous fen

_ State park, forest, trail or recreation area

_ State and federal fish and wildlife refuges and fish and wildlife management areas

_ State or federal designated wilderness area

_ Designated or dedicated state natural area

_ Wild rice water listed in ch. NR 19.09, Wis. Adm. Code

_ Surface water identified as an outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code

2. **Y N** According to the Natural Heritage Inventory (Bureau of Endangered Resources) or direct observations, are there any rare, endangered, or threatened plant or animal species in, near, or using the wetland or adjacent lands? If so, list the species of concern:

There could be T&E or Special Concern animals or plants near but not in the wetland. The Town of Milton has the results of an ER Review dated January 9th, 2013.

3. **Y N** Is the project located in an area that requires a State Coastal Zone Management Plan consistency determination?

No

Floral Diversity

1. **Y N** Does the wetland support a variety of native plant species (i.e. not a monotypic stand of cattail or giant reed grass and/or not dominated by exotic species such as reed canary grass, brome grass, buckthorn, purple loosestrife, etc.)?

No

2. **Y N** Is the wetland plant community regionally scarce or rare?

No

Wildlife and Fishery Habitat

1. List any species observed, evidenced (e.g. tracks, scat, nest/burrow, calls), or expected to utilize the wetland:

No wildlife were observed, but species expected to use the wetland at some stage of their life cycle are opposum, raccoon, mink, red-tailed hawk, Cooper's hawk, mallard, killdeer, brown-headed cowbird, American robin, gartersnake, northern red-bellied snake, blue-spotted salamander, American toad, Western chorus frog, green frog, snapping turtle, and painted turtle.

2. **Y N** Does the wetland contain a number of diverse vegetative cover types and a high degree of interspersion of those vegetation types?

No

3. **Y N** Is the estimated ratio of open water to cover between 30 and 70 percent? What is the estimated ratio?

There was no cover since the site was heavily grazed; if grazing ceased, the ratio of water to cover could fall within these percentages.

4. **Y N** Does the surrounding upland habitat likely support a variety of animal species?

Yes

5. **Y N** Is the wetland part of or associated with a wildlife corridor or designated environmental corridor?

Yes, it is part of a stream corridor, much of which is wetland, connecting large wetlands to each other.

6. **Y N** Is the surrounding habitat and/or the wetland itself a large tract of undeveloped land important for wildlife that requires large home ranges (e.g. bear, woodland passerines)?

No

7. **Y N** Is the surrounding habitat and/or the wetland itself a relatively large tract of undeveloped land within an urbanized environment that is important for wildlife?

No

8. **Y N** Are there other wetland areas near the subject wetland that may be important to wildlife?

Yes, the wetland is connected via a long, skinny stream corridor to a large (>100 acres) marsh in the Storr's Lake Wildlife Area.

9. **Y N** Is the wetland contiguous with a permanent waterbody or periodically inundated for sufficient periods of time to provide spawning/nursery habitat for fish?

Yes, although the absence of vegetation due to grazing would compromise its value for fish spawning habitat.

10. **Y N** Can the wetland provide significant food base for fish and wildlife (e.g. insects, crustaceans, voles, forage fish, amphibians, reptiles, shrews, wild rice, wild celery, duckweed, pondweeds, watermeal, bulrushes, bur reeds, arrowhead, smartweeds, millets...)?

No, production of food base is diminished by removal of vegetation by grazing.

11. **Y N** Is the wetland located in a priority watershed/township as identified in the Upper Mississippi and Great Lakes Joint Venture of the North American Waterfowl Management Plan?

No

12. **Y N** Is the wetland providing habitat that is scarce to the region?

No

Flood and Stormwater Storage/Attenuation

1. **Y N** Are there steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within the watershed (circle those that apply)?

Yes, there are moderate slopes with row crops and overgrazed fields in the watershed.

2. **Y N** Does the wetland significantly reduce run-off velocity due to its size, configuration, braided flow patterns, or vegetation type and density?

Yes

3. **Y N** Does the wetland show evidence of flashy water level responses to storm events (debris marks, erosion lines, stormwater inputs, channelized inflow)?

Yes, there was rafted debris.

