David L. Bimber, Deputy Regional Permit Administrator
New York State Department of
Environmental Conservation
Region 8
6274 East Avon-Lima Road
Avon, NY 14414

Re: Frontier Stone LLC
Shelby Quarry, DEC ID No. 8-8436-00033/00001
Response to DEC Comments dated December 22, 2009

Dear David:

On behalf of Frontier Stone LLC enclosed herewith are 5 copies of the applicant's revised Draft Environmental Impact Statement, including Volume 1 DEIS, Volume 2 MLUP, and revised/updated reports from Volume 3, along with a digital copy and red-lined version of same. We have provided below responses to the Department's December 22, 2009 comment letter. Each comment is reproduced in italics below, and where applicable, the section of the DEIS is referenced along with a summary of any changes made therein.

1. Several factors significantly constrained our review of the resubmitted dEIS and mining application for this proposal. Three copies were not adequate for review by five of the Department's Divisions and at two locations. I acknowledge receipt of the dEIS (Vol. 1) in a digital format. I requested (via email November 25, 2009) but did not receive additional copies of the MLUP (Vol. 2) and the Appendices (Vol. 3). Future submissions must include five printed copies (see below) and a digital version of all documents.

We recommend that your next submittal include three copies of the amended maps and revisions of specific narrative/text pages as needed and two additional complete copies. We will replace those pages and maps in our three copies of the dEIS or MLUP received on November 23, 2009. Please include an index of the pages/maps etc. to be replaced. You should additionally be preparing to have the documents associated with the dEIS placed on your website for public review when the Department accepts the dEIS and deems the application complete.

Response:

In lieu of page revisions with and index of page replacements, we are submitting 5 complete copies of the revised DEIS, Volume 1, Volume 2, and revised/updated reports from Volume 3. When the DEIS is accepted and application deemed complete, the Applicant will follow the regulation with respect to publication of the DEIS on a website.

2. The influence of quarry activities on the Iroquois National Wildlife Refuge (Refuge) and the NYS Wildlife Management Areas (WMA), located immediately south and contiguous to the proposed quarry, is the most significant potential impact associated with this proposal. In general terms, the dEIS does not adequately analyze those impacts. Staff suggest that you create a map depicting the limits of disturbance, for example, noise and vibration overlaying habitat cover types. This map would be used to facilitate a discussion of a variety of issues including impacts to wildlife and to recreational users of the affected area. The discussion based on the map and overlays should address potential impacts to wildlife within the affected habitat types, possibly including forest, shrub-scrub, marsh, grassland and agricultural land. Impacts to nesting and migrating birds (raptors, songbirds, waterfowl, etc.) in these habitats should be included.

Response:

To facilitate discussion and to better visualize the impacts of the project on resources within the Refuge, Frontier prepared two maps which overlay the limits of noise and vibration, including ambient readings, over the Refuge. Two maps have been created: Plate 2 and Plate 3. Plate 2 depicts the existing noise conditions throughout the Refuge and proposed quarry site. Plate 3 depicts the anticipated noise and vibration impacts that will result from the proposed quarry. These maps are referenced in multiple sections throughout the DEIS to assist in analysis of the exiting conditions and potential quarry impacts within affected areas.

3. An Article 24, Freshwater Wetlands permit may be needed to evaluate increases in size and other potential changes to the wetland. More information is needed, in addition to water quality data, which would describe how the wetlands would be expected to increase based on current wetland size, water discharges rates, and capacities or limits of culverts and control structures on the Refuge. See comments below for more detail.

Response:

The DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCad analysis and water quality sampling performed by CPI, and an expanded water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report. These reports fully address potential impacts to Refuge wetlands, including water quality data, water discharge rates and capacities of culverts and control structures within affected water basins on the project site and adjacent Refuge areas.

Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project. A water quality assessment based on CPI samples for both surface and groundwater included existing water quality in the wetland and the project site. All parameters requested by DEC were tested.

4. *An Article 11, Rare and Endangered Species permit application may be needed to address issues related to the potential take of threatened of endangered species or their habitat (related to Northern Harriers and Short-eared Owls). Staff will need additional information (below) prior to making a final determination on this issue.*

Response:

The applicant is providing herein clarification of information with respect to threatened and endangered species. Please see Sections 3.1.4 and 4.1.4 of the revised DEIS.

TES prepared a Vegetation and Wildlife Resources Report describing baseline conditions at the site. TES also prepared an Impact Analysis of Ecological Resources. In response to DEC and USFWS comments, TES prepared a Supplement to Ecological Resources Report. Those three reports were located in Appendices 6 and 7a of the November 2009 DEIS. Since those reports were prepared, DEC provided additional comments on the DEIS. As a result, TES conducted additional visits and field surveys on the proposed quarry site and surrounding Refuge area. TES combined its previous reports and incorporated the new field work data and responses to comments in an updated Vegetation and Wildlife Resources and Impact Analysis of Ecological Resources Report. Chapter 1 provides baseline vegetation and wildlife information. Relevant information from Chapter 1 is excerpted and placed in Section 3.1.4, which describes the existing conditions for terrestrial and aquatic resources Chapter 2 provides the impact analysis of the proposed quarry on ecological resources. Relevant information from Chapter 2 is excerpted and placed in Section 4.1.4 which discusses the potential impacts to terrestrial and aquatic resources. The entire revised and updated TES report is located in Appendix 6 of the DEIS and is the data is referenced throughout Volume 1 of the DEIS.

5. *It was difficult to verify that some of our comments provided in our June 13, 2008 and July 8, 2008 letters were addressed in your recent resubmission. Please provide and itemized response to those letters, the location of where they were addressed in the dEIS, and a brief summary of the rationale behind your response. I have examples that I can provide of similar response letters.*

Response:

Comment noted. DEC's comments and applicant's itemized response to each comment are set forth below. Where applicable, a reference is made to the DEIS sections where revisions have been made. Itemized responses to the June 13, 2008 and July 8, 2008 letters are provided as attachments A and B hereto.

