

An aerial photograph of a river valley. The river flows through the center, surrounded by hills covered in dense forest with vibrant autumn foliage in shades of yellow, orange, and red. Some areas of the forest appear to be cleared or show signs of mining activity. In the foreground, a road and some small structures are visible.

Continued Concerns Surrounding DEC Application ID#0-9999-00075/00001 (Cargill Mine Shaft #4)


May 1st 2017

2:30PM – 4:00 PM

Photo: Bill Hecht

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- An aerial photograph of a wide river, likely the Mississippi, flowing through a landscape. The river is a deep blue, contrasting with the surrounding land. The land is covered in dense forests with trees in various shades of autumn, including yellows, oranges, and browns. There are some cleared areas, possibly fields or pastures, and a few small buildings or structures visible in the distance. The sky is a pale, hazy blue.
- Thank you
 - Introductions
 - Dale Baker
 - Cait Darfler
 - Deborah Dawson
 - John Dennis
 - Brian Eden
 - Dooley Kiefer
 - Raymond Vaughan

Photo: Bill Hecht

An aerial photograph of a wide river, likely the Mississippi, flowing through a landscape with dense forests displaying vibrant autumn foliage in shades of yellow, orange, and red. The river is a deep blue, contrasting with the colorful land. In the foreground, there are some cleared fields and a few small buildings. The sky is a pale, hazy blue.

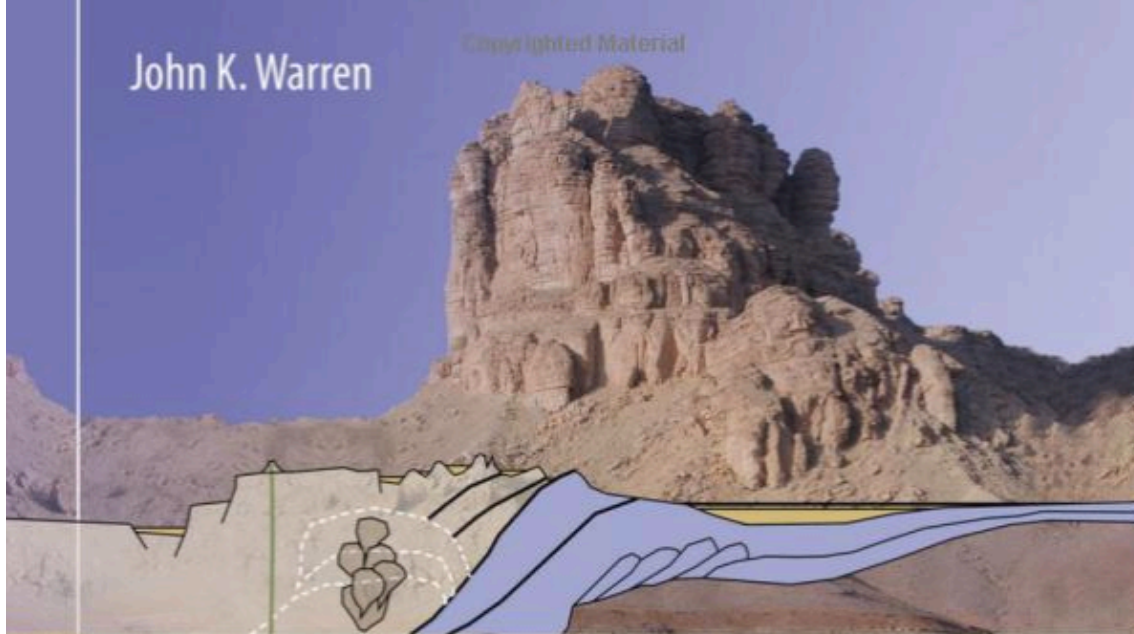
Subsurface technical team:

- John K. Warren: eminent evaporite geologist
- Raymond Vaughan: geologist
- Cait Darfler: geologist
- John Mason: geologist
- Andrew Michalski: hydrogeologist
- Angus Ferguson: geophysicist

Photo: Bill Hecht

John K. Warren

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Evaporites

A Geological Compendium

Second Edition



How did we get here?



