STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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In the Matter of the Application for an Underground Gas Storage Permit Pursuant to Environmental Conservation Law (ECL) Article 23, Title 13, by

DEC Appl. No. 8-4432-00085

FINGER LAKES LPG STORAGE, LLC

Applicant.

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DEPARTMENT OF ENVIRONMENTAL CONSERVATION STAFF'S POST-ISSUES CONFERENCE REPLY BRIEF

Dated: May 29, 2015

Jennifer L. Maglienti
Lisa P. Schwartz
Lawrence Weintraub
NYS Dept. of Environmental Conservation
625 Broadway, 14th Floor
Albany, New York 12233

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I. SUMMARY

Staff of the Department of Environmental Conservation hereby submits this reply to the initial post-issues conference briefs filed by the Seneca Lake Pure Waters Association ("SLPWA"), Gas Free Seneca ("GFS"), the Seneca Lake communities ("SLC") as well as the late filed petition for full party status filed by Schuyler County legislators Van Harp and Michael Lausell ("Harp and Lausell"). Additional post-issues conference briefs were filed by Finger Lakes LPG Storage ("FLLPG"), the National Propane Gas Association and the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union, ALF-CIO.

Potential parties GFS and SLC argue that the DSEIS is insufficient on the issues of community character, alternatives and cumulative impact. Staff respectfully submit that the DSEIS as supplemented with the rest of the record including the issues conference record and anticipated responses to comments makes the record complete for purposes of making findings under Article 8 of the Environmental Conservation Law ("ECL"). With respect to community character, in particular, assuming the staff were incorrect in believing that issue was not significant (and should have been included in the scope and the DSEIS), the record is more than adequate now for findings to be made under Article 8 of the ECL.

Potential parties SLPWA, GFS and SLC also raise several overlapping issues for adjudication related to community character, noise, cumulative impacts, cavern integrity, water quality and public safety. As detailed below by Department staff, none of the proposed interveners raised a substantive and significant issue. In all cases, these three potential parties failed to provide a fact based offer of proof and raised academic issues that are not appropriate for adjudication. Department staff's analysis including the proposed mitigation measures

contained in the form of draft permit conditions rebutted their generalized concerns, and the record available to Department staff, including the issues conference record, is both substantial and sufficient to make SEQR findings. Since they failed to raise a substantive and significant issue, Department staff respectfully request that potential parties SLPWA, GFS and SLC be denied party status. Department staff also request a ruling denying petitioners Van Harp and Lausell full party status in this matter, as they failed to demonstrate sufficient cause to file a late petition for full party status.

II. THE SEQR RECORD IS COMPLETE; NO SUBSTANTIVE AND SIGNIFICANT ISSUES HAVE BEEN RAISED.

The SEQR record is more than sufficient for the Commissioner or Department staff and the Town of Reading Planning Board[1] to make findings on under Article 8 of the ECL based on the SEIS and taking into account of the rest of the record, including the issues conference record and the anticipated response to comments. There is no basis to adjudicate community character here absent an adequate offer of proof on any of the constituents of character including noise, visual or traffic. The petitioning parties have made an offer of proof only as to the noise issue and staff have shown that offer to proof to be without merit. In arguing that the draft supplemental environmental impact statement ("DSEIS") is insufficient, GFS states as follows:

[1] With regard to community character and other SEQR issues, the record will also serve to support local government decisions including those of the Town of Reading Planning Board (as discussed in staff's Initial Post Issues Conference Brief) and the Schuyler County Planning Commission. Under General Municipal Law §239-m, the Schuyler County Planning Commission is likely to be called upon to review the Finger Lakes LPG storage project for inter-community impacts as well as county-wide planning, zoning (community character and land use compatibility), and site plan issues and to then to make advisory recommendations to the Town of Reading Planning Board as to any concerns it may have with the project. See GML §239-l.

> "First the ALJ should decide whether the scoping process relieves the New York State Department of Environmental Conservation…from the statutory obligation to take a hard look at all relevant areas of environmental concern before deciding whether to grant the permit application. Second, the DSEIS should be found insufficient as a matter of law for failure to analyze a reasonable range of alternatives, cumulative impacts, or community character. Finally, as a remedy for the deficiencies, the Department (not the applicant) should prepare a revised draft DSEIS or, at the very least, supplement the record with new analyses of the three omitted subjects, with an opportunity for public comment prior to the adjudicatory hearing." Post Issues Conference Closing Brief of GFS ("GFS PIC Br.") at 1."

In staff's view, the issue is not whether the scoping process relieved staff of the obligation to take a hard look at all relevant areas of environmental concern but whether the DSEIS as augmented by the record is sufficient to make SEQR findings. On community character, petitioners have *not* met their burden in showing that impacts to community character are substantive and significant, standing alone or in conjunction with impacts from noise, or that the record is insufficient warranting preparation of another supplemental EIS. Even if staff were *not* correct in their judgment regarding the significance of the community character issues that have been raised, the appropriate remedy would be for the Office of Hearings and Mediation Services ("OHMS") to direct that the DSEIS be supplemented with the record of the issues conference pertaining to community character — which is now extensive (*staff would support including this material in the EIS record in any event*).[2] *See Matter of Besi-corp-Empire Development Corp.*, Decision of the Commissioner, 2004 N.Y. LEXIS 64, 21,[3] September 23, 2004. Petitioners' reports as well as the applicant's responding analysis together with the Town of Reading Land Use Law and the comprehensive plans of the Town of Reading and Schuyler County can be considered as comment on the DSEIS and responded to in the FSEIS and findings.

[2] These documents are listed on pages 16-17 of staff's Initial Post-Issues Conference Brief.
[3] Pinpoint citations as used in this brief are to the Lexis electronic pagination.

The record is also already sufficiently developed on alternatives and cumulative impact. Given the existing record on alternatives and cumulative impact, OHMS should not require supplementation of the record as there really is nothing that could be substantively added to it. It would be a drastic and completely unwarranted remedy to require another supplemental EIS for any perceived shortfalls associated with the DSEIS here. *See Matter of Armenia Sand and Gravel, Inc*., Interim Decision of the Commissioner, 1997 N.Y. ENV LEXIS 13 at 5, August 27, 1997;[4] *see also*, *King v. Saratoga County Board of Supervisors*, 89 N.Y.2d 341, 350 (1996).

GFS contends that the DSEIS is inadequate for the asserted failure to address: A) impacts on community character, B) reasonable alternatives, and C) cumulative noise impacts of the Finger Lakes LPG project with the Arlington facility.

As an initial matter, the validity of GFS's adequacy argument must be judged against the "rule of reason" standard set out in *Neville v. Koch*, where the Court of Appeals stated that "an agency's responsibility under SEQRA must be viewed in light of a 'rule of reason'; not every conceivable environmental impact, mitigating measure or alternative, need be addressed in order to meet [that] responsibility." 79 N.Y.2d 416, 425 (1992).[5]

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[4] Point page references are to the Lexis electronic pagination.

[5] The rule of reason underlies SEQR. In the SEQR Handbook, the Department states:
"F. What is the Concept of "Reasonableness" as it applies to SEQR?
The range of decision making by agencies and the comprehensive nature of SEQR continually present new circumstances that require judgment to apply SEQR. For instance, SEQR asks the lead agency to decide: how many alternatives should be reviewed; how much information is enough; and is the proposed action really "significant"? All lead agencies routinely face these and similar questions. While there cannot be black and white formula answers to such matters, there is one basic principle or rule that can be used -- the rule of reason.
The regulations provide abundant support and tools for basing judgments on how to manage the SEQR process by choosing a reasonable approach. The principle of reasonableness, as put into practice in SEQR decision making, has been upheld by the decisions of the courts (see Landmark Court Decisions on SEQR). In addressing the review of impacts the courts have limited the consideration of impacts to reasonably related potential impacts. The court decisions have also

A. Staff Rationally Concluded That the Project is Consistent with Existing Community Character

With respect to community character, staff correctly determined that the underground gas storage facility would have not have a potentially significant impact on existing community character. This is true whether the community is defined as the areas encompassed within the territorial limits of the Town of Reading or whether it includes surrounding areas along Seneca Lake. Staff's determination was based on facts that petitioners have failed to controvert. First, the facility is allowed by special use permit in the Town of Reading, which is the zoning lexicon for a land use that is presumptively deemed compatible with its surroundings. As stated on pages 10-11 of Department staff's Initial Post-Issues Conference Brief, a special use permit "…gives permission to use property in a way that is consistent with the zoning ordinance, although not necessarily allowed as of right." In the context of SEQR and Part 624, staff quoted previous Commissioner decisions as stating that the Department does "not intrude its judgment in matters …which have properly been the subject of definitive local governmental determinations of patterns of land use." *See, e.g.*, *Matter of Pyramid Crossgates Company*, Final Decision of the

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stated that not every conceivable impact needs to be considered; speculative impacts may be ignored.… In Part 617.9(5) (v) the regulations require that the draft EIS describe and evaluate "the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor." For private applicants, site alternatives should be limited to parcels owned by, or under option to, a private applicant. To demand otherwise would place an unreasonable burden on most applicants to commit to the control of sites which they do not otherwise have under option or ownership.
When the lead agency receives a draft EIS from the project sponsor, the lead agency's responsibility is to determine whether the document is adequate for public review, in terms of both its scope and content. These are reasonable expectations. The regulations do not demand that the draft EIS be perfect. That would be an unreasonable expectation. *The SEQR Handbook* pp. 4-5 and 124 (3d ed. 2010), available at http://www.dec.ny.gov/docs/permits_ej_operations_pdf/seqrhandbook.pdf, last visited on May 29, 2015.

Commissioner, 1981 N.Y. ENV LEXIS 32 at 16, June 25, 1981. The Town of Reading's legislative judgment is a definitive judgment when combined with the comprehensive plans of Reading and Schuyler County, which both characterize Reading as having industrial and commercial uses in addition to residential and agricultural uses. "The Department, to a large extent, relies on local land use plans as the standard for community character. Adopted local plans are afforded deference in ascertaining whether a project is consistent with community character [citations omitted]." *Matter of St. Lawrence Cement*, Second Interim Decision of the Commissioner, 2004 N.Y. ENV LEXIS 60 at 137, September 8, 2004; see also, DEC's Workbook for Completing the Full Environmental Assessment Form, Part II, Question 17, published on the Department's website at http://www.dec.ny.gov/permits/91799.html.

Reading's plan was admittedly prepared in the early 90s or nearly twenty-five years ago; Schuyler County's plan is, however, recent — having been adopted in 2014. Staff confirmed what both plans indicated as the land use pattern in the Town of Reading in the land use map ("Land Use Map") that is attached to the affidavit of Eric Rodriguez, sworn to on March 19, 2015, and submitted with staff's Initial Post Issues Conference Brief. The same map shows industrial and commercial uses just south of the Town of Reading in the Village of Watkins Glen along Seneca Lake. To reiterate from staff's Initial Post Issues Conference Brief, the property where the proposed surface facility and wells are to be located is an existing industrial facility and the brine ponds would be located on Finger Lakes property. The Project is in keeping with the existing character of properties surrounding the project that include a rail line, salt manufacturing operations, gas storage facilities, a trucking company, solid waste transfer station, state highway, and highway department garage.

On page 4 of their brief, SLC hyperbolically states:

> "The Applicant's proposal to convert long-abandoned salt caverns into a large industrial storage facility and regional transportation hub for the movement of massive quantities of a hazardous substance through the Seneca Lake region [6] materially conflicts with the officially expressed development goals and self-described character of nearly every municipality in that region. Far from being speculative or purely psychological, this conflict is rooted in the unmistakable text of the area's numerous and readily-available comprehensive planning and land use documents, expressing the desire to preserve local rural character and cement the region's trajectory toward becoming a recognized center for agri-business, viticulture, and tourism. Because the DSEIS – without explanation and contrary to the clear dictates of SEQRA and the Department's own guidance – wholly ignores these potential detrimental consequences to local community character, that omission raises a substantive and significant issue that must be adjudicated [SLC's Post Issues Conference Brief ("SLC PIC Br."), p. 4]."

This statement ignores the most salient plan, namely Reading's plan where the facility is proposed to be situated and where it is considered a special permitted use. DSEIS, Appendix A; *Commissioner's lead agency determination in Town of Reading Planning Board and the NYS DEC, through its Region 8 office*, decided February 2, 2010, published on the Department's website at http://www.dec.ny.gov/permits/65814.html, last visited on May 26, 2015. It also ignores the fact that numerous Commissioner decisions and years of precedent require staff to defer to zoning and comprehensive plans on the question of consistency with character (as already spelled out in staff's Initial Post Issues Conference Brief): the Department *does not* adjudicate community character in the absence of a substantive and significant issue related to an aspect of the action that could physically affect character such as increases in community noise levels, visual impacts, and traffic. *See, e.g., Matter of Red Wing Properties, Inc*., Interim Decision of the Commissioner, 2010 N.Y. ENV LEXIS 31, 16, May 19, 2010. Character issues,

[6] Obviously, if the salt caverns were still actively mined then they could not be put to use for storage of LPG. LPG is also an essential product used for home heating as well as commercial and industrial uses. See DSEIS, pp. 14-16.

to the extent they only concern consistency with zoning and comprehensive planning travel to the decision maker through the EIS record. Thus, although SLC and GFS call for an adjudication of community character, they do not identify a single instance where community character has ever been adjudicated under Part 624 as a standalone issue (without a significant impact on noise, aesthetics, or traffic). Notably, neither SLC nor GFS have made an offer of proof on visual or traffic impacts. Petitioners only offer of proof is on noise impacts, which staff have rebutted and shown to be without any merit. *See* Affidavit of Scott E. Sheeley, sworn to on April 17, 2015 and Point II (D), below. As in *Matter of St. Lawrence Cement*, staff do not object to including petitioners' offer of proof on community character as commentary on the DSEIS — which would be responded to in the FEIS and evaluated in findings.[7]

Petitioners' argument that the Finger Lakes LPG facility would have a significant impact on community character because the land use *trend* (as opposed to existing character) of the communities along Seneca Lake has favored wineries and tourism over industrial uses does not withstand scrutiny since the regulatory language calls upon staff to look at "existing character" rather than "land use trends." The significance indicator for community character in 6 NYCRR 617.7 (c) (v) refers to "*existing* community or neighborhood character [emphasis supplied]". Reading and at least part of Watkins Glen nearest to the proposed LPG storage facility, however, continue to have a mix of commercial and industrial facilities as evidenced by the Land Use Map and the comprehensive plans. In responding to similar arguments about land use trends in the

[7] SLC states on page 7 of its Initial Post Issues Conference Brief that, "the Commissioner has held that the examination of potential impacts on community character or other resources cannot be limited to the boundaries of the actual or adjacent municipalities where a project occurs." Staff agree with this proposition. However, in the case at hand, petitioners have failed to make an offer of proof of such impacts except for alleged noise impacts across Seneca Lake — which staff have rebutted and shown to be without merit.

Hudson Valley as being inconsistent with the proposed St. Lawrence Cement plant, the Commissioner indicated that it would be sufficient if land use trends were discussed in the EIS and appropriate judgments could then be made. *Matter of St. Lawrence Cement*, Second Interim Decision of the Commissioner, *supra*, 2004 N.Y. ENV LEXIS 60 at 135-145. Here, staff have no objection, as mentioned above, to inclusion of GFS's and SLC's offer of proof on community character (as well as the applicant's response) into the EIS record so it can be responded to in the final EIS and considered in findings. See *Matter of Buffalo Crushed Stone*, Inc., Decision of the Commissioner, 2008 N.Y. ENV LEXIS 69 at p. 25, November 17, 2008;[8] *Matter of Besi-corp-Empire Development Corp*., Decision of the Commissioner, 2004 N.Y. LEXIS 64, 21, September 23, 2004; and *Matter of Armenia Sand and Gravel, Inc*., Interim Decision of the Commissioner, 1997 N.Y. ENV LEXIS 13 at 5, August 27, 1997.

Finally, the best evidence to show that petitioners are in error regarding their assertions about the possibility of Finger Lakes LPG having a significant adverse impact on community character or trending character along Seneca Lake is that tourism and the local wineries have co-existed for many decades with the salt plants on Seneca Lake, associated rail lines, solution salt mining facilities and the underground gas storage facilities that formerly or currently exist in Schuyler County. Petitioners have not addressed this fact in any form. While their expert reports

[8] "Although I concur with ALJ's determination that no adjudicatory hearing is warranted, the information presented on the appeal may be relevant to the SEQRA review on this proposed permit modification. Both Department staff and applicant have acknowledged the relevance of at least some of the material to the SEQRA review. Department staff stated that various concerns that TA raised were "proper matters" for inclusion in the final environmental impact statement ("FEIS") on this application (see Department Staff Reply, at 3). Department staff also stated that it would "endeavor to assure that all such questions are addressed by the [a]pplicant" in the response to comments that would become part of the final environmental impact statement (see id.; see also Applicant Reply, at 11 [relevant comments on the appeal should be deemed comments on the DEIS and included in the FEIS])." *Matter of Buffalo Crushed Stone, supra*, Decision of the Commissioner, 2008 N.Y. ENV LEXIS 69, at p. 25.

discuss trends, they fail to mention the fact that tourism and wineries have coexisted for decades with industrial activities in Reading and in the Village of Watkins Glen. According to the DSEIS, the US Salt facility has been in business for over 100 years. *See*, DSEIS p. 67. Natural gas and LPG storage currently exists or formerly existed on lands adjacent to the Project site and at the Texas Eastern Enterprise Products LPG storage facility ("TEPPCO") facility west of the Project site. From about 1964 until 1984, TEPPCO stored over 4 million barrels of LPG beneath US Salt property in salt caverns adjacent to the Project site and which now are used or proposed as part of the Seneca Lake natural gas storage facility. Since about the mid 1980's, TEPPCO has stored LPG in hard rock caverns west of the US Salt property. NYSEG (and now Arlington Storage Company, LLC) has safely stored natural gas in salt caverns near the proposed LPG storage facility since 1996. Nevertheless, tourism and the wine industry have both continued to thrive during past decades along with the storage of both natural gas and LPG in the Watkins Glen area.

B. The DSEIS Analyzed All Reasonable Alternatives, Including the No Action Alternative.

1. The DSEIS, as supplemented by the applicant's, February 15, 2012, letter provides an adequate description of the no action alternative.

The DSEIS, as supplemented with the applicant's letter dated February 16, 2012 (see DEC's Initial Post-Issues Conference Brief at pp. 91- 93)[9] is sufficient with respect to the no-action alternative. According to the SEQR Handbook, "[t]he "no action" alternative must always be discussed to provide a baseline for evaluation of impacts and comparisons of other impacts. The substance of the "no action" discussion should be a description of the likely circumstances at

[9] The letter is numbered as OHMS Document No. 201166576-00003 D.L. I.B.7.

the project site if the project does not proceed. For many private actions, the no action alternative may be simply and adequately addressed by identifying the direct financial effects of not undertaking the action, or by describing the likely future conditions of the property if developed to the maximum allowed under the existing zoning." The *SEQR Handbook*, p. 124 of the printed version (3d ed. 2010), available at http://www.dec.ny.gov/docs/permits_ej_operations_pdf/seqrhandbook.pdf, last visited on May 26, 2015. While the no action alternative was not included in the DSEIS, the omission was cured by the applicant's supplemental submission dated February 16, 2012, which was included in the hearing documents provided to this tribunal and GFS by cover letter dated October 20, 2014. (The transmittal letter to Ms. Goldberg and list of publicly available documents, including the February 16, 2012 letter are attached to this reply brief in Appendix A).

In their initial post issues conference brief, GFS argues that the omission from the DSEIS was not cured inasmuch as the public did not have a chance to comment on the no-action alternative during the public comment period on the DSEIS and that the discussion was inadequate. Both arguments should be rejected since GFS had months before the conference to consider and comment on the discussion. It is also important to keep in mind that the no-action alternative does not involve another use of the site; it only involves the present use or status *quo* that has existed on the site for decades, i.e., the project site would continue to be used as it is now used. That use is described in DSEIS as the "environmental setting," albeit without being specifically listed as the no action alternative. There is not a lot more that could reasonably be said on the subject of the no action alternative. GFS would have the applicant prepare a supplement on the no-action alternative, which, under such circumstances, would be unwarranted and entirely redundant. This is a case where the no-action alternative can be developed, if

warranted, in responses to comments. *See King v. Saratoga Cnty. Bd. of Supervisors*, 89 N.Y.2d 341, 350 (1996). The remedy here for the omission, if one is even needed, is to supplement the SEQR record with the issues conference record and responses to comments. The case at hand is akin to the facts of *Webster Associates v. Town of Webster* (59 N.Y.2d 220 [1983]) where the Court held that the omission of an important alternative in the DEIS was cured because the alternative was widely discussed in the political sphere during the environmental review of the project. Here, the no action alternative is discussed in a Part 624 forum, where it can receive a more disciplined and formalized consideration. *See* Transcript of Issues Conference on February 13, 2015 ("Tr.") at p. 453.

2. There are no reasonable and feasible site alternatives.

GFS and SLPWA state that the DSEIS is insufficient because it does not consider alternative project sites, alternative layouts of any other portions of the Project, alternative Project scales, or alternative transportation allocations. GFS argues "[a]t a minimum, the DSEIS should have analyzed product transportation alternatives" — reallocating LPG deliveries from trucks to pipelines and railroads. GFS PIC Br. at 6. Finally, GFS takes aim at the DSEIS for not having considered the Savona site in the DSEIS. *Id.* at 7. The rationale for the Department's rejection of the Savona site is set out on pages 93-95 of Staff's Initial Post-Issues Conference Brief. In addition to that discussion, none of the petitioners raised the Savona site as a possible alternative location during scoping. While Department staff agrees that scoping does not absolve the lead agency from identifying and assessing potentially significant, adverse environmental impacts, the scoping regulations, first adopted in 1987 and then amended in 1996, provides a process to address issues that were missed or arose after the scoping process is completed without requiring the lead agency to return to square one of the process. *See* Gerrard, Ruzow and

Weinberg, *Environmental Impact Review in New York*, §3.07. The scoping process, which had been part of the National Environmental Policy Act of 1969 upon which SEQR was modelled, largely came about in SEQR through the 1995 rulemaking (which became effective on January 1, 1996). In the GEIS associated with that rulemaking, the Department stated as follows:

> To address the issue that scoping has no definitive end, the Department is proposing that substantive information raised after the preparation of the final written scope and prior to the completion of the draft EIS meet a strict test for inclusion. The individual/organization/agency raising the issue must identify: the nature of the information; the importance and relevance of the information to a potential significant impact; and the reason(s) why the information was not identified during scoping and why it should be included at this stage of the review. This information must be submitted to the lead agency and project sponsor. However, the project sponsor will have the discretion whether to include this new information in the draft EIS. If the information is substantive and the project sponsor does not include this information in the draft EIS, it must be treated and addressed as public comment on the draft EIS. Giving this authority to the project sponsor is reasonable because the project sponsor is usually responsible for the preparation of the draft EIS. If the issue is substantive and relevant then it is in the project sponsor's best interest to include it in the draft EIS. If the project sponsor chooses not to include this material or if it is submitted so late as to make it difficult to include at that point, then the potential risk of the need for a supplement to the draft or final EIS is a risk that the project sponsor will assume. The lead agency will, in most cases, provide the project sponsor with its position whether to incorporate this material into the draft EIS, but the final decision would be the responsibility of the project sponsor. This change will give definite closure to the scoping process. [emphasis supplied; DEC, *Final Generic Environmental Impact Statement on the Proposed Amendments to the State Environmental Quality Review Act (SEQRA) Regulations*, at p. 58, dated September 6, 1995, available on the Department's website at: http://www.dec.ny.gov/permits/357.html, last visited on May 18, 2015.]

Pursuant to this flexible approach, staff have no objection to considering petitioners' comments with regard to the Savona facility as commentary on the DSEIS.

In further response to GFS, as pointed out on in staff's Initial Brief, the Savona LPG facility is not located adjacent to a salt plant that can accept its excess brine. Instead of using

FLLPG's excess brine to make commercial grade salt as would occur if sited as proposed, the only existing option for disposal of excess brine at the Savona site is to discharge it into subsurface and surface waters of the state. The Savona LPG facility disposes of its excess brine pursuant to a SPDES permit into a disposal well and the Cohocton River. Brine disposal into deep formations in New York has not typically been a viable option for cavern development as evidenced by the failure of the Avoca Natural Gas Storage ("ANGS") project in Steuben County in 1995 and the lack of brine disposal wells in the state (see http://www.dec.ny.gov/energy/29856.html).

Expansion and cavern development of the existing and permitted Savona LPG underground storage caverns for additional LPG storage is constrained by the rate at which the facility can dispose of its excess brine, primarily into the Cohocton River, and the Savona facility does not have any surplus capacity to dispose of additional quantities of brine. Therefore, staff did not deem the Savona site as a viable alternative to Finger Lakes LPG preferred site as it would require development of a new mode of brine disposal or expansion of existing modes. If the project were to be relocated to the Savona site, significant quantities of brine (i.e., many hundreds of millions of gallons) would require disposal because new storage caverns would have to be created by active solution mining whereas caverns are already constructed at Finger Lakes LPG's proposed Reading site. New or expanded brine disposal options at the Savona site could include construction of an evaporator plant, drilling and use of new disposal wells, or reevaluation of the Cohocton River to assimilate additional discharges of brine into it. All of these options would have greater environmental impacts than the Reading site.

Creation of new LPG storage caverns at the Savona LPG facility is also not a possibility as it would not only require some additional means of brine disposal beyond that currently

available at the Savona site but it would also require a significant quantity of fresh water to perform the solution mining to construct the caverns. It is estimated that more than 617 million gallons of fresh water would be required to create the 88.2 million gallons (2.1 million barrels) of product storage capacity which already exists at Finger Lakes LPG's Gallery 1 and Gallery 2 as the volume of fresh water required to leach a new cavern is approximately seven times the required cavern volume. This consumptive use of fresh water simply isn't required at the Reading site where the caverns are already constructed.

Further, unlike the proposed Reading site, the Savona LPG facility does not have ready access to an existing incoming pipeline to provide propane for storage. It also doesn't have ready access to an existing outgoing pipeline for propane shipments to points east in New York State including the Enterprise Selkirk LPG terminal located in Selkirk, New York, which serves a critical energy supply need to the Hudson Valley Region. Consequently, the relocation of the Finger Lakes LPG project to the Savona site would cause more shipments of propane to be transported by highway and rail as compared to the use of the Reading site, unless a new LPG pipeline of at least 17 miles in length is built at the Savona site to interconnect with existing LPG pipeline infrastructure. Pipeline construction would have its own environmental impacts. Moreover, the synergy and efficiencies that would occur between the proposed Finger Lakes LPG site and the existing and neighboring TEPPCO facility, located approximately 1,805 feet away (DSEIS, Page 10) and that would be interconnected by pipeline (DSEIS, Page 6), do not exist at the Savona LPG facility.

Accordingly, staff acted reasonably in excluding the Savona site as an alternative to the Reading site inasmuch as its selection would not serve to mitigate or avoid impacts. There was simply no justification for including an alternative that staff could reject out of hand based on

many years of regulating solution mining and gas storage facilities in the Finger Lakes. Savona, as an alternative, did not merit further investigation. *See Matter of St. Lawrence Cement, LLC*, First Interim Decision of the Commissioner, 2002 N.Y. ENV LEXIS 61 at 73-74, December 6, 2002 ("I concur with the ALJs that there is no justification to adjudicate alternatives based upon the record before me. In particular, adjudication of the Catskill site is not warranted, and no further information is necessary to make that determination. The Applicant has provided sufficient and detailed information in the record for me to conclude that further review of the Catskill site would not aid in the decision-making process, in particular, the undisputed conclusion that the visual impacts of the Catskill site on Olana would be greater, as well as the lack of any demonstrable net environmental benefit associated with the Catskill site."). Staff acted according to the rule of reason discussed in this brief. "While it is essential that public agencies comply with their duties under SEQRA, some common sense in determining the extent of those duties is essential too.…That [the City] chose not to investigate some matters of doubtful relevance is an insufficient reason for prolonging the process further, and for adding to the expense. A "rule of reason" (*Matter of Jackson v New York State Urban Dev. Corp*., 67 NY2d at 417) is applicable not only to an agency's judgments about the environmental concerns it investigates, but to its decisions about which matters require investigation." *Save the Pine Bush, Inc. v. Common Council of the City of Albany*, 13 N.Y.3d 297, 308 (2009)]. *See also*, *Neville v. Koch*, 79 N.Y.2d 416, 428 (1992). Other than Savona, petitioners do not identify any other sites. In short, Reading — versus Savona or construction of an entirely new facility — was chosen because it possesses all of the essential elements for a successful LPG storage operation, which at the same time makes it an environmentally wise choice.

In terms of constructing an entirely new facility, an alternate location without existing wells and caverns would initially require the drilling of new stratigraphic wells to collect cores and ascertain geologic conditions. While these wells could be converted to solution mining wells to construct the storage caverns, the construction of new caverns would require some mode for disposition of the brine generated during the solution mining of a cavern (e.g., evaporator plant, brine disposal wells, brine pipeline, hauling of brine to another location). The infrastructure required to completely construct an LPG storage facility without the benefit of existing caverns or infrastructure would be significant.

GFS, in its discussion of alternatives, argues that the DSEIS should have considered the possibility of transporting LPG solely by means of rail and pipeline. (Ironically, in making this suggestion, GFS ignores the contradiction that the Savona site — which they suggest as an alternative — does not ready access to pipelines as described above.)

According to the SEQR Handbook, "[t]he goal of the alternatives discussion in an EIS is to investigate means to avoid or reduce one or more identified potentially adverse environmental impacts. …In general, the need to discuss alternatives will depend on the significance of the environmental impacts associated with the proposed action. The greater the impacts, the greater the need to discuss alternatives. The discussion of each alternative should specifically include an assessment of its likely effectiveness in reducing or avoiding specific impacts." SEQR Handbook, p. 124 in printed copy; the Handbook is available on the Department's website at http://www.dec.ny.gov/permits/6188.html, last visited on May 22, 2015; see also, *Matter of St. Lawrence Cement, LLC*, First Interim Decision of the Commissioner, supra, 2002 N.Y. ENV LEXIS 61 at 73-74.

In short, the failure to consider a rail/pipeline alternative only is not a substantive and significant issue or a deficiency in the DSEIS because traffic impacts are not significant based on Section 4.4 of the DSEIS and Appendix J to the DSEIS (which contain a detailed analysis and discussion of vehicular traffic and rail issues). The traffic assessment contained in the DSEIS as Appendix J was submitted to the NYSDOT. On January 11, 2012, the NYSDOT wrote the Department stating that the "traffic impacts associated with the proposed action do not represent a substantial increase to the existing traffic volumes, nor do they present a need for mitigation to the highway." *See Matter of Besicorp-Empire Development Company*, LLC, Hearings Report and Recommended Decision, 2004 N.Y. ENV LEXIS 4, 49, January 9, 2004. *See also, Matter of Hyland Facility Associates*, Interim Decision of the Commissioner, 1992 N.Y. ENV LEXIS 52, 11, August 20, 1992 ("The Commissioner should give due deference and serious consideration to DOT's position, since it is the state agency with particular expertise in this case"). Inasmuch as there was no offer of proof on truck traffic, petitioners have failed to state a matter for adjudication. *See Matter of 4-C's Development Corporation*, Interim Decision of the Commissioner, http://www.dec.ny.gov/hearings/10916.html, May 1, 1996.

The applicant has indicated that it initially plans to use rail and pipeline only. "Finger Lakes expects all propane volumes delivered to the facility will be transported by pipeline (95%) and rail (5%). All outgoing volumes of propane will be delivered via pipeline. In addition, Finger Lakes expects that all butane volumes (in and out) will be transported by rail. Accordingly, Finger Lakes would not expect to receive or deliver any propane or butane by truck if the storage facility were operational today." Letter from Kevin Bernstein, Esq. to Lisa Schwartz, dated December 2, 2014, available at http://www.dec.ny.gov/permits/71619.html, last visited on May 22, 2015.

The applicant is free to utilize rail and pipeline only or agree to a condition so limiting its transportation options. Construction impacts will be even less significant since FERC has given the go ahead for the Arlington Storage facility to be constructed and Crestwood has indicated that it plans for, at least at the onset of the project, to use rail and pipeline only.

GFS cites to the Commissioner's interim decision in *Crossroads Ventures, LLC*. GFS states on page 6 of its Initial Post Issues Conference Brief: "In Crossroads Ventures, the Deputy Commissioner rejected a draft EIS [on the Belleayre Resort at Catskill Park project], even though it included an analysis of alternative sites and layouts, because the draft failed to discuss "reasonable smaller scale alternatives to the proposed project" and lacked a sufficiently detailed discussion of the "environmental impacts and the extent to which those impacts would be reduced" by eliminating particular components of the proposed project."

It is hard to imagine a project more distinguishable than the Belleayre Resort at Catskill Park, in its pre-2007 iteration. As OHMS is aware, the project involved a four season, large scale resort project located in the Catskill Park and adjacent to State Forest Preserve land on steep terrain in a sparsely populated area within the New York City watershed. The project had three components, two resorts and a subdivision. It involved disturbance of 573 acres and construction of two hotels, golf courses and hundreds of lodging structures and hotel rooms. The most controversial part of the development involved construction of a large scale hotel, detached lodges and a golf course on Big Indian, which has since been conveyed into the Forest Preserve as part of a negotiated agreement with the State to move the resort out of the Ashokan Watershed.

Also with respect to the alternatives discussion, Deputy Commissioner Johnson had ruled "given the magnitude of the proposed project, its location, and the environmental impacts

already noted in this record, the alternatives analysis in the DEIS must include further environmental detail on the alternatives presented as well as one or more additional alternatives to ensure a meaningful basis to compare and evaluate the environmental impacts of the proposed project." The Deputy Commissioner then directed that the applicant "…prepare a supplement to its alternatives analysis that addresses the environmental impacts of alternative layouts which will be considered during the adjudicatory phase of the proceeding." He stated: "…Although I am not designating a specific number of alternatives that would be included in this supplement, I would direct applicant to include an environmental evaluation of impacts with respect to the two alternatives already referenced in the DEIS (the one golf course and one hotel complex alternative and the east resort/ west resort alternative) and such additional smaller scale alternatives that would ensure that a reasonable range is considered." *Matter of Crossroads Ventures, LLC*, Interim Decision of the Deputy Commissioner, *supra*, 2006 N.Y. ENV LEXIS 88, 100-102, Ruling 18.

The principal part of the project here is underground. Together with the truck terminal, rail siding and brine ponds, it constitutes an industrial use that is surrounded by existing industrial uses. While it was possible to imagine many alternatives for the original Crossroads project that would have avoided or mitigated impacts (as was eventually accomplished through the Agreement in Principal process and subsequent to that in the EIS process), petitioners have not described a single feasible and reasonable alternative that would have the effect of reducing or mitigating significant impacts. They offer no other feasible and reasonable sites, mitigation, or transportation alternatives except perhaps eliminating truck transportation — though truck traffic has not been shown to be a significant environmental impact.

C. There Is No Potential for Significant Adverse Cumulative Impacts.

GFS argues that the DSEIS is deficient since it did not address the cumulative impact of both the proposed facility and the Arlington Storage Company, LLC's natural gas storage facility. SEQR defined cumulative impacts as "those environmental impacts that: 'result from the incremental or increased impact of an action(s) when the impacts of that action are added to other past, present and reasonably foreseeable actions. Cumulative impacts can result from a single action or a number of individually minor but collectively significant actions taking place over a period of time. Either the impacts or the actions themselves must be related.'" *Matter of Crossroads Ventures, LLC*, 2006 N.Y. ENV LEXIS 86, 86-88, quoting the SEQR Handbook, at printed page 83 (formerly page 41 from the pre-2010 SEQR Handbook), available at http://www.dec.ny.gov/permits/6188.html, last visited on May 22, 2015. As pointed out in staff's Initial Post Issues Conference Brief, GFS is less than specific about what those impacts may be and make no offer of proof as to their significance. Staff have responded to all of GFS's cumulative arguments on pages 95-100 of its Initial Post Issues Conference Brief and believe that the record is sufficient with regard to all possible cumulative impacts (noise and construction impacts) with the Arlington facility for SEQR findings to be made.

As stated in staff's initial brief, a cumulative impact analysis is required when there are potential for significant cumulative impacts. DEC PIC Br. at 97; 6 NYCRR 617.9(b) (5) (iii). Early in the review of the Finger Lakes LPG storage project, Department staff investigated whether storage operations at the proposed facility would be impacted or would impact operations at the adjacent natural gas storage facility. After the former NYSEG facility was purchased by Arlington Storage Company and Arlington announced a plan to expand their natural gas storage capacity, Department staff appropriately considered whether Arlington's

plans changed any part of the cavern integrity analysis. Since FLLPG demonstrated that cavern integrity would not be impacted by nearby natural gas storage, it was entirely reasonable to conclude the facilities would not have the potential for cumulative impacts underground. Similar to the conclusion reached by FERC, there is also no potential for cumulative impacts from surface activities, such as noise, traffic and visual impacts and none of the proposed parties have alleged otherwise.

D. Noise Impacts Are Neither Substantive Nor Significant.

In initial briefing, GFS continued to question the sufficiency of the Hunt Sound Study.[10] Nothing contained in the GFS brief changes the analysis and conclusions regarding potential noise impacts of the proposal already filed in this matter in the Department Staff post-issues conference closing brief. In response, staff must again emphasize certain aspects of that staff analysis in response to the GFS Brief, including that: a) the scope of the applicant's noise analysis was appropriately defined; b) the ambient baseline noise level GFS uses for comparison is inappropriate; c) contrary to GFS's contention, there are no unaddressed "unusual acoustic properties"; and d) Potential construction noise has been addressed.

1. The Scope of the applicant's noise analysis was appropriately defined.

GFS incorrectly continues to assert that the appropriate region of influence to evaluate noise includes surrounding communities through which any truck or train originating from, or traveling to, the Finger Lakes LPG project site must pass. This argument completely ignores

[10] The Hunt Sound Study consists of the applicant's noise analysis prepared by Hunt Engineers. This analysis includes a July, 2013, Sound Study and March 7, 2014 Supplement, together found at OHMS Document Number 201166756-00006, Document List I.B.32.

that, with the exception of the rail siding proposed at the project site, there are no changes to roads or rail lines beyond the project boundaries.

While GFS fails to specify just how far afield it believes DEC should go to evaluate truck traffic supposedly related to this Project, they offer no evidentiary support for any expanded traffic analysis. However, where SEQR is appropriately applied, once the traffic leaves the project area, it is not part of the project SEQR analysis. *See,* e.g., *Golden v. New York City Department of Sanitation*, Index No. 42723/98 (Sup, Ct. Kings Co. June 25, 1999) (attached to this brief in Appendix B). In *Golden,* the court found that the NYC Department of Sanitation fulfilled its SEQR responsibilities relating to its award of a contract to Waste Management of New York, Inc. (WM) to export approximately 2500 tons of waste per day of Brooklyn-generated, DOS-collected, residential waste through two WM waste transfer facilities in Brooklyn to out of state locations. The court found that, "the DOS appropriately confined its analysis [of truck traffic] to a reasonable geographic area and was not required to account for any increase in traffic on the interstate highway system." *Id.*

Furthermore, concerning trucks, the state highways and road systems adjacent to the project site and in the surrounding areas already exist, and already carry commercial truck traffic from a variety of sources (e.g., agricultural, construction, freight, and fuel delivery). As noted in the Department's post-issues conference brief, the NYS Department of Transportation has indicated in their letter dated January 11, 2012 (OHMS Document Number 201166576-00003, Document List I.B.4) that the Project does "not represent a substantial increase to the existing traffic volumes." There are also no modifications to any roadways proposed as part of this Project (e.g., no addition of lanes or changes in intersections.). As a result, all GFS assertions

that the Hunt Sound Study is deficient because potential impacts of traffic noise were not characterized or evaluated are irrelevant – such an evaluation was not necessary.

Apart from the proposed rail siding terminal proposed on the Project site, the rail line to which the siding will be connected already exists and carries rail traffic. No significant change in the volume of train traffic is proposed as part of this Project (DSEIS, Section 4.4.2, pp. 125-128). As is true with truck traffic, the evaluation of train noise on an existing rail line beyond the project site is outside the scope of the proposed action. However, the potential impacts of train noise associated with the proposed rail sidings and turn around to be constructed specifically as part of this project proposal are an appropriate area of evaluation, and the Hunt Sound Study provides that evaluation.

The Applicant's noise analysis appropriately identified receptors in accordance with the DEC Noise Policy.[11] In accordance with Section V.B.1.b of the Noise Policy (p. 13), appropriate receptor locations are those closest to the noise sources and potentially impacted by project noise. Given the non-significant impacts on the identified receptors, as described in the Department's Initial Post-Issues Conference Brief, there is no basis to require analysis of further-distant receptors where noise increases due to the project would be even lower or undetectable due to additional attenuation. Nothing in the GFS brief supports a different conclusion.

2. The ambient baseline noise level GFS uses for comparison is inappropriate.

GFS exaggerates potential noise impacts by relying on inappropriate values for comparison with project noise. As noted in the Department's post-issues conference closing brief, the existing ambient noise levels used as a basis of comparison would include all sources of non-project noise, and there is nothing in the DEC Noise Policy to suggest otherwise. In this

[11] Department's Program Policy on Assessing and Mitigating Noise Impacts (DEP-00-1).

case, GFS contends that the project would result in noise level increases of 20-30 dB (A). *See* GFS PIC Br. p. 70. This contention should be disregarded, as it is based on a comparison between project noise level estimates by Sandstone and undocumented[12] noise measurements by Sandstone of noise on the east side of the lake without human sources (which would contribute to ambient levels). By improperly using noise levels "without human sources" as a basis of comparison, Sandstone ignores the simple truth that people reside, travel, operate industrial facilities, and otherwise exist around Seneca Lake, and produce sound as they do so, contributing to the ambient sound levels. Further, there is nothing in the DEC Noise Policy to suggest that ambient noise levels should be determined by excluding all human sources of noise. Under section V.B.1.a. (1) of the DEC Noise Policy (p. 11), "A noise can only intrude if it differs in character or SPL [sound pressure level] from the normal ambient sound" (emphasis added). The DEC Noise Policy thus requires the inclusion of all non-project noise sources in the determination of ambient noise levels. Indeed, when Sandstone includes existing "anthropogenic" sources, their own analysis finds ambient noise levels in the Town of Hector as high as 53 dB (A) (p. 7). Again, as the Department demonstrated in its post-issues conference brief, there are no significant adverse impacts to receptors in Hector on the east side of Seneca Lake.

[12] No information is provided in the Sandstone Report presented by GFS to indicate the time of day or duration of their noise measurements, or what methods were used to distinguish between the sound levels described as the "Naturally occurring background noise sources" and the sound levels described as the "Anthropogenic (human-made) sources from Reading" (Sandstone Report, pp. 5-7).

3. Contrary to the GFS contention, there are no unaddressed "unusual acoustic properties" and construction noise has been addressed.

GFS contends that there are "unusual acoustic properties" that have not been addressed. GFS PIC Br. at 61-62. However, GFS offers nothing specific regarding this concern, except perhaps the "unusual" difference in noise propagation over water versus land due to the presence of Seneca Lake claimed by GFS in its petition for party status. The Department's Initial Post Issues Conference Brief addresses that issue, concluding that still there will be no significant noise impacts across Seneca Lake.

GFS incorrectly argues that the region of influence covered by the Hunt noise study is "cramped", and "should have included the Route 14 corridor and the eastern shoreline [of Seneca Lake]. *Id.* at 60-61. GFS offers the ALJ's September 25, 2001 ruling on the proposed issue of noise in the Matter of Dalrymple Gravel and Contracting Company for a mine in the Town of Erwin, Steuben County (http://www.dec.ny.gov/hearings/11163.html). They offer this case for the proposition that "the standard procedures of the DEC Noise Policy may not be conservative enough when a project is situated in an area with unusual acoustic properties" (GFS Post Issues Conference Brief at p. 61) because the ALJ found noise to be an adjudicable issue in part due to the effects of site topography on noise levels.

While the ALJ in *Dalrymple* found that there was an issue of fact as to the appropriateness of the location of the sound receptors relied upon by the applicant in its noise study, the ALJ did not suggest that the standard procedures of the DEC Noise policy are inadequate to locate such receptors. In fact, one of the reasons that the intervening party in the *Dalrymple* proceeding had suggested that ambient levels were not representative was because, the receptor were selected not at the boundary of the applicant's property or at the point of use of contiguous property owners. They, therefore, did not comport with the protocols suggested in the

aforementioned noise policy. On appeal (*Matter of Dalrymple Gravel & Contracting Company*, Interim Decision of the Commissioner, 2002 N.Y. ENV LEXIS 49, p. 8, September 24, 2002), Commissioner Crotty affirmed that noise should be adjudicated as the placement of sound receptors analyzed for ambient levels was claimed to be in violation of the Department's guidance. Therefore, in no way did the *Dalrymple* case modify the policy instructions concerning the region of influence appropriately studied.

Potential construction noise has been addressed through permit conditions limiting hours of construction. *See* Affidavit of Scott Sheeley, sworn to on April 17, 2015, ¶18 and 26. As in *Matter of 4-C's Development Corporation*, Interim Decision of the Commissioner, http://www.dec.ny.gov/hearings/10916.html, May 1, 1996, no offer of proof has been made regarding this impact and it should therefore be rejected as an issue for adjudication. Department staff would also consider a reasonable condition that would result in construction being staggered, for example, between the truck terminal and the brine ponds or the Arlington facility. In any event, as Mr. Sheeley points out, such impacts are temporary and not significant and the Department has made reasonable efforts to address them. *See, e.g., Powell, IV v. City of New York*, 16 Misc. 3d 1113A (Sup. Ct. NY Co. 2007).

E. Petitioners SLPWA and GFS Failed to Raise any Substantive and Significant Cavern Integrity Issues; DEC Staff's Review of the Project Was Rigorous.

SLPWA and GFS failed to raise an adjudicable issue related to cavern integrity. Their initial post-hearing briefs did not shed any additional light on their proposed issues and in some cases, took a step backward from their pre-issues conference submittals. SLPWA's attempts to shore up the holes in their arguments about the presence of faults in the area of the proposed facility only revealed other weaknesses in their petition, which are also contradicted by evidence

available in the record and in published literature. Both parties raised generalized concerns about cavern integrity but neither party pointed to any specific statutory or regulatory standard, or even a relevant industry standard, that FLLPG would be unable to meet and neither party adequately considered the mitigation proposed by Department staff. SLPWA raised valley stress relief as a concern and attempt now to supplement their offer of proof with new calculations of horizontal compressive strength. However, they failed to establish that valley stress is an issue at the depths of the proposed caverns, which is not proposed to be located under a valley and their proposed calculations are both untimely and unsupported.

GFS's six proposed issues for adjudication related to cavern integrity seek to adjudicate matters that are not subject to any specific regulatory standard, such as the manner in which geologists should display information on a map. Since the purpose of adjudication is not to engage in an academic debate, Department staff respectfully request rejection of petitioners' proposed cavern integrity issues. Many of GFS's arguments are also based on inaccurate information about the geology of the site and proposed storage operations by FLLPG. Both Department staff and the State Geologist conclude that FLLPG adequately demonstrated the suitability of the solution-mined caverns for LPG storage and the draft permit conditions already include the mitigation measures necessary to ensure the project is appropriately regulated.

1. SLPWA now alleges there is both a strike-slip fault and a thrust fault at the project site, which contradicts their offer of proof.

In their January 16, 2015 petition for party status, SLPWA took the contradictory position that FLLPG did not fully recognize the Jacoby-Dellwig strike-slip fault and that the fault should be reinterpreted as a thrust fault directly connecting the salt layers under the Project site to the bottom of Seneca Lake. *See* SLPWA's Petition for Party Status, Issues One and Two. Department staff pointed out at the Issues Conference and in Staff's Initial Post-Issues

Conference Brief that SLPWA couldn't have it both ways. They couldn't criticize FLLPG for failing to account for a strike-slip fault and simultaneously argue that the strike-slip fault should be reinterpreted as an active thrust fault that connects the storage caverns with Seneca Lake. Tr. 262. In their post-issues conference brief, SLPWA is indeed trying to have it both ways, and then some. Now, instead of arguing that the Jacoby-Dellwig fault should be reinterpreted as a thrust fault, SLPWA argues in Point 1(a) and 1(b) of their brief that both types of faults are present, making the unbelievable claim that:

> "Dr. Vaughn focuses his analysis on a widely-recognized strike-slip tear fault created during stress regimes in the Alleghany Orogeny. Dr. Nieto focuses his analysis on a thrust fault formed by contemporary east west tectonic stresses in the deep Seneca Lake valley. There is no inconsistency in identifying *two separate faults* in the Project area. In fact, it is likely that there are also other faults in the Project area." *See* SLPWA's April 17, 2015 Post Issues Conference Brief "SLPWA PIC Brief" at 6 (emphasis added).

To the contrary, there was an obvious inconsistency in SLPWA's original argument because both of their witnesses, Dr. Vaughn and Dr. Nieto, were relying on the same information (Jacoby's published papers) to arrive at two different conclusions about the orientation of the Jacoby-Dellwig fault. They emphasized the importance of Jacoby's observations from the 1960s and 1970s and criticized FLLPG for not taking the Jacoby-Dellwig fault into account. But their own witness, Dr. Nieto, contradicted Jacoby's findings and opted for a different fault orientation - one that provided SLPWA and GFS with a more convenient and direct connection between the caverns and Seneca Lake.

After Department staff pointed out at the issues conference that this was both internally inconsistent and contradicted by Jacoby's detailed analysis of geophysical logs which provided evidence of a north-south strike-slip fault in the bedded salt deposits beneath the project area, SLPWA changed their argument in post-issues conference briefing and now say they were arguing that two *separate* faults are present. SLPWA neglected to account for the fact that their

offer of proof does not support this change in their argument. *See American Marine Rail*, 2000 N.Y. ENV LEXIS 63, ALJ Ruling on Issues and Party Status and Environmental Significance, August 25, 2000, (where an issue raised for the first time in post-issues conference brief was rejected.)