4. **Y N** Is there a natural feature or human-made structure impeding drainage from the wetland that causes backwater conditions?

Yes

5. **Y N** Considering the size of the wetland area in relation to the size of its watershed, at any time during the year is water likely to reach the wetland's storage capacity (i.e. the level of easily observable wetland vegetation)? [For some cases where greater documentation is required, one should determine if the wetland has capacity to hold 25% of the run-off from a 2 year-24 hour storm event.]

Yes

6. **Y N** Considering the location of the wetland in relation to the associated surface water watershed, is the wetland important for attenuating or storing flood or stormwater peaks (i.e. is the wetland located in the mid or lower reaches of the watershed)?

Yes

Water Quality Protection

1. **Y N** Does the wetland receive overland flow or direct discharge of stormwater as a primary source of water (circle that which applies)?

Yes, it receives overland flow from surrounding pastures.

2. **Y N** Do the surrounding land uses have the potential to deliver significant nutrient and/or sediment loads to the wetland?

Yes

3. **Y N** Based on your answers to the flood/stormwater section above, does the wetland perform significant flood/stormwater attenuation (residence time to allow settling)?

Yes

4. **Y N** Does the wetland have significant vegetative density to decrease water energy and allow settling of suspended materials?

No, it was heavily grazed.

5. **Y N** Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface water?

Yes

6. **Y N** Are algal blooms, heavy macrophyte growth, or other signs of excess nutrient loading to the wetland apparent (or historically reported)?

No

Shoreline Protection

1. **Y N** Is the wetland in a lake fringe or riverine setting? If NO, STOP and enter "not applicable" for this function. If YES, then answer the applicable questions.

Yes

2. **Y N** Is the shoreline exposed to constant wave action caused by long wind fetch or boat traffic?

No

3. **Y N** Is the shoreline and shallow littoral zone vegetated with submerged or emergent vegetation in the swash zone that decrease wave energy or perennial wetland species that form dense root mats and/or species that have strong stems that are resistant to erosive forces?

No

4. **Y N** Is the stream bank prone to erosion due to unstable soils, land uses, or ice floes?

Yes, grazing has left the soil vulnerable to erosion.

5. **Y N** Is the stream bank vegetated with densely rooted shrubs that provide upper bank stability?
No

Groundwater Recharge and Discharge

1. **Y N** Related to discharge, are there observable (or reported) springs located in the wetland, physical indicators of springs such as marl soil, or vegetation indicators such as watercress or marsh marigold present that tend to indicate the presence of groundwater springs?

No

2. **Y N** Related to discharge, may the wetland contribute to the maintenance of base flow in a stream?

Yes

3. **Y N** Related to recharge, is the wetland located on or near a groundwater divide (e.g. a topographic high)?

No

Aesthetics/Recreation/Education and Science

1. **Y N** Is the wetland visible from any of the following kinds of vantage points: roads, public lands, houses, and/or businesses? (Circle all that apply.)

No

2. **Y N** Is the wetland in or near any population centers?

No

3. **Y N** Is any part of the wetland is in public or conservation ownership?

No

4. **Y N** Does the public have direct access to the wetland from public roads or waterways? (Circle those that apply.)

Yes, the wetland adjoins a navigable waterway.

5. Is the wetland itself relatively free of obvious human influences, such as:
a. **Y N** Buildings? e. **Y N** Pollution?
b. **Y N** Roads? f. **Y N** Filling?
c. **Y N** Other structures? g. **Y N** Dredging/draining?
d. **Y N** Trash? h. **Y N** Domination by non-native vegetation?

The wetland was impacted by construction of a gravel access road and a bridge; it was also heavily impacted by grazing and trampling by cattle. It would probably be dominated by non-native reed canary grass and cattails if it were not grazed. There were no other obvious human influences.

6. Is the surrounding viewshed relatively free of obvious human influences, such as:
a. **Y N** Buildings? **Yes**
b. **Y N** Roads? **Yes**
c. **Y N** Other structures? **Yes**

7. **Y N** Is the wetland organized into a variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water)?

No

8. **Y N** Does the wetland add to the variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water) within the landscape as a whole?

