

**New York State Department of Environmental Conservation  
Environmental Permits, Region 8**

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Joe Martens  
Acting Commissioner

10 February 2011

Kevin Bernstein, Esq.  
Bond, Schoeneck & King, PLLC  
One Lincoln Center  
Syracuse, New York 13202-1355

Dear Mr. Bernstein:

**Re: DEC Facility No. 8-4432-00085**  
Brine Pond Stability Review Comments  
Finger Lakes, LLC Underground LPG Storage Facility  
Town of Reading, Schuyler County

Technical Staff have had an opportunity to review the June 18, 2010 Preliminary Engineer's Report. The comments below build on our August 20, 2010 letter and its attached summary. We have the following comments and require additional information to evaluate the geotechnical slope stability of the proposed brine pond:

1. Soil borings, ground-water monitoring and subsequent soil laboratory analyses must be provided with emphasis on obtaining the necessary soil properties (for natural and as-placed soils during construction), seasonal ground-water levels, and related surface hydrology that will better define the site's geotechnical characteristics. The design of the diversion channels and interception trenches, as well as their impact to downstream surface hydrology needs to be addressed. Existing groundwater quality characterization needs to be established for the site. The mechanical properties of the 50 foot high soil berm as well as the cut sections of the hillside need to be analyzed for geotechnical stability. These geotechnical stability analyses need to also address the cyclic operation, including the sudden draw down, of the brine pond or any other anticipated conditions at this site from a geotechnical stability standpoint. Draw down analyses are site-specific calculations and can be done with most geotechnical slope stability codes/models and must be included in the final design submission. The geotechnical data used in support of the geotechnical slope stability modeling needs to be submitted and the critical design parameters from a materials standpoint needs to be incorporated into construction quality control (CQC) and construction quality assurance (CQA) plan that will ultimately support a final construction certification report to be submitted by the design engineer demonstrating that the approved design has been properly constructed.
2. The preliminary engineering report's liner design is based on literature data for the geomembrane materials. The final design needs to be based on the actual geosynthetic and natural soil materials and conditions anticipated.
3. Engineering details of the brine conveyance and delivery system should be included in the design reports in that these are critical details which if not designed properly can impact the liner as well as the liner subgrade conditions and the environment.

4. In light of the discussion in the Department's August 20, 2010 letter concerning a double liner system that will incorporate a leak detection system between the liners, the design engineer needs to establish a worst case action leakage rate for the design of the leak detection layer. The design engineer also needs to assign an operational action leakage rate for the impoundment as well. The details of how this system will be kept free flowing and will be routinely monitored and measured needs to be included in the final design for Department approval.
5. The 3 foot free board determination should document how this has been derived. The analysis should take into consideration wave action from prevailing wind and storm events.
6. The preliminary engineering report lacks details or information of how the brine pond will be operated. The operations report should better detail contingency plans for liner system damage and repair. Consideration should be given to installation of a grid type leak detection and monitoring system into the design to facilitate defect location. This report should also include detailed discussions of how often it is proposed that the brine pond sediments would be cleaned or perhaps not be cleaned as well as detailing how liner repair will be conducted.
7. The design engineer projected a design life of over 50 years for the brine pond. Please specify how this determination was made. The exposed condition and the cyclic operation of the pond are considered to create a harsh environment for the geosynthetic material used in this design and a 50 year service life under these conditions is highly unlikely. The service life prediction needs to represent the actual conditions that will exist and should not be based on generic manufacturer's literature. A geomembrane sampling and analysis plan should be included in the operations/maintenance report whereby archived geomembrane samples stored in the pond can be recovered for routine testing (5 years) and analysis for aging evaluations.
8. The design of the geomembrane underdrain system shown in the preliminary design needs to be further discussed in the engineering report providing supporting information on their sizing and spacing. Alternative underdrains might also be considered. The exit conditions for these underdrains must also be carefully considered in light of the existing topography and year round conditions that could impair effective operation.
9. The engineering report should also evaluate slope stability conditions immediately up-slope of the proposed brine pond. The NYS DOT highway embankment may potentially be affected by a removal of the soils at the toe of slope.

Mr. Kevin Bernstein  
Brine Pond Stability Review

10 February 2011

If you have any questions concerning the status of the DSEIS, please do not hesitate to contact me at 585-226-5401 or e-mail (dlbimber@gw.dec.state.ny.us). If there are questions relating to the technical issues discussed in this letter, please have your engineers or other technical consultants contact Robert Phaneuf, Division of Materials Management, in our Albany office at 518-402-8649 or e-mail (rjphaneu@gw.dec.state.ny.us).

Sincerely,



David L. Bimber  
Deputy Regional Permit Administrator  
Division of Environmental Permits

cc: R. Phaneuf, DEC, Albany (7250)  
P. Briggs, DEC Albany (6500)