SLPWA's offer of proof refers not to a second, separate fault, but to a "reformulated" fault. It was Dr. Nieto's report that said "[t]hus the only variance with Jacoby is the attitude and type of fault. . ." Nieto Report at 4, ¶8. Dr. Nieto was not suggesting in his report that there was a second fault in the project area; he used the word "reformulated" throughout his report because he was reinterpreting the Jacoby-Dellwig fault as a thrust fault. In fact, in Exhibit H of their post-issues conference brief, which is an updated (for the third time) representation of Dr. Nieto's fault, there is an arrow with the words "Active Seneca Lake fault *reinterpreted* from Jacoby & Dellwig, 1977." SLPWA PIC Br., Ex. H, (emphasis added). For SLPWA to suggest that they were talking about two separate faults instead of a "reinterpretation" of the same fault is disingenuous. More importantly, SLPWA's new argument is at odds with their own offer of proof and is therefore an unsupported factual argument. By trying to cure their first inconsistency, which was arguing that the same fault was oriented in two different directions, SLPWA changes their argument in post-issues conference briefing and is now taking a position that contradicts their original offer of proof. Proposed issues for adjudication consisting entirely of cursory and contradictory statements with no supporting offer of proof should be summarily rejected. 6 NYCRR 624.5(b)(2).

2. Concerns about valley stress relief are misplaced since the project is not proposed to be located under the lake.

In point 1(b) of their post-issues conference brief, SLPWA repeats much of the same information stated in their petition for party status about a reformulated fault. SLPWA also

repeat its claims about valley stress relief, and attempt to supplement their offer of proof with calculations of horizontal stress from Dr. Nieto. *See* SLPWA PIC Br., Exhibit C. SLPWA claims the new calculations are being offered as rebuttal to DEC staff's comments at the issues conference, but in the cited references to pages 262-264 of the transcript Department staff did not call for calculations of the strength of the rock under the center of Seneca Lake where the project is not located. Department staff's position at the issues conference was, in part, that the concern about valley stress relief is irrelevant because the proposed storage caverns are not located under any valley and that, to date, successful storage operations of both LPG and natural gas in nearby solution-mined caverns renders moot any speculation about whether stress relief plays a role in cavern integrity at this site.

SLPWA's whole point about valley stress relief is that geologists have observed indications of stress relief at the bottom of some stream valleys, where high horizontal stresses below the center of the valleys are relieved by buckling and/or faulting caused by the unloading of overlying pressure (i.e., overlying sediment or rock) by erosion. These indications are typically near-surface shallow fracturing of the top of bedrock. SLPWA references a 2008 doctoral dissertation in their brief as a basis for their concerns related to valley stress relief, and now resubmits comments from Richard Young, which were prepared for the benefit of Earthjustice before access to the confidential material in this proceeding was made available. Department staff is already aware of Earthjustice's comments. However, Earthjustice's comments and the 2008 dissertation[13] do not support SLPWA's arguments. They merely speak to

[13] The 2008 dissertation was also addressed by Chief Administrative Law Judge James T. McClymonds', February 11, 2015, ruling, which ruled that the dissertation could not be submitted as a supplement to SLPWA's petition for party status.

a general observation made in some stream valleys that do not apply to this specific site, which is not located under a stream valley.

a. Stress relief features, when present, are shallow conditions that do not extend to the depths of the proposed caverns.

In addition to the fact that the proposed project is not proposed to be located under the lake, it is equally important to understand that valley stress conditions, when observed, do not extend to the depth of the proposed project. The United States Geological Survey ("USGS") describes stress relief as "the removal of compressional stress on underlying rocks by erosion of overlying rocks, result[ing] in predictable fracture patterns in valleys. The fractures are generally horizontal under valley floors and are generally vertical along valley walls, where the rocks are nearly flat-lying, as in the Appalachian Plateaus." *See, Hydrologic Effects of Stress-Relief Fracturing in an Appalachian Valley,* Granville G. Wyrick and James W. Borchers, 1981 U.S. Gov. Printing Office, available online at: http://pubs.er.usgs.gov/publication/wsp2177, ("Wyrick and Borchers, (1981)"). This 1981 USGS paper, cited by both Dr. Nieto and in Earthjustice's comments, was developed to evaluate the impact of valley stress relief on the movement of groundwater in Wyoming County, West Virginia. What that paper ultimately concluded is that "fracturing frequency due to stress-relief decreases with depth and [] they most likely do not exist below 60 meters." *See, Impacts on Ground-water Hydrology from Surface Coal Mining in Northern Appalachia*, Jay W. Hawkins, International Mine Water Association, 1995, at 35, available at: https://www.imwa.info/docs/imwa_1995/IMWA1995_Hawkins.pdf.

SLPWA also cites to the 1992 paper by G. M. Molinda, et. al. ("Molinda (1992)") and resubmits comments prepared by Dr. Young on behalf of Earthjustice.[14] *See, Effects of Horizontal Stress Related to Stream Valleys on the Stability of Coal Mine Openings*, available at: http://stacks.cdc.gov/ObjectView?pid=cdc:10109&dsid=DS1&mimeType=application/pdf. Figure 6 of Earthjustice's comments, in fact, is taken from Molinda (1992). The stated goal of Molinda (1992) was to gain a better understanding of the relationship between topography and coal mine roof stability. The concern there was that surface drainage through channels created by stress relief could extend to mining depths and impact mine roofs and openings. What the modeling done in Molinda (1992) ultimately indicated is that in coal mines, stress relief features were only possible down to 300 feet.

Department staff reviewed all the papers referenced by SLPWA and Dr. Nieto and none of those cited reports indicate that valley stress is a concern at the depths and locations of the solution-mined caverns proposed for use by FLLPG. Even the unpublished doctoral dissertation relied on by SLPWA and Dr. Nieto doesn't discuss any valley stress features deeper than 50 feet. *See*, Cole, 2008 at e.g., p.20 and 73. So while SLPWA may draw a misleading picture (addressed below) and cite to articles on stress relief at sites that are not comparable to FLLPG's project site, those concerns are altogether irrelevant here. In fact, the literature that SLPWA cites to indicate that valley stress relief can be modeled to show effects at 300 feet but "[a]t greater depths, horizontal stress contours will flatten out and the effect of the topography will disappear." Molinda (1992) at 22, (emphasis added).

[14] Comments by Dr. Young on the structural geology of the area were also submitted as an attachment to Gas Free Seneca's comments to FERC. FERC reviewed those concerns and dismissed them as well. See, FERC Order at ¶27 & n25.

Counsel for SLPWA contends that "Dr. Nieto does not propose any novel theories of geological activity" but this is plainly untrue. SLPWA PIC Br. at 9. Dr. Nieto is, in fact, advancing the novel theory that valley stress relief features previously observed in coal mines and stream valleys can be found at a site that is geologically distinct from locations where valley stress features have been observed. SLPWA has not cited any scientific support for this theory. It is also clear that (regardless of location) there is no available literature that even suggests that valley stress relief features are observable or even theoretically possible deeper than 300 feet below the center of a valley. To require the Department to subject FLLPG to adjudication based on Dr. Nieto's untested theory (i.e. that stress relief features normally observed in shallow bedrock under the center of a valley *might* be found above a dry, salt layer at a considerable depth under confining pressure impacting caverns that are not located under a valley) SLPWA must first establish that its theory meet the *Frye* test. *See*, *Frye v. United States*, 293 F.1013 (D.C. Ct. Appls., 1923); *see also People v. Wesley*, 83 N.Y.2d 417 (1994). SLPWA, under no uncertain terms, can meet this test.

The proposal before the Department, of course, does not involve operation of a gas storage facility beneath the valley of Seneca Lake and that facility is not in an area where groundwater movement would be influenced by shallow fractures in the bedrock. The proposed facility is several thousand feet west of the center of Seneca Lake and is far below any groundwater-bearing zone. The salt layers which contain the proposed storage caverns are dry and impermeable, and have shown through pressure tests to be a suitable storage container. Therefore, SLPWA's concerns about valley stress relief are misplaced. Moreover, SLPWA's and Earthjustice's earlier comments about valley stress are only generalized concerns that do nothing to change the Department's understanding of the proposed project site. As a

consequence, additional review of SLPWA's concerns on valley stress relief through adjudication is not justified and should be rejected.

b. SLPWA provides no data to support their generalized concerns about valley stress relief; their attempts to supplement their offer of proof should be rejected as untimely.

In support of their claim that there is evidence of "horizontal compressive tectonic stresses" at the project site, SLPWA points to three items: 1) that stresses are observed in other parts of the world and have been documented in databases such as the World Stress Map Project; 2) cross-sections of Seneca and Cayuga lakes that SLPWA claims shows "wrinkles" in the sediment at the bottom of the lake and; 3) new calculations prepared by their proffered expert. They make other generic statements and references in point 1(b) of their brief (e.g. their reference to the Tully Valley Brine Field which is addressed below), but these three are the only items they identified as evidence of their proposed issues.

First, as is shown above, Department staff is aware of the nature of stress relief features. However, it is not enough for SLPWA to merely indicate that valley stress relief exists or that the World Stress Map houses data recorded in other parts of the World. To justify adjudication, SLPWA must provide a sufficient offer of proof to indicate that valley stress relief is germane to *this* project site and that the applicant's omission of such information is a defect worthy of adjudicating. *See, Matter of Crossroads Ventures*, 2006 NY ENV LEXIS 88 at 9-10 ("Assertions by potential parties cannot simply be conclusory or speculative but must have a factual or scientific foundation.") Neither Department staff nor FLLPG suggested that the valley stress relief conditions didn't exist in other parts of the country or the world. Yet, these conditions are not a concern at this project site which is not under a stream valley, and is both horizontally and vertically distant from a filled lake valley.

SLPWA didn't provide in their offer of proof a printout from the World Stress Map documenting known stress relief conditions below Seneca Lake, nor did they point to any publications or journal articles discussing the connection between valley stress conditions and solution-mined caverns or any caverns located a distance of several thousand feet under the slope of a valley. The reason they didn't is because there is no such support for their arguments. So their reference to the World Stress Map is as irrelevant as the pictures of dams, and the Grand Canyon, that were attached to their post-issues conference brief. As interesting as it might be to discuss the geology of those areas, they are not relevant to the proposed project.

Moreover, the applicant, FLLPG, did confirm that the conclusions in the Finite Element Analysis ("FEA") would not be affected by the general comments raised in Earthjustice's October 13, 2004 letter. SLPWA complains about the number of pages FLLPG used to respond to those concerns, but the purpose of the January 6, 2014 memo from Leonard Dionisio and John Istvan was not to provide a point by point response to Earthjustice's letter. *See*, SLPWA PIC Br. at 14. The purpose of the memo was to respond to DEC's request for specific information regarding the FEA. It is SLPWA, not FLLPG or DEC, who bears the burden of proof to advance their proposed issues to adjudication and pointing to the World Stress Map and the number of pages in FLLPG's response to issues that do not exist at the project site fails to meet this burden.

Second, as to their claims that seismic profiles beneath Seneca and Cayuga lakes indicate the presence of valley stress relief, SLPWA is flatly wrong. The figures in the 1996 article by Mullins shows sediment profiles that are typical for the Finger Lakes and are associated with a series of varying depositional sequences associated with the glacial history of the region, not horizontal compression of sediments from closing of valley walls. As indicated by one of FLLPG's experts, Dr. Nieto's conclusion is not warranted. *See*, OHMS Doc. 201166576-00030,

Alpha Geoscience, Section 2.3.2. Mullins' interpretation of seismic profiles was correlated with drilling samples and again, there is no mention of compressional forces in the Mullins article. In contrast, SLPWA's interpretation is not backed up or correlated with any data. Here again, SLPWA and Dr. Nieto are attempting to "reformulate" the Mullins seismic profiles to fit their theory, though the literature they cite makes no mention of it.

In this same section of their brief, SLPWA says "Such closings of valley walls, as well as closings of the walls of man-made excavations . . . are evidenced in numerous publications." SLPWA PIC Br. at 11. Similar to their claims about Mullins' data, SLPWA is mistaken because the cited publications don't support SLPWA's claims. For instance, they cite to a 1996 publication by William J. Brennan.[15] Interestingly, that publication discusses the fact that valley stress-relief structures were *not* observed in the Wyoming Valley in New York. Brennan's words on the presence (or absence) of valley relief features in filled lake valleys are significant, considering that both the Wyoming and Seneca valleys are filled lake valleys. He wrote:

> "The absence of mid-valley stress-relief structures like those proposed by Molinda and others (1992) beneath the floor of the Wyoming Valley is clearly evident, and some attempt at explanation is appropriate. Glaciated troughs in western New York are typically deep, wide and have flat valley floors like the valleys Molinda and others (1992) suggest are at highest risk of stress-relief deformation. However, the glaciated troughs are also filled with thick accumulations of glacial and postglacial sediment. The maximum thickness of fill in the Wyoming Valley near the brine field is just over 300 feet and the thickness in the Genesee Valley is more than 500 feet over the abandoned Restof mine (Brennan, 1988). Thus, these valleys are filled with material of sufficient thickness and small enough density contrast with bedrock (Brennan, 1988) that vertical stresses at the top of bedrock are increased substantially. In addition, the sedimentary fill is unconsolidated which allows it to contribute to vertical stresses

[15] SLPWA's brief cited to an article titled, *Aseismic Bedding Fault: Evidence of Stress-Relief Revealed during Solution Mining on the Appalachian Plateau*, Geological Society of America 28(7):243, 1996. A search of GSA's journal archives did not locate an article by this title. Volume 28 of GSA's Journal *Geology,* was published in 2000. Department staff believes the citation should have been to *Stress-Relief Phenomena Observed During Solution Mining in Western New York,* William J. Brennan, Solution Mining Research Institute (1996).

> on the bedrock floors of valleys, but makes it incapable of supporting or transmitted horizontal stresses effectively. Thus, the presence of thick valley fill reduces the difference between horizontal and vertical stresses at the top of bedrock." Brennan (1996) at 11, attached as Appendix C.

This is the exact point Department staff made in Staff's Initial Post-Issues Conference Brief -- that statements made by SLPWA about stress relief in empty valleys cannot be applied to filled lake valleys like Seneca Lake, and that SLPWA was not giving any credit to the fact that the 450 feet of water and over 500 feet of sediment in the lake would attenuate any concerns about shallow stress relief features. *See*, DEC PIC Br. at 50; Affidavit of Peter S. Briggs, sworn to on April 15, 2015 ("Briggs 4/15 Aff."), ¶26. Both SLPWA and GFS quibble about the amount of relief measured by FLLPG when FLLPG gave their measurement about the depth of Seneca Lake. Whether the depth of the water- and sediment-filled Seneca Lake Valley is 700 or 1200 feet, the amount of topographical relief adjacent to the proposed project is immaterial because the project is not located under the valley and the valley is filled with hundreds upon hundreds of feet of both water and saturated sediment.

SLPWA also cites a publication related to structural instability features along and in the vicinity of the Clarendon-Linden fault system as an example of the "numerous publications" that support their claims that valley stress relief exists in the Finger Lakes area. SLPWA PIC Br. at 11. However, the Clarendon-Linden fault system is located at least 60 miles from the project site and is a deep seated basement fault. In addition, the study area in the publication cited by SLPWA does not actually include any of the Finger Lakes and therefore does not appear to be relevant. *See*, attached affidavit of Eric Rodriguez ("Rodriguez Aff."), ¶7.

SLPWA asserts that DEC staff have not rebutted "the fundamental bases for Dr. Nieto's hypothesis, i.e., the effects of horizontal stresses being concentrated by a deep valley only a couple of hundred feet above the salt layer." SLPWA PIC Br. at 17. Not only does Department

staff challenge the basis for Dr. Nieto's conclusion that this lake valley is geologically similar to the dams and coal mines studied in the publications on stress relief, but Department staff challenges the relevancy of valley stress altogether. The quote from Brennan (1996), above, demonstrates that glaciated lake valleys in New York are not identical to stream valleys lying above coal mines in West Virginia. Moreover, SLPWA's attempt to downplay the vertical distance between the top of bedrock and the top of the salt layer as "a couple of hundred feet" is transparent. Ignoring the additional 4,000 foot horizontal separation between the bottom of the lake valley and the proposed storage caverns, the vertical separation between the bottom of the lake valley and the top of the salt layer is at least 700 feet.

Third, SLPWA included new calculations in their post-issues conference brief, which are purportedly offered to suggest that it is theoretically possible for valley stress relief conditions to exist in the shallow bedrock beneath Seneca Lake. Department staff objects to their inclusion of these figures, because SLPWA offers no explanation for why these were not presented in their offer of proof. These calculations were not part of their presentation at the issues conference and it's not appropriate for SLPWA to continually update their offer of proof, since the deadline to identify evidence they intend to use in support of their offer of proof was January 16, 2015. *See, Matter of Seneca Meadows*, Interim Decision, October, 26, 2012, ("Furthermore, absent express authorization by the ALJ or the Commissioner, no offer of proof may be supplemented once the issues conference is completed."); *Matter of Crossroads Ventures*, supra, at 10 ("Furthermore, it is not the purpose of post-issues conference briefing to allow a party to supplement, expand upon or otherwise remedy a deficient petition for party status.")

That aside, the title given to their new calculations indicates that Dr. Nieto attempted to quantify the "Available Unconfined Compressive Strength Under the Center of Seneca Lake at

Top of Rock." SLPWA PIC Br., Ex. C, (emphasis added). SLPWA doesn't actually say what they mean by "top of rock" because between the Syracuse formation and the bottom of the lake, there are at least eight distinct stratigraphic layers including the Camillus, Rondout, Oriskany, Onondaga and Marcellus formations. If the proposed project was actually located either under the center of Seneca Lake or the caverns were going to be anywhere near the top of bedrock, then perhaps their new calculations might be germane -- if they were done correctly. But since the project is not located at the top of bedrock, SLPWA's calculations are not appropriate.

It's also not clear why Dr. Nieto would use the compression tests results from Well No. 59, which are specific to the Camillus shale, and assume that all the rock layers between the salt through to the top of bedrock would have the same compressive strength. In other words, Dr. Nieto didn't calculate the strength of the each of the layers above the salt. Dr. Nieto instead inexplicably substituted the compressive strength of the Camillus shale and used that to indicate the strength of other rock that exists at the top of the lake valley.

SLPWA's post issues conference brief includes a new diagram, too. In the diagram, SLPWA used an orange box to indicate the location of "Field Sample (Unconfined Conditions)." SLPWA IC Br. at E-7. Their diagram shows how misleading SLPWA is on this point. The "field sample" they refer to was taken from Well 59 and Well 59 is not located in the middle of Seneca Lake. Well 59 is part of Gallery 1 of Arlington Storage Company's Seneca Lake Storage Project and the depth of the two samples shown in Table 4-2 of RE/SPEC's report, reproduced on E-7, is between 1841 to 1865 feet. *See*, SLPWA PIC Br., Ex C, p. E-7. SLPWA depicts the samples as if they were taken from the top of bedrock in the center of the lake, but the sample location is west of Seneca Lake, and almost 2,000 feet deep. Their decision to misapply and

"reformulate" the sampling location to fit their pre-determined conclusion should be rejected.

But that wasn't the only problem with SLPWA's Exhibit C.

Their new diagram, found on page E-7 of their brief, has other problems. For instance:

- The basis and methodology for development of a stress concentration factor of 2.9, which was used to significantly increase an assumed regional horizontal stress values, was not supported by published references.

- The diagram has a notation that indicates "Concentrated Stresses Because of Relief of 1250FT = 6000PSI (See calculation above)" but there is no calculation above that 6,000 psi figure showing its derivation.

- SLPWA's new diagram is titled "Stress Conditions Under the Center of Seneca Lake at the Top of Rock." SLPWA PIC Br., Ex. C, p. E-7. As stated above, the project is not located in the center of Seneca Lake, or at the top of rock. The project is located several thousand feet from the center of the lake and there is no evidence to suggest that the thrust fault depicted in the diagram exists, and that any such fault would actually extend to the storage caverns.

- On page E-7, there is a symbol used to indicate a "probable stress-release fault" and on the figure it shows the alleged fault as a connection between the salt layers and the center of Seneca Lake. This depiction is a misrepresentation of the stratigraphy below the project site. By comparison, Dr. Nieto's own Figure 1, which SLPWA submitted on January 16, 2015 and revised on January 30, 2015, shows that the proposed caverns are far deeper than the bottom of the lake, whereas this new drawing makes it appear that the bottom hole location of Well 34 is even with the bottom of the lake valley.

The items listed above are some of the more obvious problems with SLPWA's new Exhibit C. Furthermore, SLPWA's new figure and calculations suffer from several other flaws. For one, the pitch of the alleged "stress-release fault" shown on page E-7 is at odds with the literature on stress relief fractures. The 1981 USGS publication cited by Dr. Nieto and SLPWA indicates that near surface stress-relief fractures are horizontal under valley floors, whereas SLPWA's new drawing shows the fault with a vertical reach of 700 feet between the top of salt and the center of Seneca Lake. *See*, Wyrick and Borchers (1981) at 12. The horizontal nature of shallow stress relief features is seen in Figure 3.2-1 of Wyrick and Borchers, which is included in

Exhibit G of SLPWA post-issues conference brief (Figure 10 of Earthjustice's comments). Therefore, Dr. Nieto's theoretical drawing is not consistent with the literature cited by SLPWA.

Also, Dr. Nieto's Figure 1, as drawn on January 16, 2015 and January 30, 2015, shows his reinterpreted fault which, as originally drawn would have intersected the sediments under the lake just a few hundred feet from the shoreline of Seneca Lake. However, the new figure included in Exhibit C of their brief shows Dr. Nieto's fault has migrated several thousand feet east and now lines up perfectly with the center of the lake. Dr. Nieto's fault was also redrawn for the third time and included as Exhibit H of SLPWA's brief and either the centerline of Seneca Lake has changed since the last time they prepared this cross-section or SLPWA can't decide where it would be most advantageous to place its theoretical fault. The attached affidavit of Eric Rodriguez, includes copies of Dr. Nieto's drawings. As shown in Mr. Rodriguez's affidavit, Dr. Nieto's alleged fault has moved 2,600 feet since SLPWA's petition for party status. *See*, Rodriguez Aff., ¶4. Whatever their intentions, SLPWA's figures are not consistent and on that basis alone should be afforded no weight in this proceeding.

Most importantly, it bears noting that Dr. Nieto's new drawing is not based on any data. As FLLPG's expert, Dr. Sam Gowan, observed, all of SLPWA's theories are not backed up by "substantive geologic proof." OHMS Doc. No. 00030, Alpha Geoscience Report, at 35. The location of the SLPWA "hypothesized" fault is not based on an evaluation of geophysical logs or isopach maps; it's merely a theory and, at best, it's a theory of whether valley stress conditions exist under a lake where the project is *not* planned to be located. SLPWA PIC Br. at 17.

The only ostensibly site-specific information provided by SLPWA is Dr. Nieto's new, out-of-time, calculations of horizontal stress. However, on its face, the calculations included in Exhibit C of the post-issues conference brief are not sufficient to constitute an offer of proof, and

are an out-of-time attempt to supplement their petition for party status. Even if the Department were to accept these new calculations as an untimely supplement to SLPWA's offer of proof, there is so much information missing from their submission that it renders their calculations unreliable and meaningless. For instance, there is no indication of whether the methodology used by Dr. Nieto to calculate compressive strength is a methodology which has gained general acceptance in the scientific community, as required by *Frye* and *Wesley. See Frye v. United States,* 293 F.1013 (D.C. Ct. Appls., 1923); *Wesley*, supra. SLPWA's brief didn't provide any citations for the method they used so that the parties could verify their appropriateness.

What SLPWA did do was use two compressive strength sample results for the Camillus Formation (Well 59), averaged them together and then piled on different correction factors until they were able to conveniently get a "field-corrected unconfined compressive strength" that was below their calculated horizontal stress. They didn't explain why they chose to use the unconfined stress value for only one stratigraphic layer for their calculations. If it was Dr. Nieto's intent to evaluate the strength of the Camillus Formation, which was the formation analyzed by RE/SPEC and is the cap rock overlying the storage formation, then use of samples under 0 psi confining pressure is not appropriate because the formation is overlain by approximately 710 feet of rock, 500 feet of saturated sediment, and 450 feet of open water. Compressive strength increases with increasing confining pressure and use of sample results under 0 psi confining pressure underestimates compressive strength.

Regarding the correction factors applied by SLPWA, SLPWA did provide references for the corrections applied to their averaged and re-calculated compressive strength, but they didn't include a reference indicating why corrections were needed in the first place and two of the references they did cite are to unpublished theses. *See generally*, *Styles v. GMC*, 20 A.D.3d 338

(where separate tests, found to be reliable, were subjected to *Frye* hearing to determine admissibility of using tests in combination.) On the point of whether compressive strength calculations need to be corrected and by what amount, unpublished articles hardly qualify as general acceptance in the relevant scientific community. By virtue of being unpublished they have arguably not been seen by the scientific community much less accepted as reliable. It also bears noting that Dr. Nieto was the faculty advisor for the two students who authored the papers, and one of the papers acknowledged that "[m]any of the ideas presented in this dissertation originated with Professor Nieto." Cole, 2008. This hardly qualifies as general acceptance in the scientific community since the community in question must consist of someone other than the proponent of a theory. *See Matter of New York City Asbestos Litig.*, 2013 N.Y. Misc. LEXIS 6317, 2013 NY Slip Op 33467(U) (N.Y. Sup. Ct.), Nov. 26, 2013 ("Rather, the doctor intentionally disregarded accepted theories, providing a consensus of only one, his own opinion, and this cannot be accepted as reliable.")

Department staff checked the other citations used in Exhibit C, and those references do not support SLPWA's proposed supplement to their offer of proof. The reference to Figures 62 and 70 in Hoek and Brown, 1982, do not lead to a list of correction factors to apply to a rock sample, for either sample size or sample orientation. Figures 62 and 70 from Hoek and Brown are attached here as Appendix D. SLPWA made no effort to explain how they went from the Hoek and Brown's figures and arrived at a "correction for sample size" of 0.80. Dr. Nieto also used a "correction for time to failure" of 0.80 and he cites to "Hendron, 1968, Fig 2" as the basis of this correction factor. SLPWA PIC Br., E-6. However, Department staff obtained a copy of this text and Figure 2 does not exist in this publication. The figures in Chapter 2 of Hendron, 1968 are labeled 2.1 through 2.23. As a consequence, Dr. Nieto's correction factor of 0.80 is not

supported. In all, Dr. Nieto applied several correction factors for compressive strength and incorrectly assumed the sample was unconfined, and when added together he discounted the horizontal compressive strength of the Well 59 shale sample by 0.55 or 55%. It appears that Dr. Nieto only chose to apply correction factors that would benefit his theory and ignored those which did not. *See Selig v. Pfizer, Inc*. 185 Misc. 2d 600, 713 N.Y.S.2d 898 (N.Y. Sup. Ct. 2000).

In all, the evidence relied on by SLPWA to prove that it's possible for stress relief features to exist in the Seneca Lake valley is really no evidence at all. Moreover, even if SLPWA were hypothetically able to prove that valley stress conditions are present at the top of bedrock under the center of the lake, SLPWA must face the inescapable truth that the proposed project is not located and will never be located under the lake, much less the center of Seneca Lake. The available literature on valley stress relief – both published and unpublished – does not indicate that valley stress is a consideration at the depths of the proposed storage facility and nothing provided in SLPWA's brief demonstrates otherwise. In addition, SLPWA's attempt to supplement their offer of proof with new calculations of compressive strength should be denied. Post-issues conference briefing is not the time to supplement an inadequate offer of proof.

c. SLPWA's attempt to manipulate a cross-section from the Tully Valley Brine Field should be rejected.

Department staff addresses SLPWA's claims about valley stress, above; but SLPWA's reference to Tully Valley as an example of valley stress relief deserves separate mention in light of the fact that SLPWA misconstrued conditions at that project site. Attached is an Affidavit of Linda Collart ("Collart Aff."), who is the Department's Region 8 Regional Minerals Manager. Coincidentally, prior to joining the Department, Ms. Collart was employed by H&A of New York, one of the engineering firms who assisted with the Tully Brine Field Well Closure Plan

cited in SLPWA's brief. Ms. Collart performed geophysical and structural geologic interpretation work for the Tully Valley Brine Field. Thus, she is uniquely qualified to discuss the geology at that site.

SLPWA's post-issues conference brief included a portion of the 1992 Tully Valley report as Exhibit D of their brief. They also include as Exhibit E, a figure titled "Detailed diagram of Tully Valley thrust fault by Dr. Albert Nieto." In their brief, SLPWA claims at first that Exhibit E is "[a] diagram of the mechanics involved in the formation of the Tully Valley fault. . ." SLPWA PIC Br. at 13. SLPWA later describes Exhibit E as a "clear example of a thrust fault of the type Dr. Nieto describes in the Seneca Lake valley." *Id.* at 18. In reality, Exhibit E is an attempt by SLPWA and Dr. Nieto to reformulate, reinterpret and rewrite geological processes at another site that is not comparable to the proposed Finger Lakes site, all in a misguided effort to prove that conditions under the center of Seneca Lake are favorable for valley stress relief features. As indicated in Ms. Collart's affidavit, the probable faults drawn by SLPWA and Dr. Nieto in their Exhibit E do not exist. Collart Aff. ¶5-7.

Along with an investigation into available geological literature, Ms. Collart conducted an extensive review of geophysical well logs and drilling records of the wells in Tully Valley while employed at H&A. Based on the records and logging information available, there is no evidence of valley stress relief faulting at Tully Valley. *See*, Collart Aff., ¶6. Rather, the fault mapped in the Tully Valley by H&A is an east-west striking thrust fault induced by regional tectonic activity associated with salt formation. *Id*. ¶7. The small scale faulting described by Ms. Collart at Tully Valley is a result of northeast and northwest compressional stresses associated with the Allegheny Orogeny, and is not associated with valley stress relief. *See*, Collart Aff., ¶7.

SLPWA's attempt to use Tully Valley as an analogy for Seneca Lake is therefore rebutted by Department staff. Moreover, it was misleading for SLPWA to submit their "slightly simplified" figure taken from the 1992 Tully Valley report in the first place, as there is no data in the H&A report or elsewhere that supports Dr. Nieto's theory about faulting in that location either. SLPWA PIC Br. at E-17. Their offer of proof in this regard was not appropriate and should be rejected out of hand.

SLPWA is also wrong when they say, "Because the depth of the Seneca Lake valley is greater than the depth of the Tully Valley, the geologic features (fault, folds, fractured zones) described by Dr. Nieto in the Seneca Lake valley probably reach farther into the valley walls and are better developed than the features in the shallower Tully valley." Notwithstanding the fact that SLPWA doesn't have a single piece of sampling data to back up their theory that stress relief features are present under Seneca Lake, Tully Valley is actually deeper than the Seneca Lake valley. Page 3 of the 1992 Tully Valley report states very clearly that the valley is "an elongated north-south Valley with relief on the order of 1300 feet." See attached as Appendix D, pg. 3 of the Tully Valley Closure Plan. Assuming for the sake of argument that the Department agreed with SLPWA's opinion about the depth of the Seneca Lake valley at approximately 1200 feet, the Tully valley clearly is a deeper valley - - and definitively, stress relief features have not been documented.

3. There is no evidence of faulting, of any kind, above the salt layers.

In point 1(d) of SLPWA's brief, the petitioner repeats its assertion that faulting in the salt layer extends all the way up to the surface. SLPWA again takes the view that both of their proposed experts have provided evidence that there are faults below the project site – one is the north-south Jacoby-Dellwig fault discussed by Dr. Vaughn and the other is Dr. Nieto's

hypothesized thrust fault. Like FERC, Department staff acknowledges that the Jacoby-Dellwig fault is present along Seneca Lake and is a north-south strike-slip fault. *See*, FERC Order, ¶26. The salient point about the Jacoby-Dellwig fault is that it doesn't intersect any of the proposed caverns. As indicated in Department staff's initial brief, if the Department assumed for the sake of argument that SLPWA's proposed expert correctly drew the Jacoby-Dellwig fault on the brine field map, it shows without question that the fault is east of the proposed project and does not intersect either of the proposed storage galleries. *See*, DEC PIC Br. at 41. In essence, all the discussion in SLPWA's brief about the confinement of the salt layer and the surface expression of brine is a moot point since the fault is known by all parties to be east of Well 29. So whether or not the fault extends above the top of the salt interval does not impact the proposed storage operations.

In any case, it is not just DEC and FLLPG who conclude that the Jacoby-Dellwig fault doesn't extend above the salt layers. Jacoby and Dellwig's published figures show that the fault is limited to the salt. *See*, DEC PIC Br. at 36-39, 41; s*ee also*, Affidavit of Eric Rodriguez at ¶5,6 and attachment. Jacoby's 1969 paper shows that the tear fault does not extend into even the upper salt layers or the Camillus Formation. SLPWA tries to muddy the waters by claiming that FLLPG is confused about what Jacoby wrote in 1974 but there is no confusion in Jacoby's 1969 figures; the fault is shown and it doesn't extend any higher than the C salt. SLPWA PIC Br. at 22; DEC PIC Br., Appendix B.

Also, SLPWA makes the claim that DEC "misapprehends the types of displacements that occur with strike slip faults. Repeated or missing sections are indicative of reverse or normal faults but are generally not informative for a strike-slip fault. The displacement along a strike-slip fault is mainly horizontal." SLPWA PIC Br. at 23. It's interesting that SLPWA doesn't

think that geophysical logs can be used to locate strike-slip faults since the only evidence relied on by SLPWA and their witness, Dr. Vaughn, to prove the existence of the Jacoby-Dellwig faults is Jacoby's interpretation of geophysical logs. Department staff pointed out in staff's initial brief that SLPWA and GFS were relying on the portions of well logs that Jacoby published in order to support their statements that the fault exists in the first place. Nevertheless, to rebut SLPWA's statement, the attached affidavit of Paul M. Giachetti demonstrates that geologists most certainly can rely on geophysical logs to locate strike-strip faults - - and when it comes to Dr. Nieto's imagined fault – to prove the absence of a thrust fault. Affidavit of Paul M. Giachetti ("Giachetti Aff.") at ¶7-10

Department staff's review of the logs verifies that there is no displacement in the upper salt, Camillus caprock and the overlying formations. *Id.* As a result, staff review also confirms the information contained in Jacoby's 1969 cross-section which was based on specific rock cores and geophysical logs. Jacoby's cross-section, as confirmed by Department staff, show that the upper beds of the salt are consistent, with no breaks or repeat sections. There is simply no evidence of a thrust fault, like the one postulated by Dr. Nieto.

Department staff's post-issues conference brief responds to SLPWA's claims about the surface expression of brine noted by Dr. Jacoby. *See*, DEC Staff PIC Br., at 45-46; SLPWA PIC BR. at 20. SLPWA continues to assert that Jacoby's 1974 reference to a 1958 surface expression of brine is evidence that a fault exists above the salt layer. As noted in DEC staff's initial brief, Well 29 was subsequently solution mined under pressure after Jacoby's reported flow to the surface was mentioned in his 1974 paper. If there was a preexisting pathway to the surface along an open fault that was not sealed, then all of the water/brine used for solution mining would have leaked to the surface.

But it's clear no such event occurred, because Well 29 was put into service after the alleged 1958 surface expression. There is nothing to gain from dithering over what might have happened when the well was initially fractured since the same result was not reproduced upon solutioning. Again, the Jacoby-Dellwig fault does not intersect any of the storage caverns, so even if the Department abandoned all reason and assumed that the Jacoby-Dellwig fault extended all the way to the surface, this would still not be an adjudicable issue because the location of the inactive fault is known and does not have the potential to impact cavern integrity. Thus, all of the discussion by SLPWA in this portion of their brief is neither substantive nor significant.

4. The FEA demonstrates cavern integrity; SLPWA misunderstands the purpose and scope of the FEA.

In point 3(a) of their brief, SLPWA alleges that the FEA didn't take into account SLPWA's concerns about stress relief, fractures, and the full extent of Gallery 1. *See,* SLPWA PIC Br. pp. 35-38. SLPWA also seems to favor the 2002 FEA developed by Skaug and Nieland for the Arlington Gas Storage project. Regardless, there is no substantive and significant issue associated with the FEA.

SLPWA repeats their generalized concerns about regional tectonic stresses, and claims generically that any "finite element analysis . . .that fails to incorporate stress redistribution . . is mechanically deficient." SLPWA PIC Br. at 35. Department staff agrees that in-situ stresses need to be understood, but it appears SLPWA doesn't appreciate the purpose of the FEA. The FEA prepared for this project is a mathematical study of cavern and inter-cavern pillar behavior. Under different operating scenarios, the FEA is designed to show how different pressures exerted in the cavern would act on the cavern walls and deform the salt pillars between the galleries. Pointedly, as indicated in the introduction to the FEA, it is a study of the mechanical behavior of

the Syracuse salt. *See*, February 2010, *Final Report, Finite Element Analysis on Caverns 33 and 43, 34/44 LPG Gallery, Gallery 10 and Well 58 of Finger Lakes LPG Storage, LLC*, K. Fuenkajorn, Ph.D., P.E.

SLPWA references the FEA as if it is a regional study of all geological conditions observable both at the project site and as far afield as the center of Seneca Lake, where SLPWA alleges stress relief features could exist. However, the focus of the FEA is not on regional stress, and the conclusions in the FEA were determined to be valid regardless of how FLLPG and the petitioners chose to measure the depth of the lake. Appendix A of the February 2010 FEA lists the core-derived inputs into the FEA model, and Appendix B of the February 2010 FEA includes the analytical results from the finite element code (GEO) that was used by Dr. Fuenkajorn. SLPWA's petition for party status and their brief make general statements about what they believe should have been included in the model but their arguments lack specificity about where in the finite element code such information is relevant. For instance, SLPWA alleges that the FEA "failed to model the strike-slip tear fault widely recognized as running next to or through the storage caverns." SLPWA PIC Br. at 36. Of course, based on Dr. Vaughn's drawing of the Jacoby-Dellwig fault, not even SLPWA can prove that the Jacoby-Dellwig fault runs "through the storage caverns." *See* Vaughn Report, Ex. 3 & 4. Nonetheless, SLPWA thinks the FEA should have considered the fault, which is not within the modeled area. Figure 7 in the Final FEA shows the finite element mesh for the horizontal model prepared by Dr. Fuenkajorn. In this particular figure, the zone of interest is the area between well 34/44 and Gallery 10. SLPWA offers generalized comments about the FEA, but they failed to point to specific evidence (e.g. modeling data, scientific publications, etc.) which indicates that the location of the Jacoby-Dellwig fault would change the results of the FEA mesh. In fact, SLPWA doesn't include any

diagram or figures of their own to suggest that the Jacoby-Dellwig fault is close enough to warrant inclusion in the FEA. Their concerns are speculative ones, since the fault does not intersect the proposed galleries but the Department does not adjudicate speculative concerns.

Like GFS, SLPWA next argues that all of Gallery 1 was not modeled properly because they believe there is an "abandoned" cavern under Gallery 1. SLPWA PIC Br. at 36-37. As indicated by Department staff in the Initial Post-Issues Conference Brief, there is no abandoned cavern; to the contrary there is a portion of Gallery 1 that is filled with rubble. SLPWA makes generalized statements such as, "a non-sealed abandoned cavern is a potential pathway for fluid flow. . ." insinuating that there is some gallery connection that has escaped Department staff's attention. *Id*. Department staff disagrees with SLPWA's statements about Gallery 1. The 1976 sonar survey documents the span of the rubble pile. DEC is fully aware of the extent of hydraulic connection between the caverns that comprise Gallery 1. *See* Briggs Aff., ¶32. Also, the rubble filled portion of Gallery 1 is presently filled with brine and will not be used for storage so there is no basis for SLPWA's claim that the rubble pile is a pathway for communication given that LPG will be stored well above the rubble and how the caverns will be operated[16]. Draft permit conditions prepared by Department staff would also monitor for product movement outside of the planned storage locations, so although there's no legitimate basis for SLPWA's allegations, monitoring wells will detect product movement outside of the area accessed by the future storage well, FL1. Therefore, Department staff disagrees that more information is needed about the rubble filled portion of Gallery 1.

[16] SLPWA also didn't specify where they believed fluid would flow if product somehow reached the rubble pile, which is not likely considering the respective densities of LPG and brine and the location of the brine string. See, DEC Staff PIC Br. at 60.

5. Department staff's review of the project was comprehensive and pressure tests are a reliable indicator, but not the only indicator, of cavern integrity.

SLPWA next argues that the long-term pressure tests performed by FLLPG do not rule out gas pockets and that an increase in pressure during the pressure tests justifies their request for additional testing. SLPWA PIC Br. at 38. They also make unsupported claims that the pressure tests done did not correct for cavern expansion and temperature, although SLPWA did not point to any specific document in the record as proof of this claim. *Id*. More importantly, SLPWA cannot point to any specific statutory or regulatory standard, or industry standard, to suggest that pressure tests should not be used to establish cavern integrity or that a longer test period is required. Furthermore, FERC relies on pressure tests, in part, to establish integrity and at the adjacent Seneca Lake Gas Storage Project, used pressure test results as a basis to refute concerns raised by Gas Free Seneca on cavern integrity. *See* FERC Order, ¶26 and 30.

As to SLPWA's statement about ruling out gas pockets, there is no basis to suggest that gas is present in the caverns. Their offer of proof on this claim is the identical statement made by Dr. Vaughn, but there is no cite in their brief or Dr. Vaughn's report, available data or published literature to indicate the origin of the gas to which they refer or even the type of gas in question. In short, there's nothing before the Department to suggest that gas pockets are present in the caverns and would affect pressure testing results, since the proposed caverns have not been previously used to store LPG or any other product.

The length of the long-term pressure test is also not an adjudicable issue since SLPWA neglects to point to any regulatory requirement or even an industry standard specifying that a longer test is necessary. Department staff's detailed permitting requirements do not specifically require hydrostatic tests, although it's typical for applicants to conduct such tests prior to storage

operations. *See* OHMS Doc. No. 2011166576-00003, Doc. I.A.1. It is also important to recognize that pressure tests previously performed on Galleries 1 and 2 are not the last tests that will be performed on the caverns. Permit conditions will also require routine mechanical integrity tests, sonar surveys, casing inspections and evaluations, subsidence surveying and daily pressure readings. The draft permit conditions also require FLLPG to demonstrate that Gallery 10 is pressure-tight prior to storing LPG. These conditions, along with other measures that will be specified in FLLPG's operations plan will allow FLLPG to identify any significant leaks and take corrective action. *See* Briggs 4/15 Aff., attachment, "Conditions that Monitor Cavern Integrity".

Finally, Department staff is aware of the pressure increase on Well 33 on June 13, 2009. Exhibit 11 of the May 14, 2010 Reservoir Suitability Report contains a table of the pressures recorded by FLLPG while pressuring up the cavern and from the pressure test. *See* Response to NOIA1 on Confidential CD, RSR, Exhibit 11. On the third page of the table, the words "test start" are used on June 9, 2009, however, FLLPG subsequently advised Department staff that on June 12 or 13th, FLLPG pressured up the cavern and had to restart the test on June 15, 2009. This is why the pressures recorded from June 15, 2009 to June 25, 2009 are listed at the end of the table, because it is these 10 days which were relied on by FLLPG to determine that Gallery 1 is pressure-tight. The table and corresponding narrative were not artfully presented, and the wrong dates were noted by FLLPG, but the minimal pressure drop over the final 10 day test period was certainly within acceptable limits. Therefore, while SLPWA was correct that there was an increase during one of the days, FLLPG is also correct that the purpose of the test is to identify pressure drops, not pressure increases. *See* FLLPG's PIC Br. at 71. Over the longer 10-day period (June 15, 2009 to June 25, 2009), FLLPG demonstrated that Gallery 1 can hold

pressure. Coupled with the fact that Gallery 1 had a drill-in pressure that exceeded the expected operating pressure of the gallery, there is no factual dispute related to the long-term pressure test of Well 33 that requires adjudication.

6. No additional site characterization is necessary.

SLPWA's final argument under Point III(A) of their brief is that additional testing, specifically seismic, coring and radar should be used to locate or confirm the presence of faults. SLPWA PIC Br. at 42, *et seq*. But what SLPWA really requests when they contend that additional testing is needed to "better define and demonstrate whether proposed faults and other subsurface structures. . . actually extend into or close to the site area," is a requirement that FLLPG search for SLPWA's unsubstantiated "reformulated" fault since the location of the Jacoby-Dellwig fault is already known. *Id.* SLPWA has the burden of proof to demonstrate that their theorized or hypothesized fault exists. Apparently, because they have no data to suggest its existence, they somehow believe the Department should compel a permit applicant to search for a fault that no one (including their own witness, Dr. Vaughn) believes exists. Their argument is not reasonable.

Given the extensive amount of data that exists from this project site, there is more than a sufficient and reasonable basis to make permitting decisions. There are approximately 58 geophysical logs on file for the site area, sonar surveys dating back to 1976, several published papers by Jacoby on the structural geology beneath the site and the behavior of salt, a history of successful storage operations in this field since 1964 and a history of successful solution mining in this field for almost a hundred years. There is a considerable volume of data that has been collected that characterizes the site, including sonar surveys, fracturing pressures, and coring data. This is all in addition to the re-entry pressure information, long-term pressure tests,

structure and isopach maps, geomechanical evaluations, and the FEA that were completed by FLLPG and deemed acceptable by the Department.

SLPWA argues that seismic reflections are needed and that when a fault is found, follow-up laboratory testing should be done to determine the permeability of the fault and other structures. SLPWA PIC Br. at 43. However, there is great deal known about the ability to connect caverns through pressure connections, and the nature of salt related to both fracturing and healing has been studied in *this* brine field since at least the 1960s. Department staff discussed this more fully in staff's post-issues conference brief, where staff quoted from Dr. Jacoby and his unbiased opinion that fracture connections that are unsupported will heal and that healed fractures are stronger than the original salt. DEC PIC Br. at 31. Salt behavior is not a mystery and there is no need for additional cores to prove this point.

The case law is clear that the purpose of adjudication is to litigate an applicant's ability to meet applicable regulatory requirements when there is a bona fide dispute among the parties. An adjudicatory hearing to determine the amount of data a geologist should rely on when determining the completeness of an application is not appropriate and will invariably lead to an endless academic debate removed from any question of whether any specific regulatory requirement would be met. *See Matter of Akzo Nobel Salt*, Interim Decision of the Commissioner, January 31, 1996. Department staff finds that FLLPG's application meets all statutory and regulatory requirements and their permit application, which includes all of the information identified above including their Reservoir Suitability Report, establishes cavern integrity.

7. SLPWA demands a brine budget then questions whether an accurate budget can be kept.

SLPWA raises two points about the Department's draft permit conditions; first, that ongoing solutioning will make the pressure tests a less reliable indicator of tightness, and second, that FLLPG should be required to keep a brine budget as "a safeguard against brine loss. . ." SLPWA PIC Br. at 48. DEC staff addressed the claim about ongoing solutioning in DEC staff's initial brief. DEC PIC Br. at 55, et. seq. Those points will not be repeated here since SLPWA didn't raise anything new. Related to their request for a brine budget, SLPWA now equivocates in their opinion on whether a brine budget would be useful. They say on the one hand that it would be used to detect brine loss but then go on to talk about how difficult it would be to keep an accurate brine budget. SLPWA PIC Br. at 50, (". . .an accurate salt budget would be a crucial and timely safeguard . . but it remains unclear whether such a budget could be kept with sufficient accuracy to serve this purpose").

Regardless of where SLPWA lands in their debate, there are already sufficient safeguards built into the draft permit conditions to detect loss of product and to monitor cavern growth. For example, there is a condition that requires daily pressure monitoring, which essentially will serve as an ongoing pressure test for the life of the project. Additionally, FLLPG would be limited to 2% cavern growth by operational solutioning, annually, as provided in the draft permit conditions. SLPWA's counsel doesn't believe the first part of draft permit condition 1(b) satisfies their desire for a brine budget, if they indeed think one is needed. *Id*. at 48. However, draft permit condition 1(b) specifies that product displacement fluid is limited to brine from the base of the brine ponds, which ensures that the most saturated brine available is used to displace product. Monitoring and record keeping of the salt saturation level of the displacement fluid must be performed at least daily during product displacement, and made available to the Department upon request. *See* DEC PIC Br. at 31-32, 63-65. In addition, FLLPG would, as part

of its routine procedures, meter the volume of LPG injected and withdrawn from wells, which along with salt saturation levels will indicate how much brine is being used. These routine and mandatory operational procedures will be detailed in the Operations, Maintenance and Contingency Plan required by Draft Permit Condition 7. Since draft permit condition 1(b) would also limit cavern growth to 2% annually – and FLLPG will record both product in and product out, alongside monitoring of salt saturation levels – the daily monitoring that SLPWA may or may not want, will be done. *See also* Briggs Aff. ¶29-31. Therefore, whether one refers to this as a brine budget or product monitoring, the draft permit conditions do include a means to both track cavern growth and detect a loss in pressure.

8. GFS continues to misunderstand or misstate facts about the geology of the site and the proposed project.

During the issues conference, GFS indicated they had three issues for adjudication: the rubble pile, the shape of Gallery 1 and the roof of Gallery 2. Tr. 224. Their petition for party status also included their opinion that the cross-sections prepared by FLLPG didn't meet with the GFS expert's approval and that their proffered expert, Dr. Clark, suggested a number of other permit conditions that should be imposed on the project. In post-issues conference briefing, GFS now proposes to adjudicate six specific sets of questions, all under the guise that such issues are germane to the long term integrity of Galleries 1 and 2. *See* GFS PIC Br. at 20. As framed, GFS's questions are textbook examples of the type of academic debate that is not appropriate for an adjudicatory hearing. *See Matter of Buffalo Crushed Stone,* Decision of the Commissioner, *supra,* 2008 N.Y. ENV LEXIS 78, at 11, *citing, Adirondack Fish Culture Station,* Interim Decision of the Commissioner, August 19, 1999. Moreover, their questions are based on an inaccurate understanding of the project and gas storage. GFS has been reviewing and commenting on the proposed project since at least 2010 but their post-issues conference brief

indicates that they don't fully understand the gas storage process or what FLLPG proposes to do at this particular site. As detailed below, GFS failed to raise a substantive and significant issue and their attempt to use the adjudicatory process to debate the finer points of how geologists should draw cross-sections or depict rubble piles should be rejected.

a. The cross-sections provided by FLLPG meet DEC staff's standards.