6. *Item 3 of our June 13, 2008 letter was not adequately addressed. The estimates of impact were based on an annualized average of 1,142 gpm flow to the Refuge. This analysis doesn't account for the impact of seasonal flow rates on the downstream water impoundments in the Refuge and Oak Orchard Creek at a time when they may be stressed by increased seasonal runoff rates. The analysis of impact should be augmented by a more concise estimate of those seasonal highs and a management plan developed jointly by Frontier Stone and the Refuge Manager. See comments below for more detail.*

Response:

The DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCad analysis performed by CPI, and an expanded water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report. These reports fully address potential impacts to Refuge wetlands, including water quality data, water discharge rates and capacities of culverts and control structures within affected water basins on the project site and adjacent Refuge areas.

Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project. The HydroCad and water budget analysis include annualized volumes from groundwater and storm event analysis to include a 2 year, 5 year, 10 year and 25 year storm events. School House Marsh Pond will have insignificant water level changes. Seasonal runoff is reflected in these storm event analysis.

Seasonal water flow rates for the HydroCad analysis included snow melt conditions. Records going far back as 1938 were reviewed to establish worse-case seasonal, i,e, storm and snow melt, conditions. See also Sections 1.3.2.2 and 4.1.2.2.4 for additional discussion.

7. *Item 3 also requested groundwater quality data. Other than the Johnston (1964) information provided, I was unable to find recent groundwater quality data. The data provided by Johnson (1964) suggests that groundwater from this geologic unit may not meet the discharge requirements of the Multi-Sector SPDES permit. A comparison with surface water characteristics is also necessary. This information is critical to our determination regarding the need for a site-specific Industrial SPDES permit. See comments below for more detail.*

Response:

Section 3.1.2.1 which contains test results for water samples from Schoolhouse Pond and the agricultural field drainage ditch. Test results for the water samples from the wells are also located in the section. See also discussion regarding Alpha Geoscience Report.

8. *The dEIS (Vol. 1) should include more summary information on impacts and analysis from the Appendices. In some instances, the statements in Vol. 1 did not support the analysis in the Appendices. Additionally, the possible impacts discussed in the Appendices should be summarized and discussed as necessary in the dEIS (Vol. 1). For example:*

a. "Noise and vibrations that result from blasting can potentially affect wildlife. Loud abrupt [sic] can startle animals, causing them to flush from a perch, leave a foraging area of [sic] abandon a nest. This can result in increased energy expenditure, reduced foraging time, and lowered reproductive output." This statement does a good job at summarizing some of the potential impacts to offsite wildlife, but none of these issues made it to Vol. 1 of the document.

b. The projected drawdown out to 7,000 ft. (page 14, Alpha Report) from the Frontier Stone quarry dewatering operation could affect private bedrock wells along Fletcher-Chapel Road, Sour Spring Road, and Southwood Road. The water level analysis shows that water levels in the Lockport could be drawn down below the top of the rock at distances of between 2100 and 4800 ft. from the quarry limit when the quarry has reached its maximum extent (Plate 2). This impact is not discussed or analyzed in Section 4.1.2.2., page 92, of the dEIS section entitled Potentially Significant Environmental Impacts.

c. The statement (Vol. 3, Appendix 7A, page 5 Impact Analysis of Ecological Resources) "How this pump out will affect habitats down drainage from the quarry will depend upon the volume of pump-out water. It is anticipated that it potentially will add water to the system and may result in more wetland areas" is a key issue that needs a better analysis and discussion throughout this review.

Response:

The text of the DEIS is revised throughout and contains more detailed discussion of existing conditions and analyses of potential impacts from the updated and expanded studies that are contained in the Appendices.

a) As previously stated, Frontier prepared Plates 2 and 3 which overlay the limits of noise and vibration, including ambient readings, over the Refuge. Plate 2 depicts the existing noise conditions throughout the Refuge and proposed quarry site. Plate 3 depicts the anticipated noise and vibration impacts that will result from the proposed quarry. These maps are referenced in multiple sections throughout the DEIS to assist in analysis of the exiting conditions and potential quarry impacts within affected habitats. The DEIS also contains additional discussion of TES's revised and updated Vegetation and Wildlife Resources Report and the Impact Analysis of Ecological Resources. TES's report reflects information obtained during additional surveys and site visits, including an off-site breeding survey on the Refuge and follow-up surveys. These studies provide support for the discussion of the project's impacts to resources within the Area of Influence (AOI).

b) The DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCAD analysis and water quality sampling performed by CPI, and an expanded

water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report. These reports fully address potential impacts to Refuge wetlands, including water quality data, water discharge rates and capacities of culverts and control structures within affected water basins on the project site and adjacent Refuge areas.Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project.

The Refuge will not be impacted by groundwater drawdown by the quarry. This conclusion is predicated on observations that the water levels in the wetlands are associated with a shallow water table, that a thick (30 ft.) deposit of underlying, low permeability, silt and clay isolate the wetlands from the bedrock aquifer and that the water levels in the bedrock are already below levels in the wetland; consequently, any potential drawdown has already occurred naturally. See DEIS Section 3.1.2 and 4.1.2, and the Alpha Geoscience Hydrogeological Investigation in Appendix 4.

c) Please see response to b)

1.2.2 Page 5: Please provide confirmation from National Grid (Niagara Mohawk) that the proposed crossing construction details, and setbacks are adequate and acceptable to maintain transmission line and substation integrity as it relates to blasting and mining activities.

Response:

The applicant submitted construction details to National Grid for approval that setbacks from the power line are adequate. National Grid has agreed to enter into a Third Party Occupation Agreement with Frontier for its proposed crossing of National Grid land. The documents are located in Appendix 15 of the DEIS.

1.2.3 Page 6: The Mining Plan Map reference, included in Appendix I, requires updating. The Acreage Summary references a 2006-2011 permit term. A 2010-2015 reference would be more applicable.

