Hanson
HEIDELBERGCEMENT Group

Hanson Aggregates New York LLC
P.O. Box 513
4800 Jamesville Road
Jamesville, NY 13078

Tel 315 469 5501
Fax 315 469 3133

www.lehighhanson.com

CERTIFIED MAIL 7015 3430 0000 4050 9395, Return Receipt Requested

November 28, 2016

Thomas P. Haley, Deputy Regional Permit Administrator
New York State Department of Environmental Conservation
Division of Environmental Permits, Region 8
6274 East Avon-Lima Road
Avon, NY 14414-9516

Re: DEIS Response to Comments – DEC Request for Additional Information
DEC#8-9908-00113/00005
Hanson Aggregates New York LLC – Honeoye Falls Quarry Expansion
Livingston and Monroe Counties

Dear Mr. Haley:

Hanson Aggregates New York LLC (Hanson) is in receipt of the above-referenced correspondence and respectfully offers the following additional information in response to Items 1 through 3 in the September 28, 2016 letter to Hanson from NYSDEC.

1. Attached is the technical response to the June 30, 2016 comment letter from Monroe County Department of Public Health, prepared by Alpha Geoscience.
2. Below are Hanson's responses to the items listed in the May 27, 2016 letter from CHA to Cathy Frank, Town of Rush Supervisor.
3. A discussion of the facility's current hours of operation is provided at the end of this document.

Comment:

Page 7, Project Description: This section lacks a true description of the project site, construction, and operations to occur as a result of the proposed expansion. What specific actions are being proposed as part of the quarry expansion? Where and when will these actions occur? Where will new internal roadways or vehicle movement patterns be located, what volume of truck trips will occur on site, what other machinery will be used on the expansion site, and where will blasting take place? How will the site be reclaimed after operations conclude? All project components should be fully summarized under the Project Description heading.

Response:

The "Project Description" section is a summary of the project contained in the "Introduction" of the Draft Environmental Impact Statement (DEIS). This section is not meant to provide a comprehensive description of all facets of the project which are detailed in specific sections throughout the DEIS. Refer to Sections 1.2.1; 1.2.2; 3.2.2; 3.2.3; 3.3; 3.6; 3.7; 4.8; 4.9; 5.0.

Due to the typical nature of the consolidated mining operations, internal roadways and vehicle movement patterns change frequently. As stated in the DEIS, there are no proposed changes to the existing operation or new equipment. No increased production capacity is being sought as part of this project. Therefore, the volume of trucks in and out of the proposed expansion area will be the same as the current volume. The volume of trucks as well as most everything else at a mine site (e.g., blasting frequency) is based on customer demand which fluctuates from month to month and year to year.

Mining in the proposed area will advance as described Section 3.3.2 of the DEIS. Therefore, blasting will advance in the same areas and sequence at a frequency dictated by customer-demand and other operational factors.

Page 14, Local Economic Benefits: Property tax contributions to school and municipal/special district jurisdictions are important to the community. Will the assessed value of the quarry property change as a result of capital improvements and/or enhanced access to resources on the project site? Associated changes to property tax contributions should be quantified to demonstrate the level of fiscal economic benefits to applicable tax jurisdictions including the Town of Rush.

Response:

The local economic benefits of keeping the current quarry in operation go far beyond property tax contributions. Refer to Sections. 1.3; 1.4; 1.5.1; and Appendix IV.

The proposed modification area is within Monroe County Tax Parcel No. 227-.04-1-4.12 which is assessed as the rate for "Vac. Farmland (105)." The total assessed value of this parcel is currently $100,400. Hanson currently leases the parcel out for farming. It is anticipated that once mining operations commence in this parcel that it would be assessed at the rate for "Mine/Quarry (720)," which is presumed to be higher. Correspondingly, the amount of property tax contributions to school and municipal/special district jurisdictions are expected to be greater than they are currently. The Monroe County Tax Assessor makes a determination of applicable assessment rates. As such, Hanson cannot quantify the level of fiscal economic benefits to applicable tax jurisdictions, including the Town of Rush.

As stated in the DEIS, there are no capital improvements associated with this project.

Page 25, Air Quality: This section states that "Since there are no proposed changes in the current quarry operation, there will be no changes in the air resources within and in proximity of the proposed expansion area." This statement is not supported by the information provided. There will be changes to the current quarry operation as a result of the project, and the purpose of this DEIS is to evaluate potential impacts related to these changes. The proposed expansion will open

more than sixty acres of previously unpermitted land to intensive mining practices. The location of many day-to-day quarry operations will not be the same, and this is a significant change from existing conditions. Air Quality and other sections should reflect changes in the location of operations – i.e. new internal roadways and on-site truck trips, blasting locations, etc. – in the consideration of impacts. How will off-site impacts differ from those occurring under existing conditions due to operations at a different location on the Hanson Property?

Response:

Hanson Aggregates has a valid "State Air Facility Permit" for the current operation. Hanson will continue to operate within the conditions and limitations specified in its permit. The proposed action does not require a modification to the current air permit as the emissions, including the emission sources, type of emissions, potential to emit, and quantity limitations, will not change as a result of the action.
It is a standard condition of all NYSDEC mining permits that "water or other approved dust palliatives must be applied to haulageways and other parts of the mine, as often as necessary, to prevent visible dust from leaving the mine property." Additionally, the Mined Land Use Plan for the Honeoye Falls Quarry which is part of the mine permit, includes a discussion of the dust control measures to be used. Hanson also maintains dust control in vehicle travelways and work areas to ensure compliance with federal Mine Safety and Health Administration (MSHA) regulations. Hanson will continue to implement applicable dust control measures as required by state and federal regulations.

As described in the DEIS, the entire 63.6-acre area will not be opened all at once. Rather it will be mined in phases over a period of approximately 30 years (or more) as dictated by market demand. Additionally, there will be no new processing equipment or any relocation of processing equipment in the new area (or existing quarry) as part of the proposed action.

A comprehensive assessment of potential air impacts, as well as a discussion of emissions controls, are provided in Section 4 of the DEIS. It is noted that the level of detail in this section is consistent with (if not more than) what is typically included in a DEIS for a consolidated rock quarry expansion in NYSDEC-Region 8. Estimates of fugitive emissions from haul truck traffic, truck loading, mobile equipment exhaust, etc., were calculated using USEPA's AP-42, which is the standard air emission reference used by regulatory agencies and regulated entities throughout America. The calculations in Section 4.1.2 of the DEIS demonstrate that the total fine particulate emissions generated by quarry operations (no changes are proposed) are less than one-half of the threshold set in NYSDEC's Policy CP-33. Pursuant to this policy, no further impact assessment of fine particulate matter emissions is required.

Fugitive emissions along mobile equipment routes and work areas, in the proposed modification area, will be controlled with a water truck in the same manner as fugitive emissions are controlled in the existing quarry.

Page 25, Air Quality: The author indicates that "Based on this data, the prevailing winds at the proposed project location would primarily blow toward the existing quarry and away from receptors." Some elaboration would be helpful here – please explain how the data support this conclusion.

Response:

The potential receptors are located to the north-northwest of the project site. As stated in this section, the prevailing winds typically blow away from receptors toward the quarry (and project area). Therefore, if dust were present, it would also blow toward the quarry where it would be contained within the quarry walls and perimeter berm. Refer to Figure 1B for details on the prevailing winds in the vicinity of the proposed modification area.

Pages 34-35, Fugitive Dust Emissions: The DEIS states that "There will be no additional equipment or crushing plants that would be considered new emission sources as a result of the proposed expansion. Therefore, there is no new potential for air emissions that can be attributed to the proposed project. It is the same as those for the existing quarry operation." This is a reasonable statement concerning the overall volume of dust emissions produced on site. However, the proposal would open an entirely new area to intensive mining operations including blasting, truck traffic and loading/unloading activities. The location of some operations will change significantly, and there is potential for this to cause fugitive dust in new locations relative to current operations. Dust emissions should be evaluated in the context of new locations where dust may be generated, and receptors in the vicinity of these new locations, rather than making a determination of no impact based on the location of current operations as considered by Section 4.1.2.

Response:

Hanson Aggregates has a valid "State Air Facility Permit" for the current operation. Hanson will continue to operate within the conditions and limitations specified in its permit. The proposed action does not require a modification to the current air permit as the emissions, including the emission sources, type of emissions and quantity limitations, will not change as a result of the action.

As described in the DEIS, the entire 63.6-acre area will not be opened all at once. Rather it will be mined over a period of approximately 30 years as dictated by market demand. Additionally, there will be no new processing equipment or any relocation of processing equipment in the new area as part of the proposed action.

A comprehensive assessment of potential air impacts, as well as a discussion of emissions controls, are provided in Section 4 of the DEIS. It is noted that the level of detail in this section is consistent with (if not more than) what is typically included in a DEIS for an existing consolidated rock quarry expansion of this nature in NYSDEC-Region 8. Estimates of fugitive emissions from haul truck traffic, truck loading, mobile equipment exhaust, etc., were calculated using USEPA's AP-42, which is the standard air emission reference used by regulatory agencies and regulated entities throughout America. The calculations in Section 4.1.2 of the DEIS demonstrate that the total fine particulate emissions generated by quarry operations (no changes are proposed) are less than one-half of the threshold set in NYSDEC's Policy CP-33. Pursuant to this policy, no further impact assessment of fine particulate matter emissions is required.

It is a standard condition of all NYSDEC mining permits that "water or other approved dust palliatives must be applied to haulageways and other parts of the mine, as often as necessary, to prevent visible dust from leaving the mine property." Additionally, the Mined Land Use Plan for the Honeoye Falls Quarry which is part of the mine permit, includes a discussion of the dust control measures to be used. Hanson also maintains dust control in vehicle travelways and work areas to ensure compliance with federal Mine Safety and Health Administration (MSHA) regulations. Hanson will continue to implement applicable dust control measures as required by state and federal regulations.

Fugitive emissions along mobile equipment routes and work areas, in the proposed modification area, will be controlled with a water truck in the same manner as fugitive emissions are controlled in the existing quarry.

Page 53, Agricultural Districts and Soils: More than 50 acres of active Agricultural District farmland will be converted within the Town of Rush. This action should be discussed relative to guidelines and recommendations provided in the Town of Rush Agricultural and Farmland Protection Plan and the Town of Rush Comprehensive Plan. The EIS should discuss how the proposed action corresponds with agricultural and land use planning in the Town of Rush.

