

M E M O R A N D U M

TO: Helen MacPhail, NS Department of Environment and Labour

FROM: Sarah MacKay (for Hugh Gillis), NS Department of Natural Resources

DATE: March 6, 2008

RE: Registered Environmental Assessment Document - Proposed CGC Inc. Fundy Gypsum, Miller's Creek Mine Extension

CGC Inc., Fundy Gypsum has registered the proposed Miller's Creek Mine Extension Project for environmental assessment, in accordance with Part IV of the *Environment Act*. The purpose of the proposed undertaking is to mine gypsum from a surface mine in Miller's Creek, Hant County beginning in the second half of 2008. The mine life, including construction, operation and reclamation is anticipated to be 50 years.

Staff of the Department of Natural Resources (DNR) have reviewed the environmental assessment document and provide the following comments:

- DNR confirms that the project will develop gypsum resources for the Province and will continue to provide social and economic benefits to the local community and to the Province through direct employment and associated investment in the area. DNR supports the development of the Province's resources when such development is conducted in an environmentally and socially responsible manner as outlined in this project description.
- The proponent has operated gypsum mines in the Miller's Creek area for more than 50 years. This project will allow the company to maintain the social and economic benefits generated by gypsum resource development for another 30 to 50 years.
- The overall approach to mining as described by the proponent is appropriate and consistent with good operating practices.
- The proponent currently holds a Non-Mineral Registration for the project area, which provides the proponent with authority to extract gypsum under the *Mineral Resources Act*. The proponent must also demonstrate they have land ownership or gypsum rights and landowner access agreements for all lands required for the project.
- Additional information on reclamation planning for the property will be required at later stages of the approval process.
- Gypsum soils are not especially rare in Nova Scotia, however the deepest gypsum deposits and highest degree of surface exposed soil and rock is more localized

within the area surrounding Windsor and throughout Hants County. This same combination of factors that lead to the economic desirability of the area for mining also affect the suitability of the habitats for many wild species, some of which are unique in this province. Windsor and the surrounding area have an extremely rich diversity of rare plant species, some of which have a disjunct distribution and are geographically isolated from other populations as far away as Maine (e.g. Ram's-Head Lady Slipper). A few species occur nowhere else in Nova Scotia (e.g. Leatherwood, Maidenhair Fern), while still others have the highest density by number anywhere in the province (Yellow Lady Slipper). Such aggregations of species in this region tend to be rather clumped and associated with forest habitats (Yellow Lady Slipper, Ram's-Head Lady Slipper, Hepatica), and/or wetlands (e.g. Bloodroot, Black Cherry, Blue Cohosh, Showy Lady Slipper).

- The diversity of species-at-risk and those of conservation concern (including vascular plants and lichens) within the area proposed for development by Fundy Gypsum is especially rich, as identified by the extensive surveys completed by the proponent. One Endangered plant listed under the Nova Scotia *Endangered Species Act* (Ram's-head Lady Slipper), and six others listed under the Nova Scotia General Status of Wild Species including two RED listed species (Round Leaved Hepatica and Eastern Leatherwood) and four YELLOW listed species (Canada Buffalo-Berry, Thimbleweed, Yellow Lady Slipper and Black Ash) all occur within the proposed development footprint. Six species of rare lichens are also found within the proposed development area. At least three species of vascular plants not currently listed under the *Endangered Species Act* are strong candidates for legal listing and either have formal status assessments already underway (e.g. Black Ash) or impending (eg. Round-leaved Hepatica).
- Overall, the extraction of gypsum *can* occur without significant negative environmental effects to wildlife species and habitats as long as the extraction areas within the proposed development footprint are modified to avoid the sensitive sites and species identified as described below.
- Ram's-Head Lady Slipper (*Cypripedium arietinum*), listed as Endangered under the *Endangered Species Act*, occurs within the proposed development area. This area is recognized as extremely important as it is the largest population of the species in Nova Scotia. The proponent intends to protect most of these plants in a conservation area. However, the specifics of the protection that may be afforded are not defined in the Environmental Assessment Registration (EAR) document and approximately 40 plants border a wetland (#12) that will be negatively impacted by the proposed development as currently described. Additional monitoring of the surrounding topography, vegetation and hydrology around wetland #12 (e.g. microclimate, drainage) will be needed to assess immediate or long-term impacts to these plants.
- Although not yet listed under any species-at-risk legislation, more than half of the known provincial population (by number) of Yellow Lady Slipper (*Cypripedium*

parviflorum) occurs within the proposed development area. The proponent in the EAR proposes to protect about 500 plants within a conservation area, however, the remaining 500 plants would be lost with the current layout of extraction areas. Such a loss would reduce the provincial population of Yellow Lady Slipper by a full third and would likely result (pending a formal Status Assessment) in their being listed as Threatened or Endangered under legislation.