Yes

9. Does the wetland encourage exploration because any of the following factors are present:
a. **Y N** Long views within the wetland? **No**
b. **Y N** Long views in the viewshed adjacent to the wetland? **Yes**
c. **Y N** Convoluted edges within and/or around the wetland border? **No**
d. **Y N** The wetland provides a different (and perhaps more natural/complex) kind of environment from the surrounding land covers? **Yes**

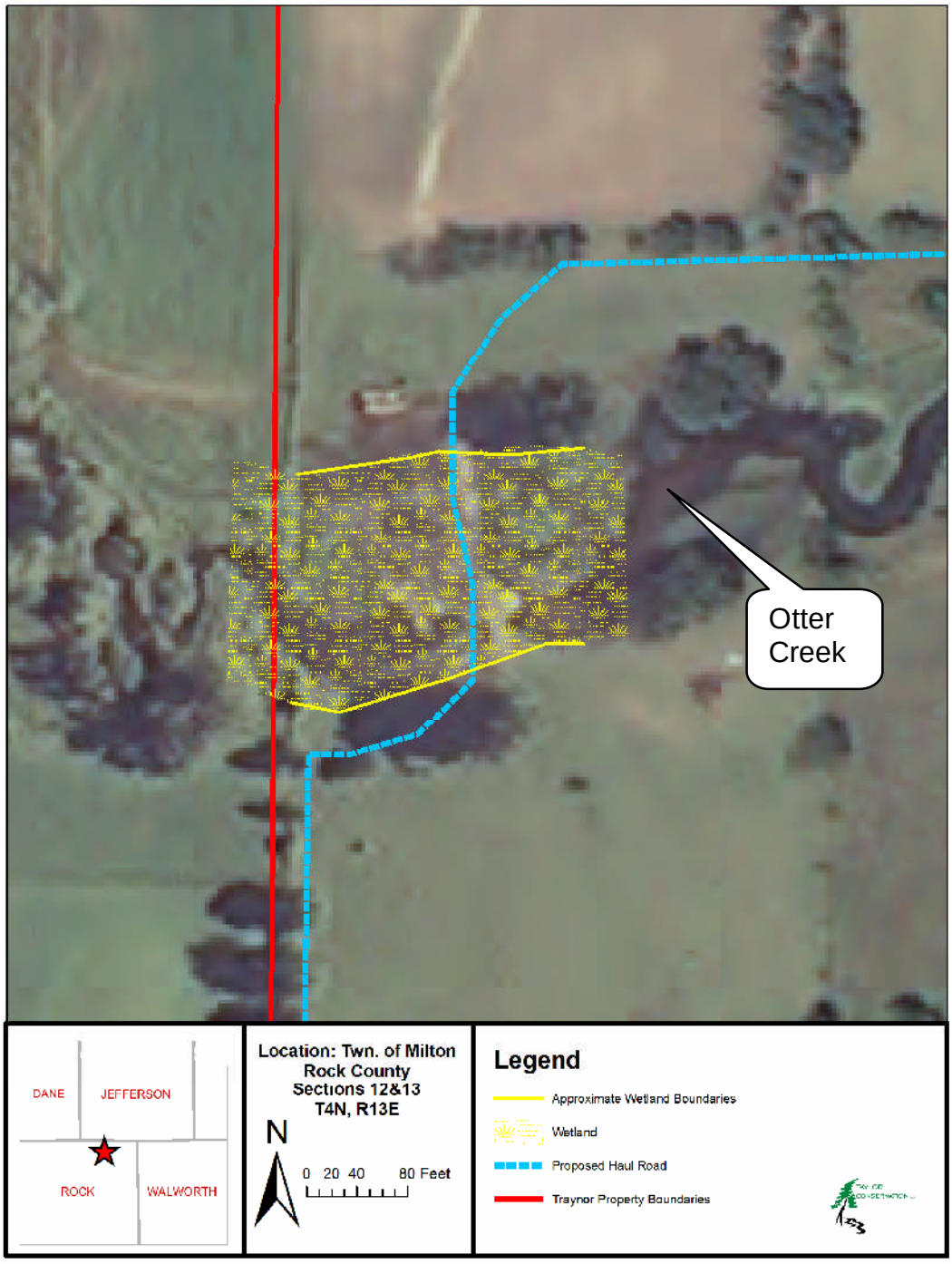
10. **Y N** Is the wetland currently being used for (or does it have the potential to be used for) the following recreational activities? (Check all that apply.)