Response:

References to permit term dates are removed from the Mining Plan Map. Please see Volume 2 of the DEIS.

1.2.3 Page 7, 8: The mining hours and days are given in general terms, and there is a reference to operation outside these hours. The MLUP states that "the permittee shall notify the Department's Mined Land Reclamation Specialist, in writing, at least 24 hours in advance of operating outside the currently identified hours of operation." Language must be included that

states the Department authorization must be obtained prior to operating outside the approved hours of operation.

Response:

The language is changed to read the permittee shall notify the Department's Mined Land Reclamation Specialist in writing at least 24 hours in advance and obtain approval to operate outside the normal hours of operation.

Frontier proposes that a special permit condition be included in the Mining Permit that allows operations outside of the normal hours of operation to satisfy NYS DOT projects with a minimum 24 hour written notice to DEC. In all other instances (i.e. non-NYS DOT projects), the applicant will obtain approval from DEC.

1.2.4.1 Page 10: Perimeter shallow sloping is only designed for 5 ft. of water depth. Seasonal fluctuations should be considered when determining this depth. What is the maximum anticipated seasonal lake level fluctuation?

Response:
Final lake elevation is anticipated to be 625' amsl based on water level monitoring data from on site wells. The shallow slope design will accommodate seasonal fluctuations.

1.2.4.2 Page 10: Mulching specifications should be included along with the seed and fertilizer.

Response:
Mulching specifications are added to section 1.2.4.2 of the dEIS.

1.2.4.5 Page 11: If concurrent reclamation is to occur, how will the berms remain in place to limit dust, noise and visual impacts throughout the life of the project?

Response:

All exterior screening berms will remain in place. Some interior berms that do not provide screening may be removed and used for reclamation. The applicant anticipates that there will be adequate material from clearing to accomplish reclamation involving seeding for stability. See also section 4.1.1.2 of the DEIS.

1.3.2 Page 12: Potential impacts to wildlife and recreation should be added to this section

Response:

TES revised and updated its Vegetation and Wildlife Resources Report and the Impact Analysis of Ecological Resources. This section of the DEIS is revised to include summaries of their updated findings. TES performed additional surveys and site visits, including an off-site breeding survey on the Refuge with a follow-up survey thereafter. The TES report, contained in Appendix 6, sets forth the methodologies for the surveys and detailed results. Section 4.1.4 contains more detailed discussion regarding potential significant impacts to these resources.

New Sections 1.3.2.7 Wildlife and 1.3.3.1.1 Recreation have been added to this section. Section 1.3.3 includes a summary of impacts to the recreation. Section 3.2.7.1 discusses the existing Refuge recreational uses in detail. Section 4.2.7.1 contains detailed discussion regarding potential significant impacts to recreational users.

1.3.2.2 Page 13: Potential impacts to the Refuge from dewatering should be analyzed and discussed.

Response:

The Refuge will not be impacted by groundwater drawdown by the quarry. This conclusion is predicated on observations that the water levels in the wetlands are associated with a shallow water table, that a thick (30 ft.) deposit of underlying, low permeability, silt and clay isolate the wetlands from the bedrock aquifer and that the water levels in the bedrock are already below levels in the wetland; consequently, any potential drawdown has already occurred naturally. See DEIS Section 3.1.2 and 4.1.2, and the Alpha Geoscience Hydrogeological Investigation in Appendix 4.

1.3.2.5 Page 14: The maximum or peak number of truck per hour should be specified, not the average.

Response:

The average number of trucks was provided as an estimate based upon a projected maximum annual production over 220 days, which is in turn based upon projected plant capacities. Production varies based upon demand. A peak number of trucks per hour based upon projected equipment capacities is 30 trucks per hour and could occur over limited durations of time to supply aggregate for a large road or construction projects, such as for NYSDOT.

1.5.2.2 Page 18, 19: The potential impact to residential water supply wells has been identified, and a mitigation plan has been proposed. This plan is unacceptable, and would eliminate an individual's ability to seek restitution in the even of an impact, if that individual decides not to consent to the permittee's arbitration agreement. This well arbitration agreement should be eliminated from the dEIS. Also, the proposal to deepen wells where public water is unavailable does not take into [sic] water quality issues, which tend to decline with depth.

Response:

The proposed arbitration agreement has been deleted and an alternative mitigation plan is proposed. The proposed mitigation plan shall read as follows:

A. The permittee must immediately supply water at its expense to the impacted property or properties, and must continue to supply water to the impacted property or properties unless and until the permittee can demonstrate to the satisfaction of the Department that the mining operation is not a contributing cause to the identified impacts. In the event that the impacted water supply is utilized as a drinking water source, potable water must be supplied.

B. The permittee shall undertake tests or investigations as deemed necessary by the Department to aid in determining the cause of the identified impacts.

C. If the Department concludes that the mining operation has negatively impacted groundwater at or in the vicinity of the mine site, the permittee must, at its expense, and with consent of the landowner, provide an alternate, permanent source of water to the impacted property or properties. In the event that the impacted water supply is utilized as a drinking water source, the permittee must connect any impacted property or properties to a municipal water supply system, if available, or, if a municipal water supply system is unavailable to the impacted property or properties, a permanent potable water source must be supplied.

1.5.2.2 Page 19: Spill prevention measures are mentioned, but not specified. A plan containing specific details should be included in the dEIS. Additional information must be provided regarding fuel storage, fueling of equipment and what precautionary procedures are to be incorporated to insure spill prevention and leakage minimization. Where will the fuel tanks be located and what is their maximum capacity? Is adequate secondary containment to be provided? Will there be an area designated for equipment refueling and maintenance? Will this area be constructed in such a manner (compacted clay surface, concrete pad, etc.) as to minimize potential leakage of fuels/lubricants or other contamination? Indicate in the plan that a portable storage unit that contains a spill kit including an adequate supply of absorbent materials (diatomaceous earth and textile absorbent fabric and pads), a shovel and an impermeable container with a tight-fitting lid. In addition, indicate that the NYSDEC Spills Hotline number will posted [sic] in a weatherproof manner on the storage unit and all spills will be treated as emergencies, cleaned up immediately and appropriate notifications made within the required time frames.

