

Susan Perrin Schubert
susanpschubert@gmail.com
319 Pine Mountain Road
Grand Marais, Mn. 55604

Attention: Judge LauraSue Schlatter

Re: Mandatory Category Rulemaking Comment
Docket # 80-9008-35532

Thank you Judge Schlatter for this opportunity to add to my comments on record, delivered in person on 5/31/19 in Minneapolis regarding the proposed changes to motorized recreational trails, Rule 4410.4300 subpart 37.

As I stated in that testimony, and reiterate here, I do NOT agree that the statement of general reasonableness or need given by the EQB for the current proposed changes of items A. and B under recreational trails, are justified.

I also do not agree that these changes are generally reasonable, as applied to motorized recreational trails, based on the fact the EQB provides; that the legislature has requested these changes be made 3 separate times to support regulatory review efficiency and streamline the environmental process. Nor that the changes to Items A. and B,. are necessary and reasonable because in 2015 **the Legislature** determined there was potential for significant environmental effects at the proposed threshold levels.

Nor do I agree with the justifications the EQB provides that the current proposed rule change to items A. and B. is necessary to fulfill a directive by the Legislature to update environmental rules to allow certain trails to be built or designated without requiring environmental review.

I also do not agree that the rule change to item A. and B. is necessary to fulfill a directive by the Legislature to update rule language and statutory language.

It is the executive branch, which is the Environmental Quality Board (EQB) under the Governor and the Courts, that are responsible for holding the Legislature in check and assuring that execution of laws are not in conflict with legislation that has passed, including here, the longstanding requirements of the Minnesota Environmental Policy Act (MEPA).

As I will detail in the following testimony, the proposed rule changes for mandatory review for Motorized Recreational Trails, Items A. and B. are, I believe, in direct conflict with the EQB's responsibility under **MEPA 116D.01** *"to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings."*

The Legislature directs agencies, including the EQB, to follow all of MEPA when it states in **MEPA 116D.03 subdivision 1: Requirement**

The legislature authorizes and directs that, to the fullest extent practicable the policies, rules and public laws of the state shall be interpreted and administered in accordance with the policies set forth in sections 116D.01-116D.06

The purpose of MEPA, which all state agencies are to follow including the EQB are stated in :

MEPA 116D.01. PURPOSE

- a) To declare a state policy that will encourage productive and enjoyable harmony between human beings and their environment;
- b) **To promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings;**
- c) To enrich the understanding of the ecological systems and natural resources important to the state and to the nation.

To accomplish the regulatory objectives of MEPA stated under 116D.01, all state agencies, including the EQB, are given specific responsibilities noted in **116D.02, which includes:**

Subdivision 1. Policy.

.....to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which human beings and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of the state's people.

And

Subdivision 2. State Responsibilities.

In order to carry out the policy set forth in Laws 1973, chapter 412, it is the continuing responsibility of the state government to use all practicable means, consistent with other essential considerations of state policy to improve and coordinate state plans, functions and programs to the end that the state may:

- 1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;**

(Doc 1)

To, “*use all practicable means*”, to carry out MEPA and the policy set forth in Laws 1973, chapter 412, clearly includes administering the rules of Environmental Review in a way that fulfills the EQB's and all state member agencies responsibility to effectively achieve the objectives set forth in MEPA.

As stated in the 1982 SONAR under:
(Doc 2)

II. History of Environmental Review in Minnesota:

“ Environmental review does not of itself make decisions; rather it provides necessary information to government units which they can utilize to make environmentally sensitive decisions in the best interests of the public. It has a further purpose in allowing the public to participate in decisions that affect them. ***The intent is to prevent environmental degradation by wise and informed decisions.***”

The changes proposed by Items A. and B., both of which would entail increasing the mileage threshold for mandatory environmental review would promote, rather than prevent environmental degradation, as I will document in the following pages.

Therefore, I maintain that Items A. and B. are in direct conflict with the intent of Environmental Review *to prevent environmental degradation by wise and informed decisions* and with the stated purpose of the MEPA. 116D. 01 (b), which all state agencies, including the EQB are to follow. The rule changes proposed in items A. and B. are also in conflict with the EQB's responsibilities to carry out MEPA and act as a trustee of the environment for succeeding generations under 116 D.02 Subdivision 2, 1.

The EQB maintains:

“ The proposed rule amendments include updates to thresholds in EAW and EIS categories to reflect the EQB’s experience in applying the process. These changes are needed because the majority of the EAW and EIS categories were established in the 1980s and the 1990s and do not reflect the modern regulatory system or project types. Rule updates are needed to keep the rules relevant and more easily understood by project proposers, RUGS and citizens.”

I do not agree that this stated need, to increase the mileage threshold for mandatory review of motorized recreational trails is valid and applicable to motorized recreational trails because the EIS and EAW categories were created in the 1980s and the 1990s.

The only change in motorized recreational trails that has transpired since the 1980s is huge growth in the recreational vehicle industry and in user numbers.

The 2008 Superior National Forest, Forest-wide Travel Management Project, cited the figures of the most recent Minnesota Department of Natural Resources OHV study, done in 2005. “ *The total Minnesota off highway vehicles registered had increased dramatically from 56,706 in 1994 to 222,594 in 2004.*”

(Doc 3)

This is an almost 400% increase in those ten years alone. User demand and industry growth has continued over the past 15 years since those figures were recorded.

Given the explosive growth of the recreational vehicle industry, user population and the resulting increase in use of our trails and roads by these vehicles since the 1980s and 1990s, I believe that under the EQBs MEPA responsibility 116D.01,

To promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings;

the threshold level of mandatory review for the impact of recreational vehicles on natural resources and human well being, should remain at 10 miles to be able to review and analyze the exponential increase in recreational vehicle use on our routes and trails and the de facto significant escalation of potential risk to our natural resources, watersheds, woods, aquatic, wild and human life with such a dramatic increase in motorized vehicle use.

To have such a dramatic increase in vehicles and use of our routes and trails by motorized recreational vehicles and to increase the threshold mileage by 150% from 10 miles to 25 miles, before a mandatory review is required, is in direct conflict with the EQB's duties under MEPA to protect the environment, to execute duties in the public interest and to act as the trustee of our environment for future generations.

It is only common, evident sense, that with an increase in recreational vehicles on trails and roads, the more potential there is for environmental damage to natural resources due to volume and use of trails and routes alone. Therefore, I maintain, the threshold for mandatory review should remain at 10 miles and the fact that the EAW/ EIS categories were created in the 1980s and 1990s is not germane to the discussion of whether or not threshold mileage for motorized recreational trails and routes should be altered.

Further Review of the proposed changes in Item A. and B.

ITEM A.

In item A, the EQB proposes the threshold mileage for a trail to receive a mandatory review be increased from the current 10 miles, to 25 miles. The NEED and reasonableness to increase the threshold mileage from 10 to 25, based on the need to be cost effective and streamline the process and the statement that changes in threshold changes to EAW and EIS categories are reasonably based on many years of rule application and experience from practitioners, is not reasonably based in my opinion. Also I do not agree with the statement that the threshold changes to Items A. and B. are necessary and reasonable because the 2015 Legislature determined there was potential for significant environmental effects at the proposed threshold levels.

All of these statements of need and reasonableness to justify the 150% change in threshold mileage from 10 to 25 miles are in direct conflict with the intent of the environmental review and the NEED and REASONABLENESS stated in the 1982 SONAR and restated in the 2004 SONAR of mandatory EAW categories, that is included in Exhibits for Sonar, Mandatory Review Categories, January 2013, Appendix D, pgs. D8 , which states: (Doc 4)

“Linear projects usually entail greater impact as a function of increased length.”

And it goes on to state:

“ Specifically for recreational trails, while different types of trails or trail uses vary in their impacts such as ecological damage, runoff and erosion, damage to water resources and noise, the potential for these impacts will tend to increase with the length of the project, simply because all things being equal, a longer trail has more likelihood of encountering sensitive resources of whatever kind.”

Therefore, to increase the threshold 150%, from 10 miles to 25 miles, before an environmental review is needed, when the governing RGU itself has stated that linear projects usually entail greater impact as a function of length, would be to intentionally allow, without any mandatory review, the creation of longer trails with the acknowledged inherent potential for greater environmental impact due to the increased length and therefore, “ more likelihood of encountering sensitive resources of whatever kind.” . This is in direct conflict with the EQB’s mandate under MEPA 116D.01.

a) To promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings

Also it violates, in my view, the intent of the Environmental Review which is to prevent environmental degradation by wise and informed decisions as stated in the 1982 SONAR, *to prevent environmental degradation by wise and informed decisions.* (Doc 2)

In view of the above, I believe it is the EQB's responsibility, as dictated by the legislature, in MEPA 116D.03, to maintain the threshold at 10 miles as it is in the best interest of the environment to prevent degradation, as supported by the 1982 Sonar statement that the degree of environmental impact is a function of length, and it is in the best interest of succeeding generations for whom the EQB is the environmental trustee , as stated in 116D.02 under Subdivision 1. Policy and Subdivision 2. State Responsibilities.

ITEM B.

The rule change proposed in Item B states that, " When designating an existing motorized trail or existing corridor in current legal use by motor vehicles, the designation does not contribute to the 25 mile threshold under this item."

The language in this proposed rule change of Item B. remains impermissibly vague in my view and so indefinite one must guess at its meaning.

It does not establish a reasonably clear policy or standard to control and guide administrative officers so that the rule is carried out by virtue of its own terms and not according to the whim or caprice of the officer.

What is the definition of “***an existing corridor in current legal use by motor vehicles?***” This description is not specific enough. It could include public roads and highways, to the detriment of the general public’s physical safety and well being and jeopardize the physical integrity of needed public transportation infrastructure. It could also include pipeline corridors and power line corridors that ATVS can legally ride along in some areas.

It could also include seldom used, primitive logging roads that are not closed and can pose significant environmental impact issues of sedimentation and invasive species spread, if designated for motorized recreational use.

The language is unclear to the user and to the enforcer regarding the specific parameters for a route to be designated for a new motorized recreational use. Could, for example, a mudder truck go down a pipeline or powerline corridor which is legally used by ATVS in some areas? How does the enforcer know? How does the user know?

In addition, this proposed rule change of Item B. makes the underlying assumption that adding an additional traffic load to an already “existing corridor in current legal use by motor vehicles” would not increase the potential for environmental damage, which has already been inflicted by the created corridor, and therefore, the new use, should not be counted towards the proposed new 25 mile threshold for a mandatory review.

I maintain and will review below with documentation and an example, that this is not true and that adding a new motorized recreational use to an “existing corridor in current legal use by motor vehicles” has the potential to significantly increase potential environmental damage to natural resources, fish and wildlife. I maintain that any new recreational use added to an “existing corridor in current legal use by motor vehicles” should count towards the mileage threshold for a mandatory environmental review, which I believe should be kept at the current 10 miles based on the RGU comments of the 1982 Sonar that the degree of environmental impact potential is a function of linear length.

Roads, (which I use here as one possible interpretation of many to represent, “an existing corridor in current legal use by motor vehicles”) were, in many instances, created long before the science of road ecology or environmental awareness. Therefore, current motorized vehicle use of these roads, can and does inflict significant chronic environmental damage to some of our natural resources.

However, low density population in some areas, along with historically low traffic volume, can, for example, mitigate the environmental impacts of sedimentation and fugitive dust load pollution to waters crossed by gravel roads.

However, to increase traffic load on these roads by adding yet another motorized vehicle use, would add to and increase the environmentally damaging effects such as sedimentation and fugitive dust load pollution of gravel roads to streams at road crossings.

We know from studies that fugitive dust pollution from Off road vehicles on a gravel road can travel 300 feet across buffer zones, to settle in waters at road crossings.

(Doc 5)

The Minnesota Pollution Control agency states that stream crossings on gravel roads are a contributing factor to stream sedimentation.

(Doc 6)

We also know that stream sedimentation can damage the habitat of highly pollution intolerant species such as trout that require clear, cold water by causing turbidity, increasing water temperature and decreasing available oxygen levels and eventually extirpate these sensitive species from streams.

(Doc 7)

As stated in Current Forestry Reports: The Potential Effects of Roads on the Environment and Mitigating their Impacts

(Doc 8)

“Perhaps the largest impact from forests roads is on water quality, through both chronic and acute deposition of sediment that can limit the beneficial uses of water and harm aquatic organisms in waters that originate from forests.”

Therefore, I maintain that any new motorized recreational use added to “ an existing corridor in current legal use by motor vehicles “ should have a mandatory review to analyze if this added motorized use has the potential to create a tipping point in environmental impact that could increase environmental damage to natural resources, fish and wildlife. For example, would adding a new motorized recreational vehicle use to an “ existing corridor in current legal use by motor vehicles” that crosses a designated trout stream, create enough added fugitive dust pollution and stream sedimentation to extirpate from the stream the highly sensitive trout species or jeopardize its reproduction and survival ?? Or if the “ existing corridor in current legal use by motor vehicles” crosses an exceptional stream, does the potential exist to degrade its exceptional use ranking, due to an increase in fugitive dust load and sedimentation pollution?