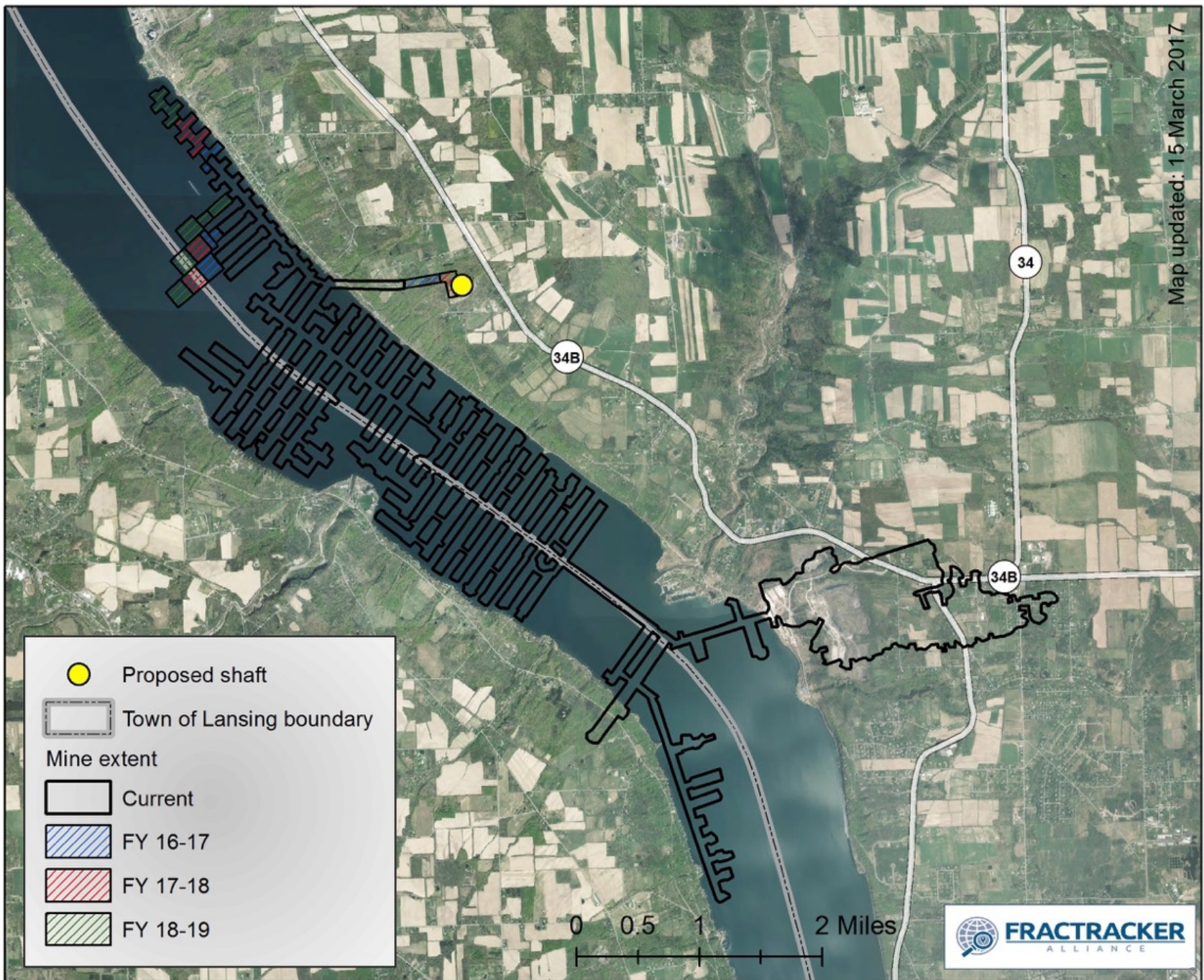
Photos: Bill
Hecht

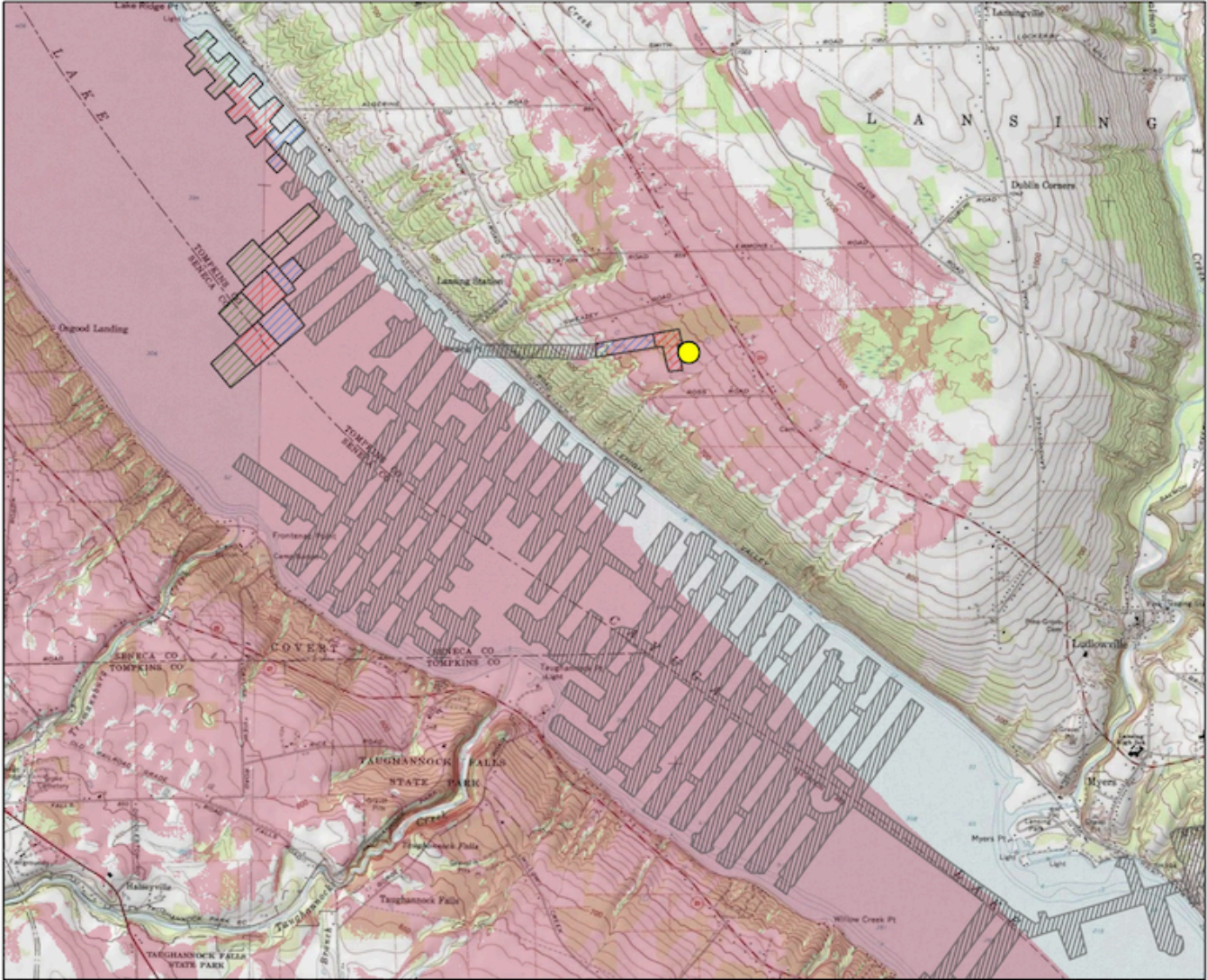
Economics

- The land area of the [Cayuga Lake Watershed](#) includes six counties and 45 municipalities (cities, towns, and villages), and is home to 133,942 people, according to 2010 U.S. Census data
- \$1.076 billion waterfront property assessment values of 2,804 waterfront parcels in Tompkins, Cayuga, and Seneca counties.
- \$156 million in 2009 from visitor spending and supporting more than 2,300 jobs in Tompkins County alone.
 - According to a study conducted for the Tompkins County Visitors Bureau in 2009, Tompkins County recording more than 840,000 visitors.
- Along with world-renown educational institutions, the top motivators listed by visitors were directly or quite closely related to Cayuga Lake and its network of waterbodies.
- \$863 million in tourism related labor income and \$1.44 billion including indirect and induced impacts in the Finger Lakes.
 - According to a 2015 study, tourism in the Finger Lakes generated. (*The Economic Impact of Tourism in New York 2015 Calendar Year, Finger Lakes Focus*. 2015. Tourism Economics, an Oxford Economics Company).

Cayuga Lake Supports

- Water supply for 30,000 homes and businesses in the Towns of Dryden, Ithaca, and Lansing and the Villages of Cayuga Heights and Lansing from Bolton Point Municipal Water System
- flourishing local products and markets industries
 - wine
 - beer
 - ciders
 - liquors
 - cheeses
 - specialty crops
 - honey
 - maple syrup, etc.
- massive recreational boating and fishing industry
- seven state parks and numerous county/town parks.