Response:

Section 1.5.2.2 is amended as directed. A Spill Response Plan is contained in section 11.0 of the Stormwater Pollution Prevention Plan located in Appendix 14 of the DEIS. An impermeable pad will be constructed for the fueling area to minimize leakage of contamination. In addition, Frontier will have adequate spill kit resources nearby which will included absorbent textile pads

and earthen materials, containers with lids, and shovels. The proposed location of the fueling area and storage area is now depicted on the Mining Plan.

3.0 Page 32: This section should include a description of the adjacent Iroquois National Wildlife Refuge.

Response:

This section now contains a description of the Refuge.

3.1.2.2 Page 45: Inadequate data and information is provided for the assessment of groundwater quality impacts offsite. The dEIS does not contain site specific water quality testing, and there appears to be quality issues in the monitoring wells on the property, as well as nearby residential sources, and offsite springs. Impacts from quarry dewatering to the Wildlife Refuge, as well as Oak Orchard Creek are a concern. Poor groundwater quality and a large discharge volume may have significant impacts on wetland vegetation, wildlife, and habitat areas. Without specific information and data, an appropriate review cannot be completed. The assessment in Appendix 7 does not rely on specific site data, and cannot provide an adequate assessment of quality (components, levels, etc) and potential impacts. The updated analysis should include testing results which include: sulfates, chlorides, hardness, TDS, TSS, DO, pH, iron, manganese, barium and H2S.

Response:

Water quality samples were taken from on-site wells. Those test results are presented in section 3.1.2.2 of the DEIS, In addition, water quality samples representing surface water were taken from School House Pond and from an on-site agricultural drainage ditch. Those results are discussed in section 3.1.2.1. The parameters identified in the above comment were measured.

3.1.4 Page 55: There is no mention of offsite surveys for Short-eared Owls or the presence of a known wintering area in the vicinity of the proposed site (it is briefly mentioned in the Appendices)

Response:

Terrestrial Environmental Specialists (TES) revised and updated its Vegetation and Wildlife Resources Report and the Impact Analysis of Ecological Resources. This section of the DEIS is revised to reflect the updated findings. TES performed additional surveys and site visits, including an off-site breeding survey on the INWR with a follow-up survey thereafter. The TES report, contained in Appendix 6, sets forth the methodologies for the surveys and detailed results.

The surveys for Short-eared Owls were conducted in the winter and spring. No Short-eared Owls were observed on site or in the vicinity of the site.

4.1.1.2 Page 91: The soil balance shows that there will be adequate amounts of material on site for reclamation. However, as stated in the question from 1.2.4.5 Page 11, how will concurrent reclamation occur if the berms remain in place to limit dust, noise and visual impacts throughout the life of the project?

Response:

See response to 1.2.4.5, above. All exterior screening berms will remain in place. Some interior berms that do not provide screening may be removed and used for reclamation. The applicant anticipates that there will be adequate material from clearing to accomplish reclamation involving seeding for stability.

4.1.2.1 Page 92: Additional clarification and detail relating to erosion and sedimentation control is required. There is a concern that there is a significant potential for the discharge of sediment laden water from the site. How will a sediment laden discharge be avoided during quarry construction? During this phase there are no retention areas: and sediment load from stripped soils is high. Additionally, there are no discussion or design details of the inflow and discharge location of the agricultural ditch once bisected by the excavation. Will these areas be rock lined, or will other structures be used to prevent erosion and sedimentation. There is a concern that free flowing water out of a bare soil cutoff ditch or pumping of water to the receiving ditch will cause significant erosion and sedimentation.

Response:

During quarry construction, precipitation and (or) groundwater will collect in the quarry and then be pumped to a series of sediment basins, the location and size of which are shown on the Mining Plan Map. Between each pond and at the outlet a sediment trap will be constructed. A construction detail for a stone outlet sediment trap is also provided in this section.

4.1.2.1 Page 93: No mention is given to what will be done with the agricultural drainage ditch (that will be cut off by the quarry) at the time of final reclamation. It is anticipated that the drainage ditch will be allowed to continue to flow into the reclaimed quarry lake. Based on the ground surface elevations, compared to the reclaimed lake level elevation, the flow that originally continued on to the Refuge will be permanently cut off. An assessment of the quantity of water that will no longer flow to the Refuge, or an alternative, to rerouting the ditch around the lake at final reclamation should be provided.

Response:

Section 4.1.2.1 is modified as follows:

As the mine is developed and advances across phases 2 and 3, the upper 1400± feet of the agricultural drainage ditch will be mined out. The precipitation runoff that may have collected in the ditch will now collect in the quarry where it will be pumped back to the unaffected ditch via the settling pond system to resume the pre-existing condition drainage pattern. The remaining drainage ditch will not be cut off or prevented from flowing southward. Any overland flow which collects in the quarry will collect in a sump which will also act as a settling basin before the water is pumped to the settling ponds and then discharge to the ditch. As an alternative, the water could be pumped to the Phase 1 excavation area for a more controlled flow to the ditch over time (quarry pump out is discussed further in the appended Wetlands Impact Assessment report appended and Section 4.1.2.2.4). In practice, drainage off site will not be altered. At the time of final reclamation, the drainage ditch will remain, except for the upper section between mine phases 2 and 3 which will have been mined through. The ditch will not flow into the reclaimed quarry.

The agricultural drainage ditch is not a continuously flowing feature. During most of the year, the portion of the ditch to be affected is dry with infrequent periods of standing water. During periods of significant precipitation or snowmelt, the ditch does drain to the Refuge; most of the time it does not. This is largely a result of the ditch's location just south of the drainage divide. During active mining operations, water which is captured by the quarry can be pumped back into the ditch. At the cessation of mining, a ditch could be cut from the reclamation lakes to the agricultural ditch to free drain the lakes as runoff raises their elevation during precipitation events, restoring existing conditions.

