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March 12, 2018
File: 2499.004

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. Matthew Podniesinski
Director, Bureau of Resource Development
and Reclamation

Subject: Annual Report Review - 2017
Cayuga Mine, Cargill, Inc.
Seneca and Tompkins Counties, New York

Gentlemen:

John T. Boyd Company (BOYD) received a CD from Cargill Deicing Technology (Cargill) on February 2, 2018. The CD contained:

- An unsigned cover letter¹ dated January 24, 2017 included as the file Boyd MLRP submittal Jan '18 cover letter.docx last modified January 26, 2018.
- The Annual Report² signed by Shawn G. Wilczynski as file Annual Report for Oct 2016 through Sept 2017.pdf last modified November 02, 2017.
- Maps as AutoCAD® or Adobe Acrobat® files.
- Extensometer and closure readings as Excel® files.
- Consultant reports from Engineering Seismology Group (ESG), RESPEC, and Rocktec Solutions.

¹ Skrobialowski, Adam, 2017 (2018), untitled letter, unsigned from Cargill Deicing Technology to Vincent A. Scovazzo, John T. Boyd Company, January 24.

² Cargill Deicing Technology, 2017, "Annual Report for Mine File #709-3-29-0052; Cayuga Salt Mine Permit ID#0-9999-00075-00001," with cover letter from Shawn G. Wilczynski to Matthew Podniesinski of New York State Department of Environmental Conservation, November 2.

On February 15, 2006, Mr. Steven M. Potter, then the Director, Bureau of Resource Management & Development, New York State Department of Environmental Conservation (NYSDEC), requested that BOYD review all documents, digital data, and annual reports received by BOYD starting with the 2006 Annual Report.

The recently received documents were reviewed for their adherence to conditions of the revised Permit³. §12.8 of the revised permit limits cost for review of annual reports by Consulting Services to \$15,000. BOYD is providing the Consulting Services for this annual review. It is noted that "Funding relating to permit modifications or alterations requiring consultant review shall be not be capped due to the varying nature of potential future applications. Cargill shall fund the cost of the annual meeting/underground inspections, and will share the cost of joint inspections with American Rock Salt Co., LLC."

The Cargill 2017 Annual Report is complete. BOYD was limited in this review because a base map was not provided by Cargill. Such a map is needed to evaluate the location of the closure stations with respect to their location to active mining. Active mining location was necessarily determined from the royalty map that is not in the same coordinate system as other maps. Without the base map, the royalty map cannot be accurately referenced to the closure station map. In the past, the base map was included as a layer in the closure station map. Similarly, mining in U63 cannot be evaluated as it is not shown on the royalty map. Our review requires the location of mining that has occurred over the last two years in U63.

Discussion of Annual Report

The Permit has several conditions that affect the Annual Report and its review including:

Condition 9.

Condition 9.a.

Condition 9.a. requires investigation into the disturbed salt zone and this investigation to be completed and submitted before mining proceeds into the area. Based upon the additional seismic survey and consultant reports, Cargill will maintain the planned 1,000 ft setback around the Frontenac Point Anomaly. Further investigation is to be completed and submitted to the Department for review and approval prior to mining within this 1,000 ft buffer.

³ New York State Department of Environmental Conservation, Region 7, 2007, "Permit" DEC ID 0-9999-00075, expiration December 31, 2012, December 31, Modification # I Effective Date: November 8, 2013.

Condition 9.b.

Condition 9.b. requires investigations and reports on the adequacy of the thin rock overburden where the solid rock overburden is thinner, the glacial till and lake sediments thicken, and lake depth increases. The thin rock overburden and Frontenac Point Anomaly may overlap.

The required additional investigations and reports have been performed for Anomaly C. Undermining of Anomaly C will be completed using a large pillar configuration and not the more yielding production pillar typically used at the Cayuga Mine. Cargill has agreed that no additional mining will occur under Anomaly E and no mining will occur under Anomaly D and the Frontenac Point Anomaly. Additional investigations and reports will need to be undertaken for anomalies A and B, and mining in these areas should be avoided until reviewed and approved by the NYSDEC. The following summarizes reports included with the annual report that address these anomalies.

The 2017 Annual Report notes the inclusion of reports by ESG Canada Inc. which were provided on the CD:

- ESG Solutions, 2016 and 2017, "Seismic Data Processing Results and Health Analysis Report for Cayuga Monitoring System," prepared for Cargill Salt Division, covering 12 months from December 2016 to November 2017.