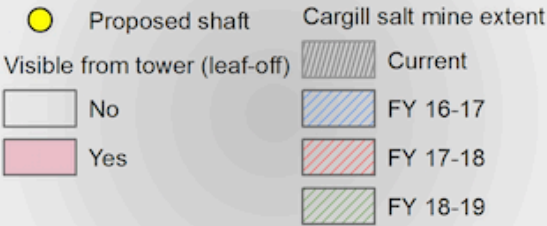


Visibility of Proposed Cargill Shaft: Leaf-off Season

0 0.5 1 Miles

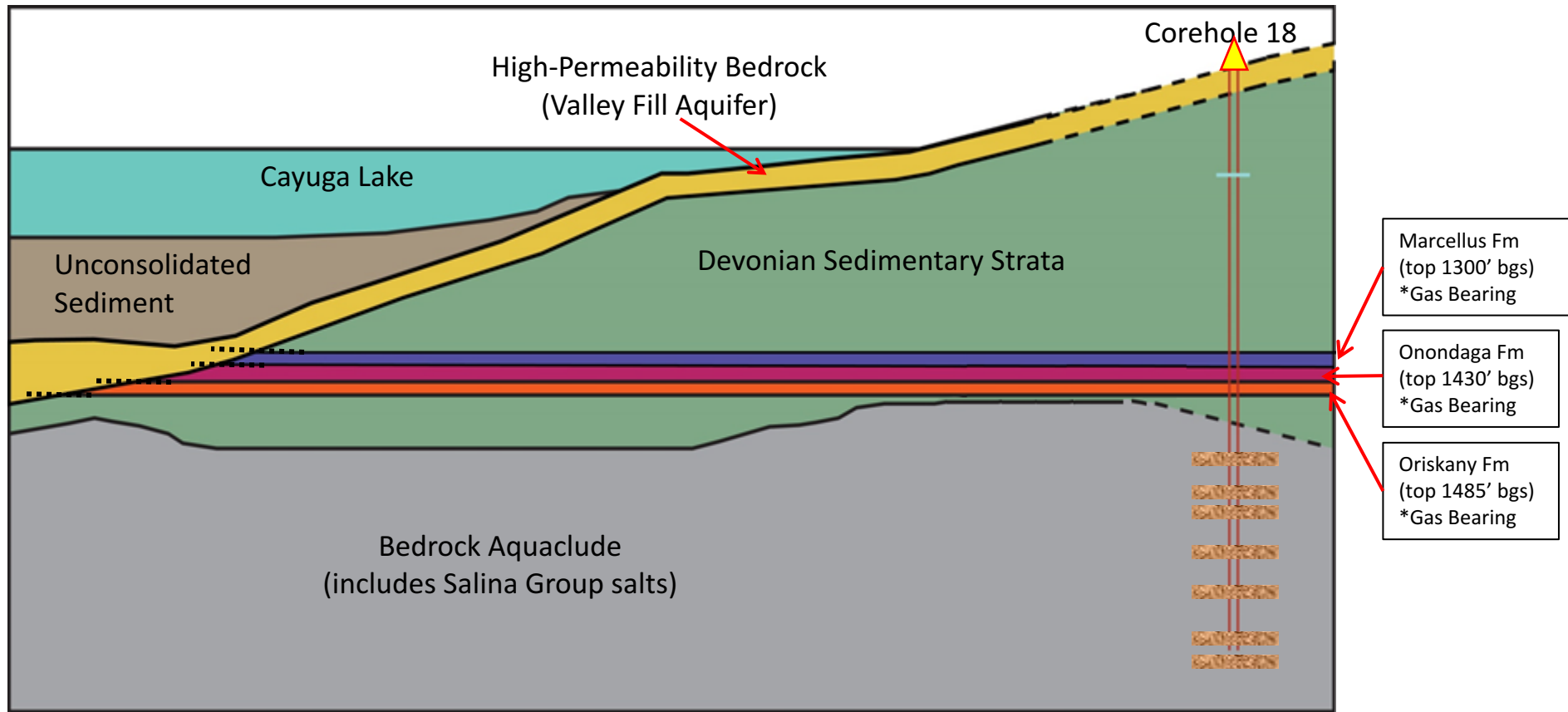


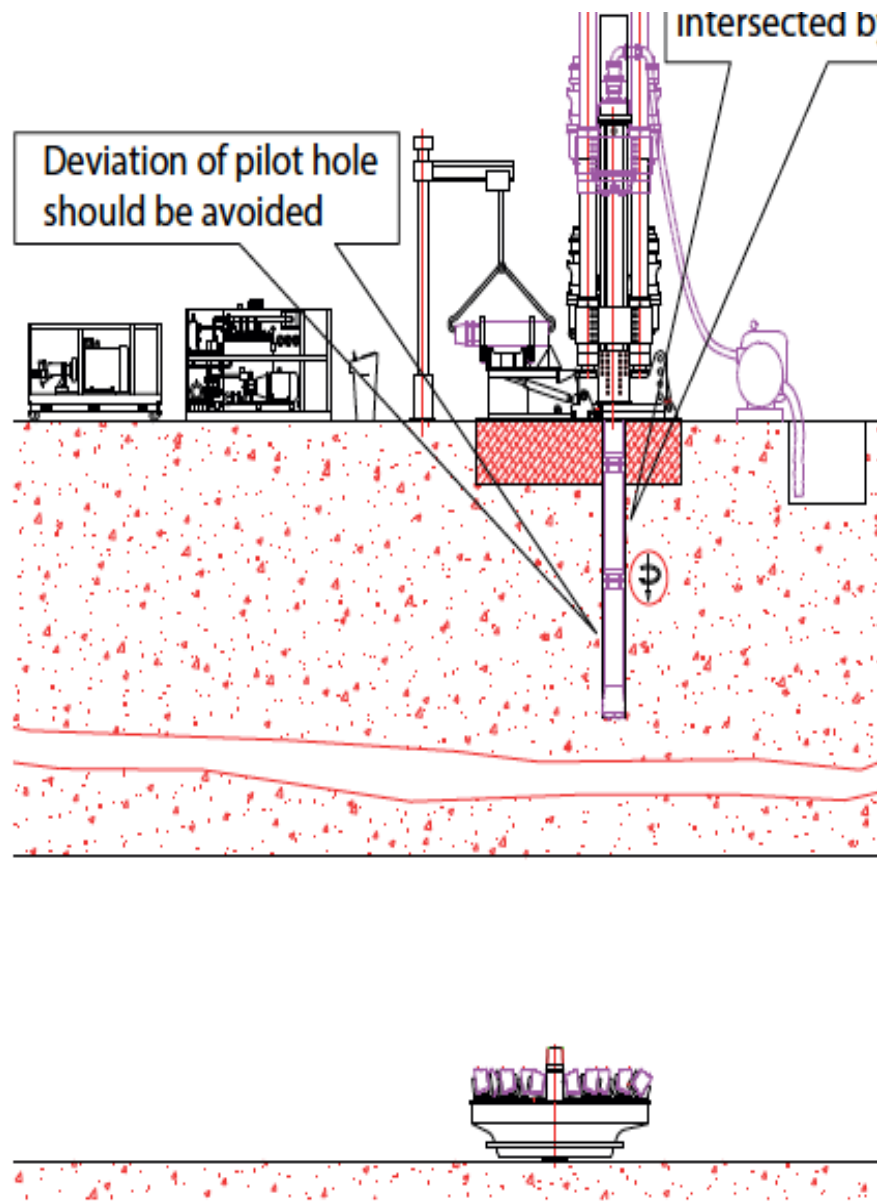
Data sources: ESRI, NYS GIS Clearinghouse, MRLC.gov
 Map created by Karen Edelstein.
 Updated: 28 April 2017