Under Antidegradation law, once a stream has achieved this highest exceptional use ranking, it must be maintained.

(Doc 9)

These potential risks to the environment should be analyzed by a mandatory environmental review.

An actual example of a road which was created long before environmental awareness and the science of road ecology and that negatively impacts natural resources, is Pine Mountain Road in Cook County, which I mentioned in my public hearing testimony on 5/31/19.

Because this road has current legal use by motor vehicles, I am assuming, but cannot be definitively certain due to the vague wording, that Pine Mountain Road, according to the proposed changes in Item B. would be considered an, “ existing corridor in current legal use by motor vehicles.” I will address this example of Pine Mountain road here again in more detail and add photos in attached documentation.

Pine Mountain Road was started as a Trail in 1875 called Cove Road and was a completed road on a 1916 Plat map of the area.

(Docs 10 & 11)

At the time it was created and subsequently expanded, the builders had no environmental concerns that its gravel bed crosses an exceptional stream with almost no buffer zone, nor that this stream is also a dedicated trout stream. There was also no concern that the road crosses, again with almost no buffer zone, a tributary that directly feeds into this exceptional stream or that it passes right next to wetlands or by a protected wild rice lake.

(Docs 12,13 & 14)

Any increase in traffic load of an added new motorized recreational use to Pine Mountain road, would increase the fugitive dust load and sedimentation pollution to these various water bodies along the road's edge. All of these streams, creeks and wetlands, drain into and contribute to the sediment and fugitive dust pollution load of Lake Superior.

Lake Superior is itself an outstanding value resource water with special protections that is now being monitored for sedimentation plume pollution. (Docs 15,16 and 17)

--Also to be considered is the case of historically low volume traffic roads that cross exceptional streams, skirt wetlands or cut through areas of outstanding biodiversity. Due to the low traffic volume, the impact is minimal, however if a new motorized recreational use is added, this impact could be significantly magnified and harmful to the natural resources, fish and wildlife, particularly if the added new motorized use were a designated route.

Therefore, adding a new motorized recreational use to an, " existing corridor in current legal use by motor vehicles", has the potential to significantly increase environmental damage and should undergo a mandatory environmental review.

Further, this proposed rule change in Item B. could allow for the creation of a route that is hundreds of miles long without any mandatory environmental review, by stringing together “ existing corridors in current legal use by motor vehicles ”, assuming this vague definition would include public roads and highways. Many of these roads, like Pine Mountain road, could have been built long before environmental concerns and never have received any form of environmental review. Or they could be roads in terrible disrepair and a significant threat to the environment.

The proposed changes in item B. could allow for a new motorized recreational use to be added to of some of the most degraded, environmentally damaging roads, without mandatory environmental review, thereby increasing the environmental damage already done by these roads to natural resources and aquatic species.

This would be a gross distortion of the spirit and intent of the mandatory environmental review for recreational trails. It would risk the significant potential for serious, unchecked environmental damage across hundreds of miles, potentially across the entire state, without any environmental review done to gauge the potential impacts on watersheds, aquatic and terrestrial life, invasive species management and threats to endangered species such as the Canadian Lynx, whose travel corridors could be near these roads.

One example of a road long in disrepair that could be added to a trail under the changes of Item B., without counting towards the 25 miles threshold as “ an existing corridor in current legal use by motor vehicles,” would be Mark Lake Road, in Cook County Mn.

(Doc 18)

This road would be considered, as I interpret it, “ an existing corridor in current legal use by motor vehicles”. To add a new motorized recreational use such as Off Road Vehicles (OHV) to this road, which could be done if the proposed changes to Item B. were made, has the potential to cause a significant increase in environmental damage by substantially increasing sedimentation to the waters at failed culvert areas from OHV traffic. The failed culvert shown here is on Mark Lake Road at Mistletoe creek, an exceptional stream (MPCA ranked) that feeds directly into Lake Superior. If the proposed change to Item B. were made, despite the evident potential for significant environmental damage, the new recreational motorized use could be added to this severely damaged road without a mandatory environmental review.

In summation regarding the proposed mandatory review rule changes to Items A. and B for recreational trails, I believe the changes are not necessary, not reasonable and not justified.

As presented, I maintain it is the EQB's responsibility as part of the executive branch under the Governor and in accordance with 116D.01. to keep the threshold for an environmental review at 10 miles. Further, that any new added motorized recreational use to an " existing motorized trail or an existing corridor in current legal use by motor vehicles" count towards an unchanged 10 mile threshold for mandatory environmental review for reasons cited.

To propose the changes in Items A. and B. based on the need to streamline the administrative process for regulatory efficiency, which , as shown, would be at the cost of protecting our environment, is in direct conflict with the responsibility of the EQB under 116D.01 and 116.D 02 Subdivisions 1 and Subdivision 2, item 1.

The proposed language change in Item B. does not make environmental review more efficient by adding clarity and specificity, but is unclear and vague and leaves the interpretation of the language up to the whim and caprice of an officer.

The statement that these changes are needed because the EAW and EIS categories were established in the 1980s and 1990s and do not reflect the modern regulatory system or project types is not germane to the discussion of recreational trails. These trails need the same, if not more oversight than they did in the 1980s and 1990s. I maintain that environmental protection dictates that due to the dramatic increase in recreational vehicle use, in conjunction with the statement in the 1982 SONAR that the degree of environmental impact is a function length, it is the EQB's responsibility under MEPA 116D.01 and 116D.02 to maintain the thresholds for mandatory environmental review at the 10 mile threshold established in the 1982 SONAR and re-stated in the 2004 Sonar.

It is the EQB's and court's responsibility to keep the Legislature in check, when passed legislation is in direct conflict with the long standing requirements of MEPA.

Thank you, Judge Schlatter, for your time and careful consideration of my testimony.

Pusan P. Schubert
15 JULY 2019

**Mandatory Category Rule Making Comments
DOCUMENTS**

1. Chapter 116D
2. 1982 SONAR excerpt
3. Forest-wide Travel Management Project
4. 1982 SONAR Recreational Trails
5. Monitoring Fugitive Dust Emissions from Off-Highway Vehicles
6. Lake Superior Streams Assessment, Phase One
7. Brook Trout statement
8. The Potential Effects of Forest Roads on the Environment and Mitigating their Impacts
9. Antidegradation Purpose
10. Pioneers in the Wilderness
11. 1916 Platt Map of Pine Mountain Road, Cook County, Mn.
12. Pine Mountain Road
13. Pine Mountain Road, Mud Creek
14. Pine Mountain Road, Wetlands
15. Lake Superior North Watershed Restoration and Strategy Management Report- 2018
16. Lake Superior North Watershed Restoration and Strategy Management Report- 2018
17. The Outside Impact Small Streams have on Lake Superior and Photo
18. Mark Lake Road, Cook County, Mn.

CHAPTER 116D
ENVIRONMENTAL POLICY

Table listing sections 116D.01 through 116D.11 with their respective titles: PURPOSE, DECLARATION OF STATE ENVIRONMENTAL POLICY, ACTION BY STATE AGENCIES, ENVIRONMENTAL IMPACT STATEMENTS, ENVIRONMENTAL IMPACT STATEMENTS; COSTS, EFFECT OF EXISTING OBLIGATIONS, ENERGY AND ENVIRONMENTAL STRATEGY REPORT, REPORT PREPARATION.

116D.01 PURPOSE.

The purposes of Laws 1973, chapter 412, are: (a) to declare a state policy that will encourage productive and enjoyable harmony between human beings and their environment; (b) to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings; and (c) to enrich the understanding of the ecological systems and natural resources important to the state and to the nation.

History: 1973 c 412 s 1; 1986 c 444

116D.02 DECLARATION OF STATE ENVIRONMENTAL POLICY.

Subdivision 1. Policy. The legislature, recognizing the profound impact of human activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high density urbanization, industrial expansion, resources exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of human beings, declares that it is the continuing policy of the state government, in cooperation with federal and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which human beings and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of the state's people.

Subd. 2. State responsibilities. In order to carry out the policy set forth in Laws 1973, chapter 412, it is the continuing responsibility of the state government to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate state plans, functions, programs and resources to the end that the state may:

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
(2) assure for all people of the state safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
(3) discourage ecologically unsound aspects of population, economic and technological growth, and develop and implement a policy such that growth occurs only in an environmentally acceptable manner;
(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever practicable, an environment that supports diversity, and variety of individual choice;
(5) encourage, through education, a better understanding of natural resources management principles that will develop attitudes and styles of living that minimize environmental degradation;

- (6) develop and implement land use and environmental policies, plans, and standards for the state as a whole and for major regions thereof through a coordinated program of planning and land use control;
- (7) define, designate, and protect environmentally sensitive areas;
- (8) establish and maintain statewide environmental information systems sufficient to gauge environmental conditions;
- (9) practice thrift in the use of energy and maximize the use of energy efficient systems for the utilization of energy, and minimize the environmental impact from energy production and use;
- (10) preserve important existing natural habitats of rare and endangered species of plants, wildlife, and fish, and provide for the wise use of our remaining areas of natural habitation, including necessary protective measures where appropriate;
- (11) reduce wasteful practices which generate solid wastes;
- (12) minimize wasteful and unnecessary depletion of nonrenewable resources;
- (13) conserve natural resources and minimize environmental impact by encouraging extension of product lifetime, by reducing the number of unnecessary and wasteful materials practices, and by recycling materials to conserve both materials and energy;
- (14) improve management of renewable resources in a manner compatible with environmental protection;
- (15) provide for reclamation of mined lands and assure that any mining is accomplished in a manner compatible with environmental protection;
- (16) reduce the deleterious impact on air and water quality from all sources, including the deleterious environmental impact due to operation of vehicles with internal combustion engines in urbanized areas;
- (17) minimize noise, particularly in urban areas;
- (18) prohibit, where appropriate, floodplain development in urban and rural areas; and
- (19) encourage advanced waste treatment in abating water pollution.

History: 1973 c 412 s 2; 1986 c 444

116D.03 ACTION BY STATE AGENCIES.

Subdivision 1. **Requirement.** The legislature authorizes and directs that, to the fullest extent practicable the policies, rules and public laws of the state shall be interpreted and administered in accordance with the policies set forth in sections 116D.01 to 116D.06.

Subd. 2. **Duties.** All departments and agencies of the state government shall:

- (1) on a continuous basis, seek to strengthen relationships between state, regional, local and federal-state environmental planning, development and management programs;
- (2) utilize a systematic, interdisciplinary approach that will insure the integrated use of the natural and social sciences and the environmental arts in planning and in decision making which may have an impact on the environment; as an aid in accomplishing this purpose there shall be established advisory councils or other forums for consultation with persons in appropriate fields of specialization so as to ensure that the

Rulemaking, including rule amendments, must follow a process that is defined in Minn. Statute 14, the Administrative Procedure Act. The process requires public notification of the rulemaking and the proposed rule changes must be made available for public review and comment. Comments are considered and decisions made for the final version of the rules. Though an agency prepares the draft rules, the process is overseen by the Office of Administrative Hearings. The statute requires an open public process for preparing and amending agency rules.

The statute also requires that a rule amendment proposal include a Statement of Need and Reasonableness (SONAR), which explains the reasons for proposed rule changes. The SONAR also discusses such things as who will be affected, alternative methods for achieving the purpose of the rule amendment, and other points listed in statute.

The following excerpt from the SONAR prepared in 1982 will help understand the historical purposes of the environmental review program overall.

Excerpt from 1982 Statement of Need and Reasonableness (SONAR)

I. AUTHORITY

These rules are proposed to implement the 1980 amendments to the Minnesota Environmental Policy Act, Minn. Stat. Ch. 116D. Existing rules 6 MCAR § 3.021 through 3.032 are deleted in their entirety and are replaced by proposed rules 6 MCAR §§ 3.021 through 3.041. Existing rules 6 MCAR §§ 3.033 through 3.047 are amended to become 6 MCAR §§ 3.042 through 3.054. These sections contain minor revisions as indicated. Rules 6 MCAR §§ 3.055 and 3.056 replace the existing rule 6 MCAR § 3.025 G.

Specific authority to promulgate rules relating to the Environmental Review Program is granted under Minn. Stat. § 116D.04, subd. 5 (a) and Minn. Stat. § 116D.045. General rule-making authority is given the Environmental Quality Board in Minn. Stat. § 116C.04 and Minn. Stat. § 116D.

II. HISTORY OF ENVIRONMENTAL REVIEW IN MINNESOTA

The concept of environmental review was spawned in the late 1960s with the developing environmental conscience. Its purpose was to implement environmental protection as a matter of public policy and to utilize the Environmental Impact Statement (EIS) as a planning tool in the decision-making process. Environmental review does not of itself make decisions; rather it provides necessary information to governmental units which they can utilize to make environmentally sensitive decisions in the best interests of the public. It has a further purpose in allowing the public to participate in decisions that affect them. The intent is to prevent environmental degradation by wise and informed decisions.

