

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES  
ENVIRONMENTAL SCIENCES DIVISION



TED SCHWINDEN, GOVERNOR

JUN 22 1982

COGSWELL BUILDING

STATE OF MONTANA

(406) 449-3946

HELENA, MONTANA 59620

RE: Northern Lights, Inc.  
Proposed Kootenai River Project

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 Rep. William Baeth, 805 Minnesota Ave., Libby, MT 59923  
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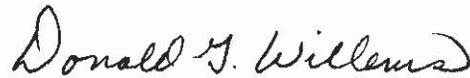
Attached are the following materials pertaining to the State Department of Health and Environmental Sciences' review of the proposed Northern Lights, Inc. Kootenai River project:

- (1) Comments and conclusions on the review of the applications and supplementary material.
- (2) Responses to questions raised at the December 1, 1981 public hearing and by associated letters.
- (3) Water Quality Bureau permit (MPDES) for point source discharges during construction.
- (4) Authorization to exceed water turbidity standards during instream construction activity. This authorization requires best reasonable construction activity.
- (5) Air Quality Bureau permit for construction of the project.
- (6) Federal Clean Water Act Section 401 Certification.

These actions in addition to being set forth by the Montana Water Quality and Clean Air Acts are also part of the Montana Major Facility Siting Act.

The effective date of the action taken by the Department of Health and Environmental Sciences described in the conclusions, permits, authorization and certification is the date shown on this transmittal letter.

Sincerely,



Donald G. Willems  
Administrator

jg

Enclosures

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KOOTENAI FALLS HYDROELECTRIC PROJECT  
AIR AND WATER QUALITY PERMITS

INTRODUCTION

The Montana Major Facility Siting Act requires the Department of Health and Environmental Sciences (DHES) to issue any decision, opinion, order, certification or permit required under laws administered by DHES and the Siting Act. DHES is required to determine compliance with all standards, permit requirements and implementation plans under its jurisdiction for the primary and reasonable alternate locations in its decision, opinion, order, certification, or permit, which are utilized by the Department and Board of Natural Resources and Conservation in their final site selection process.

Concerning the proposed Kootenai Falls Hydroelectric Project, the DHES notified Northern Lights, Inc., May 1, 1981 that its application for Montana air and water quality permits was complete for its primary location at Kootenai Falls and alternative Kootenai River sites at 1) Katka, Idaho, 2) Katka, Idaho and Rocky Creek below Troy, Montana and 3) Kootenai Falls and Rocky Creek. The DHES had seven months from the date the application was deemed complete to hold a public hearing and one year from that date to approve or disapprove the permits. December 1, 1981 the DHES held a hearing in Helena to gather public reaction to the following proposed permits for the primary and alternate sites (Appendix A): an Air Quality Permit, Montana Pollutant Discharge Elimination System (MPDES) Permit and an authorization to temporarily exceed turbidity standards from nonpoint sources during construction.

Each proposed permit contains conditions Northern Lights must meet to ensure there will be no violations of Montana environmental standards. The air quality permit pertains to controlling suspended particulate from point sources, such as crushing operations and concrete batch plants, and from fugitive emissions, such as haul roads, blasting, rock handling and general construction activity. The MPDES permit includes controlling suspended sediment in water pumped from behind cofferdams; regulating nitrates from blasting that become dissolved in groundwater and are pumped out during tunnel construction, controlling sediment from stormwater runoff which is collected and then discharged, and controlling leaks and spills of petroleum products used by equipment during the dewatering activities.

At the December hearing, the Department of Fish, Wildlife and Parks asked that the record be kept open for 45 days. The DHES concurred. The comment period ended January 14, 1982.

After reviewing the testimony and written material and considering the substantive comments, the DHES has decided to issue the permits.

The permits contain conditions Northern Lights must meet to ensure Montana's air and water quality standards will not be violated. The DHES will monitor the project during construction and operation to make sure the developer complies with the conditions of the permit.

In conjunction with the review of DHES permits, the DHES also has been working with the Department of Natural Resources and Conservation on an addendum to the Federal Energy Regulatory Commission's (FERC) environmental impact statement. The draft addendum is scheduled to be released this summer.

## KOOTENAI FALLS REVIEW SUMMARY

### Water Quality

The permit section of the Water Quality Bureau (WQB), DHES, received two applications from Northern Lights. One was for discharge of water to the Kootenai River resulting from dewatering operations during construction. The other application was for obtaining a temporary authorization to exceed water quality standards for unavoidable turbidity resulting from necessary instream construction work.

Dewatering activities will occur during tunnel and powerhouse excavation in rock, and when the various cofferdams are dewatered to enable construction work. Some unavoidable turbidity will occur during placement and removal of cofferdams in the stream.

Pollutants possibly present in dewatering discharges would be sediment (turbidity), nitrates (from blasting) and oil or fuels dripped or leaked from the excavating equipment. The WQB permits' staff has placed limits on these pollutants which will ensure that the water quality standards will not be violated in the river. The discharge permit ensures beneficial uses in the river will not be impaired by these pollutants. A copy of the final permit is attached. (Appendix B)

The instream construction activity, while it may create visible turbidity, will be mitigated to the maximum extent feasible under conditions of the authorization which require best reasonable construction practices to be used. A copy of the authorization is attached. (Appendix C)

### Summary of Water Impact Analyses

This analysis was performed by identifying possible impacts, then evaluating these impacts to see if violations of water quality standards would occur.

Possible impacts were initially identified by reviewing the Major Facility Siting Act application, the FERC's environmental impact statement and by using professional judgment.

In order to perform some of these analyses, additional data was requested from the applicant. Table 1 lists all of the water quality standards for the Kootenai River and indicates whether the impacts could cause violations of water quality standards during construction or operation. Where violations were possible, they were identified. These impacts are discussed in the notes following Table 1 and Appendix C.

TABLE 1

Evaluation of Water Quality Impacts  
Northern Lights Development at Kootenai Falls and Alternative Sites

Stream Classification B-1 (ARM 16.20.606(1))

The following are impacts on water quality standards possible during construction and operation of the Kootenai Falls hydroelectric project at the primary location and alternatives 1, 2 and 3.

<u>Standards</u>	<u>Construction</u>	<u>Operation</u>
B-1 Standards		
(16.20.618 et seq.)		
(2)(a) Fecal coliform	Won't exceed	Won't exceed
(b) Dissolved oxygen	Won't exceed	Won't exceed
(c) pH	Won't exceed	Won't exceed
(d) Turbidity	See #1	See #2
(e) Temperature	Won't exceed	See #3
(f) Sediment	See #1	See #2
Settleable solids		
Oils		
Floating solids		
(g) Color	Won't exceed	Won't exceed
(h) Toxic and deleterious substances	Won't exceed	Won't exceed
Treatment Standards (16.20.631)	Won't exceed	Won't exceed
Operation Standards (16.20.632)	Won't exceed	Won't exceed
Prohibitions (16.20.633)		
(1)(a) Sludge or emulsions	Won't exceed	Won't exceed
(b) Floating debris scum, visible oil film; globules of grease or other floating materials	See #1	Won't exceed
(c) Odor, colors or other conditions	See #1	See #2

which create a  
nuisance or  
affect the taste  
of fish

(d) Concentrations or combinations of materials which are toxic or harmful	See #1	Won't exceed
(e) Create conditions which produce undesirable aquatic life	No	Yes #5
(2) Combinations, etc.	No	No
(3) Short-term exemption	See Appendix C	Does not apply
(4) Leaching pads, etc.	Does not apply	Does not apply
(a) Plans, etc.	Does not apply	Does not apply
(b) Leaching pads, etc.	Does not apply	Does not apply
(5) Dumping of snow	Does not apply	Does not apply
(6) Minimum flows	Does not apply	Does not apply
(7) Ephemeral streams	Does not apply	Does not apply
(8) Pollution resulting from storm drainage etc.	See #1	Won't exceed
(9) Pesticides	Won't exceed	Won't exceed
(10) Supersaturation	Won't exceed	Possible #4
(11) Public water supply watersheds	Does not apply	Does not apply
Mixing Zone (16.20.634)	Provided	Won't exceed
Sampling methods (16.20.635)	Applies #1	Does not apply
Radiological (16.20.641)	Won't exceed	Won't exceed
Bioassay (16.20.642)	Does not apply	Does not apply

Possible impact #1

These possible impacts will be controlled by discharge limitations and water quality standards so there will be no instream effect exceeding water quality standards. These discharge limitations include prescriptions on test procedures (reference MPDES, Appendix B, Page 6).