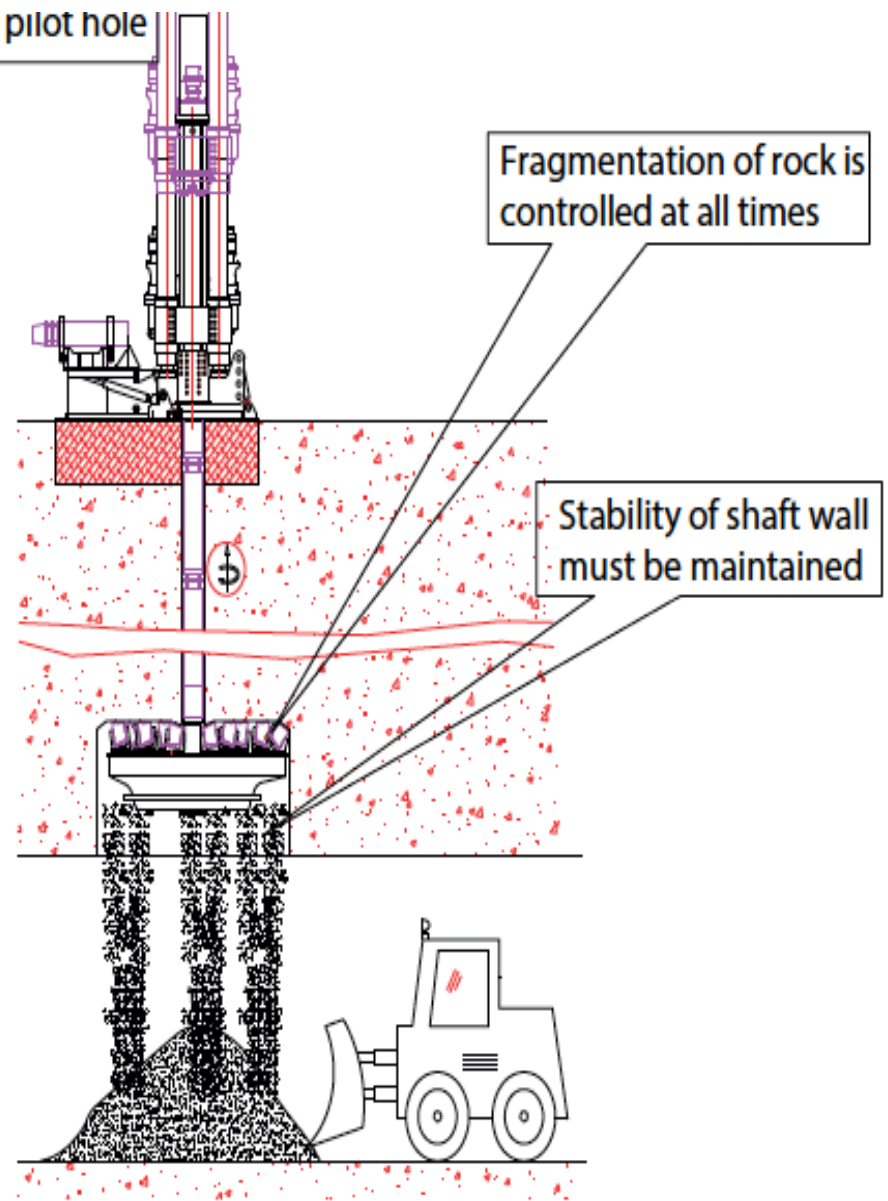
West

East





(a) Pilot drilling.



(b) Back reaming.

Corehole #18

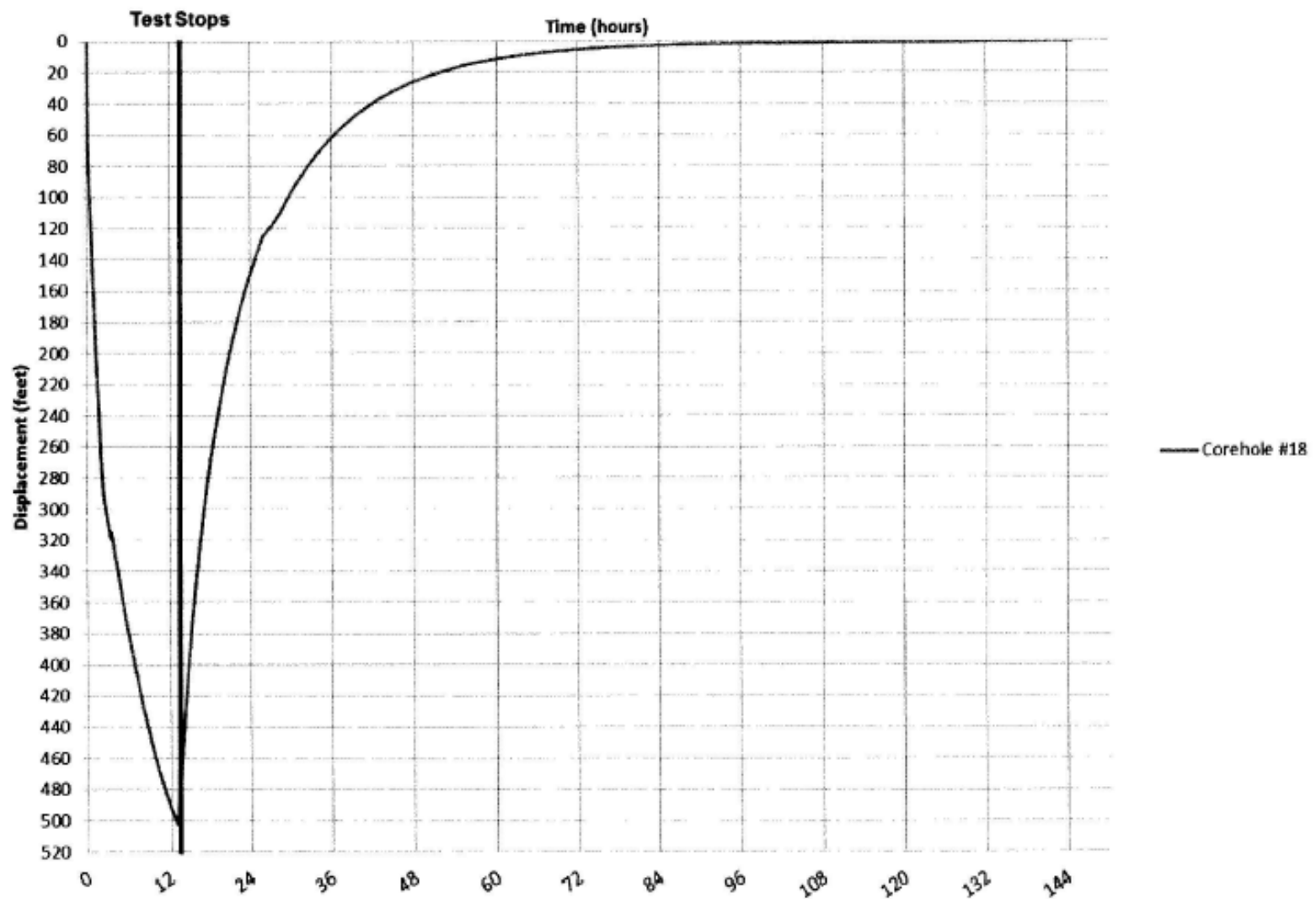


Figure 3-9. Corehole #18 Response to Pumping (Displacement Versus Time).