Several of GFS's concerns related to the cross-sections prepared by FLLPG at Department staff's direction. Mainly, GFS is of the opinion that every piece of geological information collected in the region needs to be included on a cross-section in order for FLLPG and the Department to be able to respond to a problem. For instance, GFS expresses a desire for a graphical display of the Jacoby-Dellwig fault on FLLPG's cross-sections, citing their expert's opinion that it's "dangerous" to not have a visual depiction of the fault. GFS PIC Br. at 21. Department staff can certainly agree with GFS that maps are important tools, but it's an exaggeration to say that it's dangerous if a fault, which does not intersect the galleries and is limited to the salt interval, is not shown on a given map. Department staff has developed a detailed list of mapping requirements, and through the three Notices of Incomplete Applications issued to FLLPG, DEC staff certainly required the cross-sections to be updated to serve staff's needs. For DEC staff, the cross-sections provided a means to overlay the different sonar surveys so as to depict cavern growth and to provide an overview of the layout of the brine field, including nearby wells which are plugged and abandoned. *See* OHMS Doc. No. 201166576-00003, Docs. I.A.1, I.A.4, I.A.7 & I.A.11.

While Department staff requires maps to be correct, there is no regulatory or statutory requirement for all of the information in the permit application to be displayed on the cross-sections. At present, ECL 23-1301(1)(a) requires FLLPG to provide "a map showing the

location and boundaries of the proposed underground storage reservoir" and FLLPG has done so. Department staff's detailed permitting requirements also direct applicants for a storage permit to include in their Reservoir Suitability Report geologic cross-sections that "depict any faults or structural or stratigraphic features that affect either, continuity and extent of the formations shown or effectiveness of containment of gas in the storage reservoir." OHMS Doc. No. 201166576-00003, Doc. I.A.1. These detailed requirements are not promulgated regulations, but serve as Department staff's measuring stick for the completeness determination for a gas storage permit application. Since the Jacoby-Dellwig fault does not intersect the proposed storage caverns and would not affect storage containment, there was no specific requirement to include the fault on maps provided to DEC staff.

The same is true for the rubble that now underlies Gallery 1. GFS doesn't approve of the way that rubble pile is depicted on the cross-sections and they allege that the cross-sections "grossly understate the maximum storage capacity of the caverns. . ." GFS PIC Br. at 23. There seems to be some confusion about the rubble piles. The parties here are talking about two different accumulations of rubble; the rubble pile created during active solutioning of the caverns when they were created, and the rubble that will later accumulate during operational solutioning of the cavern (which would be limited to 2% growth, annually). It is only the latter class of rubble that is included in the maximum storage capacity indicated in the draft permit conditions. *See* Briggs, Aff. at ¶23-28[17] FLLPG does not propose to store LPG in the existing rubble pile;

[17] Draft permit condition 1d defines storage capacity as "the total volume of void space that exists within the caverns and any rubble pile above the cavern bottom, determined by the most recent sonar survey as of the issuance date of this permit, regardless of well or tubing configuration and accessibility or use of such void space for product storage and/or monitoring." OHMS Doc. No. 201166576-00012. Therefore, the void space within rubble that exists above the most recent sonar bottom at the time of permit issuance will be included in any future determination of maximum capacity.

their application is limited to the upper portion of Gallery 1. So GFS is wrong on the facts when they say that a failure to understand the true depth of the existing rubble pile will lead to an inaccurate calculation of storage capacity in the draft permit. They are also incorrect when they say that "uncertainty about the four caverns of the gallery has resulted in a plan to limit LPG storage to just one cavern" GFS PIC Br. at 20. GFS's manufactured reasoning, notably, is not accompanied by a citation to the record.

As to GFS's claim that DEC staff and FLLPG do not correctly "depict the rock piles" and that this, "increases the risk of delayed leakage detection," GFS is wrong again. The connectivity of the caverns that make up Gallery 1 is known, and has been known for some time. In fact, the connections were mapped in 1979 and this map was made available to the parties on the CD of confidential materials. *See* FLLPG's Response to NOIA 3, App. B, p. 19. Dr. Gowan provided a more recent depiction of the assumed connections at the base of the galleries in his, February 9, 2015 report. *See* OHMS Doc. No. 201166576-00030, Alpha Geoscience Report, Figure 2; Briggs 4/15 Aff. at ¶21.

Both GFS and SLPWA believe there is an abandoned cavern under Gallery 1 but there is nothing to this claim and there is no need for further exploration into the rubble pile. What was shown in the 1976 sonar is depicted on the cross-sections for the purposes of showing conditions at the time of that survey. Later sonars showed the area to be filled with rubble. Regarding the connectivity of the caverns and the span of the rubble compared to the span of the proposed storage areas, the 1979 figure in FLLPG's response to NOIA 3 shows that the development and configuration of the gallery was due to solutioning between wells that resulted in a long north-south orientation with a relatively narrow east-west span. In addition, the most recent brinefield map for the site depicts the maximum cavern spans in the east-west orientation and shows the

pressure connections which are oriented north-south. The above information, along with a basic understanding of the Well 43 1976 sonar, was used to conclude that the east-west extent of the rubble does not extend beyond the maximum cavern span derived from the most recent sonar surveys which are represented by the maximum gallery outlines shown on the brinefield map. *See* Briggs Aff. at ¶32.

Since the area depicted on the 1976 sonar of Cavern 43 is now filled with rubble, which has porosity, the Department agreed that this portion of the cavern is in hydraulic communication with Gallery 1, and that the all caverns that comprise Gallery 1 are hydraulically connected to each other. It is, in fact, documented in FLLPG's application that all of the caverns within Gallery 1 are hydraulically connected through the rubble. Because the caverns are hydraulically connected is precisely the reason they are proposed to be permitted as a single gallery, rather than as separate galleries.

Nonetheless, evaluation of re-entry pressures for the caverns accessing this gallery and the results of the long-term brine pressure test, in combination with historical and recent sonar survey data, helped Department staff to conclude that the gallery is suitable for LPG storage. This conclusion is further supported by evaluation of geophysical logs and site geology, geo-mechanical studies, and the results of the FEA.

GFS's third bulleted question is therefore based on a wrong premise – that FLLPG hasn't accurately measured Gallery 1. The to-be permitted capacity of Gallery 1 is only the area above the existing rubble pile and any new rubble added as a result of operational solutioning will be included in the maximum permitted capacity. Nevertheless, FLLPG has provided information on the extent of the existing rubble pile to the Department. In its October 9, 2009 application FLLPG states: "The rubble pile thickness is the difference between the original total depth and

bottom depth recorded by the latest sonar survey" and in the same application FLLPG in the Well Status and Condition Report provides the depth in feet to the "Top of rubble, bottom of existing cavern." *See* Briggs Aff. at ¶XX If FLLPG chooses in the future to store LPG in the existing rubble pile, which would require prior approval from the Department, then it would be more reasonable to follow FERC's lead and at that future time require a deeper characterization of the rubble pile. GFS advocates that the Department adopt FERC's sonar schedule and the requirement to characterize the existing rubble pile in Arlington's Gallery 2. FERC's requirements were reasonable since natural gas storage has a higher pressure gradient than LPG and natural gas storage does not involve the use of brine, which serves to separate stored product from the top of the rubble pile, and natural gas may be stored in the rubble since Arlington has a ready means of removing the brine from within a portion of the rubble. Unlike FLLPG, with no well casings in the rubble, Arlington Well 45's casing is landed in the rubble pile, and it will be used for brine withdrawal when natural gas is injected into Arlington's Gallery 2 for the first time. Therefore, during cavern de-brining, natural gas injected into the cavern could displace brine out of the cavern down to the depth of Well 45's production casing in the rubble. Here, however, there is no reason to require additional testing and analysis since the currently brine-filled caverns that make up FLLPG's Gallery 1 are pressure tight, product will only be introduced to and stored at the top of the caverns, and no brine withdrawal wells are landed in rubble. Therefore, Department staff disagrees that there is a need for further characterization of Gallery 1, the rubble pile or resubmission of additional cross-sections, as advocated by GFS in their first three bulleted issues for adjudication.[18]

[18] GFS also argues: "The incompletely characterized rubble presents a particular problem with respect to Gallery 1, because the Applicant needs to know how much brine is required to float

GFS's remaining points in section II(A)(2) of their brief are addressed in the attached affidavit of Peter S. Briggs. *See* Briggs Aff. ¶13-16. In short, there is no support for GFS's claims that there is a potential for leakage because the "rubble abuts the walls of the caverns" GFS PIC Br. at 27. As stated above, there will be no storage in the existing rubble pile and the pile will not be flushed with brine. *See* DEC PIC Br. at 60; Briggs Aff. ¶25. GFS doesn't appear to understand the LPG storage process involved. Also, there are no planes of weakness outside of the salt interval, contrary to GFS's theory about a "misfired fracturing." GFS PIC Br. at 27. For one, the fracturing gradient – the amount of pressure needed to initiate a fracture in the salt – is twice the maximum storage pressure, meaning there is no way for storage operations to create or reopen previously fractured connections and second, the zones of weakness discussed in Jacoby, 1974, are limited to the salt interval.

Department staff also disagrees with the claim that the western edge of Gallery 1 requires further evaluation. GFS is correct that a portion of the cavern outline is shown as a straight line. Department staff noted this feature and remarked in the first Notice of Incomplete Application dated January 11, 2010, that "[f]or the portion of the cavern outline currently shown on the map due west of Well No. 34, it is the Department's understanding that this linear feature would be re-evaluated prior to submission of this storage application because the sonar for Well No. 34 does not show such a feature. Rather, the linear feature shown is from Well No. 44's sonar." OHMS Doc. No. 201166576-0003, Doc. I.A.4. FLLPG responded on May 14, 2010 and

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the LPG above the lip that keeps the hydrocarbon in Cavern 43." GFS PIC Br. at 26. GFS must still believe that the caverns need to be filled with brine. They then say, "the exposure of the lip to unsaturated brine will dissolve the salt lip over time, requiring a higher maximum fill level" LPG injection ceases before the level of the product reaches the safety weep holes located above the bottom of the brine string or the maximum allowable fill level. This is how product levels are maintained. There is no "lip" that can be dissolved by under-saturated brine. See Briggs Aff. ¶17, 18.

included an April 5, 2010 interpretation by Sonar Well Services, Inc. Id., Doc. I(A)(5) Exhibit D. Department staff was satisfied with Sonar Well Service, Inc.'s response and the submission of Figure 14 attached to their letter showing that the sonar of Well 34 does not exceed the western boundary of the Well 44 sonar. *See* OHMS Doc. No. 201166576-0003, Doc. I.A.7. The northern maximum gallery outline on the August 28, 2014 Brinefield Map Showing galleries for Gallery 1 was derived from an analysis and combination of sonars from both Wells 34 and 44, whichever of the two showed the greatest dimension. There is therefore no compliance issue and no factual dispute. Whether the gallery outlines are deemed acceptable by Department staff is dictated, at least initially, by ECL 23-1301. Department staff would, of course, prefer for them to be depicted with a certain degree of preciseness. However, when they are not, the cure is to have the applicant resubmit any necessary maps and analysis. The cure is not an adjudicatory hearing.

Finally, Department staff disagrees with GFS's opinion that FLLPG refused to give Department staff updated cross-sections showing the rubble pile. *See* GFS PIC Br. at 27. If FLLPG refused to give the Department information, DEC staff would not have issued a completeness determination. Although an Article 23 permit is not a permit subject to the Uniform Procedures Act, it should be nevertheless be noted that under the Department's regulations, "[t]he completeness of an application, as defined in section 621.2(f) of this Title, will not be an issue for adjudication." 6 NYCRR 624.4(c)(7).

b. Well 58 has integrity; GFS's claims about the roof of Well 58 are incorrect.

Next, GFS repeats their belief that the roof of Well 58 has dropped and they add a new, unsupported claim that somehow there was a "tripling in the diameter of the roof, an undesirable expansion of unsupported rock." GFS PIC Br. at 30. They cite to a portion of Department staff's presentation at the issues conference for their new claim, though Department staff never made

any such statement. What Department staff indicated at the issues conference is that the product blanket used during storage operations will prevent the roof from growing due to operational solutioning. GFS seems to imply that the roof has tripled in size during active solution mining and that this is disproportionate to the growth seen in the rest of the cavern. However, when viewing the A-A' cross-section that GFS points to as evidence of this untoward "tripling", one can see that over time, the cavern grew in size rather proportionately. *See*, August 2014 Gallery Map and Section, CD of Confidential Materials. Additionally, any "tripling" in the diameter of the cavern roof in Gallery 2 was considered and analyzed in the FEA, which concluded that the gallery is adaptable for storage purposes.

There is also no data to back up GFS's claims about the shape of the cavern's roof. They keep claiming that there was a five foot drop in the roof of Well 58 but in their brief, they say: "(2) Cross-section AA' carefully marks 2155' and 2162' in depth, a difference of seven feet. The drawing does not show a five-foot difference between the top of the 2011 sonar's green outline and the top of the 2013 sonar's turquoise outline." GFS PIC Br. at 30. At this point, it's unclear what GFS is arguing. The marks of 2155′ and 2162′ are leader lines for the purpose of pointing to a general location on the vertical section and are not pointing to an exact scaled difference between the points, those marks are labeled "TOC = -2155" and "CS=9 5/8 36#J55= -2162′." The abbreviation "TOC" is top of cavern and the mark of -2162′ is a reference to the shoe of the 9 5/8" casing. It's not clear why GFS would single out these reference points as they are clearly not drawn to scale, and were probably drawn in that manner to accommodate labelling on Cross-section AA′. Otherwise the labelling for the two depths would have been on top of each other.

GFS also says that the edges of the roof in the 2011 and 2013 sonar are the same and that the center is "visibly sagging in 2013." *Id*. In fact, the edges of the 2011 and 2013 are not the same, and in both pictures shown in their expert's report, the top centers of the cavern are at the same elevation - 2150 feet, after correcting for the five-foot misalignment in the 2013 survey. *See,* GFS Petition for Party Status, Clark Report at 20. Moreover, the shade plots supplied by Sonarwire Global, LLC, which are found in the "July 1, 2013 Well Reports" file on the Confidential CD, shows that although there is some natural variation in the profile of the cavern, the roof of Cavern 58 in 2013 is demonstrably flat, and there is no "downward bulge" as GFS states.

The sonar reports also provide scores of data detailing the depth and bearing of the tool used by Sonarwire Global, yet GFS doesn't specify what data points are a concern. The best they can do is blow up a picture of Well 58 and claim the roof is sagging with a downward bulge. But there is no evidence at all that the shape of Well 58's roof has changed at all between the two sonars despite the fact that the well was actively solutioned between 2009 and 2013. GFS also seems to think that because FLLPG's expert, John Istvan, noted that the sonar equipment has an expected level of accuracy, this is an admission that the sonars are not reliable. GFS PIC Br. at 31. It's unreasonable to think two different sonars done two years apart by two different companies using different tools and operators will reproduce, identically, every single data point. However, those considerations aside, the fact that the 2011 and 2013 sonars produced such consistent results provides confidence, rather than skepticism, in the results of the sonar surveys.

Finally, GFS claims that the occurrence of a "suspected porosity zone" in the Camillus Formation presents a risk that may affect cavern integrity. As indicated in the attached affidavit

of Peter S. Briggs, cores taken from Well 59 establish that the "suspected porosity zone" is instead located in the Bertie Unit above the Camillus, and that the Camillus is fully intact and is a competent part of the proposed storage caverns' roof at certain caverns in both FLLPG Gallery 1 and Gallery 2. *See*, Briggs Aff. ¶9-16. Coring done at the Arlington's Seneca Lake Storage Facility also confirms the competency of the Camillus, and the lack of permeability in the "suspected porosity zone" located above the Camillus. *Id*.

Clearly what GFS is trying to do is cast doubt on the integrity of Gallery 2, yet the data they reference casts no such doubt. To raise an adjudicable issue through identification of some defect in the application, "an intervenor must make a credible showing that such a defect is present and likely to affect permit issuance in a substantial way." *Buffalo Crushed Stone, Ruling on Issues and Party Status, supra,* 2008 NY ENV LEXIS 27 at 10. GFS has not made any credible showing that the roof of Well 58 is sagging or the Camillus lacks integrity, nor have they pointed to any engineering analysis to suggest that sonar surveys have the level of preciseness and replication that GFS demands. More to the point, GFS has failed to present any technical analysis at all to suggest the span of the cavern or the shape of the cavern roof is, from an engineering standpoint, a legitimate concern. All they have done is point to a picture and made a number of unsupported claims. This is no more than an attempt to create a dispute out of thin air and it should be firmly rejected. In all, GFS failed to raise a substantive and significant issue about the shape and integrity of Well 58's roof. The FEA supplied by FLLPG, along with all the other information supplied in the Reservoir Suitability Report, demonstrates that Well 58 is suitable for storage. Considering the myriad permit conditions that would be in place requiring, for example, mechanical integrity tests, additional sonar surveys and daily pressure monitoring, any potential concern associated with the cavern's integrity would be mitigated.

c. GFS is confused about the caverns evaluated by the NETL.

Point II(A)(5) of GFS's brief largely repeats their demand for more information on the rubble pile, Gallery 1 and competency of the Camillus Formation, and those points are addressed above. However, in this section, GFS also makes the claim that FLLPG's Well 58 was previously rejected by the National Energy Technology Laboratory ("NETL") for re-use in a compressed air energy storage project ("CAES"). Notwithstanding the fact that FLLPG is not proposing to operate a CAES project, GFS is misreading the NETL report. They cite to a map on page 12 of the NETL report as proof that it was Well 58 that was rejected, but the referenced map does not point to any existing well locations, it just has an arrow pointing to the original location of the CAES proposal, across from the north side of the access road off on Route 14. *See* Seneca Compressed Air Energy Storage (CAES) Project, Final Phase 1 Technical Report, at http://www.smartgrid.gov/sites/default/files/doc/files/NETL-Final-Report-9-6-12.pdf. Notably, Well 58 is not located on the north side of the access road off of Route 14 and the words "Cavern 58" do not show up in the document. GFS PIC Br. at 32.

In addition, on page 26 of the NETL report, it states that "The original Seneca CAES DOES proposal was based on a January, 2008 study conducted by Parsons Brinkerhoff Energy Storage Services (PBESS) and EPRI. That study determined that an existing cavern (Gallery #2 on the US Salt property adjacent to the former NYSEG Seneca Natural Gas Storage facility) of approximately 5 million cubic feet in size could operate safely and reliably in support of a 180 MW CAES plant." *Id.* at 26. The reference here was to Gallery 2 at the Seneca Lake Natural Gas Storage Facility now operated by Arlington Storage Company, not FLLPG's Gallery 2. However, the conclusion about Arlington's Gallery 2 is the exact opposite of what GFS contends. In other words, Arlington's Gallery 2 was suitable for a CAES facility and Arlington's

Gallery 2 was the "Original CAES Proposal" shown on the map on page 12 of the report. GFS was therefore incorrect about FLLPG's Well 58 being rejected for use in a CAES project.

In addition, it's not appropriate to draw any conclusions about the ability to re-use solution mined caverns for LPG storage from a report that evaluates the suitability of a cavern to store for compressed air. The pressures used in compressed air storage are higher than LPG storage, the materials have different properties, the number of product cycles differs considerably (260 cycles/year for CAES) and the economics of the projects differ. *See* NETL Report at pp. vi & 26. In any case, FLLPG's Well 58 was not rejected in the NETL study, notwithstanding the fact that the well's suitability for CAES is irrelevant. GFS is again not in possession of all the facts and is advocating positions based on the wrong information. There is therefore no reason to question the suitability of Well 58 for LPG storage based on GFS's misread of the NETL report.

d. DEC staff's draft permit conditions already address the concerns specified in GFS's brief.

Department staff previously addressed the additional permit conditions proposed by GFS. *See* DEC PIC Br., pp. 62-65. In their post-issues conference brief, GFS repeated the list of permit conditions and argued that such conditions were necessary to provide "real-time, continuous measurement, rather than testing over periods as long as 10 years." GFS PIC Br. at 34. GFS also argued that several of the wells could be converted to monitoring wells and that DEC staff's proposed permit conditions do not allow for early detection of a problem or change in the cavern. However, staff's draft permit conditions already require real-time monitoring and conversion of existing wells to monitoring wells.

GFS is correct that sonar surveys would be required at least every 10 years, but sonar surveys are not the means proposed by DEC staff to monitor daily operations. Instead, as

detailed in the April 15, 2015 affidavit of Peter S. Briggs, a real-time digital pressure recorder would be required for Well FL2 for the purpose of monitoring pressure and detecting any migration of LPG from Cavern FL1 to Cavern FL2. A real-time digital pressure recorder would likewise be installed on Well 52 for the purpose of monitoring pressure and isolation of Gallery 10. *See* OHMS Doc. No. 201166576-00012, Condition 1(h).[19] Any change of pressure at Well FL2 indicating migration of product would require reporting in the form of a written report to the Department while a pressure change at Well 52 would be considered a non-routine incident, and require prompt reporting to the Department in accordance with the draft permit conditions where FLLPG would need to describe any corrective actions taken. Additionally, pressure readings of the storage wells in Gallery 1 and 2 would be recorded and evaluated at least daily.

Mechanical integrity tests would also be required at least every 5 years, with a report due to the Department within 90 days of completion of the test. Subsidence surveys are required at least every two years and the draft permit conditions require a host of other measures that would provide early detection of a problem and a plan for FLLPG's response to any emergencies. GFS glosses over the fact that there will be daily monitoring of the wells, because they would rather infer that monitoring will only be done every 10 years. But this only further exemplifies how GFS has fails to fully recognize the full suite of mitigation measures contained in Department staff's draft permit conditions and the fact that such measures rebut their concerns about cavern integrity. Consequently, since real-time pressure monitoring of certain wells is already required and daily pressures of the storage wells will be recorded and any changes in the wellbore and cavern would be detected through the types of routine testing required of every other LPG

[19] Draft permit condition 17 also gives FLLPG the option to use Well 29 as a monitoring well.

storage operator in the State, GFS has failed to demonstrate why the additional permit conditions they seek, such as borehole sensors and strain tape, are necessary to impose on FLLPG.

9. SLPWA and GFS, in all respects, failed to raise an adjudicable issue related to cavern integrity.

To summarize the cavern integrity issues, SLPWA proposes four different cavern integrity issues for adjudication in addition to their shared water quality issue with GFS and SLC. They argue first, that the Jacoby-Dellwig fault has not been properly considered. However, this inactive strike-slip fault is already well known and documented in the record, and according to even SLPWA's own proffered report, is hundreds of feet east of the proposed storage galleries. Next, SLPWA argues that a second type of fault is now present at the project site and is a thrust fault connecting the proposed storage galleries and the bottom of Seneca Lake. SLPWA calls this a hypothesized fault for good reason, since there is no data available to suggest its existence. Department staff reviewed the geophysical logs available for the project area. In the attached affidavit of Paul M. Giachetti, there is no indication that such a thrust fault is present. SLPWA suggests that it's possible for a thrust fault to exist and that it could have been caused by valley stress relief, a geological condition observed in some stream valleys. However, as described in detail above, the proposed project is not located under a stream valley, but is located several thousand feet west of a filled, glaciated lake valley. The proposed storage caverns are also at least 2,000 feet below the surface and at least 700 feet deeper than the top of bedrock in the adjacent lake. All published literature related to valley stress relief cited by petitioners also indicates that valley stress is only a concern at up to 300 feet deep, at the most, and beyond this depth, the effect of the topography "disappears." Molinda (1992), supra.

SLPWA then argued that it is theoretically possible, based on new calculations prepared by Dr. Nieto, for horizontal stresses beneath the lake to overcome the compressive strength of

the underlying rock and result in valley stress relief conditions. However, SLPWA offers nothing in their brief to indicate that the methodology used by Dr. Nieto is generally accepted in the field of geology and supported by publications. Dr. Nieto cites to two unpublished theses, which he supervised, as a basis for several "correction factors" applied to his formula and cited to specific figures in other publications which do not support his theories. SLPWA's misuse of a cross-section from the 1992 Tully Valley Brine Field Closure Plan, where SLPWA's expert presented a "slightly simplified" figure from the report to show yet another fault that does not exist, raises questions about the integrity of SLPWA's petition for party status. In addition to trying to "reformulate" the Jacoby and Dellwig fault, SLPWA now sees fit to reformulate any other geologic cross-section to serve their ends. That includes cross-sections produced for Tully Valley and even their own cross-section, which (as indicated in the attached affidavit of Eric Rodriguez) has changed over time. *See* Rodriguez Aff. ¶4. As the Department's issues conference proceeding has continued, Dr. Nieto's hypothesized fault has moved 2,600 feet and now incredibly lines up to pad their irrelevant concerns about valley stress relief.

SLPWA then claims that the finite element analysis submitted by FLLPG fails to incorporate geological considerations such as valley stress, the full extent of Gallery 1 and faulting. However, the FEA was proper in scope and its intended purpose was to establish the mechanical stability of the proposed caverns based on the thickness of the inter-cavern pillars as they exist today and how they will behave over the life of the facility. SLPWA argues that their issues about stress relief and non-existent faults should have been included in the FEA but they failed to identify why, based on the model used by FLLPG's experts, such factors, if they existed, would be close enough to impact the results from the FEA. SLPWA comments are too general to serve as a basis for adjudication.

Finally, SLPWA takes issue with the pressure tests and contends that the draft permit conditions do not adequately account for the injection and withdrawal of brine. However, the hydrostatic tests performed by FLLPG are routinely relied upon by both DEC and FERC, as a factor in determining cavern integrity. Site-specific information available from this site provides a complete and comprehensive picture of the geology of the site and the reservoir suitability report prepared by FLLPG evaluated both the existing condition of the galleries, and the expected integrity of the caverns during the projected life of LPG storage operations.

GFS's and SLPWA's proposed cavern integrity issues overlap where that GFS argues that additional site characterization is needed of Gallery 1 to further explore any connectivity of the caverns in Gallery 1 through the rubble pile. They both take issue with the quality of FLLPG's cross-sections, suggesting that the Department adjudicate how information should be displayed on maps. GFS also makes a number of unsubstantiated claims about the shape of Gallery 1 and Gallery 2, claiming that one side of Gallery 1 cannot meet permitting requirements and that the roof of Gallery 2 has dropped 5 feet between sonars conducted in 2009 and 2013. None of GFS' claims have merit. FLLPG has already mapped connections between the caverns in Gallery 1 and provided information on the extent of the rubble pile so there is no further testing or analysis needed for the rubble pile. Since LPG will not be stored in the existing rubble pile, and the use of brine as a displacement fluid and the location of the brine string prevents circulation through the rubble, no additional tests are necessary prior to permitting. GFS's claims about Well 58 are also not backed up by a sufficient, fact-based offer of proof. Since Well 58 was actively solutioning between 2009 and 2013, changes in the overall cavern shape are expected but the sonars do not show any demonstrable change in the shape of the roof. Further, as discussed herein and in Staff's Initial Post-Issues Conference Brief, all cavern roofs

will have a protective pad in place to prevent additional solutioning of salt at the roof. In all, petitioners SLPWA and GFS failed to supply an adequate offer of proof and their suggestion to adjudicate issues of purely academic interest should be denied.

F. There is No Scientific Support for the Claim that LPG Storage Will Increase Chloride Levels in Seneca Lake.

GFS, SLPWA and SLC all claim that LPG storage in solution-mined caverns will lead to an increase in Seneca Lake's salinity levels, and all three proposed parties premise their theory on their allegation that prior LPG storage in a different set of caverns previously caused an increase in chloride levels in the lake. The proposed parties suggest different mechanisms for how LPG storage operations would actually reach Seneca Lake. SLPWA claims an unhealed fracture or some other conduit through bedrock could lead to a salinity increase in Seneca Lake, and that a connection between the proposed caverns and the bed of the lake would account for the elevated saline levels observed by others. *See* SLPWA Party Status Petition at 18. GFS and SLC claim that instead of a leak, the pressure added to the cavern during storage activities would strain the surrounding salt and this pressure strain would deform and flex the salt formation over 10-14 miles away to the point where the salt layers outcrop under the lake. GFS PIC Br. at 51.

Not only do the proposed parties fail to provide a sufficient offer of proof to establish that prior LPG storage in a different set of solution-mined caverns caused an increase in Seneca Lake's chloride levels, they also completely fail to demonstrate that their theories for how brine would reach the bottom of the lake are scientifically plausible. To establish the reliability of their theories, the proposed parties must be able to demonstrate that the relevant scientific community has accepted that salt or the storage caverns can behave in the way they allege. Chief Administrative Law Judge James T. McClymonds directed the parties to indicate whether the

principles advanced in their petitions for party status meet the test for reliability established in *Frye* and *Wesley*. Yet, none of the three potential parties provided any legal analysis at all on this point. As a consequence they have failed to adequately demonstrate that their dubious theories meet the applicable legal test for reliability.

1. Historical discharges to the lake are a more reasonable explanation for elevated chloride levels.

GFS, SLPWA and SLC all advocate that because prior LPG storage by TEPPCO supposedly coincided with an increase in chloride levels in the late 1960s that future LPG storage in a different set of caverns will lead to a similar increase. Their proof that an increase occurred are in the publications by Wing et. al., and proposed expert, Dr. John Halfman, who at different times measured chloride levels in the lake. Both of those publications speculate about potential contributors to chloride levels but neither study was designed to specifically identify the source of chloride concentrations. Wing (1995) concluded that some source of saline groundwater is contributing to chloride concentrations and Halfman (2014) said there wasn't enough data to determine the cause.

SLPWA, GFS and SLC are quick to point to previous LPG storage as the source of elevated chloride levels but they certainly did not provide any documentary proof that LPG storage caused the increase. Nor do these parties seem to know anything about TEPPCO's operations, such as the amount of LPG stored or the number of product cycles over the life of the project, or the actual LPG storage pressures which they claim are the cause of the chloride spike. What they allege is a coincidence, and as indicated by Department staff, there wasn't even a coincidence to speak of. *See* DEC PIC Br. at 69, *et seq*. The proposed parties do not provide any raw data of their own, nor do the parties do any deeper analysis into the other industrial discharges that were occurring during the time of the chlorides increase. They merely adopt the

anecdotal and superficial conclusions of proposed expert Dr. Myers[20] that industrial discharges to the lake are either too small or too late to account for the lake's chloride levels. SLC PIC Br. at 34-35; GFS PIC Br. at 50.[21]

In their initial briefs, GFS and SLC argue that Department staff did not rebut their assertions. GFS PIC Br. at 53. SLC also claims, incredibly, that DEC staff merely shrugged off its concerns, as if it is Department staff's burden to demonstrate that mine waste discharges were, in fact, responsible for chloride levels recorded in the 1960s. SLC PIC Br. at 39. Of course, it's the proposed party's burden to demonstrate an issue exists, not the other way around. Nonetheless, Department staff didn't need to look far to prove that SLC and GFS grossly underestimated the amount of chlorides discharged into the lake from mine sites. Department staff attached just one document to staff's initial brief to rebut petitioner's claim that industrial discharges were too small to have caused elevated chloride levels. *Id.* The Huff Report, attached to Department staff's initial brief, shows that at one single outfall there was an average discharge of 40,000 pounds of chlorides per day during 1980, several years after efforts to reduce chloride inputs were underway. *See* Collart Aff. ¶17. There were also three mining operations on Seneca Lake during the 1960s, not to mention other sources of chlorides, such as road salt.

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[20] GFS refers to Dr. Myers as both a hydrologist and a hydrogeologist. *See*, GFS PIC Br. at 47 and 51.

[21] Actually, Halfman (2014) concludes that the elevated concentrations observed today can be attributed to time lag to reach equilibrium from the input of the 1970s slug from the Himrod mine. Therefore, according to Dr. Halfman, groundwater inputs are not required to have the present day lake chloride concentrations and they could be attributed solely to mine waste. Dr. Halfman states that discharge loads prior to the late 1990s are unknown but mine wastes larger than present day must have been input to attain the slow historical rise in concentrations from 1900 to 1965 and that a large slug of chloride entered the lake in the 1960s from an unknown source to cause the 1965 peak.

GFS argued in a footnote that the 40,000 pounds per day "would not account for the 300,000 ton increase in chloride that would have been needed to record a 50 percent increase in the chloride levels in Seneca Lake." GFS PIC Br. at 50, n54. GFS misses the point. What the Huff report indicated is that after almost twenty years of regulatory efforts, discharges of 40,000 lbs per day in 1981 were still occurring in Seneca Lake from this one facility– meaning that the peak of chloride discharges would have been much higher than 40,000 lbs per day, and coupled with other sources of chlorides, would easily reach Halfman's 300,000 tons.

Regardless, as indicated in staff's initial brief, it's clear that GFS and SLC didn't do their homework. They provided the Department with an offer of proof based on a substandard evaluation of mine waste discharges so that they could discount mine waste as the predominant source of chlorides. Of course they claim that they "reviewed available evidence" but that's clearly not the case. GFS PIC Br. at 49. The Huff Report attached to DEC Staff's initial brief is just one of many documents that demonstrate the concerted effort by DEC and DOH to prevent discharges into Seneca Lake and over time, all the parties agree that chloride levels have improved. GFS now argues in their brief that the improvement in salinity levels since the 1970s does not explain how the levels increased in the first place. *Id*. at 54. No, but the fact that salinity levels decreased while both LPG and natural gas storage continued certainly rules out storage operations as the culprit.

Since GFS, SLC and SLPWA speak of coincidences, there are a few other coincidences that might be of interest. For one, Department records show that 30 of the 69 solution salt mining wells at the International Salt Company site in Watkins Glen were drilled during the 1950s through the 1960s. An increase in production would naturally lead to an increase in waste streams. Collart Aff. ¶14-15. Second, International Salt closed their facility on Cayuga Lake in

1962 and production was shifted to the Seneca Lake facility. *Id*. Third, the decline in Seneca Lake salinity during the mid-1970s noted in the petitioners' briefs coincide with strict regulation of salt waste discharge. Prior to establishment of DEC, enforcement actions taken by DOH in the mid-1960s required the elimination of process waste streams discharged to Seneca Lake, which took several years to implement. *Id*. at ¶13. DOH enforcement only directed the salt companies to construct facilities to dispose of or treat their wastes by the late 1960s. DEC took over regulatory jurisdiction of the facility discharge permitting/oversight between 1970 and 1971. It wasn't until late 1974 that USEPA National Pollutant Elimination System (NPDES) permits were issued for the salt mines establishing salt waste discharge limits at the plants' outfalls. Since 1974 -1975, both salt companies had implemented most of their water pollution control systems to attempt to meet the discharge limits of the NPDES permits. These three facts – drilling of additional wells, closure of the Cayuga Plant and enforcement – coincide with the alleged increase and decrease in chloride levels in the late 1960s though the mid-1970s.

At the issues conference, Department staff pointed out some of the records available which ruled out prior LPG storage activities as the cause of chloride levels. Tr. 359. Despite knowing that Department staff had records which contradicted the basis for their conclusions, GFS argues in their initial brief that statements by Department staff's counsel at the issues conference are not enough to rebut GFS's allegations because they are statements made by an attorney, not a member of technical staff. GFS PIC Br. at 53. Every statement made by Department staff's counsel at the issues conference and after on the technical aspects of the proposed project is grounded in the technical opinion of Department staff. Nevertheless, the attached affidavit from Linda A. Collart discusses the information on historical mine waste discharges that both GFS and SLC disregarded. As detailed in Ms. Collart's affidavit, the mine

waste discharges that preceded state regulatory efforts by the DOH and the DEC far exceed the quantities of chlorides that Dr. Halfman believes are needed to explain the alleged spike. *See* Collart Aff. at ¶14, et. seq.[22] Again, SLC demands that the Department now investigate, but it is SLC and GFS who should have reviewed discharge monitoring reports and enforcement documents before leveling accusations and calling for an adjudicatory hearing. SLC PIC Br. at 33. Unlike the proposed parties, the Department has looked at the sampling information available, and all of it contradicts GFS's and SLC's claims.

GFS's new table of known chloride inputs to Seneca Lake also requires correction. For instance, they separately list the Himrod and Morton salt mines as separate facilities, but they are the same mine with two separate discharge sources reported by Halfman (2014) and Wing (1995). Also, the figure of 1,314 tons/yr used for "permitted salt mine" in the third row of GFS's new table was taken from Wing (1995). Attached to Ms. Collart's affidavit is a summary of the mass loading of chlorides from International Salt's Outfall 002 from 1987 to early 1993. Collart Aff., Attachment XX. This summary shows that Wing (1995) significantly underestimated the discharges to the lake. GFS tries to rely on Wing (1995) to prop up their conclusion that mine waste discharges couldn't explain the chloride levels seen when Wing's paper was published. But DEC records show that the daily average from just Outfall 002 at International Salt

[22] While DEC staff certainly do not have a reason to dispute the chloride levels recorded at different time by different researches, care must be taken when combining such information to draw conclusions about the source of chloride levels. For example, as indicated in the attached affidavit of Paul Giachetti, the data sets relied on by USGS researcher Glen Jolly, came from different sources. *See* Giachetti Aff. ¶29. Data collected from 1960-1964 was collected by NYSDOH and data from 1964-1974 was collected by the Department. None of the parties have analyzed whether the samples were taken from the same location or using the same collection and analytical methods. For the sake of argument, and determining whether the proposed parties have raised an adjudicable issue, Department staff will assume a "spike" occurred. However, that has not been established and it is not the purpose of this proceeding to investigate pollutant loadings into the lake which are unrelated to LPG storage. *Id*. at ¶29-30.

Company's facility was 19,442 lbs per day (or 3,219 tons per year), when Wing reports a loading of just 1,314 tons per year. Collart Aff. at ¶24. Again, GFS bases its proposed issue for adjudication on the wrong information or information which is lacking.

GFS, SLC and SLPWA were determined from the outset to blame TEPPCO's previous LPG storage operations as the cause for elevated levels of chlorides and they therefore ignored all facts which contradicted their claims. There is no rational basis to conclude that prior LPG storage caused an increase in chloride levels in Seneca Lake. As described above, the lack of regulation of mine waste discharges in the 1960s and earlier is the most likely explanation for why chloride levels were elevated in the first place and changes in the handling of the numerous waste streams from mining operations due, in part, to the regulation of the industry by DOH and DEC, is the most reasonable explanation for why conditions in the lake have improved.

2. GFS attempts to shift the burden to DEC and FLLPG to disprove Dr. Myers' unbelievable theory.

In points II(C)(2)(c) & (d) of their initial brief, GFS argues that the various tests performed by FLLPG were insufficient to rebut GFS's theory of how deformation of the salt layers will impact salinity levels in Seneca Lake. They claim that the pressure tests done by FLLPG did not rebut GFS's claims about the ability of salt to deform and that the mechanical integrity tests "do not address the critical question whether the salt beds could conduct a pressure signal. . ." GFS PIC Br. at 56. They then claim that "[b]ecause no testing was conducted in the salt beds . . ." FLLPG and DEC cannot rebut GFS's claims. The problem with GFS's claim is that neither FLLPG nor DEC has the burden to prove that Dr. Myers' pressure signal is impossible, although common sense tells us that it is. The burden is on GFS to 1) prove that their "cap on the toothpaste" theory is generally accepted in the relevant scientific community and 2) lay a proper foundation for applying that theory to the facts of this proceeding. The cold

truth is that they offer absolutely no scientific evidence establishing the criteria under which it is even possible for a dry, impermeable salt layer to transmit pressure over the distance it would take to reach the point where the salt layers outcrop under Seneca Lake. Nor can they establish that the specific caverns proposed to be used by FLLPG fit that non-existent criteria. *See* Giachetti Aff. ¶17, 23-24. There is simply nothing to rebut. Dr. Myers offers a "theory" that is not backed up by reference to any scientifically accepted means to test the theory and Dr. Myers, as noted in staff's initial brief, doesn't believe that the data even exists to construct a model. *See* DEC PIC Br. at 76. Department staff must agree with Dr. Sam Gowan that this is not science.

GFS also makes contradictory claims about Myers' hypothesis. For instance, when discussing the pressures tests done on the caverns, GFS reasserts that "the walls of the adjacent caverns easily could distort the pressure signal, however, and prevent it from reaching the monitoring equipment located on the inside of the adjacent cavern." GFS PIC Br. at 56. It is illogical to claim that adjacent caverns would easily distort the "signal" sent during pressure tests, but somehow believe the same caverns wouldn't distort a *lower* "signal" sent during storage operations. Since the hydrostatic pressure exerted during a pressure test is higher than the maximum operating pressure during LPG storage, it would be impossible for Myers' pressure strain to be felt miles and miles away when the modeling done by Dr. Fuenkajorn shows that a higher pressure will not cause deformation a short distance away from the cavern.

It is worth noting as well that GFS did not present their toothpaste theory to FERC during review of Arlington Gas Storage Company's proposal to add natural gas storage capacity to adjacent caverns. GFS recently petitioned for re-hearing in that proceeding and argued that FERC needed to reconsider the potential for natural gas storage to cause brine to seep through bedrock and reach Seneca Lake. Instead of a "pressure signal", GFS appears to have adopted

SLPWA's hypothesis for how brine might reach Seneca Lake, that is, through fractures in the bedrock. Neither the advection theory, where salt is carried along as a dissolved material, or the pressure wave or "toothpaste" theory has any legitimacy but it's telling that GFS took two different positions in two different proceedings. In any case, FERC recently confirmed their findings on cavern integrity, noting that their earlier findings on cavern integrity also served as "the basis for the conclusion that Arlington's proposed operational pressures are unlikely to result in brine water seeping into Seneca Lake or other potable groundwater sources." Arlington Storage Company, LLC, *Order Denying Rehearing*, 151 FERC ¶62,160 (May 20, 2015), available at: http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150520-3042 (last visited May 22, 2015). Department staff agrees.

In all, the parties have failed to raise a substantive and significant water quality issue. The parties have failed to demonstrate that prior LPG storage was the cause of elevated levels of chloride in Seneca Lake and record evidence made available by Department staff rebuts the premise of GFS and SLC's assumptions about the amount of mine waste discharge into the lake from the 1960s to the present. SLPWA's concern that fractures could be reopened and cause brine to enter the bottom of Seneca Lake is not a substantive concern. As FERC indicated, any fractures in the salt created solution mining would have healed and the pressure need to fracture salt in the first instance far exceeds the pressures needed for effective LPG Storage. *Id. at* GFS's water quality issues fail as well. GFS failed to include any analysis at all in their initial post-issues brief demonstrating that either their advection-like or toothpaste theory, proffered to suggest that LPG storage would increase chloride levels in Seneca Lake, has been generally accepted in the scientific community. As they failed to do so and cannot do so, petitioners GFS, and SLC, to the extent they rely on GFS's offer of proof, are essentially asking the Department

to move forward with costly and time consuming litigation to adjudicate a principle that no one else in the scientific community has ever heard of and that cannot, according to GFS's expert, even be proven. *See Frye*, supra.

G. Public Safety Impacts Have Been Adequately Addressed.

As detailed in Department staff's initial brief, the potential risks to public safety were adequately addressed in the Quantitative Risk Assessment ("QRA") prepared by Quest Consultants and the QRA has now been supplemented with the February 9, 2015 Quantitative Transportation Risk Analysis for the Finger Lakes LPG Terminal, and the issues conference record. *See* DEC PIC Br. at 82; OHMS Doc. No. 201166576-00003. In post-issues conference briefing, GFS's only claims are that Department staff: "attacked Dr. Mackenzie's qualifications, made unsupported arguments about the scope of federal preemption and mischaracterized appropriate risk analysis methodology." GFS PIC Br. at 37. GFS's brief, however, failed to offer any meaningful analysis on their expert's qualifications and the case law related to expert testimony. GFS also failed to include adequate legal support for their claim that public safety concerns associated with rail and pipeline transportation can be considering in SEQR balancing when the underlying SEQR evaluation is preempted by federal law. As to their claim that the Department mischaracterized risk assessment methodology, GFS never stated in their brief what was allegedly mischaracterized so this assertion goes unsupported.

1. GFS's proposed public safety expert is unqualified to testify.

GFS complains that the FLLPG and the Department "attacked" the qualification of GFS's proposed public safety expert, Dr. Mackenzie. *Id*. However, it was in error for GFS to offer Dr. Mackenzie as an expert in risk assessment in the first instance. GFS admits freely that Dr.

Mackenzie does not "hold a degree or have specific experience in petrochemical engineering" but they argue this doesn't affect his ability to qualify as an expert because "[w]hat Dr. Mackenzie did for his hospital is the same thing he did in assessing the risks of the Project." *Id.* at 39. Under the right circumstances, it may be possible to qualify an expert based on experience alone, but the type of experience Dr. Mackenzie claims to have in a hospital setting does not qualify him to testify on accident rates at LPG storage facilities. Hospitals and LPG storage operations do not share much of anything in common, and Dr. Mackenzie is clearly not familiar with how storage caverns are constructed or operated since, as GFS indicates, he had to draw on information collected by other proffered experts. Nor does Dr. Mackenzie have any experience with the transportation or pipeline sector. Also, while Dr. Mackenzie may be familiar with identifying where risks may be present in a hospital (e.g., the risk of spreading disease), this does not necessarily qualify Dr. Mackenzie to prepare a mathematical evaluation of the likelihood of such risks.

In order to be considered an expert, a witness must have some specific training in the subject matter of that expert's testimony. *See Behard v. Coren*, 21 A.D.3d 1045 (2nd Dept. 2005), (where pathologist was not qualified to provide testimony about surgical and gastroenterological treatment). GFS believes that Dr. Mackenzie's work in storm and epidemic preparedness qualifies Dr. Mackenzie to produce a reliable quantitative risk analysis of transportation and pipeline operations but there is no reading of applicable case law to support this notion. Dr. Mackenzie is simply not qualified to serve as an expert in a hearing and his report should, at most, be treated as a comment on the DSEIS. Department staff can then address his concerns in the forthcoming response to comments.

a. References to incidents at other facilities should take into account the similarities and the differences with the proposed project.

In Staff's Initial Post-Issues Conference Brief, Department staff indicated that while there is always something that can be learned from incidents at other facilities, a review of incidents at other facilities requires an analysis of both the similarities and differences between the design of the facilities where incidents occurred and the project under review. DEC PIC Br. at 64. One of the problems with Dr. Mackenzie's analysis is that he took a simplistic view of what occurred at other facilities and assumed that if an accident occurred at another storage project, then it should be used as predictive measure of whether an incident would occur at FLLPG's proposed facility. Dr. Mackenzie did not consider whether the stored product was the same or whether a salt dome or bedded salt storage facilities was involved. As detailed in the attached affidavit of Peter S. Briggs, the incident at the Yaggy facility is not an appropriate analogy for FLLPG's project. Briggs Aff. ¶33-44. Similarly, SLC's qualitative statements that LPG storage presents a greater degree of risk than natural gas storage or aboveground storage is not appropriate. *See* DEC PIC Br. at 81. In contrast, Quest Consultant's QRA provided a site-specific analysis of the risks posed by the proposed project that considered not only the likelihood of an accident but the scale of impacts in such event. *Id*. at 82-83.

2. The safety of rail and pipeline transportation cannot be considered in SEQR findings.

While the record in this proceeding adequately addresses all petitioners' concerns related to public safety (see, Department Staff's Initial Post-Issues Conference Brief, pp. 82-89), DEC staff must respond to GFS's incorrect assertion that DEC is not preempted under federal law from either reviewing the public safety risks of the Project related to the rail transport of LPG or considering such risks in SEQR balancing. GFS Brief, pp. 39-41.

a. Petitioners' citations are inapposite or otherwise fail to support their arguments.

GFS circuitously argues that DEC does not, but actually does, have jurisdiction over the rail transport safety aspects of the Project. The fact remains, DEC does not. GFS's citation to *Flynn v. Burlington N. Santa Fe Corp.*, 98 F. Supp. 2d 1186, 1190 (E.D. Wash. 2000) is inapposite. The "ancillary facility" which could be regulated by a state in that case was a railroad refueling facility, not a train, or part of one, or railroad tracks, or a bridge over which the train tracks run. Thus, *Flynn* does not in any way support DEC regulation of the items that GFS and the other petitioners appear to want DEC to regulate. Also missing the point is the GFS cite to *Borough of Riverdale – Petition for Declaratory Ruling – The N.Y. Susquehanna & Western Railway. Corp.*, STB Finance Docket No. 33466 (S.T.B., Sept. 9, 1999). In that matter, the "ancillary facilities" of concern were a truck terminal, weigh station, and corn processing plant. The Project here proposes no such rail facilities.

Also, GFS's reliance on *Lane Construction Corporation v. Cahill et al.*, 270 A.D. 609; 704 N.Y.S.2d 687; 2000 N.Y. App. Div. LEXIS 2633 (App. Div. 3rd Dept.) is misplaced. In *Lane*, the court upheld the Deputy Commissioner's denial of a mining permit based on SEQR and "the over-all record concluding 'that the project's impacts on the historical and scenic character of the community including visual and other impacts on the community cannot be sufficiently mitigated.'" Here, however, GFS argues that the Department can deny the Finger Lakes LPG Project because federal preemption precludes the Department's imposition of measures to mitigate risk to public safety from LPG rail transport. In other words, petitioner contends the Department can regulate where it is federally preempted from doing so if it goes through a back door created by SEQR, by flat-out prohibiting the Project. But there is no support in *Lane* for any such proposition; no area implicated by federal preemption served as the grounds

for permit denial in *Lane*. See also the analogous matter of *Fourth Branch Associates v. New York State Department of Environmental Conservation*, 146 Misc. 2d 334; 550 N.Y.S.2d 769; 1989 N.Y. Misc. LEXIS 843) (where the court concluded in pertinent part, "Having determined SEQRA to be inapplicable to NYSDEC's determination of AHDC's section 401 water quality application [because FERC preempted hydroelectric dam licensing under the Federal Power Act and other federal law], it follows that the Commissioner has no authority to require either the filing of an environmental assessment form, or the preparation of an environmental impact statement, or to direct a public hearing pursuant to SEQRA.")

b. The Department is preempted by federal law and regulation from regulating railroad safety.