Possible impact #2

These are connected with possible dredging or flushing of accumulated sediment from the reservoir sometime in the future. Letters from James A. Sewell, James A. Sewell and Associates, consulting engineers for Northern Lights Inc., dated March 23 and 29, 1982 state that sediment will not be dredged or flushed from the Kootenai River site. Because the storage area for sediment is larger in proportion to the drainage area contributing sediment for both the Katka and Rocky Creek sites, neither of these reservoirs should require dredging or flushing. However under alternative #3 the smaller storage area available in the lowered Kootenai Falls project would probably require dredging or flushing.

#### Possible impact #3

There is a possibility of impacts occurring in the section between the Kootenai Falls dam and the tail tunnel outlet. Analysis of this by the applicant (April 28, 1981) indicates violations will not occur. The analysis appears complete and accurate. Temperature standards should not be violated at the three alternative sites.

#### Possible impact #4

Air injection could result in total gas pressure exceeding 110% of saturation, thus a deleterious substance would be present. DHES first requested additional information in a letter to Sewell on June 27, 1980. Exchange of information between the DHES and Sewell climaxed with a statement from Sewell on March 31, 1981 stating they did not plan to inject air at the primary location. This was followed with a notice of change of project plans in a letter to the DHES from Sewell dated June 23, 1981, which would remove the need to inject air. Subsequently on September 29, 1981, the applicant modified its application with the FERC to remove the need to inject air. In a letter dated May 26, 1982, the applicant stated that air would not be injected at any of the alternative sites.

Due to turbulence, Kootenai Falls serves to naturally equilibrate dissolved gas levels. The equilibrium point shifts from about 110% at low flows to about 115% at high flows. The high levels above the falls have resulted from spills through the spillway or sluiceways at Libby Dam. During normal operation of Libby Dam, all discharges are through the turbines (up to 24,000 cfs). During this operation levels of dissolved gas above Kootenai Falls Dam will be consistently below 110%. During these periods passing the majority of the stream's flow through the power plant will have no effect or will lessen the normal small increases in gas saturation. In the past discharges from Libby Dam via the spillway or sluiceways caused high levels of dissolved gas. In 1980 modifications were made to the sluiceways to lessen these increases. Measurements made in 1980 indicate that since these modifications, Kootenai Falls increased the levels of dissolved

gas at a flow of 29,000 cfs. This increase would be prevented or lessened by the Kootenai Falls power plant. This effect will exist except at very high (and very rare) flows. At these very high flows a significant amount of the flow will go over Kootenai Falls Dam and be exposed to the equilibrating effect of the falls. An additional equilibration or decrease in gas levels will occur due to the dam design. The overall effect at these very high flows will be that dissolved gas levels below Kootenai Falls with the Kootenai Falls Dam will be nearly the same as without the Dam.

The DHES feels that for the primary site and alternative site #3 the effect on dissolved gas levels due to bypassing the falls will not result in violations of the water quality standard for dissolved gas levels. For both alternatives #1 and #2, the natural effect of Kootenai Falls will not be affected. Construction of new dams at Katka and/or Rocky Creek could result in dissolved gas levels which would violate water quality standards at high flows. These violations could be prevented by proper design of these dams and their overflow structures.

#### Possible impact #5

There will be some change in aquatic life in the reservoir and in the partially dewatered section between the dam and the tail tunnel outlet. In neither case should the change produce undesirable aquatic life. The changes in aquatic life resulting from the alternatives will be greater due to the larger reservoirs but these changes should not produce undesirable aquatic life.

#### Air Quality

The proposed project will require an air quality permit (Appendix D) to comply with the Montana Clean Air Act. The Air Quality Bureau (AQB), DHES, has an approved State Implementation Plan (SIP) for all programs except Prevention of Significant Deterioration (PSD). Since this project does not require a PSD permit under federal law, the review will be limited to the DHES and will not include the Environmental Protection Agency (EPA).

A general survey was made of the climate and existing air quality in the area of construction. The only major air pollutant in the area is particulates from prescribed open burning of forest slash, roads and to some extent, exhaust from Burlington Northern locomotives. The area is subject to low level inversions which tend to trap air pollutants and prevent their dispersal. Operation of the constructed project should produce minimal pollutants and not cause violation of air quality standards.

An analysis was conducted on the types and expected emissions from the construction and operation of the project (including alternative site locations). The following sources were identified:

1. Rock crushing (primary and secondary)

2. Haul roads
3. Concrete plant
4. Storage piles (wind-blown dust)
5. Miscellaneous construction activity  
(operating construction equipment)
6. Drilling and blasting

After the identification and analysis of these emissions, emission controls were required of the sources (specified in the permit). The controls must meet the "Best Available Control Technology" as required in the air quality rules.

Under Montana law, PSD (ARM 16.8.901 et. seq.) applies to the facility. The PSD provisions, however, allow a waiver for increment consumption from temporary and construction-related activities (ARM 16.8.907(1)(c)). Therefore, no analysis was conducted for PSD increments.

An analysis for the three alternative locations was conducted for compliance with Montana and federal ambient air quality standards. The analysis used a simple Gaussian Plume model and the EPA VALLEY model. The results of the models showed compliance with all ambient air quality standards.

#### CONCLUSIONS

1. Based on the information received, which in part includes applications for permits and an authorization and a project design which does not include air injection, Northern Lights, Inc. will not cause violation of Montana's Water Quality Act and standards or Montana's Air Quality Act, standards and SIP during project construction at either the primary site or alternative sites. Appropriate permits and authorization have been issued. (Appendices B, C and D)

2. Operation of the constructed facility at the primary site at Kootenai Falls will not cause violation of Montana's water quality standards. This is based on the following conditions which the applicant has agreed to abide by:

(a) Air will not be injected into the turbines' intake.

(b) Dredging or flushing of the reservoir to remove the sediment which accumulates will not occur.

3. Operation of the constructed facility at the primary site and the alternative sites will not cause violation of Montana's air quality standards and SIP.

4. Operation of the alternative site #1 at Katka, Idaho will not cause violation of Montana's water quality standards if the following condition applies:

(a) Flushing and dredging will not occur in the Montana portion of the reservoir.

5. Operation of the alternative site #2 with dams at Katka, Idaho and Rocky Creek near Troy will not cause violation of Montana's water quality standards if condition 4(a) above applies at Katka and the following conditions apply at the Rocky Creek facility:

(a) An increase above 110% gas supersaturation will not occur due to spillage over the dam.

(b) Flushing and dredging will not occur.

(c) Air will not be injected into the turbines' intake.

6. Operation of the alternative site #3 with dams at Rocky Creek and Kootenai Falls will not cause violation of Montana's water quality standards if the following conditions apply at these facilities:

(a) An increase above 110% gas supersaturation will not occur due to spillage over the dam.

(b) Flushing and dredging will not occur.

(c) Air will not be injected into the turbines' intake.

7. Based on the MPDES permit, the Short-Term Exemption from Surface Water Quality Standards and the proposed design of the turbines, a Section 401 of Federal Clean Water Act certification has been issued. (Appendix E)

#### PUBLIC COMMENTS

##### I. Transcript

Commentor: Wilbur Rehmann, Montana Wildlife Federation

A. Comment: (Transcript page 13) Air injection will degrade water quality.

Response: The project has been changed so that air will not be injected. This change is documented in letters from Sewell to the DHES on March 31, 1981 and to the Department of Natural Resources and Conservation June 23, 1981, and in a notice to the FERC on September 29, 1981.

B. Comment: (Transcript page 17) Sediment loading and eventual flushing or dredging of the dam reservoir.

Response: The reservoir will not be flushed nor will it be dredged. These conclusions are documented in letters from Sewell to the DHES dated March 23, 1982 and March 29, 1982.

Commentor: Steven C. Moore, Indian Law Unit of the Idaho Legal Aid Services, Inc.