Minnesota's Environmental Review Program was established by the Minnesota Environmental Policy Act (MEPA) of 1973. Companion legislation, found at Minn. Stat. ch. 116c, established the Minnesota Environmental Quality Board (EQB). Rules implementing the process were promulgated in 1974 and remained in effect until 1977. Under the initial process all decision-making authority was centralized in the EQB. The EQB decided on a case-by-case basis which projects were major actions with the potential for significant environmental effects.

DOC 3

1 of 2

United States
Department of
Agriculture

Forest
Service

December 2008



Environmental Assessment

Forest-wide Travel Management Project

Superior National Forest

For Information Contact: Duane A. Lula
Superior National Forest
8901 Grand Avenue Place
Duluth, MN 55808
(218) 626-4300
<http://www.fs.fed.us/r9/forests/superior/projects>

DOC 3

alternatives also have the potential to benefit some of the sensitive plant species that benefit from intermediate levels of disturbance. Alternative 4 would be the most desirable because it would have the least negative impacts on sensitive plants, followed by Alternative 2, Alternative 3, and Alternative 1.

3.11.7 Cumulative Effects

See Appendix B to the EA for a description of projects considered for cumulative effects along with resource-specific projects discussed below.

The BA and BE include specific cumulative effects analysis for each of the species or guilds analyzed. The following is a summary of the cumulative effects for all species.

Spatial framework: The analysis of cumulative effects considers the impact of past, present, and reasonably foreseeable future management activities on regional forest sensitive species on all land ownerships in the analysis area. Opportunities for consolidating off highway vehicle use on ownerships other than National Forest were included in this proposed action. Consultation with the State, Counties and tribes occurred (see Chapter 1 in EA) to try and mesh our travel planning as much as possible. Other agencies do have different regulations about seasonal use of motorized vehicles but overall, between public landowners, road miles open to motor vehicles declines.

Time frame: Cumulative effects analysis considers a 15 year period, which includes the accomplishments of the past 10 years, and reasonably foreseeable activities within the next 5 years. The next 5 years is a realistic timeframe for estimating what projects may be proposed in the vicinity.

Past impacts: The project area is highly fragmented because of timber harvesting, mixed ownership patterns, development, and road construction. The quantity and standard of roads has remained relatively stable in the last 5 years. Road density has stabilized, but the quality and standard of roads on the Superior has increased because of timber harvest and recreational activities. Increased road miles and road usage have lowered the amount of remote habitat available to species. Increased human access may result in disturbance during the breeding season, illegal shooting and trapping, introduced parasites and diseases, and competition with other species

Present impacts: Since 2004, many miles of road have been identified for decommissioning. Road decommissioning from previous resource management projects is making progress at reducing the road density, and consolidating road usage on the Superior National Forest.

Future impacts: Off highway vehicle use is expected to increase over the next 10 years, due to increasing public demand for this type of outdoor leisure activities. The total Minnesota off highway vehicles registered has increased dramatically, from 56,706 in 1994 to 222,594 in 2004 (p. 33, Minnesota Department of Natural Resources 2005 OHV Study). As more land that is private is posted with no trespassing signs, more pressure is placed upon Federal, State, County, and other jurisdictions to designate trail routes for off highway vehicles. Although many species may benefit from the action alternatives on Federal Lands, the off highway vehicle project may shift the demand for access to State and County lands within the Superior National Forest. Forest Plan objective O-RMV-2 would allow up to 90 miles of designated off highway vehicle trails, some from this project and some from future projects that would be considered in future NEPA analysis.

See page 2

DOC 4

Appendix D

1/5

TABLE D-1: MANDATORY EAW CATEGORIES: MINNESOTA DEPARTMENT OF NATURAL RESOURCES AS RGU

Mandatory EAW Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply	Should category be modified, eliminated, or existing permits or other federal/state/local law
4410.4300 Recreational trails subp. 37	<p>Recreational trails. If a project listed in items A to F will be built on state-owned land or funded, in whole or part, by grant-in-aid funds administered by the DNR, the DNR is the RGU. For other projects, if a governmental unit is sponsoring the project, in whole or in part, that governmental unit is the RGU. If the project is not sponsored by a unit of government, the RGU is the local governmental unit. For purposes of this subpart, "existing trail" means an established corridor in current legal use.</p>	<p>The Minnesota Historical Society's State Historic Preservation Office (SHPO). The revisions would add two additional reasons or situations where no EAW would be required prior to the destruction of a property on the National or State registers of Historic Places.</p> <p>The present rules recognize two situations as not requiring preparation of the EAW. These both involve review of historic values through other established federal processes. It is now proposed to add another such situation, namely where the destruction will be reviewed by a certified local heritage preservation commission. The State Historic Preservation Office believes that review by such a commission gives adequate oversight over historic places without preparation of an EAW. To be certified, a local heritage preservation commission applies to SHPO, which reviews the application and local ordinance for consistency with nationwide standards established in the Code of Federal Regulations at the cited locations.</p> <p>The second situation proposed to be added is not a substitute form of review but rather has to do with the nature of the property proposed for destruction. In some cases, the historic place included on the National or State Register is an entire district rather than a single structure. In such districts, not all the properties actually have or contribute to the historic value of the district. A "non-contributing property" is a property located within the boundaries of a designated historic district but which itself is not historic and does not contribute to the historical attributes of the district as a whole. Often, non-contributing properties are buildings constructed many years after the period during which the historic buildings of the district were built. Sometimes these non-contributing properties are identified as being non-contributing in the historic place designation documents, but not always. It is proposed that the destruction of non-contributing properties not require preparation of an EAW if either they are identified as being non-contributing in the designation documents or if the State Historic Preservation Office reviews the matter and issues a determination that the property is non-contributing.</p> <p>(2004) This paragraph prescribes which governmental unit will be the RGU, which stands for "Responsible Governmental Unit," for preparing EAWs for the recreational trails for which review will be required under this subpart. Each mandatory category has an RGU designation listed for it in the appropriate subpart of part 4410.4300. The Department of Natural Resources (DNR) is named as RGU for all trail projects for which it is either the project constructor or the provider of grant-in-aid funds. This assignment is consistent with the general principles for RGU assignment at part 4410.0500 that (1) if a state agency will carry out a project it is the RGU (4410.0500, subp. 1) and (2) the RGU is the unit with the greatest responsibility for supervising or approving the project as a whole or has expertise that is relevant for the review (4410.0500, subp. 5, item B). Where grant-in-aid funds are being supplied to assist with a project the DNR must review and approve the plans for the project prior to entering into the grant agreement.</p> <p>This gives the DNR a strong degree of authority over the project. In addition, the DNR staff has expertise with the review of recreational trails that is likely to be greater than that available to a local unit of government that would be a sponsor for a grant-in-aid trail. Furthermore, assigning all grant-in-aid projects</p>	<p>N/A</p>	<p>See page 2 →</p> <p>DOC 4</p> <p>D7</p>

TABLE D-1: MANDATORY EAW CATEGORIES: MINNESOTA DEPARTMENT OF NATURAL RESOURCES as RGU

Mandatory EAW Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply	Should category be modified, eliminated, or unexisting permits or other federal/state/local law
<p>4410.4300 Recreational trails subp. 37 A</p>	<p>A. Constructing a trail at least ten miles long on forested or other naturally vegetated land for a recreational use other than snowmobiling or cross-country skiing, unless exempted by part 4410.4600, subpart 14, item D, or constructing a trail at least 20 miles long on forested or other naturally vegetated land exclusively for snowmobiling or cross-country skiing.</p>	<p>to the DNR will promote more uniform review of all grant-in-aid projects regardless of where they take place. For those projects not constructed by the DNR or involving state grant-in-aid funds, but which will be sponsored by another unit of government, the sponsoring unit will be the RGU; this is consistent with the general principle of RGU assignment cited as #2 above. For all other projects, the RGU will be the local governmental unit, in keeping with the RGU assignment in other mandatory categories where the permitting responsibility is at the local level. It should be noted that there may be some private trail projects which require no governmental permits, and therefore would not be "governmental actions" under these rules and not be subject to Environmental Review at all.</p> <p>(2004) Item A would require mandatory preparation of an EAW for the kinds of trails named with the thresholds based on trail length. Item A covers construction of new trails (or extensions of existing trails) which do not follow the alignment of an existing trail. Except for winter uses, the threshold proposed for this category is 10 miles. For the named winter uses, the threshold is proposed to be twice as long, 20 miles, as these uses are generally considered to have lesser potential for environmental impacts due to the fact that frozen soil conditions and snow or ice cover greatly reduce the potential for physical environmental damage. Item A would only apply to trails crossing land that was now forested or otherwise covered with natural vegetation for a distance of at least 10 continuous miles. If a trail was to be partially on naturally vegetated land only the length on such land would be counted.</p> <p>Length was chosen as the primary threshold parameter in order to make the recreational trail categories analogous to the existing categories for linear-type projects, including electrical transmission lines (subp. 6), pipelines (subp. 7), and highways (subp. 22). As stated in the 1982 SONAR, linear projects "usually entail greater impact as a function of increased length." (pg. 119)</p> <p>Although different types of linear projects differ in the extent of their potential for various environmental impacts, generally speaking they all vary in accordance with project length. Specifically for recreational trails, while different types of trails or trail uses vary in their potential for impacts such as ecological damage, runoff and erosion, damage to water resources, and noise, the potential for these impacts will tend to increase with the length of the project simply because, all else being equal, a longer trail has more likelihood of encountering sensitive resources of whatever kind. Another benefit of using length as a surrogate for impact potential is that it is "use neutral." A number of commenters, particularly motorized use organizations, were very concerned about some trail users being "singled out" in the proposed rules, i.e., treated differently than other types of users. Using trail length as the threshold parameter avoids this concern. Finally, length is a basic parameter of trail design that is easy to determine in the early stages of design, promoting an early determination of the need for EAW preparation with accompanying planning efficiency.</p> <p>The thresholds of 10 and 20 miles were chosen for a number of reasons. Most fundamentally, for almost all types of projects covered by the existing mandatory and exemption categories there is a "gap" between the magnitudes of project that are exempt and the smallest projects for which review is mandatory. Following this principle (in the absence of any compelling reasons</p>	<p>Local: Permission to cross land Land alteration permit Site permit application WCA mitigation plan</p> <p>State: Construction stormwater general permit 401 certification Section 4(f) evaluation Special use permit for highway crossings Ease agreement State grant Public water work permit WCA mitigation plan SNA permit to cross & trail maintenance agreement</p> <p>Federal: 404 permit Federal grant</p>	<p>Summary: 4 EAWs have been prepared for project into effect in 2004. Two were for hiking trails, one OHV trail. Several potential environmental issues, regulated, were evaluated. Unregulated potential wildlife disturbance, and native plant community projects as a whole, so environmental review was effects of the whole project. Permits associated with authority, and many do not include a public review</p> <p>Recommendation: Maintain this EAW category.</p>

TABLE D-1: MANDATORY EAW CATEGORIES: MINNESOTA DEPARTMENT OF NATURAL RESOURCES AS RGU

Mandatory EAW Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply	Should category be modified, eliminated, or existing permits or other federal/state/local law
<p>4410.4300 Recreational trails subp. 37B</p>	<p>B. Designating at least 25 miles of an existing trail for a new motorized recreational use other than snowmobiling.</p>	<p>Another reason for choosing 10 miles as the basic threshold number is that it makes sense when compared to the thresholds for the other linear-type projects in other subparts. The highway categories have a length threshold of 1 mile, pipelines, either 0.75 or 5 miles depending upon the nature of the product transported and other factors, and transmission lines, 20 miles. Most people would undoubtedly agree that recreational trails in general pose less potential for environmental impacts than most highway or pipeline projects, and somewhat more than electrical transmission line corridors (where there is little activity after construction is completed, little potential for impacts beyond the right-of-way, and less direct physical intrusion by the structures than from a continuous trail surface).</p> <p>One way to check on the reasonableness of proposed thresholds is to compare estimates of how many EAWs would result with the numbers of EAWs prepared due to other existing mandatory categories. The EQB recently examined mandatory EAW records from the 4-year period 2000-2003 to compare one category with another. The data from that analysis showed that during that time 570 EAWs were prepared due to the 35 existing EAW categories, an average of 143 per year. Only 10 of the 35 categories resulted in at least 5 EAWs per year and the median number was 1 EAW per year per category. Using the DNR's estimate from section III.A factor #5 of 3 EAWs per year likely to result from the proposed recreational trail categories, it appears that the number of EAWs likely due to the proposed thresholds would fall roughly mid-pack when compared to all 36 categories.</p> <p>(2004) Item B covers situations where a governmental unit is proposing a change in authorized uses on an existing trail to allow use by a form of motorized recreational vehicle not previously allowed to use the trail. The threshold is proposed as 25 miles, two and one-half times the main threshold of item A, on the basis that the potential for environmental damage is diminished by the fact that a trail already traverses the route. This category is proposed to exclude the designation of snowmobile use, which instead is proposed for an exemption (see the section later on Exemptions for the rationale).</p> <p>This provision is proposed to deal with the likely common occurrence where a planned trail will include segments of new alignment and also segments with new use designations on existing trails. In such cases, how can it be determined if the mandatory review thresholds are exceeded? The solution proposed is borrowed from existing subparts of 4410.4300. At subparts 19 and 32, residential developments and mixed residential and commercial projects a</p>	<p>Local: Approval for bridges Lease amendment</p> <p>State: Construction stormwater general permit 401 certification State trail plan amendment State funding Public water work permit WCA mitigation plan</p> <p>Federal: 404 permit</p>	<p>Summary: 1 EAW has been prepared for a project into effect in 2004. Currently, many trail projects went through the legislatively mandated design of the State Forests with respect to motor vehicle use Chapter 128, Article 1, Section 167, Subdivision 6100.1950. Trail segments where the proposed by included in the mileage for determining whether reached or exceeded. In addition, mileage of OH outside of state forests is not included in the three have recently been proposed that would require p the DNR still believes the issues identified in the remain valid.</p> <p>Recommendation: Retain this EAW category; con new types of motorized trail use are calculated. A uses on abandoned trail grades toward Item 37B if</p>