How can Stabilized water level in CH-18 be 100 ft lower than the Cayuga Lake Level?

22

GROUND WATER AND WELLS

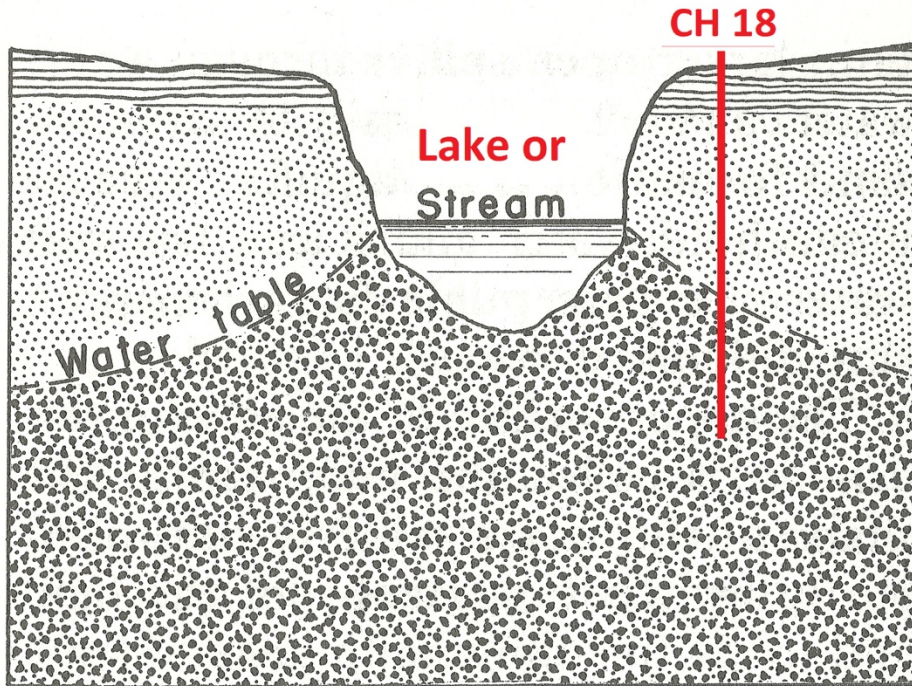


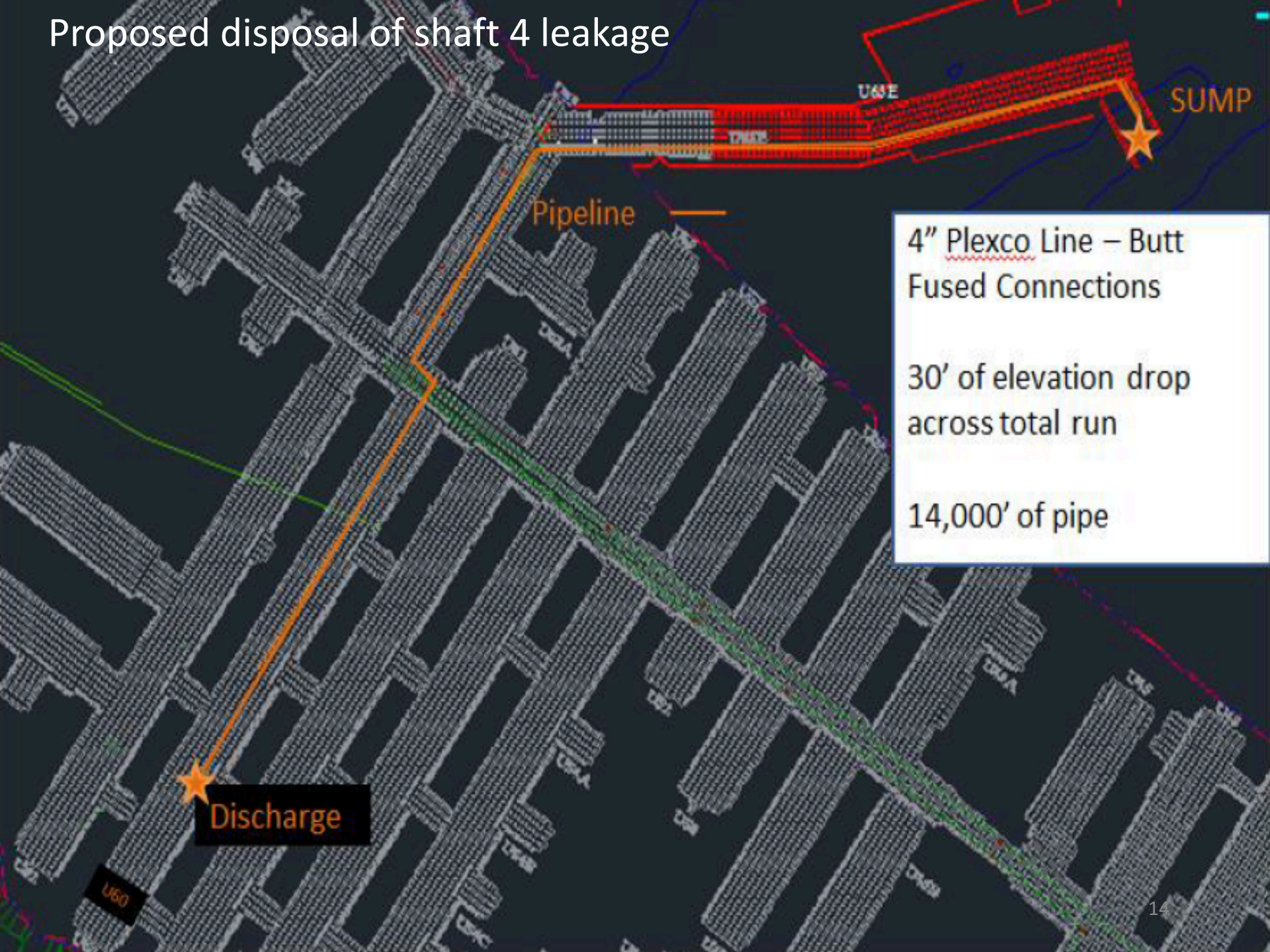
Figure 13. Influent stream [or lake] loses water to the aquifer

Page 119: Effect of Sloping Water Table

The ground-water flow within an aquifer, toward and past a well, produces another situation which can bring about virtual stabilization of the pumping level. As explained in Chapter 2, ground water moves because of the hydraulic gradient that has developed between areas of recharge and areas of discharge. The gradient is represented by the slope of the water table or piezometric surface....