Cargill notes in the annual report that "The Cayuga Mine operates a micro-seismic monitoring network which now has over 70 geophones and covers over 5 square miles of mine workings. The data from this system is reviewed daily in-house and by Engineering Seismology Group (ESG), and is summarized in a monthly report by ESG. This data indicates the mine is behaving as expected."

- Petersen, Gary, 2017, Cayuga Mine Trip Report, prepared for David Plumeau, Cargill deicing technology, RockTec Solutions, March 31. As 2017 Mar – Cayuga Rock Mechanics Review.pdf last modified on April 03, 2017.
Mr. Petersen notes "...the Northern reserves the Valley aquifer is well below the Oriskany. The lake seismics indicate there are anomalous zones penetrating deep into the bedrock that could be a vertical conduit for Valley aquifer water. Because of this mining the Northern reserves with a YPP design is not a viable option." His conclusion here is based on his theory that water from the Oriskany Formation has moved down linears and is increasing closure rates in the U12 and U40B panels. This flow was due to the destressing caused by a yielding production pillar." "The big pillar design has a very small de-stress zone and is much more suited for mining the Northern reserves." Petersen notes using large pillars that "Ground problems will first show up as roof shears developing along the edge of the pillar ..."

- Plumeau, Dave, 2017, Assessment of the Feasibility of Mining Beneath the “C” Anomaly, Confidential and Proprietary Memorandum from Cargill Deicing Technology, to Vincent Scovazzo, John T. Boyd Company, October. As Geologic assessment and mining beneath anomaly C 10-18-2017 - final for JT Boyd.docx last modified October 18, 2017.

This memorandum summarizes some of the seismic and engineering work in characterizing the scour and Frontenac Point anomalies and the drilling to characterize the C Anomaly by REI.

- Drawings to clarify the REI drilling program including:
 - Elevation view - Stratigraphic test hole 2017 as U-72I as REI Profile – Directional Drilling – U72 C anomaly.pdf last modified March 13, 2017, which shows the vertical drill path of the exploration drill hole in reference to the 4, 5, and 6 salt seams.
 - Plan view – Stratigraphic test hole 2017 from U-72 as Plan view Test hole from U-72 2017.docx last modified March 13, 2017, which shows a horizontal drill path of the exploration drill hole along with its four branch holes.
 - REI Drilling, 2017, Cargill Salt, C Anomaly Project, 4" Wellhead, February 22 as 4012205 – 4 inch Wellhead Drawing – Cargill C Anomaly Project.pdf last Modified March 13, 2017, which is a construction specification drawing of the piping and shut-off of the 4-inch wellhead.
 - REI Drilling, 2017, Cargill Salt, C Anomaly Project, 8" Wellhead, February 22 as 4012205 – 8 inch Wellhead Drawing – Cargill C Anomaly Project.pdf last Modified March 13, 2017, which is a construction specification drawing of the piping and shut-off of the 8-inch wellhead.

Condition 12.a.

Condition 12.a. requires an Annual Report to be submitted by Cargill in response to 12.a. sub-conditions 1 through 8 and Condition 12.b through g. These conditions and Cargill’s responses are summarized below.

Condition 12.a.1.

Condition 152a.1. requires the inclusion of the Mine Manager’s signed certification that “all mining related activities...were in conformance with this permit and the approved plans, or that variances have been reported and managed.”

A certification was included on page 2 §15.a.(1) and the certification sent to NYSDEC was signed by Mr. Shawn G. Wilczynski, Mine Manager, on November 2, 2017. This certification notes “...that all mining activities, to the best of my knowledge, conducted during the reporting period from November 18,2016 to present were in conformance with

the DEC Permit # 0-9999-00075/00001 and the approved plans. No variances occurred and none were reported.”

Condition 12.a.2.

Condition 12.a.2. requires “A summary of all non-routine mining incidents as defined in Special Conditions Part b. ...” Condition 12.b. defines non-routine as “incidents during mining, processing, or other mine related activities that may adversely affect mine stability, ground and surface water or other natural resources, or the health, safety, welfare or property of the general public.” During a meeting held on August 17, 2004, with Cargill, NYSDEC, and BOYD, it was agreed that statements will be included in the Annual Report “to point out known, encountered, or discovered geologic and geotechnical anomalies and mine action to address such anomalies.”