Department staff has carefully reviewed the extensive body of law governing railroad operations and safety and the transportation of LPG in interstate commerce and has concluded that New York is preempted from addressing these issues. Congress has made clear in a series of statutory enactments that the laws and regulations pertaining to railroad safety, railroad operations, and the shipment of hazardous materials in interstate commerce should be nationally uniform and within the exclusive jurisdiction of the federal government. The Federal Railroad Safety Act, 49 U.S.C. § 20101 et seq., the Interstate Commerce Commission Termination Act, 49 U.S.C. § 10101 et seq., and the Hazardous Materials Transportation Act, 49 U.S.C. § 5101 et seq., each contain express preemption provisions which prohibit states from regulating matters that Congress determined are more appropriately regulated at the national level. Courts have consistently upheld Congress's intent and overturned state laws and regulations that delve into these areas.

i. Federal Railroad Safety Act

The Federal Railroad Safety Act ("FRSA") was enacted as the Federal Railroad Safety and Hazardous Materials Transportation Control Act of 1970 (Pub. L. No. 91-458) to promote safety in all areas of railroad operations, reduce railroad-related accidents, and reduce deaths and injuries to persons . . . ." *Id*. The purpose of the Act was to create a "nationally uniform" system of laws, regulations, and orders related to railroad safety. *See CSX Transportation v Easterwood*, 507 U.S. 658, 661, 679 (1993); 49 U.S.C. § 20106(a)(1).

The FRSA authorizes the Secretary of the Department of Transportation ("DOT or Secretary") to "prescribe regulations and issue orders for every area of railroad safety." 49 U.S.C. § 20103(a). These regulations are included in 49 C.F.R. 209-272. DOT regulations also contain a preemption provision in 49 C.F.R. § 172.822, "Limitation on actions by states, local governments, and Indian tribes," that states any "law, order, or other directive of a state . . . that designates, limits, or prohibits the use of a rail line . . . for the transportation of hazardous materials . . . is preempted."

The STB's jurisdiction preempts a wide range of state and local regulation of rail activities to prevent a patchwork of regulation that could unreasonably interfere with interstate commerce. The Senate Report on this legislation explained:

> The hundreds of rail carriers that comprise the railroad industry rely on a nationally uniform system of economic regulation. Subjecting rail carriers to regulatory requirements that vary among the States would greatly undermine the industry's ability to provide the "seamless" service that is essential to its shippers and would weaken the industry's efficiency and competitive viability. S. REP. NO. 104-176, at 6 (1995); 49 U.S.C. § 10501(b).

To implement Congressional intent, the ICCTA provided the STB with express preemption over:

> (1) the transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules), practices, routes, services and facilities of such carriers; and

> (2) the construction . . . operation . . . of spur, industrial, team, switching, or side tracks, or facilities . . . is exclusive. Except as otherwise provided in this part, the remedies provided under this part with respect to regulation of rail transportation are exclusive and preempt the remedies provided under Federal or State law. 49 U.S.C. § 10501(b).

Notably, the ICCTA requires railroads to act as "common carriers," to the exclusion of competing or contradictory state rules. "It is well established that a state or local law that permits a non-federal entity to restrict or prohibit the operations of a rail carrier is preempted under the ICCTA." *See Norfolk Southern RR Co. v. City of Alexandria*, 608 F.3d 150 (4th Cir. 2010) (citing Green Mtn. R.R. Corp. v. Vermont, 404 F.3d 638, 643 [2d Cir. 2005]). Pursuant to 49 U.S.C. § 11101, railroads providing transportation or services subject to the STB's jurisdiction are obligated to provide the same upon a reasonable request.

Courts have consistently held that the STB's exclusive authority to regulate railroad operations preempts state environmental reviews of railroad operations. "The distinction between 'economic' and 'environmental' regulation begins to blur. For if local authorities have the ability to impose 'environmental' permitting regulations on the railroad, such power will in fact amount to 'economic regulation' if the carrier is prevented from constructing, acquiring, operating. . . a line." *City of Auburn v, Surface Transportation Board*, 154 F.3d. 1025, 1029 (9th Cir. 1998). (Citations omitted).

Accordingly, "[a]ny form of state or local permitting or preclearance [requirement] that, by its nature, could be used to deny a railroad the ability to conduct some part of its operations or proceed with activities that the [STB] has authorized" is "'categorically' or 'facially' preempted." *Adrian & Blissfield R.R. v. Vil. of Blissfield*, 550 F.3d 533, 540 (6th Cir. 2008) (quoting *New Orleans & Gulf Coast R.R. Co. v. Barrois*, 533 F.3d 321, 332 [5th Cir. 2008]); see also *Green Mtn. R.R. v. Vermont*, 404 F. 3d. at 641 (state's pre-construction land use and permit

requirements on proposed railroad transloading facilities were preempted); *City of Auburn v. United States*, 154 F.3d. 1025, 1029-1031 (9th. Cir. 1998) (ICCTA preempted state and local environmental regulations requiring railway to submit to a permitting process before making repairs and improvements on its track line). "Congressional intent is clear, and the preemption of rail activity is a valid exercise of congressional power under the Commerce Clause". *Green Mtn*, 404 F. 3d. at 642 (quoting City of Auburn).

There is a limited role for States in the environmental regulation of railroads. First, the ICCTA does not preempt EPA-approved statewide plans under federal environmental laws such as the Clean Air Act; courts will attempt to harmonize the ICCTA with federally recognized environmental regulations. *See Association of Railroads et al. v. South Coast Air Quality Management District*, 622 F.3d 1094 (9th Cir. 2009) (comparing federally approved plans with local air district rule regulating air pollution from idling trains, which applied exclusively to trains and was not part of the EPA-approved statewide implementation plan and was preempted). Thus, DEC can administer its federally-approved Title V air permitting program at facilities operated by, or under the "auspices of, a rail carrier", and include the federal Spill Prevention, Control and Containment plan as a condition of the major oil storage facility licensing program required by EPA under 40 C.F.R. Part 112.

Second, the ICCTA does not preempt states from enforcing regulations in a manner that does not unreasonably burden railroad activity. For example, prohibitions on the dumping of harmful substances or wastes are permissible where they are generally applicable regulations (not exclusively applied to railroad activities) and do not unreasonably burden interstate commerce. *Auburn & Kent*, 2 S.T.B. 330 (1997). Similarly, the ICCTA does not preempt local laws that have a more remote or incidental effect on rail transportation. See *Norfolk Southern*

R.R. v City of Alexandria 608 F.3d 150, 157 (4th Cir. 2010) (citations omitted). In addition, state and local governments may act pursuant to their police powers to regulate rail road activity involving local electric, building, fire and plumbing codes. *See Green Mtn. R.R. Corp. v. Vermont*, 404 F.3d 638, 643 (2d. Cir 2005).

However, using SEQR findings to deny Norfolk-Southern the right to transport LPG by rail based on public safety risks does not fall within any of the three permissible areas of regulation carved out of the ICCTA. As indicated above, GFS is advocating that DEC use the SEQR process as a back door to federal preemption over rail safety. The Department may generally discuss impacts and can address those parts of the proposed Project that are within FLLPG's control, but SEQR balancing and the imposition of mitigation measures is out of the question.

iii. The Hazardous Materials Transportation Act

In 1975, Congress enacted the Hazardous Materials Transportation Act ("HMTA"), U.S.C. 49 U.S.C. § 5101 et seq., and amended it in 1990 and 2005, to establish uniform standards for the transportation of hazardous materials in interstate commerce to avoid a multiplicity of state and local laws and regulations. *See Jersey Cent. Power & Light Co. v. Lacey*, 772 F.2d 1103, 1112 (3d Cir. 1985), cert. denied, 475 U.S. 1013 (1986); S. Rep. No. 1192, 93rd Cong., 2d Sess. 1. Notably, the 1990 amendments strengthened the HMTA's preemption provision to read as follows:

> "Except as provided in subsections (b), (c), and (e) of this section and unless authorized by another law of the United States, a requirement of a State . . . is preempted if: (1) Complying with a requirement of a State . . . and a requirement of [the HMTA] is not possible; or (2) The requirement of a State . . . as applied or enforced, is an obstacle to accomplishing and carrying out [the HMTA]." 49 U.S.C. § 5125(a).

The HTMA empowers the Secretary to promulgate regulations the Secretary of Transportation to "prescribe regulations for the safe transportation . . . including security, of hazardous materials in intrastate, interstate, and foreign commerce." 49 U.S.C. § 5103(b)(1). Pursuant to this authority, DOT has promulgated the Hazardous Materials Regulations ("HMR"), 49 C.F.R. §§ 171-180.605. Together, the HMTA and HMR establish a scheme of regulation that controls the movement of hazardous materials in interstate commerce during various other stages of transportation. 49 C.F.R. § 171.1(a)-(c).

Hazardous materials are listed in 49 C.F.R. 172.101 and include petroleum distillates, petroleum products, petroleum sour crude oil, petroleum gases, liquefied petroleum gases. *See* 49 C.F.R. §§ 171-180 (Part 171 General information, Regulations and Definitions; Part 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans; Part 173 Shippers – General Requirements for Shipments and Packaging; Part 174 Carriage by Rail; Part 178 Specifications for Packaging; Part 179 Specifications for Tank Cars; and Part 180 Continuing Qualifications and Maintenance of Packages).

Sections 5125(a) and (b) of 49 U.S.C. provide that, in the absence of a waiver of preemption by the DOT, or specific authority in another Federal law, a local or state requirement is preempted when: (1) It is not possible to comply with both state and federal requirement (the "dual compliance" test); and/or (2) as applied or enforced, the State requirement is an obstacle to accomplishing and carrying out the requirement ("obstacle test"); and/or (3) the State requirement concerns a covered subject and is not "substantively the same as" the federal requirement (the "substantively same as" test). The covered subject areas are listed in §5125(b) and include:

> "(D) the written notification, recording, and reporting of the unintentional release in transportation of hazardous material and other written hazardous materials transportation incident reporting involving State or local emergency responders in the initial response to the incident (49 CFR Part 172) and,
>
> (E) the design, manufacturing, fabricating, marking, maintenance, reconditioning, repairing, or testing of a packaging or a container represented, marked, certified, or sold as qualified for use in transporting hazardous material."

State regulation of a subject matter that is covered by DOT regulations is typically preempted under the HTMA because it is considered an obstacle to complying with Federal law. *See e.g. Public Service Commission of Nevada v. Southern Pacific Transport Co*., 909 F.2d. 352 (9th Cir. 1990). DOT's extensive regulation of the loading, unloading, transfer and storage incidental to the transportation of hazardous materials, for example, occupies the field of hazardous materials transport and makes state regulations on the same subject redundant, and potentially inconsistent with, the federal program. *Id.*

Moreover, courts will not permit states to engage in a discretionary and potentially iterative review of application materials, citing the expense and delays to applicants and the possibility that applicants could satisfy federal but not state regulations. *Id.* Congress had specifically sought to avoid such a piecemeal result. *See also CSX Transp. Inc. v Public Utilities Commission of Ohio*, 701 F.Supp. 608; 1988 U.S. Dist. LEXIS 14184 (State legislation incorporating federal regulations in response to a catastrophic 1986 derailment was preempted); *Consolidated Rail Corp. v. Bayonne*, 724 F. Supp. 320, 1989 U.S. Dist. LEXIS 13632 (Dist. NJ 1989) (a facility which processes gasoline and then ships the product to customers by various means [including rail cars] through interstate commerce was immune from local transportation and handling regulations).

Again, there is nothing in federal statute or applicable case law to suggest that a state agency can use the SEQR process to collaterally attack federal preemption by denying Norfolk-

Southern the right to transport additional LPG by rail because of safety concerns. In a similar fashion, the safety of downstream transport of LPG by pipeline cannot be used as a basis to deny or condition a storage permit to FLLPG, when FLLPG has no control over the safety of the pipeline. LPG is presently being transported by these means and GFS's and petitioners Harp and Lausell's concerns about the safety of activities removed from the Project site are subject to federal, not state, review. Moreover, since federal preemption prevents the Department from either imposing additional conditions on FLLPG's draft underground storage or denying the permit altogether based on safety concerns, the proposed issues for adjudication cannot meet the definition of a substantive and significant issue. For all the above reasons, and for the reasons specified in Staff's Initial Post-Issues Conference Brief, the petitioners have failed to demonstrate that the safety of LPG transportation is a substantive and significant issue in this proceeding.

III. THE SCHUYLER COUNTY LEGISLATORS' LATE FILED PETITION FOR PARTY STATUS SHOULD BE DENIED.

An entity seeking full party status must file a written petition which: (i) identifies the proposed party, its environmental interest in the proceeding, any interest relating to relevant statutes administered by the Department, and the precise grounds for its opposition or support; and (ii) identifies an issue for adjudication that is "substantive" and "significant," (see 6 NYCRR 624.4[c][2]-[3]), and "present(s) an offer of proof specifying the witness(es), the nature of the evidence the person expects to present and the grounds upon which the assertion is made with respect to that issue." See, 6 NYCRR 624.5(b)(2)(ii). Also, petitions filed after the date set in the notice of hearing must include the following in order to receive any consideration: (i) a demonstration that there is good cause for the late filing; (ii) a demonstration that participation

by the petitioner will not significantly delay the proceeding or unreasonably prejudice the other parties; and (iii) a demonstration that participation will materially assist in the determination of issues raised in this proceeding. See, 6 NYCRR 624.5(c).

Legislators Harp and Lausell timely filed their original petition for amicus party status in this matter on January 16, 2015. Their petition for full party status was filed on April 17, 2015.[23] No prior permission for this late filing was sought or obtained from the ALJ.

Because the two legislators were able to submit their petition for amicus party status in a timely fashion, and thereby address the same issue addressed by the late petition for full party status, the legislators should have been able to file their petition for full party status in a timely fashion, too. The amicus brief identified the legal and policy issue to be briefed as, "the inadequate identification and mitigation of the risks involved in railroad transport of LPG to and from the proposed facility through Schuyler County." Petition for Amicus Status, Van Harp and Michael Lausell at 3. Almost identically, the late petition for full party status offers the following issues as meeting the requirements of 6 NYCRR 624.5(b)(2) as both substantive and significant, "(a) public safety due to inadequate identification and mitigation of the risks involved in truck and rail transport of LPG through the county, and (b) the failure to consider reasonable alternatives." Harp and Lausell's Petition for Full Party Status, at 4. Moreover, the

[23] In light of the two legislators' assertions that they are brought to this proceeding, "to ensure that county public safety issues are given a proper hearing before DEC" (Two County Schuyler County Legislators' Brief and Petition for Full Party Status, page 6, second full paragraph, last sentence), it must be noted that the legislators represent only themselves in this proceeding. The legislators make no claim to represent the Schuyler County Legislature, clearly offering themselves as "two legislators", as they have done from the start of this proceeding, and offering no documentation of support from the County to act on its behalf. Also, they offer no authorization to act on their (unidentified) county legislative districts behalf outside the Legislature, citing only to a law that refers to the authority of the entire Legislature to prepare comprehensive emergency management plans. Thus, it is clear that they represent only their own individual interests.

two legislators fail to explain how the final (April 2015) County Emergency Management Plan differs from the draft County Emergency Management Plan (publicly available well prior to the January 2015 petition for party status filing deadline) in a manner that necessitated the legislators' three month late petition for full party status.

Additionally, there is no reason to believe that granting the two legislators full party status will materially assist in the determination of issues raised in this proceeding. Most significantly (and as more fully explained by the Department staff's initial post-issues conference brief as well as this reply brief), the issues asserted by the two legislators are not substantive and significant, and should not be adjudicated. Regarding the legislators' proposed alternatives issue, the legislators appear to assert that the "testimony" at the issues conference constitutes their own offer of proof on the issue. *Id.* at 12. However, the legal argument presented at the issues conference in this proceeding cannot be offered as testimonial evidence at adjudicatory hearing. Further, concerning the transportation safety issue that the legislators assert, the two legislators offer the final County Emergency Management Plan as their "evidence" *Id.* at 4, line 17, but the ALJ may take judicial notice of this public document, which has also already been provided on the record of this proceeding with the filing of the Applicant's initial post-issues conference brief, without requiring the testimony of any individual.

For all the above reasons, including but not limited to the fact that no substantive and significant issue under 6 NYCRR 624.4(c) has been raised in this proceeding, the late filed petition for full party status filed by Schuyler County Legislators Harp and Lausell should be denied.

IV. CONCLUSION

As indicated in Department staff's initial brief, the Department has fully engaged the SEQR process in the review of the Finger Lakes LPG storage project. Every aspect of the proposed project has been scrutinized by Department staff for the last six years and over the course of Staff's review the project has been refined to address potential adverse environmental impacts. When Staff's review of this project began, FLLPG proposed a single brine pond design, and through careful evaluation of the engineering involved, both FLLPG and Department staff agreed that the two pond design would be preferable to address the potential for a single larger brine pond to impact the surrounding environment. Department staff also carefully considered potential noise, traffic and public safety impacts and on several occasions required the record to be supplemented by FLLPG to address Staff's concerns. Department staff's review of the applicant's underground gas storage permit application was no less exacting. Division of Minerals Resources staff undertook a searching review of cavern integrity issues. They required a project and site-specific cavern integrity analysis and report, and a review of the responses to the Department's notices of incomplete application chronicles staff's efforts to ensure the proposed caverns were properly tested and analyzed. Based on staff's extensive experience in regulating similar projects, staff prepared a draft permit with numerous conditions designed to both protect the environment and the public and to provide an enforceable means to monitor FLLPG's operation. The proposed issues for adjudication raised by petitioners GFS, SLPWA, SLC and Harp and Lausell for full party status fail to raise an issue that would lead to either imposition of additional permit conditions or denial of the permit. Every subject addressed in their briefs have already been fully vetted by Department staff and their attempt to expand the SEQR process to address issues that are not appropriate for review under SEQR should be rejected. For the reasons specified above and in staff's Initial Post-Issues Conference Brief, there

are no substantive and significant issues needing adjudication and the SEQR record, as supplemented by the issues conference and post-issues conference briefing, is sufficient.

DATED: May 29, 2015

Respectfully submitted:

On behalf of the New York State Department of Environmental Conservation,

_____
Jennifer L. Maglienti
Associate Attorney

_____
Lawrence Weintraub
Assistant Counsel
625 Broadway, 14th Floor
Albany, New York 12233-1500
(518) 402-9507

_____
Lisa P. Schwartz
Assistant Regional Attorney

6274 East Avon-Lima Road
Avon, New York 14414
Phone (585) 226-5364

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New York State Department of Environmental Conservation
Office of General Counsel, Region 8
6274 East Avon-Lima Road, Avon, New York 14414-9516
Phone: (585) 226-2466 • **Fax:** (585) 226-9485
Website: www.dec.ny.gov

Joe Martens
Commissioner

October 23, 2014

Deborah Goldberg, Esq.
Earthjustice
48 Wall Street
19th Floor
New York, NY 10005

Re: Finger Lakes LPG Storage, LLC
DEC Application No. 8-4432-00085

Dear Ms. Goldberg:

As we discussed earlier this week, enclosed is a DVD that Department staff has prepared of publicly available application documents and related materials in anticipation of the upcoming issues conference. I expect a notice concerning the issues conference will be published in the Department's ENB and the local newspaper later this month.

Sincerely,

Lisa Schwartz
Assistant Regional Attorney

Enclosure

cc: J. Maglienti, Esq. (without enclosure)

DOCUMENT LIST

Matter of Finger Lakes LPG Storage, LLC / DEC Application No. 8-4432-00085
Application Materials and Related Communications
September 10, 2014, Revised October 20, 2014

I. Application Documents

A. Application Documents – Gas Storage

1. 2009-02-24, DEC to Inergy – Storage Permit Requirements
2. 2009-10-09, BSK to DEC – Storage Permit Application (redacted)
3. 2010-01-07, FL to DEC, Moon to Collart Letter re Well 58 Proposed Storage Gallery 2 (redacted)
4. 2010-01-11, DEC to FL-BSK – NOIA (redacted)
5. 2010-05-14, BSK to DEC – NOIA Response (redacted)
6. 2010-5-14, BSK to DEC – NOIA Response Reservoir Suitability Report (redacted)
7. 2010-08-12, DEC to BSK – NOIA 2 (redacted)
8. 2010-09-28, BSK to DEC – NOIA 2 Response (redacted)
9. 2010-10-28, BSK to DEC - Well Logs and Evaluation (redacted)
10. 2010-11-17, BSK to DEC – NOIA 3 Revised Response (redacted)
11. 2011-03-28, DEC to BSK – NOIA 3
12. 2011-04-19, BSK to DEC – NOIA Response (redacted)
13. 2011-07-20, FL to DEC – Gallery 10 Work Plan and Blanket Thickness for Galleries 1 and 2
14. 2011-07-22, FL to DEC – Gallery 10 Work Plan Addendum
15. 2012-04-11, BSK to DEC – Gallery 10 Work Plan Report (redacted)
16. 2012-04-11, BSK to DEC – Well Logs and Reports (redacted)
17. 2012-06-01, BSK to DEC – Gallery Map (redacted)
18. 2012-10-03, FL to DEC – Gallery 10 Work Plan Approval
19. 2012-10-03, FL to DEC – Gallery 10 Work Plan Response

20. 2012-11-16, BSK to DEC – Gallery Map and X-Section (redacted)

21. 2012-12-28, BSK to DEC – Gallery Map (redacted)

22. 2013-01-18 – DEC to NYSGS – Determination Request

23. 2013-01-22, BSK to DEC – Cavern 58 and Sevenker Letter

24. 2013-03-07, FL to DEC – Well 33

25. 2013-03-15, FL to DEC – NYSGS to DEC – State Geologist Approval Letter

26. 2013-06-25, BSK to DEC – Well Drilling and Completion Reports (redacted)

27. 2013-07-01, BSK to DEC – Logs and Sonars (redacted)

28. 2013-07-24, BSK to DEC – Well Drilling and Well Completion Reports (redacted)

29. 2013-08-15, BSK to DEC – Maps and Table (redacted)

B. **Application Documents – Other than Gas Storage**

1. 2009-10-14 to 2009-09-11 SHPA Documents

2. 2010-05-20, Air Facility Registration Package

3. 2011-10-31, Superior Energy Systems Letter to DEC

4. 2012-01-11, NYSDOT Letter to DEC

5. 2012-01-19, FL memo re public comments

6. 2012-01-20, BSK to DEC Supplemental Information, with 22 Attachments

7. 2012-02-16, BSK to DEC Supplemental Information, with 5 Exhibits (Exhibit 5 in two files)

8. 2012-02-16, Quantitative Risk Assessment, Quest Consultants

9. 2012-03-05, DEC to BSK, NOIA

10. 2012-03-19; BSK to DEC, WQC Response

11. 2012-04-03, BSK to DEC, Pre-Construction Notification

12. 2012-04-09, DEC to BSK, NOIA

13. 2012-04-10, Quest Consultant Letter to BSK re. Quantitative Risk Assessment

14. 2012-05-18, USACE Nationwide Permit Letter

15. 2012-05-22, CT Male Engineering and Geotechnical Investigation Reports, Two Volumes, with appendices, figures, and 18 drawings

16. 2012-06-08, DEC to Wakeman, Phaneuf E-mail

17. 2012-06-15, CT Male Revised Engineering and Geotechnical Investigation Reports, Cover Letter, Two Volumes, and 11 drawings

18. 2012-07-18, BSK to DEC

19. 2012-07-23, DEC to BSK, Additional Information Request

20. 2012-08-06, DEC to BSK, SWPPP Comments

21. 2012-08-20, JessEng to DEC, SWPPP Information

22. 2012-08-21, CT Male Brine Pond Information

23. 2012-08-24, BSK to DEC, Water Well Information

24. 2012-09-09, SWPPP Revision 4, Jess Engineering, Cover Letter, Notice of Intent, and Eight Report Sections

25. 2012-09-10, CT Male Brine Pond Engineering Report and Plans, 2 Report Volumes and 23 Drawings.

26. 2012-09-12, BSK to DEC, Finger Lakes/US Salt Schematic

27. 2012-10-23, DEC to BSK, Additional Information Request

28. 2012-11-09, BSK to DEC, Additional Information

29. 2013-07-13, Landscaping Plan for Transfer Facility

30. 2013-09-09, BSK to DEC, Additional Information Email

31. 2014-02-21, BSK to DEC, Company Information

32. 2014-03-07, Hunt Revised Sound Study, with report revised July, 2013

33. Town of Reading Emergency Response Plan, 2007

II. Freedom of Information Law Documents

A. FOIL 10-0541 Correspondence (Requester – Mantius)

B. FOIL 10-0834 Correspondence (Requester – Mantius)

C. FOIL 10-2260 Correspondence (Requester – Mantius)

D. FOIL 10-2517 Correspondence (Requester – Mantius)

E. FOIL 10-2927 Correspondence (Requester – Bartholomew)

F. FOIL 11-1732 Correspondence (Requester – Campbell)

G. FOIL 12-1773 Correspondence (Requester – Campbell)

H. FOIL 13-0317 Correspondence (Requester – Campbell)

I. FOIL 13-3540 Correspondence (Requester – EJ)

III. Public Comments

A. **Comment Letters**

1. Comment Letters Tab A
2. Comment Letters Tab B
3. Comment Letters Tab C
4. Comment Letters Tab D
5. Table 1 Index of Public Comment Letters

B. **Hearing Transcripts**

1. 2011-09-27 Hearing 1
2. 2011-11-03 Hearing 2

C. **Post-Hearing Comments – various, ranging from 2011 to present**

IV. SEQR Documents

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ABBREVIATION KEY:

BSK	Bond, Schoeneck & King (typically addressed to Kevin Bernstein, Esq.)
DEC	New York State Department of Environmental Conservation
EJ	EarthJustice
FL	Finger Lakes LPG Storage, LLC
NYSGS	New York State Geological Survey
NOIA	Notice of Incomplete Application
NYSDOT	New York State Department of Environmental Conservation
SHPA	State Historic Preservation Act
SWPPP	Stormwater Pollution Prevention Plan
USACE	US Army Corps of Engineers

(All Dates Listed are in Year-Month-Day format)

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF KINGS

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In the Matter of the Application of HON. HOWARD GOLDEN, BOROUGHS ALLIED FOR RECYCLING AND GARBAGE EQUITY, THE WATCHPERSON PROJECT, INC., INEZ PASHER, NEIL COHEN, ANNETTE LAMATTO, LOU SONES, DONALD KENNEDY, JOHN McGETTRICK, ASSEMBLYMAN FELIX ORTIZ, ASSEMBLYWOMAN JOAN MILLMAN, ASSEMBLYWOMAN ADELE COHEN, COUNCILMAN KENNETH FISHER, COUNCILMAN STEVE DIBRIENZA, COUNCILMAN VICTOR ROBLES, SENATOR CARL KRUGER, SENATOR MARTIN CONNOR, COUNCILWOMAN MARY PINKETT, ASSEMBLYMAN WILLIAM COLTON and COUNCILMAN ANGEL RODRIGUEZ,

Petitioners,

EL PUENTE, NEW YORK CITY ENVIRONMENTAL JUSTICE ALLIANCE, NEIGHBORS AGAINST GARBAGE, RED HOOK CIVIC ASSOCIATION, RED HOOK GROUPS AGAINST GARBAGE SITES, GLENN REED and LUIS GARDEN-ACOSTA,

Intervenors - Petitioners,

For a Judgment pursuant to CPLR Article 78 and for Declaratory Relief pursuant to CPLR §3001

- against -

NEW YORK CITY DEPARTMENT OF SANITATION, MICHAEL CARPINELLO, ACTING COMMISSIONER OF THE NEW YORK CITY DEPARTMENT OF SANITATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION and WASTE MANAGEMENT OF NEW YORK, INC.,

Respondents.

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By: Hon. R.A. Goldberg

Date: June 25, 1999

DECISION & ORDER

Index No. 42723/98

By statute effective May 31, 1996, the Fresh Kills Landfill (the "Landfill"), located on Staten Island, will no longer "accept solid waste for disposal after January first, two thousand two." ECL

§ 27-0706. In an Invitation for Bids issued on November 14, 1997, the City of New York (the "City"), through the Department of Sanitation (the "DOS"), solicited bids from vendors to receive, process, and transport out-of-City approximately 2,500 tons per day of Brooklyn-generated DOS-collected residential waste. In September 1998, the DOS awarded a contract to Waste Management of New York, Inc. ("WM") for the export of that waste through WM's waste transfer facilities at 485 Scott Avenue and 215 Varick Avenue in Brooklyn for a term of three years, and renewable for an additional two years (the "interim contract"). Both facilities are located within Brooklyn Community District 1 in areas zoned M3-1, which is an industrial zoning allowing for heavy manufacturing and industrial uses. 184

Petitioners, various individuals and community groups, as well as a number of elected Brooklyn officials, brought this Article 78 proceeding to challenge the implementation of the interim contract on the grounds that the DOS failed to meet its obligations under state and local environmental law, including, as alleged in the Verified Petition:

1.) issuance of a negative declaration of significance (the "DOS Negative Declaration") under the State Environmental Quality Review Act, Article 8, Environmental Conservation Law ("SEQRA") for the interim contract for the export of solid waste without identifying the relevant areas of environmental concern or taking a "hard look" at the environmental impacts;

2.) implementation of a plan for the management of solid waste as a direct consequence of the determination to close the Landfill without undertaking a comprehensive environmental review of the proposed plan;

3.) impermissible segmentation pursuant to SEQRA in the environmental review process of the various components of the DOS plan to manage the City's solid waste;

4.) failure to prepare a modification of the City's solid waste management plan ("SWMP") as required by section 27-0107 of the Environmental Conservation Law ("ECL");

5.) violation of the sole source requirements in the City's Policy Board Procurement Rules; and

6.) violation of the City's fair share criteria in the siting of undesirable City facilities.

Petitioners also assert that the interim contract actually provides for the processing of in excess of 4200 tons of waste per day rather than the 2490 tons claimed by the DOS.

Petitioners moved, by Order to Show Cause, for judgment on the petition and to stay implementation of the interim contract. On October 30, 1998, the Hon. Matthew D'Emic granted Petitioners a temporary restraining order, which was continued by this Court on November 2, 1998, and a hearing date on the motion was calendared for November 13, 1998. At the request of the parties, the hearing date was adjourned to December 18, 1998, and the parties were given additional time to prepare final submissions.

Following the addition of certain intervenors to the proceeding, the Amended Verified Petition was served, alleging, in addition to the original claims, that the Department of Environmental Conservation (the "DEC") failed to meet its environmental obligations under state and local law by the issuance of permits and/or permit modifications for the Scott Avenue and Varick Avenue waste transfer facilities:

1.) without the required environmental review, public notice and opportunity for the public to participate in the permit review process;

2.) without an approved and current SWMP in effect; and

3.) in violation of the due process rights of petitioners.

In addition to the allegations contained in the Verified Petition and Amended Verified Petition, the Second Amended Verified Petition alleges that the DEC also failed in its obligations under SEQRA by the issuance of negative declarations of significance (collectively, the "DEC Negative Declaration") for the permits and/or permit modifications issued to WM for the Scott Avenue and Varick Avenue facilities.

On December 18, 1998, on the record, the Court lifted the temporary restraining order, having found that Petitioners and Intervenors-Petitioners (collectively, "Petitioners") had failed to meet their burden of showing a likelihood of success on the merits, irreparable injury absent the granting of the relief, and a balancing of the equities in favor of the moving party. The Court also invited oral argument from the parties as well as from various persons who had moved for leave to appear as amici curiae.

At a conference held by the Court on March 18, 1999, Petitioners withdrew their claims of violation of the City's sole source procurement rules and violation of the fair share criteria, and further submissions were requested by the Court on the issue of remedy.

Article 78 Proceedings

Initially, the Court notes that, whatever the political wisdom of the actions undertaken by Respondents, the power of the judiciary, in an Article 78 proceeding, is limited. In this review, the Court's role "is not to weigh the desirability of any proposed action or to choose among alternatives and procedural requirements of SEQRA and the regulations implementing it, but to determine whether the agency took a 'hard look' at the proposed project and made a 'reasoned elaboration' of the basis for its determination." Matter of WEOK Broadcasting Corp. v. Planning Board, 79 N.Y.2d 373, 383 (1992) (citations omitted). Indeed, "[n]othing in the law requires an agency to reach a particular result on any issue, or permits the courts to second-guess the agency's choice, which can be annulled only if arbitrary, capricious or unsupported by substantial evidence." Matter of Jackson v. New York State Urban Development Corp., 67 N.Y.2d 400, 417 (1986) (citations omitted).

Background

The above-referenced SWMP was adopted by the City Council and submitted to the DEC for review and approval on October 28, 1992, and the last modification to it was submitted to the DEC on February 15, 1996 and approved by the DEC on April 26, 1996. The modification relied on the continued use of the Landfill for disposal of municipal solid waste ("MSW") for an additional fifteen to twenty years and contemplated the permitting of an incinerator at the Brooklyn Navy Yard. The Legislature subsequently enacted section 27-0706 of the ECL. The DOS, following the recommendations issued in November 1996 by the City-State Task Force established to explore the City's options for disposal of solid waste without the use of the Landfill, attempted to take action to gradually reduce the amount of waste sent to the Landfill before the closure date.

As stated above, the interim contract was entered into following solicitation of bids and provides for the transfer of some 2490 tons of MSW[1] generated in Brooklyn to locations out of state instead of the present system of delivery of the waste to three Marine Transfer Stations ("MTSs") located in Brooklyn followed by shipment of the waste by barge to the Landfill. The Allocation of Awards for the Bid for the interim contract states that the daily tonnage bid was 2,400 and the daily tonnage awarded was 1,400 for the Varick Avenue facility, and that the daily tonnage bid was 1,867

[1] Prior to the implementation of the interim contract, the DOS collected approximately 2900 tons per day of MSW in Brooklyn.

and the daily tonnage awarded was 1,100 for the Scott Avenue facility.

On April 3, 1998, the DOS issued a draft modification to the SWMP for the long-term export of municipal waste in light of the coming closure of the Landfill. The draft modification discusses, but does not include as proposed modifications, the Bronx export contract, the interim contract, and the possibility of other "short-term contracts to achieve the phase-down target for the year ending December 31, 2000 and the Fresh Kills Closure Deadline of December 31, 2001," and states that "[i]t should be emphasized that this is a transitional program that depends on the short-term use of existing, privately owned truck-to-truck or truck-to-rail transfer facilities located in the boroughs where the exported waste is generated." The draft modification also states that the DOS "will develop a programmatic EIS[2] for the Plan Modification that defines and discloses the potential economic and in-City social and environmental impacts associated with the proposed new solid waste infrastructure for long-term waste export."

The DOS, through its consultants, HydroQual, Inc. and Edwards and Kelcey, Inc., conducted a study to determine the environmental impact of the interim contract, memorialized in the EAS Form, the Supplemental Report to the EAS Form, and the technical appendices thereto of September 1998 (together, the "Environmental Assessment Statement" or "EAS"). The study was conducted to determine whether roadways were sufficient to handle the anticipated traffic and to determine whether there would be significant traffic impacts as defined in the New York City Environmental Quality Review ("CEQR") Technical Manual (the "Manual"). The study analyzed the impact of rerouting 273 daily DOS collection truck trips in Brooklyn and 46 daily DOS collection truck trips in Queens[3] and compared the proposed new routes with routes taken by those collection trucks to the MTSs currently used to transfer municipal solid waste to the Landfill. According to the DOS Negative Declaration subsequently issued on September 17, 1998, "[d]ata [were] collected and analyzed at 52 intersections in Brooklyn and 16 intersections in Queens from February 1998 through May 1998 to establish traffic volumes, intersection turning movement percentages, number and use of travel lanes, types and operation of traffic controls, etc." The data were collected during the peak

[2] Environmental Impact Statement, as defined in 6 N.Y.C.R.R. § 617.2 (n).

[3] At present, there is no contract for the Queens waste.

periods of 9 to 11 a.m. and 3 to 5 p.m. weekdays. The intersections were surveyed through visual identification of intersection geometry, installation of automatic traffic recorders, and manual turning movement counts. It was contemplated that the DOS trucks would empty their loads at one of the two proposed transfer stations, where approximately 114 long-haul export trucks per day would then transport the waste to an out-of-City disposal site. It was contemplated that the long-haul transport trucks would first proceed along the Brooklyn-Queens Expressway, then through Staten Island to the New Jersey Turnpike. The study considered traffic, air and noise impacts from the rerouting of the DOS vehicles and from the long-haul trucks leaving the transfer stations, and noted that award of the interim contract "would increase neither [the permitted capacity of the transfer stations] nor the amount of MSW authorized to be transported from the transfer station[s] by long-haul trucks." Based on the EAS, the DOS concluded that the interim contract would have no significant impact on mobile source air quality; that it was not expected to cause significant traffic related noise impacts or to create a hazard to human health; that it would not result in a substantial adverse change to land use, zoning or neighborhood character; that it would not result in stationary air or noise impacts in the vicinities of the transfer stations; that it would not have any direct or indirect impacts on community facilities or open space resources; that it would not impair the character or quality of important historical, archeological, architectural, or aesthetic resources; that it would cause no changes to demands for infrastructure or energy; that it would not adversely affect natural resources; that it would not result in significant adverse impacts to the natural or built environment from hazardous materials; and that it is expected to have beneficial solid waste impacts consistent with an orderly transition toward the closing of the Landfill.

On October 14, 1998, the DEC ordered WM to cease work it had commenced at the two transfer stations without submitting permit modification requests and obtaining permit modifications, and issued a violation. On October 16, 1998, WM submitted a Proposed Modification to the Existing NYSDEC Permit for the Varick Avenue facility for removal of certain existing equipment, reconfiguration of balers, demolition of an existing loading dock and construction of a new dock, construction of a new concrete floor, design of a new interior drainage system, installation of new scales, and installation of new doors, all "[t]o facilitate the safe and efficient operation of the [interim] contract." On October 20, 1998, WM submitted a Proposed Modification to the Existing

NYSDEC Permit for the Scott Avenue facility for construction of a new outdoor access area and installation of new roll-up doors, all "[t]o facilitate the more efficient operation of the [interim] contract." Permit modifications for the two facilities were issued by the DEC on October 23 and October 26, 1998. On October 30, 1998 WM agreed to enter into a consent order (the "Consent Order"), which provided, inter alia, that "the alteration of the facility operations and related construction did not entail an increase in waste throughputs." The Consent Order, along with payment of the required penalty, was submitted to the DEC and was executed by the DEC on November 12, 1998. The permit modifications were withdrawn on November 13, 1998.

On November 25, 1998, the DEC issued the DEC Negative Declaration and reissued the permit modifications. The DEC described the action for Scott Avenue as "[m]odification of a permit for an existing solid waste management facility to allow alterations to the facility's physical plant and operation . . . [to] reflect a change in the source (but not volume) of . . . PSW[4] coming to the facility" and the action for Varick Avenue as "[m]odification of a permit for an existing solid waste management facility to allow alterations to the facility's physical plant and operations . . . [to] reflect the elimination of waste wood from the facility's waste stream and a change in the source (but not volume) of . . . PSW to be delivered to the facility." The DEC identified the areas of potential environmental concern, i.e., "traffic and traffic-related air and noise impacts; noise; dust; vectors; land use; zoning; and neighborhood character." The DEC reviewed WM's proposals, the DOS Negative Declaration and EAS, as well as the submissions in this proceeding. For Varick Avenue, the DEC found that while the DOS employs smaller collection contemplated trucks than private commercial haulers do, resulting in an increase of 44 collection trucks, the contemplated elimination of wood waste processing would eliminate 154 truck trips resulting in a net reduction of 110 truck trips. For Scott Avenue, the DEC found a net increase of 39 more collection trucks. The DEC analyzed the number of truck trips and evaluated the HydroQual report, noting, inter alia, that its conservative approach did not account for the net decrease in truck traffic at Varick Avenue nor for the fact that the maximum number of export trucks from both facilities would not increase because there would be no increase in PSW capacity. The DEC agreed with the HydroQual findings, which

[4] Putrescible solid waste.

the DEC found relied "on nationally accepted methodologies for measuring and assessing impacts, as well as uniform standards for assessing the significance of those impacts . . . as embodied in the City's CEQR Manual." The DEC Negative Declaration concluded that the proposed action would have no significant adverse impact on traffic generated air quality, noise levels, odor, dust, vectors, land use, zoning, or neighborhood character.

Submissions of the Parties

Petitioners claim that the DOS Negative Declaration was improperly issued as the EAS was flawed in its methodology and failed to account for significant environmental impacts that would occur following implementation of the interim contract.[5]

In support of their motion, the original Petitioners submit the affidavit of Carolyn Konheim, president of Konheim & Ketcham, Inc., environmental consultants, and chair of Community Consulting Services, Inc., "a non-profit, public interest firm that provides affordable technical services to community groups and local elected officials." Ms. Konheim opines that the DOS Negative Declaration "is invalid because it is based on an assessment of highly selective and erroneous information."

In her affidavit, Ms. Konheim identifies what she views as the shortcomings of the EAS upon which the DOS Negative Declaration is based:

1.) The EAS does not address the increase in compactor collection truck traffic from 2400 compactor truck-miles per day to 4500 miles per day nor the effects of this increase in traffic on Brooklyn motorists and neighborhoods.

2.) The EAS fails to address a significant increase in truck traffic in the specific areas of Greenpoint and Williamsburg, which she estimates to be an increase of 772 additional heavy trucks each weekday in those areas as it only reports peak travel hours, which results in underreporting of the impact. Further, she claims that of the more than 50 intersections studied, many are located far from Greenpoint/Williamsburg, and that few reflect the results of other studies.

3.) The EAS ignores the impact of the project on the Brooklyn Queens Expressway and on the nation's expressway network as the project would annually add 17 million vehicle miles of travel

[5] Some of the affidavits that address the claims against the DOS also address the claims against the DEC.

to the interstate highway system.

4.) The air quality screening was improperly conducted.

5.) The noise analysis was improperly conducted as the EAS concludes that the sites studied are all in industrial areas with no nearby sensitive receptors.

6.) The impact of a proposed DOS garage on Varick Avenue was not considered.

7.) The EAS fails to disclose the impact of the conversion of these two facilities to accept MSW instead of DOS-collected recyclables.

8.) The EAS fails to disclose the fiscal impacts of relying on truck-based export.

In support of their motion to intervene and in support of the Petition, Intervenors-Petitioners submit the affidavit of Leslie H. Lowe, Executive Director of the New York City Environmental Justice Alliance, who opines as "to the errors and inadequacies of the air quality, land use, community character, and noise analysis in the EAS," "[t]he defects in the traffic and transportation analysis [being] fully described in the affidavit of Carolyn Konheim." Ms. Lowe states that "the geographic scope of the impact area identified in the EAS is inappropriately limited," as the collection trucks "may traverse areas in Williamsburg and other parts of the borough that are not manufacturing zones." She further states that the EAS offers no analysis of the cumulative impacts of the truck traffic on the Williamsburg community. She also states that the EAS does not address whether the "action may have singular or cumulative impacts which exceed the thresholds in the" City's Zoning Resolution for the actual uses, including light industrial, that are present in the areas in the immediate vicinity of the transfer stations. Ms. Lowe also opines that the EAS fails to analyze the air quality impacts in the immediate vicinity of the transfer stations and that receptors should have been placed on sidewalks near the stations, which she characterizes as "open sided garages." With respect to the issue of segmentation, Ms. Lowe states that the DOS should have addressed the cumulative impacts of the short-term contracts let in the Bronx and proposed for Manhattan and Queens and that a result of these contracts would be increased trucking of waste through Williamsburg. Finally, she states that the DOS "transitional strategy will commit the City to a course of action that foreclose[s] less environmentally harmful alternatives" such as export of municipal waste from the City's MTSs.

Petitioners have also submitted a number of affidavits which, they aver, support the

conclusion that implementation of the interim contract would irreparably harm them. The affidavits of the individual petitioners Lou Sones, Donald Kennedy, Neil Cohen, John McGettrick, Annette LaMatto, Inez Pasher, Luis Garden-Acosta, Glenn Reed, James E. McKnight, and Jocelyn Phillips speak, with vehemence, of their dissatisfaction with the DOS and of the present truck traffic in their neighborhoods, but none addresses the issues of whether the DOS and the DEC conducted proper environmental studies nor whether the transfer facilities are properly permitted by the DEC. Ms. LaMatto also states that, as "part of my activity in this case, I keep a watchful eye on the transfer stations" and "[f]or well over a year I have observed that the Scott Avenue facility has not operated as a putrescible waste transfer station." Ms. Pasher also states that, based on her personal observations, "Scott Avenue has not been operating as a putrescible transfer station at this time."

Barbara J. Warren, a registered nurse and Project Director for the New York Toxics Project of the Consumer Policy Institute of Consumers Union, opines in an affidavit that diesel exhaust is "a probable human carcinogen," that "nearly all the City's transfer stations are clustered in a few low-income communities whose residents are predominately non-white" thus raising the issue of environmental justice, and that DOS did not prepare the required EIS for the interim contract.

Harold H. Osborn, M.D., opines that an "increase in asthma in the inner city may be caused by environmental factors such as air pollution," that diesel exhaust is an ambient air pollutant, and that "both acute as well as chronic exposure to diesel exhaust constitute a health hazard."

Eric Jacobson, PhD., opines that "diesel emissions represent a serious health concern," especially during the summer months and that "the impact of such an exposure could be severe and the concentration of traffic in a small area poses a real risk for the health of the Williamsburg-Greenpoint population."

George D. Thurston, ScD., states that "acute increases in ambient air pollution are associated with increases in the number of daily asthma attacks and asthma hospital admissions" and that "[g]ood public health practices of prudent avoidance of potential health risks would dictate that the potential adverse health effects that may be associated with the addition of thousands or hundreds of thousands of diesel truck trips per year . . . would certainly require a vigorous search for alternatives."

In opposition to the motion and to Ms. Konheim's affidavit, the DOS submits the affidavit

of Scott Parker, a project manager with the consulting firm hired by the DOS to oversee preparation of the traffic, air and noise analyses performed in connection with the EAS. Mr. Parker points out that the contract does not create new collection truck trips, but redistributes the trips and that the transfer facilities are located in industrial areas zoned for such use. As to reliance on tractor trailers to export the waste, Mr. Parker notes that approximately 226 heavy truck trips will be added over each 24-hour period, spread over a number of roadways, and peak activity will generate approximately 11 tractor trailer trips per hour, and that this activity was factored into the EAS. He also states that the selection of intersection locations for analysis was thoroughly reviewed by the New York City Department of Transportation, the New York City Department of Environmental Protection, and the Mayor's Office of Environmental Coordination. Moreover, as to observed traffic volumes, Mr. Parker notes that application of a 1 percent per year volume growth, as done in the study, actually exceeds future traffic volumes and the CEQR requirements. Mr. Parker also notes that the allocation of MSW to the two transfer stations was capped by the DOS to conform to the existing permitted capacity of the stations, not to increase the amount of waste processed. With respect to the claim that the impact of a DOS garage in the area should have been studied, Mr. Parker notes that because the garage is anticipated to open in 2003, the Manual does not require its inclusion in the present traffic, air and noise analysis. Furthermore, Mr. Parker points out the infirmity of Ms. Konheim's assertion that the EAS does not detail truck trip generation and further notes that analysis of the incremental effect of a change in traffic patterns is included in the EAS. Mr. Parker also addresses the assertion that some studied intersections already operate at a level of service ("LOS") F by noting that, while some stopped delay would be anticipated, the CEQR Defined Thresholds allows some increases such that the EAS correctly determined that no significant increases are anticipated. Furthermore, as set forth in the EAS, not all of the additional trailer truck traffic would use the same on/off ramp for the BQE. As to the noise assessment, Mr. Parker notes that the Manual guidelines do not require analysis of locations "near" the roadways as asserted by Ms. Konheim but only analysis of locations immediately adjacent to such roadways. With respect to the assertion that implementation of the contract might significantly affect the City's recycling efforts, Mr. Parker notes that the contract would only affect MSW currently collected by the DOS and no changes in the recycling program would result. Finally, Mr. Parker notes that a passenger car equivalent ("PCE")

of 1.6 is usually used for heavy trucks as opposed to a PCE of 3.3 as proposed by Ms. Konheim.

In reply, Petitioners submit the affidavit of Brian Ketcham, Technical Director of Community Consulting Services, Inc., and the reply affidavit of Carolyn Konheim. Mr. Ketcham states that he is "responding to the challenges of Scott Parker of analyses that I performed of the . . . EAS, the findings of which were previously articulated to this Court by . . . Carolyn Konheim." He opines that DOS trucks will travel an additional 526,000 miles per year, which fact was not addressed in the EAS. He further estimates that the costs of additional truck traffic will cause increased "traffic accidents, increase[d] noise and air pollution" as well as loss of productivity amounting to millions of dollars in the borough as well as the region. Mr. Ketcham also states that the DOS improperly employed the hours of 4:30 p. m. to 5:30 p. m. as peak hours for the traffic analysis, arguing that CEQR requires analysis of midday traffic as well. He further argues that the impact of the proposed DOS garage should have been considered, stating that CEQR states that "[f]or many technical areas, it is important that the no action analysis accurately incorporate known development projects." Further, he states that the EAS does not take into account the effects of the trucks on Metropolitan Avenue and that there could be long queues of trucks at the transfer stations. Mr. Ketcham also claims that traffic volumes were "potentially flawed" and that the LOS at intersections cannot be accurately calculated if the underlying data are not fully reported. He also argues that the DOS should have supplied more details regarding the truck traffic to and from the transfer facilities. Mr. Ketcham claims that the DOS ignored the effect of "the addition of 3,700 pounds of carcinogenic pollutants along certain corridors in Brooklyn." Finally, he claims that "the additional ten trucks at an intersection in Downtown Brooklyn are very likely equivalent to 100 passenger cars in terms of their emissions impacts," requiring preparation of an EIS.