- C. Comment: (Transcript page 21) The DHES must examine the effect of the Kootenai Falls project on the Kootenai Indians' fishing rights.

Response: The DHES has concluded that the water quality effects of the project will not cause damage to the fish populations.

- D. Comment: (Transcript page 21) Changes in water quality and temperature caused by construction and operation of the project.

Response: The proposed permits from the Water Quality Bureau deal with the construction aspect of the project. Construction activities will be carried out under permit. The MPDES permit for cofferdam pumping contains effluent limitations based on meeting water quality standards. Instream construction activities will receive a conditional exemption from state water quality standards for turbidity. The conditional exemption contains conditions on construction which mandate the use of "good" construction practices.

- E. Comment: (Transcript page 21) The proposed change in air injection is "an unconfirmed tentative proposal".

Response: The DHES considers the change to no air injection to be definite. Furthermore any change in the design of the project which again includes air injection invalidates the permits and conclusions of the DHES. See response to comment IA.

- F. Comment: (Transcript page 24) The decision that no permit is required for the operational phase of the project is interpreted by the Kootenai people to be an attempt by the State of Montana to avoid its responsibility to protect the Kootenai River from environmental degradation which would abrogate aboriginal and treaty preserved fishing rights. The decision regarding the operational phase raises the legal issue of whether the Kootenai Falls Dam should be considered a point source of pollution pursuant to Montana law.

Response: At the time of the initial review, it was the determination of the DHES that unless a pollutant was discharged into the water between the intake and its discharge back to the Kootenai River, no MPDES permit for the operation of the turbines would be required. Injection of air, initially proposed by Northern Lights, Inc., was considered to be a pollutant. After Northern Lights stated it would not inject air, no MPDES permit was considered necessary. (See Table 1)

- G. Comment: (Transcript page 25) What is the "impact of sediment starved water on the downstream river banks?"

Response: Rivers in mountainous areas generally carry small amounts of sediment or are "sediment starved," except during high flow periods. In addition, because of Libby Dam, the Kootenai River is

"sediment starved" in the Kootenai Falls area almost all of the time. The additional sediment removal which would occur due to Northern Lights development at Kootenai Falls would have no discernible effect on the downstream river banks.

## II. Letters

Commentor: Ruth G. Hogan, Troy, Montana

- A. Comment: It is difficult to get construction equipment to the site from Highway 2. This could present air and water pollution problems.

Response: The AQB took into account the dust and gas emissions that would be generated by this construction activity. The computer simulation (modeling) data indicates that with the use of the dust suppression methods specified in the permit there would be no violation of Montana or federal ambient air quality standards, including secondary standards.

Pollutants addressed in the MPDES permit are sediment (turbidity), fuel spills (oil and grease) and nitrates. This should cover the possible pollutants from dewatering operations and instream activity. This permit would not cover nonpoint source pollution from offstream activities such as timber clearing, but if offstream activities caused violation of the water quality standards, appropriate enforcement action could be taken under the provisions of the water quality standards.

- B. Comment: Air, water and noise pollution would affect herds of Big Horn Sheep in the area.

Response: The DHES has reviewed the permit for compliance with all applicable standards. The standards reviewed include the secondary air quality standards which are designed to protect values such as livestock, wildlife and material degradation. DHES data indicates that the levels of air pollution produced during the construction of the project will be below all of these standards. The DHES has no evidence to suggest that the air pollution generated would affect the herds of Big Horn Sheep.

There are to be no discharges from the crushing operation and concrete plant into state waters. Water from surface runoff through these areas that reaches sediment ponds or cofferdams will be controlled through the discharge permit limitations. The DHES does not have the authority to regulate these noise problems.

- C. Comment: The introduction of sediment, nitrates and oil and grease into the river will definitely affect the trout population.

Response: Although such introduction of significant amounts could affect the trout population, the permit limits and conditions in the authorization for short-term exemption do not allow water

quality standards to be exceeded thereby protecting the trout population.

- D. Comment: Has Northern Lights filed for a construction application with the Army Corps of Engineers?

Response: To the best of our knowledge they have not.

Commentor: Libby Rod and Gun Club

- E. Comment: Water passing through hydroelectric turbines can be harmful to fish and water quality.

Response: Based on reviews of project plans and professional judgement of the DHES, the DHES has concluded that passing water through the hydroelectric turbines will not be harmful to water quality. The Department of Fish, Wildlife and Parks is considering what the impact of passing water through the turbines will be on fish.

- F. Comment: ...nearly one mile of the Kootenai River will be virtually dewatered (94% of the water gone) below the proposed dam site.

Response: Water quality laws and regulations only address flow when it relates to water quality. In this case the reductions in flow will not cause violations of the water quality law and regulations.

Commentor: Barbara D. Rhodes for the League of Women Voters

- G. Comment: It would be untimely to grant construction permits before federal and state agencies have made a decision on the need for the project and before the final design of the facility is known.

Response: Permit issuance in response to appropriate applications is mandated by the Major Facility Siting Act. The construction permits are written to take into account the unknown status of construction methods. If, for other reasons, the project is not built, the construction permits will be of no consequence. (See also response to comment I.H.)

Commentor: James W. Flynn for the Montana Department of Fish, Wildlife and Parks (DFWP).

- H. Comment: We are concerned that the proposed MPDES permit would require only monthly monitoring of turbidity, flows and nitrate nitrogen, and further that the construction details for the cofferdams have not yet been delineated.

We strongly recommend, therefore, that issuance of the permit be postponed until detailed construction plans have been developed and reviewed and agreement reached with the applicant concerning measures necessary to mitigate water quality impacts.

Additionally, the applicant should be required to monitor flow and turbidity on a daily basis - the latter both immediately below the construction site and at some point downstream that constitutes a mixing zone. Nitrate nitrogen should be monitored twice daily, corresponding to daily peaking at Libby Dam.

We also recommend that construction activities that impart the greatest turbidity be timed so that they immediately precede periods of high flow, thereby allowing for adequate flushing and sediment transport.

Response: The DHES accepted part of the comments from DFWP and changed the monitoring requirement of the MPDES permit to require daily monitoring for flow, turbidity and nitrate nitrogen. This will expose any short-term fluctuations in discharge quality.

For the 16.20.633(3)(a) exemption, the DHES is issuing it conditionally, requiring Northern Lights' submittal of an approvable construction plan prior to commencement of construction.

The DHES is constrained by the Montana Major Facility Siting Act to make its final permit determinations within 12 months of receipt of the completed application. Some information on construction details is impossible to have available in that time frame. The DHES tries to issue permits in such a manner that it can maintain review authority after the construction details are available.

Commentor: Joe Kipphut for Five Valleys Audubon Society

I. Comment: Alternatives have not been adequately considered.

Response: Permit limits were examined for all alternative sites given. Water quality is similar and instream flows are equal or greater at all alternative sites relative to the preferred site. Therefore water quality limits given would adequately protect any of the sites. With the proposed air quality limitations, the alternative sites should also meet air quality standards.

Commentor: James A. Sewell

J. Comment: Minimum river flow used in effluent limit calculations should be 4,000 cfs rather than 2,000 cfs since 4,000 cfs is basically low flow release from Libby Dam except under emergency conditions.

Response: The EIS states there are normal daily fluctuations down to 4,000 cfs, and emergency low flow from Libby Dam down to 2,000 cfs. Permit limits are generally based on 10-year, 7-day low flows. The DHES feels 2,000 cfs is a safer approximation of the 10-year, 7-day low flow than 4,000 cfs, and therefore based the limitations on 2,000 cfs.

K. Comment: Could the use of a chemical suppressant to minimize dust from the haul roads cause a water quality problem.

Response: There are a number of chemical suppressants available for use on the haul roads. The DHES will work with the contractor to choose a suppressant that will meet the requirements of effective dust suppression without endangering water quality.

Commentor: W.D. Hutchison, Legal Division, Montana Department of Highways.

L. Comment: It should be noted that the Montana Department of Highways (MDOH) believes less environmental damaging alternatives are available for hauling excavated materials. One such alternative is a conveyor belt system. Use of such a system for hauling excavated materials would greatly reduce particulate emissions due to combustion of gas and diesel fuels by haul trucks.

