Appendix A.3

Review of the Adequacy and Age of Engineering Data Used in the DEIS

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PROJECT TECHNICAL MEMORANDUM

TO: NYCDEP – OEPA

FROM: EA Engineering, P.C. and its Affiliate EA Science and Technology

SUBJECT: Crossroads DEIS Review – Deliverable A.2 Subtask A.2
Review of the Adequacy and Age of Engineering Data Used in the DEIS
EA Project No. 14112.01

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INTRODUCTION

This Technical Memorandum provides our review for Subtask A.2—Adequacy and Age of Engineering Data Used in the Draft Environmental Impact Statement (DEIS) for the Belleayre Resort at Catskill Park (proposed Belleayre Resort). This review focused primarily on those issues likely to impact water quality and quantity or resources likely to be impacted by changes in water quality and quantity. Our review examined the Executive Summary, Sections 1-3, and associated Appendixes of the DEIS.

GEOLOGIC AND TOPOGRAPHIC RESOURCES

Site-specific geologic information is incomplete for the goal of providing an overall understanding of the site geology. The information provided must be coupled with a discussion of the hydrology and its interaction with the differing stratigraphic units. A thorough discussion of the existing, site-specific geology coupled with the hydrology is critical to properly assess the pre-development hydrology and the associations of onsite conditions with offsite water resources (i.e., intermittent channels, springs and hillside seeps). No geologic cross-sections were prepared for this DEIS, and no discussion on fractures and fracture orientation was provided. In addition, the wetland delineation report should be linked to the discussion of site hydrogeology with an expanded discussion that includes a complete analysis of the hydrologic connections to offsite wetlands, watercourses, and water resources. Such information would provide a more complete understanding of the factors affecting groundwater resources and the relationship between surface water and surficial and bedrock groundwater resources.

SOIL RESOURCES

Significantly more detail/discussion is necessary to integrate the sampling and testing locations with the appropriate planned locations for onsite structures, i.e., building structures and retention ponds. Comments related to soil percolation tests and proposed leachfields are no longer relevant, as the leachfields are no longer a component of the wastewater treatment system design.

SURFACE WATER AND GROUNDWATER RESOURCES

Surface Water and Stormwater Runoff

EA's primary concern is that the proposed Belleayre Resort is located adjacent to headwater streams that are extremely sensitive to perturbation. This is important in that any deleterious effects on water quality that occur in the headwater streams have the potential to cascade downstream. A prime example of this aspect is seen at the wetland/watercourses located on the north face of Big Indian Plateau. The wetland designated as Nos. 33, 34, and 35 on Sheet 4 of the wetland delineation report is an intermittent stream channel (New York City Department of Environmental Protection [NYCDEP] designated watercourse) that is undergoing active erosion (incisement) due to past logging projects and disrupt drainage patterns near Winding Mountain Road. In the areas mentioned above, the wetland delineation includes a log landing area (at wetland flag BJ10) with a logging access road to Winding Mountain Road adjacent to wetland flags BJ19, 22, 25, 28, and 31. It appears that this access road at least partially diverted and concentrated drainage to its present pathway (several abandoned channels were found in this location), which led to erosion of the logging access road and may have prompted further drainage work (streamside berms) to keep flow within the present channel. The deleterious results of this past logging project are apparent through field investigation as the channel shows identifying features consistent with channel incisement (i.e., low width to depth ratios, steep eroding streambanks, and advancing head-cuts within the channel bed). These erosional features are seen along portions of the channel length at elevation 1,900 ft, 1,475 ft (at private driveway), and 1,400 ft (at railroad track). The Stormwater Pollution Prevention Plan must include a complete analysis of existing conveyance channels, and it must also contain a detailed fluvial geomorphological assessment of channel stability for existing drainage channel throughout the proposed project development area. Evaluation of this information is critical in understanding how hydrological changes in surface water flow can result in significant accelerated erosion of the sensitive mountain slopes and channels throughout all the proposed developed areas. Localized hydrological effects of the land use changes are de-emphasized in the DEIS (Section 3.2) by presenting impacts in the context of the entire Ashokan and Pepacton reservoir watersheds. NYCDEP reviews all projects with performance criteria based on an analysis of the local impacts to water quality in addition to the overall impact.

Water Balance Study

In preliminary versions of the DEIS, fill absorption beds were included as a "key assumption for the future, post-development water budget analyses" as an additional source of infiltration (Appendix 19A, Exhibit 19A, Page 3). These absorption beds have been eliminated in the wastewater treatment design proposed in the DEIS. The switch from onsite infiltration of treated wastewater to offsite effluent discharge or golf course irrigation in the new plans must be studied further to determine the effects of reduced infiltration on the overall water budget.

The water balance study deserves significantly more detailed discussion in the DEIS. The water balance is essential for predicting how land use and landcover changes in the individual onsite watershed will impact adjacent stream water quantity and quality. Specifically, the fate and transport of nutrients and chemicals applied to the watershed is dependent upon how

precipitation runoff is routed to the channels and at what rate. One problem is that the DEIS *assumes a constant runoff coefficient (RC)* over time, assuming a constant RC is inadequate since the RC will change from season to season and with antecedent moisture conditions. This is important in that the RC is a key determinant in the volume of water that will leave the site as runoff. A better approach would be to generate site-specific RCs from annual water balances for nearby watersheds using long-term rainfall data from the New York State Department of Environmental Conservation (NYSDEC) at Belleayre Mountain and runoff data from U.S. Geological Survey gauging stations at Birch Creek, Bush Kill, