The following comments are provided as a review of the Yukiguni Maitake Mushroom Corporation of America's (YMMCA) submittal of Additional Data to NYS DEC dated July 28, 2009. (DEC requested the data in a memo from Alexander Ciesluk, Jr. dated July 1, 2009)

The following topics are in the order presented in the letter submitted to DEC. Yukiguni Maitake is referred to as "the applicant." Cornerstone Engineering, Inc. prepared the submittal.

Groundwater Mounding Analysis beneath the Process Wastewater Infiltration Basin (PWIB)

Only two assumptions used in the mounding calculation model were provided and many others were omitted.

Two different saturated aquifer thicknesses (50 and 190 feet) were used for calculations to optimize the results to the applicant's advantage. Standard procedure is to use one value.

As shown in submitted soil boring logs, the applicant did not mention the downward change in sediments from sand and gravel to red silt at 32 feet in B-7 and 52 feet in B-8. The red silt represents a barrier to vertical infiltration and will cause buildup of a mound in the water table beneath the PWIB.

Soil boring information provided to DEC was not used to estimate saturated thickness of the aquifer. If used, the thickness would be 16 to 24 feet based on the red silt layer at a depth of 32 feet and water table measurements of 8 to 16 feet below ground surface.

Those dimensions will increase the potential of mounding by a factor of 100 or more.

The applicant's conclusion of very small mounding effect of less than 0.3 feet over 1 to 10 years is grossly underestimated.

Soil Data Test Locations

Three boring logs (B-6, B-7 and B-8) were submitted with a sketch map of locations. None of the borings were continuously sampled from ground surface to total depth and none are within the footprint of the proposed Process Wastewater Infiltration Basin. Water levels ranging from 15.6 to 16.46 below ground surface were reported for piezometer PZ-3. The location of PZ-3 is near but not within the infiltration basin.

Previously, BKAA has requested at least two continuous-sampled soil borings from the ground surface to a depth of at least 75 feet within the PWIB footprint.

Previously, BKAA has requested continuous monitoring of groundwater levels at the site as required in the Town of Mamakating Planning Board's Scoping Document for the State Environmental Quality Review (SEQR) reported by the applicant in the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS). Five years later, BKAA is still requesting this basic subsurface information.

The PWIB design is based on percolation tests conducted in shallow basins close to the ground surface near the proposed basin, but not in the footprint. The current plan shows the corners of the basin at a depth of 6 feet below grade on the west and 2 to 4 feet on the east. New perc tests should be conducted at the appropriate elevation of the proposed bottom of the basin(s). Alternatively, more accurate measurements such as Basin Tests or Cylinder Infiltrometer tests could be conducted.

Effects of Freezing and Temperature Effects on Infiltration Basin

The applicant begins by stating "The calculation of the possible impacts that winter operations is a complicated thermal dynamic problem"… After providing some relevant factors, but no analysis; the applicant proposes to wait and see how the PWIB works during the winter months when the Pilot Plant is operational. Build first, observe impacts later is an outrageous suggestion on the part of the applicant.

The "wait and see" concept is totally inappropriate because the Pilot Plant will only discharge 66,000 gallons of water per day, which is only about 20% of total water disposal proposed for the full build-out.

BKAA advises DEC to have a senior staff hydrogeologist recommend methods of analysis, which Cornerstone Engineering could use to predict PWIB behavior during worst case freezing conditions. A quantitative analysis is needed to demonstrate if the basin will or will not function as proposed.

As BKAA requested in the past, the applicant has listed three locations with operational infiltration basins and similar climatic conditions in (1) Victor, Montana; (2) Calumet, Michigan and (3) Lake George, New York. However, no site-specific characterizations or dimensions were provided. BKAA recommends that DEC request a spreadsheet listing design specifications for those examples, so it will be possible to compare them with the proposed PWIB.