TABLE D-1: MANDATORY EAW CATEGORIES, MINNESOTA DEPARTMENT OF NATURAL RESOURCES as RCU

Mandatory EAW Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply	Should category be modified, eliminated, or an existing permits or other federal/state/local law
<p>4410.4300 Recreational trails subp. 37 C</p>	<p>C. Paving ten or more miles of an existing unpaved trail, unless exempted by part 4410.4600, subpart 27, item B or F. Paving an unpaved trail means to create a hard surface on the trail with a material impervious to water.</p>	<p>similar arithmetic operation is prescribed for determining if review is mandatory. Here is an example of how this method would work: suppose an ATV trail is proposed with a total length of 18 miles, 8 on new alignment and 10 as a designation of an existing snowmobile trail for ATV use. To determine if an EAW is mandatory divide 8 by 10 (quotient = 0.8), and 10 by 25 (quotient = 0.4), then add the quotients (0.8 + 0.4 = 1.2). Since the sum of 1.2 exceeds 1, review is mandatory for this project.</p> <p>(2004) Item C would require preparation of a mandatory EAW for situations where an existing unpaved trail is upgraded by paving it for a length of at least 10 miles. The rationale is that creating an impervious surface over that length of trail creates sufficient potential for runoff and erosion problems to warrant review. The clause about exemptions is included to clarify that the reconstruction of a paved trail or the construction or rehabilitation of a paved, non-motorized trail within the Twin Cities Metropolitan Regional Park System is exempt, rather than covered by this category if the length exceeds 10 miles.</p>	<p>Local: Roadway utility permit WCA mitigation plan</p> <p>State: Construction stormwater general permit 401 certification State grant Public water work permit</p> <p>Federal: 404 permit Federal grant</p>	<p>Summary: 1 EAW has been prepared for a project into effect in 2004. In that project, DNR found that had minor environmental effects because environment already occurred and project-specific disturbance compaction had already occurred. Although few projects would require preparation of an EAW under this category identified in the 2004 SONAR that created this category.</p> <p>Recommendation: Maintain this EAW category, but on abandoned railroad grades.</p>
<p>4410.4300 Recreational trails subp. 37 D</p>	<p>D. Constructing an off-highway vehicle recreation area of 80 or more acres, or expanding an off-highway vehicle recreation area by 80 or more acres, on agricultural land or forested or other naturally vegetated land.</p>	<p>(2004) Item D deals with recreation areas for off-highway vehicles. Such areas would include an intensive network of trails as well as special events areas designed especially for various types of off-highway vehicles. Because of the concentrated network of trails, it is appropriate to provide a separate mandatory EAW category for recreation areas, and to base the threshold on acreage rather than trail length. Two thresholds are proposed, one for "undisturbed," naturally vegetated land or agricultural land and another for land that either is not naturally-vegetated or agricultural, or has been previously disturbed to a great extent by human activities.</p> <p>The proposed 80 acre threshold for naturally-vegetated and agricultural areas corresponds with the threshold used in the land use conversion mandatory category at subpart 36, which deals with the permanent conversion of such lands to more intensive human uses.</p> <p>(2004) The most likely disturbed areas to be used for recreation areas are former mine sites, so the rule explicitly lists metallic and non-metallic mining as past human activities making land suitable for the "disturbed" classification. The only existing recreation area for OHVs was established by the DNR on a former mine site near Gilbert and another similar area near Virginia has been authorized but not yet built.</p> <p>For non-naturally-vegetated lands, agricultural, or disturbed lands, a much higher threshold is appropriate and thus 640 acres was chosen; this provides a 1:8 ratio and sets the threshold equal to the common land measure of one section.</p>		<p>Summary: No EAWs have been prepared for a project into effect in 2004. The DNR still believes that created this category remain valid.</p> <p>Recommendation: Maintain this EAW category.</p>
<p>4410.4300 Recreational trails subp. 37 E</p>	<p>E. Constructing an off-highway vehicle recreation area of 640 or more acres, or expanding an off-highway vehicle recreation area by 640 or more acres, if the land on which the construction or expansion is carried out is not agricultural, is not forested or otherwise naturally vegetated, or has been significantly disturbed by past human activities such as mineral mining.</p>			<p>Summary: No EAWs have been prepared for a project into effect in 2004. The DNR still believes that created this category remain valid.</p> <p>Recommendation: Maintain this EAW category.</p>
<p>4410.4300 Recreational trails</p>	<p>F. Some recreation areas for off-highway vehicles may be constructed partially on agricultural naturally vegetated land and partially on land that is not agricultural, is not forested or otherwise naturally vegetated.</p>	<p>(2004) Since it is likely that recreation areas could be proposed on lands subject to both thresholds, the same arithmetic method for determining if review is mandatory as is proposed at items A and B is proposed to be used here as well.</p>	<p>Local: Land use zoning approval</p> <p>State: Construction stormwater general</p>	<p>Summary: 1 EAW has been prepared for a project into effect in 2004. Potential environmental issues regulated, were evaluated. Unregulated potential wildlife disturbance, native plant community impacts. No single permit regulates these types of projects</p>

TABLE D-1: MANDATORY EAW CATEGORIES: MINNESOTA DEPARTMENT OF NATURAL RESOURCES AS RGU			
Mandatory EAW Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply
subp. 37 F	or has been significantly disturbed by past human activities. In that case, an EAW must be prepared if the sum of the quotients obtained by dividing the number of acres of agricultural or naturally vegetated land by 80 and the number of acres of land that is not agricultural, is not forested or otherwise naturally vegetated, or has been significantly disturbed by past human activities by 640, equals or exceeds one.		<p>pernit 401 certification State funding Public water work permit WCA mitigation plan</p> <p><u>Federal:</u> 404 permit</p>
			<p>the only opportunity to analyze effects of the who category have gaps and overlaps in authority and process.</p> <p><u>Recommendation:</u> Maintain this EAW category.</p>

TABLE D-2: MANDATORY EIS CATEGORIES: MINNESOTA DEPARTMENT OF NATURAL RESOURCES AS RGU			
Mandatory EIS Category	Category Text	Intended Historical Purpose (SONAR)	Potential Local, State, Federal Permits, Laws, Ordinances that may (or may not) apply
4410.4400 Underground Storage subp. 7 A	Underground storage. Items A and B designate the RGU for the type of project listed: A. For construction of an underground storage facility for gases or liquids that requires a permit pursuant to Minnesota Statutes, section 1031.681, subdivision 1, paragraph (a), the DNR shall be the RGU.	(1982) This category is proposed because this type of project is new and largely untested, is very large in scope, has the potential for groundwater contamination and serious human health impacts and is very controversial. Minn. Stat. § 84.57 mandates a permit for the displacement of groundwater by the underground storage of gases or liquids under pressure. The Department of Natural Resources (DNR) is the responsible permitting agency. No specific rules have been promulgated regarding this authority. One facility of this type has been constructed in Minnesota. No EIS was prepared for that facility. The DNR is currently processing a second application. An EIS has been ordered on the proposed facility. The primary environmental effects of concern on this type of project are groundwater quantity and quality impacts. The lack of a formal process for citizen comment further documents the need for environmental review of this type of activity.	<p>State: Minnesota Statutes, section 1031.681</p> <p>Minnesota Rules, part 6115.0130</p> <p>Minnesota Statutes, chapter 216B</p> <p>Minnesota Rules, Chapter 7851</p>
4410.4400 Underground Storage subp. 7 B	B. For construction of an underground storage facility for gases or liquids, using naturally occurring rock materials, that requires a permit pursuant to Minnesota Statutes, section 1031.681, subdivision 1, paragraph (b), the DNR shall be the RGU.	(1982) Minn. Stat. § 84.621 mandates a permit for the storage of gases or liquids, other than water, in natural rock formations underground. These formations could be naturally occurring or the result of the mining of rock material to create a storage site in a rock formation. No facilities of this type currently are found in Minnesota and no formal proposals have been presented. It is known, however, that the concept of mining rock to create an underground cavity in the bedrock is being discussed. The purpose of the cavity would be to potentially store petroleum products. The primary environmental concerns associated with such an activity would be related to groundwater quality and safety concerns. The DNR is the responsible permitting agency for this type of activity. No specific rules have been promulgated regarding this authority. The lack of a formal process for citizen comment further documents the need for environmental review of this type of activity.	<p>State: Minnesota Statutes, section 1031.681</p> <p>Minnesota Rules, part 6115.0130</p> <p>Minnesota Statutes, chapter 216B</p> <p>Minnesota Rules, Chapter 7851</p>
4410.4400 Metallic mineral mining and	Metallic mineral mining and processing. Items A to C designate the RGU for the type of project listed:	(1982) Extensive evaluation of radioactive deposits has been elevated to a mandatory EIS category pursuant to 6 MCAR § 3.039 G.1, because of the increased potential for adverse environmental impacts and human health impacts. The 1,000 ton threshold was recommended by the DNR as a Feasible	<p>Summary: Review of recently prepared EISs indicates issues, including some that are not directly regulated impacts included wildlife habitat effects, native plant effects to a number of natural resources and environmental</p>

Monitoring fugitive dust emissions from off-highway vehicles traveling on unpaved roads and trails using passive samplers

Pamela E. Padgett & Dexter Meadows &
Ellen Eubanks & William E. Ryan

Received: 4 April 2007 / Accepted: 28 August 2007 / Published online: 28 September 2007
© Springer Science + Business Media B.V. 2007

Abstract Vehicles traveling on dry, unpaved roads generate copious quantities fugitive dust that contributes to soil erosion, and potentially threatens human health and ecosystems. The purpose of this study was to develop a low-cost technique for monitoring road dust that would enable land managers to estimate soil loss. The "sticky-trap" collectors developed were evaluated at the Turkey Bay off-highway vehicle (OHV) riding area on the Land Between the Lakes National Recreation Area, in western Kentucky. The

results showed that the dust plume created by vehicle traffic was heterogeneous: larger particles were in the lower part of the plume and deposited closer to the source, smaller particles were carried higher in the plume and traveled at least 100 m away from the source. Collection of particles parallel to the source was also heterogeneous, suggesting that measurements taken at a single point may not be appropriate for estimating erosion losses. Measurements taken along two trails indicate that when large numbers of riders are present, dust concentrations may reach unhealthy conditions for riders, but that it is unlikely that fugitive dust is harming native vegetation, given frequent rainfall. The study demonstrated that OHV traffic contributes to substantial erosion of roadbeds because of aeolian transport.

P. E. Padgett (*)
Pacific Southwest Research Station, USDA Forest Service,
4955 Canyon Crest Dr.,
Riverside, CA 92507, USA
e-mail: ppadgett@fs.fed.us

D. Meadows · E. Eubanks
USDA Forest Service,
San Dimas Technology Development Center,
San Dimas, CA 91773, USA

D. Meadows
e-mail: dmeadows@fs.fed.us

E. Eubanks
e-mail: eeubanks@fs.fed.us

W. E. Ryan
USDA Forest Service,
Land Between the Lakes National Recreational Area,
Golden Pond, KY 42211, USA
e-mail: wryan@fs.fed.us

Keywords Fugitive dust · Particulate air pollution ·
Soil erosion · Aeolian erosion

Introduction

Fugitive dust created by recreational off-highway vehicles (OHV) is an increasingly serious problem for land managers. Recreational traffic increases maintenance costs for critical access roads, accelerates erosion and run off, damages ecological structure and function, and can threaten human health. But the consequences of OHV traffic are quite site-specific,

often influenced by weather conditions and can vary widely depending on the vehicle itself and the driving behavior of the operator (Etyemezian et al. 2003; Reheis and Kihl 1995). Before effective control measures can be implemented, land managers need a clear understanding of how much dust is generated under given conditions, and how far dust is migrating from the source.