In her reply affidavit, Ms. Konheim states that "[a] realistic calculation of the Passenger Car Equivalents (PCEs) for the additional truck traffic in the subject area brings the proposed action over the CEQR threshold for a detailed noise analysis," that is, the Manual requires such analysis when there is a doubling of PCEs. Furthermore, she states that noise measurements taken by Konheim & Ketcham in November 1998 in front of a residence between Lombardy and Beadel Streets were 73.7 dBA and 72.1 dBA and measurements taken on the northeast corner of Vandervoort Avenue and Beadel Street were 73.1 dBA and 70.1 dBA. Ms. Konheim also states that the redistribution of

traffic is not sufficiently addressed in the EAS, which studied only the end points of neighborhood streets, as a claimed 300% increase in truck traffic along, for example, Metropolitan Avenue generates greater impacts than acknowledged. She also states that Mr. Parker has not addressed the issue of the displacement of recycling equipment and capacity at the transfer stations and that the economic consequences of the contract must be reported. Finally, she states that the Scott Avenue facility would have a shortfall each day because of a requirement that WM set aside 25% of its permitted capacity for independent waste contractors and that WM's Varick Avenue trucks would be displaced.

In reply to Ms. Konheim, Mr. Ketcham and Mr. Lowe, Mr. Parker sets forth the review required by SEQRA and the regulations promulgated thereunder and the requirements of CEQR as set forth in the Manual guidelines, and outlines the study undertaken by the DOS. Mr. Parker notes that the study scope was not limited to manufacturing zones and that traffic currently generated by other transfer stations in the area was taken into account. He states there is no basis for insisting on different peak hours based on arrival patterns at MTSs, or on the three photographs submitted. Further, the Manual does not require the inclusion of a "soft site" such as the proposed DOS garage. Moreover, traffic was studied at nine intersections along Metropolitan Avenue. He also notes that the queueing analysis employed at MTSs is not applicable to the transfer facilities at issue. Mr. Parker goes on to rebut all of Petitioners' remaining claims with respect to the traffic analysis performed. Mr. Parker also notes that, at the four locations where a doubling of PCEs is anticipated, no sensitive noise receptors are located,[6] and that CEQR does not require analysis of receptors merely in the vicinity of the route and that noise measurements taken by Ms. Konheim's firm addressed only existing conditions. With respect to the claims regarding air quality, Mr. Parker notes that none of the intersections within the scope of the study area are listed in the Manual as critical intersections and thus, even in "a worst case scenario, none of the action impacted intersections will experience an increase of one hundred vehicles." Therefore, further analysis is not triggered.

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[6] While there is one residence located at the intersection of Vandervort Avenue and Lombardy Street, it is located diagonally across the intersection, not along the leg of Lombardy Street Street where a doubling of PCEs was predicted. Applying a logrhythmic formula provided in the Manual, the DOS found that the noise increment for that location will be less than one dBA.

Finally, Mr. Parker states that particulate emissions were studied in conformance with the Manual and "[t]he addition of emissions from the small number of action induced trucks could not possibly double the existing ambient level of particulate emissions," which condition would require further study.

In opposition to the Petition WM submits the affidavit of Frank A. Frega, a principal associate with TAMS Consultants, an engineering and environmental consulting firm, who states that, in his professional opinion, the traffic claims made by the Petitioners "are totally unfounded." Mr. Frega notes that the interim contract does not in any way increase the permitted capacity of the two facilities at issue and that the increase in truck trips under the interim contract is solely because DOS collection vehicles carry smaller loads than the commercial "packer" trucks that previously had brought waste to and from the transfer stations. For Scott Avenue, the interim contract will result in an increase of 39 truck trips from incoming collection vehicles. The number of truck trips for Varick Avenue will decrease by 110, as "the modified permit for the . . . facility eliminated the authorization to process up to 825 tons per day . . . of wood waste contained in the old permit, resulting in a reduction of 154 truck trips attributable to that waste stream," which will offset the 44 truck trip increase attributable to implementation of the interim contract. Further, Mr. Frega states that the DOS traffic impact analysis "was prepared in accordance with accepted traffic engineering standards and procedures" and "in accordance with New York City's CEQR Technical Manual and in consultation with the New York City Department of Transportation."

Mr. Frega outlines the traffic analysis methodology employed and notes that, of the "52 intersections where manual peak period counts were collected and eight locations where seven-day automatic traffic recorder counts were made," six are located within a half mile of the Scott Avenue facility and eight within a half mile of the Varick Avenue facility, that the peak period counts were recorded during the hours when the greatest impacts could be expected, and that "[t]he traffic monitoring program accurately depicts the existing transportation network and existing traffic volumes." Mr. Frega also notes that the traffic analysis is based on several conservative assumptions, such as counting all truck trips from the facilities as additional trips, assuming that all the relay trip activity would occur in the first four hours of the evening shift, and employing a 1% growth factor in spite of the limited duration of the study.

Mr. Frega also notes that the EAS' estimates of the number of truck trips are based on historical data from DOS sanitation districts "and reflect no change in the daily tonnage in MSW or total daily trips to the transfer stations from existing conditions" and that the only difference will be "in the relative proportion of shift-dumps to relay-dumps because of the change in the transfer destination, and the addition of private export carrier trips to handle the outbound MSW destined for out-of-city landfills." Mr. Frega further states that Petitioners have provided no basis for their claim with respect to the hourly distribution of future truck trips, significant change in LOS at the studied intersections, the assignment of travel routes, the assignment of peak travel hours, queueing times at the transfer stations, the estimate of 526,000 additional miles per year traveled in Brooklyn, the PCE of 3.3, or the number of vehicles forced into downtown local streets. With respect to Petitioners' claim that the interim contract will significantly impact nearby residential neighborhoods, Mr. Frega notes that nine intersections along Metropolitan Avenue were studied and that the new routes will actually "pass substantially fewer potential sensitive adjacent land areas than the existing truck routes."

WM also submits the affidavit of James J. Coyle, a principal associate with TAMS Consultants, Inc., who addresses Petitioners' critique of the DOS air quality analysis, as set forth in Ms. Konheim's and Mr. Ketcham's affidavits. Mr. Coyle states that "[i]t is well established that the only criteria of a significant adverse air quality impact for the proposed action is whether or not vehicle emissions generated by the action would cause a violation of the National Ambient Air Quality Standard ('NAAQS')" for particular pollutants, which in this case are particulates and carbon monoxide. He notes that none of the affidavits offer any proof of such a violation, that "[t]he limited additional PM-10 emissions . . . could not possibly double the ambient level of PM-10 and thereby cause a NAAQS violation," and that the EAS properly applied a criteria of 100 vehicles at non-critical intersections "and concluded that there would be no violation of the NAAQS for carbon monoxide." Further, Mr. Coyle states that operational capacity of the transfer facilities at issue "will not increase under the recent DEC modification," and that engine exhaust emissions for these facilities are exempt from DEC regulations pursuant to 6 N.Y.C.R.R. § 201-3.3 (c) (11), thus negating the claim that the ventilation system should be upgraded.

Benjamin H. Hoffman, M.D., M.P.H., Corporate Medical Director of Wheelabrator

Technologies, Inc., a Division of Waste Management, L.L.C., states, in an affidavit that in response to the claims made by Petitioners, he conducted a study in conjunction with the Columbia School of Public Health of asthma incidence in Williamsburg and Greenpoint. According to Dr. Hoffman, "[t]he allegation that the elevated rates of asthma in Greenpoint/Williamsburg sections . . . are due wholly or in part to ambient exposures from airborne emissions from transfer stations or direct truck emissions going to and from transfer stations is not supported" by the Department of Health Statewide Planning and Research Cooperative System data regarding the incidence and prevalence of respiratory illness. Further, Dr. Hoffman, while conceding that air pollution may aggravate respiratory illness, points to an Environmental Protection Agency report which concludes that an increasing trend in asthma prevalence is not thought to be caused by air pollution. Finally, Dr. Hoffman notes that the affidavits of Harold H. Osborn and George D. Thurston lack a scientific basis and are conclusory and speculative.

Petitioners also claim that the Scott Avenue permit had been abandoned pursuant to 6 N.Y.C.R.R. § 360-1.11 (f); that both permit applications should have been treated as applications for new facilities pursuant to 6 N.Y.C.R.R. § 360-1.8 (e); and that the DEC Negative Declaration was improperly issued. They allege that the DEC renewal of Scott Avenue's permit on September 14, 1994 was "palpably improper as the authority to process putrescible waste had lapsed in August 1994, one year after [a DEC inspector] found that BQE [the former owner] was no longer processing putrescible waste." Petitioners further claim that the Varick Avenue facility is not currently authorized to accept the waste streams, which they allege to be in excess of 4200 tons per day, contemplated in the interim contract. They also claim that Varick Avenue does not have an adequate ventilation system. The supporting documentation for this latter claim is a number of letters from the firm of Konheim & Ketcham, the latest of which is dated December 24, 1991, regarding various aspects of the operation of the facilities at issue. Ms. Konheim, who submitted these letters, acknowledges that her firm's involvement with Star Recycling, Inc., the former owner of the facility, ended in 1991.

In an affidavit, David A. Blackman, Director of the DEC Bureau of Program Management, in the Division of Solid and Hazardous Materials, states that "[p]etitioners offer an inaccurate, and very restrictive reading of the [SEQRA] regulations." He notes that both the transfer facilities at

issue are described in the City's present SWMP "as existing solid waste management facilities used to process solid waste within the New York City Planning Unit" and that, therefore, no modifications to the SWMP were required before the permit modifications were issued.

Laurie Silberfeld, Regional Attorney for DEC Region 2, states in an affidavit that, with respect to the permit modifications and the Consent Order, "the modifications sought were indeed minor and should be authorized by DEC provided [WM] were to resolve its violations" and that under the circumstances suspension of permits for the transfer facilities "would have been unwarranted and disproportionate to the violations."

Richard P. Bruzzone, Regional Solid and Hazardous Materials Engineer in the DEC Region 2, states in an affidavit that, historically, while solid waste transfer stations are required to submit an annual report to the DEC, "DEC has accepted amended annual reports . . . when a facility or DEC has determined that the annual report was inaccurate." Here, Mr. Bruzzone states that on November 12, 1998, WM provided an amended report indicating that the Scott Avenue facility had handled 663 tons of PSW in 1997 and, in response to a DEC inquiry, submitted supporting documentation. The DEC reviewed the records "and found them to be credible," belying Petitioners' "contention that the facility ceased handling [PSW] for twelve consecutive months." Mr. Bruzzone also states that, under the DEC's implementation of 6 N.Y.C.R.R. § 360-1.1 (f), even if a facility permitted to process various categories of waste does not process a particular category for one year "it remains a permitted facility and authorized to accept" that category of waste, and that the purpose of the rule is to eliminate "ghost or phantom" facilities. Further, he states that both facilities "have a series of roof exhaust fans "which satisfy Part 360 ventilation requirements. Finally, Mr. Bruzzone states that the Varick Avenue facility is not a facility operated on behalf of a municipality as under the interim contract it would receive less than two thirds of its permitted capacity from the City.

John J. Ferguson, Regional Permit Administrator for the DEC Region 2, states in an affidavit that, "the determination . . . to treat a modification request as a new application" being discretionary pursuant to 6 N.Y.C.R.R. § 621.13 (e), the permit modifications requested for the transfer stations at issue would not "materially alter the current operations," nor was there "a material change in environmental conditions, relevant technology or applicable law or regulation." Further, as "there was no expansion of operations or increase of the approved design capacity . . . nor any change in

the process that would have a potential environmental impact," the requirements of 6 N.Y.C.R.R. § 360-1.8 (e) were not triggered. "Thus, the applications were properly treated as modifications rather than as applications for new facilities." Mr. Ferguson describes the facility modifications and finds an "absence of either an increase in the approved design capacity or a change in the process that may have a significant environmental impact." Mr. Ferguson further states that there was nothing out of order in the "hand delivery" of the permit modifications, as their issuance was "time-sensitive" since WM desired to resume construction work at the facilities in order to begin accepting MSW under the interim contract. With respect to its issuance of the DEC Negative Declaration, Mr. Ferguson states that the DEC permitting staff properly "evaluated potential environmental impacts associated with the [permit modifications], reviewed the [DOS Negative Declaration] and appropriately reached the conclusion that negative declarations under SEQRA for the permit modifications would be in order," but neglected "to document its analysis in a written negative declaration." Therefore, the permit modifications issued on October 23 and 26, 1998 were withdrawn on November 13, 1998. Mr. Ferguson states that, based on the subsequent thorough review of the potential environmental impacts, the DEC again concluded that there would be no significant environmental impact and the DEC also concluded that there would be an actual net decrease of 70 truck trips per day. Mr. Ferguson also notes that the transfer stations at issue have adequate ventilation and that the mobile source emissions at the stations are exempted from the revised 6 N.Y.C.R.R. Part 201 regulation. Finally, he notes that the other transfer stations in Community Board #1 are existing operations and therefore were included in the existing environmental conditions considered in analysis of the interim contract.

Also in opposition to the motion, WM submits the affidavit of Gregory Cekander, an engineer employed by Waste Management, Inc., the parent company of WM. In response to Petitioners' claim that the interim contract is actually for a larger amount of MSW, Mr. Cekander notes that the Notice of Award of the interim contract to WM provides for a three-year contract in the amount of $133,340,550.00 based on a price of $57.72 per ton, which corresponds to the approximate amount of 2500 tons per day, rather than the 4200 tons claimed by Petitioners. Mr. Cekander also submits documentation showing that the Scott Avenue facility was permitted effective November 6, 1989, which permit was renewed. Mr. Cekander describes the Scott Avenue facility

and its location in an M3-1 zone, and states that all activities relating to PSW will be performed within enclosed areas at the facility. He also states that operations at Scott Avenue never ceased for a continuous twelve month period and that it is not an unpermitted facility, a permit modification having been issued by the DEC on October 26, 1998 "which in no way altered the permitted capacity of 2,250 cyd of PSW." Mr. Cekander also describes the Varick Avenue facility and its location in an M3-1 zone, that it is permitted to process up to 3,700 tons per day of PSW, and that a permit modification issued by the DEC on October 23, 1998 did not change the amount of PSW that could be processed there. He also states that he is "perplexed" by Ms. Konheim's assertion that the "environmental assessment failed to consider the impacts on recycling of DOS-collected recyclables . . . because the Varick Avenue facility does not accept or process DOS-collected recyclables and the handling of recyclables at the Scott Avenue facility will not be affected by the award of the interim contract."

WM also submits the affidavit of Charles Gusmano, its district manager of the Brooklyn/Queens district. Mr. Gusmano states that he has been employed by WM since 1996, when WM acquired Star Recycling and its affiliated companies, which had previously owned and managed the transfer stations at issue. He states that "[t]he contemporaneous scale reports document that the Scott Avenue facility accepted and processed PSW for eight months in 1995, and every single month since that time." He notes that the internal WM code to reflect PSW processed at the facility is "101" and submits scale reports that show amounts of PSW processed since January 1995. Mr. Gusmano details the system employed to track the amount of various types of waste processed. He further explains that residual amounts of PSW in a load of commingled recyclables are coded "801" or "802" not "101," which also accounts for the greater amounts of PSW recorded as leaving the facility than entering it. Mr. Gusmano further states that "black bag" waste, which is also putrescible waste, is not code "101" and thus was not included in the scale reports he reported for 1998. Further, Mr. Gusmano states, that the annual reports for Scott Avenue for 1996 and 1997 were in error and the scale reports submitted to the DEC on November 16, 1998 "are the most accurate indicator of facility operations and . . . correspond to my personal knowledge and observations regarding the continuing receipt of PSW at the Scott Avenue facility." With respect to the claim that implementation of the interim contract would displace recycling equipment and capacity, Mr.

Gusmano states that Scott Avenue will continue to receive and process recyclables and that, due to market conditions, Varick Avenue no longer processes recyclables. Finally, Mr. Gusmano states that WM's Licensing Order provides that WM allocate 25% of its capacity for use by private waste haulers, but that capacity is exclusive of MSW.

In addition to the above submissions, the Court has reviewed the EAS, the DOS Negative Declaration, and the DEC Negative Declaration, as well as the affirmations of the respective attorneys and their memoranda of law, and the applicable law. The Court concludes that the Petition must fail.

Amount of Waste Under the Contract

A review of the Notice of Award of the interim contract, as well as review of the Allocation of Awards for the Bid for the interim contract makes it clear that the total daily tonnage amount is approximately 2,500, not the 4,267 that Petitioners contend is the actual amount of the contract. Although the facilities at issue are permitted to accept and process the larger amount (see discussion below), the foregoing documentation belies Petitioners' assertions and the Court accepts that the total daily tonnage is as stated by the DOS and WM.

The DOS Negative Declaration

"The basic purpose of SEQR is to incorporate the consideration of environmental factors into the existing planning, review and decisionmaking processes of . . . agencies at the earliest possible time." 6 N.Y.C.R.R. § 617.1 (c). "To accomplish this goal, SEQR requires that all agencies determine whether the actions they directly undertake . . . may have a significant impact on the environment, and, if it is determined that the action may have a significant adverse impact, prepare . . . an [EIS]." Id. "To determine that an EIS will not be required for an action, the . . . agency must determine either that there will be no adverse environmental impacts or that the identified adverse environmental impacts will not be significant." 6 N.Y.C.R.R. § 617.7 (a) (2). The agency "must study the same areas of environmental impacts as would be contained in an EIS, including both the short-term and long-term effects . . . as well as the primary and secondary effects . . . of an action on the environment." Chinese Staff and Workers Association v. City of New York, 68 N.Y.2d 359, 364 (1986). "The extent to which particular environmental factors are to be considered varies with the circumstances and the nature of the particular proposals." Save the Audubon Coalition v. City

of New York, 180 A.D.2d 348, 355 (1st Dep't 1992), leave denied, 81 N.Y.2d 702 (1993). However, "not every conceivable environmental impact, mitigating measure or alternative, need be addressed in order to meet the agency's responsibility." Matter of Neville v. Koch, 79 N.Y.2d 416, 425 (1992). If, after undertaking such a study, the agency determines that significant environmental impacts will not result from the proposed action, the agency may issue a negative declaration and "must provide a reasoned elaboration for the basis of its determination." Save the Audubon Coalition, 180 A.D.2d at 359. The role of the Court, however, is "not to weigh the desirability of [a] proposed action or choose among alternatives, but to assure that the agency itself has satisfied SEQRA procedurally and substantively." Matter of Neville, 79 N.Y.2d at 424.

Guided by these principles, it is clear that the DOS fulfilled its responsibilities under SEQRA in its study of the environmental impacts of the interim contract and properly concluded that implementation would not result in significant environmental impacts.

Preliminarily, it must be noted that, with respect to the collection truck routes contemplated in the EAS, these routes are not new ones, but represent a rerouting of such trucks from the MTSs located in Brooklyn to the Varick Avenue and Scott Avenue facilities, and are recognized as such in the EAS. It also must be noted that the amount of MSW to be processed at these facilities does not represent any increase in the amount of MSW generated or collected in Brooklyn or presently processed at the facilities.

Petitioners' claims that the DOS failed to follow SEQRA are unsupported by the record. The DOS properly focused its study on the traffic and traffic-related air and noise impacts that could reasonably be anticipated following implementation of the interim contract. As set forth above, data from 52 intersections were studied from February to May 1998. The intersections were selected as representing locations with the greatest potential to be impacted by the interim contract. As detailed in the affidavits of Scott Parker, Frank A. Frega, and James J. Coyle, the DOS identified the areas of concern, took the requisite "hard look" at the potential impacts and came to the reasoned conclusion that no significant adverse effects would occur. The claims made in the affidavits of Barbara J. Warren, Harold H. Osborn, Eric Jacobson, and George D. Thurston fail to address the specific determination that SEQRA demanded of the DOS, i.e., a reasoned estimate of the effect of the interim contract on existing conditions. Those affidavits are merely conclusory, framed as they

are in terms of warnings against the effects of air pollution, and offer no challenge to the detailed study undertaken by the DOS. Nor do the affidavits of the individual petitioners address the issue.

The affidavits of Carolyn Konheim and Brian Ketcham, while framed in more technical terms, also fail to identify the significant adverse impacts they allege require preparation of an EIS. With respect to the assertion that the EAS fails to disclose the economic impact of the interim contract and fails to apply a cost/benefit analysis, neither SEQRA nor judicial opinion requires such disclosure or analysis. See, e.g., Matter of Mobil Oil Corp. v. Syracuse Industrial Development Agency, 76 N.Y.2d 428 (1990). Moreover, the DOS appropriately confined its analysis to a reasonable geographic area and was not required to account for any increase in traffic on the interstate highway system. See, e.g., Matter of Neville, 79 N.Y.2d at 428.

With respect to Petitioners' claims that traffic impacts were not fully considered, the affidavits submitted simply do not make any showing of such failure. The purported increase of 526,000 additional miles is unsubstantiated; there is no demonstration that the intersections studied were erroneously chosen; there is no showing that all the export trucks would use the same BQE on/off ramp; there is no objective showing that the DOS should have employed different peak hours; there is no objective showing that the LOS at various intersections was inaccurately calculated; and there is no SEQRA requirement that traffic impacts from sites such as the DOS garage that may open in 2003 (well past any extension date of the interim contract) be included in this study. Moreover, there is no showing that the rerouted collection truck trips should follow the most direct route, rather than the quickest route as employed by the DOS; the state study that is purportedly at odds with the LOSs found by the DOS is not even identified; and there is no evidence that the DOS included only half the number of truck trips. Finally, there is no showing that traffic, during peak hours, would be diverted from the BQE onto downtown local streets.

With respect to Petitioners' claim that CEQR requires a detailed noise analysis of locations where there is a doubling of PCEs, such claim is clearly refuted by the EAS and by the affidavits of Scott Parker. Mr. Parker also points to the requirements of the Manual, which does not require analysis of receptors merely in the vicinity of a proposed route but only receptors along such route, which were indeed included in the study.

With respect to Petitioners' claims that the air quality screening was improperly conducted,

Mr. Parker notes that none of the intersections within the scope of the action are listed in the Manual as critical intersections and none are located in Long Island City, downtown Brooklyn, or lower Manhattan. Thus, pursuant to the Manual, a one-hundred vehicle screening test applies and, the study having concluded that none of the impacted intersections would experience such an increase, further analysis was not required. Moreover, as Mr. Parker notes, the EAS did analyze potential particulate emissions impacts and found that emissions from the number of action-induced trucks would not result in a doubling of NAAQS, which would have required further study. Moreover, the affidavit of Petitioners' medical experts, while strongly contested by the affidavit of Dr. Hoffman and of interest with respect to public health concerns, simply do not address whether the DOS violated the substantive and procedural requirements of SEQRA. Finally, Petitioners have made no showing that SEQRA or the Manual requires study of particulates other than PM-10.

As detailed above, the DOS and WM rebut all of Petitioners' claims with respect to the DOS Negative Declaration. The study was clearly conservative in its approach, [7] took the requisite hard look at the relevant and required factors and came to the reasonable conclusion that implementation of the interim contract would not result in significant adverse environmental effects.

The DEC Permit Modifications/Negative Declaration

Initially, it must be noted that, while Petitioners claim that the standard of review normally imposed upon courts in challenges to administrative actions is inappropriate in this case because the DEC is engaged in "a sordid and collusive relationship with WM," Petitioners offer nothing but sheer speculation and inquisitional suspicions in support of that claim. Petitioners argue that the DEC attempted to cover up its faulty issuance of the permit modifications by relying on what they claim is the inherently flawed DOS study and WM's "new and unsubstantiated submissions" in order to re-issue the modifications on November 25, 1998. "Arbitrary action," however, "is without sound basis in reason and generally [is] taken without regard to the facts." Matter of Pell v. Board of Education, 34 N.Y.2d 222, 231 (1974). Here, as evidenced by the DEC's submissions, there were reasonable, factual bases for the agency actions. Additionally, as pointed out by the DEC's counsel, Petitioners were notified of the DEC's intention to withdraw the permit modifications on November

[7] Indeed, as discussed above and below, the DEC Negative Declaration found that the proposed action would actually result in a net decrease of 70 truck trips per day.

11, 1998 and Petitioners made no objection. Further, counsel for all parties subsequently negotiated a schedule, which was submitted to the Court on November 13, 1998, to allow the DEC time to conduct its review and time for Petitioners to submit further papers. Petitioners, however, made no objection at that time and now offer no authority for the proposition that the agency may not reconsider its actions if it finds the prior action improper. See, e.g., Matter of Young v. Board of Trustees, 89 N.Y.2d 846 (1996). Petitioners' citation to Rahman v. Coughlin, 112 A.D.2d 591 (3d Dep't 1985) is inapposite as that case holds that an agency may not frustrate review of a determination by revoking the determination while it is pending during an Article 78 proceeding. Here, the DEC Negative Declaration is fully before the Court for review.

As detailed above, the challenge to the HydroQual study and the resulting EAS, here applied to the DEC Negative Declaration must fail. The DEC reviewed and evaluated the study and agreed with the conclusion rendered by the DOS. Indeed, the DEC found that the study was so conservative as to not take into account the net decrease in truck traffic at Varick Avenue which its own independent study revealed. The Court sees no reason to disagree with its own conclusion with respect to the DOS Negative Declaration and therefore rejects Petitioners' claims with respect to this aspect of the DEC Negative Declaration.

Petitioners' claim that the DEC was required to treat the permit modifications for the two facilities as new permits or substantial modifications, with the concomitant full SEQRA review must also fail. In spite of the allegations made by the individual Petitioners, it is clear that, based on WM's amended report which the DEC found to be credible, the Scott Avenue facility has continuously processed PSW, thus negating the "automatic" expiration set forth in 6 N.Y.C.R.R. § 360-1.11 (f), which provides that "[i]f . . . operation activities started under a permit issued pursuant to this Part cease for a period of 12 consecutive months, the permit automatically expires." Moreover, the construction given the rule by the DEC, the agency responsible for its administration, "is entitled to great deference and shall be upheld if not irrational or unreasonable." Matter of Wedinger v. Goldberger, 129 A.D.2d 712, 715 (2d Dep't 1987), aff'd, 71 N.Y.2d 428 (1988), cert. denied, 488 U.S. 850 (1988). Here, the DEC interprets the regulation to impose automatic expiration only if all the waste processing operations cease for twelve consecutive months. Such interpretation, which recognizes the otherwise harsh result, is neither irrational nor unreasonable. Further, the DEC

acted well within its authority to treat the modifications as neither an application for a new permit nor an application for a permit modification exceeding the thresholds set forth in 6 N.Y.C.R.R. § 360-1.8 (e), as those modifications would neither change the type of operations conducted at the facilities nor increase the capacity of either facility.

With respect to the claim that the DEC should not have reviewed the permit modification applications until the violations that were the subject of the subsequent Consent Order were resolved, 6 N.Y.C.R.R. § 621.3 (f), which provides that "[p]rocessing and review of an application may be suspended . . . if an enforcement action has been . . . commenced against the applicant for alleged violations of law related to the activity for which the permit is sought," clearly gives discretion to the DEC to impose suspension but does not mandate such. Again, in the absence of irrationality or unreasonableness, the DEC's decision not to impose a suspension is entitled to deference. Matter of Wedinger, 129 A.D.2d at 715. The resolution of the violations, as set forth in the Consent Order, which itself referenced the modification applications, clearly did not warrant suspension of the application procedure. Nor have Petitioners cited any authority for the assertion that they were wrongly excluded from the negotiations between the DEC and WM with respect to the violations and wrongly excluded from the permit modification process. The mere fact of litigation does not bestow additional rights on Petitioners.

Further, the claim that the facilities have inadequate ventilation systems is rebutted by the affidavits of John J. Ferguson and Richard P. Bruzzone, who unequivocally state that the facilities have a series of roof exhaust fans adequate to satisfy Part 360 requirements. Finally, 6 N.Y.C.R.R. § 201-3.3 (c) (11) excludes "[e]ngine exhaust emissions and/or refueling emissions generated from mobile and portable powered vehicles and equipment such as . . . construction and off-road vehicles and equipment . . . which are collected and/or vented in any manner through any opening in a facility when the vehicles and equipment are operated in the facility for the purposes of their design and intended use" from the major stationary source permit requirement of 6 N.Y.C.R.R. Part 201.

In conclusion, the Court finds that the DEC permit modifications and Negative Declaration were lawfully issued and Petitioners' claims must fail.

Segmentation

Petitioners claim that the DOS impermissibly segmented the environmental review process

as the interim contract is an integral part of a well-defined and comprehensive plan to export the City's waste.

> Actions commonly consist of a set of activities or steps. The entire set of activities or steps must be considered the action, whether the agency decision-making relates to the action as a whole or to only a part of it. Considering only a part or segment of an action is contrary to intent of SEQR. If a lead agency believes that circumstances warrant a segmented review, it must clearly state in its determination of significance, and any subsequent EIS, the supporting reasons and must demonstrate that such review is clearly no less protective of the environment.

6 N.Y.C.R.R. § 617.3 (g) (1). Segmentation is defined as "the division of the environmental review of an action such that various activities or stages are addressed . . . as though they were independent, unrelated activities, needing individual determinations of significance." 6 N.Y.C.R.R. § 617.2 (ag).

However, when the agency action has utility independent of speculative future activities, a separate environmental review of the action does not constitute segmented review. See, e.g., Matter of Residents for a More Beautiful Port Washington, Inc. v. Town of North Hempstead, 149 A.D.2d 266 (2d Dep't 1989). When the action does "not represent an irreversible commitment" on the agency's behalf, review of the entire project is not required until the project "is actually proposed." Id. at 275. Here, however, Petitioners claim that the Draft SWMP embodies the DOS' solid waste export plan and that the DOS has taken the first two [8] of five total steps in implementing the plan. Thus, they argue, there is a comprehensive plan to export waste preliminary to the closing of the Landfill, which is "immediate, concrete, and capable of review." The argument must fail, however, as it simply does not recognize that there are no such concrete plans at present. The mere mention in the Draft SWMP of contemplation of the export of 2,000 more tons per day by the end of 1999, 2,500 more tons per day by the end of 2000, and 4,000 more tons per day by the end of 2001, all in anticipation of the Landfill closure, does not constitute the formulation or articulation of a concrete plan. Indeed, Petitioners concede that the overall future plan to manage the City's solid waste "may take several years to formulate." The argument, considered in conjunction with the claims regarding issuance of a new solid waste management plan, would essentially impose a stranglehold on the

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[8] The DOS awarded a contract for processing 1,900 tons per day of Bronx MSW in June 1997.

DOS' attempts to rationally plan for the Landfill closing and to engage in formulating plans for a new solid waste management scheme. See, e.g., Matter of Citizens for an Orderly Energy Policy, Inc. v. Cuomo, 78 N.Y.2d 398 (1991). Even if the Court were to consider such vague policy statements as a fully developed plan for managing solid waste until the Landfill closes, the interim contract still has a geographically distinct scope, with potential impacts limited to this borough, and thus study of other contracts in other boroughs is not necessary. SEQRA only requires that the area studied be the "geographic boundary within which [the impacts] could reasonably be expected to occur." Matter of Neville, 79 N.Y.2d at 428. Moreover, if and when interim contracts for the other boroughs eventuate, the DOS would be required to evaluate the effects, if any, of this contract as a no-action condition in its environmental review. 218

Segmentation may also be found where an action is "practically determinative" of future actions. Matter of Tri-County Taxpayers Association, Inc. v. Town Board, 55 N.Y.2d 41, 46 (1982). Here, reduced reliance on the Landfill in the next few years does not mean that the interim contract will be the de facto long-term plan for disposal of solid waste without benefit of a full-blown environmental review. As discussed above, the DOS acknowledges that its future actions will be the subject of a SWMP modification and an environmental impact statement, with its concomitant public comment and review.

SWMP

Petitioners assert that, before implementation of the interim contract could lawfully commence, the City as a planning unit under SEQRA, was required to modify the SWMP. Petitioners also argue that the City has not undertaken a proper modification of the SWMP to reflect its long-term plan for waste disposal, which modification is required by the impending closure of the Landfill. 272

A solid waste management "plan must take into account the objectives of the State's solid waste management policy . . . and provide for the management of all solid waste within the planning unit for at least a 10-year period." 6 N.Y.C.R.R. § 360-15.9. The plan must include, inter alia, "identification of proposed or existing solid waste management facilities used to process, store, treat, or dispose of the solid waste generated within the planning unit." 6 N.Y.C.R.R. § 360-15.9 (c). "All plans . . . must be submitted to the [DEC] in draft form for approval," following which the DEC is

required to "review the draft plan" and adhere to certain timetables for review and comment. 6 N.Y.C.R.R. § 360-15.10 (a). Once such a plan is approved and effective, "[a] planning unit must undertake a plan modification . . . if there is . . . a significant change in the method of managing all or any significant portion of the solid waste generated within the planning unit." 6 N.Y.C.R.R. § 360-15.11 (b) (1). "The plan modification . . . must be submitted by the planning unit for review and approval by the [DEC] in accordance with section 360-15.10." 6 N.Y.C.R.R. § 360-15.11 (g).

Essentially interrelated with Petitioners' claim with respect to the allegedly segmented review, this claim must also fail. The clear purpose behind the SEQRA rules is reasonable agency examination of potential environmental impacts. Here, the DOS, as discussed above, duly subjected the proposed interim contract to the proper environmental review and issued the DOS Negative Declaration. Petitioners, however, would require an additional review premised on submission of a draft modification to the SWMP. There is no support for this position in the statute, rules, or case law. A solid waste management plan modification is "a revision to a [DEC] approved plan . . . due to a significant solid waste issue that was not identified at the time of plan approval." 6 N.Y.C.R.R. § 360-15.2 (c), and is subject to DEC approval pursuant to 6 N.Y.C.R.R. § 360-15.11. That the closure of the Landfill, and the inevitable infrastructure changes, is such an issue is beyond question, but to require a modification for implementation of a short-term strategy which had already been subjected to review, and permits for the facilities at issue having been included in the SWMP, would impermissibly constrain the DOS in the exercise of its administrative function. Further, to require the DOS to modify the SWMP while its long-term plan for dealing with the City's solid waste is yet in the formative stages, with no "irreversible commitment," to such a plan, Matter of Residents for a More Beautiful Port Washington, Inc., 149 A.D.2d at 275, does not require such intensive environmental review. Finally, Petitioners would require that the DOS do more than "undertake" the SWMP modification at this time. This would clearly place large, and unwarranted, lockstep obstacles in the path of the DOS' responsibility for dealing with the Landfill closing.

Statute of Limitations

Finally, challenges to the Draft SWMP, which Petitioners allege constitute a concrete plan to which the DOS is committed, or to the recommendations of the City-State Task Force, are barred by the statute of limitations applicable to Article 78 proceedings.

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ORDERED, that the motion is denied; and it is further

ORDERED, that the petition is denied in its entirety.

The foregoing constitutes the decision and order of the Court.

ENTER:

J.S.C.

SOLUTION MINING RESEARCH INSTITUTE

1745 Chris Court
Deerfield, Illinois 60015-2079
USA
847-374-0490

Meeting Paper

Stress-Relief Phenomena Observed During Solution Mining in Western New York

William J. Brennan

Department of Geological Sciences
State University College
Geneseo, New York
USA

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Cleveland, Ohio, USA
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INTRODUCTION

The Wyoming Valley is a northeasterly trending glaciated trough located in northeastern Wyoming County, New York. Near the Village of Wyoming, the valley is filled with more than 300 feet of glacial drift and postglacial alluvium. The valley floor is approximately 4000 feet wide, and approximately 350 feet of topographic relief exists in the Valley (Fig. 1).

Solution mining from the B unit of the Vernon Formation was initiated just south of the Village of Wyoming in 1986. The Wyoming brine field presently consists of 44 wells which are distributed over an area which extends from the center of the valley floor southeastward into the adjacent rolling upland (Fig. 1). The stratigraphic section in the brine field is inclined southward at approximately 60 feet per mile, and the entire section thickens toward the Appalachian Basin. Analysis of geophysical logs of all brine wells has demonstrated that no abrupt or unusual stratigraphic changes occur within the brine field. Neither the geophysical logs, nor surface geology contain any evidence of folding or faulting. Subsidence monitoring data contain no evidence of ground motions which can be attributed to closure of cavities created by solution mining (Brennan, 1993).

Beginning in 1994, maintenance and plugging operations revealed that entry to some well casings was blocked (apparently by crimping) at a depth of approximately 300 feet. As a result, it was necessary to remove the blockage by drilling (over a six foot interval) in order regain entry. The wells with blockage are located only along the lower portion of the valley wall and adjacent to the valley floor. No blockage has been observed in wells located either on the valley floor or a distance of more than 1500 feet into the upland to the southeast. The consistent characteristics of this problem suggest a direct relationship to stress-relief phenomena that are well known in the region.

REGIONAL CRUSTAL STRESS

For more than two decades information on the state of stress in the crust in North America has continued to accumulate (Sbar and Sykes, 1973; Haimson, 1977; Zoback and Zoback, 1980; Plumb and Cox, 1987). A commonly observed condition in crustal stress measurements is the presence of high horizontal stresses relative to vertical stress at shallow depths (Hast, 1973; McGarr and Gay, 1978). In northeastern North America the greatest horizontal stress is well known to be compressional and oriented east-northeast though some deviations from this trend are observed near the Atlantic coast (Adams and Bell, 1991; Zoback and Zoback, 1991). Crustal stresses in western New York reflect this regional pattern in that the greatest principal stress (σ_H) is oriented east-northeast, the intermediate principal stress (σ_h) is oriented north-northwest, and the minimum principal stress (σ_v), obtained by calculation from the weight of overburden, is vertical (Fletcher and Sykes, 1977; Agapito and Associates, Inc., 1995). Similar crustal stress orientations and ratios ($\sigma_H > \sigma_h > \sigma_v$) continue to be found elsewhere in the region (Haimson, 1996).

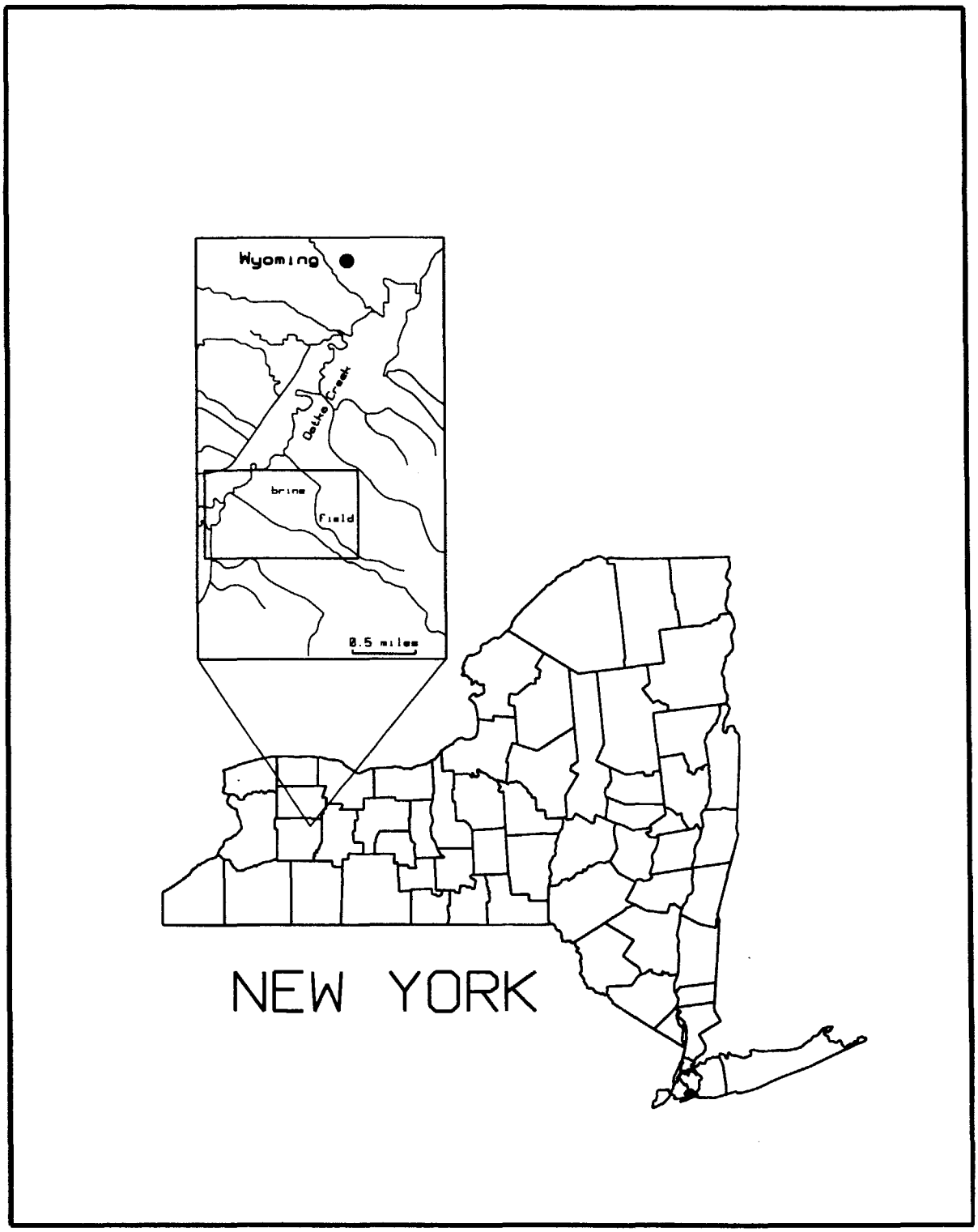

Figure 1. Location map of the brine field at Wyoming, New York.

STRESS RELIEF IN EXCAVATIONS

Dramatic results of the presence of high horizontal stresses at shallow depth are often observed in the floors of rock quarries. Johnston (1854) described several occurrences in Connecticut of the abrupt failure of thick sandstone beds as trenches were advanced downward to within one foot of the bottoms of the beds. Each failure was accompanied by a loud report and convergence of the trench walls of approximately three quarters of an inch. More recently, numerous examples of spontaneous failure of the uppermost stratum in newly exposed quarry floors to form an anticlinal structure with planar limbs, fractured crest and separation from the stratum immediately below (to produce a separation void) have been reported in southern Ontario and western New York (Coates, 1964; Sbar and Sykes, 1973; Saull and Williams, 1974; Lo, 1978; Adams, 1982; Williams and others, 1985). The majority of the anticlinal floor heaves trend north-northwest perpendicular to the regional σ_H. Although many floor heaves exhibit other trends, the variability in orientation may be the result of reorientation of ambient stresses caused by excavation. Lo (1978) reported several cases of convergence of the walls of excavations ("rock squeeze") associated with heaves of quarry and canal floors in southern Ontario. Additional examples of similar and related phenomena in the region were compiled by Smith (1977). Pomeroy and others (1976) attributed the triggering of a shallow earthquake sequence in the lower Hudson Valley of New York to crustal unloading caused by quarrying.

STRESS RELIEF ALONG STREAM VALLEYS

Hofmann (1966) described many small folds and thrust faults located almost exclusively along stream channels near Cincinnati, Ohio. The structures occur in strata with a regional dip of less than one half degree to the northwest. The folds and thrust faults usually occur together, exhibit from one to three feet of structural relief and decrease in amplitude with increasing depth. According to Hofmann (1966), the folds are aligned both parallel and transverse to the stream channels, and their trends, though somewhat scattered, average north-northwest which is now known to be perpendicular to the regional σ_H (Zoback and Zoback, 1991). He speculated that the folds may have originated from a variety of surficial processes or unloading by erosion.

Simmons (1966) observed small anticlines with amplitudes of five feet or less, widths of several tens of feet or less and lengths of up to one half mile in central Kentucky, an area of flat-lying strata. The folds, which die out with increasing depth, are located along streams, and each is aligned with the stream regardless of the trend of the channel. The folds have fractured crests, and Simmons (1966) concluded that their alignment with drainage is evidence of recent origin. He recounted an 1877 eyewitness report of the abrupt formation of one of the folds accompanied by a loud report. He theorized that the folds may have formed as a result of expansion of the bedrock

caused by chemical weathering or perhaps unloading caused by stream erosion.

Molinda and others (1992) reported a strong correlation between roof failures, thought to have been caused by horizontal compression of roof members, in coal mines located beneath the floors of broad, flat bottomed valleys in Pennsylvania and West Virginia. The roof failures include bedding plane faults, low angle thrust faults and small scale folding which are observed to depths of as much as 300 feet. They demonstrated, using numerical modeling, that excavation by erosion to form valleys concentrates horizontal stresses beneath the valley centers and causes horizontal stresses to exceed vertical stresses to depths of more than 150 feet. Their results also indicate that at very shallow depth (50 feet or less) horizontal stresses are not increased because of the presence of a stress-relief zone. This modification of the stress field by valley erosion causes large shear stresses to exist at shallow depth, and, when horizontal tectonic stresses normal to the valley trend also exist, stress conditions result in a situation of greatest risk (Molinda and others, 1992). Although the Wyoming Valley is broad and flat bottomed, geophysical logs of brine wells give no indication of the presence of stress-relief structures like those described by Molinda and others (1992) at depths below the bedrock floor of the valley.

POP-UPS

Many authors have described additional flexures of small amplitude and areal extent in northeastern North America. The flexures are typically located at or near the top of bedrock in flat-lying strata, may be accompanied by small, low angle thrust faults, and are located in both open areas and small ravines. Although many are indistinguishable from the small stream anticlines described by Hofmann (1966) and Simmons (1966), the term "pop-up" has generally been used to label them. Cushing and others (1910) reported more than a half dozen in the Thousand Islands area of New York and concluded that they were of postglacial origin. Van Horn (1909) attributed similar flexures near Cleveland, Ohio to lateral expansion of horizontal strata caused by chemical weathering. Fakundiny and others (1978) examined the variety and distribution of pop-ups near the Clarendon-Linden Fault. They summarized the geometrical variations observed, and they recognized that in areas of low relief pop-ups are located primarily in open terrain, but in areas of high relief they are usually located in ravines.

Wallach and Chagnon (1990) concluded that the predominant north-northwest orientation of pop-ups in quarries in the Québec City area is a result of the high east-northeast directed horizontal crustal stresses in the region. They attribute the substantial minority of pop-ups whose orientations do not conform to this trend to local reorientation of stresses. Wallach and others (1993) suggest that pop-ups should be considered strong indicators of seismic risk. However, the wide distribution of

pop-ups (Smith, 1977; Fakundiny and others, 1978) and the broad distribution of high horizontal crustal stresses in eastern North America (Adams and Bell, 1991; Zoback and Zoback, 1991) suggests that most form in response to local topography and crustal stress conditions. Roorda (1995) performed a mathematical analysis of pop-ups based on the assumptions that they form in strata that can be modeled as infinite elastic plates lying on a horizontal substrate. His results suggest that pop-ups form after some small trigger disturbance initiates sudden unstable growth of a bulge in a stratum with some initial minimum in-plane compressive stress. According to Roorda (1995), the area within which stresses are relieved extends out to distances of as much as hundreds of feet from the central bulge.

DRILL HOLE DISPLACEMENTS

Drill hole displacements have been observed in several locations in eastern North America. Several were observed in road cuts excavated in 1970 along Route 11 in southern Connecticut shortly after construction of the highway began (Block and others, 1979). The offsets occurred on pre-existing foliation or fault planes in schist and ranged from 0.4 inches to 2.4 inches. At one site the initial offset was 0.9 inches followed by an additional 0.6 inches of creep over the following eight years. The offsets were directed updip to the southeast and, depending on the orientation of the roadway, occurred parallel or transverse to it. The direction of transport is parallel to the local σ_H and earlier thrusting in the area (Zoback and Zoback, 1991; Block and others, 1979).

Schäfer (1979) observed offsets of drill holes in road cuts in folded and thrust faulted strata of Paleozoic age near Rockwood, Tennessee. One displacement occurred on a thrust fault presumed to be of Alleghenian age and was directed N 80 W, parallel to the road cut. The road cut was excavated in 1966 and first studied in 1974 when a displacement of 12 inches was noted. Because no slip has been documented since 1974, it is not known whether the displacement occurred in one event. Elsewhere in the area, offsets of drill holes along bedding planes have occurred. The directions of slip were generally to the southeast (Schäfer, 1979). Hatcher and Webb (1981) examined the same outcrops described by Schäfer and concluded that the drill hole offsets were caused by the release of stored elastic strain energy of topographic origin rather than tectonic stresses. They point out that drill hole offsets vary from negligible to 11.8 inches from one side of a joint to another and such offsets are common in the Cumberland-Allegheny Plateau of Tennessee and west Virginia.

Wallach and others (1995) monitored bedding plane offsets (up to 9 inches) of drill holes in road cuts in the Ottawa-Hull area and found that the slip direction was directed to the northeast or nearly parallel to the regional σ_H. They found no evidence of continuing motion; thus, the offsets may have formed in a short time interval immediately following excavation. In contrast, (Bell, 1985) concluded that drill hole offsets caused

by updip displacements along bedding planes in Alberta, Canada resulted from local near-surface stress-release expansion in areas where the minimum principal stress is vertical. He noted that the large displacements which apparently have occurred in short time intervals are much greater (4 inches or more per year) than would be expected for contemporary thrust faulting given present rates of plate convergence. In addition, contemporary thrusting at such rates would probably be accompanied by notably more seismicity than is presently occurring.

CONSTRICTION OF WELL CASING IN THE WYOMING BRINE FIELD

The constrictions noted in well casings at Wyoming have been observed only in wells located adjacent to the margin of the valley floor. In all wells the constrictions have occurred at the same stratigraphic position within the Kashong member of the Moscow Formation, a marine shale. This stratigraphic position lies just above the top of the bedrock floor under the center of the Wyoming Valley and 1000 feet above the top of the salt (Fig. 2). No evidence that might relate the casing constriction to solution mining or continued deformation on pre-existing folds or faults which transect the stratigraphic section has been identified. Removal of salt by solution mining has taken place throughout the brine field without surface evidence of cavity closure (Brennan, 1993). In addition, structure contouring at the base of the salt bearing interval (Fig. 3), the top of the Onondaga Formation (Fig. 4) and the top of the Tichenor Limestone (Fig. 5) give no indication of structural deformation, or deviation from regional trends at any stratigraphic level below the top of the bedrock floor of the valley. Thus, the cause of the constrictions must lie at a shallower depth.