4.1.2.2 Page 93: The statement that there appears to be little connection between the upper layer of bedrock and the deeper water bearing zone requires further clarification. It is apparent that there is some hydraulic connection between PW-1 and the barn well. The barn well is located approximately 1700 ft. from PW-1 and shows drawdown within hours after the start of the test.

Response:

The statement was deleted and further analysis is provided.

4.1.2.2 Page 99 Provide further explanation as to why drawdown away from the quarry will diminish when the confining layer of the aquifer is relieved.

Response:

Section 4.1.2.2 is substantially revised and contains more detailed analysis regarding the extent of drawdown. See also Appendix 4 page 11 for detailed analysis.

4.1.2.2 Page 99: The narrative indicates that homeowner wells shown in Figure 12 are shallow wells and are not drawing from the same water bearing zone intercepted during the pump test. Approximately 42 wells are identified on Figure 12, seventeen water well surveys are distributed, and only three returned with well information. How was it determined that the wells on Figure 12 are shallow? The additional well information used to determine residential well depth should be provided.

Response:

In addition to the well surveys, DEC's database of registered water wells for the Town of Shelby indicates the average well depth is 49 ft. for the reported wells in the Town.

4.1.2.2 Pages 99-102 Impacts associated with dewatering adjacent to quarries is [sic] dependent on site specific hydrologic conditions. While general conclusions can be drawn relating to a particular formation, they should not be relied upon as accepted site specific characteristics. Department files document a range of measurable drawdown from 50 to over 1200 ft. This section should be revised as to no leave the reader with the impression that there is no measurable impacts adjacent to other quarries, and that a cone of depression only extends 50 ft. from a highwall. Finally, data and information contained in the applicant's dEIS specifically show a significant area of influence surrounding the proposed quarry.

Response:

The text is revised as follows:

> The theoretical cone of depression shown on Plate 4 in the Alpha Geoscience report (Appendix 4), is considered a worst case scenario and is based solely on intercepting groundwater from the entire Lockport section, and it assumes a highly permeable fracture system. The site specific core data show that the fractures are concentrated in the interval from the top of the Lockport Dolomite to a depth of 59 to 89 feet below the land surface; consequently, the remaining Lockport section to a depth of 150 feet below the land surface will neither produce groundwater or influence drawdown. The hydraulic conductivity anisotropic distribution of the fractures limit drawdown away from the quarry face. These conditions are the reason that the horizontal extent of drawdown impacts in Lockport quarries fall in the range of 50 to 1200 feet, rather than several thousand feet as suggested by the analysis provided in the Alpha report in Appendix 4.

4.1.2.2 Page 102: Reference is made to monitoring wells, both existing and planned, to be checked on a regular basis. A monitoring plan should be included which outlines wells to be monitored and frequency. Construction details for newly installed wells should be included.

Response:

The text now provides the following:

> The water level monitoring program will be instituted during mining. The program will consist of quarterly water level measurements from the existing on-site wells, the barn well and the garage well (see Alpha report in Appendix 4 for well locations). The on-site wells will be destroyed as the mine develops. These will be replaced by monitoring other private residential wells, if permission is granted, or by adding site perimeter wells, as needed. The new monitoring wells will consist of a surface casing grouted to the top of the rock and an open bedrock hole below the casing to the full mining depth. The locations of the new monitoring wells will be determined if and when it is determined that these wells are needed.

4.1.2.2.3 Page 104-106: The flow through Basin 1 is characterized as increasing from 169.91 gpm to 1092.06 gpm. This estimate is an annualized average, and does not accurately portray the maximum flow through increase at a given time. The maximum flow through increase should be provided (for a given period of time, presumably spring) to allow for an adequate impact assessment to the Refuge. It is unclear if the marsh design, and outfall structures would be adequate to handle the maximum increase in flow, especially during the spring. Also it is unclear if the maximum increase in flow to the refuge would potentially impact the wetlands, wildlife, and habitat areas. Finally, there is mention that water would be pumped at a desirable level to benefit the Refuge, but no specifics are offered. There is no plan which outlines what this would be, no evaluation of maximum flow impacts, or its acceptability to the Refuge.

Response:

Summary Findings are as follows:

> Summary
>
> Existing natural drainage to that portion of the Refuge which has the greatest potential to be affected by the proposed project (School House Pond wetland area), is from Drainage Basin 1, the location of which is shown on the drainage basin figure developed for HydroCAD calculations. Drainage exits the project site via a constructed agricultural drainage ditch.
>
> The character of the wetland in the Refuge in Basin 1 is primarily man-made, the product of a constructed earthen dike, blocking drainage and impounding water which is controlled by a weir outlet. Wetland environmental conditions can be regulated by the position of the weir boards which determine the size of the wetland and depth of the wetland ponding. Calculations indicate that the existing system has sufficient design capacity to transmit drainage, including storm events, without adverse structural issues.

In regard to the control of wetland size, and/or character, the Refuge's Comprehensive Plan states:

> "The goal of the Refuge water management program is to provide high quality functioning wetlands that supply optimal stopover and breeding habitat for waterbirds and bald eagles. This program requires the manipulation of wetland water levels to provide high-energy plant and invertebrate foods and structural habitat diversity for feeding, resting, and breeding waterfowl and other migratory birds (USFWS 2005b).
>
> There are currently 19 wetland impoundments on the Refuge (Map 2-3). These impoundments encompass nearly 4,000 acres of diverse wetland habitat. Because of the uneven topography within individual impoundments, often a single impoundment will help meet multiple objectives within the same year. Water levels are adjusted within and between years to mimic natural hydroperiods associated with unaltered wetlands and to provide the optimal habitat conditions for wetland dependent wildlife species.
>
> Each impoundment is drawn down approximately every three to six years; a few impoundments are scheduled for drawdown every year. These drawdowns mimic a drought in a natural marsh and allow the re-growth of natural vegetation in a "drawdown cycle."