Response: The MDOH statement is, in fact, correct. Other alternatives were considered by the DHES in designating the appropriate control technologies. DHES rules require an applicant to install the "Best Available Control Technology (BACT)" (ARM 16.8.1103). The DHES proceeded to analyze for BACT according to its definition. It is the DHES' opinion that the controls specified in the permit conditions (Appendix D) constitute BACT under its definition since both economic and environmental considerations must be addressed in order to assess BACT. Due to the cost and short-term considerations of construction, controls specified by the DHES are deemed appropriate.

APPENDIX A

PUBLIC NOTICE OR PRELIMINARY DECISION OF  
DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES  
ON THE KOOTENAI FALLS HYDROELECTRIC PROJECT  
AND SCHEDULING OF HEARING

Pursuant to section 75-20-6 of the Montana Code Annotated and rule 16.2.503 of the Administrative Rules of Montana, the Department of Health and Environmental Sciences hereby gives notice that the tentative permits as identified below are proposed to be issued in relation to the Kootenai Falls Hydroelectric Project which was submitted by Northern Lights, Inc., P. O. Box 310, Sandpoint, Idaho, for review and consideration by the State of Montana under the Major Facility Siting Act.

- I. PRIMARY LOCATION: Kootenai Falls
- A. description: single dam with reservoir surface at 2000 feet elevation affecting less than 5.5 river miles
  - B. specific location: Lincoln County, Township 31 N, Range 33 W, Sections 13, 14 plus unsurveyed portion of 4 additional miles upstream
  - C. generating capacity: 144 megawatts
  - D. proposed permits: Air Quality Permit (ARM Title 16, Chapter 8, Sub-Chapter 11), Montana Pollutant Discharge Elimination System Permit (MPDES) [ARM Title 16, Chapter 20, Sub-chapter 9], and authorization to temporarily exceed turbidity standards during construction as provided by ARM 16.20.633(3)
  - E. State water receiving discharge: Kootenai River
- II. ALTERNATE LOCATION: Katka, Idaho
- A. description: single dam with reservoir surface at 1862 feet elevation affecting approximately 20 river miles (approximately 15 river miles in Montana)
  - B. specific location: Lincoln County, Township 31 N, Range 34 W, Section 1, 12; Township 32 N, Range 34 W, Sections 5, 8, 9, 16, 21, 22, 27, 34, 35, 36; Township 33 N, Range 34 W, Sections 17, 20, 21, 27, 28, 34, 35.
  - C. generating capacity: 138 megawatts
  - D. proposed permits: Air Quality Permit and authorization to temporarily exceed turbidity standards during construction as provided by ARM 16.20.633(3)
- III. ALTERNATE LOCATION: Katka, Idaho and Rocky Creek below Troy, Montana
- A. description: Katka site--one dam with reservoir surface at 1817 feet elevation affecting approximately 8 river miles (3 river miles in Montana)  
Rocky Creek site--one dam with reservoir surface at 1868 feet elevation affecting approximately 12 river miles
  - B. specific location: same as II above
  - C. generating capacity (combined): 132 megawatts

- D. proposed permits: Katka site--Air Quality Permit and authorization to temporarily exceed turbidity standards during construction as provided by ARM 16.20.633(3)  
Rocky Creek site--Air Quality Permit, MPDES Permit and authorization to temporarily exceed turbidity standards during construction as provided by ARM 16.20.633(3)
- E. state water receiving discharge: Kootenai River

IV. ALTERNATE LOCATION: Kootenai Falls and Rocky Creek

- A. description: Kootenai Falls site--one dam with reservoir surface at 1990 feet elevation affecting approximately 3.5 river miles  
Rocky Creek site--one dam with reservoir surface at 1857 feet elevation affecting approximately 10.25 river miles
- B. specific location: Lincoln County, Township 31 N, Range 33 W, Sections 13, 14 plus unsurveyed portion of 4 additional miles upstream; Township 31 N, Range 34 W, Sections 1, 12; Township 32 N, Range 34 W, Sections 5, 8, 9, 16, 21, 22, 27, 34, 35, 36; Township 33 N, Range 34 W, Sections 27, 28, 34, 35.
- C. generating capacity (combined): 184 megawatts
- D. proposed permits: Air Quality Permit, MPDES Permit, and authorization to temporarily exceed turbidity standards during construction as provided by ARM 16.20.633(3)
- E. state water receiving discharge: Kootenai River

Only one of the four locations described above will be approved by the Board of Natural Resources and Conservation.

- V. Water Pollutants Discharged: Pollutants discharged will include (A) turbidity (suspended sediment) from cofferdam construction dewatering activities; (B) nitrates (due to blasting), dissolved in groundwater seepage and pumped out during underground tunnel dewatering; and (C) oil and grease (due to equipment spills and leaks) pumped out along with dewatering activities.
- VI. Air Pollutants Discharged: The primary air pollutant discharged will be suspended particulate matter. Point source emissions would be from the crushing operation and the concrete batch plant. Area or fugitive emissions would be from haul roads, blasting, rock handling, and general construction activity.
- VII. Public Comment: The Department of Health and Environmental Sciences will accept written comments on the proposed permits postmarked no later than December 1, 1981. Such written comments should be sent to Robert L. Solomon, Department of Health and Environmental Sciences, Cogswell Building, Room B101, Helena, Montana 59620. (telephone: 449-3444)

VIII. PUBLIC HEARING: A public hearing will be held pursuant to ARM 16.2.503 to receive public comment, orally or in writing, on the proposed tentative permits. The public hearing will be held Tuesday, December 1, 1981, at 7:00 p.m. in Room 6209, Cogswell Building, 1400 Broadway, Helena, Montana. The presiding officer will be Robert L. Solomon. The hearing is not subject to the contested case procedure of the Montana Administrative Procedure Act, and no cross-examination will be allowed. The presiding officer has the discretion to limit repetitive testimony and prescribe rules to ensure orderly submission of statements.

IX. Permit Information: Information on the proposed tentative permits may be obtained from Fred Shewman, Water Quality Bureau, Department of Health and Environmental Sciences, Cogswell Building, Helena, Montana (449-2406) or Harry Keltz, Air Quality Bureau, Department of Health and Environmental Sciences, Cogswell Building, Helena, Montana (449-3454).

**COPY**

Permit No.: MT-0026255

**COPY**  
MONTANA DEPARTMENT OF HEALTH  
AND  
ENVIRONMENTAL SCIENCES

AUTHORIZATION TO DISCHARGE UNDER THE  
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Section 75-5-101 et seq., MCA, and ARM 16.20.901 et seq., and 16.20.601 et seq.,

Northern Lights, Incorporated, on behalf of the Successful Bidder for Kootenai River Hydroelectric Project,

is authorized to discharge water from the construction site (at Kootenai Falls or Rocky Creek),

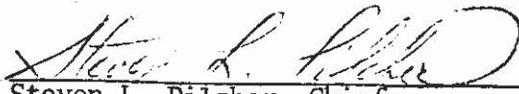
to receiving waters named the Kootenai River,

in accordance with effluent limitations, monitoring requirements and other conditions set forth in PARTS I, II and III hereof.

This permit becomes effective on the date that the Montana Board of Natural Resources and Conservation issues a certificate, pursuant to the Montana Major Facility Siting Act, for the facility at the primary location, Kootenai Falls, the facilities at the alternate location, Kootenai Falls and Rocky Creek, or the facility at the Rocky Creek portion of the alternate location, Katka, Idaho, and Rocky Creek below Troy, Montana.

This permit and the authorization to discharge shall expire in five years from the effective date of the permit.

FOR THE MONTANA DEPARTMENT OF HEALTH  
AND ENVIRONMENTAL SCIENCES

  
Steven L. Pilcher, Chief  
Water Quality Bureau  
Environmental Sciences Division

**COPY**

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - SEE ANY ADDITIONAL REQUIREMENTS UNDER PART III

During the five year term of this permit, commencing on the effective date stated on page one, the permittee is authorized to discharge from outfall(s) as required with the construction area.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Limitations	
Discharge	Concentration
Kg/day (lbs/day)	mg/l
Daily Avg.	Daily Avg.
Daily Max.	Daily Max.