Infiltration Basin Design

The newly proposed three-cell basin appears to be more conventional than a single basin. However, for now, it complicates the process of trying to determine if the PWIB will function as designed. For instance, three separate calculations will be needed for the mounding analysis, one for each basin. When there is already a question if the original basin can accommodate the maximum daily discharge plus stormwater, making the

basin smaller will exacerbate the situation and definitely cause breaching of the berm(s) and flooding to the Basha Kill.

Water Quality and Quantity Monitoring

In addition to the existing production well (PW-2) and five monitoring wells or piezometers (PZ-1 to PZ-5), the applicant proposed three additional piezometers around the PWIB. However, in addition to monitoring the east side of the site, DEC asked for piezometers to monitor plant impacts to the on-site State Regulated Freshwater Wetland. BKAA recommends piezometers on the west side of the property near the wetland to monitor water levels in addition to chemical and biological impacts.

BKAA recommends that DEC request a table or spreadsheet of existing and proposed piezometers listing dimensions and construction materials.

Industrial Chemical Survey (ICS)

The applicant states that YMMCA will not use, produce, store, distribute or otherwise dispose of any substances listed on Form NY-2C instructions. BKAA recommends that DEC review Appendix K from the DEIS and compare the chemicals listed in those 95 pages with those on Form NY-2C instructions. BKAA requests DEC to ask the applicant to address the use of any additional chemicals (listed in Appendix K and not in Form NY-2C instructions).

Pilot Plant

The Pilot Plant will only have about 20 percent of the daily discharge to the Process Wastewater Infiltration Basin compared to 100 percent at full build-out. The stormwater entering the PWIB will remain constant throughout Pilot and Full Plant phases. The stormwater must be added into the prediction of the function of the PWIB.

Revised Project Description after DEIS/FEIS

The proposed open loop geothermal system represents about one-third of the water entering the PWIB during a 100-year storm and about one-quarter during a 100-year Plus event. A change in the geothermal system to closed loop and a reduction in size of the 5.5-acre stormwater drainage area should be seriously considered to design a functional PWIB. This is the most important technical recommendation BKAA can make.

Based on raw data from percolation tests, the design of the PWIB remains an error because the applicant continues to overestimate the infiltration capacity of the basin by more than a factor of 10. If nothing else, this situation should result in an Adjudicatory Hearing conducted by DEC.

State Historic Preservation Act (SHPA) & NYS Office of Parks, Recreation and Historic Preservation (OPRHP)

The applicant could not locate the copy of the landscaping plan from 2004, which was submitted to NYS OPRHP. It is the applicant's responsibility to meet this legal requirement agreed to in the past.

ADDITIONAL ISSUES (not in Yukiguni Submittal to DEC)

Stormwater & DEC SPDES Permit

Stormwater management remains an unresolved issue, which shall require an Adjudicatory Hearing to settle. The applicant proposes to discharge water from the State-Protected wetland to adjacent property of the D&H Canal Linear Park, owned by Sullivan County. BKAA regards any approval on the part of DEC of discharging stormwater onto adjacent properties as irresponsible in their oversight and approval of stormwater management practices and plans.

Andrew Willingham, PE Summary of the Stormwater Situation from July 8, 2009
Yukiguni Maitake proposal:
The Applicant proposes to provide only minimal storage of the massive increase in stormwater that will result in the proposed construction of 12 +/- acres of impervious surfaces. The Applicant claims that the stormwater storage (that is required by NYSDEC) will be provided within offsite wetlands.
BKAA Engineering Opinion:
The unmitigated increase in stormwater does not meet NYSDEC standards and will cause damage to the adjacent neighboring property. The damage can be avoided by simply meeting NYSDEC standards and regulations.
BKAA Recommendations to NYSDEC:
The Applicant must redesign the stormwater drainage basins to mitigate the runoff created by the 12 +/- acre impervious surfaces, which will require significantly larger basins than currently shown on the plans. The intent of the NYSDEC stormwater regulations was to prevent damage to downstream property owners from flooding. The regulations simply need to be enforced in this instance to avoid the damage that will be caused by the proposed project.