Cargill included a statement in the Annual Report page 2, Section 15.a.(2) that “[t]he Cayuga Mine is not aware of any non-routine incidents associated with the mining, processing, or other mine related activities that would have adversely affected any of the following:

- Mine stability.
- Ground and surface water.
- Natural resources.
- Health, safety, welfare, or property of the general public.

Condition 12.a.3.

Condition 12.a.3. requires “[a]n updated Mining Plan Map depicting the current extent of mining activities, and the proposed advancement of the working face for the subsequent three years.” At the August 2004 meeting, it was agreed that in addition “[a] mine map showing instrumentation location and type and shore line...” will be included in the Annual Report.

Cargill included a statement in the Annual Report, page 2, Section 15.a.(3) that “[t]he Cayuga Mine is currently operating in the northern region of the mine. Active mining is located in panels U-63E to the east under the land, U-80 to the southwest, and NW-3 to the northwest.” Mine maps as AutoCAD or Adobe Acrobat files were supplied by Cargill to fulfill this condition. Included maps were:

- Adobe Acrobat file, [3 Year Plan Not Under C Nov 2017.pdf](#) last modified on November 06, 2017, and contains Cargill Deicing Technology, 2017, “Cayuga mine 3 Year Mine Plan Assuming No Approval for Mining Under C Anomaly 2017/ 2018 Fiscal Yr,” November. Includes the planned mining to fiscal year 2019-2020. No approval has been given to mine under Anomalies A and B.

- Adobe Acrobat file, 3 Year Plan Under C Anomaly Nov 2017 Model (1).pdf last modified on November 06, 2017, and contains “Cargill Deicing Technology, 2017, “Cayuga mine 3 Year Mine Plan Assuming Approval for Mining Under C Anomaly 2017/ 2018 Fiscal Yr,” November. Includes the planned mining to fiscal year 2019-2020. No approval has been given to mine under Anomalies A and B.
- The AutoCAD file, ROYALTY.dwg, last modified December 11, 2017, and containing the Cargill Deicing Technology, 2017, “Cayuga Mine, Mine Royalty Map, 2017/2018 Fiscal Yr.” August. Map shows fiscal year production areas from June 1, 1984 through November 30, 2017.
- The AutoCAD file, Hakes update U38-36 Dust fill map.dwg, modified December 07, 2017, containing an undated map, “Dust Fill Plan, Current Mapping as of 12-5-17” and shows U38, U38A and U36 areas filled.
- The Adobe Acrobat file, 4 Level Pond Map MLRP 2Nov17.pdf, modified November 03, 2017, and containing the map, 2017, “Cayuga Mine, 4 Level Pond Map, Updated: 2 Nov 2017,” November. This map shows filled levels to November 20, 2017, and remaining potential pond area.
- AutoCAD file 4 Level Convergence Map.dwg, modified December 29, 2016 and contains an untitled and undated map showing closure station locations.
- The AutoCAD file, 4A Level for JT Boyd.dwg, modified December 29, 2016 containing undated, “4A Level Instrumentation Map.” This map shows closure station’s locations.
- The AutoCAD file, undated and untitled, scale 1 in. = 50 ft and AutoCAD file, PAMELPASS.DWG, modified December 29, 2016, and contains the map “4 Level, Pamel Pass – 13 Belt.” This map shows locations of extensometers along 13 belt.
- An untitled AutoCAD file, Screen Plant Horizontal Roof Ext.dwg, modified December 29, 2016, and showing map and cross-section view of installation locations of near horizontal extensometers in the roof of the screen plant gallery.
- The AutoCAD file, Screen Plant Instrumentation.dwg, modified December 23, 2014 and containing map undated, “Unit # 5 Screenplant,” showing instrument locations in and around the screen plant gallery.
- The AutoCAD file, undated, Surge Bin instrument Map to JT Boyd.dwg modified August 24, 2017, and containing undated, “Current Surge Bin Instrumentation Map as of 9-09,” showing instrument locations in and around the screen plant gallery.
- AutoCAD file, Convergence Map w-Basemap Outline 5-2016.dwg, modified December 12, 2017, and containing the map Cargill Deicing Technology, undated, “Cayuga Mine, 6 Level Workings, Convergence Stations” This overlay shows the locations of convergence stations.
- Adobe Acrobat file Cayuga Mine Contour Closure Dec - 2017.pdf modified January 24, 2018 and containing the undated map “Cayuga Mine Closure (Inches) Dec-2017.”