Parameter

\*Nitrate Nitrogen (net) ----- 49(108) -----

Turbidity shall not exceed 100 NTU above natural occurring turbidity in the receiving water, as determined by grab sample.

Oil & Grease shall not exceed 10 mg/l in any grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

\*The nitrate limitation applies to the combined discharge of all discharge points.

In addition to the above daily maximum concentration limitation, the analysis of any single properly preserved grab sample, shall not exceed 150 percent of the daily maximum concentration (1.5 times the limitation).

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2. SELF-MONITORING REQUIREMENTS**COPY**

The permittee shall monitor each discharge and the river\* immediately upstream of all discharges as shown below:

<u>Parameter and Reporting Units</u>	<u>Frequency 1/</u>	<u>Sample Type 2/</u>
Flow - gallons per minute (gpm) or cubic feet per second (cfs)	daily	grab
Turbidity - NTU	daily	grab
Nitrate-Nitrogen - mg/l	daily	grab

Oil and Grease monitoring shall consist of daily visual observation of the discharge.

Report monthly only the dates of observed oil and grease in the discharge.

\*River monitoring not required for nitrate nitrogen.

1/ See page 4, #2. Reporting

2/ See J of Definitions

**COPY**

MONITORING AND REPORTING REQUIREMENTS

1. Representative Sampling

**COPY**

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period.

Duplicate signed copies of these, and all other reports herein, shall be submitted to the Department and the Regional Administrator at the following addresses:

(a) Montana Department of Health  
and Environmental Sciences  
Water Quality Bureau  
A-206 Cogswell Building  
Helena MT 59620

(b) Regional Administrator  
U. S. Environmental Protection  
Agency  
1860 Lincoln Street  
Denver CO 80295  
ATTENTION: Permits Branch

Note: If no discharge occurs during the reporting period, "no discharge" shall be reported, in letter form, to the above agencies.

3. Definitions

- (a) The "Act" means the Federal Water Pollution Control Act.
- (b) The "Administrator" means the administrator of the United States Environmental Protection Agency.
- (c) A "composite" sample, for monitoring requirements, is defined as a minimum of four (4) grab samples collected at equally spaced two (2) hour intervals and proportioned according to flow.
- (d) For compliance purposes, the "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.
- (e) For compliance purposes, the "daily maximum" discharge means the total discharge by weight during any calendar day. This limitation shall be determined by the analyses of a properly preserved composite sample composed of a minimum of four (4) grab samples collected at equally spaced two (2) hour intervals and proportioned according to flow at the time of sampling.

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- (f) For compliance purposes, the "daily average" concentration means the average concentration during a calendar month. Where less than daily sampling is required by this permit, the average concentration shall be determined by the summation of all measured daily samples divided by the number of days during the calendar month when the measurements were made.
- (g) For compliance purposes, the "daily maximum" concentration shall be determined by the analysis of a properly preserved composite sample composed of a minimum of four (4) grab samples collected at equally spaced two (2) hour intervals and proportioned according to flow at the time of sampling.
- (h) The "Department" means the Montana Department of Health and Environmental Sciences.
- (i) The "EPA" means the United States Environmental Protection Agency.
- (j) A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
- (k) An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement using acceptable monitoring equipment.
- (l) "Net" value, noted under Parameter, is calculated on the basis of the net increase of the individual parameter over the quantity of that same parameter present in the intake water measured prior to any contamination or use in the process of this facility. Any contaminants contained in any intake water obtained from underground wells shall not be adjusted for as described above and therefore shall be considered as process input to the final effluent. Limitations in which "net" is not noted are calculated on the basis of gross measurements, of each parameter in the discharge irrespective of the quantity or quality of those parameters in the intake waters.
- (m) The "Regional Administrator" means the administrator of the region of EPA with jurisdiction over federal water pollution control activities in the state of Montana.

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#### 4. Test Procedures

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Test procedures for the analysis of pollutants shall conform to regulations published in or subsequent revisions to the Federal Register, October 16, 1973, Vol. 38, Number 199, Part II. Sample collection and preservation shall be in accordance with the best methods technologically feasible, and shall be in a manner acceptable to the Department. (The EPA Region VIII Treatment and Preservation Guide should be consulted for acceptable sample collection and preservation techniques.)

All flow measuring and flow-recording devices used in obtaining data submitted in self-monitoring reports must indicate values within 10 percent of the actual flow being measured.

#### 5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- (a) The exact place, date and time of sampling;
- (b) The dates the analyses were performed;
- (c) The person(s) who performed the analyses;
- (d) The analytical techniques or methods used; and
- (e) The results of all required analyses.

#### 6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

#### 7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Department or the Regional Administrator.

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## MANAGEMENT REQUIREMENTS

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## 1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new MPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Department of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

## 2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Department and the Regional Administrator with the following information, in writing, within five (5) days of becoming aware of such condition:

- (a) A description of the discharge and cause of noncompliance; and
- (b) The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

## 3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

## 4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to state waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

## 5. Bypassing

Any diversion from or bypass of treatment or control facilities or systems necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm rainfall or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Department and the Regional Administrator in writing of each such diversion or bypass.

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If, for other reasons, a partial or complete bypass of the wastewater treatment facilities is considered necessary, a request for such bypass shall be submitted to the Department and to the Regional Administrator at least sixty (60) days prior to the proposed bypass. If the proposed bypass is judged acceptable by the Department and by the Regional Administrator, the bypass will be allowed subject to limitations imposed by the Department and the Regional Administrator.

If, after review and consideration, the proposed bypass is determined to be unacceptable by the Department and the Regional Administrator, or if limitations imposed on an approved bypass are violated, such bypass shall be considered a violation of this permit; and the fact that application was made, or that a partial bypass was approved, shall not be defense to any action brought thereunder.

#### 6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering state waters.

#### 7. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

(a) In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

(b) Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss or failure of the primary source of power to the wastewater control facilities.

### B. RESPONSIBILITIES

#### 1. Right of Entry

The permittee shall allow the head of the Department, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

(a) To enter upon the permittee's premises where an effluent source is located or in which any records are kept; and

(b) At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutant

**COPY**

2. Transfer of Ownership or Control

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In the event of any change in control or ownership from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Department and the Regional Administrator.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 75-5-633, MCA.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- (a) violation of any terms or conditions of this permit;
- (b) obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- (c) a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

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7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Reapplication

If the permittee desires to continue to discharge beyond the expiration date of this permit, he shall reapply, in writing, to the Department at least 180 days prior to the expiration date of this permit.

**COPY**

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES



TED SCHWINDEN, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

HELENA, MONTANA 59620

Northern Lights, Inc.  
P.O. Box 310  
Sandpoint ID 83864

Re: Short-Term Exemption from Surface Water  
Quality Turbidity Standards for the  
Kootenai River Hydroelectric Project,  
Lincoln County, Montana  
#WQS 82-01

Dear Sir:

We have completed our review process of your application for the above-referenced activity on the Kootenai River. This activity is herewith exempt from surface water quality turbidity standards if it is carried out in accordance with the following conditions:

- (1) Construction activities in or near the watercourse are conducted so as to minimize increases in suspended solids and turbidity.
- (2) The use of machinery in the watercourse shall be avoided, unless absolutely necessary.
- (3) Precautions are taken to prevent spillage of fuels or lubricants in or near the watercourse.
- (4) All disturbed areas on the streambank created by the construction activity shall be protected from subsequent erosion and revegetated to provide long-term erosion control.
- (5) Each individual contractor that may cause instream turbidity shall submit to the Department of Health and Environmental Sciences, Water Quality Bureau, a description of their construction plans and methods. Additional specific provisions may be required of the contractor based upon his specific construction activity. Cofferdamming materials and methods may be restricted in order to mitigate turbidity effects.

Any complaints received by this Department indicating noncompliance with the above provisions will be grounds for immediate review of this authorization. Such violations of this authorization are subject to an enforcement action pursuant to the Montana Water Quality Act.

**COPY**

Northern Lights, Inc.