Manipulation of the wetland water levels is a goal of the Refuge. HydroCAD calculations demonstrate that even with no manipulation by the Refuge, the quarry's impact beyond natural seasonal variations and storm events is insignificant. That is, seasonal drainage variations will result in continued drainage to the Refuge as they have historically done. The addition of the project's groundwater contribution (the impact) is extremely small and essentially non-measureable even with a static control on the wetland.

Drainage analyses demonstrate that the addition of quarry dewatering volumes under a worst case scenario add insignificant amounts to peak precipitation events. Calculations also show that the added quarry volume has little to no effect on wetland pond elevation (and related wetland size) based upon a static weir elevation with no attempt to regulate drainage control.

The Phase 1 quarry will act as a large drainage retention basin as mine Phases 2 and 3 are being excavated. Natural drainage and groundwater can be pumped to the Phase 1 Basin and then pumped to the agricultural drainage ditch in a regulated, controlled manner. Such control will result in no loss of drainage to the Refuge and no stress to the drainage system during precipitation events.

Controlled regulated drainage could be taken a step further to direct drainage to Basin #2 if desired by the Refuge. Drainage Basin #2 will be little affected by mining, impacting only the southeast corner of Mining Phase 2 which has little direct connection to the Refuge property south of the power line. The proposed operation could in the future direct dewatering activities to that Basin #2 if it aided wildlife management or exert more control to Basin 1; the mine plan affords these opportunities. The Refuge Comprehensive Plan states:

> "A refuge does not exist in isolation from its surrounding landscape. That is particularly true of the Iroquois NWR, located within the "Alabama Swamps" and in the heart of the Oak Orchard Watershed. Habitats and wildlife populations are affected by land uses within the watershed including the effects of water quantity and water quality. The Refuge needs to expand its work with adjacent landowners, watershed residents and conservation partners within the basin to ensure a healthy, functioning Refuge."

Upon completion of the project the site will contain large ponds/small lakes. The projected water elevation of the lakes is 625± feet. The lake created in Phases 2 and 3 could be connected to the lake formed in Phases 1 and 2 via a ditch, or the lakes could drain separately to the existing agricultural drainage ditch via a small ditch connecting the excavation areas to the agricultural ditch. Hence, post mining as the lakes receive precipitation and drainage, they will drain into the existing agricultural drainage ditch and runoff will exit to the Refuge as it does now.

4.1.2.2.3 Pages 104-106 Inadequate data and information is provided for the assessment of groundwater quality impacts. The dEIS does not contain water quality testing. Quality issues are apparent in the monitoring wells on the property, as well as nearby residential sources. Quality issues are anticipated to be worst [sic] with depth. Impacts to the Wildlife Refuge, as well as Oak Orchard Creek are a concern. Poor groundwater quality and a large discharge volume may have significant impacts on wetland vegetation, wildlife, and habitat areas. Without specific information and data, an appropriate review cannot be completed. The assessment in Appendix 7 does not rely on site specific data, and cannot provide an adequate assessment of quality (constituents, levels, etc.) and potential impacts.

Response:

Water quality samples were taken from on-site wells. Those test results are presented in section 3.1.2.2 of the DEIS, In addition, water quality samples representing surface water were taken from School House Pond and from an on-site agricultural drainage ditch. Those results are discussed in section 3.1.2.1. The impacts were discussed is section 4.1.2.2.3.

4.1.4.1 Pages 109, 110 Please provide detailed methods from field surveys. In particular, include the methods used for bird surveys including both on and offsite Short-eared Owl surveys (time periods surveyed, survey methods, survey locations, etc.) Also provide details from the walking survey of the Refuge. Spring bird surveys should be completed in the area of the refuge adjacent to the proposed quarry.

Response:

Terrestrial Environmental Specialists (TES) revised and updated its Vegetation and Wildlife Resources Report and the Impact Analysis of Ecological Resources. This section of the DEIS is revised to reflect the updated findings. TES performed additional surveys and site visits, including an off-site breeding survey on the INWR with a follow-up survey thereafter. The TES report, contained in Appendix 6, sets forth the methodologies for the surveys and detailed results.

4.1.4.1 Pages 109: The report states that "Field studies confirmed that wildlife of special concern such as the endangered Short-eared Owl are not found on the site, nor was there suitable breeding habitat." Please provide the details regarding the methods used for the field studies. This statement also appears to contradict the earlier section where use of the site by Northern Harrier (state threatened) and Horned Lark (state special concern) are discussed.

Response:

Please see response to Comment regarding Section 3.1.4, Page 55 above and response to preceding comment.

TES conducted 11 field surveys between November 9, 2006 and July 13, 2010, including an off-site breeding bird survey on the Refuge south of the site. Details of the methods used are contained it their report contained in Appendix 6.

TES observed the northern harrier on three occasions foraging on site. No nesting sites were observed and TES noted that because the site is under active agricultural use, it is not good nesting habitat. Horned larks (species of special concern) were recorded on April 29, 2010 as nesting on the site. The species occurs in open areas with bare ground or short grass. Despite being listed as special concern, horned larks are a fairly common breeder in western and central New York. The habitat on site will diminish very slowly over time. The project site will continue as an agricultural field. There is also abundant agricultural land surrounding the project site.

4.1.4.1 Pages 109, 110 A discussion and analysis of impacts to recreational users on the wildlife areas is needed. Include hunting, trapping, fishing, hiking, bird watching, canoeing etc.

Response:
Impacts to recreational users have been discussed in section 4.1.4.1 of the DEIS.

As directed by DEC, to facilitate discussion and to better visualize the impacts of the project on resources within the INWR, Frontier prepared a map which overlays the limits of noise and vibration, including ambient readings, over habitat areas in the INWR. The map and supporting noise readings indicate that the extent of noise impacts into the INWR is very limited.