- The proponent plans to mitigate the loss of Black Ash on the site by translocation. Translocation is not a recommended mitigative action for species-at-risk, as the probability of success is unknown. A status report for Black Ash is currently in preparation and will be reviewed by the Nova Scotia Species-at-Risk Working Group appointed by the Minister of Natural Resources, under the *Endangered Species Act* (likely by Fall, 2008). Loss of the 25+ Black Ash trees on site as proposed in the EAR may contravene the *Endangered Species Act* if the species is listed.
- All alterations to wetlands are significant, and proponents must apply the mitigative sequence to activities which may impact wetlands. The first step in this sequence is avoidance of wetlands, followed by mitigation and then compensation. Gypsum extraction will lead to the loss of some wetlands, which is an acknowledged effect. The proponent has identified 16 wetlands within the project area, and 12 will be fully or partially lost with mining. Impacts to wetlands 10 and 12 can be avoided with slight changes to the southern boundary of the pit. Several wetlands (2, 3, 4, 15, 16) will be lost or impacted by the placement of the stockpiles on the east side of the project area. These impacts can be avoided if the footprints of the stockpiles are reduced, such as by moving overburden west across Ferry Road to the Bailey Quarry, which will be undergoing reclamation. An analysis of wetland avoidance options is particularly relevant for the largest wetland (#1). Alterations made to the pit location to avoid impacts to endangered species or species of conservation concern are not sufficient justification to alter a wetland, as species *and* their habitats are both of importance.
- Predictions on impacts to wetlands with respect to surface and groundwater inflows and outflows are qualitative and need to be substantiated with quantitative estimates. There is insufficient information in the EAR document to determine the extent and magnitude of the proposed project to surface water and groundwater impacts on wetlands. Modeling undertaken by the proponent to predict prevailing site conditions and impacts has not been validated against site data. It is proposed to mitigate the loss of water catchment contribution to streamflow associated with the pit, by discharging water collected in stormwater and settling ponds to the lower reaches of the streams. However, seasonal and interannual discharge curves have not been calibrated for the streams. It is thus difficult to envisage how the proponent will replicate these patterns, and what criteria will be used to assess whether their water supply will mitigate downstream impacts with respect to water quantity for wetlands.

There is not a map showing the location of species-at-risk, wetlands/watercourses, and the proposed conservation area relative to the mine footprint layout. Such a map would allow the reader to better assess the impact of the project on valued environmental components (VEC's).

- Attempts to locate possible Bat Hibernaculums have been addressed, however there remain concerns whether the cold air venting method and the month of May evening surveys are sufficient to dismiss the possibility of caves and thus possible hibernaculums. There should be a plan put in place to address what is to be done should a cave be discovered as the project moves forward.

Recommendations:

1. The western section of the proposed development footprint does not have the same predicted impacts to species-at-risk and wetlands. Subject to recommendation 3 and non-wildlife issues, initial pit development may be possible in the western part of the project area to allow sufficient time to study and propose mitigation to prevent impacts to species-at-risk or conservation concern.
2. There is a high potential for long term negative impacts on endangered plants and other species with a high level of conservation concern should the project proceed as outlined in the proponent's EAR document. DNR recommends that the details and requirements for protection of species-at-risk and their habitat, and the details of extractive areas within the development footprint, be formally agreed upon with Nova Scotia Environment and Labour (NSEL) and DNR.
3. DNR recommends that the proponent commit to a monitoring and research program for Ram's-Head Lady Slipper within the proposed development area, and that the specific requirements for such a research/monitoring program for Ram's-Head Lady Slipper be developed and agreed to by DNR (Wildlife Division) and a recovery team (to be formed).
4. DNR recommends that the conservation area be expanded to incorporate habitat extending northward where the highest concentrations of Yellow Lady Slipper are within the proposed development footprint. The dimensions of the conservation area should be subject to additional study and final agreement with DNR (Wildlife Division).
5. Given the proximity of more than 40 endangered Ram's-Head Lady Slipper plants to wetland #12, and the high potential for adverse effects resulting from changes to topography, vegetation and hydrology, DNR recommends that wetland #12 be fully captured within the conservation area and additional modeling using on-site data be undertaken to assess mitigation options to ensure plant survival.
6. The loss of wetlands as outlined in the proponent's EAR should not be approved