Page 2

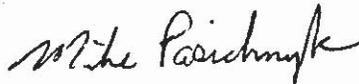
Re: Short-Term Exemption from Surface Water  
Quality Turbidity Standards for the  
Kootenai River Hydroelectric Project,  
Lincoln County, Montana

**COPY**

This authorization is granted pursuant to ARM 16.20.633(3) and only applies to the project described by your application. Changes in your project which may result in additional turbidity in the stream must receive prior approval from the Department.

EFFECTIVE DATE: This short-term exemption becomes effective on the date that the Montana Board of Natural Resources and Conservation (BNRC) certifies the facility pursuant to the Montana Major Facility Siting Act and will apply only to the site certified by BNRC.

Sincerely,



Mike Pasichnyk  
Environmental Specialist  
Water Quality Bureau

MP/as

**COPY**

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES



TED SCHWINDEN, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

HELENA, MONTANA 59620

James Sewell & Associates  
710 Hutton Building  
Spokane, WA 99204

Re: Final Approval - Permit #1640  
Northern Lights

Dear Mr. Sewell:

Your air quality permit application dated March 30, 1981 and received in this office on April 3, 1981, for construction of a hydroelectric generation station to be located in Lincoln County, Montana, is approved. The permit will be valid on the date that the Montana Board of Natural Resources and Conservation (BNRC) certifies the facility pursuant to the Montana Major Facility Siting Act and will apply only to the site certified by BNRC. The application was given Permit Number 1640.

Conditions:

See attached.

We appreciate your interest in this matter.

For the Department

*Harold W. Robbins*  
Harold W. Robbins, Chief  
Air Quality Bureau

Enc.

**COPY**

Kootenai Falls Project  
Proposed Permit Conditions

**COPY**

1. All crushers shall be enclosed or equipped with operational water spray bars to control dust emissions.
2. Chemical dust suppressant supplemented by water spraying shall be applied to all haul roads.
3. Exposed ground and material stock piles shall be watered as necessary to control dust emissions.
4. Best Management Practices shall be followed where necessary; i.e. not overcharging blast holes, minimizing material fall distance during loading operations, etc.
5. The concrete batch plant, if utilized on site, shall be equipped with a baghouse or equivalent device for particulate emission control.
6. All fugitive dust visible emissions shall be limited to 20 percent opacity.
7. Each individual contractor shall submit to Department of Health and Environmental Sciences, Air Quality Bureau, a description of their construction plans and methods. Additional specific provisions may be required of the contractor based upon his specific construction activity.

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# AIR QUALITY PERMIT ANALYSIS

## KOOTENAI FALLS PROJECT

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The following discussion on air quality is limited to air quality emissions and impacts. Section I deals with emissions of particulate matter (PM) from various construction operations and activities. Section II deals with the anticipated impacts of those PM emissions on the ambient air. Modeling is used to predict impacts.

In arriving at the amount of particulate matter generated, AP-42 emission factors plus estimates were utilized. As a result, there may be some overpredicting of impacts on ambient air standards. In some areas information was missing or could not be supplied by either Northern Lights or Sewell and Associates. Much of the information submitted on air quality is of the best guess variety and as such makes it difficult to arrive at accurate predictions.

The table below indicates particulate emissions from various construction activities. As one can see, there are gaps where the information is unknown.

TABLE 1

Operations	Size	Hrs/day	lbs/day (cont.)	Hrs/yr	Emissions (t/yr)	
					Uncon.	Cont.
Primary(1) crushing	600 t/hr	8-16	96-192	3333	100	10-20
Secondary(2) crushing	300 t/hr	8-16	144-288	3333	300	30
Haul Roads(3)		8-16	939-3130	3500	343-685	172-343
Misc. Const.(4)		8-16	384-768	3500	168	84
Drilling &(5) blasting		Unknown		Unknown	---	---
Concrete plant(6)		4-16	32-128	2000	40	8
Storage(7) pile	170,000 yd <sup>3</sup>				36	18

- (1) Air Quality Permit will require eighty (80) to ninety (90) percent control of particulate emissions at the primary crusher. Control shall be achieved by crusher enclosure or equivalent dust suppression such as water spray bars. AP-42 Emission factor of 0.1 lb/T used to project uncontrolled emissions.
- (2) Secondary crushing assumed to be approximately 300 tph capacity. AP-42 emission factor of 0.6 lb/t utilized.

Enclosure of secondary crushing and screening should yield 90% control (if there is secondary crushing). Emission factor appears high.

Permittee will be required to enclose the secondary crusher.

# COPY

(3) Emission factor calculated from AP-42 formula:

$$E = (0.181s) \left(\frac{S}{30}\right) \frac{365-w}{365} = \text{lb/VMT}$$

s = percent silt calculated as a whole number  
S = vehicle speed in mph  
w = number of wet days with precipitation equalled 0.01"  
VMT - vehicle miles traveled

$$E = (0.81) (12) \left(\frac{30}{30}\right) \frac{365-120}{365} = 6.52 \text{ VMT}$$

$$\text{Max. emission } 6.52 \text{ lb/VMT} \times \frac{3 \text{ trips}}{\text{hr}} \times \frac{2 \text{ mi.}}{\text{trip}} \times \frac{16 \text{ hr.}}{\text{day}} \times 10 \text{ vehicles} = \text{lb/day}$$

At the time the haul roads emissions were calculated, the weight of the trucks was not known. Therefore, the above formula was used to estimate emissions. Since that time, the weight of the trucks has been supplied and the following formula could be used. Also the increased weight of the trucks has resulted in a possible decrease in vehicle speed.

$$E = (5.9) \left(\frac{S}{12}\right) \left(\frac{S}{30}\right) \left(\frac{W}{3}\right)^{0.8} \left(\frac{d}{365}\right) \text{ lb/veh. mi.}$$

Using this formula the VMT value would be:

$$E = (5.9) \left(\frac{12}{12}\right) \left(\frac{15}{30}\right) \left(\frac{15}{3}\right)^{0.8} \left(\frac{245}{365}\right) = 7.18 \text{ lb/VMT}$$

d = Number of dry days per year  
W = Vehicle weight in tons

The other symbols are the same as indicated in the first formula.

This represents a ten (10) percent increase in uncontrolled emissions of particulate matter attributed to haul road travel.

The Air Quality Bureau does not feel that this would translate to a controlled emission figure sufficient to warrant changing the modeling impacts. Therefore, the original values in Table 1 will not be changed.

Annual emission based on 3500 hr/yr operation. Watering yields approximately 50% control while permanent dust suppression yields 85% control.

- (4) AP-42 lists an emission factor of 1.2 tons/acre/month; however, the exact area of surface disturbance is only estimated to be 140 acres for any given year. These calculations indicate a maximum emission of 168 t/yr. Water spraying should control any fugitive emissions to at least 50%.
- (5) The amount of drilling and blasting is not known and can only be provided by the contractor who has not yet been chosen; at least to the Air Quality Bureau's knowledge. In order to make projections on particulate emissions, the numbers of holes drilled and blasted must be known, after which an emission factor (lb/hole) can be used to predict and project impacts.

Concrete batch plant size has been estimated to be 100 yd<sup>3</sup>/hr which translates to a minimum figure of approximately 200 tons/hr. AP-42 emission factor of 0.2 lb/T is used as the uncontrolled figure.

Maximum daily 0.2 lb/T x 200 x 16 = 640 lb/day uncontrolled emissions.

80% control should reduce particulate matter emissions to 128 lb/day and annual emissions to 46 tons/year. Annual uncontrolled and controlled emissions are approximately 40 and 8 tons respectively. However, the Air Quality Bureau will require the concrete batch plant to install a baghouse or equivalent device for controlling emissions, thus control greater than 80% will actually be achieved.

0.2 lb/T x 200 T/hr x 2000 hr/yr = 40 T/yr

- (7) Storage pile size has been estimated to be 170,000 yd<sup>3</sup>; however, 70% of this material is tunnel muck which is wet and should not create airborne particulate matter problems.

$$(170,000 \text{ yd}^3) \times (0.3) \left( \frac{0.33}{\frac{PE^2}{100}} \right)$$

$$(170,000 \text{ yd}^3) \left( \frac{1.5 \text{ T}}{\text{yd}^3} \right) \times (0.3) \left( \frac{0.33}{\frac{59}{100}} \right)^2 \times \frac{\text{T}}{2000 \text{ lb}} = 36 \text{ T/yr}$$

PE = precipitation index

Control by watering should yield 50% control and will be required as part of the permit.