Off-highway traffic on unpaved roads clearly disturbs the roadbeds, loosening the surface increasing the potential of surface erosion during rain events, and aeolian transport when it is dry. Erosion of road surfaces during rain not only damages the road, but also can lead to siltation of streams and wetlands, harming habitat, degrading water quality, and potentially impacting drinking water resources. Aeolian transport of dust during dry spells leads to accumulation of dust on roadside vegetation, which can impair foliar function by reducing photosynthetic capacity and gas exchange (Farmer 1993; Grantz et al. 2003). Fugitive dust also damages foliage by abrading surfaces reducing the integrity of the cuticle boundary (Eveling 1986). And clouds of dust are irritating to human lungs; prolonged exposure may lead to long-term impairment of pulmonary capacity.

Adequate quantification of aerial migration of dust created by OHV activities is often lacking. In part, because atmospheric monitoring techniques for particulate pollutants generally focus on the fine particulate fraction known to impact human health, and because monitoring methods for human health usually entail expensive equipment that do not yield spatial resolution of source-sink relationships. A 1983 Forest Service estimate of aeolian erosion was 564 kg/km (1 ton per mile) in 1 year for one vehicle, traveling once a day on an unpaved road (Frazer 2003). An annual rate of soil loss at 300 kg/ha (300 lb/ac) for forested land is considered normal (Munsell 2004).

This study was designed to measure the quantity of soil displaced by aeolian erosion due to vehicle traffic. The goal was to understand the relationship between vehicle use intensity and dust creation. The amount of dust generated was determined by weight using simple sticky-trap devices developed for monitoring fugitive dust. Atmospheric particulate loads relevant to human health were measured using electronic instruments for PM_{2.5}, and visualization of particles was conducted using scanning electron

microscopy (SEM). Portable weather stations were used to measure wind speed and direction, temperature and relative humidity at the test sites.

Secondary objectives were to evaluate the effect of dust accumulation on native vegetation, and the potential for impacts to human health by suspended particles. For these questions leaf samples were collected and viewed by SEM to determine damage to cuticle surface and interference with stomata opening. Portable electronic particulate monitors were deployed at the two test sites to quantify atmospheric concentrations of particles less than 2.5 μm – the US Environmental Protection Agency standard for damage to respiratory tissues.

Methodology

Site description

The Turkey Bay OHV area is part of the Land Between the Lakes (LBL) Recreational Area in western Kentucky (Fig. 1). The OHV area, roughly 688 ha (1,700 acres), has been set aside for use by any operator of an OHV. The area was originally designated by the Tennessee Valley Authority in 1975 and has been operated as an open riding (riders were not restricted to designated trails) area ever since. The USDA Forest Service acquired the property in 1999. Under Forest Service guidelines, the area must be managed for preservation of the resource in addition to recreation. Changes in, and increases in usage have left the area severely scarred and impacted. Impacts include severely denuded and eroded hillsides, loss of leaf litter and topsoil, compacted soils, heavily disturbed and dead flora, and dust everywhere.

Two test sites were chosen. The first site was along a broad main trail close to the entrance station (labeled "A" on Fig. 1). The trail was bordered on the north side with woods, and on the south side with an open field. The second site (labeled "B" on Fig. 1), was about 1 km further into the trail network where the trails are narrower. The second site (referred to as the "tunnel") was bordered by dense forest vegetation on both sides and a nearly enclosed canopy. The trails ran north-south therefore the sampling grids were on the east and west sides of the trail. The sampling transects were established along the edges of the trails

Lake Superior Streams Sediment Assessment, Phase ONE 8/2013 Minnesota Pollution Control Agency

DOC 6

some North Shore streams, only one of those sites was field evaluated in this study. All sites and their adjective BEHI ratings are illustrated in Figure 47.

5.1.4 BANK AND BLUFF SOILS ASSESSMENT

The available soils data along the North Shore is quite generalized and the published quaternary geology mapping of the North Shore has only progressed as far as Castle Danger. Beyond Castle Danger, published maps are not accurate enough to describe local variability in geomorphic conditions that would impact erosion potential of stream channels. Furthermore, soils data is also limited to broad categories. To compare existing soils data to actual field conditions, soil samples were collected from streambanks and bluffs along North Shore streams and were analyzed in the lab by hydrometer and sieve analysis. Sites sampled had a wide range of distribution of particles sizes (Table 12). Of particular note was the high clay content of the sample taken from the Knife River bluff. This sample was collected from a location that overlaps with the broad area delineated as having predominantly red lacustrine sediments.

6.0 FIELD ASSESSMENT OF ROAD IMPACTS ON SEDIMENT SUPPLY

Although anthropogenic stress as determined by SUMREL scores was very low for most subcatchments of the North Shore, SUMREL scores were elevated in most subcatchments due to the presence and density of roads. To address the potential impact of roads on sediment delivery to Lake Superior tributaries, we examined the extent and hydrologic connectivity of roads and streams, the contribution of roadside erosion on sediment availability and the localized effects of stream-road crossings on stream channel stability. Due to the high density of roads and impervious surfaces around the City of Duluth, our analysis was directed at North Shore catchments outside of this urbanized area. The following presents a summary of the study findings (see Appendix K for the full report).

6.1 ROAD-STREAM CONNECTIVITY ANALYSIS

Within the transportation network high risk areas for increased sediment and fluvial conveyance exists for roads in close proximity to streams, especially roads draining to ditches which drain directly to streams. This is especially true for all road-stream crossings which serve as a direct connection of roads to streams (Croke et al., 2005). –Dutton, 2012.

GIS analysis of stream-road layers was conducted to examine the impact of roads on channel network extension. As with methods outlined by Miller (2010), this study quantified channel network extensions resulting from the proximity of roads to streams, in addition to the areas in which they intersect. To do this, a modified roads layer was developed which consisted of a MnDOT roads base layer and a US Forest Service (Superior National Forest) roads layer. The modified layer was overlaid with buffered stream layers (USGS NHD hydrography layer, 30m resolution) to evaluate roads within close proximity to streams. Stream buffer widths used to determine proximity were 10, 50 and 100-ft, to account for St. Louis County setback requirements (Dutton, 2012). The length of road intersecting these layers was considered an extension of the stream network and was added to existing stream lengths to evaluate changes in drainage density.

In total, 1346 stream-road intersections were identified using the GIS analysis and over 3485 miles of roads were found to be within 100ft of North Shore streams (Table 13). Together, the intersection of these features and their proximity to one another resulted in a drainage density increase of 1.5% when channels were buffered at 10ft widths and upwards of 9.5% when streams were buffered at 100ft widths.

DOC 6



Backcover of Wisconsin DNR publication for Land Use Education and Impervious Surface Implications to the environment

see page 2

Copyright © 2012 by the Board of Regents of the University of Wisconsin System doing business as the Division of Conservation Education of the University of Wisconsin Extension. All rights reserved. Send copyright requests to: Cooperative Extension Publishing, 522 N. Lake St., Box 227, Kaukaun, WI 53101, pubinfo@ces.wisc.edu

Cooperative Extension publications are subject to post-publication review by the University of Wisconsin Extension Cooperative Extension in cooperation with the U.S. Department of Homeland Security. Wisconsin County Extension Publications are subject to further review purposes of the 2012-2013 and 2013-2014 Wisconsin Statewide 110-AA employment. The University of Wisconsin Extension Cooperative Extension provides equal opportunities for employment and programing regardless of race, sex, age, religion, marital status, sexual orientation, gender identity, and disability. University of Wisconsin Extension, 522 N. Lake St., Box 227, Kaukaun, WI 53101, extension@ces.wisc.edu, phone: (920) 262-9277, fax: (920) 262-4341, TDD: (920) 262-9277

DNR Publication
WI-0949 2012



DNR Publication
6/20/2012 10:10:20 AM

DNR Extension Center for Land Use Education



NEW LEAF PAPER®
ENVIRONMENTAL BENEFITS STATEMENT
of virgin post-consumer waste fiber in single fiber

University of Wisconsin Extension used the following resources to create 432 pounds of New Leaf Paper:
made with 100% post-consumer waste and manufactured with electricity that is at least 50% green or certified renewable energy certificates.

trees fully grown	water gallons	energy million BTUs	solid waste pounds	greenhouse gases pounds
27	12445	11	789	2760

Calculations based on research by Environmental Defense Fund and other members of the Paper Task Force
www.newleafpaper.com

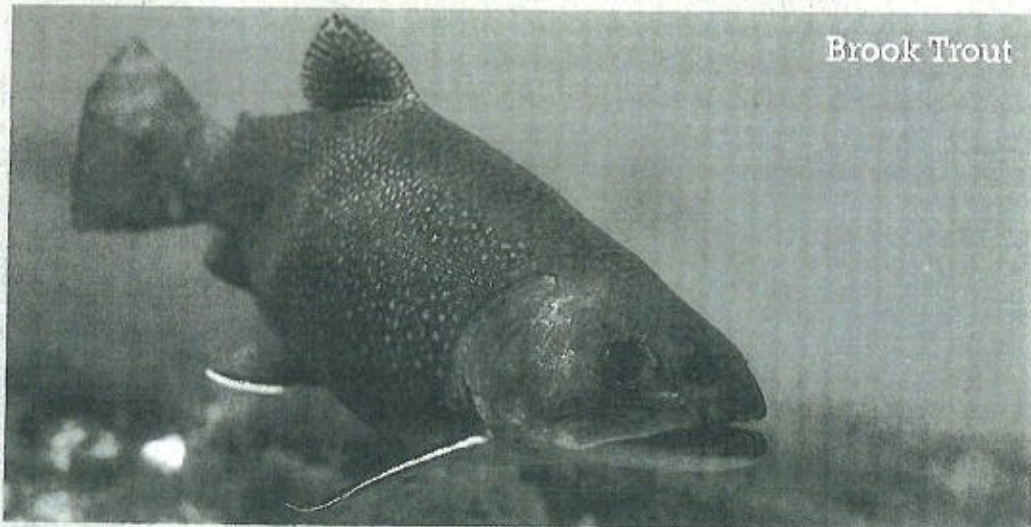


Brown Trout

Photo by Eric Engbretson

Brook Trout and Brown Trout

Both brook trout and brown trout are found in many streams in Wisconsin, and require cold, clean water to survive. Both species are sensitive to pollution and low oxygen conditions. A study conducted on 33 coldwater streams in Wisconsin and Minnesota found that when impervious surfaces covered more than 11% of a watershed, trout were eliminated from streams.⁶



Brook Trout

Photo by Eric Engbretson

The brook trout is the only trout species native to Wisconsin's waters. Part of their diet consists of aquatic insects and small fish, whose populations are negatively impacted by increased runoff and sedimentation.

The Potential Effects of Forest Roads on the Environment and Mitigating their Impacts

Kevin Boston¹

Published online: 13 October 2016
© Springer International Publishing AG 2016

Abstract Forest roads are a necessary element for accessing forestry resources, but their impact on the environment can be significant. Forest roads can cause a variety of impacts on local wildlife that may lead to extirpation: facilitating the spread of invasive organisms, causing death or harm by vehicle strikes, and changing the behavior of animals to their detriment. Roads create improved access to forests, which can increase predation rates from hunters. Animals may move to avoid traffic noise, increasing their vulnerability to predation by other animals. One of the most significant impacts of forest roads is on water quality, through both catastrophic and chronic sources of water pollution, primarily from sediment. While it is not the case that every road will cause any or all of these impacts, for those that do, mitigation measures can be used to lessen these negative effects. These mitigation measures must begin during the location phase of the road and should continue through construction, use, and maintenance of the roads. Application of these mitigation measures allows forest managers to minimize the impacts from their forest roads when necessary.

Keywords Forest roads · Environmental impacts · Mitigation measures

This article is part of the Topical Collection on *Integrating Forestry in Land Use Planning*

✉ Kevin Boston
Kevin.Boston@oregonstate.edu

¹ Department of Forest Engineering, Resources and Management, College of Forestry, Oregon State University, 210 Snell Hall, Corvallis, OR 97331, USA

Introduction

The existence, development, and maintenance of forest roads have both positive and negative effects. Many of the benefits are generated from improved access to both extractive and non-consumptive resources that are produced from our forests. Non-consumptive resources include access to hunting, camping, wildlife viewing, and general site seeing—all of which use forest roads.