Adapted from Johnson, *Ground Water and Wells*, pp. 22 and 119.

Proposed disposal of shaft 4 leakage



4" Plexco Line – Butt
Fused Connections

30' of elevation drop
across total run

14,000' of pipe

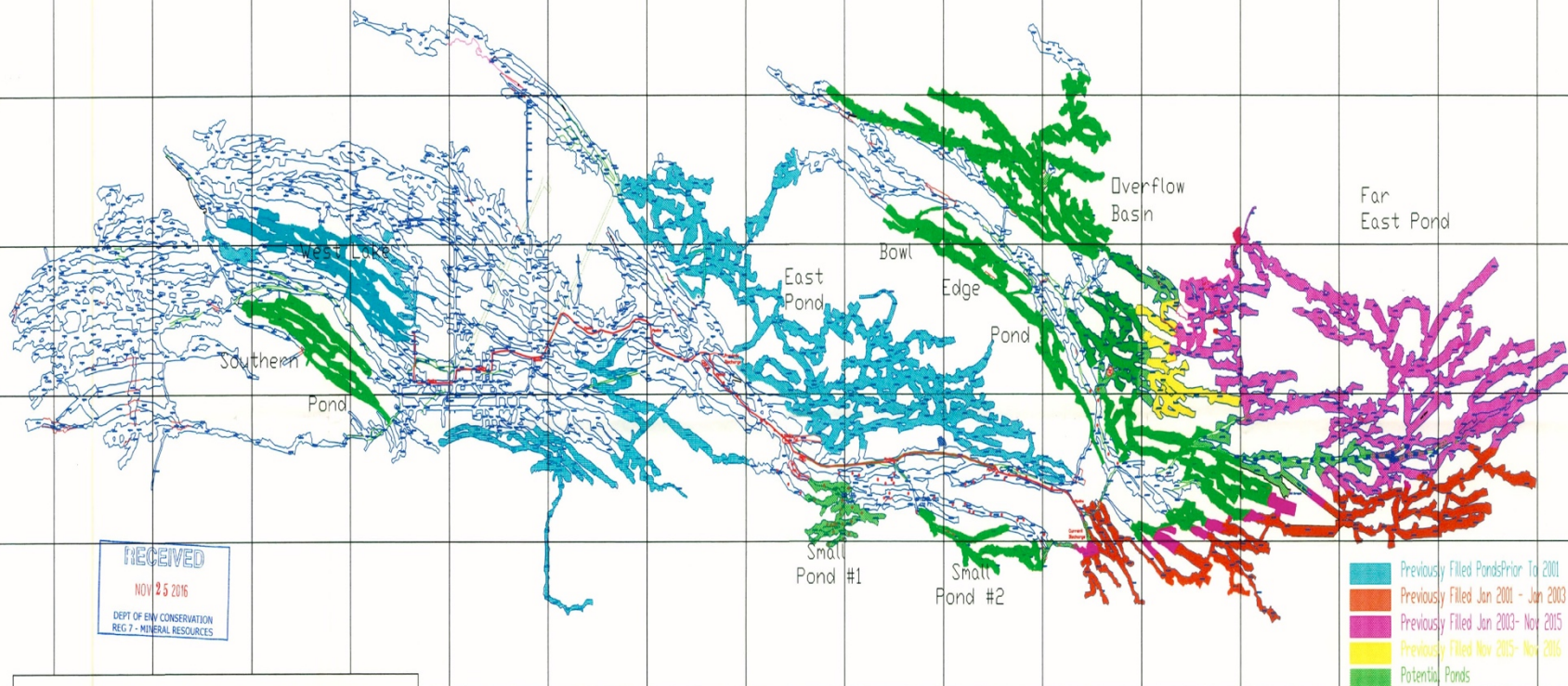
Discharge

SUMP

Pipeline

U60

RESPEC: “salt dissolution is visible and pillars are being undercut”
 Cargill: re Shaft 4: “We will fully saturate leakage water.”



CAYUGA MINE **4 Level Pond Map** **Updated: 21 Nov 2016**

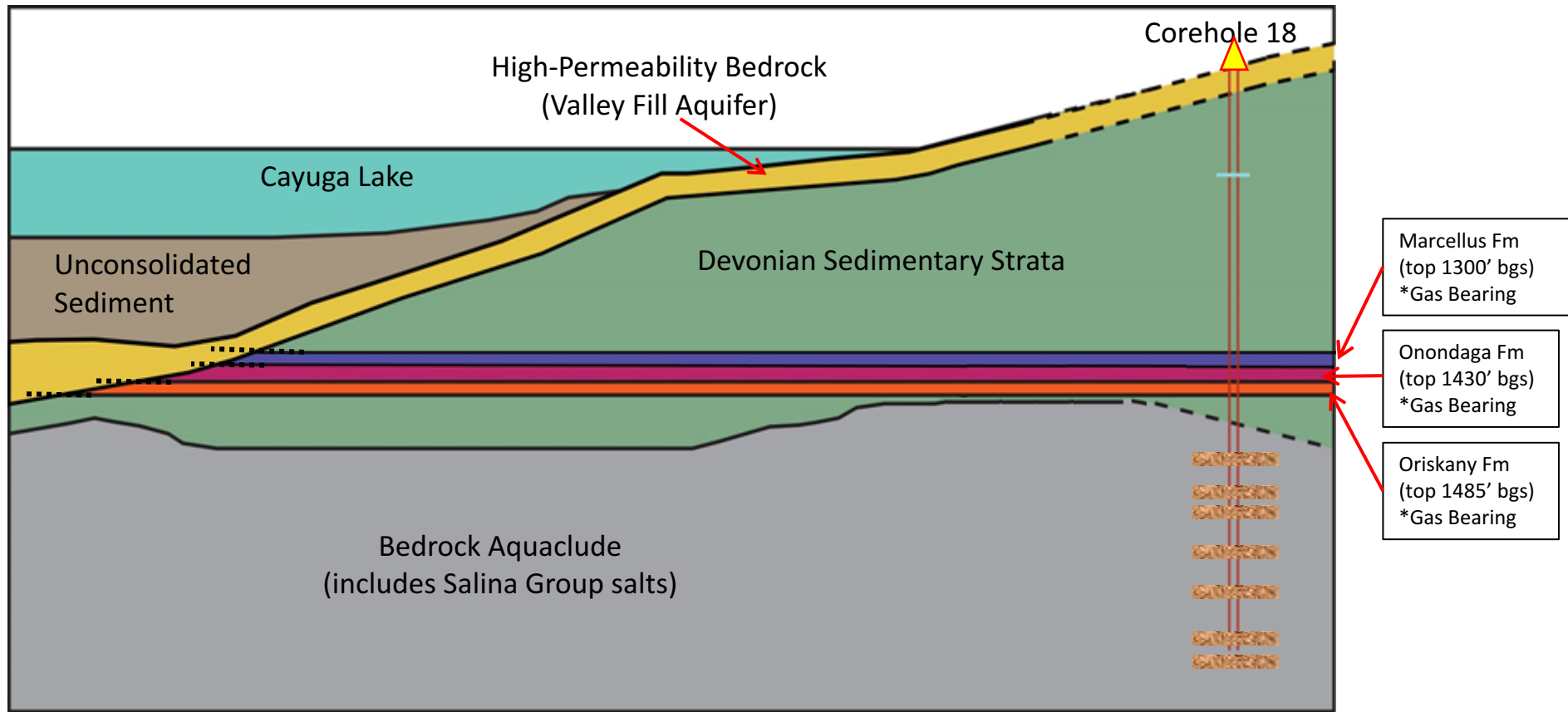
TITLE.DWG: 4 Level Pond Map.dwg ARG

DATE: DEC 2016 1" = 600'

Grid Spacing = 1000 ft.