- (8) In addition to particulate emissions, there will also be varying amounts of hydrocarbons, carbon monoxide, sulfur and nitrogen oxide pollutants formed during the combustion of gas and diesel fuel by the construction equipment. The amount of fuel consumption is not known; therefore, no estimates of associated pollutants is made.
- (9) The use of explosives will also generate varying amounts of carbon monoxide nitrogen oxides and sulfur dioxide. Assuming that ANFO is the chosen explosive the following amounts of the above pollutants may be generated based on usage of 1,105,000 - 2,782,000 pounds of explosives. The Air Quality Bureau has assumed that this is total usage over the life of the projects.

TABLE 2

EXPLOSIVE USE

Pollutant	@1,105,000 lbs.	@2,782,000 lbs.
CO	18.5 Tons	46.6 Tons
NOX	4.7 Tons	11.8 Tons
SO <sub>2</sub>	0.23-0.83 Tons	0.7-2.1 Tons

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Ref. AP-42, Table 11.3-I, Page 11.3-3

## Applicable Rules and Standards

### Rules

Sub-Chapter 9 - Prevention of Significant Deterioration

Sub-Chapter 14 - Emission Standards

ARM 16.8.1401 Particulate Matter, Airborne

16.8.1404 Visible Air Contaminants

The requirements of ARM 16.8.1403, Particulate Matter, Industrial Processes, will be superseded by permit requirements of Sub-Chapter 9, Prevention of Significant Deterioration (PSD). Under that rule are a number of sections dealing with increments, control technology review, air quality review, monitoring, additional impacts analysis and exemption from impact analysis, etc.

The Air Quality Bureau feels that due to the temporary nature of the construction activities at the site, that the applicant is exempt from the major portions of the PSD rule with the exception of 16.8.910, Control Technology Review, which requires the use of "Best Available Control Technology" (BACT) on all sources of pollution at the facility.

Although the word temporary is defined as being two years or less, the construction activities will not be ongoing for the proposed life of the project. In addition, under Section (c) of ARM 16.8.907, Exclusions from Increment Consumption, particulate matter from construction activities is excluded from increment consumption which in turn may be argued also qualifies the applicant for 16.8.915, Exemptions From Impact Analysis. If the applicant meets the criteria of section 907 and 915, then he is excluded from the requirements of ARM 16.8.911, Air Quality Review; 16.8.912, Monitoring; and 16.8.913, Additional Impact Analyses.

If an applicant is excluded from ambient air increment consumption which translates to impacts, then logically he must be exempt from the major portion of the PSD rule since the idea behind PSD is to prevent degradation via minimizing emissions or concentrations of pollutants in the air.

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STATE AND FEDERAL  
AMBIENT STANDARDS

Pollutant	Averaging Time	Montana	Federal	
			Primary <sup>a</sup>	Secondary <sup>b</sup>
Total Suspended Particulate	Annual 24 Hour	75 ug/m <sup>3</sup> <sup>c</sup> <sup>b</sup>	75 ug/m <sup>3</sup>	60 ug/m <sup>3</sup>
		200 ug/m <sup>3</sup> <sup>f</sup>	260 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>
Sulfur Dioxide	1-hour	0.50 ppm <sup>e</sup>	--- <sup>h</sup>	---
	3-hour	---	---	0.5 ppm
	24-hour	0.10 ppm <sup>d</sup>	0.14 ppm <sup>f</sup>	---
	Annual	0.02 ppm <sup>f</sup>	0.03 ppm <sup>f</sup>	---
Carbon Monoxide	1-hour	23 ppm <sup>4</sup>	35 ppm	35 ppm
	8-hour	9 ppm <sup>4</sup>	9 ppm	9 ppm
Lead	90 days	1.5 ug/m <sup>3</sup> <sup>f</sup>	1.5 ug/m <sup>3</sup>	1.5 ug/m <sup>3</sup>
Nitrogen dioxide	1 hour	0.30 ppm <sup>d</sup>	---	---
	Annual	0.05 ppm <sup>f</sup>	0.05 ppm <sup>f</sup>	0.5 ppm <sup>f</sup>
Settled Particulate	30 days	10 g/m <sup>2</sup> <sup>f</sup>	---	---
Nonmethane Hydrocarbons <sup>g</sup>	3 hour (6-9 a.m.)	---	0.24 ppm	0.24 ppm
Photochemical Oxidants (ozone)	1 hour	0.10 ppm <sup>d</sup>	0.12 ppm	0.12 ppm
Hydrogen Sulfide	1 hour	0.05 ppm <sup>d</sup>	--- <sup>h</sup>	---

<sup>a</sup>Federal ambient air quality standards with averaging times less than 1 year are not to be exceeded more than once per year.

<sup>b</sup>Arithmetic average; not to be exceeded.

<sup>c</sup>Geometric mean; not to be exceeded.

<sup>d</sup>Not to be exceeded more than once per year.

<sup>e</sup>Not to be exceeded more than 18 times in any 12 consecutive months.

<sup>f</sup>Not to be exceeded.

<sup>g</sup>Set as a guide to achieve photochemical oxidant standards.

<sup>h</sup>--- indicates no standard.

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# Memorandum

STATE DEPARTMENT OF HEALTH  
AND ENVIRONMENTAL SCIENCES

5

TO : Files

DATE: August 3, 1981

FROM : Hal Robbins (AR)

# COPY

SUBJECT: Air Quality Modeling for Kootenai Falls Project

I performed a screening analysis to determine if the particulate emissions from the proposed project might cause or contribute to air quality violations in the area of the project.

A simple Gaussian plume model was used for this analysis. The plume model and assumptions are listed in EPA Publication No. AP-26 ("Workbook of Atmospheric Dispersion Estimates," by Bruce Turner, 1970). Basically, the model assumes that a plume emitted from source will diffuse within a Gaussian (normal) distribution both in the horizontal and vertical directions (relative to the mean wind flow). Some of the more relevant assumptions to the model are:

- a. There is a continuous emission from the source.
- b. There is no particle fallout.
- c. The equation of continuity is maintained (no mass is lost through chemical reactions, impacts with the ground, etc.)
- d. The mean wind direction specifies the x-axis and that the wind is consistent throughout the mixing layer.
- e. The dispersion coefficients are accurate for up to one hour time periods.

The calculations for the model were done on a WTC-850 microprocessor in the program language of BASIC. A copy of the standard program is attached.

The model was run for six separate stability classifications (Pasquill stability classes A through F) and 3 wind speeds within each stability class. Since the output of the model is in hourly concentrations and since the only applicable standards for the particulates are 24-hour and annual average, some manipulation of the data was necessary. It was decided to run only the 24-hour data since in nearly every case this is a more stringent standard than the annual standard.

It was decided to use the assumptions of the VALLEY model to estimate the maximum 24-hour concentration. This model assumes that the maximum values occur when there is an F stability class for 6 of 24 hours. This is somewhat typical of a valley situation, such as Kootenai Falls, and is a standard procedure used by EPA and the State of Montana in impact analysis.

Three general sources of emissions were modeled for this project. The results of each source are presented below.

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crushers (primary and secondary)

The crushers were treated as only one point source with the emission rate equal to the sum of the individual operations. The following assumptions were used:

- Emission Rate = 1.25 grams/second (45 tons/year)
- Height of the Emissions = 30 meters
- Distance to worst case receptor = 1 kilometer

Model Results:

Wind Speed (m/sec)	Stability Class					
	A	B	C	D	E	F
3	1.4	8.3	18.0	40.8	49.3	25.7
6	***	4.2	9.0	20.4	24.6	12.8
9	***	2.8	6.0	13.6	16.4	8.6

These values represent the concentration in micrograms per cubic meter over a one-hour period. The class F stability class was converted to a 24-hour period by using the VALLEY assumptions already mentioned. The maximum value calculated would be 6.4 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). A time delay function, described in the EPA Workbook, was used to estimate the maximum concentration in the other stability classes. The results of this calculation yields that the maximum value would be from an E stability at 3 meters/second wind speed with a concentration of 27.4  $\mu\text{g}/\text{m}^3$ .