Improperly designed, constructed, or maintained forest roads can have a significant impact on the environment. Roads can be vectors for the spread of diseases or noxious weeds. They can both directly and indirectly harm terrestrial wildlife. Perhaps the largest impact from forest roads is on water quality, through both chronic and acute deposition of sediment that can limit the beneficial uses of water and harm aquatic organisms in waters that originate from forests. Many of these impacts can be minimized through the adoption of mitigation measures that change the manner in which roads are designed, built, maintained, and used. These mitigation measures might result in additional costs but can lessen the environmental impacts from forest roads.

This paper will describe both the benefits and impacts that can occur from forest roads and will describe mitigation measures to lessen the damage forest roads cause. The goal is to provide a review of mitigation opportunities to forest road managers, in order to assist them in lessening the impacts from their forest roads when they occur as well as promoting sustainable management of forests. The paper will primarily focus on examples from North America, as that has been the source of much of the research cited, but will occasionally use international examples where possible and applicable. The intention is not to suggest that all roads produce all of the outlined impacts, but to provide a description of some common impacts that occur from forest roads,

2.1 [For text of items EE to HH, see M.R.]

2.2 [For text of subps 4 to 10, see M.R.]

2.3 **7050.0250 ANTIDegradation PURPOSE.**

2.4 The purpose of the antidegradation provisions in parts 7050.0250 to 7050.0335 is
2.5 to achieve and maintain the highest possible quality in surface waters of the state. To
2.6 accomplish this purpose:

2.7 A. existing uses and the level of water quality necessary to protect existing uses
2.8 shall be maintained and protected;

2.9 B. degradation of high water quality shall be minimized and allowed only to the
2.10 extent necessary to accommodate important economic or social development;

2.11 C. water quality necessary to preserve the exceptional characteristics of
2.12 outstanding resource value waters shall be maintained and protected; and

2.13 D. proposed activities with the potential for water quality impairments
2.14 associated with thermal discharges shall be consistent with section 316 of the Clean Water
2.15 Act, United States Code, title 33, section 1326.

2.16 **7050.0255 DEFINITIONS.**

2.17 Subpart 1. **Applicability.** For purposes of parts 7050.0250 to 7050.0335, the
2.18 following terms have the meanings given in this part. Terms in parts 7050.0250 to
2.19 7050.0335 that are not specifically defined in applicable federal or state law shall be
2.20 construed in conformance with the context, in relation to the applicable section of the
2.21 statutes pertaining to the matter and ~~current~~ professional usage as of the effective date of
2.22 this part.

2.23 Subp. 2. **Agency.** "Agency" has the meaning given under Minnesota Statutes,
2.24 section 115.01, subdivision 2, unless otherwise specified.

2.25 Subp. 3. **Applicant.** "Applicant" means a person requesting a control document.

DOC 10

Pioneers in the wilderness: Minnesota's Cook County, Grand Marais, and the Gunflint in the 19th century
by William Raff 1988

pg. 127

Pine Mountain Road was part of a road called Rove Lake Road built by one of the founders of Grand marais, Henry Mayhew.

1916 roads and Plat maps

John Borchert U of MN Library map section. 1916 roads and Plat maps.
http://geo.lib.umn.edu/plat_books/stateofmn1916/reference/map00898.jpg

DOC 10

to Saganaga Lake runs through this town." Perhaps it ran from Rush Lake west through Granddad, along the creek to Long Island Lake, thence north.¹²

The comments Davis wrote in 1884, and reference to a good map will surely confirm the opinion that the "Saganaga Trail" mentioned in these Townships 1, 2, and 3, could not have been a road useable in summer (except as a canoe route). No doubt it would be a mistake to think of this trail as any kind of predecessor to the Gunflint Trail.

The combined effects of early trading posts, Indian trappers, mineral prospectors—the search for roads has certainly been fruitless, if not entirely pointless. Thus far, the only sensible conclusion must be: there were no developed, rational, overland trails—or roads—from the Gunflint-Saganaga area to the Shore at Grand Marais in that early period.

While it is clear that a number of Indian trappers and many prospectors prowled the mid-Trail area during the 1880s and 90s, there apparently were no homes or permanent residents anywhere between the Maple Hill homesteads of Christian and Elias Eliason (their claims were dated 1890) and the far north area of Gunflint Lake. The only possible exception to this generalization was the log cabin of John Miller near Poplar Lake, as noted in 1884 by surveyor Davis; this was probably John M. Millar, the first Auditor of Cook County. However that may be, it is unlikely that "Miller" continued in that location for long. There are no reminiscences, newspaper articles, or records of any kind that indicate that anyone lived there, or anywhere, indeed, in the mid-Trail region. Even during and after the building of the County Wagon Road north of the 24-mile post cut-off to Rove Lake, in 1893, there is no evidence that there was any cabin, homestead, or established stop-over to relieve the no-man's-land wilderness between Maple Hill and Gunflint Lake.

But, there was indeed an overland road, built in the late 1870s. Starting at Grand

Marais near the present Catholic Church, it wound up Maple Hill, passed on the west side of the present site of the Maple Hill Church, continued north about one mile east of Devil's Track Lake; north, passing a half-mile east of Little Clearwater Lake (now Binagami); continuing north, it passed on the lower east slopes of Pine Mountain; north following approximately the present Gunflint Trail route; over the North Brule; passing one-quarter mile east of Swamper Lake (not named then, or even by 1926); northwest to the 24-mile post near the western tip of Carlton Lake (now East Bearskin); continuing northwest to the west end of Aspen, turning there to the northeast, passing the western tip of Jocko Lake (now Flour); east of Hungry Jack, the east end of Bear Skin; then northeast to the west end of Emby Lake (now Clearwater); north one mile to the eastern tip of Daniel's Lake; finally, northeast to the eastern end of Rove Lake. There in the 1870s was a trading post!¹³

Note: Binagami is on the current day Pine Mountain Road

None of the early travelers associated with the French or the English periods of the fur trade had ever mentioned a post or settlement on that little lake. Nonetheless, it must have become a rather important trading center, for its existence was the cause of the road being built. But, when was it actually built? What were the exact circumstances? A description of the trail, or road?

Because Cook County's Board of Commissioners was not functioning until 1882, one searches the Minutes of the Lake County Board; but in the Minutes of their meetings one discovers nothing about the Rove Lake road. Nevertheless, there is a considerable amount of other testimony; consequently, there need be no doubt that it did exist during the 70s.

In 1929, one of Cook County's early-20th century pioneers, Dr. Frank B. Hicks, wrote a lengthy newspaper article about the origins of white settlement in Grand Marais. Quite naturally, he wrote a great deal about that prospecting and trading entrepreneur, Henry Mayhew. Relevant for this study is his comment that Mayhew "established

tents and wigwams used by a population that fluctuated between extremes depending upon the seasons of the year. Indeed, despite the claims as to the size of the place (grossly inflated, probably by Mayhew himself), there can be little doubt that it was in operation only during the winter fur-buying seasons.

During the summer of 1978, the sharp old-timer, Charlie Boostrom, Sr., clearly recalled that during his many years of hunting and trapping in the vicinity of Rove Lake, he had never seen any kind of buildings there that could have served a town of 200 Indians, traders and prospectors; he scorned the idea.

Seeking additional information about this little town on Rove Lake, it is possible to turn again to the notes of those hardy men who surveyed the area, slogging through swamps, battling bugs, climbing cliffs, suffering the bitter cold!

Township 65 North Range 1 East, is the one which contains Rove, Watap and Clearwater Lakes. Some disappointment is encountered, however, when the notes of the surveyors, Thurston and Kindred, are consulted; they explained they had not actually been in the Township because of the untimely severity of the winter. Nevertheless, on November 26, 1876, they wrote: "This township embraces the division of waters, on the height of land. In Mountain Lake the water flows southeast into Superior, and from Rove Lake it flows into Rainy River." (The surveyor erred in this. The waters from Rove also flow into Superior via Arrow Lake and Arrow River. The height of land is between North and South Lakes). Had they been able actually to survey the area on the ground, they certainly would not have made this obvious error; moreover, they then would have written a commentary on Mayhew's trading post.

Although the comment of Thurston and Kindred is disappointing, some information about the road is given in the reports of other surveyors three years later.

Township 63 North, Range 1 East, was surveyed by H. P. Lund and C. Davis in September, of 1879. On the 3rd of the month they wrote, "The road from Grand Marais to Rove Lake traverses the township North and South near the center." Today, the intersection of the Gunflint Trail and the Greenwood Road is very close to the exact center-point of this Township.

Township 62 North, Range 1 East, was surveyed by the same Lund and Davis during the same month of 1879. On the 17th they commented: "The Grand Marais and Rove Lake road traverses the W. portion of the town from North to South." For convenience, it should be recalled that Elbow Lake is near the center of this Township; the present Gunflint Trail crosses the southeast quarter and extends north along the west border.¹⁷

Reading these two comments, it is apparent that the road, generally, followed the old Gunflint Road route, but considerably to the west of the present Trail, at least to a point one mile north of the present bridge over the South Brule River.

Certainly it is unfortunate that Lund and Davis were the only surveyors to comment on the road to Rove Lake; yet, there are maps available that do show the route in adequate detail.

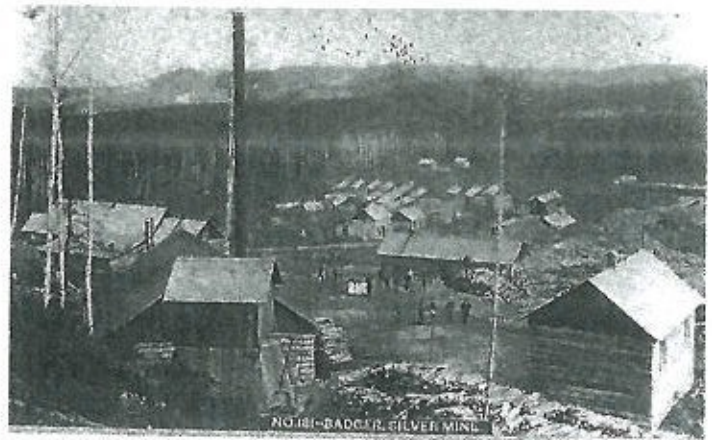
Charlie Boostrom, a pioneer of the mid-Trail area and builder of Clearwater Lodge, has made a number of pertinent comments about the old road which once passed so near his main lodge building. Although Charlie first came to the area in 1910, by which time the road had not been used for many years, he recalls a number of remarks about that trail made by men who were old-timers when he arrived. Surely correct in stating that it was the oldest County road in the area, they told Charlie that teams of oxen had once been used to haul freight sleds, or small tote sleighs, on the route during winters. Moreover, some of the old men recalled that when Mayhew operated the post, it was always possible for a man to earn some extra money backpacking (or by dog sled or by pulling a toboggan)

trade goods to Rove, or packs of furs down to Grand Marais! According to Boostrom's informants, the road even had milepost markers erected its entire length!

Exactly where the trading post was located on Rove Lake is somewhat unclear. Charlie Boostrom asserts that it was located on the Canadian shore, at the extreme eastern tip of the lake, on the shallow narrows between Rove and Watap. And Ben Ambrose, another pioneer woodsman, clearly remembers seeing the building ruins on the Canadian side, as his friend, Charlie, recalled. Unfortunately, the few records do not specify the exact site and, as we will see, even the best of maps are ambiguous about the location.¹⁸

There is no doubt at all that Henry Mayhew, the fur-trading businessman, was operating posts at both Rove Lake and Grand Marais. Hiring crews of Indians he cut out and developed the first overland trail joining the North Shore to the border lakes. Obviously, it was not a highway suitable for automobiles (in 1875-76!), or even for horses or oxen pulling wheeled wagons; rocks, stumps, mud, roots, and deadfalls would, almost certainly, have made such usage impossible. However, it is reasonable to assume it was entirely adequate as a hiking trail or for winter use for men backpacking on snowshoes or with dog sleds or toboggans, or even oxen hauling large sleds.

While his business was operating on a modest level, Mayhew, the prospector, was continuously engaged in his search for valuable minerals; as we will see further, this search involved his attentions in all parts of the County. Surely his eagerness was sustained over the years by the frequent reports in Duluth newspapers about diggings at Silver Islet, up on the Canadian shore. But, in 1882, news of even more dramatic import came to Grand Marais: nearby Port Arthur had suddenly become the "Silver Gateway" to the northwest! Great discoveries in the Whitefish Lake area! Significant finds at Silver Mountain, Crown Point, Rabbit Mountain. Huge mines were opened! Port Arthur quickly became a boom town,



Courtesy of the Thunder Bay Historical Museum.

reaching a population of 5,000 by the end of 1885! Because the silver area was inaccessible except by primitive wagon roads, the Thunder Bay Colonization Railway was planned in 1882. Actual construction began within two years! The silver boom continued in the 80s, reaching "dizzy heights" by 1888.¹⁹

What fabulous, welcome news for a man who had been prospecting since before the Civil War, for one who had an operating trading post on the border a mere 16 miles as the crow flies from the new silver fields! Confident that the silver-bearing geological formations of northern Cook County were similar (if not identical) to those of the Silver Mountain region, Mayhew would have been a fool if he had not made plans to improve all his facilities; plans had to be made to take advantage of the expected discoveries closer at hand!