4.1.4.1 Pages 109, 110: It is evident that human activity and wildlife can coexist to some degree, however: [sic] the article discussed from the Journal Register regarding use of a Quarry's crusher as a nesting site is a popular account that lacks widespread validity that can apply to this mining operation. It should be deleted. Similarly the comments relating to the New York State Thruway and the Montezuma National Wildlife Refuge did not include a valid scientific approach to analyzing the conclusion offered and should not be included in the dEIS.

Response:
This language has been deleted from the DEIS.

5.1.2.3 Page 167: The mitigation plan (arbitration agreement) is unacceptable, and should be removed as part of the proposed mitigation. As is the case with other quarries, the Department's special condition contains acceptable language for potential impact mitigation. Also, the company's proposal to deepen wells where public water is unavailable, does not take into water quality issues, which tend to decline with depth.

Response:
The above comment duplicates the comment made for 1.5.2.2. Page 19. Please see the response above.

5.1.2.3 Page 168: Spill prevention measures are mentioned, but not specified. A plan containing specific details should be included in the dEIS. Additional information must be provided regarding fuel storage, fueling of equipment and what precautionary procedures are to be incorporated to insure spill prevention and leakage minimization. Where will the fuel tanks be located and what is their maximum capacity? Is adequate secondary containment to be provided? Will there be an area designated for equipment refueling and maintenance? Will this area be constructed in such a manner (compacted clay surface, concrete pad, etc.) as to minimize potential leakage of fuels/lubricants or other contamination? Indicate in the plan that a portable storage unit that contains a spill kit including an adequate supply of absorbent materials (diatomaceous earth and textile absorbent fabric and pads), a shovel and an impermeable container with a tight-fitting lid. In addition, indicate that the NYSDEC Spills Hotline number will posted [sic] in a weatherproof manner on the storage unit and all spills will be treated as emergencies, cleaned up immediately and appropriate notifications made within the required time frames.

Response:
The above comment duplicates the comment made for 1.5.2.2 Page 19. Please see the response above.

*5.1.4.2 Page 170: Please provide a reference for the statement: "For example, Dupont's attenuation curves have demonstrated, there is effectively **no** vibration caused by blasting beyond 1600± feet." Additionally, a conservative worst case scenario should be provided for incorporation into the mapping, analysis, and discussion related to item #2, above.*

Response:
DuPont Blasters Handbook, Technical Services Division, E.I. DuPont, Wilmington, DE (1977)

5.1.4.2 Page 170: The statement: "no significant adverse impacts will occur to wildlife outside the project area" is not supported by the document and the materials provided in the Appendices (Vol. 3).

Response:

The language is stricken. As previously stated, TES revised and updated its Vegetation and Wildlife Resources Report and the Impact Analysis of Ecological Resources. The DEIS is revised to include summaries of their updated findings. TES performed additional surveys and site visits, including an off-site breeding survey on the Refuge with a follow-up survey thereafter.

5.1.4.2 Page 171 The articles cited here do have some relevance to the dEIS, however, they do not necessarily fully support the statement that "blasting and firing activities had little effect on abundance, behavior and nestling [sic] success".

Response:

The language is stricken. As previously stated, Frontier prepared two maps which overlay the limits of noise and vibration, including ambient readings, over the Refuge to facilitate discussion and to better visualize the impacts of the project on resources within the Refuge. The maps are referenced in multiple sections throughout the DEIS to assist in analysis of the exiting conditions and potential quarry impacts within affected habitats.

5.1.4.3 Page 171: The statement "No significant impacts to the wetlands have been identified" is not supported by the data in the Appendices (Vol. 3).

Response:

The language is stricken. As previously stated, the DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCad analysis and water quality sampling performed by CPI, and an expanded water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report. These reports fully address potential impacts to Refuge wetlands, including water quality data, water discharge rates and capacities of culverts and control structures within affected water basins on the project site and adjacent Refuge areas.

Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project.

5.2.3 Page 175: A plan for implementing the traffic engineer's report recommendations is not provided.

Response:

The traffic engineer's report lists recommendations for the proposed project which will be implemented by the Applicant in cooperation with the Town Highway Department prior to operation of the facility.

5.2.6.1 Page 177: A Pre-Blast Survey will be required for all structures within 1000ft. of the Life of Mine boundary. Please an outline [sic] for the survey, and indicate how it will be implemented.

Response:

Frontier will complete pre-blast surveys on all structures within 1,000 ft. of the mine site upon consent of the property owners.
Prior to conducting blasting operations in each mining phase, Frontier will inventory and conduct pre-blast surveys on all structures within 1, 000 feet of that particular phase, upon consent from owners. Moving forward, pre-blast surveys shall be completed on structures within 1,000 ft. of the phase that mining operations will move into.

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This pre-blast survey procedure will be memorialized as a special permit condition.

Prior to entering any subsequent phase, the number of structures within 1,000 ft. of the phase being affected will be reviewed and pre-blast surveys will be completed upon consent of the property owners.

All costs associated with conducting the Pre-Blast Surveys shall be paid by the applicant.

Applicant shall maintain all correspondence to and from owners regarding condition surveys and all condition surveys performed and the supporting documentation.

<u>dEIS Volume 2- Mined Land Use Plan (MLUP)</u>

2.4.2 Page 12 The MLUP states that "the permittee shall notify the Department's Mined Land Reclamation Specialist, in writing, at least 24 hours in advance of operating outside the currently identified hours of operation." Language must be included that states the Department authorization must be obtained prior to operating outside the approved hours of operation.

Response:

The above comment duplicates the comment made for 1.2.3, Page 7, 8. Please see the response above.

3.0 Page 19 No mention is given to what will be done with the agricultural drainage ditch (that will be cut off by the quarry) at the time of final reclamation. It is anticipated that the drainage ditch will be allowed to continue to flow into the reclaimed quarry lake. Based on the ground surface elevations, compared to the reclaimed lake level elevation, the flow that originally continued on to the Refuge will be permanently cut off. An assessment of the quantity of water that will no longer flow to the Refuge, or an alternative, to rerouting the ditch around the lake at final reclamation should be provided.

