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Mining and Geological Consultants

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September 16, 2004
File: 2455.2

New York State Department of Environmental Conservation
Bureau of Resource Management & Development
Division of Mineral Resources
625 Broadway, Third Floor
Albany, NY 12233-6500

Attention: Mr. Steven M. Potter
Director, Bureau of Resource Management &
Development

Subject: 2004 Review of Cayuga Mine, Cargill, Inc.
Number 6 Salt
Seneca and Tompkins Counties, New York

Gentlemen:

At the request of Mr. Joseph S. Moskiewicz of the New York State Department of Environmental Conservation, Division of Mineral Resources, Region 7 (NYSDEC), John T. Boyd Company (BOYD) has visited the Cayuga Mine and met with Cargill's staff on August 17, 2004.

In attendance from the NYSDEC were Messrs. Potter, Moskiewicz, and Steven Army along with mine personnel. Using Cargill's Annual Report¹ as an outline for the meeting, the geomechanics and hydrogeologic aspects the Cayuga Mine were discussed along with planning for the mine visit.

Discussion of Annual Report

The Annual Report submitted by Cargill is in response to Special Conditions 7 through 13 of Permit Number 0-9999-0075/00001.

¹ Cargill Deicing Technology, 2003, "Annual Report for Mine File #709-3-29-0052; Cayuga Salt Mine," prepared for New York State Department of Environmental Conservation, December 30.

The annual report was accepted without modification at the meeting but specific requests were made to improve the next annual report that will result in a more complete report to aid NYSDEC in the mine review process. Specifically:

- All rock mechanics data including, but not limited to all instrumentation reading and observations from the initial readings to present. Data for subsidence, closure, and extensometers are to be provided electronically. These electronic files are to include raw and processed data, graphs, and explanations of any inconsistencies and anomalous readings including reasons for abandonment, reinstallation, etc., along with applicable observation in the vicinity of the instrument such as floor heave, water inflow, etc.
- Future reports are to contain comment on whether, in the opinion of Cargill, the instrument readings support or conflict with prior stability models especially in areas employing new mine, panel, or main configurations.
- A mine map showing instrumentation location and type and shore line is to be provided.
- Statements are still needed to point out known, encountered, or discovered geologic and geotechnical anomalies and mine action to address such anomalies. For example, at the meeting it was relayed that Unit 50 suspended mining due to rock and that a rock roll prevented mining in 3 South. Such events and a description of the geology encountered must be reported in the annual document.
- Updates of Level 4 filling including data on shore line advance are required. This level is being used to store contaminated surface run-off and waters entering the mine through shafts. It is Cargill's estimate that the level will be at capacity in 9 years assuming procedures to reduce inflow proceed as planned.
- Calculations and assumptions for determination of brine volume storage on Level 4 are requested.
- Cargill plans to change the panel configuration. It is expected that Cargill's next annual report will present these planned changes by comparing the existing and planned configurations using text, sketches, and maps. NYDEC and BOYD are of the understanding that analysis will be completed that will compare stability for the new and old configurations. Cargill reported that RE/SPEC maybe retained to complete this assessment and that Rock Mechanics Assist maybe retained to aid in instrumentation installation and interpretation. Cargill should be aware that NYSDEC questions such changes as it was a configuration change that led to the Retsof Mine inundation.

Mine Visit

Both Level 4 and Level 6 were to be observed during the mine visit, thus the NYDEC party was split into two groups. Most of the party visited Level 6, while Messrs. Army and Scovazzo visited Level 4. Level 4 was visited to observe its overall stability and to aid in

review of brine storage capacity. Because of abandonment of this level no walk way is maintained and roof falls are common. The roof falls are mostly confined to stone cut passages (non salt) and for most of the fall areas the top has attained what appeared to be a stable arch.

The shore line was observed in only one entry because of limitations in access and time. The shore line showed signs of slow brine flow and shoreline advance.

This visit allowed NYDEC to obtain an understanding of Level 4 size allowing for a better assessment of the storage capacity calculations once presented by Cargill. The assumption that Level 4 will store brine for 9 more years can now be better addressed.

BOYD looks forward to the review of the next annual report. Please contact us if you require additional information or if we may be of further service.

Respectfully submitted,

JOHN T. BOYD COMPANY

By:



Vincent A. Scovazzo
Senior Geomechanics Specialist

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