- Adobe Acrobat file Cayuga Mine Contour Rate Dec -2017.pdf modified January 24, 2018 and containing the undated map “Cayuga Mine Closure Rate (Inches/Year) Dec-2017.”

Two maps that are normally included in the annual report but were not included in the 2017 Annual Report are:

- The base map was included as basemap_with_rock_layer_roof_rock_floor_rock_rolls(updated12-1-16).dwg, which was last modified December 29, 2016, and includes a map entitled “Cayuga Mine, 6 Level Workings,” by Cargill Deicing Technology. Also included on this map are roof and floor rolls.
- The AutoCAD file, Complete Mine Overlay w_Surface Subsidence(11-2016).dwg, last modified December 29, 2016, and containing untitled, undated map, which shows subsidence monument locations, shore line, and 6th Level workings.

The maps show the extent of mining, proposed mine plan, shorelines of both the 4 Level flooding and of Cayuga Lake, total closure, closure rate, and instrument locations.

Condition 12.a.4.

Condition 12.a.4. requires the annual report to include a “summary of in situ measurements of rock mechanics required by Part f. of this Special Condition.”

Condition 12.f. requires the measurement and collection of in situ rock mechanics data “in accordance with the approved Mined Land Use Plan.” The data are to include “plots of relevant graphs. ...” Furthermore, “[e]xceptions to anticipated trends in rock behavior shall be noted and explained. ...”

At the August 2004 meeting, it was agreed that “[a]ll rock mechanics data” would be incorporated in the Annual Report, “including, but not limited to, all instrumentation readings 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.”

Cargill included a statement in the Annual Report on page 2, Section 15.a.(4) that “Evaluations of the convergence data indicate that no unusual trends have been identified and the mine is behaving as expected. There continues to be two slight anomalies: the U-40B and U-12 areas. Since backfill placement in U-40B was completed

the convergence rates have slowed and are trending back toward historical rates. The U-12 panel is also trending toward normal rates. These areas are being monitored more frequently as we try to understand why the rates were higher than expected.”

Closure measurements can be evaluated to indicate possible instability in three ways:

1. By studying the graphs of the rate of closure over time. The shape of these graphs indicates areas of instability, areas of concern, and areas of stability. Mr. Petersen of Rocktec Solutions (Cargill geotechnical consultant) evaluated the closure in this manner.
2. By establishing trigger values for total closure. This method is applicable in harder, less viscous rock, but is not applicable for the Cayuga Mine, as stable closure in salt will continue until the openings are closed.
3. By establishing trigger values for long-term closure rates. Since this is not being completed by the other investigators, BOYD applied such trigger rates in its evaluation of the closure readings.

Closure rate data are significant because they offered insight into the collapses and the inundation of the Retsof Mine. Sustained closure rates of 15 in. per year or less were measured in stable areas of the Retsof Mine, while in the failure areas, closure was regularly measured with sustained rates over 230 in. per year with onset of failure around 600 in. per year. Although Retsof and Cayuga mines have different overburden and material properties, in the general sense, a comparison seems warranted for a relative indicator of stability.

BOYD reviewed the 309 closure stations read in 2017 (27 less than last year; 309 in Level 6, zero in Level 4A, and zero in Level 4).

None of these 309 closure stations showed readings that exceeded 230 in. per year. Below is a list of the 10 highest measured closure rates in 2017 for areas of recent mining defined as areas within 1,000 ft of mining that occurred since October of 2016.

Top 10 Closure Rates in Areas of Recent Mining

Closure Station	Rate of Closure (in./yr)	Last Recorded Rate of Closure (in./yr)	Notes
U63EPIN#29	85.35	6.75	First reading
U63EPIN#25	72.78	8.76	First reading
U63EPIN#28	69.41	6.42	First reading
U63EPIN#31	62.17	11.21	First reading
NW3PIN#53	60.33	7.33	First reading

Top 10 Closure Rates in Areas of Recent Mining

Closure Station	Rate of Closure (in./yr)	Last Recorded Rate of Closure (in./yr)	Notes
U63EPIN#39	57.62	11.46	First reading
U63EPIN#30	57.24	5.20	First reading
U63EPIN#37	56.89	15.49	Second reading
U63EPIN#33	49.88	5.60	First reading
U63EPIN#26	48.75	40.41	First reading

These rates are markedly lower than the comparable rates for 2016. All of these rates substantially dropped over time showing that the ground is stable or stabilizing. All 10 of these stations are located in U63 the access to the new shaft.