Response:

Agricultural and Farmland Protection Plan

An assessment of the potential impacts to agricultural land is provided in Sections 4.6 and 6.2 of the DEIS. With respect to the Town of Rush "Agricultural and Farmland Protection Plan" prepared by CHA (July 2012), allowing the existing quarry to continue to operate within the town is consistent with the "Public Infrastructure" goal of the town's plan. As stated in the town's plan, one of the objectives is to "work with local farmers to identify, prioritize, and schedule improvements to Town-owned and maintained public infrastructure including local roads, bridges, drainage culverts, flood protection measures and access driveways to farm fields." Almost 100% of the construction aggregate materials needed to realize this objective come from the Hanson Honeoye Falls Quarry. Without the quarry, the materials will need to be imported from outside of the immediate area, driving up the cost to the Town. This would be contradictory to the "funding and cost effective financing mechanisms" set as an objective in the Town's plan which are designed to minimize the cost of infrastructure improvement projects.

Hanson understands the need to preserve agricultural land within the Town. Similarly, it also emphasizes the importance of planning with respect to maintaining a local source of high-quality construction aggregates. Hanson maintains that the need to preserve economically viable stone reserves within the Town is as equally important as the preservation of farmland. As stated in Sections 1.3 and 1.4 of the DEIS, like agricultural products, the high-quality stone reserves within the project site are critical to the local community, providing the building blocks for many types of projects within the Town of Rush and surrounding area. As pointed out in Section 1.3.1 of the DEIS, quarries must be located where the suitable, economically viable stone reserves have been deposited by nature which seldom corresponds with man-made features such as municipal district boundary lines. Continued farming of the proposed project site would cause millions of tons of high-quality limestone reserves to be lost, eventually placing increased financial burden upon the local municipalities, businesses, farmers, and residents, since aggregates would need to be imported into the area from further away.

The majority of the project site is within the Eastern (#6) Agricultural District of Monroe County, and has been an active quarry for about 60 years in its existing location within the agricultural district. As such, Hanson's Honeoye Falls limestone quarry is a long-standing part of the community. The proposed action seeks to maintain the quarry operation as a provider of valuable commodities to the Town of Rush, including its farmers, and other local communities. The local farmers are valuable customers of the Hanson Honeoye Falls quarry, purchasing crusher-run stone to build/maintain entrances to their fields, #1 and #2 size stone for drainage conveyances in their fields, and even black-top pavement for improvements such as, farm-stand driveways. It should also be noted that the Honeoye Falls Quarry supplies the majority of crushed stone that is used to make the ready-mix concrete purchased by local farmers for construction of new building foundations, concrete pads for silos, manure digesters, etc. Thus, Hanson is directly helping the Town achieve one of the stated goals of the Town of Rush "Agricultural and Farmland Protection Plan" by providing the needed construction aggregate products to local farmers. The proposed action will ensure that Hanson can continue to support the needs of the Town and its agriculture industry for the foreseeable future.

Hanson owns the subject parcel and has always intended to mine it as accessing additional high-quality stone reserves became necessary. It is pointed out that, as stated in the DEIS, Hanson will continue to lease unneeded portions of the project site out for agricultural purposes until the land is needed for mining.

Monroe County Agricultural Districts are reviewed on an eight-year basis to assess whether they are still achieving their intended purposes. During this review period, landowners may request to add to or remove land from the district. For example, in 2008, there was a net increase of 55 acres to the Eastern Agricultural District. And, during the last district review in October 2015, a net decrease of approximately 94 acres from the Eastern Agricultural District was proposed. Increases and decreases in the size of agricultural districts, as a result of periodic reviews, are common. The proposed action, involving the conversion of approximately 50 acres to mining, is consistent with the fluctuating size of an agricultural district over time.

There are a total of 46,037 acres (as of October 2015) in the Eastern Agricultural District alone, and a total of 139,044 acres within the Monroe County Agricultural District. The conversion of approximately 50 acres of agricultural land represents a loss of 0.1% of the Eastern Agricultural District, and a 0.036 % loss within the Monroe County Agricultural District overall.

It is noted that approximately 10.0 acres of land within the proposed expansion area are located in the "Agricultural" Zone of the Town of Avon within Livingston County but, not within a designated agricultural district.

Town of Rush Comprehensive Plan

The goals stated in the "Town of Rush Comprehensive Plan (2010)" include "to encourage suitable new development and to ensure that there will be appropriate facilities to serve it." The proposed expansion will directly help the Town achieve this goal by maintaining a nearby source of construction aggregates and black-top, as well as the stone needed to make concrete. Keeping the current Hanson quarry in business through the proposed expansion will provide an economical source of materials needed to promote "suitable new development" within the Town. The demand for these materials in the Town will not go away.

If the current Hanson operation is not permitted to expand, the materials will need to be hauled in from outside the Town, driving up cost.

Another goal of the "Town of Rush Comprehensive Plan" is to establish a network of open space areas to balance development. In the future, once final reclamation of the exhausted quarry is complete, a 320-acre lake will be created. Such an area (public or private) is consistent with the goal of maintaining open space within the Town.

One more goal of the Town's Comprehensive Plan is to "Provide industrial land use opportunities that are consistent with the Town's residential and agricultural character" and "give priority to the infill of areas where industrial development has already begun." The existing quarry has been in its current location amongst residential and agricultural land uses for approximately 60 years. It is part of the Town's character and history. The proposed extension is consistent with the goal of giving priority to areas where industrial development has already begun, as well as the goal of discouraging industrial development in new areas. The Town Zoning Ordinance supports this as well by allowing mining in the R-30 zone under a special use permit.

Page 54, Vehicle Traffic: How will internal truck traffic patterns change on site as a result of the project? Altered on-site traffic patterns should be considered with respect to noise and air emissions, as these new on-site movement patterns will determine how and where impacts may be experienced at locations off site.

Response:

Like the existing quarry operation, haul trucks will cycle in succession to the active mine face, get loaded by front-end loader, and then travel in the most direct route practicable to the existing primary crusher location. Proposed berm heights are based on the level of noise attenuation needed to minimize noise at receptor locations. Potential noise impacts of the proposed action have been studied exhaustively. As described in Section 4.2 (Noise Pollution) of the DEIS, as well as Appendix IX (Sound Level and Attenuation Analysis), a worst-case scenario was used to analyze potential noise impacts. Therefore, it can be inferred that the noise of daily operations and the movement of haul trucks and front-end loader in the expansion area will be less than the worst-case scenario.

Typical operations such as haul trucks and a loader operating in the proposed area behind quarry faces and a perimeter berm, generate less noise upon nearby receptors than the worst-case scenario of the loudest apparatus (i.e., drill rig) operating at the project perimeter, not behind any quarry faces, that was used to assess potential noise impacts. Noise from haul trucks and a loader operating in the proposed area will be attenuated by one or more quarry high-walls and a perimeter earthen berm, planted with evergreen trees. It is noted that these barriers also provide an effective means of containing fugitive dust emissions on-site.

Potential air impacts of the proposed project have been fully examined and are addressed in the DEIS and applicable NYSDEC permits held by the facility. See the previous responses above relative to concerns about air emissions.

Page 66/Section 5.1, Land Use Objective: The DEIS states that "The probable end use for which the quarry will be prepared for is industrial, commercial, recreational, or residential with a water impoundment." These end uses should be discussed in relation to future land use planning in the Town of Rush, as well as applicable zoning regulations. The document should describe measures that will be taken to ensure that end uses are consistent with the Town's land use plans and applicable Town ordinances, or what procedures will be followed in inconsistent land uses (industrial or commercial, for example) are to be located on this property in the future.

Response:

As described in Section 5 of the DEIS, as well as the "Reclamation Plan Map" (Figure 4, Appendix II), the majority reclamation of the quarry, including the proposed modification area, will be water-based (i.e., a lake). Hanson is not proposing to change this water-based reclamation method previously approved by NYSDEC, other than extend the water-based reclamation into the proposed modification area.

As a producer of crushed stone, Hanson will most likely sell this land once final reclamation has been approved by NYSDEC. The succeeding landowner will need to confirm what types of uses are allowed under local zoning regulations and decide upon the ultimate use of the property. Due to the longevity of the project it is not feasible to predict the exact end use for the property once reclamation is complete.

Hanson did not intend to indicate that the reclaimed quarry will be used for all of the listed possible uses (e.g., industrial, commercial, etc.). Rather, Hanson was speculating that the reclaimed site could be used for a variety of uses, depending upon local zoning regulations applicable upon final reclamation. The future use of the reclaimed quarry (i.e., lake) will be determined by the of the Town and/or property owner. It is presumed that existing and/or future land use plans, ordinances, and regulations will dictate what procedures will be followed to ensure that inconsistent land uses do not occur at the site.

A portion of the existing quarry and proposed modification area are within the Town of Rush's "R-30 Residential Zone." The DEC-approved reclamation plan for the quarry is a water impoundment. As such, final reclamation will create approximately 320-acres of open space in the form of a lake. This use seems consistent with the allowable uses within the Town's R-30 Residential District.

Pages 66-67, Reclamation Method: The DEIS indicates (Pages 14, 18, 70) that the project site including quarry area to be reclaimed as a lake will provide a "recreational resource." However, Page 67 states the "The property itself will remain private property upon completion of mining and will be posted as such." What recreational opportunities will be available on this private, posted site? Does the owner intend to open a portion of the site to recreational use as a public benefit? The document should explain how the project area will constitute a recreational resource in the future.

Response:

As stated in Section 5.1 of the DEIS, Hanson will most likely sell the quarry land once final reclamation has been approved by the NYSDEC. And, the ultimate end use will be determined by the needs of the local community and/or future owner. It is presumed that the land would be sold to a private entity; however, the commenter's point is valid. It is possible that the reclaimed quarry property could be sold or donated to

local municipalities (the quarry is within the Towns of Rush, Avon, Mendon, and Lima.) or other public entity whereby it could become a publicly accessed resource. Regardless of whether the future reclaimed quarry is private or municipally-owned, it is anticipated that a lake in such a setting would be used for recreation by either the private owner(s) or the public depending upon the ultimate property owner.