What could be more natural then, that he soon turned to the Cook County Board of Commissioners for assistance in upgrading his road to the border? After all, he was Chairman of the Board; persuading his like-minded colleagues should not be too difficult.

No one should be amazed, therefore, that the County Board went along with road improvement projects from 1884, as soon as requests were made. On at least ten occasions during the next four years, the Commission approved and paid the bills for brushing out (an ever-recurring problem, of course), re-routing, widening and bridge-building—all this before the end of 1888!

And, all before Henry Mayhew was replaced by Sam Howenstine as Chairman of the Board on January 7, 1889.

It was on the 15th of September, 1884 that the Board considered a problem relating to roads of any kind for the very first time; there was a "Petition of Twenty freeholders" asking (to quote the Minutes of that meeting)

"That the road from Grand Marais to Rove Lake as cut out with exception of where it can be improved by cutting out anew be recognized and made a County road and that money be appropriated from County Revenue Fund to improve said road." was received and on motion of S. F. Howenstine, the same was adopted and Two Hundred and Fifty Dollars appropriated from County Revenue Fund for improvements on it.

W. B. Millar (brother of John M. Millar, the County Auditor?) was appointed road overseer. In any event, the overseer hired a crew of Indians and proceeded with the job quickly. Within three months the work was completed and Millar's bill (for \$250.50) was paid even though he had spent a little too much.

During that autumn season the Board decided for the first time that something would have to be done to assist the North Shore mail carriers: at the October 11th, 1884 meeting they decided—

On motion of Saml. F. Howenstine, Road Commissioner Millar was instructed to hire men to brush out the trail between Grand Portage and Lake County line, the same to be cleared out well enough to allow dog trains to get through with mail . . . this coming winter.

Although a progressive step, this brushing-out was not at all as substantial as the work being undertaken on the "County Road."

But apparently once begun, appropriations for the Rove Lake Road would have to continue on and on. Within six months Road Commissioner Millar was back before the Board requesting an additional hundred dollars "to be spent of the Rove Lake County Road in order to make it passable." The proper motion was passed, the money

appropriated, "to be expended on same at once."

At that meeting, June 1st, a new idea was suggested, one that would become very profitable for the County in the future, even if it did not work out in 1885: send Chairman Mayhew to the State Capital to seek state aid.

Motion presented that the Chariman of the Board wait upon the State Road Commissioner and ask that the State appropriate the sum of \$2,000, to be Expended on the Co. Road already laid out and partially open to Rove Lake from Grand Marais. [By this time, the trail had been in use for nearly a decade; in 1885 the Board was already planning to make it a "road" suitable for heavier traffic.]

After the disappointed Chairman returned to Grand Marais, he reported, at the meeting of July 27, that he had "tried to find the State Commissioners on County road business but I failed to do so, one of them being in Arizona, and the other in Ohio."

During that meeting, when the Chairman had to confess the failure of his mission to St. Paul, he must have been pleased to hear the Overseer's report about his progress: the \$100 appropriation had been spent, and the road "was now passable with horses as far as the 'Devil's Track River.' "

It is evident that Mayhew felt some urgency in pushing the work to enable teams of horses to be used on the road as soon as possible. He called a special meeting for the 24th of October of that year (1885), "to consider the propriety of cutting out the balance of the Road between North Brule River and the path he cut out from Rove Lake south." Mayhew stated there was an uncompleted section "about seven miles which could be made passable for a winter road for about Five Hundred dollars." Perhaps there is little need to add that the appropriation was made and the Overseer instructed "to proceed with the work."

Road Overseer Millar must have been one civil servant who quickly and efficiently followed instructions from his supervisors: he had hired a crew of men from Duluth to supplement his Indian laborers; he reap-

peared before the Board within three weeks, at the meeting of November 9th, reporting that the cutting-out was "now at the 13 mile post." (approximately at Pine Mtn.) And, within one more week, he reported again to them the road was "now cut through to Rove Lake and passable with teams." But, there was a small administrative problem: he had run through his appropriation and needed, as soon as possible, another \$400 for men's wages. There was some urgency about the matter, for the laborers he had hired from Duluth were eager to be "leaving by first boat." The wages were paid promptly, then; and the men were relieved that the mid-November weather had not suddenly closed the shipping season, isolating them in Grand Marais for the long winter.

When Russell Roberts was appointed the new Road Commissioner (often referred to as "Overseer"), he soon discovered that the upgrading of the Rove Lake road was to be his main preoccupation. During the first Board meeting he attended (July 26, 1886), he received directions to repair the County Road as far as the 9-mile post (close to Little Clearwater Lake) "making such repairs as shall be necessary to enable loaded teams to pass."

One of the recurring problems of local government throughout the country, even in recent times, was obvious in early January of 1887; the Board met eight times, on the 1st, 3rd, 4th, 5th, 6th, 7th, 8th and 10th, and was unable to conduct business because of a lack-of-quorum. When one is reading the barely legible Minutes of the Commission, it makes for a humorous interlude in the progress of Cook County government.

Commissioner Roberts lasted less than one year on the job. In late July of 1887, the new Overseer, Ted Wakelin, reported that the recent severe rains had made major reconstruction necessary on the road up the hill from Grand Marais to the 1-mile post.

Finally, by 1888, the constant difficulty, and springtime impossibility, of fording the Devil's Track River was faced by the Board; on June 12th, they called for estimates of the

cost of bridging "the main Devil's Track." And, on the 16th of the month the Overseer was authorized to proceed with construction "on the County Road running North . . . at the old crossing, putting in good abutments with stone filling, and as substantial a structure as can be made."

The great importance of the Rove Lake Road in the opinions of the Commissioners is well illustrated by the fact that throughout this entire period, they did not authorize any important work on road connections with other communities on the North Shore. Although some minor brushing work was done in 1884 and in 1887, it was not until their meeting of October 10, 1891 that they accepted and funded the first contracts for substantial work on the Shore road east and west of Grand Marais.²⁰

One appropriate, final note on "Henry Mayhew's Road" is necessary. In 1899, Newton H. Winchell, the Minnesota State Geologist, finally published his monumental series of six large, outsized, volumes compiling and describing, County by County, the geological formations of the entire state. It was a project to which he had devoted 28 years and which was authorized by the Board of Regents of the University of Minnesota. So far as the Rove Lake Road is concerned, two of the detailed, colored maps in the Cook County sections are of great interest, for they were based on field work done in 1878, 1879, 1886, 1887, and 1897. One large, double-paged map of the County shows the road, prominently labeled "Grand Marais and Rove Lake Road," running north from town, past Pine Mountain, curving to the north and east at the 24-mile post, past Birch Lake (the present West Bearskin) and Clearwater and Daniels and then to the east end of Rove Lake; a "trail" is indicated, to the western end of the lake. This map also shows an unmarked County road extending north from the 24-mile post, and northwest, stopping at the Cross River west of Gunflint Lake; as we will see, that extension of the road had already been in existence for several years before the map was published in 1899. Another good map

in the same series, a "Rove Lake Plate," adds an element of confusion to our attempt to understand; it shows the clearly marked "Grand Marais and Rove Lake Road" going past Daniels directly to the west end of Rove, and not branching off to the east end also!²¹

With the cooperation of his fellow

County Commissioners and the taxpayers of Cook County, Chairman Mayhew had positioned himself very well indeed to take rapid advantage of whatever "mineral opportunity" that Lady Luck and a lot of hard work might open up to him in the far north of the County or, indeed, anywhere in the County.

This damaged photo of Tofte was taken in 1908-9. The central feature is the log and cribbed dock built eight or nine years earlier; note the rails and cart in the distance with a load of barrels. Carlton Peak is in the background. The conspicuous white building is Hans Engelsen's Homestead Hotel; the structure on the right housed his store and Post Office. That white home in the distance belonged to the Helge Tofte family. By 1915 this dock had become inadequate; it was replaced by a concrete structure in that year. From the photo collection of Ted Tofte.



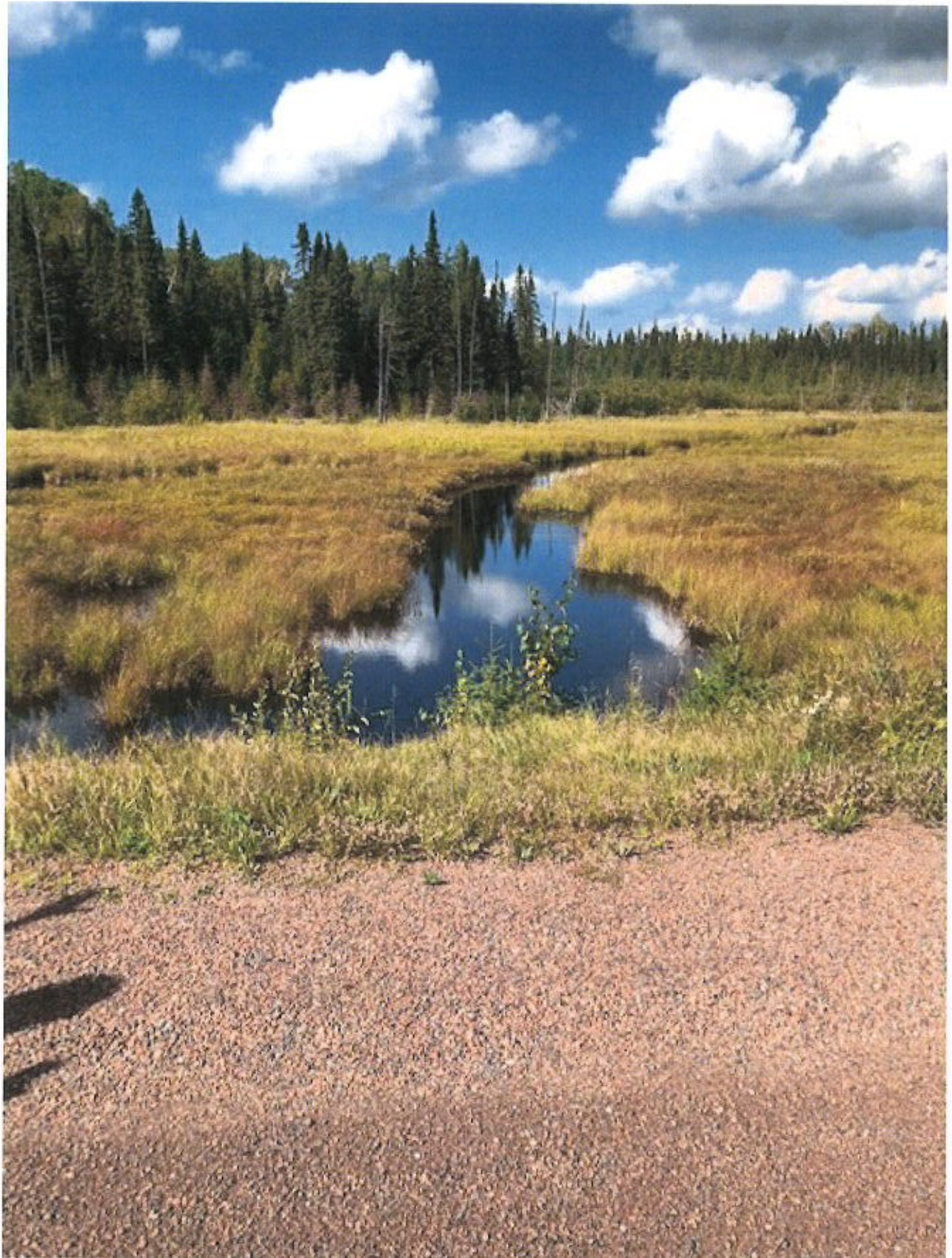
DOC 12



PINE MOUNTAIN ROAD / COOL COUNTY, MIN.
Exceptional / Great / Low
Almost NO Buffer zone