West

East



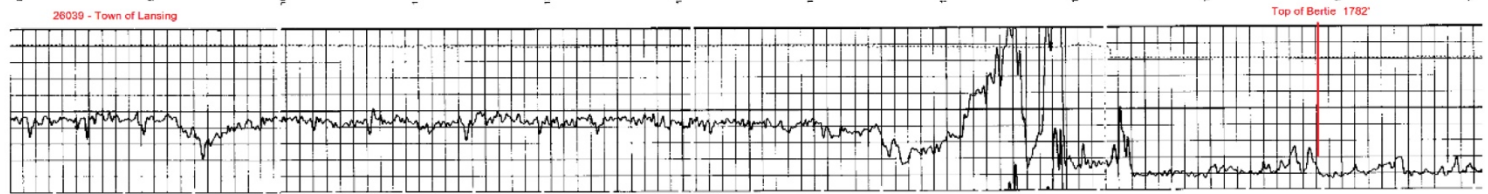
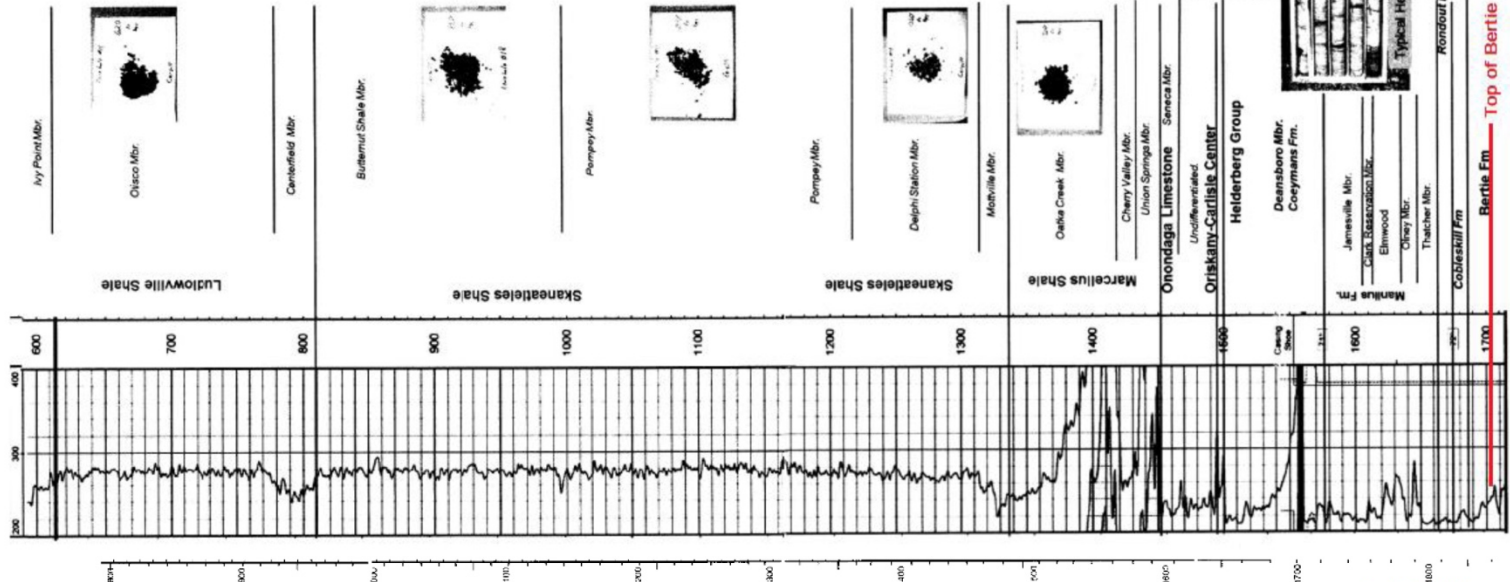
Methane Release Risks

- 4.85 million cubic feet of natural gas during reaming/grouting
- Burp or sustained?
- Corehole 17 in 1977
- Cargill: no GHG emissions to NYS or EPA
- Guns of Seneca Lake, *Science*, 1934

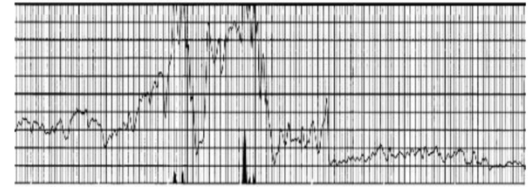
Spectra Well Survey vs DEC Water Well Database

- Spectra: 10 drilled wells
- DEC: Town of Lansing 32 wells
- Spectra aver. depth to water table:
 - 16.8' (Cargill 16.9') n=9
- DEC database:
 - 22' n=22
- study average yield (gpm):
 - 29.2 (9.5-60) n=3
- Town of Lansing average yield (gpm):
 - 8.2 (0-30) n=31
- The Campbell beach well

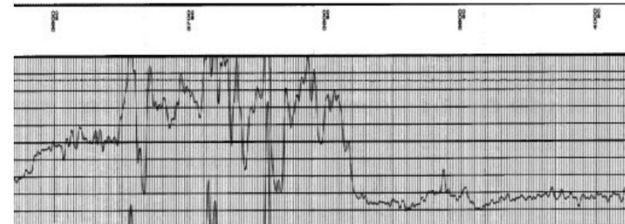
26509 (Corehole 18) - Town of Lansing



22924 - Town of Veteran



22899 - Town of Erin



Withheld Data

- RESPEC. July 2013. Expected subsidence over Cayuga Mine Amended Area, Topical Report RSI-2361.
- RESPEC (2013). Cargill de-icing technology Lansing Mine, Corehole #18
 - Stratigraphic Test Hole, Installation and data collection.
 - SONIC FILES MISSING
 - CORE PHOTOS TOO LOW RESOLUTION
- Cargill response to DEC's Dec. 15, 2015 request for 11 items of information under NOIA
- Bay Geophysical 2016 Seismic Study due January 2017

Withheld Data

Table 1. Summary of Confidentiality Determinations (FOIL W017769-020517) – Cargill 18 Stratigraphic Well Logs