3. In response to NYSDEC's request for a detailed discussion of the facility's current hours of operation, Hanson Aggregates offers the following:

    a. Hanson is not proposing any changes to the equipment, mining methods, or operations at the site. The proposed quarry expansion will not change the variable hours of operation.
    b. Typically, there are two shifts at the existing quarry. In general, second shift operations consist of limited portions of the aggregate plant being run to processes certain sized stone, and typically do not involve the operation of haul trucks or loaders in the quarry pit area and, in the future, the proposed modification area.
    c. In general, the hot-mix asphalt (HMA) plants only run during the day. Occasionally, as project and customer demands (e.g., night paving) dictate, the HMA plants may need to be run at night.
    d. The days and hours of operation vary depending upon customer demand. There are times when customer and project demands (e.g., night paving) require 24 hour operation of the aggregate and/or hot-mix asphalt (HMA) plants, mainly Monday through Friday. However, there is occasionally a need for the aggregate and/or HMA plants to be open Saturday as well.
    e. Currently, the only hours of operation condition specified in the currently issued Mined Land Reclamation Permit #8-9908-00113/00005, are for blasting. This permit requires that blasting be conducted between the hours of 9:00 a.m. to 5:00 p.m., with none on Sundays or legal holidays. Pursuant to the mine permit, there are no exceptions to the blasting hours unless prior Department approval is obtained.
    f. There are no specific hours of operation specified in the currently approved "Mining Plan Narrative" (April 9, 1990).
    g. It is Hanson's understanding that mining at the current quarry property pre-dated municipal mining regulations. As such, there are no current municipally imposed hours of operation.
    h. The proposed modification area is within zones of the Town of Rush and the Town of Avon, which both require special use permits for mining operations. It is possible that the Town special use permits may impose certain hours of operation limits for certain mining activities within their applicable zoning boundaries.
        i. The Town of Rush does not set forth specific mining hours of operation in its zoning regulations pertaining to excavation operations.
        ii. The Town of Avon limits mining operations to the hours of 7:00 a.m. to 6:00 p.m., except on Sundays. In the case of public or private emergency or whenever any reasonable or necessary repairs to equipment are required to be made, it shall be permitted at any time.
    i. Hanson is not proposing any change to its operation. It is Hanson's understanding that no new hours of operation conditions may be imposed as part of the requested NYSDEC mine permit modification.

Please feel free to contact me at the above telephone number or via email: michael.lewis@hanson.com if you have any questions regarding the information provided herein or, if you need additional information.

Sincerely,
Hanson Aggregates New York LLC

Michael Lewis
Environmental Manager

c: Steve Army/John Freeman, Division of Mineral Resources, NYSDEC – Region 8
Molly McBride, Administrative Law Judge, NYSDEC – Central Office
Dudley Loew, Esq., Office of General Counsel, NYSDEC – Region 8
Daniel M. Meehan, Vice President/GM, Hanson Aggregates New York
Scott Wheaton, Operations Manager, Hanson Aggregates New York
Mike Clark, Plant Manager, Hanson Aggregates/Honeoye Falls Quarry

ALPHA
GEOSCIENCE
Geology
Hydrology
Remediation
Water Supply

November 3, 2016

Mr. Michael Lewis
Hanson Aggregates New York LLC
4800 Jamesville Road
P.O. Box 513
Jamesville, NY 13078

Re: Response to Public Comments – Hydrogeology
Hanson Aggregates New York LLC
Honeoye Falls Quarry Mine Expansion

Dear Mr. Lewis:

Alpha Geoscience (Alpha) has reviewed, at your request, the written public comments that were received by the NYSDEC in regards to the hydrogeologic impacts of the proposed expansion at the Honeoye Falls Quarry. The comments were from Wade Silkworth, P.E., of the Monroe County Department of Public Health (MCDPH); John and Jean Campany, of 916 Works Rd (Campany); and Caroline Pluta, of 1820 Honeoye Falls No. 6 Rd (Pluta). The MCDPH had five comments and they were all related to the hydrogeologic analysis by Alpha; the Campany comments included two hydrogeology-related comments; and Pluta had two comments. The hydrogeology-related comments of each of these individuals are addressed in the following sections. Each comment is summarized in italics for convenience.

MCDPH

1) *The addendum reference above mentions a "significant drought" in 1999. In review of the MCDPH records from that time, including correspondence from several involved agencies, it appears that there was quite a disagreement about whether this period of time could even be called a "drought", let alone "significant." Due to the lack of consensus that there was an actual drought and lack of evidence when looking at the past rainfall data, it seems inappropriate to use this as a reason for the drop in the water table at that time. The only definitive activity which coincides with the lowering of the water table was the lowering of the quarry sump.*

It is clear that the Monroe County Department of Public Health officials were unable to come to a consensus on whether there was a drought in the area in 1999. The public has access to other credible sources of weather assessments, such as the National Oceanographic and Atmospheric Administration (NOAA). Part of NOAA's duties is to evaluate weather conditions and keep the public alerted to potential impacts of weather, such as flooding and drought. NOAA releases monthly maps of drought conditions in the contiguous U.S. as measured by the Palmer Drought Severity Index, the Palmer Hydrological Drought Index, the Palmer Modified Drought Index, and the Palmer Z-Index. The Palmer Drought Severity Index (PDSI), for example, ranges from 4.01 and above to -4.01 and below, with drought severity increasing with negative values. The PDSI is calculated weekly for a multitude of climatic divisions throughout the country. Monroe County is located within Climate Division 9 and Livingston County is within Climate Division 10. The quarry straddles both counties; consequently, it also straddles both Climatic Divisions.

The monthly maps of PDSI are produced by NOAA and are available on its website for any month dating back to 1900.
It is worthwhile comparing the monthly PDSI values for different droughts in New York in order to provide a perspective on the drought conditions of August, 1999. Central and western New York State experienced a widely reported drought this summer (2016), as discussed in the attached article from July 24, 2016 (Attachment 1). According to the monthly PDSI map for July, 2016 (Attachment 2), the current drought had a PDSI ranging from -2.56 to -2.80 (Climatic Divisions 9 and 10, respectively). This PDSI range is within the moderate drought classification. A moderate drought is defined as having a PDSI from -2.01 to -3.00. A severe drought is classified as having a PDSI from -3.01 to -4.00. The current (as of September 2016) drought had increased in severity to a "moderate to severe" drought by the end of September 2016, as shown by the PDSI range of -2.68 to -3.07 (see Table 1 and Attachment 2).

The article in Attachment 1 focuses on Avon, which is approximately six miles west-southwest of the quarry. The article states that *"nearly one quarter of New York state is in a severe drought"* (as of July 24, 2016) and that *"It's the worst drought in New York since the drought center began compiling statistics in 2000. The previous record was in August 2001, when 18.4 percent of the state was in the severe drought category."* The PDSI values for the August 2001 drought ranged from -2.37 to -2.54 for the region covering the quarry (Attachment 2) and equate to a moderate drought.

During August 1999, when the MCDPH could not come to a consensus on whether there was even a drought, the range of PDSI values for the area was -2.75 to -3.11, which is classified as a moderate to severe drought. Table 1 summarizes the PDSI values for the droughts of 2016, 2001 and 1999. The PDSI values for August 1999 are very similar (and slightly worse) to those of the current drought (as of September 2016). These data indicate it is entirely appropriate to mention a drought as the cause for lower water levels in 1999, especially since a drought occurred that year and the water level in many wells came back up once normal to above-normal precipitation returned the following year (when the sump was still present and active).

The term *drought* rightly connotes a lack of precipitation, but the length and severity of a drought can depend upon numerous factors such as temperature, evapotranspiration, soil moisture, time of year, and length of time that lower-than-normal precipitation has persisted. Precipitation was certainly below normal in 1999, as discussed on page 4 in Alpha's February 6, 2016 Addendum to the Hydrogeological Analysis (Addendum): "the low water levels in 1999 occurred during, and following, an eight month period (April-November) when precipitation was below normal in all but one of the months." During the following year (2000), precipitation was greater than average through the first three quarters of the year; consequently the water levels rose and the seasonal low water table in 2000 was not as low as it had been in 1999. The relationship between precipitation and water levels for the years 1999 through 2005, as discussed in the Addendum, is a fact. The occurrence of lower-than-normal water levels during a drought and periods of less-than-normal precipitation, and the occurrence of higher-than-normal water levels during normal or above-normal precipitation are completely consistent with the hydrologic cycle. Contrary to the MCDPH opinion, it is appropriate for hydrogeologists to consider precipitation data and well water level data along with the results of an extensive pumping test when developing a conclusion about the cause of lower water levels in residential wells. The conclusion that the water levels in the residential wells were lower primarily due to a drought, especially when NOAA also has indicated that there was a drought, and not the lowering of the sump a mile away, is reasonable since the water levels returned the following year when more normal precipitation returned to the area and the quarry sump was still active at its lower position. The MCDPH conclusion that the *"only definitive activity which coincides with the lowering of the water table was the lowering of the quarry sump"* is an opinion that is not supported by the facts.

2) *The Alpha Geoscience report seems to dwell heavily on the groundwater "divide" that exists. This divide shows only that the water table levels are higher in the unused monitoring wells and rarely used wells on the mine site. There are two discharge locations where water is drawn from on each side of the "divide" which lower the water table – the quarry sump on the southeast and the residential wells on the northwest. The fact that groundwater flows toward locations where the water is drawn from should not be misconstrued as the way groundwater would flow in an undisturbed condition, and certainly should not imply that the presence of this "divide" somehow means that there is a proven hydrogeologic disconnection between the quarry and the residential wells. For example, if one were to create a water table contour map based on the water levels in the wells (which were all operational) recorded in the year 2000, there will not be a divide.*

The reason the report seemed to *"dwell heavily"* on the ground water divide is that the NYSDEC asked specific questions about the pattern of water levels on either side of this divide. An entire section of the Addendum (Section 6.0) concentrated on the ground water divide in response to questions raised by the NYSDEC.

There is no need to represent *"the way ground water would flow in an undisturbed condition"* because that is not pertinent to the evaluation. The evaluation is concerned with present conditions (which include a large quarry and neighboring residential wells) and impacts to future conditions. The intent of the ground water contour maps is to reflect existing conditions based on the data. The data indicate the continued presence of a northeast trending ground water divide, regardless of high or low water level conditions and regardless of the presence of the monitoring wells installed by Hanson in 2009 and 2010.

The ground water divide shown on the contour maps is, in fact, persistent, despite the suggestion by the MCDPH that *"if one were to create a water table contour map based on the water levels in the wells (which were all operational) recorded in the year 2000, there will not be a divide."* Figure 1 and 2 are ground water elevation contour maps from April 6, 2000 and December 27, 2000, respectively. These two dates were chosen because they are near seasonal high and low water tables, and these dates had a sufficient number of wells with water level measurements for those particular days. It is worth noting that these maps were constructed without the use of the 2009 and 2010 monitoring wells installed by Hanson. The maps clearly show that the northeast trending divide is present in 2000.

3) *The maximum drawdown prediction and the seasonal low water table at full mine buildout are based on a lot of assumptions about how the water table will react. An irregular, fractured bedrock aquifer such as this is very difficult to predict. Further, when the mine is expanded to the west it seems unrealistic to predict with any certainty that the "divide" will still exist. I would suggest that it will be possible that the "divide" may disappear in the areas where the quarry creeps closer to the residential wells to the west, as their respective cones of influence approach each other.*

There are abundant data at this site to assist in making predictions about how the aquifer will respond to the full mine expansion. Alpha cannot interpret what the MCDPH means by the descriptor *"irregular"* in this context since the Onondaga Formation is a widespread aquifer across upstate New York and has been widely studied and exploited as a source for both aggregates and water supplies. The seasons and years of water level measurements collected from 1999-2005 and from 2009-2015 have provided a wealth of data on how the fractured bedrock aquifer around the Honeoye Falls Quarry reacts to the sump discharge. The elevation of the water level in the sump averaged approximately 558 ft from 1999-2005. It has been maintained at approximately 565 ft since 2009, plus or minus a few feet depending on wet or dry seasons.