Response:

The above comment duplicates the comment made for 4.1.2.1 Page 93. Please see the response above.

dEIS Volume 3 Appendices

The statement that there appears to be little connection between the upper layer of bedrock and the deeper water bearing zone requires further clarification. It is apparent that there is some hydraulic connection between PW-1 and the barn well. The barn well is located approximately 1700 ft. from PW-1 and shows drawdown within hours after the start of the test.
Provide further explanation as to why drawdown away from the quarry will diminish when the confining layer of the aquifer is relieved.

This request was made in the June 13, 2008 dEIS Review and Comment letter and had not been adequately addressed.

Response:

The above comment duplicates DEC's comments made for 4.1.2.2 Page 93, and 4.1.2.2 Page 99. Please see the response above.

Alpha Report

3.3.2 Page 11, 12 How will the water pumped back to basin 1 be controlled and monitored. A plan needs to be included in the dEIS, and developed with the refuge which outlines what will be done.

Response:

The DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCad analysis

performed by CPI, and an expanded water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report.

Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project. The HydroCad and water budget analysis include annualized volumes from groundwater and storm event analysis to include a 2 year, 5 year, 10 year and 25 year storm events. School House Marsh Pond will have insignificant water level changes. Seasonal runoff is reflected in these storm event analyses.

3.3.3 Page 14 *Only the annualized average rate is given. The flow through Basin 1 is characterized as increasing from 169.91 gpm to 1092.06 gpm. This estimate is an annualized average, and does not accurately portray the maximum flow through increase at a given time. The maximum flow through increase should be provided (for a given period of time, presumably spring) to allow for an adequate impact assessment.*

Response:

The above comments duplicate DEC's comment regarding section 4.1.2.2.3 Page 104-106. Please see the response above.

4.0 Page 16 *The flow through Basin 1 is characterized as increasing from 169.91 gpm to 1092.06 gpm. This estimate is an annualized average, and does not accurately portray the maximum flow through increase at a given time. The maximum flow through increase should be provided (for a given period of time, presumably spring) to allow for an adequate impact assessment to the Refuge. It is unclear if the marsh design, and outfall structures would be adequate to handle the maximum increase in flow, especially during the spring. Also it is unclear if the maximum increase inf flow to the refuge would potentially impact the wetlands, wildlife, and habitat areas. Finally, there is mention that water would be pumped at a desirable level to benefit the Refuge, but no specifics are offered. There is no plan which outlines what this would be, no evaluation of maximum flow impacts, or its acceptability to the Refuge*

Response:

The above comments duplicate DEC's comment regarding section 4.1.2.2.3 Page 104-106. Please see the response above.

4.0 Page 16 *Retaining water in the western quarry is offered as a potential mitigation technique. However, what will be done during the development of the western quarry when a reservoir isn't available? When the western quarry is developed, discuss the feasibility of using this as a retention area due to the existence of the horizontal fractures at the base of the aquifer (between 56 and 89 ft.) which appear to be the main water bearing feature at this location.*

Please evaluate the volume of water would be reintroduced back to the eastern quarry through this feature with only an approximate 600 ft. separation between the excavations.

Response:

The DEIS evaluation of potential impacts to wetlands is revised and substantially expanded. This includes revisions to the Wetlands Impact Assessment by TES, a detailed HydroCad analysis performed by CPI, and an expanded water budget analysis performed by Alpha Geoscience in its Hydrogeologic Investigation Report.

Water budget analyses were performed for both Basin 1 and Basin 2 to assess existing conditions and future conditions at full build-out of the quarry and future conditions at Phase 1 of the project. The HydroCad and water budget analysis include annualized volumes from groundwater and storm event analysis to include a 2 year, 5 year, 10 year and 25 year storm events. School House Marsh Pond will have insignificant water level changes. Seasonal runoff is reflected in these storm event analyses.

4.0 Page 17 No mention is given to what will be done with the agricultural drainage ditch (that will be cut off by the quarry) at the time of final reclamation. It is anticipated that the drainage ditch will be allowed to continue to flow into the reclaimed quarry lake. Based on the ground surface elevations, compared to the reclaimed lake level elevation, the flow that originally continued on to the Refuge will be permanently cut off. An assessment of the quantity of water that will no longer flow to the Refuge, or an alternative, to rerouting the ditch around the lake at final reclamation should be provided.

Response:

The above comment duplicates the comment made for 4.1.2.1 Page 93. Please see the response above.

Appendix 9 – Transportation Impact Study

V.B. Page 3: We were unable to find a response to Item 8 of our June 13, 2008 letter. Does the traffic survey and levels of traffic generated by the facility include estimates of traffic levels associated with ancillary processing facilities (concrete batch plants, etc.)? Also, please specify the maximum or peak number of trucks per hour.

Response:

Frontier does not anticipate including concrete batch plants or other ancillary processing facilities. With respect to the maximum or peak trucks per hour, please see the response to DEC Comment regarding Section 1.3.2.5, Page 14, above.

Appendix 10- Phase I Archaeological Report

OPRHP letter dated March 5, 2007 covers mining phases 1 and 4. What are your plans to complete the surveys for the entire site?

Response:

The entire project site, including Phases 1 through 4, was the subject of the Phase IA archaeological investigation. The entire area was the subject of the background research for any known archaeological resources and to generate a sensitivity assessment. A site visit was also performed for the entire project site to document ground disturbance and to obtain photographic evidence of pre-1950 structures. A more detailed Phase IB investigation was performed as Phase 1 would be the first area disturbed and Phase 4 is directly adjacent, to it on the same parcel. A phase IB will be performed in Phases 2 and 3 prior to stripping of overburden in each phase.

Appendix 14-Stormwater Pollution Control Plan

Page i: The Stormwater Pollution Control Plan must be authorized and certified.

Response:

The Storm Water Pollution Prevention Plan has been signed.