DISCUSSION

The Wyoming Valley, formed by erosion by the Laurentide ice sheet, is the only large excavation in the vicinity of the brine field, and its formation was completed by or before the time (approximately 13000 years BP) the ice front last retreated from the area. No other natural or man-made excavations of adequate size to induce stress relief at a depth of 300 feet exist near the brine field. Therefore, the observed deformation of well casings has almost certainly been caused by the erosion of the valley, and it has probably been occurring for thousands of years. The stratigraphic localization of the deformation suggests that slippage along a bedding fault is responsible for the closure of the well casings; however, a monitoring program, in operation since the initiation of solution mining, has revealed no evidence of induced seismicity. The absence of seismicity indicates that aseismic creep on a bedding fault is the process by which stresses are being relieved. Based on the number of years since the affected wells were drilled and casing diameter, the rate of slip is estimated at from 0.06 inches per year (the minimum slip needed to block tool entry) to 0.4 inches per year (the slip needed to completely close the casing).

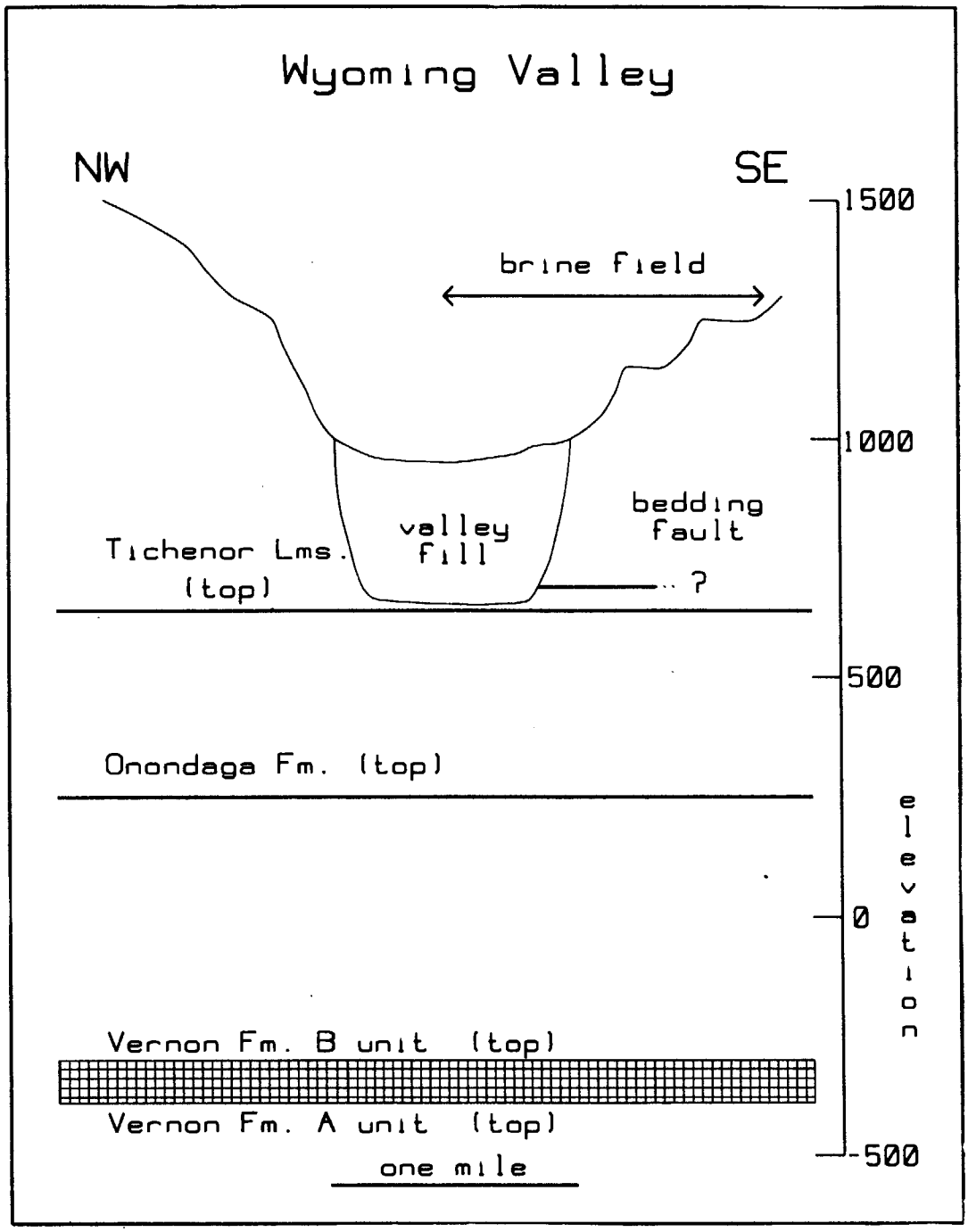

Figure 2. Cross section of the Wyoming Valley. Line of cross section is oriented normal to the trend of the valley and passes through the center of the brine field

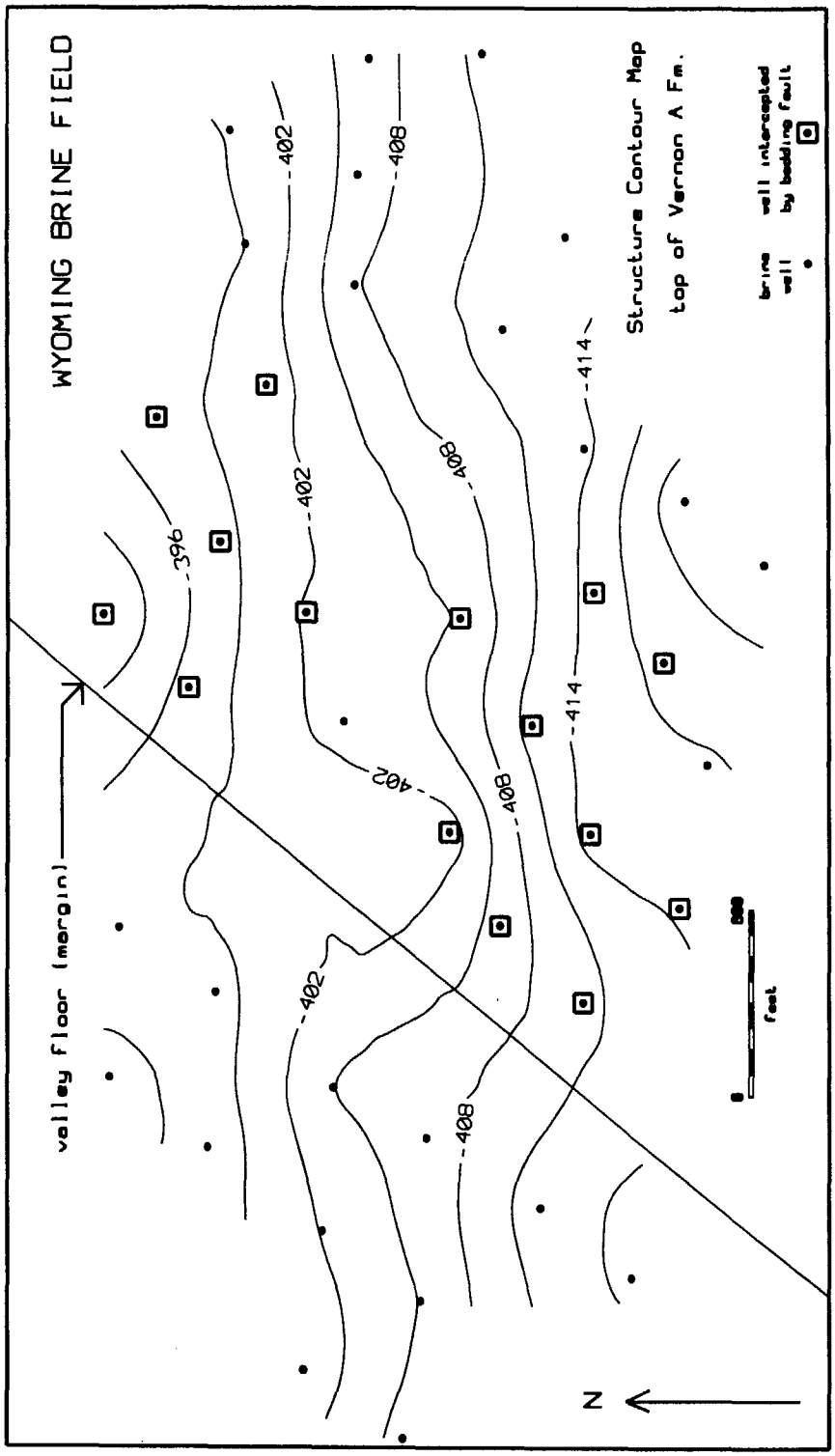

Figure 3. Structure contour map drawn on top of the A unit of the Vernon Formation in the brine field at Wyoming.

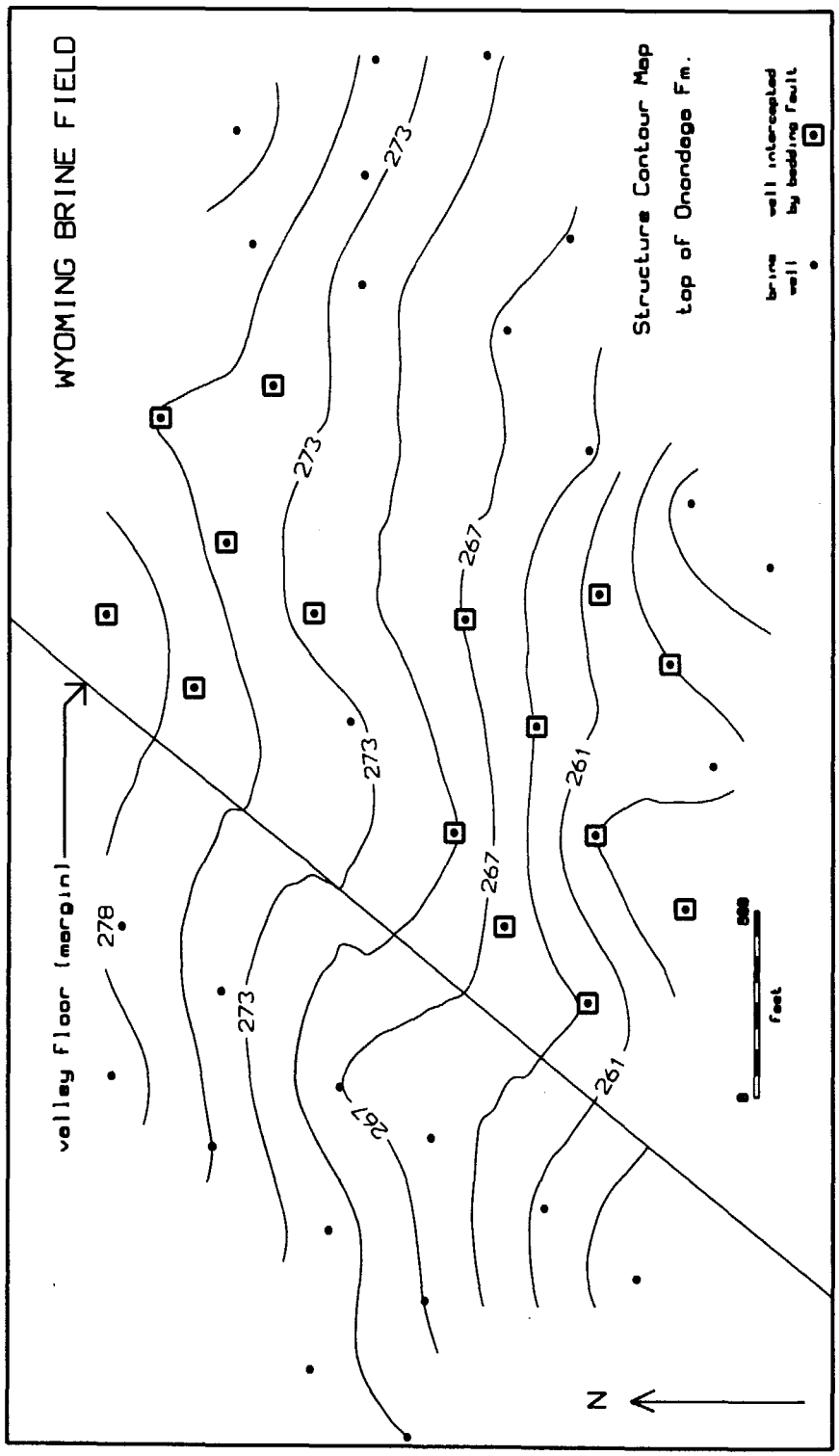

Figure 4. Structure contour map drawn on top of the Onondaga Formation in the brine field at Wyoming.

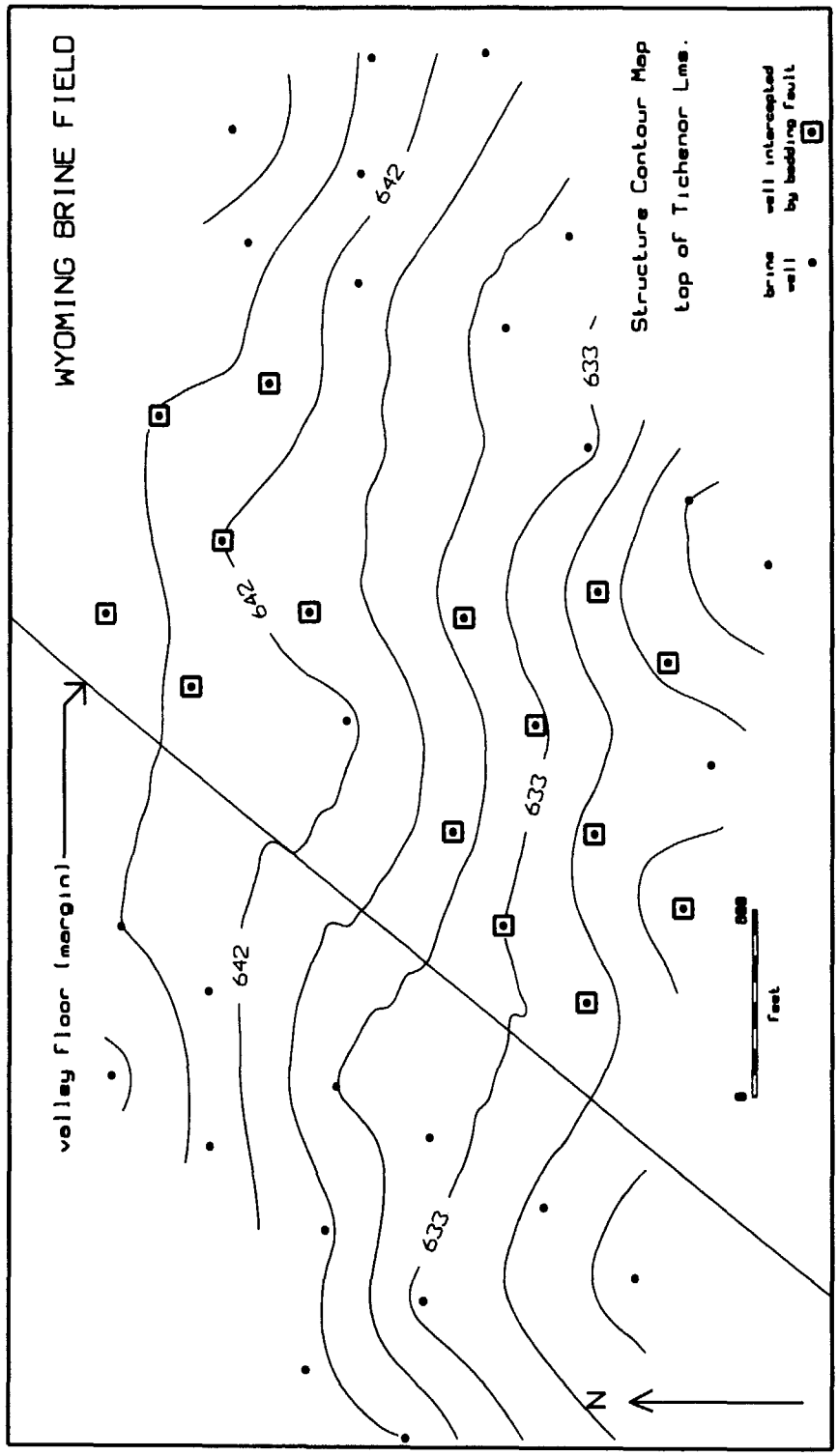

Figure 5. Structure contour map drawn on top of the Tichenor Limestone in the brine field at Wyoming.

The areal distribution of affected wells indicates that the magnitude of slip must not only decrease, but may not be occurring, to the southeast under the upland where the normal stress on the surface of slippage increases with increasing distance from the valley margin. Removal of the bedding fault horizon beneath the floor of the valley is responsible for the absence of affected wells there. Although not yet confirmed by direct measurement, it is assumed that motion of strata above the bedding fault is directed toward the valley. Observations made to the present time suggest that the driving mechanism is dependent on the reduction of vertical stresses relative to horizontal stresses by erosion as suggested by Bell (1985) and removal of lateral confinement by erosion of the valley.

The absence of mid-valley stress-relief structures like those proposed by Molinda and others (1992) beneath the floor of the Wyoming Valley is clearly evident, and some attempt at explanation is appropriate. Glaciated troughs in western New York are typically deep, wide and have flat valley floors like the valleys Molinda and others (1992) suggest are at highest risk of stress-relief deformation. However, the glaciated troughs are also filled with thick accumulations of glacial and postglacial sediment. The maximum thickness of fill in the Wyoming Valley near the brine field is just over 300 feet and the thickness in the Genesee Valley is more than 500 feet over the abandoned Retsof mine (Brennan, 1988). Thus, these valleys are filled with material of sufficient thickness and small enough density contrast with bedrock (Brennan, 1988) that vertical stresses at the top of bedrock are increased substantially. In addition, the sedimentary fill is unconsolidated which allows it to contribute to vertical stresses on the bedrock floors of valleys, but makes it incapable of supporting or transmitting horizontal stresses effectively. Thus, the presence of thick valley fill reduces the difference between horizontal and vertical stresses at the top of bedrock.

CONCLUSION

Blockage of brine well casings in localized portions of the Wyoming brine field are the result of aseismic creep along a bedding fault located just above the top of the bedrock floor of the Wyoming Valley. Slippage occurs only in those locations where the combined effects of topography and thickness of valley fill result in a condition in which vertical stress is sufficiently diminished relative to horizontal stress to allow displacement to occur and lateral confinement has been removed. The displacement has probably been occurring for thousands of years, and it is probably occurring in other glaciated troughs in the region. Because brine wells are on line for less than one decade, the risk to solution mining operations is negligible. However, other wells in similar locations that are typically in operation for decades may be at some risk.

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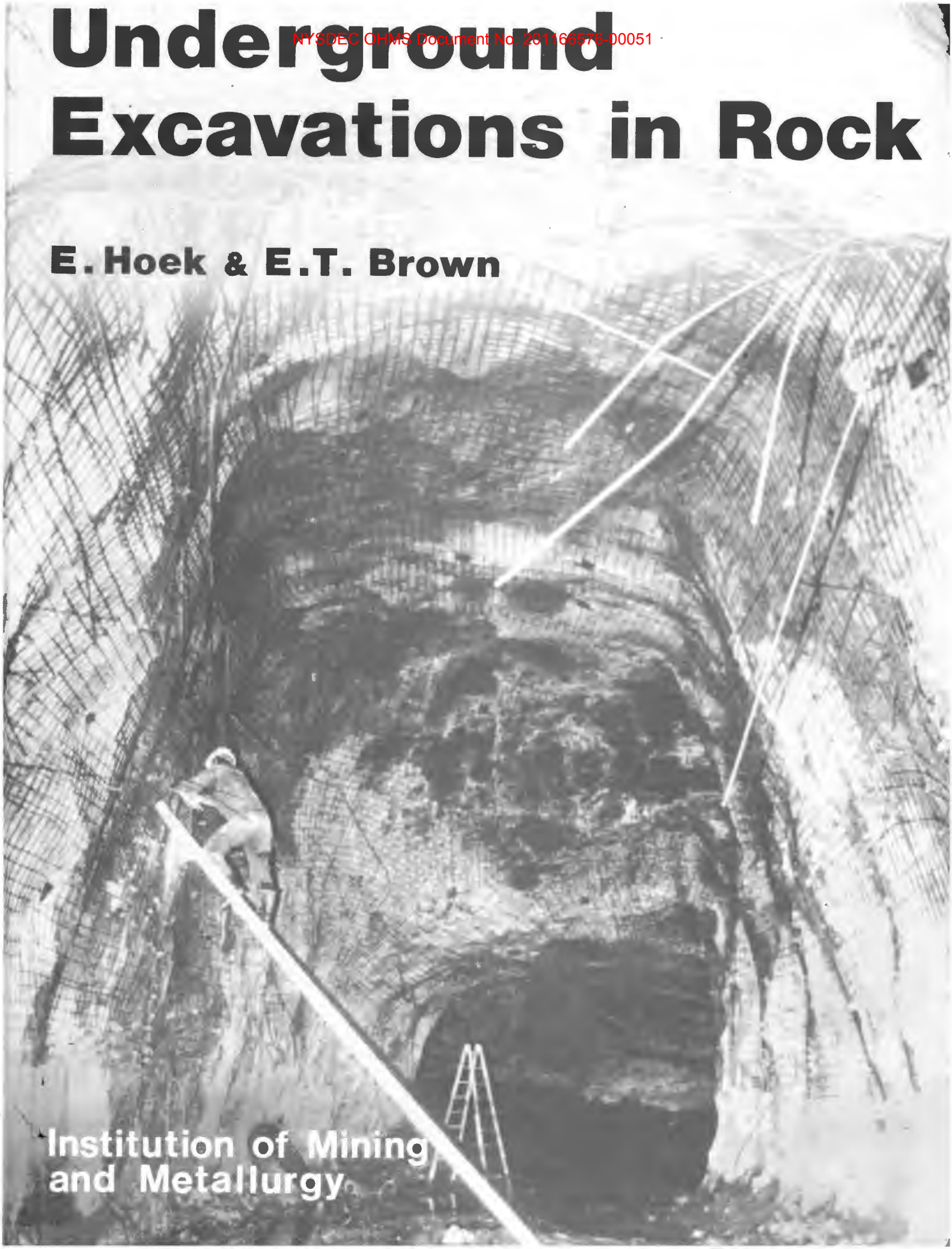
Underground Excavations in Rock

E. Hoek & E.T. Brown



Institution of Mining and Metallurgy

Underground Excavations in Rock

E. Hoek

D.Sc (Eng)

Principal, Golder Associates,
224 West 8th Avenue, Vancouver V5Y 1N5, Canada

E.T. Brown

Ph.D

London University Professor of Rock Mechanics,
Imperial College of Science and Technology,
South Kensington, London SW7 2BP, England

The Institution of Mining and Metallurgy, London
1980

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E. Hoek

D.Sc (Eng)

Principal, Golder Associates,
224 West 8th Avenue, Vancouver V5Y 1N5, Canada

E.T. Brown

Ph.D

London University Professor of Rock Mechanics,
Imperial College of Science and Technology,
South Kensington, London SW7 2BP, England

The Institution of Mining and Metallurgy, London
1980

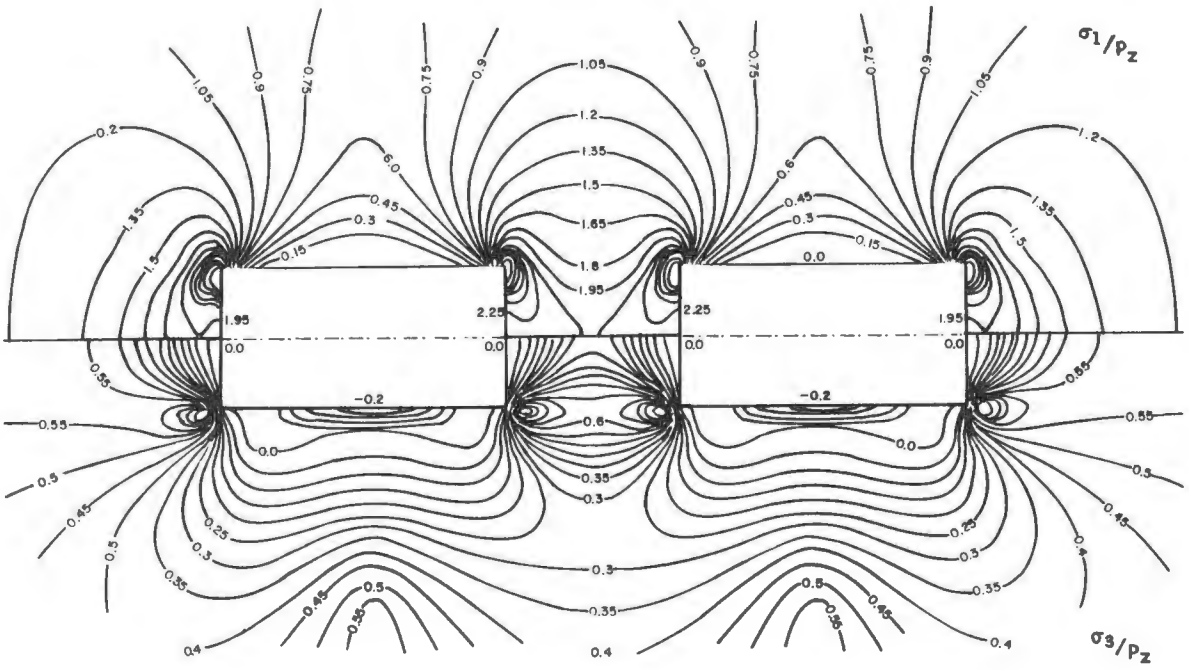


Figure 61 : Principal stress distributions in the rock surrounding two adjacent excavations aligned normal and parallel to the applied stress directions. (k = 0.5)

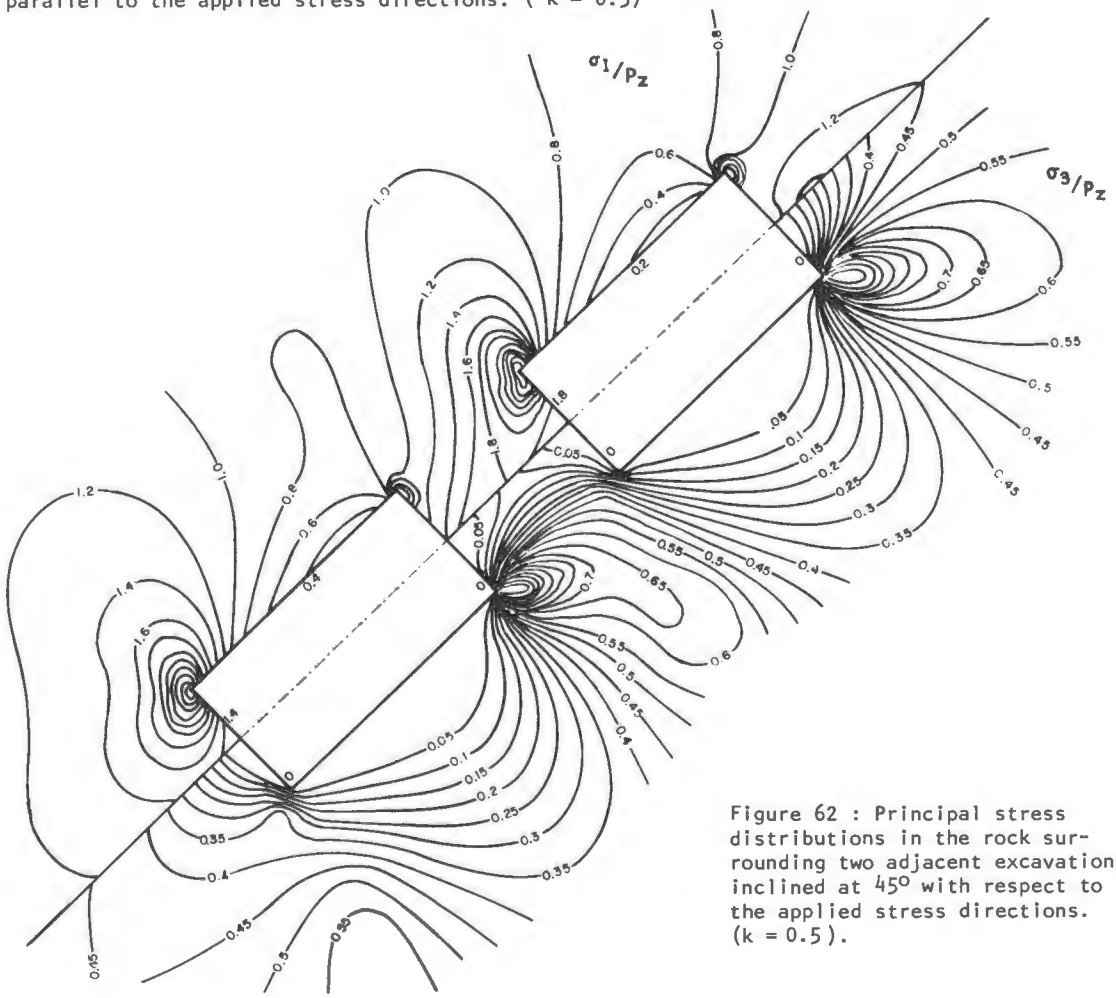


Figure 62 : Principal stress distributions in the rock surrounding two adjacent excavations inclined at 45° with respect to the applied stress directions. (k = 0.5).

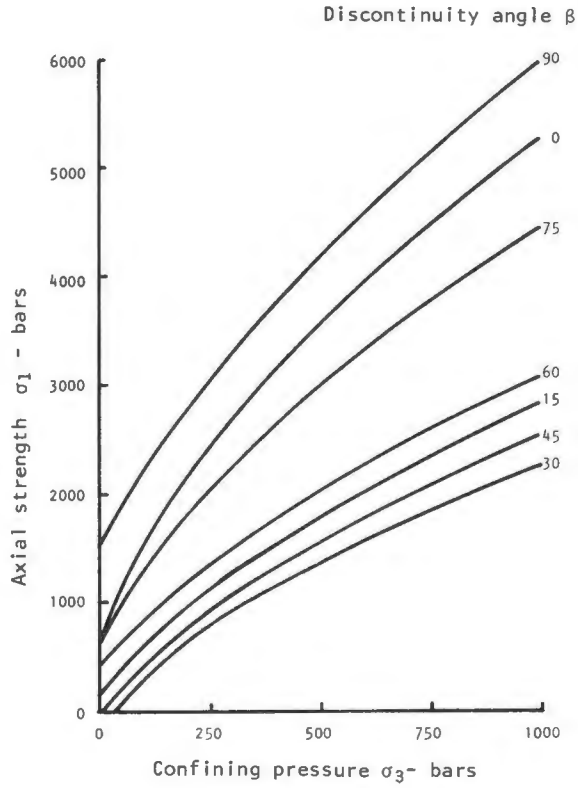
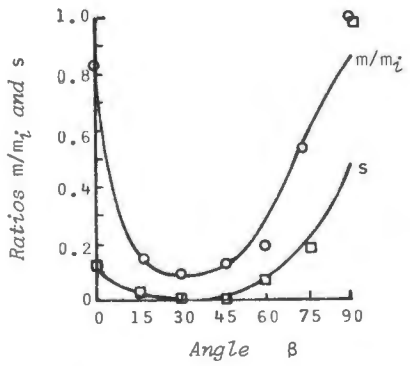
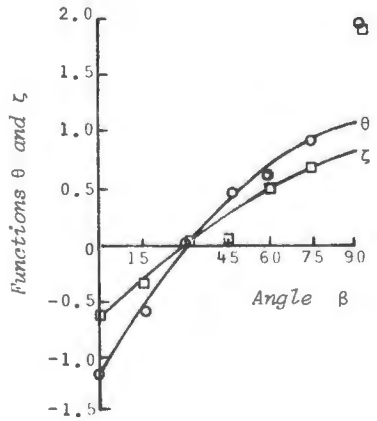


Figure 70 : Relationship between principal stresses at failure for Martinsburg slate tested by Donath[174].





From equations 58 and 59 :

$$\theta = \left(\text{Log}_e\left(\frac{A}{1-m/m_i}\right)\right)^{\frac{1}{4}} \qquad (61)$$

$$\zeta = \left(\text{Log}_e\left(\frac{P}{1-s}\right)\right)^{\frac{1}{4}} \qquad (62)$$

where $A = (m_i - m_{min}/m_i)$

$P = (1 - s_{min})$

In solving equations 62 and 63 it should be noted that the values of θ and ζ are negative for values of β less than ξ_m and ξ_s.

Plots of m/m_i and s versus β and of θ and ζ versus β are given in the margin. Equations 60 and 61 have been fitted to the values of θ and ζ, calculated from equations 62 and 63, by a process of trial and error. The values of θ and ζ from these fitted curves have then been substituted into equations 58 and 59 to obtain the curves of m/m_i and s versus β given in the upper margin drawing. These values of m and s were then substituted into equation 43 (page 137) to give the curves of axial strength σ_1 versus discontinuity angle β presented in figure 71.

The results of similar analyses on a variety of anisotropic rocks are presented in figures 72 to 76. In all cases the authors feel that equation 43, with values of m and s calculated from equations 58 and 59, describes the influence of a single discontinuity with sufficient accuracy for most practical purposes.

II. BRINE FIELD CONDITIONS

The following is a summary of existing conditions in the brine field area. It provides the basis for this Brine Well Closure Plan. A more detailed discussion of geology and hydrogeology is provided in an additional report by H&A prepared concurrently with this plan.

2.1 General

After 98 years of solution mining in the Tully Valley, Allied's brine production ended in 1986. LCP Chemicals N.Y., Inc. (LCP) operated its four wells, H-8, H-9, H-10, and H-11 until it shut down operations in 1988. The Tully brine field was developed essentially as two separate, elongated brining areas, one on each side of the valley, and a limited number of wells drilled and pumped in the center-valley area (Figure 2). Surface settlement has occurred over an area of approximately 600 to 800 acres resulting from collapse of the rock overlying the brine cavities. Much of the brine cavity void space has been filled by collapsed overlying rock, although some smaller voids probably remain (Fernandez 1991; H&A 1992).

2.2 Site Geology

The Tully Valley is an elongated north-south Valley with relief on the order of 1300 feet. Elevations range from 1800 feet, National Geodetic Vertical Datum (NGVD, formerly USGS Mean Sea Level) atop the highlands on the east and west sides of the valley to approximately 500 feet in the northern end of the valley near the confluence of Onondaga Creek's main and west branches. The southern end of the valley is formed by the Tully Moraine, a thick sequence of glacial till, outwash and mixed deposits deposited during a temporary stagnation of the most recent ice sheet to cover this area, approximately 13-14,000 years ago (Mullins, et.al, 1991). The moraine overlies bedrock which rises nearly to elevation 1100 feet near State Route 80.

The relatively flat bottom of the current valley is formed by a thick sequence of mixed glacial, glaciolacustrine and recent alluvial deposits, ranging from a few feet thick along the valley sidewalls to over 500 feet thick near the center of the valley. The U-shaped configuration of the valley's bedrock surface is typical of glaciated valleys the result primarily of scour by glacial ice and subglacial meltwater erosion (Mullins, et.al, 1991).

PUBLIC VERSION

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
----------X

In the Matter of the Application for an Underground Gas Storage Permit Pursuant to Environmental Conservation Law (ECL) Article 23, Title 13, by

FINGER LAKES LPG STORAGE, LLC

Applicant.

AFFIDAVIT IN SUPPORT OF DEC STAFF REPLY BRIEF

DEC Permit Application ID No. 8-4432-00085

----------X

STATE OF NEW YORK)

COUNTY OF ALBANY) ss:

PETER S. BRIGGS, being duly sworn, deposes and says as follows:

1. I am the Director of the Bureau of Oil & Gas Permitting and Management in the Division of Mineral Resources of the Department of Environmental Conservation ("Department") in Albany, New York. I have served in this capacity for approximately four and one-half years. Prior to that time, I was the Chief of the Division's Permits Section, a Mineral Resources Specialist III and a Mineral Resources Specialist II. I have worked in the Division for almost 27 years. My prior work experience includes six years of petroleum engineering positions in well drilling, production, completions and workovers with Texaco Inc. in Morgan City, Louisiana. I have a Bachelor of Science Degree in Mineral Engineering from The University of Alabama. My specialization was petroleum engineering.

2. I make this affidavit in support of Department staff's Post-Issues Conference Reply Brief.

3. As the Director of the Bureau of Oil & Gas Permitting and Management, I am responsible for the administration of permitting, compliance, and enforcement programs pertaining to oil, gas and solution mining development, and underground storage of natural gas and liquefied petroleum gas ("LPG"). My previous positions with the Division also included duties and responsibilities related to these programs.

4. I am very familiar with matters relating to Finger Lakes LPG Storage, LLC ("FLLPG") and its underground storage permit application having been involved in the application and permitting process related to that facility since 2009. I submit this affidavit in support of Department staff's Post-Issues Conference Reply Brief to respond to arguments made by Gas Free Seneca ("GFS") and Seneca Lake Pure Waters Association ("SLPWA") in post-issues conference briefing.

Caverns Permitted for Storage

5. With respect to FLLPG's proposed storage Gallery 1, GFS is incorrect when it states "…uncertainty about the four caverns of the gallery has resulted in a plan to limit LPG storage to just one cavern" (April 17, 2015 GFS Post-Issues Conference Closing Brief, Page 20). FLLPG's application materials including its responses, and the Draft Underground Storage Permit show multiple caverns in Gallery 1 proposed for storage by the applicant and included in its FEA, and evaluated and tentatively permitted by the Department for LPG storage. For example, FLLPG's initial application to the Department clearly indicates FLLPG requested approval for storage in multiple caverns within Gallery 1 (October 9, 2009 FLLPG application, Reservoir Suitability Report, Pages 1, 4-6, 10-11, 14). Further, FLLPG's Vertical Sections B-B′ (rev. 9, 7/16/13) indicates an "Ultimate Cavern Dimension" for Cavern 33 along with the additional notation "Possible Future Replacement Well May Be Drilled." Growth of Cavern 33 due to operational solutioning would not have been shown and accounted for in the cavern

design unless storage within this cavern was part of FLLPG's proposal. The Draft Underground Storage Permit specifically allows LPG storage in Cavern 33, not just Cavern 34 (new FL1). Attachment 2 of the Draft Permit [Note 3] states, in part, "Additional storage wells and monitoring wells may be permitted by the Department and drilled into either gallery subsequent to the issuance of this permit without affecting the allowable maximum capacities and maximum product capacities, provided product storage is limited as described above and the ultimate gallery dimensions due to operation of any such wells does not cause an exceedance of the ultimate cavern dimensions shown on the storage map dated August 28, 2014." Attachment 2 of the Draft Permit [Note 4] states, in part, "As approved by the Department, the Permittee must maintain a hydrocarbon and/or nitrogen blanket in Gallery 1 at Well FL1 and any future replacement well for Well 33, and in Gallery 2 at Well 58 at all times during storage operations and/or any shut-in periods." The fact that FLLPG has proposed and that the Department would require the plugging and abandonment of Well 33, per Draft Underground Storage Permit Condition 15, does not in any way make Cavern 33 unavailable for storage should FLLPG decide to drill a future replacement well to access such cavern.

Gallery 2 (Well 58) History

6. GFS is incorrect when it states that Gallery 2 has a history of collapse (April 17, 2015 GFS Post-Issues Conference Closing Brief, Page 20). There is no evidence in the record to support this contention. FLLPG provided documentation in its application including its response documents which is acceptable to the Department, and demonstrates that Gallery 2 does not have a collapse history that would make it unadaptable for storage purposes. Such documentation includes, but is not limited to: a) October 20, 2009 Cavern 58 sonar survey; b) January 7, 2010 FLLPG correspondence to DEC, Moon to Collart; c) March 25, 2011 Cavern 58 sonar survey; d) May 14, 2010 Reservoir Suitability Report; e) January 22, 2013 FLLPG correspondence to DEC,

Bernstein to Bimber, and; f) March 26, 2013 Cavern 58 sonar survey. Regardless of what GFS argues, the above noted Cavern 58 sonar surveys from 2009, 2011 and 2013 prove that, without a doubt, any earlier interpretation by Consulting Engineer Larry Sevenker in 2003 which indicated cavern collapse, and led to the plugging and abandonment of Well 58, was in error. (Sevenker, January 15, 2013).

7. According to the Department's website at http://www.dec.ny.gov/energy/35817.html, there are 26 underground natural gas storage facilities and three LPG storage facilities in New York.

8. I am familiar with the construction and operation of the three aforementioned existing LPG storage facilities in the state. The Reading LPG storage facility (also known as the Enterprise Products facility or TEPPCO facility) is not a salt-cavern storage facility, and instead is an unlined conventionally-mined cavern facility constructed in the relatively shallow (approximately 450 feet below ground surface) shales of the Genesee Group, well above the Camillus Formation ("Camillus"). The Savona LPG and Harford Mills LPG storage facilities, like the proposed FLLPG storage facility, are relatively deep (approximately 2,000 feet or deeper below ground surface) salt-cavern storage facilities constructed in the Syracuse Formation just below the Camillus.

Camillus as a Cavern Roof

9. The Savona LPG and Harford Mills LPG storage facilities, like the proposed FLLPG storage facility (i.e., caverns at Well 33 and Well 58), have some existing LPG storage caverns which rely on the Camillus to form all or part of the storage caverns' roofs. The Savona LPG and Harford Mills LPG storage facilities have been in operation since the 1950s, and the Camillus has a demonstrated history of over sixty (60) years of product containment at these facilities. I am not aware of any incidents at these facilities related to the migration of LPG

through the Camillus during their operating histories, thus proving the Camillus' worth as an effective caprock.

10. The Camillus at the proposed FLLPG storage facility has been thoroughly evaluated by FLLPG, Department staff and the New York State Geologist for use as a confining zone, and if applicable, part of the storage caverns themselves, in FLLPG's proposed storage Galleries 1 and 2.

11. The Camillus was conventionally cored in Well 59, and evaluated for its physical and mechanical properties (October 9, 2009 FLLPG application, Exhibits 8 & 9 and May 14, 2010 FLLPG Reservoir Suitability Report, Tab 5). According to FLLPG's August 28, 2014 Brinefield Map Showing Galleries, the distance from Arlington Storage Company, LLC's ("Arlington") Gallery 1, of which Well 59 is included, is approximately 600 feet away from FLLPG Gallery 2. Well 59 and its core are sufficiently close to be representative of the caprock at FLLPG's Galleries 1 and 2. In his FEA, Dr. Fuenkajorn provides a "Summary of properties used in FE analyses" which includes the testing results of the core obtained from Well 59 (September 28, 2010 FLLPG Response to Second NOIA). Dr. Fuenkajorn's FEA, which relies on the core properties in the summary, concluded that FLLPG Galleries 1 and 2 are adaptable for storage purposes.

12. Department staff, the New York State Geologist and the Federal Energy Regulatory Commission ("FERC") reviewed isopach and structure contour maps which depict the stratigraphy of the area in the vicinity of the FLLPG and Arlington projects, and those contour maps give no indication of faults breaking above the salt interval into the Camillus or below the salt interval into the Vernon Formation. In his March 15, 2013 approval letter for the FLLPG project, the New York State Geologist stated, with regard to the applicant, "[t]heir demonstration of both cap rock and cavern integrity is complete, and with a properly developed

monitoring program, Finger Lakes' proposed use of the Salt Point caverns is geologically sound."

Camillus Caprock Integrity

13. As I previously stated, I am very familiar with FLLPG's underground storage permit application. The underground storage permit application includes, in part, two reports entitled "Coring Activities-NYSEG Well 59, Seneca Lake Storage Project, Watkins Glen, New York" prepared by Tim J. Vogt in 1996 (October 9, 2009 FLLPG application, Exhibit 8), and "Sample Description and Core Log for Akzo Salt, Inc, International Salt Well #58, Reading Township, Schuyler County, N.Y." prepared by Brayton P. Foster (May 14, 2010 FLLPG Reservoir Suitability Report, Tab 5).

14. GFS states in its April 17, 2015 Post-Issues Conference Closing Brief, Page 31, that the Gowan Report at Page 12 notes, in part, [redacted]

GFS omits in its brief text from the following paragraph of the Gowan Report, Page 12, which states [redacted] With respect to healed fractures and core recovery in the Camillus, I concur with the Gowan Report's above noted assessment of the Vogt core description. Of relevant note from the Vogt core description concerning the 71 feet of Camillus cored, it states [redacted]

[redacted] All of the above supports reliance on the Camillus to form all or part of the proposed storage caverns' roofs in FLLPG Galleries 1 and 2, just like a number of existing storage caverns' roofs at the Savona LPG and Harford Mills LPG storage facilities, each with over sixty (60) years of satisfactory LPG storage service.

15. GFS raises in its April 17, 2015 Post-Issues Conference Closing Brief, Page 31, that the Gowan Report at Page 7 notes, in part, there is a [redacted]

[redacted]

16. In addition to the above stated facts, the Bertie at the project site lacks sufficient permeability to transmit gases and fluids. [redacted] Porosity is defined as "[t]he percentage of pore volume or void space, or that volume within rock that can contain fluids"[1]

1 http://www.glossary.oilfield.slb.com/en/Terms/p/porosity.aspx

whereas permeability is defined as "The ability, or measurement of a rock's ability, to transmit fluids, typically measured in darcies or millidarcies."[2] [redacted]

Well 58 Integrity

17. Well 58, which accesses FLLPG's proposed storage Gallery 2, has been thoroughly tested and evaluated by FLLPG, and evaluated by the Department, and its construction is suitable for LPG storage purposes. Well 58 is the only existing well that will be used as a storage well for FLLPG's proposed LPG storage project. All other existing gallery wells (i.e., Wells 33, 34, 43, 44) would be plugged and abandoned per Draft Underground Storage Permit Condition 15.

18. The integrity of Well 58 was demonstrated by its ability to contain the [redacted] psi/ft re-entry pressure gradient encountered when Gallery 2 was re-entered through Well 58 in 2009 (after approximately 6 years of being plugged) (May 14, 2010 FLLPG Reservoir Suitability Report, Page 5). [redacted]

19. The integrity of Well 58 was demonstrated by its ability to contain the [redacted] psi/ft pressure gradient during the long-term brine pressure test (May 14, 2010 FLLPG Reservoir

2 http://www.glossary.oilfield.slb.com/en/Terms/p/permeability.aspx

Suitability Report, Exhibit 12). [redacted]

20. The integrity of Well 58 was demonstrated by the running and evaluation of several cement bond logs ("CBL"). An initial CBL run on March 24, 2011 indicated inadequate CBL tool pad contact with the inside of the production casing for a small interval located at the bottom of the well. In response, FLLPG cleaned the inside of the production casing by making a bit and scraper trip. A subsequent CBL, run on March 27, 2013, showed satisfactory cement bonding on the outside of the production casing, thus ensuring adequate storage cavern isolation.

21. The integrity of Well 58 was demonstrated by the running of an evaluation and casing inspection log on March 24, 2011. According to the "Final Report, HR Vertilog Inspection Survey" (Baker Atlas, March 27, 2011), this evaluation and inspection log showed satisfactory results and was unaffected by any problems with pad contact as noted. This log will also serve as a baseline log for future casing evaluation and inspection log runs in the same well as required by Draft Underground Storage Permit Condition 5.

22. The integrity of Well 58 will again be demonstrated, prior to injection of LPG into Gallery 2, by the performance of a nitrogen-brine interface mechanical integrity test ("MIT") as required by Draft Underground Storage Permit Condition 3. This MIT is specifically designed to test the integrity of the production casing and its cement shoe (i.e., cement seal between the production casing shoe and formation).

Existing Rubble & LPG Storage Operations

23. GFS is incorrect in two ways when it states that the [redacted]

[redacted] Second, the extent of the existing rubble is not required to determine the maximum storage capacity of the galleries. Draft Underground Storage Permit Condition 1.d. states "Wherever noted in this permit and for subsequent annual reporting purposes, storage capacity must be determined by a Department-approved method and is defined as the total volume of void space that exists within the cavern and any rubble pile above the cavern bottom, determined by the most recent sonar survey as of the issuance date of this permit, regardless of well or tubing configuration and accessibility or use of such void space for product storage and/or monitoring." As such, only the open space within the cavern and the void space within the rubble that is present above the depth of the most recent sonar survey of the cavern bottom (at time of permit issuance) would be included in a determination of maximum capacity, with no reliance on rubble which exists below.

24. In its April 17, 2015 Post-Issues Conference Closing Brief, GFS continues to mistakenly argue that [redacted]

[redacted]

25. First, FLLPG's well configurations, especially the setting depths of the brine strings, preclude any circulation of undersaturated brine through the existing rubble in the galleries. As stated in the Department's April 17, 2015 Initial Post-Issues Conference Brief (Page 60), the placement of the end of the brine string above the existing rubble pile means that brine is circulated above the rubble pile, not through it. Additionally, the locations of the ends of the brine strings above the existing cavern bottoms (i.e., top of rubble) are shown on FLLPG's [redacted] Attached for illustration purposes is a diagram of an LPG storage well and cavern entitled "Generalized LPG injection and storage process" (Attachment A to this affidavit). The process shown in the diagram is for LPG injection during cavern filling. The process would be reversed for brine injection during product withdrawal. It can be clearly seen from the diagram that circulation of brine during the LPG storage process (i.e., during product injection and product withdrawal) does not occur through the rubble due to the placement of the end of the brine string above the existing rubble. FLLPG's brine strings, [redacted] on FLLPG's Vertical Sections A-A′ and B-B′, are similarly placed above the top of the existing rubble.