High precipitation and snow melt in the spring can cause the sump level to rise above the 570 ft elevation, if the pumps cannot keep up with the inflow to the sump. The mine historically does not need to keep the sump level any lower than approximately 563 ft in order to maintain a dry floor.

The cone of depression surrounding the quarry is uncomplicated and attests to the fact that the potentiometric surface associated with the bedrock aquifer is fairly well understood. The regional ground water flow across the area is northward. This is consistent with topography and published, regional, hydrogeologic information. Many wells exhibit seasonal water level swings as much as 40 ft. The magnitude of the seasonal changes diminishes closer to the sump due to the tempering effect of the continued pumping.

The Spectra pumping test, referenced in the 2016 Addendum, that was conducted in March 2000 also provided information to evaluate how the fractured bedrock aquifer reacts to changes in pumping levels in the sump. The sump water level was lowered to an elevation of approximately 550 ft, which is only three to four feet off the bottom of the sump and lower than the sump level has been ever since. The sump water level was maintained at this level for 72 hours during the test. Negligible, if any, impacts were detected in the residential wells northwest of the quarry during the pumping test.

Water levels in the surrounding area have achieved a dynamic equilibrium with the dewatered quarry and the sump. The cone of depression associated with the maintenance of a dry quarry floor can be expected to contract or expand, respectively, as precipitation increases or decreases significantly. The cone will also expand in the direction of the quarry expansion. The existing conditions currently show a ground water divide northwest of the quarry. This divide is evident in the data going back to 2000. As explained in the 2016 Addendum, seepage zones are predicted for the future northwestern quarry wall in the expansion area during seasonal high ground water levels, but not during seasonal low conditions. This expansion will result in the westward and northward movement of the divide as shown on the estimated future ground water contours during the seasonal high (Figure 12; 2016 Addendum). The divide will remain east of the residences along Works Rd and south of the residences along Honeoye Falls No. 6 Road. For the most part, the seasonal low ground water contours are currently (pre-mine expansion) below the proposed floor of the quarry; consequently, the divide will remain below the proposed floor.

Hanson mines the limestone of the Onondaga Formation and has no plans to mine the underlying dolostone of the Bertie Group. The suggestion that "*it will be possible that the "divide" may disappear in the areas where the quarry creeps closer to the residential wells to the west, as their respective cones of influence approach each other*" is not supported by the data. This divide has been persistent since 2000 and may move northward or westward to an extent (compare Figures 6 and 12, 2016 Addendum), but it will not disappear. The residences along Works Road and Honeoye Falls No. 6 Road will remain on the opposite side of the divide from the quarry, as has been the case since 1999.

4) *The report seems to be able to point to a precipitation event at each rise and fall of the water table levels, when the rises and falls also correspond to activities at the mine. If the water table in this area is such that it is vulnerable to react rather quickly to precipitation, or lack thereof, then it seems plausible that it would be just as vulnerable to being impacted by mining operations.*

This comment by MCDPH is non-specific in regards to which "activities at the mine" they consider to correspond with "rises and falls" of "water table levels." The only activity at the mine that may lower ground water levels is the discharging of water from the sump. The pumping test in 2000 clearly demonstrated that "rises and falls" of the water table at the residential wells northwest of the quarry did

not occur in response to lowering the sump, at least not in any meaningful way. The sump water level was held at an elevation that was 16 ft lower than the normal operating level for 72 hours; as a result, negligible, if any, water level drawdown in the residential wells west and northwest of the quarry occurred. In contrast, it is clear that precipitation events and patterns definitely cause spikes in water levels in some of the residential wells at times when the sump is at its normal operational level, or dropping. For example, water levels dropped at the sump by four feet while simultaneously rising by as much as 26 to 32 ft in residential wells 9 through 16 during the first quarter of 2001 (January to April; see Appendices A and B of the Addendum). Similarly, no spikes occurred in the sump water level elevation during the period from December 4, 2011 to February 22, 2013 (nearly 15 months) as the sump level was maintained between 563 ft and 566 ft; yet, the water level in residential well 9 decreased from December 4, 2011 through July 19, 2012 (8 consecutive months; 17.14 inches of precipitation) and subsequently rose until February 22, 2013 (7 consecutive months; 19.58 inches of precipitation). The sump clearly did not cause the water level changes in the residential wells in these examples. The only other factor that reasonably could cause these patterns in the residential well hydrographs is precipitation. This comment by the MCDPH is not supported by the facts.

5) *When looking at the longterm decline in the water levels, as presented in the well hydrographs (Appendix B, February addendum), the presence of the quarry seems to be the only steady continuous influence in the area. The sump was lowered in 1999. Since monitoring began in 2000, wells that have data available from 2000-2005 and 2010-2015 show their average levels have dropped by 15-30 feet. The DEIS states that, with the expansion, the mine will continue to operate "over a period of many years." Since the mine will continue to exist at its current depth, and presumably expand, for many years to come (let's say 50 years) before being filled with water – it is reasonable to assume that the neighboring wells could be impacted by this large void in the earth located, in most cases, less than 1,200 feet away.*

It is apparent that the MCDPH has concluded that long term declines in water levels between the two periods (2000-2005 and 2010-2015) were the result of the deepening of the quarry sump in 1998-1999. A closer look at the data reveals a different cause. The water levels from 2000-2005 (Addendum, Appendix B) show a fairly stable pattern on the hydrographs, with similar seasonal highs and lows. The first few years during that period show a downward trend that can be attributed to the documented droughts of 1999 and 2001, as discussed in the response to Comment 1, but most of the water levels had recovered by 2004 and 2005, when annual precipitation amounts had returned to normal. Similarly, the water levels from 2010-2015 show a fairly stable pattern of seasonal highs and lows, that appears to be on an upward trend.

Data from the nearby Avon station (National Weather Service Cooperative Network ID 300343) indicate that annual precipitation for the years 2005-2010 was at, or above, normal for each of the years 2005-2008 and below normal for 2009 and 2010 (Table 2). The year 2009 is the only significantly below-normal precipitation year during that time period (2010 was 0.01 inches less than normal). The annual total precipitation for 2009 was 26.57 inches, compared to the normal annual precipitation of 32.28 inches. The PDSI does not show indications of a drought for any of the months during 2009; however, it is evident in the precipitation data that certain months were severely lacking precipitation in the area during 2009 and the consequences were long-lasting. The month of April that year had no precipitation at all (0.0 inches) and the months of August, September and November were well below their respective monthly normals for precipitation. The precipitation deficit at the end of 2009 was 5.72 inches. This deficit was not fully overcome until August, 2013 (Table 2). A comparison of the annual rainfall for 2009 (26.57 inches) versus the annual rainfall during the drought years of 1999 and 2001, which were 29.25

inches and 25.20 inches, respectively, shows that the precipitation deficit in 2009 was similar to the two drought years. The below-normal precipitation during 2009 was a major factor in the lower water levels observed during the years 2010-2015. It took several years for the water levels to rebound subsequent to the droughts of 1999 and 2001; consequently, it is reasonable to expect water levels to take a similar amount of time to rebound in response to the below-normal precipitation of 2009. The precipitation data from 2009 and afterward (Table 2) explain why water levels remained low for several years before beginning to rise again. It is likely that the drought of 2016 will erase any water-level gains that were made in recent years.

There are not many residential wells west and northwest of the quarry with good datasets of water levels from the both time periods (2000-2005 and 2010-2015). In fact, residential well 9 (the Campany well) is the only residential well with continuous data from the two periods of time (Addendum, Appendix B). The Campany well was deepened sometime between October 1, 2009 and October 19, 2009. This action resulted in audible cascading of water in the well from upper fractures to lower fractures. The Campany well was originally 107 ft deep, had a bottom elevation of 595 ft amsl, and was open only in the Onondaga Formation limestone. The well is now 145 ft deep with a base-of-well elevation at 560 ft and it is now open to the Onondaga Formation and the underlying Bertie Group dolostone. The audible cascading of water in the well is typically heard except during periods of very high water levels. The water level in well 9 likely was lower from 2010-2015 than it was from 2000-2005 because the lower fracture zone at the well is more transmissive and at a lower pressure head; consequently, the water from the upper fracture zone is draining (cascading) down the borehole to the lower fracture zone. This, combined with the below-normal precipitation discussed in the previous paragraph, likely resulted in a lower combined water level than measured in that well during the previous years.

John and Jean Campany, 916 Works Rd (Well ID #9)

Section 4.3.3.1 – Well referenced for resident Campier is identified incorrectly. This is my well, last name Campany. What is missing in the report is the fact that my well went dry right at the same time those other test wells were drilled. I contacted the quarry superintendent at the time and he said since they still had equipment in the neighborhood they would drill my well deeper as a "good neighbor" and they were not admitting that they were the cause of my well going dry.

Alpha apologizes for incorrectly identifying the last name of Mr. and Mrs. Campany throughout the 2013 Hydrogeologic Evaluation report and the 2016 Addendum. The Campanys have been extraordinarily gracious in letting the MCDPH and Hanson collect water level measurements from their well over the years. The data collected has been very important in the evaluation of potential impacts to residential wells in the area.

Several residents near the mine notified Hanson that their wells were "running dry" during the period from August 2009 through October 2009. One local resident suggested that her well ran dry "due to increased blasting" at the mine (see Pluta Response, below); similarly, Mr. & Mrs. Campany imply that the drilling of *"test wells"* caused their well to go dry. Table 3 presents a timeline of all the well complaints in order to provide some perspective on the timing of events. It is clear that residents in the area were concerned about their wells running dry long before Hanson installed water-level monitoring wells 09-001, 09-002, and 09-003 on October 1, 2009. The lower-than-normal precipitation in 2009 resulted in low water levels at several residential wells in the area northwest of the quarry. Table 2 indicates that the annual precipitation in 2009 (26.57 inches) was the lowest annual total since the drought year of 2001 (25.2 inches).

Hanson installed monitoring wells 09-001, 09-002, and 09-003 on October 1, 2009. The wells were installed to monitor water levels in the western portion of the Hanson property to assist in the evaluation of the water table and ground water flow direction in anticipation of their proposed expansion. These wells are not water supply wells and have never been used as such. With rare exceptions, the water level elevations in all three monitoring wells have been consistently above that of the Campany well since measurements began October 19, 2009. The water level data have indicated consistently that the ground water flow is not from the Campany well toward the monitoring wells; consequently, the monitoring wells are not draining the Campany well. Ground water in the vicinity of the Campany well flows westward and northward. No problems have been reported to Hanson regarding water availability in the Campany well since it was deepened by Hanson in October 2009.