DOC 12

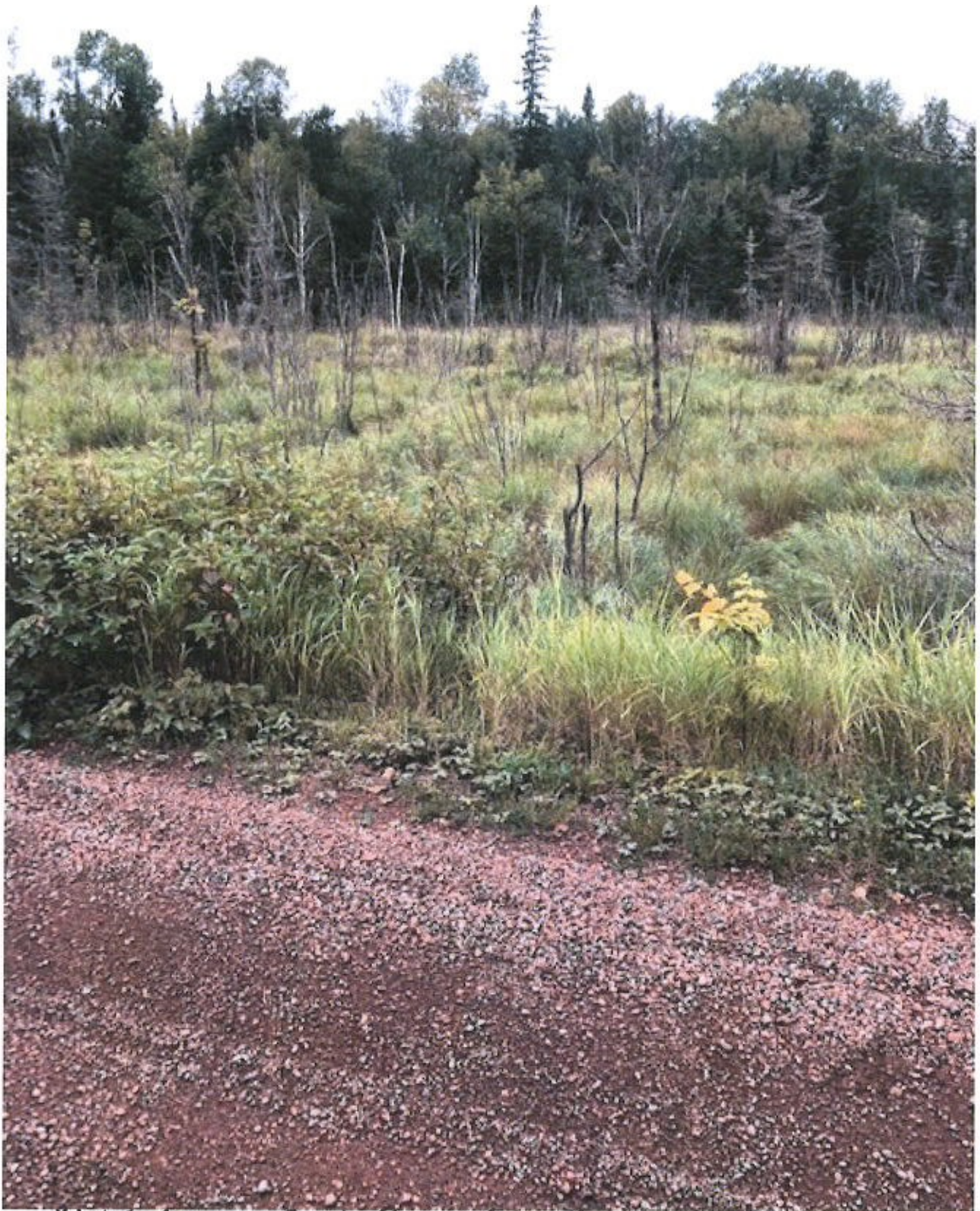
DOC 13



PINE MOUNTAIN ROAD / COOK COUNTY MN.
MUD CREEK - Direct Tributary to Elbow Creek,
Exceptional stream (MPCA ranked) - Minimal
BUFFERED ZONE

DOC 13

Doc 14



PINE MOUNTAIN ROAD / COOL COUNTY, MN.
WETLANDS - NO BUFFER ZONE

Doc 14

Lake Superior North Watershed Restoration and Strategy Management Report - 2018 - MPCA

DOC 15

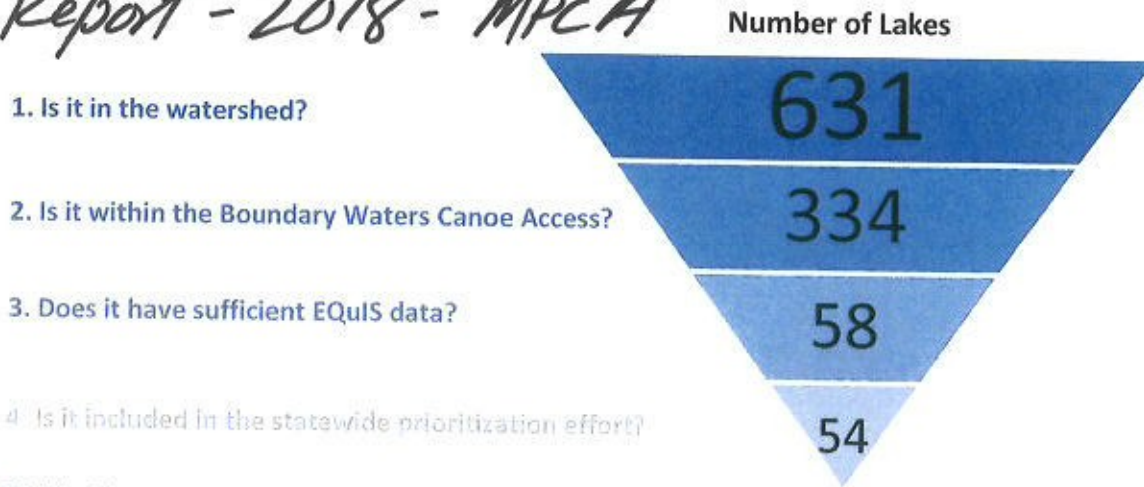


Figure 27. Lake Prioritization Process for the LSN Watershed.

A final check was also conducted to ensure all 54 lakes were mentioned in the Monitoring and Assessment Report for LSN (MPCA 2017). Of the 54 lakes, Johnson Lake was not included in the Monitoring and Assessment Report, but was still included in the final list.

Remaining lakes were then prioritized for protection based on the ranks provided in the statewide prioritization effort and local stakeholder input. Lakes of biological significance (lake trout lakes or designated trout lakes), especially those with phosphorus levels nearing the standard, and lakes with existing and active lake associations were given higher prioritization based on stakeholder input (Table 11). Lake Superior is also identified for protection consideration, as it has experienced some change in trophic status in nearshore areas with increasing levels of attached algae and turbidity. In addition, Lake Superior has been identified by the U.S./Canada International Joint Commission as a demonstration lake and is recognized nationally and internationally as one of world's most important freshwater lakes.

Appendix B provides the full list of lakes that were analyzed.

Table 11. At-risk lakes identified for protection

Lake Name	Lake ID	Lake Type	Secchi Depth (m) ^a	Average Total Phosphorus (µg/L) ^a	P Sensitivity Score ^a	% Disturbed ^a	Lake Association ^b	HUC 10
Tom	16001900		3	12.1	22.4	2.6%		401010102
Devil Track	16014300		3	12.1	4.7	1.9%	v	401010105
Hungry Jack	16022700		5.3	7.8	50.5	2.6%	v	401010101
Birch	16024700	LT ^c	5.5	8.1	73.2	3.8%		401010101
Deer Yard	16025300		2.9	16.3	31.8	1.2%	v	401010106
Divide ^d	38025600	T	3.7	15.0	8.9	0.7%		401010110
Poplar	16023900	LT	3.7	9.6	18	2.5%	v	401010104

DOC 15

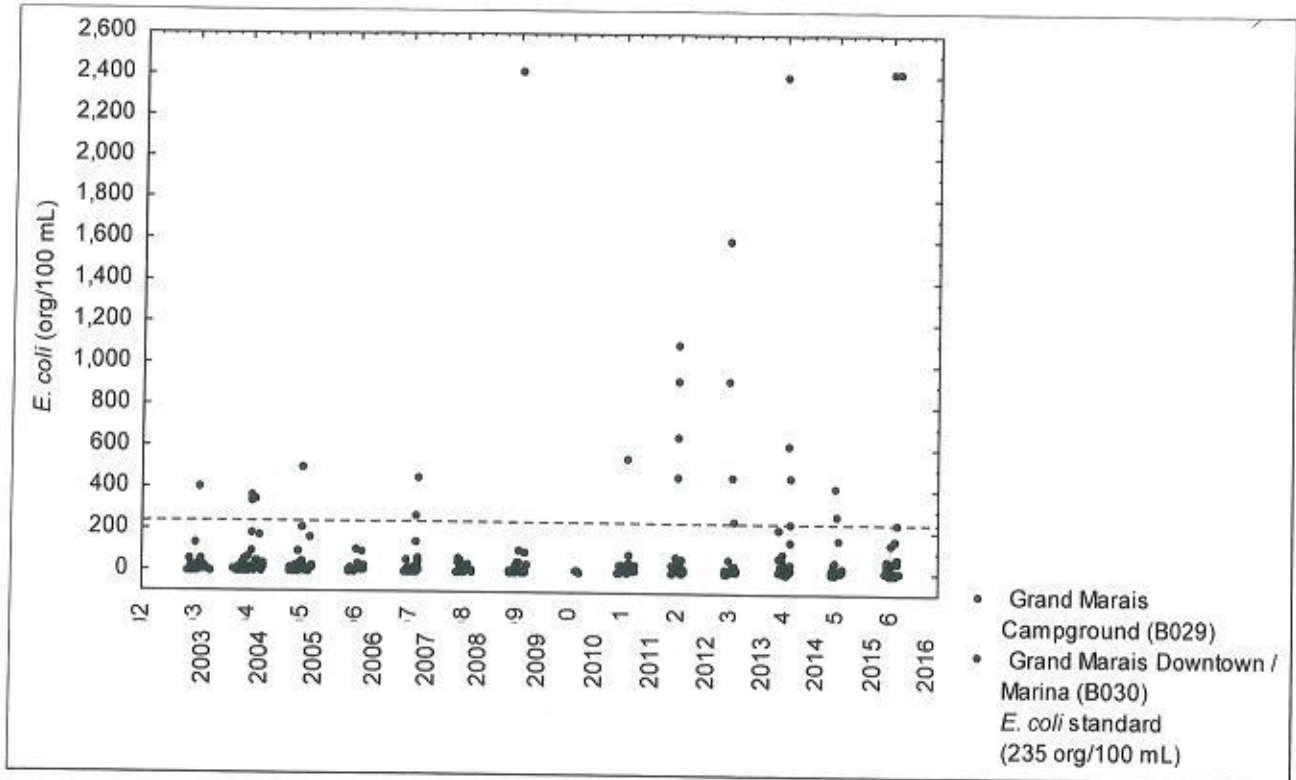


Figure 7. *E. coli* concentrations at Grand Marais beaches.

Due to water quality concerns along the shore of Lake Superior, Cook SWCD began sampling Lake Superior near shore sites in 2014 (Figure 8). Sediment plumes had been observed in the lake at tributary inputs, in addition to increased levels of attached algae. Samples were collected at five sites near Grand Marais. Transparency varied among the sites, with the best (highest) transparency at the most southwestern site (site 204) and the poorest (lowest) transparency at the site closest to the shore (site 212; Figure 9). Phosphorus concentrations varied slightly among the sites, with no clear spatial patterns (Figure 10). TSS concentrations were low—the majority of the samples were below the detection limit, with the remaining samples at or less than 2 mg/L TSS.

Lake Superior North Watershed
 Restoration and Strategy
 Management Report
 2018
 MPCA

Lake Superior DOC 17

202

~~4/17~~



DOC
17

Doc 17 1 of 2 #

WisCONTEXT

Series: Extreme Precipitation And Wisconsin's Climate

The Outsized Impact Small Streams Have On Lake Superior

Plumes Fed By Minor Tributaries Affect Ecology Of Great Lakes

.Kaley Fech, Great Lakes Echo

Dec. 27, 2018 | Noon

Wisconsin Department of Natural Resources (CC BY-ND 2.0)

Larson Creek, the Flag River and other small tributaries flow into Lake Superior at Port Wing.

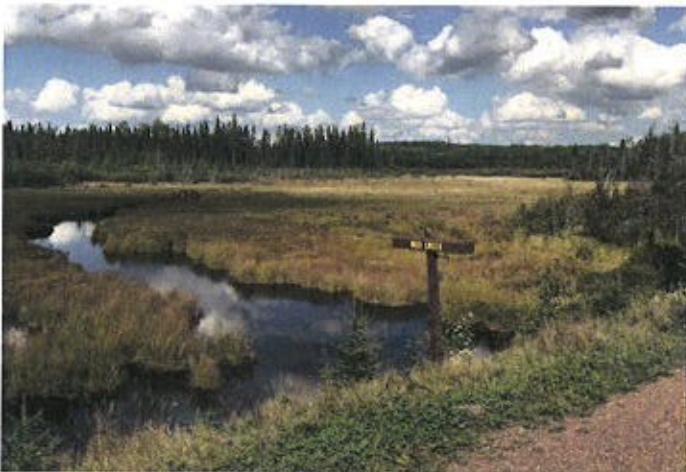
Very little is known about the smallest tributaries that flow into Lake Superior. Several researchers at Michigan Technological University are changing that.

Doc 17

DOC 18



↑ MARK LAKE ROAD, COOK COUNTY MN. ↓



Pine Mountain RD.



PINE MOUNTAIN RP.

DOC 18