26. Second, as explained on Page 66 of the Department's April 17, 2015 Initial Post-Issues Conference Brief, the caverns that makeup the proposed storage galleries, including the void space within the existing rubble, don't require filling by FLLPG as they are already brine-filled. This is supported by FLLPG's statement "The caverns will initially be full of brine (as they are now)" (October 9, 2009 FLLPG application, Reservoir Suitability Report, Page 2).

27. Third, with respect to GFS's statement "the Applicant needs to know [redacted] this statement misrepresents how LPG storage caverns operate, and GFS is incorrect that [redacted] must be known in order to properly operate [redacted]. As can be further seen from Attachment A to this affidavit, when a storage cavern is filled with product, LPG is pumped into the well and down the annulus created by the aforementioned brine string and the production casing. Injection of LPG down this annulus displaces brine contained in the cavern up the inside of the brine string to the surface, and then to a brine pond for storage and later reuse. The brine string always remains full of brine because LPG injection ceases at the maximum product fill level in the cavern which is: a) a predetermined depth in the cavern before the LPG-brine interface reaches the safety weep holes (located above the end of the brine string); b) the equivalent depth in the cavern corresponding to the maximum allowable product volume provided in the Draft Underground Storage Permit, or; c) the depth in the cavern corresponding to the maximum allowable fill level provided in the Draft Underground Storage Permit (if applicable), whichever is reached first. The LPG injection, storage and withdrawal process is also described in the DSEIS for the project (2011 FLLPG DSEIS, Pages 71-72). Consequently, the [redacted] below the depth of the maximum product fill level (as determined by one of the three aforementioned limiting controls) in the cavern is not a factor, and does not need to be known by FLLPG for it to properly operate its proposed storage Gallery 1. Furthermore, the specific [redacted] that GFS raises as an issue is not of any concern to FLLPG and the Department because it is currently present in Gallery 1 and always remains in the storage gallery.

28. Fourth, GFS is incorrect, for the same reasons stated above, with regard to its contention that FLLPG must know the [redacted]

[redacted] Because the caverns are already brine filled, and the [redacted] contained in the cavern and any rubble below the maximum product fill level in the cavern is not a factor and remains in the storage gallery, knowledge of this [redacted] is not required by FLLPG for it to maintain an adequate supply of brine in its double-lined ponds for LPG storage operations. Additionally, brine supply and disposal at the proposed site is not a concern as the level of FLLPG's brine ponds will be monitored and controlled, and should FLLPG require brine for any other reason or need to dispose of excess brine, US Salt, LLC would accommodate its needs (2011 FLLPG DSEIS, Pages 54-57, 110).

Gallery Growth Due to Operational Solutioning

29. In its April 17, 2015 Post-Issues Conference Closing Brief on Page 35, GFS states [redacted] My responses to GFS's concerns follow.

30. In the Draft Underground Storage Permit, the Department did not specify a mandatory method for determining the amount of annual gallery growth to allow for possible advances in technology. However, at this time and in general terms, a method acceptable to the Department is for the storage field operator to calculate the annual volume (i.e., cubic feet) of

salt removed from a given gallery due to operational solutioning using such factors as the amount of brine injected and its saturation (per Draft Underground Storage Permit Condition 1.b.) while assuming all undersaturated brine that is injected becomes fully saturated. Calculated volumes of salt in cubic feet are then assigned to particular caverns and specific portions of the caverns based on such things as the gallery configuration, specific wells being used to inject the undersaturated brine to displace product, product-fill depths, amounts of gas pad, and the usage of the individual caverns within the gallery. This methodology, in conjunction with other information, would allow the Department to determine compliance with the storage permit with respect to maximum cavern spans, maximum storage capacities, and maximum volume for product storage.

31. As described above, the extent of the existing rubble is not required to determine the maximum storage capacity of the galleries, and therefore the void space within it is not required to determine a baseline capacity. [redacted], sonar surveys are, in fact, used to determine the baseline capacities because Draft Underground Storage Permit Condition 1.d. states "Wherever noted in this permit and for subsequent annual reporting purposes, storage capacity must be determined by a Department-approved method and is defined as the total volume of void space that exists within the cavern and any rubble pile above the cavern bottom, determined by the most recent sonar survey as of the issuance date of this permit, regardless of well or tubing configuration and accessibility or use of such void space for product storage and/or monitoring." As such, only the open space within the cavern and the void space within the rubble that is present above the depth of the most recent sonar survey of the cavern bottom (at time of permit issuance) would be included in a determination of maximum capacity.

Extent of Gallery 1 Rubble-Filled Caverns

32. In my April 15, 2015, Affidavit at Paragraph 27, I discuss FLLPG's response and verify the Department's understanding that the cavern space depicted on Vertical Section B-B' with respect to a "Well 43 1976 Sonar" outline is filled with rubble, and not an abandoned cavern. I now state that regarding the connectivity of the caverns and the span of the existing rubble compared to the span of the proposed storage areas, the 1979 figure in FLLPG's response to NOIA 3 (Tab B) shows that the development and configuration of the gallery was due to solutioning between wells that resulted in a long north-south orientation with a relatively narrow east-west span. In addition, the August 28, 2014 Brinefield Map Showing Galleries [redacted] The above information, along with a basic understanding of the Well 43 1976 sonar, was used to conclude that the east-west extent of the rubble below the existing top of rubble does not extend beyond the maximum cavern spans derived from the most recent sonar surveys, which are represented by the maximum gallery outlines shown on the brinefield map.

Mackenzie Report & the Yaggy Incident

33. In its brief, GFS states "[w]ith its Petition, GFS submitted a report by Dr. Rob Mackenzie analyzing the historic incidence of serious accidents involving the storage of hydrocarbons in salt caverns (April 17, 2015 GFS Post-Issues Conference Closing Brief, Page 36). Dr. Mackenzie's reliance on past incidences at other salt cavern storage facilities does not take into account the differences between the cited facilities and FLLPG's proposed LPG facility, and the safeguards FLLPG has built into its facility design to prevent a reoccurrence of similarly-caused incidents.

34. For instance, Dr. Mackenzie in his report cites the Yaggy gas storage facility ("Yaggy" or "Yaggy facility"), near Hutchinson, Kansas, incident which occurred in 2001 as a "case example" (Mackenzie, 2015, Pages 11-12, Attachment 2, Attachment 3). However, inclusion of the Yaggy incident to analyze and predict the likelihood of a problem at the proposed FLLPG facility does not consider and account for the significant geologic, operational, design and regulatory differences between the two facilities, which are described below.

35. While both the Yaggy facility and the tentative FLLPG facility rely on salt caverns for hydrocarbon storage, the top of the Yaggy storage caverns are approximately 800 feet below ground surface (Subsurface Technology, Inc., 2008, Page 15) while the FLLPG storage caverns are approximately 2,000 feet below ground surface (October 9, 2009 FLLPG application, Exhibit 5). As such, there are significant differences between the two facilities in the amount of overburden, the number, names, thicknesses and types of formations (i.e., Units) overlying the caverns, the extent of faulting, and the depths and construction of the storage wells (Subsurface Technology, Inc., 2008, Pages 2-13).

36. The Yaggy facility was storing natural gas at the time of the 2001 incident (Subsurface Technology, Inc., 2008, Executive Summary, Page x). LPG, not natural gas, is proposed for storage at the FLLPG facility (October 9, 2009 FLLPG application, Tab C, Reservoir Suitability Report, Page 1).

37. In 1989 and 1990, wells that were used to store propane at the Yaggy facility were plugged by partially filling them with cement. In the early 1990s, plugged wells at the Yaggy facility were reentered to reopen the wells and caverns for natural gas storage. The reentering and subsequent milling of an obstruction over a 50-foot section at one well (Well S-1) in 1993 caused damage to the well's casing, which resulted in leakage of natural gas in 2001 after the cavern was reportedly overloaded with product and excessive pressure (British Geological

Survey, 2008, Pages 161-164 and Subsurface Technology, Inc., 2008, Pages 13-17, 24, 34). It is also reported that after Well S-1 was reopened, several cement bond logs and mechanical integrity tests ("MIT") were performed in the well prior to natural gas storage, but unlike the FLLPG project, as described below, casing evaluation and inspection logs were not run by the operator or required by any regulatory agency for the Yaggy Well S-1, despite nine days of reported workstring rotation and milling of the 50-foot section in the well.

38. In stark contrast to the Yaggy Well S-1, the Department required and FLLPG completed casing evaluation and inspection logging on all existing wells accessing the proposed storage galleries to evaluate casing integrity. The evaluation and inspection logs are used to determine if the well casings have sufficient wall thicknesses and are of suitable condition for LPG storage service. Cement bond logs ("CBL"), which are used to determine if a sufficient seal between the borehole and casing is present, were also completed to supplement casing evaluation and inspection logs. Instead of using the relatively older wells (i.e., Wells 33, 34, 43, 44) originally drilled in the 1960s that currently access FLLPG Gallery 1, the applicant decided these existing wells would be properly plugged under DEC permits, according to Draft Underground Storage Permit Condition 15. New Wells FL1 and FL2 would be drilled under DEC permits for storage injection, withdrawal and/or monitoring of Gallery 1. These new wells would also have the same type of evaluation and inspection logs and CBLs performed on them prior to LPG injection into Gallery 1. As described above in Paragraphs 20 and 21, recent testing results for Well 58 (originally drilled in 1992), which is the well that currently accesses proposed storage Gallery 2, demonstrate satisfactory casing integrity and satisfactory cement bonding making it suitable for LPG storage purposes. "Consolidated Storage, Inc. of Hutchinson, Kansas drilled the S-1 Storage Well in May, 1981" (Subsurface Technology, Inc., 2008, Page 15). As such, there is a difference in age of approximately eleven years between the Yaggy Well S-1 that was damaged

and ultimately failed, and FLLPG's Well 58, with FLLPG's well being the newer of the two wells. As mentioned above, Gallery 1 Wells FL1 and FL2 will be newly drilled and constructed so there is a distinction in the age for all of FLLPG's wells that will be used for storage purposes.

39. Moreover, permit conditions Nos. 2, 3, 4 and 5 of the Draft Underground Storage Permit state that the following would be required of FLLPG: a) sonar surveys when a well is initially completed prior to injection of LPG into its respective gallery and at least every 10 years thereafter; b) mechanical integrity testing of wells prior to injection of LPG into their respective gallery and at least every 5 years thereafter; c) subsidence monitoring at least every two years, and; d) evaluation and inspection of the production casing when a well is initially completed prior to injection of LPG into its respective gallery and at least every 10 years thereafter. Evaluation and inspection of the production casing must, at a minimum, include a: (i) cement bond log; (ii) gamma ray-neutron log; (iii) magnetic flux log, and; (iv) an electromagnetic thickness log, or equivalent logs approved by the Department. In addition, Draft Underground Storage Permit Condition 6 states "The Department may, for reasonable cause, require FLLPG to perform additional sonar surveys, well and/or cavern MITs, subsidence surveys, casing evaluation and inspection logs, or any other tests or procedures and require reporting and analysis of such to verify compliance with this permit, Environmental Conservation Law ("ECL") including Article 23, 6 NYCRR Parts 550 - 559 or any other New York State statute, rule, regulation and/or order. Results and analysis must be submitted to the Department as described by Permit Conditions 2a, 3a, 4a and 5a of Attachment 1 unless otherwise specified by the Department at the time of notification of such requirement. The Department may require additional tests or procedures, analysis or corrective actions based on its review of any report."

40. On Page 50 of its April 17, 2015 brief, SLPWA states [redacted]

[redacted]

While Mr. Istvan can certainly speak for himself, this issue highlights another difference between the Yaggy facility and FLLPG's proposed facility with respect to facility design. "The Yaggy Gas Storage Field consisted of 70 gas storage wells which were divided into four pods. The S-1 Storage Well was one of 16 cavern wells completed approximately 600 feet below surface, comprising Pod 1 which was operated with a common manifold and monitoring system" … "The wells within each pod were operated via a common system manifold and monitored with one pressure transmitter, one temperature transmitter and one bidirectional flow meter for each pod" (Subsurface Technology, Inc., 2008, Executive Summary, Pages x and 19). The pod configuration of wells at the Yaggy facility which relied on monitoring of multiple wells (i.e., 16 wells for Pod 1) via a single manifold likely masked early identification of the Well S-1 natural gas leak, and accompanying pressure loss, because of the number of pressurized storage wells involved and the overall size of the system being monitored by a single pressure transmitter. FLLPG's wells would not be manifolded together for pressure monitoring purposes, and each individual well would have its own set of pressure gauges. Each storage wells' pressures (i.e., product side and brine side) would be monitored daily in accordance with Underground Storage Permit Condition 1, as FLLPG stated such in its application to the Department. Daily pressure monitoring will verify storage well integrity on a daily basis. Additionally, per Draft Underground Storage Permit Condition 1.h., monitoring Wells FL2 and 52 would have automated pressure monitoring around-the-clock (i.e., SCADA, "supervisory control and data acquisition), in addition to the daily inspections.

41. Draft Underground Storage Permit Condition 1.g. limits the maximum pressure gradient in each FLLPG storage well to a pressure less than what each well was previously tested

and will be tested during future MITs prior to LPG storage. In comparison, the operating pressure when the 2001 Yaggy incident occurred exceeded the maximum test pressure of Well S-1. "No records were found pertaining to mechanical integrity testing performed at or above the approved maximum operating pressure gradient for the S-1 Storage Well" (Subsurface Technology, Inc., 2008, Executive Summary, Page xi).

42. The maximum storage pressure gradients at the Yaggy facility at the time of the 2001 incident and the proposed FLLPG facility are significantly different in that the authorized maximum pressure gradient at the Yaggy facility was 0.88 psi/ft (Subsurface Technology, Inc., 2008, Page 27) while the permitted maximum pressure gradient at FLLPG would not exceed [redacted] psi/ft for Galleries 1 and 2 (October 29 & 30, 2014 FLLPG to DEC, Hayden to Briggs).

43. In addition to permit requirements for limiting maximum storage pressure, pressure monitoring of storage wells and monitoring wells, and evaluating well and cavern integrity on a regular schedule through means besides pressure monitoring, FLLPG plans to have multiple safety mechanisms in place to ensure that overfilling of the caverns with LPG would not occur. In-line valves and flow meters, which are controlled by a Programmable Logic Controller ("PLC"), would monitor the flow of brine to and from the cavern. If a cavern was inadvertently overfilled with product, and LPG was to enter the bottom of the brine string, the flow rate of brine at the top of the well would be such to activate the emergency shutdown ("ESD") system. The PLC has maximum flow shut-off points that would close the electrically/pneumatically actuated valves to keep LPG from reaching the surface. However, as a precautionary measure to prevent inadvertent overfilling of a cavern with product, the brine string would have a small hole (i.e., safety weep hole) installed in it at a specific distance above the bottom of the brine string. In the event gas reaches this safety weep hole, a small amount of LPG would flow up the inside of the brine string and then to the flare tower to indicate that the cavern is beyond its maximum

product fill level. At this point, the LPG injection process would also be safely shutdown. These safeguards and procedures would ensure that FLLPG's caverns are not overfilled with LPG to a point that could create a problem, and the process would be quickly shut-in by the ESD system should LPG inadvertently enter a brine string. Draft Underground Storage Permit Condition 7 requires installation and maintenance of safety and emergency shutdown devices at the storage facility. This includes, but is not limited to, automated, remote, and manual devices that can shutdown facility equipment in the event of an emergency and prevent escape of product and/or brine, and continuous monitoring and detection systems such as gas detectors and flow regulators that will detect potential hazards and respond accordingly. All such safety and emergency response systems, which must conform to stringent regulatory standards, must be included in the Permittee's Operations, Maintenance and Contingency Plan; which must be submitted to the Department for its review and approval. Such plan must include, at a minimum, a Spill Prevention and Control Manual, Hazard Communication and Assessment Program, Safety Plan, and Emergency Response Plan. This set of deliverables must detail important aspects of the safety and emergency response program for the facility in sufficient detail. In addition, such deliverables must be reviewed and approved by the Department prior to injection of LPG into any gallery.

44. The above noted differences in geology, operation, design and regulatory requirements demonstrate that there is little comparison between the Yaggy facility and

the proposed FLLPG facility, and therefore Mackenzie's use of the Yaggy incident as a "case example" falls flat, and is not an appropriate predictor of possible incidents at the proposed subject facility.

Dated: May 29, 2015

Peter S. Briggs
Director, Bureau of Oil & Gas
Permitting and Management
Division of Mineral Resources

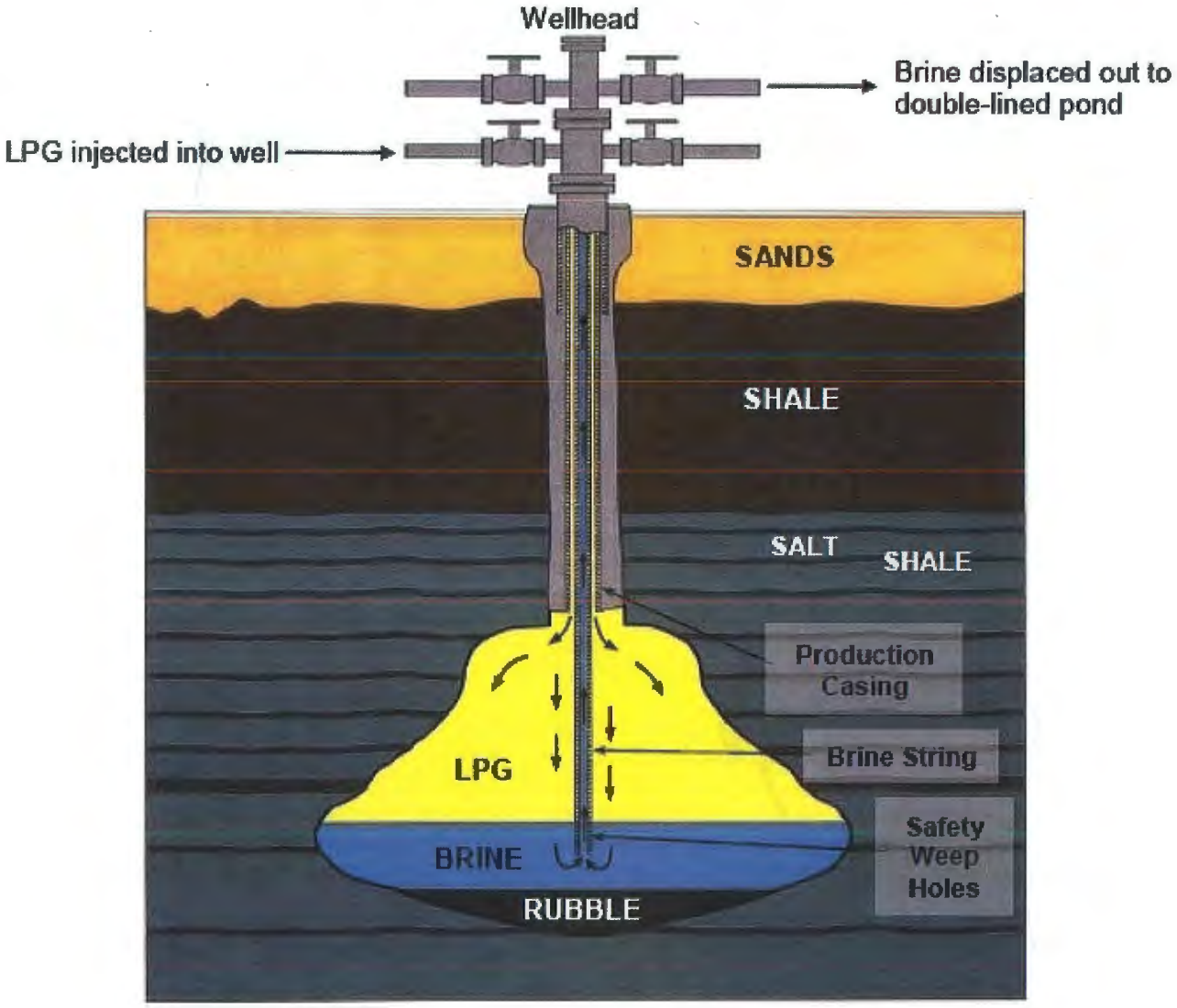
New York State Department of
Environmental Conservation
625 Broadway
Albany, New York 12233-6500

Sworn to before me this 29th day of May, 2015.

Notary Public

MARK D. SANZA
Notary Public, State of New York
No. 02SA6010701
Qualified in Albany County
Commission Expires July 20, 2018

Attachment A



Adapted From Figure 4. Generalized LPG injection and storage process (Pitman, 2005), No scale.

Attachment B

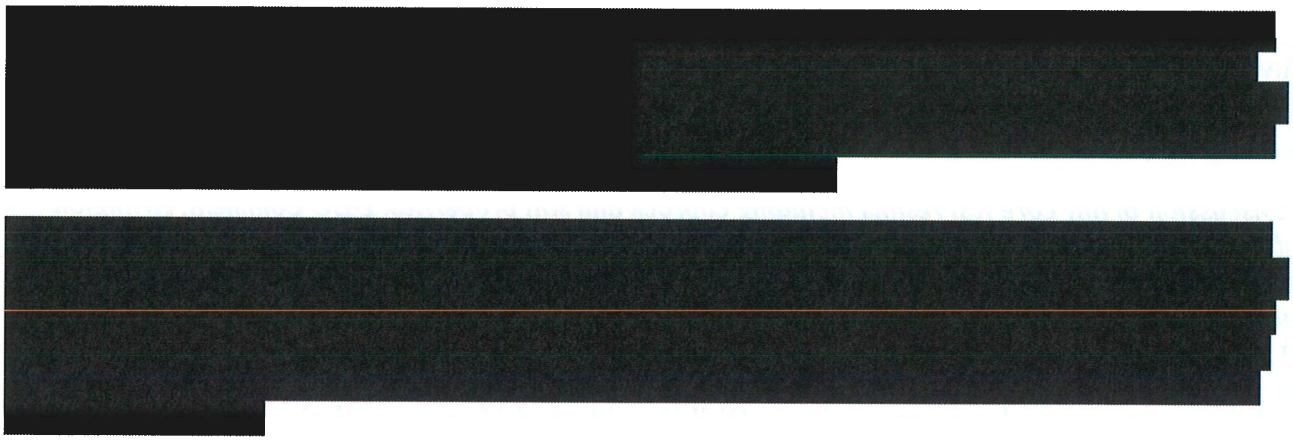
Excerpt from December 19, 2012 "Response of Arlington Storage Company, LLC to DEC's November 6, 2012 Notice of Incomplete Application ('NOIA')," Pages 15-16.

c. Discussion of any core test results including caprock and salt properties. DEC Comment: Arlington submitted core description and activity reports for Well Nos. 58 and 59 in Exhibit 14 and a rock mechanics report in Exhibit 15 in the July 2010 storage application. Subsequently, Arlington submitted core analysis reports for Well Nos. 30A and 31A, which were received by the Department on October 23, 2012. See below for the Department's comments.

ii. Arlington must provide a narrative for the Well Nos. 30A and 31A core analysis reports. The narrative, at a minimum, should include a discussion on the objective, results, and conclusions with regards to the core analyses for these wells, including: a. Discuss the entries in the "Comments" column that is included in the "Brief Description" table in the Well No. 30A core analysis report. A discussion must also be provided for the same column in the table that Arlington will provide for Well No. 31A (refer to the Department's comment under Item 6.c.iii). b. Include a correlation of the core data to the formation depths in the cross-sections.

Arlington Response: [redacted]

Attachment B (continued)



PUBLIC VERSION

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

----------X

In the Matter of the Application for an Underground Gas Storage Permit Pursuant to Environmental Conservation Law (ECL) Article 23, Title 13, by

FINGER LAKES LPG STORAGE, LLC

Applicant.

AFFIDAVIT IN SUPPORT OF DEC STAFF REPLY BRIEF

DEC Permit Application ID No. 8-4432-00085

----------X

STATE OF NEW YORK)

COUNTY OF ALBANY) ss:

ERIC RODRIGUEZ, being duly sworn, deposes and says as follows:

1. I am a Mineral Resources Specialist 3 in the Division of Mineral Resources of the Department of Environmental Conservation ("Department") in Albany, New York. My principal duties include work related to the permitting and regulation of solution salt mining and underground gas storage facilities. I have worked with the Division of Mineral Resources for approximately three years. My prior work experience includes 15 years as a geologist with an environmental consulting and engineering firm in its New York and New Jersey offices.

2. I have a Master of Science Degree in Geoscience and a Bachelor of Arts Degree in Geography from Montclair State University. I have also completed coursework at Hunter College, as part of graduate studies at The Graduate Center, City University of New York.

3. I am familiar with matters relating to Finger Lakes LPG Storage, LLC and its underground storage permit application for the construction and operation of an underground

LPG storage facility in the Town of Reading, Schuyler County. I submit this affidavit in support of Department staff's Post-Issues Conference Reply Brief and to respond to various assertions contained in Seneca Lake Pure Waters Association's ("SLPWA") Post-Issues Conference Brief.

4. SLPWA's expert, Dr. Nieto proposes an active thrust fault beneath the project area. There are two figures that depict the orientation and location of this fault. The first figure was provided as Figure 1 in the Nieto Report and attached to SLPWA's January 16, 2015 Petition for Party Status ("SLPWA's petition"). The figure shows that the hypothesized fault, from west to east, cuts below Cavern 30, cuts through Cavern 31, and then cuts above Cavern 46. The fault then exits the storage formation east of Well 27 and surfaces at the western extent of the lake bottom. The second figure was provided as Exhibit H and attached to SLPWA's April 17, 2015 Post-Issues Conference Brief ("SLPWA's brief"). However, the figure shows a change in the fault angle, and it now cuts across the top of Cavern 46 and then surfaces beneath the center of Seneca Lake, instead of surfacing at the western extent of the lake as previously shown. As such, the location where the fault surfaces beneath the lake has moved approximately 2,600 feet east of where it was originally depicted on Figure 1 in the Nieto Report. See Attachment A to this affidavit. Although SLPWA's brief states that Exhibit H is an updated version of Figure 1 that shows the "broader relationship of the proposed storage sites to the valley stress conditions of the Seneca Lake valley," no explanation was provided on why the depiction of the hypothesized fault was significantly modified and what data such modification was based on.

5. SLPWA's petition and brief show Dr. Nieto's hypothesized thrust fault cutting through the bedded salt deposits (Syracuse Formation) and overlying formations. Vertical displacement is shown only for the Onondaga Formation. However, such a fault would also

result in displacement of the bedded salts beneath the project site. SLPWA's brief acknowledges this fact by stating that Dr. Nieto's figure "is not geometrically correct in that it fails to show the displacement of all the geologic layers along the fault" and states that this inaccurate depiction was done for the sake of expediency. Therefore, it is important to recognize that Dr. Nieto's proposed fault requires displacement of the bedded salt deposits. However, Figure 1 by Jacoby in his 1969 publication *Storage of Hydrocarbons in Cavities in Bedded Salt Deposits Formed by Hydraulic Fracturing*, shows that the upper D, E and F beds of the Syracuse Formation are relatively uniform in thickness and do not show any vertical displacement. This lack of vertical displacement clearly disproves the existence of Dr. Nieto's proposed thrust fault, which would require displacement of these beds if his proposed thrust fault truly existed. Jacoby's figure is based on site-specific core logs and geophysical logs from Wells 30, 31, 28 and 27, and is therefore considered to accurately depict the geologic conditions beneath the site. See Attachment B for a comparison between the figures by Dr. Nieto and Figure 1 by Jacoby.

6. SLPWA's petition and brief state that the Jacoby-Dellwig Fault, which is known to exist within the Syracuse Formation, extends upward into the overlying Camillus Formation. However, this statement is refuted by Figure 1 from Jacoby (1969). Figure 1 is a cross-section that was developed using core logs and geophysical logs from Wells 30, 31, 28 and 27. Jacoby depicts a tear fault in his cross-section that has come to be known as the Jacoby-Dellwig Fault or Fault No. 20. The fault is located between Well 31 and Well 28 in the cross-section and is shown to be completely contained within the bedded deposits of the Syracuse Formation (see Attachment C). Dr. Clark, Gas Free Seneca's geologic expert, also agrees that the fault shown between Well 31 and Well 28 is the Jacoby-Dellwig Fault. In his January 15, 2014 report to

Earthjustice, which is attached to a January 15, 2014 cover letter from Earthjustice to FERC, Dr. Clark references the same figure by Jacoby and states,

> "All four wells were cored and geophysically logged as they were drilled, providing the stratigraphic and structural framework of each cross-section. His first cross-section (his Figure 1, attached as Exhibit 1) shows the pre-cavern geology interpreted from the logs and cores. Here, thrust faulting has pushed beds of salt and rock up and over one another, resulting in repeated sequences of several of the beds across the section.[2] The thrust fault noted in Exhibit 1 appears to continue to the east, though offset, within a Retsof salt bed sequence. In addition, faults oriented north-south, perpendicular to the figure and parallel to the west side of Seneca Lake and with vertical and horizontal offset are shown between Wells 31 and 28 and between 28 and 27.[3] The fault shown between Well 31 (the easternmost cavern of Gallery 2) and Well 28 (the westernmost cavern of Gallery 1) is known as the Jacoby-Dellwig Fault[4], a major strike-slip tear fault with vertical displacement affecting the salt section as well as 1,200 feet of horizontal offset. [emphasis added]"

The bedded salt units of the Syracuse Formation on the cross-section are designated by the letters B, C, D, E and F, working from the lowermost salt and moving upward. As shown in the cross-section, the tear fault extends from the B-Unit upwards to the C-Unit and does not extend into the overlying D, E or F units, and therefore does not extend into the overlying Camillus Formation. The additional areas of tearing and thrusting within the bedded deposits, to the east and west of the Jacoby-Dellwig Fault, are also shown in Jacoby's cross-section to be contained within the Syracuse Formation.

7. SLPWA's brief cites to a publication by Fakundiny et al. dated 1976 and titled, *Structural instability features in the vicinity of the Clarendon-Linden fault system, western New York and Lake Ontario*, as evidence of the closing of valley walls resulting from horizontal stresses in the Finger Lakes area. However, the Clarendon-Linden Fault System discussed in this publication is a deep-seated basement fault located approximately 60 miles west of the project

site. See Attachment D. In addition, the study area in the publication cited by SLPWA is approximately 40 miles west of the project site and does not actually include any of the Finger Lakes. As such, the study in the publication cited by SLPWA does not appear to be related to the project site or any of the Finger Lakes.

Eric Rodriguez

Sworn to before me this 29th day of May, 2015.

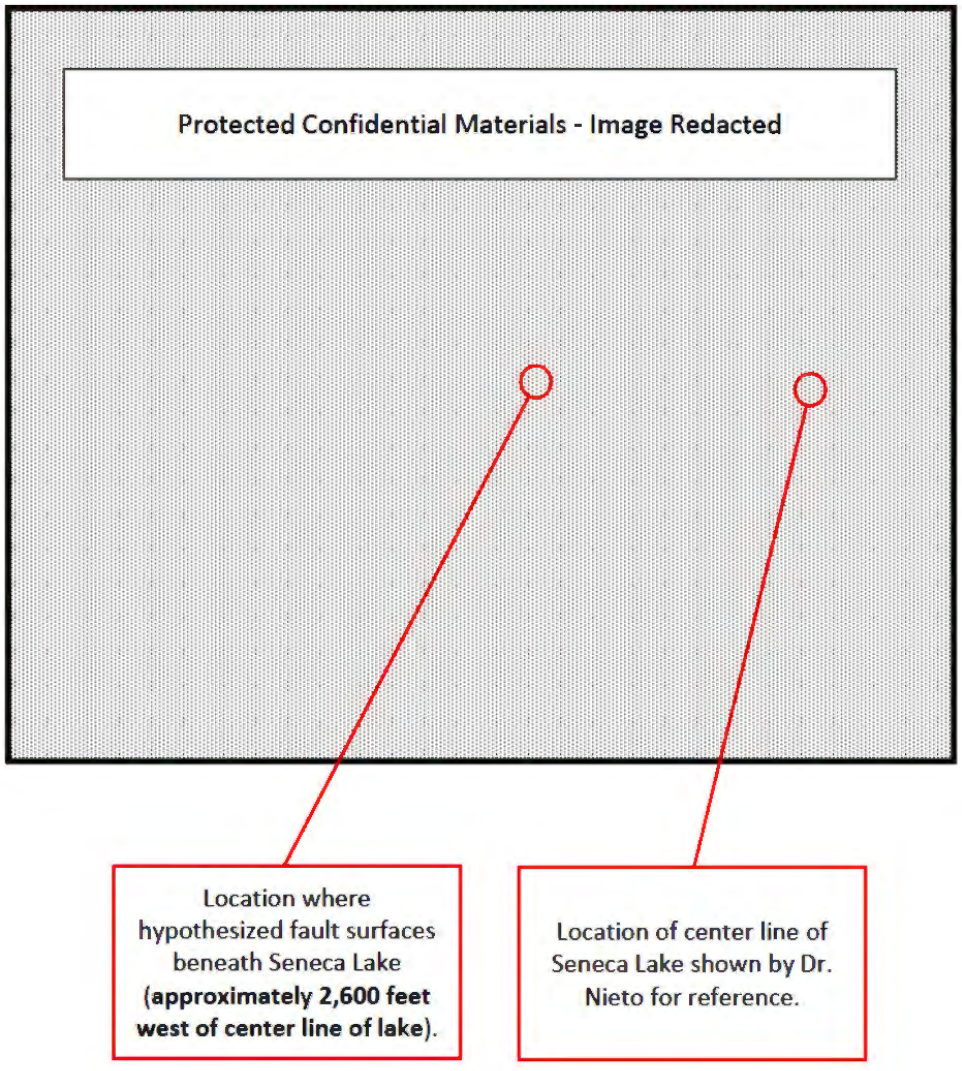
Notary Public

MARK D. SANZA
Notary Public, State of New York
No. 02SA6010701
Qualified in Albany County
Commission Expires July 20, 2018

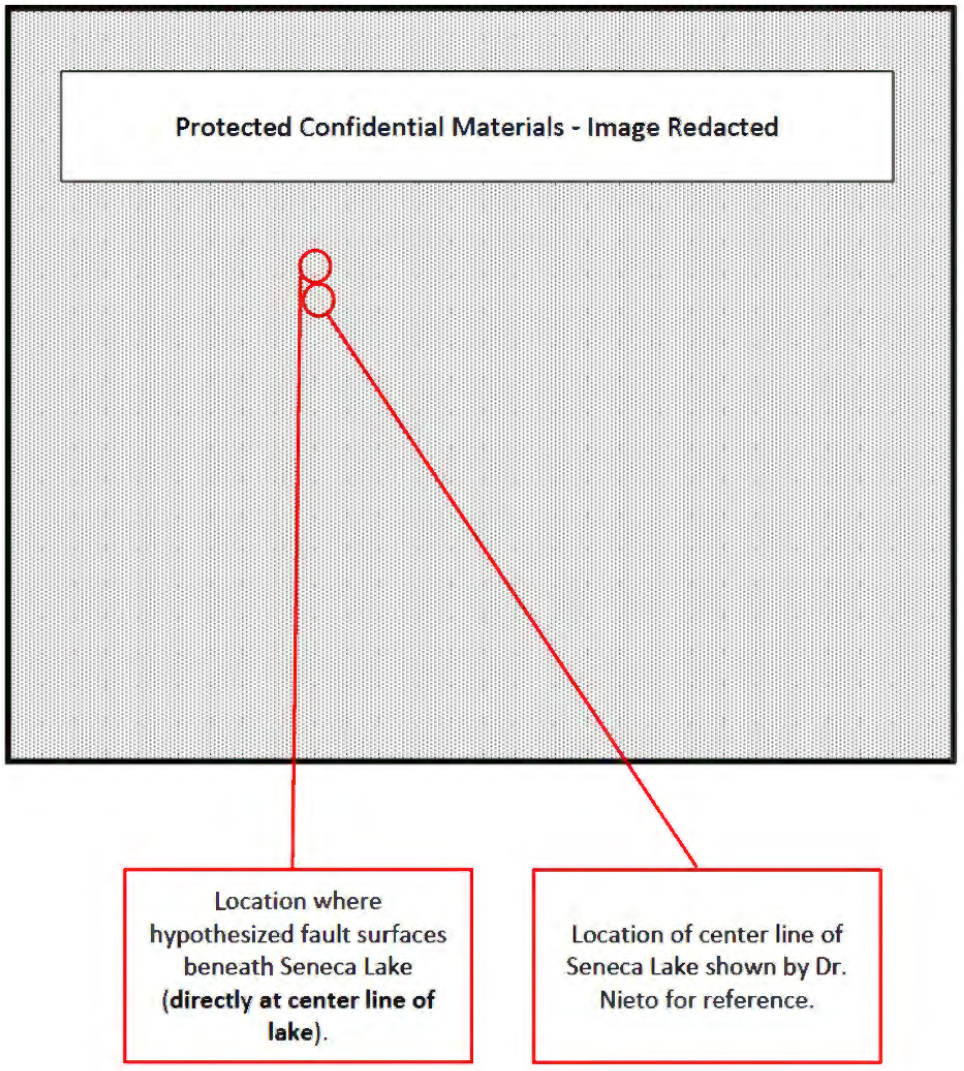
PUBLIC VERSION

Attachment A
Comparison of Figures Prepared by Nieto

From Nieto Report in SLPWA's January 16, 2015 Petition for Party Status
(Protected Materials)



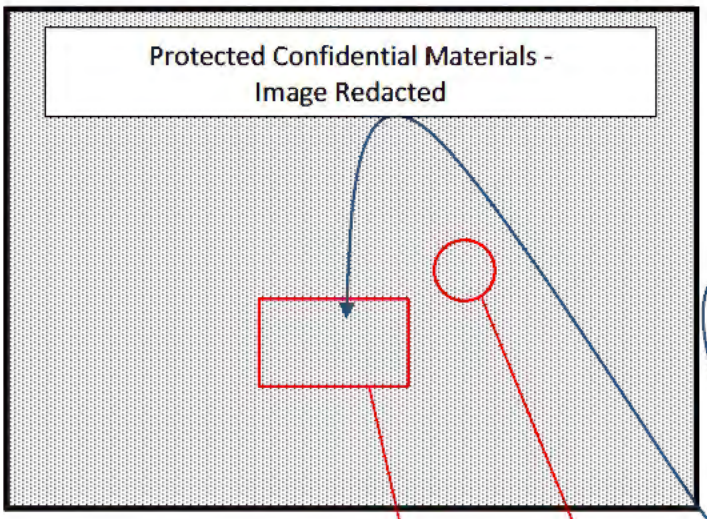
From Exhibit H in SLPWA's April 17, 2015 Post Issues Conference Brief
(Protected Materials)



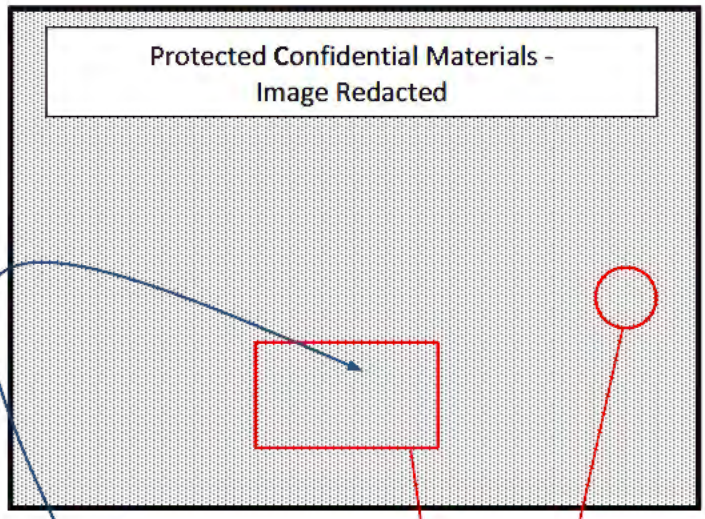
Attachment B

Comparison between Figures Prepared by Nieto and Figure 1 by Jacoby

From Nieto Report in SLPWA's January 16, 2015 Petition for Party Status (Protected Materials)



From Exhibit H in SLPWA's April 17, 2015 Post-Issues Conference Brief (Protected Materials)



Note: Dr. Nieto shows his hypothesized thrust fault and vertical displacement for the Onondaga Formation. Based on his fault, displacement would also be seen within the bedded salt deposits. SLPWA's brief acknowledges this when it states that Dr. Nieto's figure, "is not geometrically correct in that it fails to show the displacement of all the geologic layers along the fault."

Displaced bed drawn by Dr. Nieto.

Bedded salt deposits (would also be displaced based on hypothesized fault).

For reference, this is the location of Well 28 where it intersects the E-Unit in Jacoby's below drawing. Jacoby does not show displacement of this bed, which disproves Dr. Nieto's hypothesis.

Displaced bed drawn by Dr. Nieto.

Bedded salt deposits (would also be displaced based on hypothesized fault).

From 1969 Jacoby Paper. Generated Using Site-Specific Core Logs and Geophysical Logs

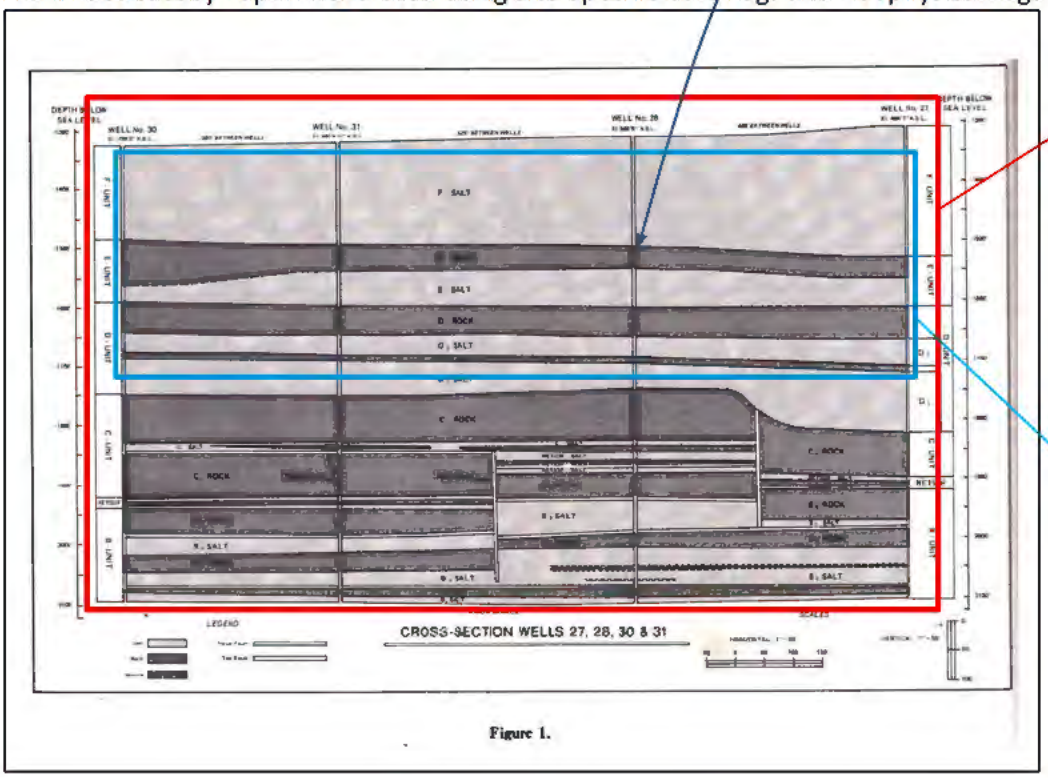


Figure 1.

This outlines the same area of bedded salt deposits that are outlined by the red box in the above drawings by Dr. Nieto.

The upper D, E and F beds in this cross-section are relatively uniform in thickness and do not show any vertical displacement. This cross-section, which shows that the upper beds have not been vertically displaced by Dr. Nieto's hypothesized thrust fault, was derived from actual core logs and geophysical logs from the four wells shown. It clearly disproves the hypothesized thrust fault by Dr. Nieto.

PUBLIC VERSION

Attachment C
Depiction of Jacoby-Dellwig Fault

From 1969 Jacoby Paper. Generated Using Site-Specific Core Logs and Geophysical Logs

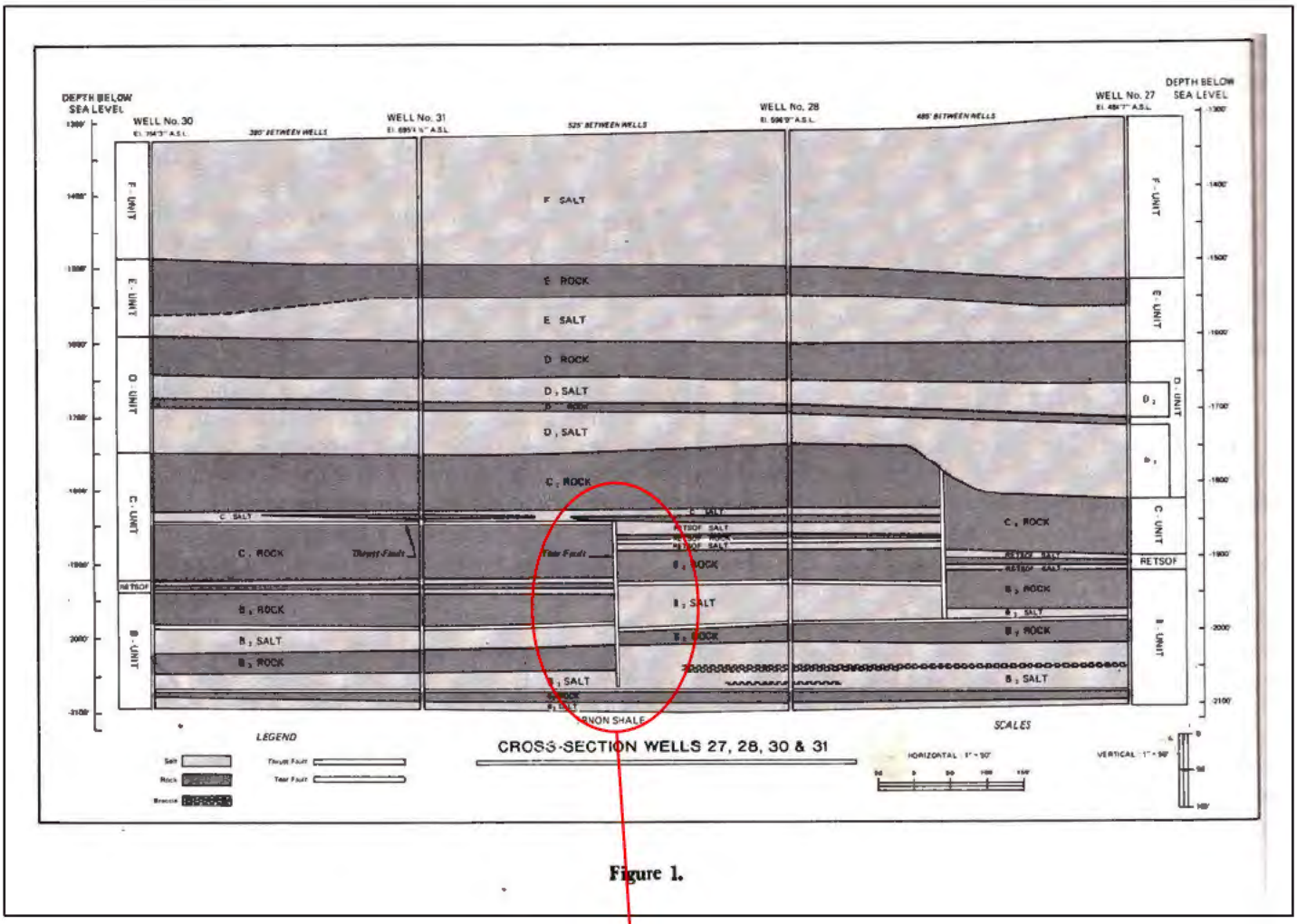


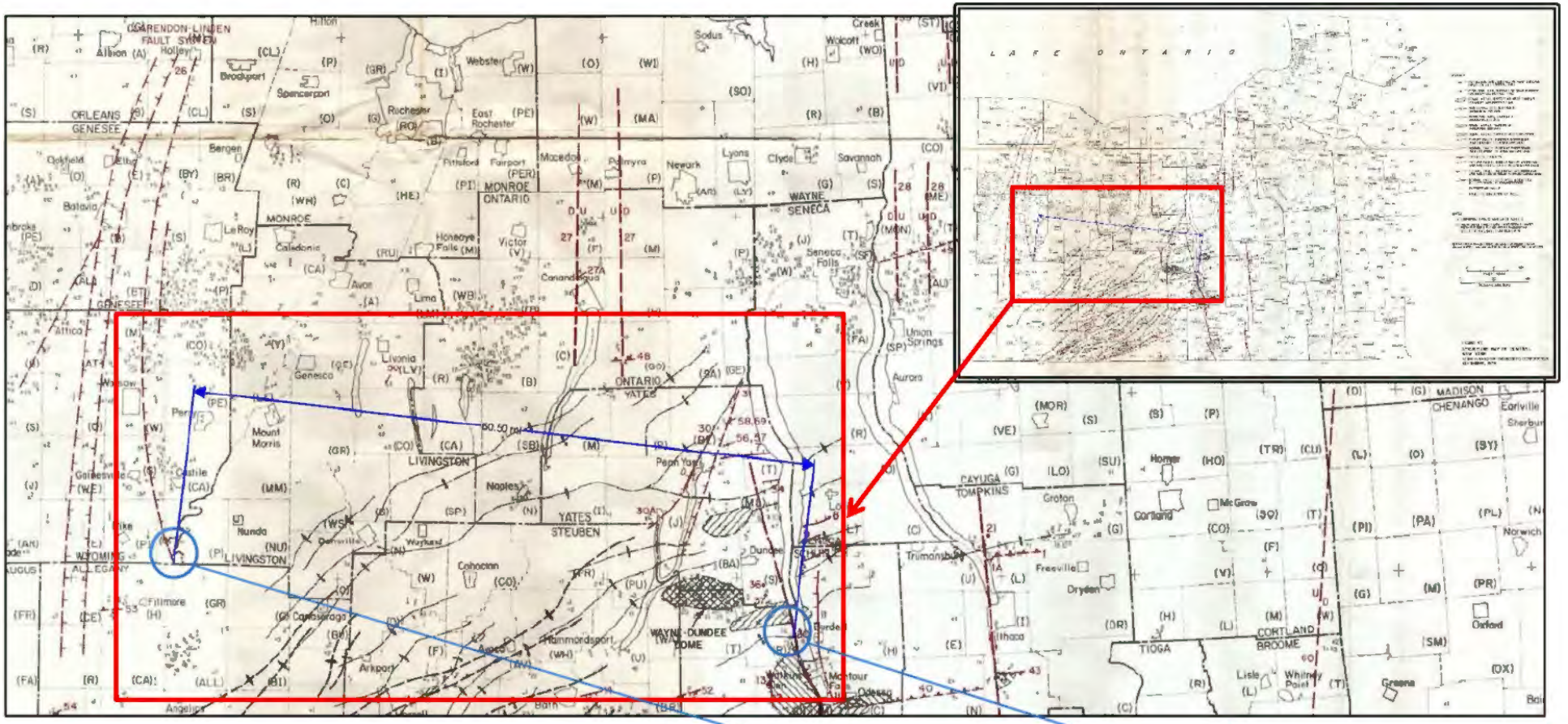
Figure 1.