Section 4.3.3.1 – Bullet point states "Quarry expansion and pump out will have the greatest potential for impacting residential wells during seasonal low water table conditions" – What is the remediation to this?

The DEIS bullet point referred to in the Campanys' comment appears to stem from the text of Alpha's 2013 Hydrogeologic Evaluation, Section 3.2.2.2. The first paragraph of that section states that *"It is during the natural, seasonal low water level conditions when nearby residential wells potentially would be most vulnerable to water level decline due to quarry expansion and dewatering."* This is a true statement; however, it is subsequently shown in the report, and in the Addendum, that drawdown impacts from the quarry expansion are anticipated only in areas where seepage faces are predicted to occur. The water table during seasonal low water table conditions is already below the proposed quarry floor in the north and west portion of the mine expansion area; consequently, no seepage faces will occur in those areas during seasonal low water table conditions. Since there will be no seepage faces, and since the pumping level at the sump will remain the same as it has been, there will be no water table drawdown north and west of the quarry expansion and no *"remediation"* is needed.

Caroline Pluta, 1820 No. 6 Road (Well ID #12)

In 2009 there were at least 6 wells in close proximity to the Hanson property that all failed (went dry) at the same time. These wells included: my well, one directly across from Hanson's entrance on Number Six Road, one at 525 Works Road, and one at the Brooks Gun Club on Number Six Road. It is my belief that this was due to the increased blasting Hanson was doing at that time as well as the other activities Hanson was conducting.

Mrs. Pluta states that "at least 6 wells in close proximity to the Hanson property" failed, but she only lists four wells. It is not clear which other two wells she is referring to. One of the wells that Mrs. Pluta mentions, the Brooks Gun Club well, is located approximately 2.8 miles from the Hanson Property and is clearly not "in close proximity to the Hanson property." The well across from the entrance to the Hanson quarry is a well that feeds a pond, according to the well completion report filed by the driller (see 2013 Hydrogeologic Evaluation, Appendix A, DEC Well Number MO1741). Mrs. Pluta's well (ID #12) is closer to the quarry than the well at 525 Works Road (Wayne Pluta). Table 3 provides information on when these wells were deepened, or replaced, in late September, 2009.

A blast vibration survey is an industry standard used to determine the damage potential of blasting activity. The severity of vibration damage caused by blasting is a function of the velocity and frequency

of the resultant vibrations. The maximum allowable levels of velocity and frequency associated with a blast are outlined in the U.S. Office of Surface Mining blasting standard 30 CFR 816.67 and the U.S. Bureau of Mines Report of Investigation #8507. A seismograph is used to record the peak particle velocity (ppv) of the ground vibration resulting from a blast event along three axes: longitudinal (long), which are vibrations oriented along an imaginary line between the vibration source and the seismograph transducer; transverse (trans), which are side-to-side vibrations oriented in the horizontal plane that is perpendicular to the longitudinal axis, and vertical (vert), which are up and down vibrations.

As required under the NYSDEC mining permit, at least one seismograph is installed in the vicinity of the nearest residential receptor during each blast. Hanson makes the seismograph reports available to the NYSDEC upon request. In 2009, Hanson conducted blasts approximately three times per month from April through mid-October at its Honeoye Falls quarry. Seismographs were typically installed between the quarry and the Dalton Rd residences to the east, since they were the closest receptors. Additional blast vibration monitoring was conducted northwest of the quarry on October 2, 2009 in response to resident concerns that their well problems may have been caused by a blast (Attachment 3). The blasting seismograph monitor was located near monitoring well 09-001, which is located more than 3000 ft northwest of the blast source in the quarry, and approximately 1700 feet southeast of Mrs. Pluta's well. The largest peak particle velocity of 0.045 inches/second was recorded along the longitudinal axis at a frequency of 26 hertz. The maximum ground vibration measured during this survey was less than one tenth the maximum allowable ground vibration (Attachment 3) and met all Federal and NYSDEC requirements.

Subsurface ground vibration due to blasting and its effect on water wells has been studied extensively [see Berger (1980); Hawkins (2000); and Stephens and Associates (2002)]. These studies indicate that ground vibration from blasting attenuates with depth. The resulting vibration underground can be between 15% and 68% of the surface vibration at a distance of 150-1000 feet from the blasting source. In this case, Mrs. Pluta's well is located more than 3,700 ft from the blasting source. The effect of blasting activity on Mrs. Pluta's well was likely nonexistent, given that the surface ground vibration recorded by the monitoring survey was negligible, and that the vibration attenuates with depth. As discussed in response to the MCDPH comments and the Campany comments, a severe lack of precipitation occurred during the months of April (0.0 inches), August and September in 2009. Table 2 indicates that the annual precipitation in 2009 (26.57 inches) was the lowest annual total since the drought year of 2001 (25.2 inches). The below-normal precipitation akin to the drought year of 2001 is the more likely cause of local wells going dry in August, September, and early October of 2009.

Please contact me if you have any further questions on these matters.

Sincerely,
Alpha Geoscience

Steven M. Trader, CPG
Geologist

679 Plank Road • Clifton Park, New York 12065 • (518) 348-6995 • Fax (518) 348-6966
www.alphageoscience.com

TABLE 1
Palmer Drought Intensity Index

Time Period	Palmer Drought Intensity Index	
	Division 9 (Monroe County)	Division 10 (Livingston County)
August 1999	**-2.75**	**-3.11**
August 2001	**-2.37**	**-2.54**
July 2016	**-2.56**	**-2.80**
September 2016	**-2.68**	**-3.07**

Source: National Centers for Environmental Information, NOAA

Moderate Drought (-2.01 to -3.00)

Severe Drought (-3.01 to -4.00)

TABLE 2
Monthly and Annual Precipitation
Avon, NY - Station ID 300343

	Avon Monthly Precipitation Normal (1981-2010)												Annual Normal
	January 1.84	February 1.6	March 2.4	April 2.67	May 2.81	June 3.26	July 3.4	August 3.43	September 3.35	October 2.67	November 2.72	December 2.13	32.28
Year	**Avon Monthly Precipitation (2000-2015)**												**Annual Precip.**
2000	1.97	1.43	1.85	4.86	3.10	3.93	2.09	4.33	3.65	1.35	1.22	1.21	30.99
2001	1.12	1.05	4.37	0.72	2.42	1.58	2.04	1.81	3.70	2.01	2.08	2.3	25.2
2002	1.41	2.50	1.89	3.64	4.67	4.95	4.10	1.72	3.01	1.93	2.26	2.82	34.9
2003	1.88	2.63	2.01	2.04	3.71	2.67	3.08	4.18	3.50	2.31	3.74	2.06	33.81
2004	2.47	0.32	1.71a	2.95	5.37	3.49	4.50	6.15	3.99	2.27	1.98	2.27	37.46
2005	3.30	1.45	1.60	3.47	1.65	2.38	2.54	4.18	5.76	3.96	2.51	0.53	33.33
2006	1.38	1.39	2.28	2.15	1.68	3.10	5.40	2.46	4.44b	4.16	2.35	3.08	33.87
2007	2.63	1.57	2.66	3.76	0.75	2.32	5.43	2.77	2.21	2.92	4.60	3.95	35.57
2008	0.83	3.36	3.40	1.34	1.51	3.26	6.35	3.96	1.98	3.19	1.78	3.69	34.65
2009	1.92	1.15a	3.05	0.00	2.55	4.94	3.82	1.88	1.18	2.89	1.05	2.14	26.57
2010	1.20	1.22	2.40	1.45	1.94	4.78	4.65	3.63	2.55	3.91	2.20	2.33	32.27
2011	1.09a	2.65	2.14	4.27	4.48	3.28	0.74	4.64	2.52	5.65	2.85	2.12	36.43
2012	2.07a	0.89	2.37	2.31	2.88	3.49	2.82	2.58	3.41	5.64	0.57	3.97	32.99
2013	1.07	1.76	0.97	3.07	3.15	6.82	4.16	4.44	2.24	3.10	2.91	2.71	36.41
2014	1.24	1.74	3.15	2.51	5.52	2.63	9.77	2.60	1.54	2.13	2.46	1.10	36.39
2015	0.99	1.74	1.08	2.29	8.12	7.73	3.30	4.63	4.22	2.77	1.00	2.44	40.31
2016	0.77	3.00	1.29	1.23	1.93	1.02	0.98	2.74	2.47	4.34	--	--	--

All values in inches
= less than monthly or annual normal
Flags: a = 1, b = 2, c = 3, ..., or z = 26 or more missing days in a month

TABLE 3
Timeline of Residential Well Complaints in 2009
Honeoye Falls Quarry

8/18/2009	Resident at 1919 No. 6 Rd (well ID #16) called Hanson. Reported that well had water on 8/15/09 but not on 8/16/09.
8/24/2009	Resident at 625 Works Rd (David Altamura) called Hanson. Reported that well ran dry over the weekend (8/22-2/23). Well was subsequently deepened by 15 ft sometime around first week of September 2009
9/18/2009	Resident at 525 Works Rd (Wayne Pluta) called Hanson. Reported that well went dry and that it now provides water intermittently. Well is also dry at his mother's house (Mrs. Pluta, 1820 No. 6 Road, Well ID #12)
9/21/2009	Resident at 1600 No. 6 Road (Chris Burnell) called Hanson. Reported that well went dry on Saturday (9/19/09).
9/23/2009	NYSDEC responds to complaints that wells have gone dry at 525 Works Rd (Wayne Pluta) and 625 Works Rd (Altamura); NYSDEC measures water levels and total depth of the wells.
9/23/2009	Well at 525 Works Rd (Wayne Pluta) is deepened 30 ft by Moravec Well Drilling. Moravec also drilled new well at 1820 No. 6 Road (Mrs. Pluta, Well ID #12) to 140 ft.
9/24/2009	Moravec Well Drilling deepened a well across (norht of) No. 6 Road from the Hanson entrance by 53 ft by Moravec – well was used to supply water to a pond. Well owned by Pluta.
10/1/2009	Hanson has Nothnagle Drilling install monitoring wells 09-001, 09-002, and 09-003 west and northwest of the quarry
10/12/2009	Resident at 1855 No. 6 Road (Don Knab, well ID 13) calls Hanson. Well went dry on 10/9/09 and was still dry as of 10/12/09.
12/16/2009	Moravec Well Drilling deepens well by 40 ft at 1855 No. 6 Road.