Habitat Assessment

The lack of Biologic Studies on this site reflects the apparent lack of concern on the part of the Town of Mamakating Planning Board.

If we don't know what flora and fauna are present on the site or if any rare, threatened or endangered species are living in the freshwater wetland, the fallow fields, floodplains and riparian buffer, or other eco-communities; it is impossible to assess project impacts on those species and inhabitants. All of the water issues associated with this proposed project have direct impacts on animals, plants, and microorganisms living in the near surface unsaturated and saturated soil and sediments.

Administrative Hearing (Andy Willingham's assessment of July 24, 2009)

It has become apparent through the project's public comments/hearing process that there is substantial disagreement between experts, professionals and citizens representing the Applicant, NYSDEC and public on the conformance of the proposed project's design with common engineering practices, scientific principles, and NYSDEC regulations. We therefore believe that an Adjudicatory Hearing is an appropriate forum to allow an Administrative Law Judge to consider all pertinent testimony and render an impartial ruling on the project's compliance with applicable standards.

From DEC: "An adjudicatory public hearing is a trial type proceeding which provides the opportunity for adjudication on the basis of evidence, including direct testimony and cross examination. An adjudicatory hearing is held only if substantive and significant issues relating to any findings or determinations of the Department is required to make pursuant to the Environmental Conservation Law exists."

Prepared for BKAA by Katherine J. Beinkafner, Andrew Willingham, & James "Spider" Barbour. 8/16/09.

SUMMARY REVIEW of the July 28, 2009 Yukiguni Maitake (YMMCA) submittal of additional data to NYS DEC prepared by Cornerstone Engineering

General Comment:

►YMMCA has not used the data provided in the submittal to update or revise the project design.

Groundwater Mounding Analysis beneath the Process Wastewater Infiltration Basin (PWIB)

►YMCCA did not provide the graph used in estimation of aquifer parameters,
►Provided only two assumptions used in the analysis, but many others were not listed,
►Used two different aquifer thickness values to optimize the mounding calculation in their favor,
►Has not used soil boring information to determine true saturated aquifer thickness,
►Did not identify the downward vertical change from sand and gravel to red silt, which presents a barrier to vertical infiltration under the PWIB, reduces infiltration below by a factor of 10,000, greatly decreases the infiltration capacity of the PWIB, and will create significant mounding,
►Did not account for stormwater in the mounding model, and
►Erroneously concludes mounding will not be significant under the infiltration basin.

Infiltration Basin Design

►YMMCA continues to base PWIB infiltration rates on percolation tests which over-estimate capacity by a factor of 10 to 100,
►Has not addressed the true infiltration capacity of the original 0.44-acre PWIB or the new design with three basins in a slightly larger area,
►Claims the current project design uses less water than the 2006 plan and now proposes to take 300,000 gallons of water per day from the production well, run the water through the plant's geothermal system, and then attempt to put the water back into the aquifer through the grossly undersized PWIB, and
►Changing from one basin to three smaller ones exacerbates the already impossible infiltration problem.

Effects of Freezing and Temperature Effects on Infiltration Basin

►YMMCA "addressed", but has not demonstrated that the PWIB will function during freezing weather,
►Suggested to wait and see if the PWIB works in winter, a totally unacceptable idea, and
►Named three "comparable" infiltration systems, but did not characterize them so they could be compared with this project.

Water Quality and Quantity Monitoring

►YMMCA provided piezometer locations around the PWIB, but did not propose any near the State-Protected Wetland.

BKAA RECOMMENDATIONS

►Using a close-loop geothermal system and reducing the size of the 5.5-acre stormwater drainage area may bring the functionality of the PWIB into focus. The current PWIB design will not work. Water will over flow the berms and flood over the site into the Basha Kill.
►BKAA recommends that DEC conduct an Adjudicatory Hearing to resolve the technical, engineering, and scientific inconsistencies of this project.