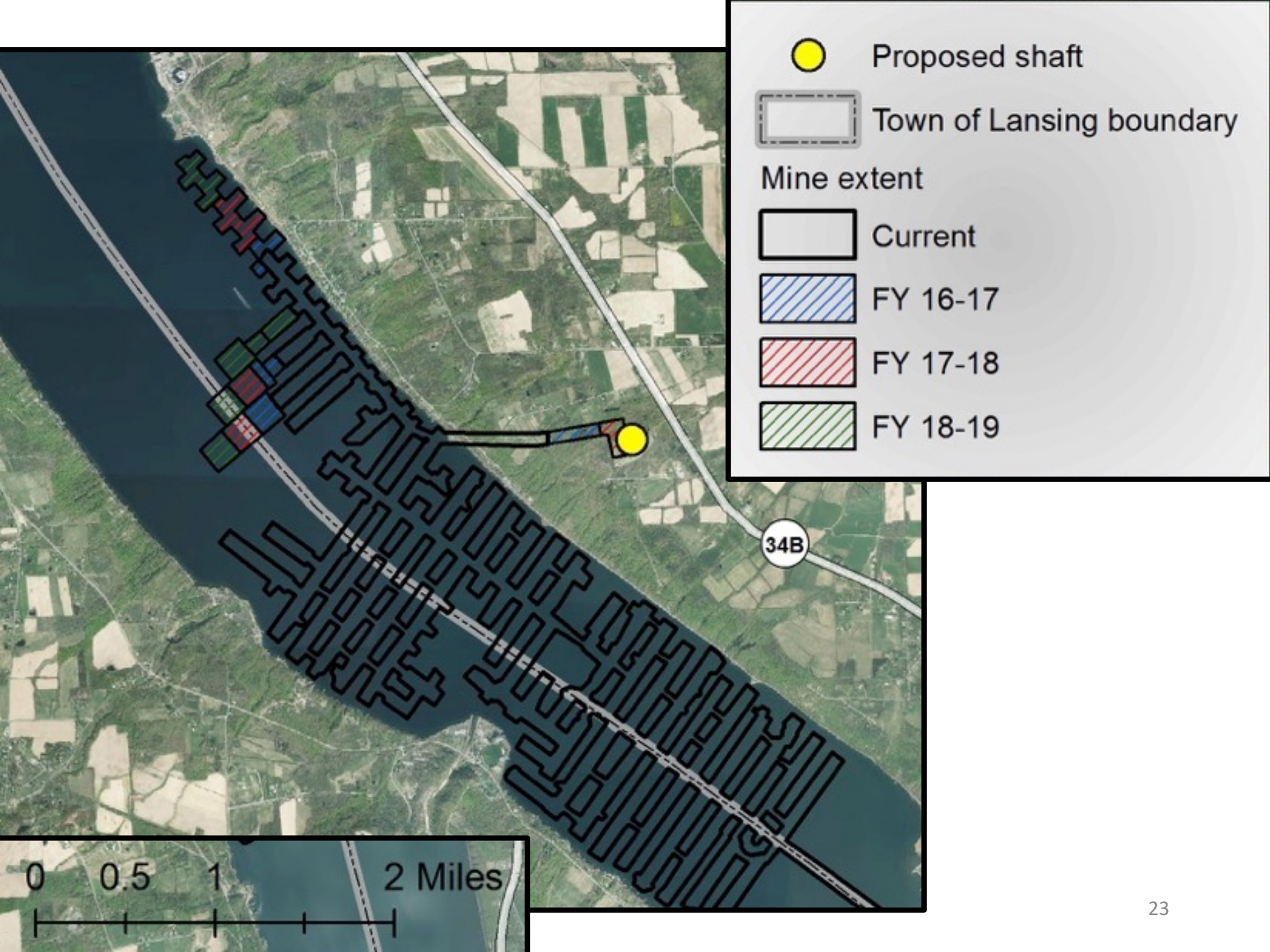
Item	Record Description	File Name	Department Determination
1	Weatherford Mechanical Rock Properties Log, Pass 1, 5/15/2013	3531401_Cargill_18_Pass_One-Rock_Properties 0 -580ft.pdf	Confidential Status Granted ¹
2	Weatherford Compact Monopole/CrossDipole Semblance Log, Pass 1, 5/15/2013	3531401_Cargill_18_Pass-One_CXD_Semblance 0 -580ft.pdf	Confidential Status Granted ¹
3	Weatherford Cross Dipole Anisotropy Log, Pass 1, 5/15/2013	3531401-Cargill_18_Pass-One_Anisotropy 0 - 580 ft.pdf	Confidential Status Granted ¹
4	Data File: Weatherford Monopole-Dipole Array Semblance Log, Run 2, 5/15/2013	Cargill 18_Run_2 Triple_3531401 Main Pass_MD 0 -580ft.las	Confidential Status Granted ¹
5	Weatherford Mechanical Rock Properties Log, Pass 2, 5/22/2013	3531404_Cargill_Inc_Cargill_18_CXD_Rock_Mechanics_Pass_2.tiff	Confidential Status Granted ¹
6	Data File: Weatherford Mechanical Rock Properties Log, Pass 2, 5/22/2013	3531404_Cargill 18_CXD SEMBLANCE_PASS 2 580 -1550 ft.las	Confidential Status Granted ¹
7	Weatherford Monopole - Dipole Array Semblance Log, Run 2, 8/20/2013	Cargill 18_Run_5_Triple_3540548 CXD Semblance Run 2 1550-2480ft.pdf	Confidential Status Granted ¹
8	Data File: Weatherford Monopole-Dipole Array Semblance Log, Run 2, 8/20/2013	Cargill hole 18_Run_5_Triple_3540548 CXD Run 2 1550 -2485ft.las	Confidential Status Granted ¹
9	Data File: Weatherford Neutron-Density, Resistivity Log, Main Pass, 8/20/2013	Cargill 18_Run_5_Triple_3540548 Main Pass_MD 1550 -2480ft.las	Confidential Status Granted ¹

Notes:

1. The Department has granted confidential status based upon the consideration of factors under 6 NYCRR §616.7(c)(2) and will safeguard the record or portion of record in accordance with 6 NYCRR §616.7(b).

Breach of SEQR Process with Improper Permit Segmentation

- Cargill's 2016 Application to the Tompkins County Industrial Development Agency/Tompkins County Development Corporation, states that Shaft #4 *is not a stand-alone project but will enable Cargill's Cayuga salt mine to expand northward in a manner that would not be possible or feasible without the new Shaft #4.*
- Cargill's statements:
 - *"Due to the age of the mine, the underground mine workings are currently over 7 miles from the elevator shafts. Because of the distance, providing fresh ventilation air and safe access to surface in the event of an emergency is becoming increasingly more difficult. A new ventilation and access shaft is required to safely and productively mine the northern reserves...."*
 - *"The new shaft project is required to ensure long term operations at the Cayuga Mine...."*



An aerial photograph of a large lake, likely Lake Champlain, with a town in the foreground. The trees are in autumn colors, and the water is calm. The text "Thank you" is overlaid in the center.

Thank you

Photo: Bill Hecht