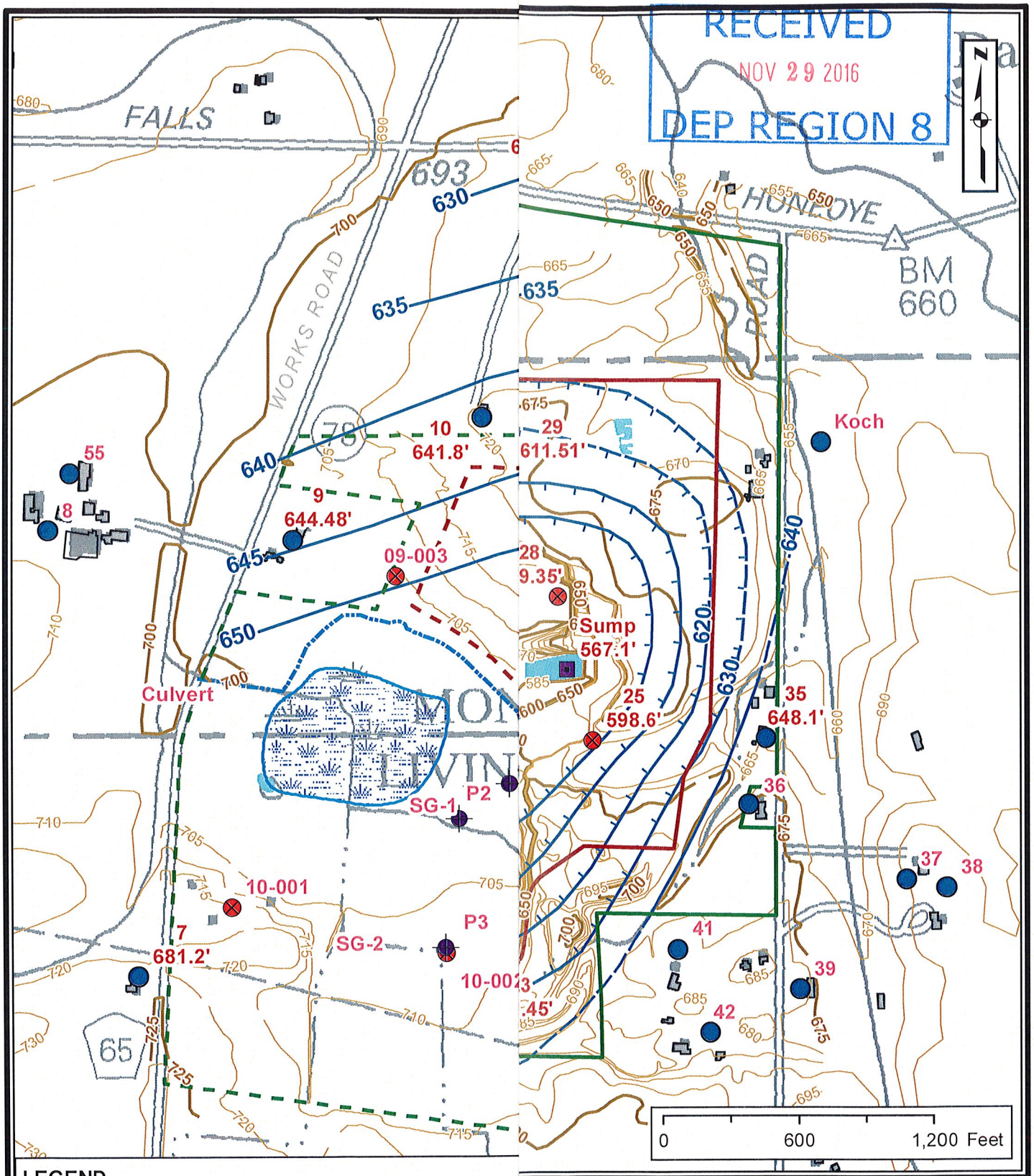


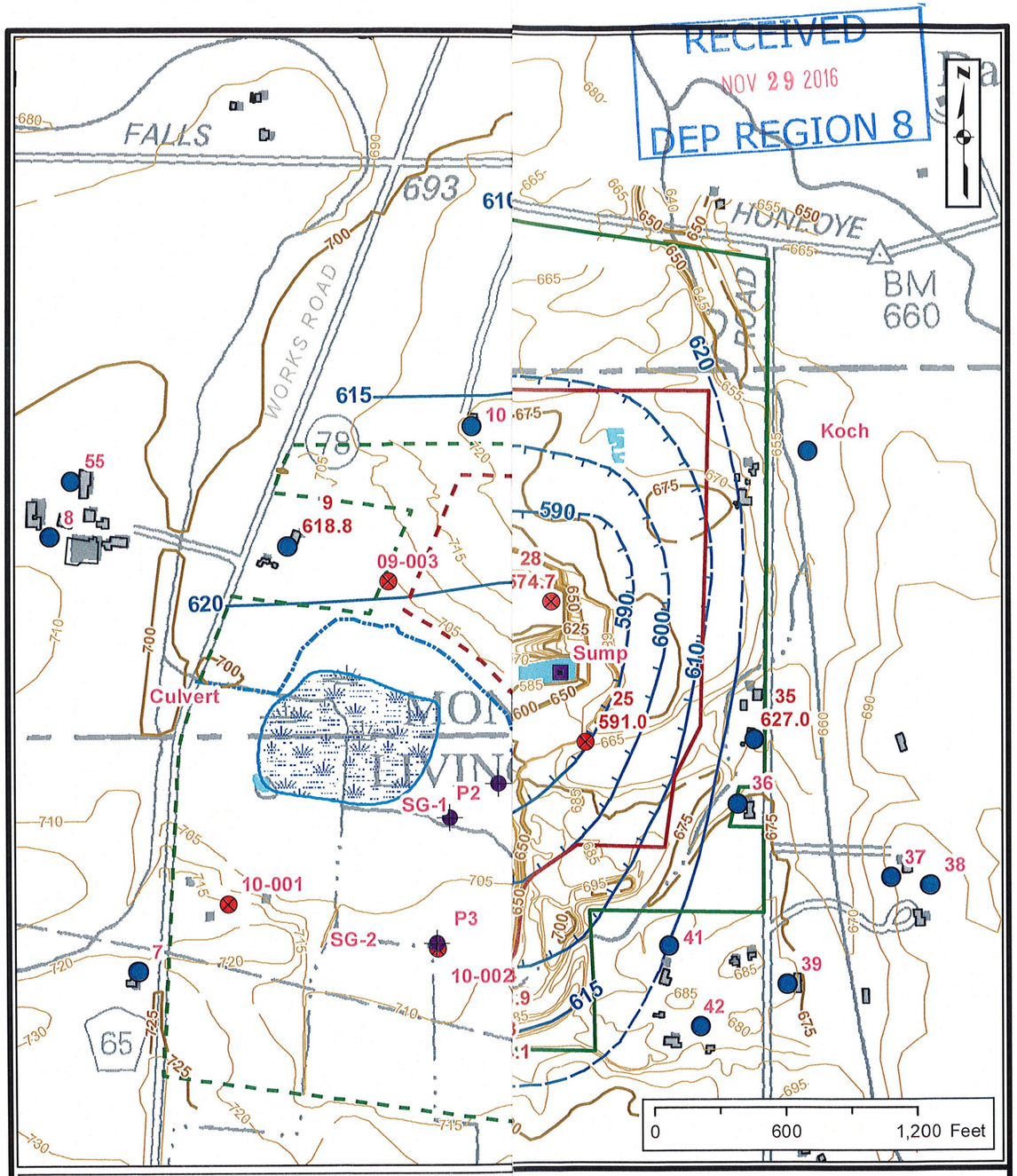
FIGURE 1

Ground Water Elevation Contours
April 6, 2000

Honeoye Falls Quarry Expansion
Hanson Aggregates NY, LLC

Livingston and Monroe Counties, NY

Path: Z:\projects\2011\11100-11120\11110 - Hanson Honeoye Expansion\GIS\2000-04-06 GW_Contou
Date Saved: 10/27/2016 1:21:22 PM



LEGEND

- Monitoring Well
- Residential Well
- Piezometer
- Sump
- Life of mine boundary (e
- Approximate Hanson Pr
- Current excavation limit
- Approx. excavation limit
- Wetland Delineation

FIGURE 2

Ground Water Elevation Contours
December 27, 2000

Honeoye Falls Quarry Expansion
Hanson Aggregates NY, LLC

Livingston and Monroe Counties, NY

Path: Z:\projects\2011\11100-11120\11110 - Hanson Honeoye Expansion\GIS\2000-12-27 GW_Contour
Date Saved: 10/27/2016 1:38:39 PM

ATTACHMENT 1

UPSTATE NEW YORK

Water flow in the Genesee River at Avon is 20 percent of its normal flow for mid-July. *Photos by Glenn Coin/gcoin@syracuse.com*

AVON IS HIT WITH WORST OF SEVERE DROUGHT

Glenn Coin *gcoin@syracuse.com*

A small town in Livingston County is the epicenter of Upstate New York's extreme drought. In the 20 counties covered by the severe drought designation, Avon has had the least precipitation since April 1. A total of 4.43 inches has fallen here, about a third of normal, according to NOAA's regional climate center data.

"It's probably the worst I've ever seen," said Aaron Smith, 70, owner of Aaron's Body Shop. Residents note with irony that in each of past two summers, Avon was flooded by epic rains.

Last July, more than 6 inches of rain fell in just two days — a third more than it's gotten all spring and summer this year. Roads were washed away and basements were flooded.

"It's been a matter of extremes," said Jim Millar, owner of the Farview Golf Course.

Asked how dry this year has been compared to the past, Millar said: "It's definitely in the top three. Probably the top one." Millar said the course is pumping 300,000 to 400,000 gallons of water each day from a pond to keep the greens green. The Genesee River, which winds past the outskirts of the village, is running at just 20 percent of its normal rainfall.

Grass is brown all over town, and even hardy hostas are dying up. Village of Avon employee Tim Cullinan said keeping plants in parks alive has become his full-time job.

"I spend probably the whole day watering," Cullinan said, while watering plants in the village's park inside the traffic circle. "And we start at 7 and we end at 4."

The drought has some advantages, said resident Darrin Smith, especially not having to mow his 5-acre lawn.

"To be honest, I love it," he said. "It costs me probably $20 in gas to mow the lawn."

Jim Millar, owner of the Farview Golf Course in Avon, walks from the dry hill toward the greens, which are watered from a pond and creek near the course.

Darrin Smith and his dog, Zeke, look out at the yard behind Aaron's Body Shop in Avon. Smith said he doesn't mind not mowing.

LITTLE RELIEF IN SIGHT

Nearly one quarter of New York state is in a severe drought, according to the latest report from the National Drought Mitigation Center. That's more than double the 11 percent of the state that was in a severe drought last week. It's the worst drought in New York since the drought center began compiling statistics in 2000. The previous record was in August 2001, when 18.4 percent of the state was in the severe drought category.