Also determined are the top 10 closure rates away from recent mining activity as shown below:

Top 10 Closure Rates Away from Recent Mining

Closure Station	Rate of Closure (in./yr)	Last Recorded Rate of Closure (in./yr)	Notes
U63EPIN#14	1.1589	0.4628	
U12PIN#32	0.9676	0.9316	
U40BPIN#8	0.9537	0.9088	71.9° F 65%H
U12PIN#28	0.8661	0.8473	
U12PIN#107	0.8553	0.8064	
U72PIN#3	0.8027	0.4239	
U40BPIN#2B	0.7968	0.7968	last reading
U40BPIN#14	0.7810	0.7710	
W1PIN#4	0.7029	0.7029	last reading
U12PIN#102	0.6926	0.6926	last reading

These rates are substantially lower than the comparable rates for 2016, likely due to lower production over 2017 and the impact of mining the 5th Level has dissipated. Rates dropped for seven of these stations from the high reading in 2017 and the final reading. Three closure stations were only read once during 2017 but all have dropped over time. The rate drop indicates the ground is stable.

Data from 14 extensometers that were read in 2017 were evaluated (18 less than in 2016). Extensometers were installed in various manners including vertically into the roof, at low angle (near horizontal), an angle that resulted in the extensometer being installed over the pillars, vertically into the roof and horizontally into pillars. These data are further complicated by the varying rod and bay lengths. (Bay length is the length difference

between rods except for the first bay which is the length of the shortest rod.)
 Nevertheless, BOYD attempted to ascertain anomalies within these data.

Last year these data were evaluated using the rate of change (inches per day). This year BOYD used a more appropriate rate measure (strain per year). Using RESPEC’s 1995 Cargill salts values:

$$\text{Dilation Limit } J_2^{0.5}/I_1 = 0.36$$

$$\text{And Creep Rate } \epsilon^c = 8.3 \times 10^{-30}(\Delta\sigma)^{5.9}$$

BOYD assessed the stress state to estimate that a strain rate greater than 8×10^{-3} in. per year is need for destructive dilation.

The five highest strain rates measured during 2017 were:

Extensometer	Bay Number	Bay Location (ft)	Strain Rate $10^{-3}/\text{year}$	Dates
Surge Bin #25	2	4.4 to 11	3.68	5/5/2016 to 6/22/2017
Surge Bin #25	1	0 to 4.4	3.50	5/5/2016 to 6/22/2017
SB-GA #27	2	12 to 19.5	3.14	4/21/2017 to 6/22/2017
SB-GA #27	2	12 to 19.5	2.96	10/18/2016 to 4/21/2017
Surge Bin #25	3	4.4 to 19.5	2.76	5/5/2016 to 6/22/2017

These strain rates are acceptable. Note that all five highest rates are from two extensometers. The extensometers installed around these two instruments measure lower strain rates.

Consultant Reports Concerning Conditions 12.a.4.

- ESG Solutions, 2016 and 2017, “Seismic Data Processing Results and Health Analysis Report for Cayuga Monitoring System,” prepared for Cargill Salt Division, covering 12 months from December 2016 to November 2017.
- Petersen, Gary, 2017, Cayuga Mine Trip Report, prepared for David Plumeau, Cargill deicing technology, RockTec Solutions, March 31. As 2017 Mar – Cayuga Rock Mechanics Review.pdf last modified on April 03, 2017.
- Plumeau, Dave, 2017, Assessment of the Feasibility of Mining Beneath the “C” Anomaly, Confidential and Proprietary Memorandum from Cargill Deicing Technology, to Vincent Scovazzo, John T. Boyd Company, October. As Geologic assessment and mining beneath anomaly C 10-18-2017 - final for JT Boyd.docx last modified October 18, 2017.

These reports are discussed in section Condition 9.b. above.

Condition 12.a.5.

Condition 12.a.5. requires the Annual Report include a “summary of subsidence monitoring data required by Part e. of this Special Condition.” Condition 12.e. requires “[s]ubsidence monitoring shall be conducted in accordance with the approved subsidence monitoring plan contained within the approved Mine Land Use Plan.” Furthermore, “[e]xceptions to the trends shall be noted and explained...” Points applicable to this condition were agreed upon at the August 2004 meeting and are noted above under Condition 12.a.4.

Cargill included a statement in the 2016 Annual Report page 3, Section 15.a.(5) that “While no surveys were conducted during the year, previous surveys indicate that the mine is behaving as expected with no anomalous subsidence zones. The next round of measurements are being planned to start in the spring of 2018.”