Concrete Plant and Storage Pile

These two sources were treated as one source and were subjected to the same calculations and analysis as above. The following assumptions and results were noted:

- Emission Rate = .748 grams/second (26 tons/year)
- Height of Emissions = 5 meters
- Distance to worst case receptor = 1 kilometer

Model Results:

Wind Speed (m/sec)	Stability Class					
	A	B	C	D	E	F
3	***	4.8	10.4	23.6	28.6	14.9
6	***	2.4	5.2	11.8	14.8	7.4
9	***	1.6	3.5	7.9	9.5	5.0

The maximum expected 24-hour concentrations would be 3.7 for the VALLEY assumptions, and 15.9 using the EPA workbook approximation as described above.

Haul Roads

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The modeling of the haul roads was a difficult task. It was decided that for purposes of this screening that the road would be modeled by making the source a virtual point source located away from the actual road. This allows one to simulate a wide plume (equal to the length of the road) by using a virtual point source some distance from the roads. In this case, the road is approximately one mile in length (1600 meters). In order to calculate the distance to the virtual point source, several factors were used. The first was that the distance to the point source must be sufficient such that at least 99 percent of the simulated plume crosses the entire length of the road. The second factor to consider was that the sigma y values (horizontal dispersion coefficients) must be large enough to satisfy the first factor. The distance to the point source, therefore, was chosen such that the sigma y values would cover the entire span of the road. Since the road was 800 meters from the center of the plume to the end of the road, and since it was desired to cover 99% of the values across the entire road, an approximate value of 267 meters (3 x 267 = 800) was chosen. This approximates three sigma values which accounts for about 99 percent of the data. This assumption was verified before starting the analysis.

Two major drawbacks exist with this method. Both tend to overestimate the expected concentrations:

1. There were no factors used to estimate particle fallout. This could be an important consideration since road dust tends to be large in size and would, therefore, fall out as it progresses along the mean wind path.
2. This method calculates the maximum concentration assuming that there is a Gaussian distribution emanating from the road. A more appropriate assumption would be that the road dust emanates from a line source. The assumption used in this analysis, therefore, will overestimate the actual concentration.

The following data were used for this model run.

Emission rate = 9.84 grams/second (343 tons/year)  
 Height of emissions = 5 meters  
 Distance to worst case receptor = 1 kilometer  
 Virtual point source distance (not including distance to receptor)

<u>Stability</u>	<u>Distance</u>
A	1,280 meters
B	1,800
C	2,750
D	400
E	100
F	10,000

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results

Wind Speed  
(Meters/second)

	Stability Class					
	A	B	C	D	E	F
3	1.1	8.5	13.8	33.9	48.8	72.9
6	***	6.8	16.9	24.4	24.4	36.5
9	***	2.8	4.5	11.3	16.3	24.3

The maximum concentrations predicted under VALLEY<sub>3</sub> therefore, was 18.2 ug/m<sup>3</sup>, while the EPA workbook maximum value was 27.1 ug/m<sup>3</sup>.

If one considers all of the sources together, then the estimated values for all sources are as follows:

<u>Source</u>	<u>VALLEY max</u>	<u>EPA max</u>
Crushers	6.4	27.4
Concrete Plant	3.7	15.9
Haul roads	18.2	27.1
<b>Total</b>	<b>28.3</b>	<b>70.4</b>

These values compare the Montana and EPA 24-hour standards of 200 and 260 respectively. The EPA also has a secondary 24-hour standard of 150. These values clearly fall below the applicable 24-hour standard. In addition, it is believed that this screening model has probably over-predicted the concentrations by using the following assumptions:

1. All sources were treated as though they were emanating from the exact same location (with the exception of the virtual point source for the haul roads).
2. No particle deposition rate was calculated.
3. The haul roads estimate over-predicts the concentration by using the center of the road as a maximum.
4. It is assumed that all sources will be operating at the same time (near full capacity).

Regardless of the over-predictive assumptions, it has been shown that the project will probably not violate the ambient air quality standards.

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*Memorandum*

: Harry Keltz

DATE: October 26, 1981

: Stan Sternberg

SUBJECT: KOOTENAI FALLS PROJECT (TUNNEL ALTERNATIVE)

**COPY**

As requested, I was asked to comment on what contribution that the tunnel alternative would have on air quality. The impact from this source would be no greater than emissions from the concrete plant and storage pile sources. Emissions from this source are expected not to exceed 28 ug/m<sup>3</sup> for a 24-hour period.

SS/lh

**COPY**

: Harry Keltz

DATE: 10-26-81

: Stan Sternberg (SS)

SUBJECT: AIR QUALITY MODELING FOR KOOTENAI FALLS PROJECT (ROCKY CREEK ALTERNATIVE)

**COPY**

As per your request, I ran a screening model for particulate emissions from the proposed construction of the hydro-electric plant in Lincoln County. This project had been modeled once before (Hal Robbins, August 3, 1981) at the Kootenai Falls site. I modeled the emissions for the Rocky Creek Alternative.

The model that I employed was the VALLEY model. Input to this model includes 112 receptor heights from 16 directions around the site and at 1 kilometer intervals out to 7 kilometers.

The emissions data that I used were the same as what Mr. Robbins used for the August 3, 1981 model. These were as follows:

Crushers (primary and secondary)

Emission Rate = 1.25 g/sec.  
Stack Height = 30 m.  
Stack Diameter = 0.5 m.  
Exit Velocity = 0.001 m/sec.  
Exit Temperature = 285°K.

Concrete Plant and Storage Piles

Emission Rate = 0.748 g/sec.  
Stack Height = 5 m.  
Stack Diameter = 0.5 m.  
Exit Velocity = 0.001 m/sec.  
Exit Temperature = 285°K.

Haul Roads (area source)

Emission Rate = 9.84 g/sec.  
Stack Height = 5 m.  
Area Dimensions = 32 m. x 32 m.  
Upwind Distance\* = 10,000 m.  
Exit Temperature = 285°K.

\*Area emissions from the haul road were set at a location 10 Kilometers from the other points so that the plume would be allowed to spread out along a line. This mimicks the effect of the haul road which is a line rather than an area source at one spot.

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I ran the model for worse case meteorological conditions. F stability and 2.5 m/sec. The model was run for 24-hour concentrations and assumes that the worse case conditions occur for 6 of the 24 hours.

The highest sums of concentrations from all the sources were as follows:

	Concentration ug/m <sup>3</sup>	Distance From Source	Direction From Source
1.	54.6	1 km.	NNW
2.	49.2	1 km.	SSW
3.	43.6	1 km.	SE
4.	38.8	1 km.	NE
5.	38.3	1 km.	W

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SS/1h

## DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES



TED SCHWINDEN, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

HELENA, MONTANA 59620

Mr. William T. Nordeen  
 General Manager  
 Northern Lights, Inc.  
 Sandpoint, Idaho 83064

Re: 401 Certification Kootenai River Hydroelectric Project  
 FERC License No. 2752  
 Northern Lights, Incorporated - Applicant

Dear Mr. Nordeen:

The Montana Department of Health and Environmental Sciences has reviewed the application submitted by Northern Lights, Inc., to the Federal Energy Regulatory Commission for a hydroelectric project on the Kootenai River. In accordance with Section 401 of the Federal Clean Water Act, 33 U.S.C. Section 1341, we hereby certify, with reasonable assurance, that the project will not result in violations of applicable Montana Surface Water Quality Standards, subject to the following conditions:

- 1) The applicant must comply with all provisions of Montana Pollutant Discharge Elimination System permit No. MT-0026255;
- 2) The applicant must comply with all requirements and conditions of the Short-Term Exemption from Surface Water Quality Turbidity Standards No. WQS 82-01 issued for construction of the Kootenai River Hydroelectric Project; and
- 3) No air injection will be utilized in conjunction with turbine operation.

If these conditions are fulfilled, any discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act.

If there are any questions regarding this certification, please contact this office.

Sincerely,

Kevin D. Keenan,  
 Water Quality Certification Review Team  
 Water Quality Bureau  
 Environmental Sciences Division

KDK:yf