The area in severe drought, the middle of five dry and drought categories, extends from Buffalo nearly to Syracuse. The report also says that:

47 percent of the state is in either moderate or severe drought

17 million New Yorkers live in areas affected by the drought

41 percent of New York is in the pre-drought phase of "abnormally dry"

› The only areas that are not dry or in drought are the Mohawk Valley and the northern half of St. Lawrence County

— *Glenn Coin,gcoin@syracuse.com*

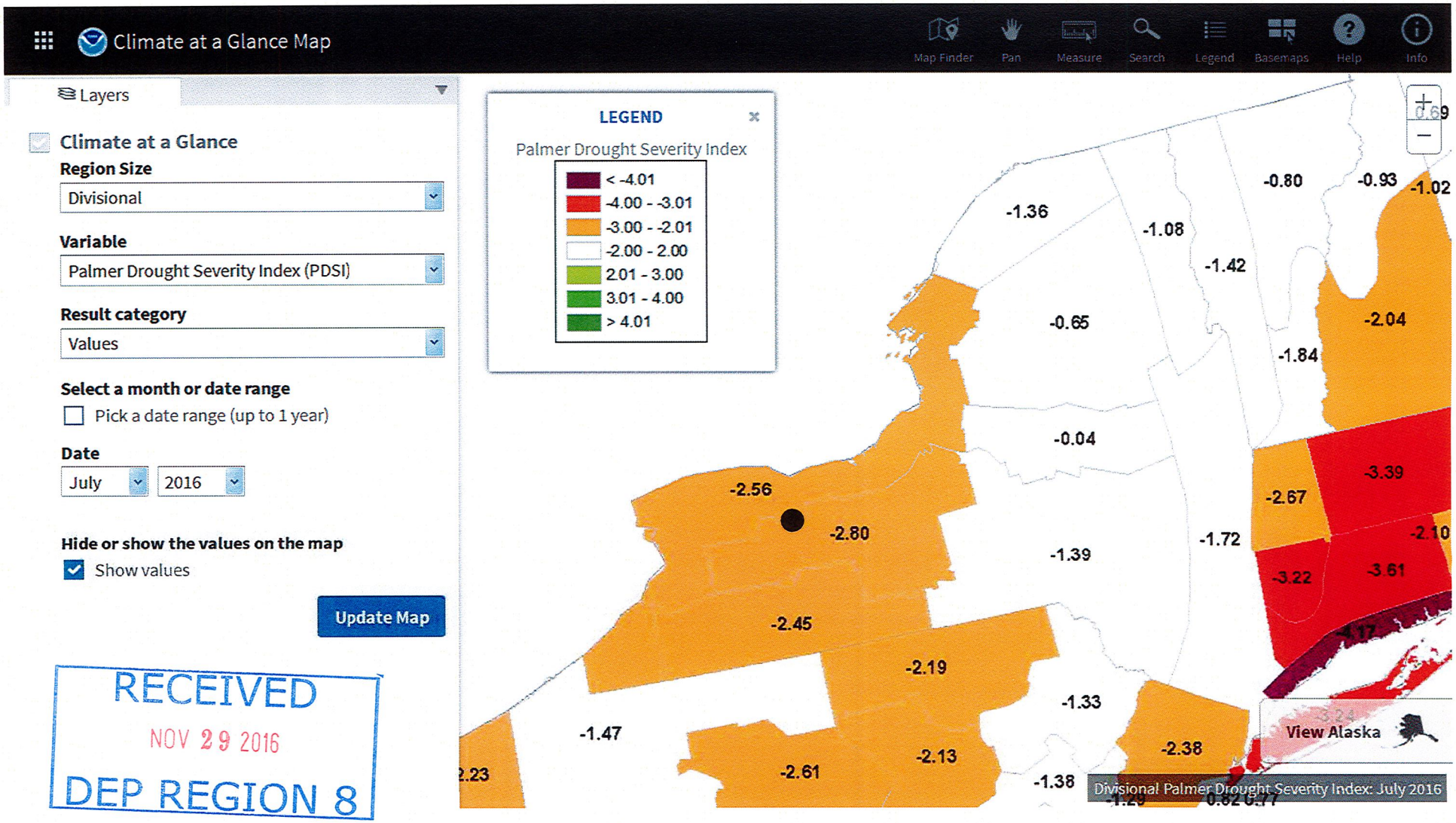
SYRACUSE

ATTACHMENT 2

ATTACHMENT 2

● = Location of Quarry

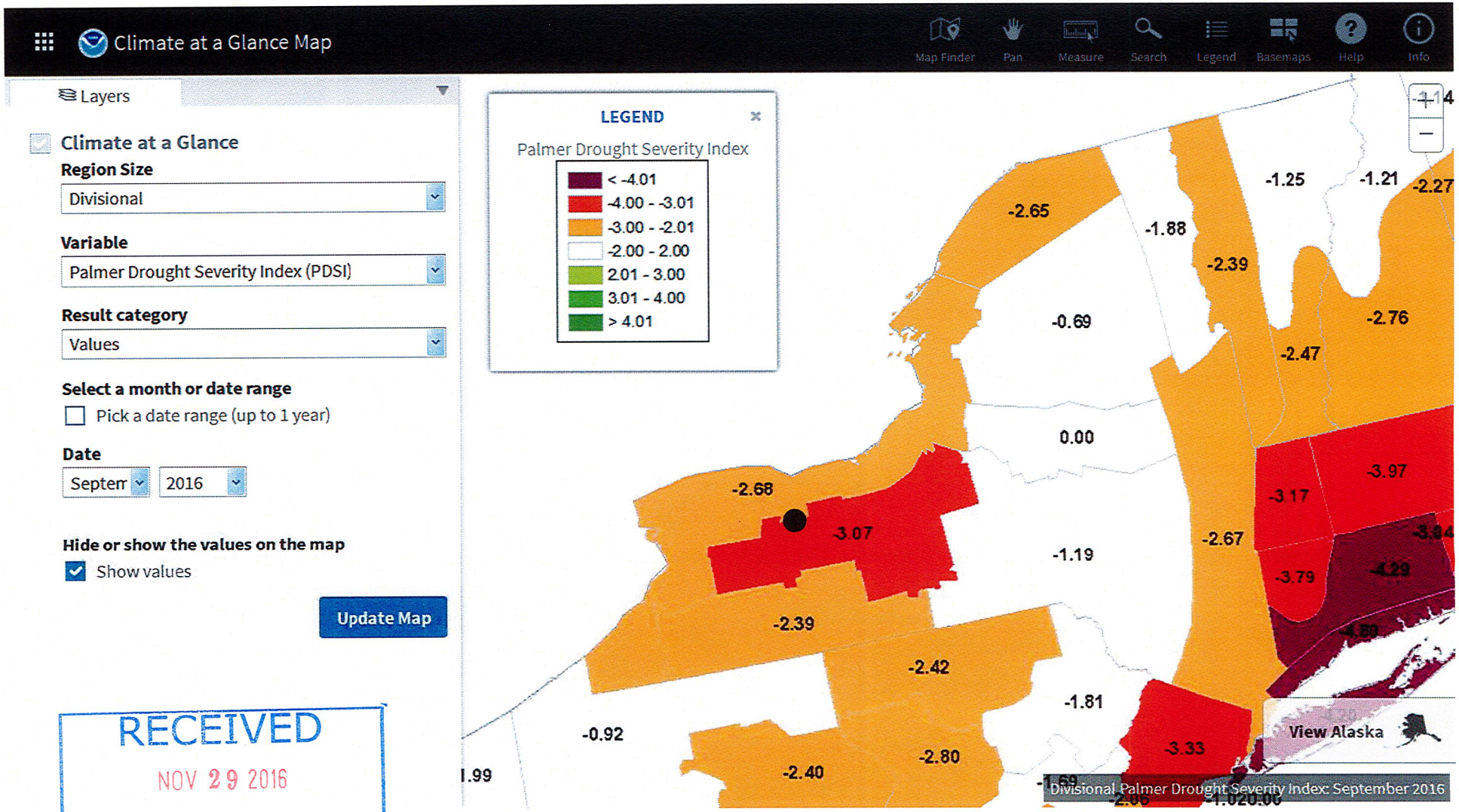
JULY 2016



ATTACHMENT 2

● = Location of Quarry

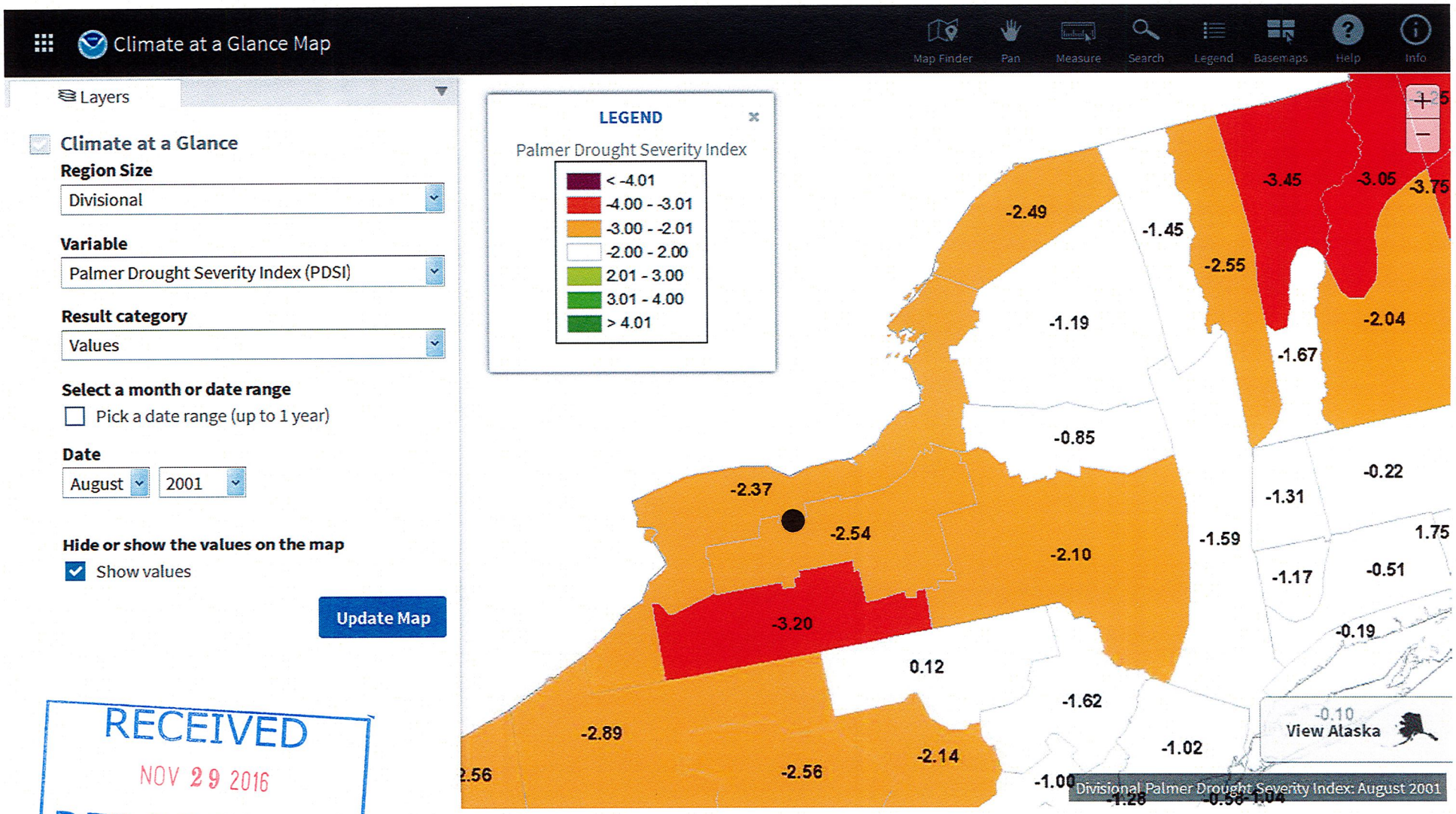
SEPTEMBER 2016



ATTACHMENT 2

● = Location of Quarry

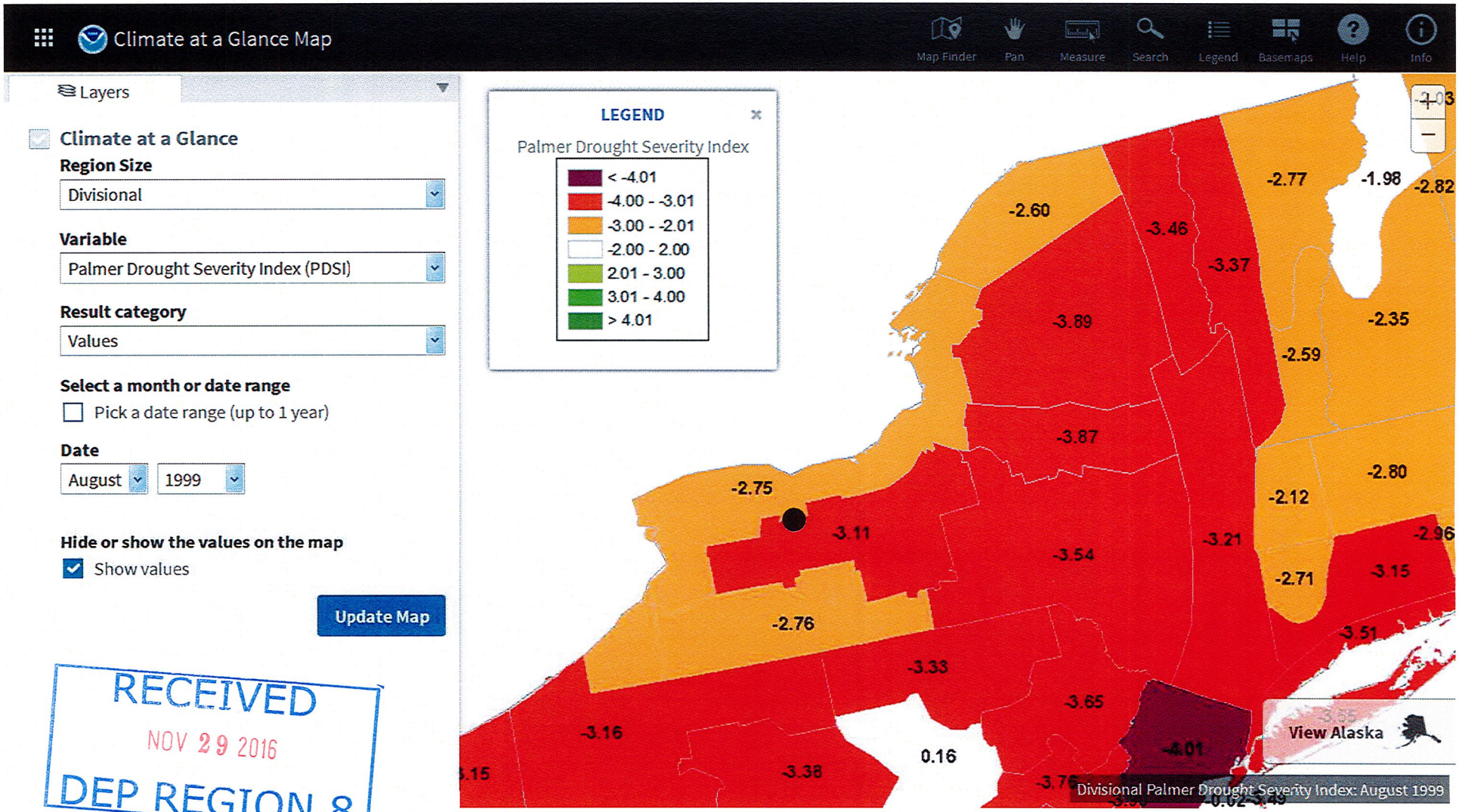
AUGUST 2001



ATTACHMENT 2

● = Location of Quarry

AUGUST 1999



ATTACHMENT 3

Instantel

Event Report

Annotations by Alpha Geoscience (in red)

Date/Time	Long at 11:19:50 October 2, 2009