Condition 12.a.6.

Condition 12.a.6. requires the inclusion of “[i]nformation regarding the source and volume of any water inflow into the mine, and the disposition of such water.” At the August 2004 meeting, it was agreed that a discussion about water disposal in Level 4 would be included in the Annual Report, noting: “Updates of Level 4 filling including data on shore line advance.” However in 2012 it was noted that “Access to view the pond is not possible due to ground conditions.”

In section 15.a.(6) of the Annual Report, Mr. Plumeau notes that “All of the water is directed to a settling pond located on the 4-level of the mine. The water is then pumped from the settling pond to abandoned areas at the far east end of 4-level as well as to various areas of the active mine for dust control. Recent volume calculations indicated that at our current rate of storage (about 14,000,000 gallons per year) we have approximately 6.1 years of storage life remaining on 4-level.” The reported volume is the same noted in 2016 when storage life was reported to be 7.1 years.

Cargill again notes that “Over the past year inflows in the #1 shaft have slowly increased back to about 23 gpm, this is despite grouting campaign that was completed in May, which achieved no measurable results. Plans are being made to perform grouting campaigns during 2018 in an effort to further reduce the inflows in # 1 shaft. Better understanding of the inflows from #2 shaft have led to plans to line the shaft this spring. The total inflow in the shaft, based on water balances, estimates the inflow at 9 gpm. This, in addition to the small amount of seepage in #3 shaft that makes it into the mine at about 1 gpm, brings the total mine inflow to about 36 gpm at this time.”

Cargill included Excel file; Copy of UG Pond Volume Calculation 1Nov17.xls last modified November 02, 2017. BOYD notes the inclusion of this information with the annual report but is not charged with its review.

Condition 12.a.7.

Condition 12.a.7. requires the inclusion of “[a] summary of all other monitoring data required under the terms of this permit or Department SPDES permit issued to Cargill.” Cargill included a statement in the Annual Report page 3, Section 12.a.7. that “There was one exceedance of the SPDES limits for the storm water outfalls, and one exceedance for non-contact cooling water temperature at the brine water treatment plant. There were no exceedances for the Waste Water Treatment Plant to report during the past year.” An included Excel spreadsheet, 2016 MLRP outfall summary of DMRs .xlsx last modified December 12, 2016, provides information on outfall water quality including cyanide, chloride, zinc, total dissolved solids, and cooling and treatment water.

SPDES data and a discussion of these data are included in the Annual Report. These data are to be reviewed by NYSDEC.

Condition 12.b. and c.

Condition 12.b and c. addresses Mine Safety and Health Administration (MSHA) reporting involving non-routine mining incidents as defined in Condition 12.b. Condition 12.c. requires Cargill to submit “all correspondence with the Mine Safety and Health Administration involving non-routine mining incidents...”

Cargill includes a statement in section 15.c. of the Annual Report that “[t]here were no incidents meeting the guidelines for notification as identified in section 15.a.(2).” and section 12.c. of the Annual Report that “[t]he Cayuga Mine has not received any citations or correspondence from MSHA regarding non-routine mining incidents as identified in section 12.a.(2).” The Annual Report does not note reports or letters from MSHA concerning any non-routine mining incidents.

Condition 12.d.

Condition 12.d. addresses reporting requirements “Prior to undertaking any material change in the approved mining methods or techniques ... Cargill shall submit to the Department a description of such modification ...” This condition does not require the reporting to occur in the Annual Report.

Cargill notes in section 15.d. that, “... in the U-74 mining panel, and subsequent mining panels to the west of NW3, a "large pillar" design has been adopted. This change is

necessitated by the potential for disturbed or thin rock overburden in the central portion of the Cayuga Lake valley. These panels were converted to a "large pillar" design which provides better support of the overburden with less changes in the stresses in the strata above the mine." This modification has not been approved by the NYSDEC.

Condition 12.g.

Condition 12.g. addresses the reporting and recording of citizen complaints.

Cargill includes a statement in section 15.g. of the Annual Report that "[n]o written complaints from citizens were received since the last report (November 2016)".

Site Visit

A site visit to discuss these findings among NYSDEC, Cargill, and BOYD should be arranged. BOYD suggests visits in the mine to U63 and the D anomaly drill site.

Topics for discussion at the meeting should include:

- The lack of closure stations in U66 and U78 through U81.
- Required map for the 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
Director of Geotechnical Services

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