Location of Jacoby-Dellwig Fault. Note that Jacoby shows that the tear fault does not extend into the overlying D, E or F beds and therefore it is shown as being contained within the bedded salt interval of the Syracuse Formation and does not extend into the overlying Camillus Formation. The cross-section also depicts additional areas of tearing and thrusting within the bedded salts, to the east and west of the Jacoby-Dellwig Fault, which are also contained within the bedded salt interval of the Syracuse Formation.

PUBLIC VERSION

Attachment D
Map Showing Distance between Clarendon-Linden Fault System and Project Site

Adapted from Figure 57 – Structure Map of Central New York. From Stone & Webster (1979), *New York and Ohio Technical Update and Summary*, October 1979. Office of Nuclear Waste Isolation, Battelle Memorial Institute, Project Management Division, US Department of Energy.



The distance between the project site and southeastern extent of the Clarendon-Linden Fault is approximately 60 miles. The distance measurement shown in the above figure was added by NYSDEC and is based on the scale shown in the original map.

Approximate Location of Project Site

Southeastern extent of Clarendon-Linden Fault.

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
----------X

In the Matter of the Application for an Underground Gas Storage Permit Pursuant to Environmental Conservation Law (ECL) Article 23, Title 13, by

FINGER LAKES LPG STORAGE, LLC

Applicant.

AFFIDAVIT IN SUPPORT OF DEC STAFF REPLY BRIEF

DEC Permit Application ID No. 8-4432-00085

----------X

STATE OF NEW YORK)

COUNTY OF LIVINGSTON) ss:

PAUL M. GIACHETTI, being duly sworn, deposes and says as follows:

1. I am employed by the New York State Department of Environmental Conservation ("DEC" or "Department") as a Mineral Resources Specialist 3 in the Division of Mineral Resources, Region 8 office in Avon, New York. I have served in this capacity for almost three years. Prior to that time, I was a Mined Land Reclamation Specialist 1, an Environmental Engineering Technician 2 and a Mineral Resources Technician 1. I have worked for the Department for 29 years.

2. I have an Associate of Science degree in Petroleum Technology and a Bachelor of Science degree in Geology from the University of Pittsburgh. I also have a Master of Arts degree in History from the University of Rochester.

3. As a Mineral Resources Specialist 3, I am responsible for the administration of permitting, compliance, and enforcement programs pertaining to oil, gas and solution mining development, and underground storage of natural gas and liquefied petroleum gas ("LPG"). My previous position with the Division also included duties and responsibilities related to these programs.

4. I am familiar with matters relating to Finger Lakes LPG Storage, LLC ("FLLPG") and its underground storage permit application for the construction and operation of an underground LPG storage facility in the Town of Reading, Schuyler County and have personal knowledge of the facts and circumstances of this matter that I gathered through the exercise of my official regulatory duties.

5. I submit this affidavit in support of the Department staff's reply brief and to respond to arguments made by Seneca Lake Pure Waters Association ("SLPWA") and Gas Free Seneca ("GFS"). Specifically, I submit this affidavit to respond to claims made by SLPWA related to the presence of faulting on the project site and to address claims by GFS, SLPWA and the Seneca Lake Communities ("SLC") about the potential for LPG storage operations to impact the quality of Seneca Lake water quality.

Presence of Faults

6. In their post-issues conference briefs, both SLPWA and GFS claim that faults are present on the project site and likely extend above the salt layer. The DEC has records for eighty six wells that were drilled, plugged and/or re-drilled for solution salt mining or hydrocarbon

storage in an area of approximately one half square mile of FLLPG's proposed facility, with fifty-eight of these having geophysical logs on file with the DEC.

7. I have reviewed all fifty-eight logs with the intent of trying to identify thrust (reverse) or normal faulting, as well as the Jacoby Dellwig strike-slip fault, in certain bedrock formations above the upper salt zone, and the upper salt zone itself, hereafter referenced as the "F" zone. The formations reviewed were the Onondaga, Oriskany, Helderberg, Akron/Bertie and Camillus.

8. My methodology for identifying thrust or normal faulting was to note any repeated or missing sections, or any thickening/thinning in any of the aforementioned formations in each of the geophysical logs. This method is a standard practice within the geological discipline in fault identification.

9. I did not identify evidence of any faulting in any of the formations leading to my conclusion is that there is no thrust (reverse) or normal faulting at the Salt Point/Crestwood facility in the aforementioned formations located in or above the "F" salt.

10. My methodology for identifying the Jacoby Dellwig strike-slip fault above the "F" salt was to correlate either common or uncommon bedding characteristics in the aforementioned formations in wells at the facility. Correlation was done on wells on each side of the fault location according to Jacoby and Dellwig (1974), then on wells on opposite sides taking into account the amount of offset that was noted by Jacoby and Dellwig (1974). I also used a smaller offset distance to be conservative. This method for strike-slip fault identification is standard practice within the geological discipline.

11. Consistent with Jacoby's Figure 1 in "Storage of Hydrocarbons in Cavities in Bedded Salt Deposits Formed by Hydraulic Fracturing" (Jacoby, 1969), I did not identify any evidence of a strike-slip fault in any of the aforementioned formations either in or above the "F" salt.

12. I also conducted a field survey of the western area of Seneca Lake at the Salt Point/Crestwood facility. The intent of the survey was to observe any surface expression of faulting, particularly the Jacoby/Dellwig strike-slip fault, by focusing on three east-west oriented ravines. My methodology was to identify any offsets along mutually abutting fracture sets as well as locating any Fracture Intensification Domains (FIDs). These methods are standard practice within the geological discipline in surface-expression fault identification.

13. Based on field observations using the above methodology, I found no evidence that would confirm the existence of a North or North Northwest trending strike slip fault within the proposed project area.

14. Based on my observations of geophysical logs and observations in the field, I find no evidence to support SLPWA's and GFS's theory that the Jacoby-Dellwig fault either extends above the "F" salt, or that the fault extends to the surface.

Potential Chloride Impacts

15. I reviewed the report by Tom Myers, Ph.D., titled "Technical Memorandum—Review of Finger Lakes LPG Storage, LLC, Proposed LPG Storage Facility" dated January 15, 2015. This report attempted to demonstrate that storing LPG at the proposed facility will increase the salinity levels in Seneca Lake.

16. Dr. Myers cited forty eight published articles, books, reports, documents and abstracts in his references. I have reviewed each one of these except a November 24, 2014 letter from "Deitrich J" to "John V. Dennis," which could not be located in any public database, and the "Institute Annual Research Conference. Hobart 7 William Smith Colleges…" which also could not be found and appears to be cited incorrectly.

17. There was no relevant information in any of Dr. Myers' cited publications that proved or even insinuated that storing LPG, or any other fluid, in the salt caverns located in the salt beds at the proposed facility could plausibly impact the sediments at the bottom of Seneca Lake tens of thousands of feet away and hundreds of feet above in elevation, forcing salt into the bottom of the lake and increasing salinity levels.

18. Dr. Myers cited poroelasticity (poroelastic flow) and viscoelasticity (viscoelastic flow) as the mechanisms for how pressuring the salt caverns due to LPG storage would propagate a "signal" through the salt beds to the salt-saturated sediments at the bottom of Seneca Lake over ten miles away and seven hundred feet higher in elevation. He cited many peer reviewed articles which explored poroelasticity and viscoelasticity to substantiate his claims.

19. Poroelasticity is the relationship between the flow of fluid through a porous and permeable medium along with the deformation of the solid aspect of the medium. When pressure is applied, fluid moves through the pores in the medium. In reaction to this force on the pore spaces, the solid material shifts and deforms elastically. Once the pressure is removed, the solid matrix returns to its original condition.

20. Poroelasticity is irrelevant to the proposed project because the salt beds are non-porous, impermeable and non-saturated with fluid thereby making poroelastic flow a physical impossibility.

21. Viscoelastic flow is the movement of a material that has both viscosity and elasticity. There are two types of viscoelastic material: fluids and solids. Examples of viscoelastic fluids are toothpaste, pudding, liquid soap, honey and gelatin. Salt, due to the lack of fluids, is considered a viscoelastic solid.

22. The properties of a viscoelastic solid, such as salt, allows it to deform under pressure. In order to cause the solid grains in the salts to deform over the course of ten linear miles (as proposed by Myers), a pressure almost twenty five times the fracture pressure of the salt would have to be applied to the walls of the cavern. This is a conservative estimate of the pressures required since the damping due to down-dip gravity, salt creep moving into the cavern, the lithostatic pressure of the overlying sediments, the hydrostatic pressure of the lake and the friction due to salt movement were not factored into my estimate.

23. Due to the fact that the salt formation would fracture prior to reaching the pressures required to cause viscoelastic flow, Myers' model of viscoelastic flow is a physical impossibility.

24. A considerable amount of time was spent by myself reviewing published literature as well as consulting with professionals and academics in substantiating Dr. Myers' assertion that previous or proposed LPG storage at the Crestwood facility could have or would cause advection flow in the sediments at the bottom of Seneca Lake over ten miles away thereby

forcing salt into the lake. I found no literature or any information from other sources that this is a valid scientific concept.

25. In reviewing Dr. Myers' citations, I also found that his theory was not supported by the information upon which he was relying.

26. Dr. Myers asserted that a spike in chloride levels in Seneca Lake in the mid-1960s coincided with the start-up of LPG storage at the same Finger Lakes facility albeit in different caverns. His evidence of this spike was a chart in his report that relied on data compiled by Glenn Jolly of the United States Geological Service.

27. I contacted Mr. Jolly who supplied me with the data that he used in determining chloride levels in Seneca Lake from 1964 to 1974. The data clearly showed a linear increase in chlorides from the early 1900s (50 mg/l) to February 8, 1965 (140 mg/l). It then leveled off until the spring of 1967.

28. After the start-up of LPG in 1964, chloride levels remained fairly stable for over two years with only a 3% increase from February 8, 1965 to April 10, 1967. It was only after April 1967 where the levels increased to what Jolly considered a "spike:" 155 mg/l (May 1967), 170 mg/l (June 1967), 185 mg/l (July 1967). By October 1967, the levels were down to 162 mg/l where they fluctuated randomly between 120 mg/l and 190 mg/l. The majority of the readings hovered around 160 mg/l, finally ending at 160 mg/l on the last reading of December 1974.

29. I encountered many contradictory chloride level readings during my review. Jolly acquired his data from various sources. The data from 1960-1964 was collected by NYSDOH. The data from 1964-1974 was from NYSDEC. Jolly also provided me with other data, such as Harriss (1967) who noted levels as low as 118 mg/l in October 1965, which is significantly less

than the NYSDEC levels recorded at the same time. Also, in an interview with the Geneva Times published January 11, 1973, William Ahrnsbrak, former professor of Oceanography and Meteorology at Hobart and William Smith Colleges, cited a 125 mg/l reading in 1965, which was ten to fifteen mg/l below that of the DEC levels during the same period. Ahrnsbrak also recorded readings in September 1972 of 210 mg/l on the surface of the lake which was over 30% more than that of the DEC readings at the same time. Ahrnsbrak's chloride graph did not show the Jolly spike in 1967. The graph showed a gradual linear increase from approximately 110 mg/l in 1955 to 152 mg/l in mid-1968, then another linear increase to 178 mg/l in 1971. Ahrnsbrak's reading in 1967, according to the graph, was approximately 145 mg/l – well below the spike noted by Jolly of 185 mg/l. Also, it is not clear where Jolly acquired his pre-1960 or post-1974 data.

30. It is my strong opinion that caution should be applied in placing too much emphasis on past chloride levels in light of the foregoing. I would also absolutely not rely on Myers' citations without knowing if readings were taken at the same locations and depths or if consistent protocols were followed in the way the data was gathered.

Paul M. Giachetti

Sworn to before me this 29th day
of May, 2015.

Notary Public

KIMBERLY T SHUTTS
Notary Public, State of New York
Qualified in Livingston County
Commission Expires March 14, 2018
Registration No. 01SH4924364

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
----------X

In the Matter of the Application for an Underground Gas Storage Permit Pursuant to Environmental Conservation Law (ECL) Article 23, Title 13, by

FINGER LAKES LPG STORAGE, LLC

Applicant.
----------X

AFFIDAVIT IN SUPPORT OF DEC STAFF REPLY BRIEF

DEC Permit Application ID No. 8-4432-00085

STATE OF NEW YORK)
ss:
COUNTY OF LIVINGSTON)

LINDA A. COLLART, upon being duly sworn, deposes and says as follows:

1. I am a Mineral Resources Specialist 4 in the Division of Mineral Resources' Bureau of Oil and Gas Regulation within the New York State Department of Conservation ("Department" or "DEC"). I have a Bachelor of Science degree in Geology and Mineralogy from Ohio State University and have over eleven years of experience overseeing oil, gas, solution mining and gas storage well permitting and operations. Before joining DEC, I worked for more than 20 years as a professional geologist for engineering/hydrogeological consulting firms and for oil and gas well operators.

2. I presently serve as Regional Mineral Resources Supervisor in DEC's Region 8 Office, and in that capacity I am responsible for overseeing the Department's regulation of oil, gas, solution salt mining, and gas storage wells for DEC Regions 6, 7, and 8.

3. I submit this affidavit to respond to arguments made in post-issues conference briefs filed by Seneca Lake Pure Waters Association ("SLPWA"), Gas Free Seneca ("GFS") and

the Seneca Lake Communities ("SCL"). More specifically, I submit this affidavit to respond to claims related to valley stress relief and the comments that prior LPG storage operations caused elevated levels of chloride in Seneca Lake.

Tully Valley

4. Prior to working with DEC, I was employed as a geologist with H&A of New York (H&A). H&A in association with CS Consulting Engineers, Inc. produced two reports for their client, Allied-Signal, to address DEC claims that Allied-Signal's brining operations in the Tully Valley had exacerbated the mudboil phenomena observed in the Tully Valley. These reports were "Mudboil Occurrence in the Tully Valley, Onondaga County, New York" dated November 18, 1991 and "A Projection of Future Geologic Conditions in the Tully Valley, Onondaga County, New York" dated February 1992 (companion report to "Tully Brine Field Well Closure Plan"). I performed the geophysical and structural geologic interpretation for both of these reports which included the investigation and mapping of faults within the Tully Valley. This investigation included research of available geological literature and an extensive review of geophysical well logs and drilling records of the brine wells within the Tully Valley. These reports formed the basis for the geologic description of faulting and figures referencing these faults in the "Tully Brine Field Well Closure Plan" ("Closure Plan"). The Closure Plan is referenced in SLPWA brief on page 13 and a portion is included in Exhibit D of their brief.

5. In SLPWA's brief (page 12), Dr. Nieto's hypothesis related to the creation of fracture permeability and thrust faulting resulting from the presence of horizontal compressive tectonic stresses under the Seneca Lake valley is described. It is stated that horizontal tectonic stresses are distorted by the presence of valleys especially where the prevailing east-west stress

field is oriented at right angles to north-south valley axes. The basic concepts of such valley-induced structures are the basis for the fault hypothesized by Dr. Nieto shown on his Exhibit H of SLPWA's brief, oriented north-south and parallel to the Seneca Lake Valley axis.

6. On page 13 of its brief, SLPWA states that the fault that Dr. Nieto hypothesizes is based upon calculations showing that the concentrated horizontal compressive tectonic stresses are sufficient to fracture the bedrock at the bottom of the Seneca Lake valley. Once the bedrock is fractured at that point, the continuing tectonic stresses cause a reverse thrust fault to form from the initial point of fracture down into the salt layer. It is then stated on page 13 that:

> "A similar fault has been mapped as a probable fault in the Tully valley brine field. *Tully Brine Field Well Closure Plan*, prepared by Consulting Engineers Inc. in cooperation with H&A of New York for Allied Signal, February 1992, Fig. 4, east-west Subsurface Profile. A copy of Figure 4 is attached as Exhibit D. A diagram of the mechanics involved in the formation of the Tully Valley fault is attached as Exhibit E. We offer these diagrams to rebut Ms. Maglienti's assertions."

The fault drawn on the cross section in Exhibit E as "The Tully Valley Cross Section Slightly Simplified from H&A Figure 4, February 1992..." is a misrepresentation of the faulting shown on H&A's Figure 4 which is not similar to Dr. Nieto's hypothesized fault in the Seneca Lake valley. Dr. Nieto is incorrect in his assumptions of the mechanics involved in formation of the fault depicted on H&A's Figure 4 as a valley stress feature and, therefore the drawing of multiple faults upon a cross section "slightly simplified" from the H&A Figure 4 has no basis.

7. Dr. Nieto has drawn what appears to be three faults on his Exhibit E cross-section while there was only one fault depicted on H&A's Figure 4. He has also implied by these drawings a completely different fault orientation than that mapped by H&A to match his valley stress fault model. H&A's 1991 report "Mudboil Occurrence in the Tully Valley, Onondaga County, New York" describes the fault as a thrust fault with an estimated strike of north 74

degrees west and dips to the southwest which is essentially an east-west trending fault. The Tully Valley axis is north-south, similar to the Seneca Lake valley but this fault is perpendicular to the valley axis and the compressional valley stresses instead of being parallel to the valley axis which is the model Dr. Nieto uses for his fault hypotheses. Additionally, the fault documented by H&A through a systematic review and mapping using driller's logs and geophysical well logs is consistent with faults documented in Onondaga County by other authors. These thrust or reverse faults commonly occur throughout New York State induced by regional tectonic activity associated with salt deformation where anticlines and synclines have been developed in the salts forming a successive decollement structure along the edge of salt deposition in the Appalachian basin. These faults and folds were produced as a result of northeast and northwest compressional stresses associated with the Allegheny Orogeny. This is the type of faulting in the Tully Valley described in the H&A reports and these faults are not related to contemporary, near surface, valley stress induced fracturing and faulting.

8. Dr. Nieto has drawn a fault on the cross section in Exhibit E that extends to the top of bedrock in the center of the Tully Valley. This is refuted by the data provided in H&A's Figure 4 which shows no formation offsets above the Rondout formation along this section line. Even off the section line in P-1, faulting does not extend to the top of rock. As previously stated, I reviewed the geophysical logs and drilling records for these wells that is the basis for the faulting shown in the H&A cross section. Nowhere is it mentioned by SLPWA or Dr. Nieto that their re-interpretation of faulting in Tully Valley is based upon any data other than what is provided in H&A's Figure 4.

9. SLPWA and Dr. Nieto have neglected to address critical interpretive information presented in Note 8 on H&A's Figure 4 of the original report. In Note 8, H&A states the following: "Probable faults shown in this profile are sections of the same fault. The profile line bisects the fault at two locations at a nearly parallel orientation giving the appearance of two faults." The fault shown by H&A in Figure 4 is only one fault and its appearance has been distorted since the east-west cross section is nearly parallel to the fault. To more accurately depict this fault on a cross section, the section must be perpendicular to the strike of the fault or in a north-south direction. Dr. Nieto has drawn three faults in Exhibit E that are unrelated to the fault and offsets depicted on H&A Figure 4 yet is using the data from H&A Figure 4 as the basis for his drawing.

10. Based on my direct experience in conducting the geological interpretive analysis of the Tully Valley Brine Field, it is my opinion that there is no basis for Dr. Nieto's redrawing of the fault in SLPWA's Exhibit E.

Historical Chloride Inputs

11. I have reviewed the portions of GFS's, SLC's and SLPWA's brief which claim that historical mine waste discharges could not account for the chloride levels observed in Seneca Lake from the 1960s to the present. I have also reviewed the document by Tom Myers, Ph.D., entitled "Technical Memorandum—Review of Finger Lakes LPG Storage, LLC, Proposed LPG Storage Facility" dated January 15, 2015 and the report by John Halfman entitled "A 2014 Update on the Chloride Hydrogeochemistry in Seneca Lake, New York" dated

December 10, 2014. Both of these reports provide summaries of data and make conclusions related to the salinity levels in Seneca Lake over time. When referencing Myers and Halfman in the following paragraphs, unless otherwise stated, it is these reports that are being referenced.

12. In response to claims that mine waste discharges were too insignificant or too late to account for elevated chloride levels, I reviewed existing records of the DEC Region 8 Division of Water related to historical discharges and National and State Pollution Discharge Elimination System ("NPDES and SPDES, respectively") permitting for the two solution salt mines on Seneca Lake and files maintained by the Region 8 DEC Mined Land Reclamation Program for the Morton Salt Himrod Mine. The DEC records provide additional information and data to show that mine discharges from three facilities on Seneca Lake during the 1960s through the early 1970s were significantly greater than estimates provided by Myers and Halfman and that these discharges were essentially unregulated prior to the mid-1970s.

13. State regulatory agencies began documenting and addressing discharges causing contamination in Seneca Lake associated with the Watkins Salt Company and International Salt Company ("ISCO") solution mining facilities during the 1960s. These solution salt mining operations are at the same locations as the current Cargill and US Salt solution salt mining operations, respectively. Orders issued by the New York State Department of Health ("DOH") in the mid to late 1960s required progressive elimination of process waste streams of brine, sludge, and flyash that were currently all being discharged to Seneca Lake. It is important to note that these orders did not establish a limit for salt discharges and only directed ISCO or Watkins Salt Company to construct facilities to dispose of or treat their wastes by the late 1960s. These orders were subsequently modified numerous times to extend the deadlines for elimination of the discharges; however, the companies were constantly working during this time period

towards this goal. DEC took over regulatory jurisdiction of the facility discharge permitting/oversight between 1970 and 1971. It wasn't until September 30, 1974 that a USEPA NPDES permit was effective for Watkins Salt Company and until December 31, 1974 that a NPDES permit was effective for the ISCO facility establishing salt waste discharge limits at the plants' outfalls. DEC was responsible for overseeing the NPDES program for the two facilities since August 1975. Since 1974 -1975, both salt companies had implemented most of their water pollution control systems to attempt to meet the discharge limits of the NPDES permits. By 1975, significant reductions to the waste streams and chloride concentrations being discharged to Seneca Lake had been accomplished by the solution salt mining operations. The reason for a noted decline in the salinity in Seneca Lake by 1975 can be explained by establishment of chloride and/or total dissolved solids (TDS) discharge limitations and the reduction of waste streams that had to he in place from 1974 to 1975 for the solution salt mining facilities.

14. Both Halfman and Myers discount salt mine waste discharge as a source of the mid-1960s increase in Seneca Lake salinity stating that there is a negative correlation between production records from the 1980s through 1990s and chloride levels in the lake. This may be true during the 1980s and 1990s when the mine waste discharge was regulated and brine waste streams that had previously been discharged were no longer present; however, the lack of regulation in the 1960s and early 1970s would cause more process waste to be discharged to Seneca Lake with higher production. The documents I reviewed indicate that salt production from the Seneca Lake facilities was higher during the 1960s through early 1970s and, therefore, the amount of waste discharged to Seneca Lake would have been much greater during this time frame. Production records referenced by Halfman (2014) show higher salt production from 1961 – 1970 than the following decades until 2001 – 2010.

15. Of particular note is that 30 of the 69 solution salt mining wells at the ISCO facility (43%) were drilled during the 1950s through the 1960s. Production data prior to 1961 is not readily available to compare with the 1960s; however, the addition of 30 brine wells to the existing 20+/- wells more than doubled the number of producing wells and should have correlatively increased production at the facility. Additionally, Department records indicate that the closure of ISCO's Ludlowville solution salt mining facility on Cayuga Lake in 1962 added operations and increased production at the Seneca Lake facility. See Attachment A. Pollution abatement and the elimination of process waste streams from the plants during the 1960s and 1970s subsequently caused decreases in production. This is supported by statements in a report by James Huff entitled "Technical Review of the Chloride Effluent Limits in International Salt's Watkins Glen Facility, SPDES #NY 0002330" dated May 7, 1981. Huff claims that ISCO was significantly impacted by their efforts to reduce discharges to Seneca Lake. The report notes: "The biggest impact is the 10% reduction in the pre-1970 production capacity directly attributable to pollution abatement." Huff also stated that "During the 1970s, numerous improvements were made to reduce the quantity of chlorides discharged to Seneca Lake to a fraction of what was discharged in the early 1960s." See Appendix G of DEC Staff's Initial Post-Issues Conference Brief.

16. Halfman's calculations from the late 1990s through 2014 use a discharge rate that could be met by counting only cooling water discharge and does not reflect the multiple other waste streams associated with the salt manufacturing process discharging to the lake during the 1960s through the mid-1970s. Additionally there were other sources of salt contamination. There are records that brine wells associated the Watkins Salt Company were observed discharging into Seneca Lake Inlet. There were also salt stockpiles along the shore of Seneca

Lake that were a source of contamination. See Attachment B.

17. An average discharge of 40,000 pounds of chlorides per day during 1980 for the ISCO facility is documented by Huff, 1981 and is approximately the same used by Halfman for his calculations in his 2014 report. This rate equated to a mean concentration of 444 mg/l Cl entering Seneca Lake. However, prior to 1980, chloride concentrations in the discharge from the ISCO facility were much higher than the 1980 concentration or those used by Halfman in his calculations. Correspondence from 1979 indicates that chloride levels were reduced from maximum levels of over 5000 mg/l in 1973 to maximum levels that rarely exceeded 1000 mg/l – generally 500 mg/l or less. See, Appendix F of Department staff's Post-Issues Conference Brief. This is a five to ten-fold reduction in chloride concentrations from 1973 to 1979. Mean chloride concentrations in 1975 through 1976 from EPA NPDES discharge monitoring reports range from 672 to 1,952 mg/l chlorides which is still significantly higher than the current values. With a concentration of 672 mg/l being discharged at a flow rate of 10 MGD (reported), 56,045 lbs./day chloride were being discharged. At a concentration of 1,952 mg/l, 162,797 lbs./day chloride were being discharged, which is significantly higher than the amounts used by Halfman in his calculations.

18. Halfman documents a leak of 1.1 million tons of salt into the lake during the late 1960s through early 1970s. He acknowledges that the spike in the 1970s can be attributed to incidents at the Himrod mine stating that "the concentration spike is consistent with the chloride record if it leaked over a span of a few years". Myers references Halfman's report and agrees if this amount is accurate that it could contribute to maintaining the high concentrations in the 1970s but merely states that it occurred too late to have been the primary cause of the earlier spike. Although specific data is not available to confirm the 1.1 million tons of salt discharged

to the lake, it is clear that significant salt discharges occurred to surface water and groundwater. The state began to investigate water pollution problems with the Morton Salt Himrod mine as early as 1970. Salt pile runoff was discharged to groundwater and nearby streams and later to brine lagoons. The brine lagoons were also used to contain brine from dissolution of a massive waste salt stock pile prior to injecting into a disposal well. These lagoons had dike breaks where numerous discharges occurred. The brine lagoons were unlined and groundwater contamination occurred. The magnitude of groundwater contamination at the site can be assessed by sampling results years later. December 13, 1984 correspondence to DEC from J. MacNeill, consultant for Morton provides monitoring well sampling data for three wells. See Attachment C. Chlorides are 19,268 mg/l in Well A which is in the area of the original retention pond. Monitoring data through January 1987 indicates contamination in Wells A and C. Well A had 7,661 mg/l chlorides and Well C had 659 mg/l chlorides.

19. Disposal of brine by injection into an open hole interval from the Marcellus Shale through the carbonate rocks above the salts began in 1974 at the Morton Salt Himrod mine. A SPDES permit was issued in 1976 for the disposal well that also directed Morton to line the lagoons to prevent further groundwater contamination. Thus, the source of surface water contamination and groundwater contamination associated with the Himrod mine was being reduced in the mid-1970s which correlates with the reduction of chlorides in Seneca Lake. It wasn't until 1986 that the waste salt stockpile had been completely removed by dissolution and injection into the disposal well that this source was eliminated.

20. Halfman (2014) uses the mean annual discharge of chlorides from the two salt plants on Seneca Lake available from the USEPA ICS website from the late 1990s through May, 2014, to calculate theoretical chloride concentrations indicating potential impact from mine

waste discharge to chloride concentrations in Seneca Lake. He concludes that the lake must have another source of chlorides (other than mine waste) since the estimated contribution from the waste to lake chloride concentrations is so small or alternatively, some other process could be at work in Seneca Lake. However, Halfman also concludes that the elevated concentrations observed today can be attributed to time lag to reach equilibrium from the input of the 1970s slug from the Himrod mine. Therefore, according to Halfman, groundwater inputs are not required to have the present day lake chloride concentrations. They could be attributed solely to mine waste.

21. Halfman states that discharge loads prior to the late 1990s are unknown but mine wastes larger than present day must have been input to attain the slow historical rise in concentrations from 1900 to 1965 and that a large slug of chloride entered the lake in the 1960s from an unknown source to cause the 1965 peak. Certainly, there is evidence that there was an increase in brine production (as described in the paragraphs above) in the mid-1960s that would cause an increase in mine discharge that could cause a large slug of chloride to enter the lake in the 1960s. Data from DEC records that I reviewed also provides evidence of mine wastes being discharged to Seneca Lake much larger than present day during the 1960s and 1970s which is what Halfman concludes would contribute to an increase in salinity in Seneca Lake.

22. Myers describes a spike in Seneca Lake chloride concentrations beginning in 1965 lasting through the early to mid-1970s. GFS brief (page 48) states that Dr. Myers' analysis builds on the work of Dr. Halfman, Dr. Wing, and others who documented a significant spike in the salinity levels of Seneca Lake from 1965 to 1970 that coincided with the commencement of LPG storage in caverns adjacent to the proposed Finger Lakes LPG project and that there was a 50% increase in the lake salinity corresponding to the commencement of storage operations. This statement in GFS's brief is refuted by statements in Myers' own report. Myers states that

chloride concentrations in Seneca Lake rose from about 50 mg/l to 110 mg/l from 1905 to about 1964. Between 1965 and the early 1970s, the concentration rose to 180 mg/l (Myers, 2015 p5 and Appendix B p1). Storage operations began in 1964 and ended in 1984. The 50% spike which according to Myers occurred between 1965 and the early 1970s is not coincident with the beginning of LPG storage operations and salinity actually decreases during the time LPG storage operations occurred. Concentrations dropped after that time with Halfman stating that the drop occurred in 1975.

23. Table 1 on page 50 of GFS's brief is a summary of Dr. Myers' findings, which support his conclusion that existing salt mines or runoff could not have contributed a significant volume of salt at the right time to Seneca Lake. Table 1 in GFS's brief is misleading since it only represents estimated discharges from the Morton Salt Company Himrod mine and reported mine discharges from 1997 through 2014 from the two solution salt mining operations that currently exist on Seneca Lake – US Salt and Cargill, Inc. Table 1 lists the Himrod salt mine and Morton salt mine as separate sources; however, they are the same mine. Brine discharges associated with the Himrod mine occurred in the late 1960s through early 1970s from salt pile runoff and brine lagoons that caused surface water and groundwater contamination. The chloride loads in Table 1 for the Himrod mine reflect the discharge reported by Halfman associated with this surface and groundwater contamination. There was a disposal well permitted in 1974 where brine was injected. The second entry in Table 1 for the Morton Salt mine reflects the discharge to the disposal well reported in Wing (1995) where Wing concludes that the disposal zone is exposed beneath the sediments in Seneca Lake where seepage is likely.

24. The data shown in the third row of in Table 1 is also incorrect. The number used in the third row is taken directly from Wing (1995), which shows a combined daily discharge is

<3,600 kg chloride per day (1, 314 tons per year) for the two solution salt mining operations on Seneca Lake. Based upon the DEC records I reviewed, these discharge amounts shown in Table 1 are not reflective of the amounts of salt discharged prior to 1995. Attached is a summary of chloride concentrations at the then Akzo Nobel Salt (now US Salt) facility outfall 002 from January 1987 to February 1993 showing an average discharge of 19,442 lbs./day which is approximately 3,219 tons per year. See Attachment D. This is significantly greater than the 1,314 tons/year reported by Wing (1995) and shown in Table 1, and notably only represents the data from one outfall at one mine site. This data indicates that the pre-1995 discharge amount by Wing (1995) shown in Table 1 is significantly underestimated or underreported.

25. Prior to 1987, the former ISCO facility discharged salt amounts that were even greater. The average reported discharge of chlorides from the ISCO facility in 1980 was 40,000 lbs./day (Huff, 1981). NPDES discharge monitoring reports from 1975 into 1976 indicate even greater amounts of chloride were discharged at the ISCO facility. During the 1970s, numerous improvements were made to reduce the quantity of chlorides discharged to Seneca Lake to a fraction of what was discharged in the early 1960s (Huff, 1981).

26. Myers' report also contains inaccurate information. On page 1 of Appendix C of Myers' Report, Myers states: "Records of permitted salt discharges to the lake prior to 1999 are not available but it is reasonable to expect that similar discharges occurred prior to that time and possibly commenced in the late 1800s with the advent of salt mining." Myers was referencing estimates used in Halfman's 2014 report to calculate mine waste fluxes theoretical contribution to lake concentrations. Based upon my review of Department records, Myers conclusion that similar discharges occurred from the advent of mining through 2014 is not reasonable.

27. Myers also states on page 1 of Appendix C of his report that "Legal controls on

such discharges would have been minimal for much of this period, but it is also unlikely that the salt mines would have been discharging extreme amounts of the product they are mining and producing." This statement is refuted by the records I reviewed and explained above. Although the salt mines would not discharge their product into the lake, increased salt production would lead to significant increase in multiple waste streams during the 1960s at both the Watkins Salt Company and ISCO facilities. Some of the process waste streams described in correspondence as contributing significantly to salt contaminated discharge entering Seneca Lake include vacuum pan bleeds, the brine purge stream from evaporators, heat exchanger condensate, sludges resulting from the purification of raw brine, dry waste salt, and contaminated salt. During the 1960s and early 1970s, the salt companies reduced their salt discharges by eliminating these and other waste streams to meet discharge criteria in the NPDES permits. See Appendix F to DEC Staff's Initial Post-Issues Conference Brief.

28. Based upon data obtained from my review of DEC records summarized in the paragraphs above, it is my opinion that the essentially unregulated discharge of mine wastes that continued through the 1960s and mid-1970s (until regulated by NPDES permitting in 1974) — at a time of peak salt production on Seneca Lake coupled with the discharges associated with the Himrod mine — provides the only cogent explanation for the "peaks" observed and chloride concentrations observed in the lake today. The 1975 decrease in lake salinity coincides with the advent of DEC regulation of salt discharge from the mines, the implementation of most of the mines' pollution control systems, and mitigation of the discharges associated with the Himrod mine. Note that regulation of mine wastes and the companies' efforts to reduce their waste streams discharging to the lake did not begin until the mid-1960s and by 1975, chlorides in

discharges from all three facilities was significantly reduced. This is the time frame of the reported "peak" in Seneca Lake salinity referenced by both Halfman and Myers in their documents.

Linda A. Collart

Linda A. Collart

Sworn to before me this
29th day of May, 2015.

Notary Public

KIMBERLY T SHUTTS
Notary Public, State of New York
Qualified in Livingston County
Commission Expires March 14, 2018
Registration No. 01SH4924364

STATE OF NEW YORK
DEPARTMENT OF HEALTH

MEMORANDUM
April 5, 1962

To: Mr. Fuller - Rochester Regional Office

From: Henry J. Smith - Geneva District

Subject: Water Pollution Control - Finger Lakes Drainage Basin - International Salt Company - Town of Reading - Schuyler County

On March 29, Mr. G. M. Faustel conferred with Mr. R. W. Wrighton, Manager of the International Salt Company plant in the town of Reading, Schuyler County. The following are Mr. Wrighton's opinions in regard to the various disposal problems:

1. He anticipated that there was no reason that the existing plan for waste disposal should not be adequate to handle the increased production expected from the takeover of the Myers operation. This is still some place in the future and the revamping of plant operation may not be complete in 1962.

2. He could see no method whereby he could avoid disposal of solid salt waste into Seneca Lake. It was his opinion that this was the only practical solution of disposing of imperfect "salt links" and "softening buttons."

3. He stated that other non-solid salt waste that is presently being discharged to Seneca Lake would be absorbed into the re-processing arrangement by summer 1962.

It seems evident that the elimination of the salt waste discharge cannot be arranged for at the local plant. It is my opinion that the procedure will have to be cleared through the main company offices.

We feel that the extension of time requested in Mr. Wrighton's letter of March 19 is reasonable and should be granted. However, I would think that it would be possible for the International Salt Company to provide a stamp or hammer mill to reduce the salt ~~process~~ Brocks to granular salt so that it could be disposed of in some manner other than discharged to the lake.

INTERNATIONAL SALT COMPANY
INCORPORATED

WATKINS GLEN, N. Y.

March 19, 1962

R. W. WRIGHTON
MANAGER
GLEN PLANT

Mr. Henry J. Smith, P.E.
District Sanitary Engineer
State of New York
Department of Health
P. O. Box 551
Geneva, New York

Dear Mr. Smith:

In order to effect necessary economy, our Company is in the process of shutting down the Refinery located at Myers, New York and merging it with our Refinery at Watkins Glen.

This has thrown a tremendous work-load on our staff, and we find we will not be able to meet the completion dates promised last year for various phases of our Pollution Control Program.

For this reason, we would appreciate consideration from the Water Pollution Control Board to change the existing proposed completion dates for the Fly Ash and Cinder Waste Disposal System to July 19, 1962 for partial and October 15, 1962 for final completion, and the Sewage Disposal System to October 15, 1963.

Very truly yours,

R. W. Wrighton

Manager
INTERNATIONAL SALT COMPANY

RWW:CPL

Mr Pearson
WATKINS SALT CO.

STATE OF NEW YORK
CONSERVATION DEPARTMENT
Division of Fish and Game

R. STEWART KILBORNE
Commissioner
W. MASON LAWRENCE
Deputy Commissioner
LEIGHTON A. HOPE
Deputy Commissioner
ROBERT E. YOUNG
Deputy Commissioner
IRWIN H. KING
Secretary

409 Exchange Bank of Olean
Olean, New York 14760

Watkins Salt Co.
Watkinsglen 67

FINGER LAKES
LAKE ONTARIO
UPPER GENESEE
CHEMUNG RIVER
IRONDEQUOIT BAY

J. G. Hall
Director
(518) 457-5690
D. H. Wallace
Deputy Director
of Fish and Game
for Marine Region
(516) 585-5400
W. G. Bentley
Assistant Director
for Fish and Game
(518) 457-5690
W. J. Goodman
Assistant Director
for Law Enforcement
and Field Services
(518) 457-5680

April 23, 1970

Mr. Henry J. Smith
Schuyler County Sanitary Engineer
80 North Street
Geneva, New York

Dear Mr. Smith:

On October 31, Mr. Stewart Field, Conservation Officer, and myself conducted an investigation of a dumping area for salt near State Route 414 and to the East of Watkins Glen, which was reported to you in our November 3, 1969 letter and accompanying information.

We were very pleased when we received a copy of your November 12, 1969 letter to Mr. Donald Robertson, Plant Manager of the Watkins Salt Company, Watkins Glen, N.Y., which advised that the site be immediately covered with at least two feet of heavy topsoil to prevent damaging leaching of the salt into Catharine Creek and eventually Seneca Lake.

On April 20, 1970, Mr. Steve Lawton, Conservation Officer, and myself again investigated the site and found no indication that the stipulations contained in your above noted letter were carried out. In addition, it was readily evident that new piles of salt with some sulphur are being deposited in this area (see attached photo).

We are definitely concerned about the status quo of this dumping operation and would like to know what stipulations are being taken to alleviate this problem by your department.

We are much concerned about the addition of the salt chemicals which are finding their way into Seneca Lake by such dumping operations and by piped flow directly from the salt manufacturing companies. Thank you for your cooperation in this matter.

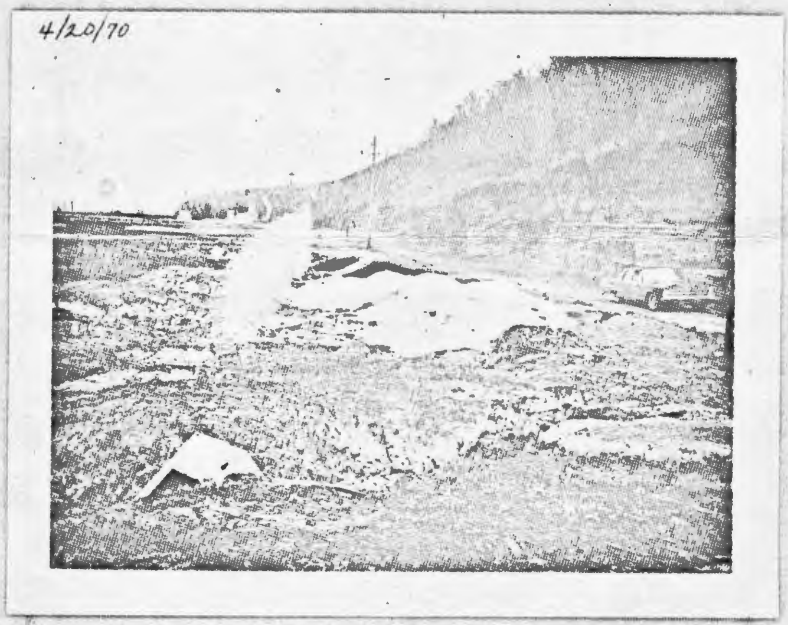
Sincerely,

Steven J. Doleski

Steven J. Doleski
Conservation Biologist

SJD/dm
cc: S. Field
J. Lawton
T. Pearson

Follow-Up Investigation of Watkins Salt Co. Dumping Area
Along Catharine Creek
Schuyler County



Looking along dump area showing fresh piles of salt and sulphur that have been recently placed. There is no indication that any topsoil was placed over the salt as requested in Mr. H. Smith's November 12, 1969 letter.

File: Morton Salt
Tn. Milo
8113-29-0016

John S. MacNeill, Jr., P.C.

CONSULTING ENGINEERS, SURVEYORS, PLANNERS

A Professional Corporation

74 NORTH WEST STREET, P.O. BOX 320
HOMER, NEW YORK 13077-0320
(607) 749-2644

571 MAIN STREET
ONEONTA, NEW YORK 13820
(607) 432-7467

December 13, 1984

Mr. Vincent Dick
Mined Land Reclamation Specialist
NYSDEC
6274 East Avon-Lima Road
P.O. Box 57
Avon, NY 14414

Re: Morton Salt - Seneca Lake Mine
Himrod, N.Y.
NYSDEC Mine File No. 8113-29-0016
Our File E-100-83

Dear Mr. Dick:

Attached are the test results for the October and November water sampling program at the Seneca Lake Mine site as required by the NYS approved Mine Closure and Reclamation Plan.

Specific conductivity and chloride tests were performed on all samples, with the results summarized on the attached data sheet. I have also enclosed a copy of the laboratory report sheet from Friend Laboratory, Inc., which is an approved laboratory facility.

Because the specific conductivity and chloride levels show some variance at this point, the December samples will also be tested for both parameters.

The extremely high chloride level in Well "A" is greatly in excess of the groundwater quality standards, but this level of contamination has been known to exist in the area east of the original retention pond prior to the reclamation process. I expect to see a trend of decreasing chloride levels in this area from this point on.

The October samples of test Well "B", south of the containment area and test Well "C", west of the site and up gradient, show relatively high chloride levels when compared to the groundwater standards. Since these levels dropped considerably with the November samples, I feel that the higher original levels can be attributed to possible contamination of the bore holes during the well installation procedure. (Well "A" was installed first and the same soil boring equipment was used on all three wells.)

(continued...)

I expect that the chloride levels will stabilize at a level well below the maximum contaminant level permitted by the groundwater standards in support 5 of the state sanitary code.

In summary, I feel these tests show that the area directly downstream of the containment area shows contamination from the initial pond failure and we should see a gradual reduction in chloride levels now that reclamation has been completed. This evaluation also shows that groundwater contamination by chlorides has not extended south of the original salt storage area.

I will provide you with monthly test data and monitoring evaluations as directed in the order of consent issued to Morton Thiokol.

Please contact me if you have any questions or comments.

Very truly yours,

JOHN S. MacNEILL, JR., P.C.

Daniel R. Walker

Daniel R. Walker, P.E.
Senior Project Engineer

DRW:nma
cc: Ray Upham, Morton Salt (with attachments)

MORTON SALT HIMROD, NY GW MONITOR WELL DATA SUMMARY

SAMPLING DATE	WELL A SP. COND. m ohms/cm	WELL A CHLORIDE mg/L	WELL B SP. COND. m ohms/cm	WELL B CHLORIDE mg/L	WELL C SP. COND. m ohms/cm	WELL C CHLORIDE mg/L
10/16/84	+20000	19380.00	920.00	280.00	850.00	196.00
11/15/84	+20000	19268.00	1350.00	56.00	1050.00	112.00

Approved by the Environmental Protection Agency for the:
Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory Inc.

446 BROAD STREET ● WAVERLY, N.Y. 14892-1445
Phone (607) 565-2893

Chemical and Bacteri analysis of:
WATER
STREAM POLLUTIO
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCTS
FOODS and MORE

Key For Report

< = Less Than
> = Greater Than
Pt. Co. U. = Platinum Cobalt Unit
ppm = Parts per Million
ug/L = Micrograms per Liter
mg/L = Milligrams per liter
NTU = Nephelometric Turbidity Unit
ND = None Detected
uMHOS/cm = Micromhos per Centimeter

Plant Mgr.

Company Name: John S. MacNeil Engineering
ATTN: Mr. Daniel R. Walker, P.E.
Address: P.O. Box 320
Homer, NY 13077

Date Received: 11/16/84

Pick up by:

SAMPLE SOURCES

Analysis Performed:	MORTON SALT MONITORING WELL "A" 10/16/84	"B" 10/16/84	"C" 10/16/84	"A" 11/15/84	"B" 11/15/84	"C" 11/15/84
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
Volatile Solids mg/L						
Chloride mg/L	19380.0	280.0	196.0	19268.0	56.0	112.0
Cooper mg/L						
Iron mg/L						
Nickel mg/L						
Zinc mg/L						
Arsenic mg/L						
Barium mg/L						
Cadmium mg/L						
Chromium mg/L						
Lead mg/L						
Mercury mg/L						
Selenium mg/L						
Silver mg/L						

CC:

Date 11/28/84 pg

Approved By: W. S. Johnson
Manager

Comments:

Form 1043

INTERNATIONAL SALT COMPANY
NY 000 2330
OUTFALL 002 CHLORIDE DATA IN lb/d

DATE	AVE_MASS	MAX_MASS
01/31/87	15225	36448
02/28/87	22702	61903
03/31/87	17831	36070
04/30/87	21314	78427
05/31/87	17702	46135
06/30/87	19846	45998
07/31/87	13664	21436
08/31/87	20262	56510
09/30/87	19166	46926
10/31/87	19118	44383
11/30/87	19094	45586
12/31/87	24967	129955
01/31/88	20233	36226
02/29/88	28967	126840
03/31/88	16200	26932
04/30/88	23077	39015
05/31/88	25087	54140
06/30/88	14409	20577
07/31/88	20697	39024
08/31/88	28962	53178
09/30/88	15892	29474
10/31/88	16630	33547
11/30/88	17903	22417
12/31/88	20590	35832
01/31/89	19618	47269
02/28/89	32748	53384
03/31/89	19346	41647
04/30/89	14421	19134
05/31/89	25590	38067
06/30/89	18107	21636
07/31/89	22640	43956
08/31/89	16308	29337
09/30/89	17505	37410
10/31/89	14394	21127
11/30/89	17189	24940
12/31/89	15177	21951
01/31/90	17957	26417
02/28/90	18434	29337
03/31/90	24349	42735
04/30/90	25952	43059
05/31/90	23513	35576
06/30/90	23039	42322
07/31/90	24310	50395
08/31/90	17153	22913
09/30/90	17267	28959
10/31/90	15561	25215
11/30/90	16246	22157
12/31/90	19947	33734
01/31/91	20368	59533
02/28/91	16538	50533
03/31/91	21143	34043
04/30/91	17284	22123
05/31/91	20404	46238
06/30/91	15449	21470
07/31/91	20576	75713
08/31/91	18939	27908
09/30/91	20200	31320
10/31/91	20459	36378
11/30/91	18059	26372
12/31/91	19762	36975

INTERNATIONAL SALT COMPANY
NY 000 2330
OUTFALL 002 CHLORIDE DATA IN lb/d

DATE	AVE_MASS	MAX_MASS
01/31/92	21045	29131
02/29/92	20883	25407
03/31/92	22435	33452
04/30/92	19078	25178
05/31/92	19870	29836
06/30/92	19372	26685
07/31/92	18771	37354
08/31/92	15707	21726
09/30/92	15258	24441
10/31/92	14330	17910
11/30/92	16273	29712
12/31/92	17212	41054
01/31/93	14374	29112
02/28/93	18591	64726

chloride (as cl) for outfall 002
excluding all permit violations

	daily ave lb/d	daily max lb/d
number of pts	74	72
average	19442	36350
std. dev.	3731	13238
maximum	32748	78427
minimum	13664	17910
95%	25579	58127
99%	28120	67142