ACTIVITY	CURRENT USE	POTENTIAL USE
Nature study/photography	**No**	**Yes**
Hiking/biking/skiing	**No**	**No**
Hunting/fishing/trapping	**No**	**Yes**
Boating/canoeing	**No**	**Yes**
Food harvesting	**No**	**No**
Others (list)	**None**	**None**

11. **Y N** Is the wetland currently being used, and/or does it have the potential for use for educational or scientific study purposes (circle that which applies)?

Yes, it has potential for educational or scientific study insofar as any natural environment does.

Wetland Assessment Area



APPENDIX C – EXAMPLE OF WISCONSIN AIR EMISSIONS INVENTORY REPORT

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2011 Air Emission Information for Wisconsin by Facility

Database query for SIC Codes 1446 for Industrial Sand Mining Operations

Year	FID	FACILITY_NAME	LOC_ADDR	LOC_CITY	County	SIC	NAICS	Pollutant	Emissions (tons)
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	SO2	0.19
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	ROG	0.29
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	PM10	5.73
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	PM	19.49
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	NOX	7.84
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	CO	5.42
2011	111003200	UNIMIN CORPORATION	W8375 US HIGHWAY 51	PORTAGE	Columbia	1446	21232	AMMONIA	0.01
2011	268560380	ATWATER - GENERAL CORP	N57 W13636 CARMEN AVENUE	MENOMONEE FALLS	Waukesha	1446	327999	ROG	66.99
2011	268560380	ATWATER - GENERAL CORP	N57 W13636 CARMEN AVENUE	MENOMONEE FALLS	Waukesha	1446	327999	PM10	0.07
2011	268560380	ATWATER - GENERAL CORP	N57 W13636 CARMEN AVENUE	MENOMONEE FALLS	Waukesha	1446	327999	PM	0.8
2011	268560380	ATWATER - GENERAL CORP	N57 W13636 CARMEN AVENUE	MENOMONEE FALLS	Waukesha	1446	327999	METHANOL	66.99
2011	399067790	Panther Creek Sand - SN 410158	6418 Curley Creek Avenue	Neilsville	Clark	1446	212322	CO	0.01
2011	399067790	Panther Creek Sand - SN 410158	6418 Curley Creek Avenue	Neilsville	Clark	1446	212322	ROG	0
2011	399067790	Panther Creek Sand - SN 410158	6418 Curley Creek Avenue	Neilsville	Clark	1446	212322	PM	8.38
2011	399067790	Panther Creek Sand - SN 410158	6418 Curley Creek Avenue	Neilsville	Clark	1446	212322	PM10	3.09
2011	399067790	Panther Creek Sand - SN 410158	6418 Curley Creek Avenue	Neilsville	Clark	1446	212322	NOX	0.04
2011	399074610	Kraemer Mining and Materials (M1213)	One Plainview Road	PLAIN	Sauk	1446	212322	PM	5.26
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	CO	1.44
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	NOX	7.2
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	PM	6.52
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	PM10	3.84
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	ROG	0.38
2011	424019310	BADGER MINING - Fairwater	W300 UTLEY QUARRY	FAIRWATER	Green Lake	1446	212322	SO2	0.04

Notes:
SO2 - Sulfur Dioxides / ROG - Reactive Organic Compounds / PM10 - Particulate Matter <10 microns / PM - Particulate Matter / NOx - Nitrogen Oxides / CO - Carbon Monoxide
Emissions listed are as reported in the NR 438 Air Emission Inventory; emissions over designated WDNR thresholds must be reported and certified on an annual basis.
Content in this table is from the WDNR 2011 Air Emission Inventory Database Excel File from the WDNR website
Atwater - General Corporation operates an organic resin sand coating process that contributes to the large ROG emissions.
Industrial Sand Mine NOx, SOx and CO emissions are from the by-products of fuel combustion in mining activities.