Trigger Source	Geo: 0.0200 in/s Mic: 127 dB(L)
Range	Geo :10.00 in/s
Record Time	3.0 sec at 1024 sps

Serial Number	BA13970 V 8.12-8.0 BlastMate III
Battery Level	6.3 Volts
Calibration	May 29, 2009 by Instantel Inc.
File Name	O970CX1M.520

Notes

Location:	NorthWest Side of Quarry
Client:	Hanson Aggregate Honeoye Falls NY
User Name:	Keith Hoffman
General:	See shot report

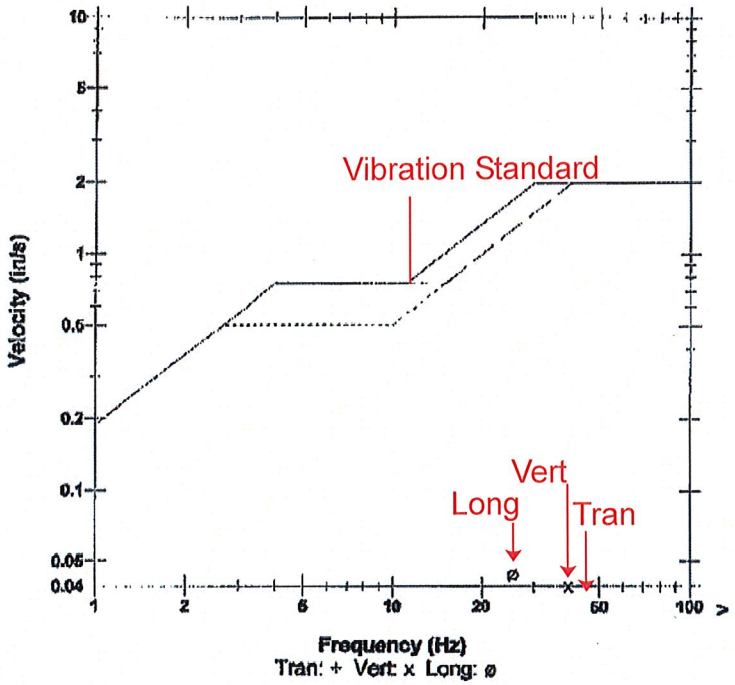
Extended Notes

Post Event Notes

Microphone	Linear Weighting
PSPL	116.6 dB(L) at 2.997 sec
ZC Freq	N/A
Channel Test	Passed (Freq = 20.1 Hz Amp = 645 mV)

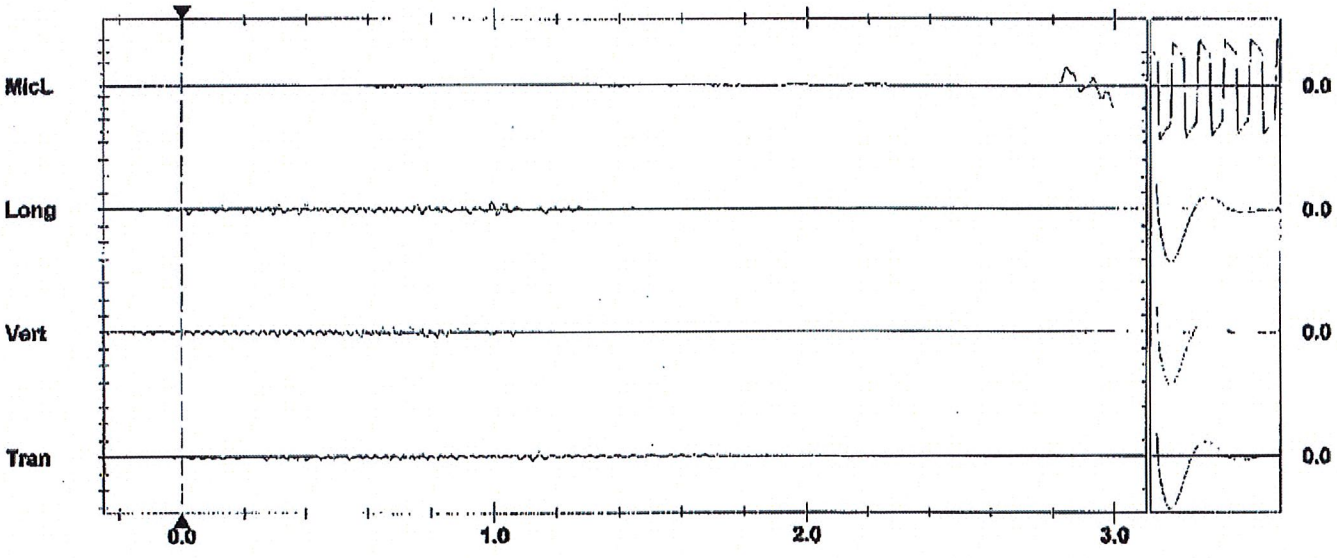
	Tran	Vert	Long	
PPV	0.0300	0.0400	0.0450	in/s
ZC Freq	47	39	26	Hz
Time (Rel. to Trig)	0.770	0.737	0.990	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00016	0.00018	0.00025	in
Sensorcheck	Passed	Passed	Passed	
Frequency	7.5	7.3	7.2	Hz
Overswing Ratio	3.6	3.9	4.2	

USBM RI8507 And OSMRE



Peak Vector Sum 0.0550 in/s at 0.770 sec

N/A: Not Applicable



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div Sensorcheck

Trigger =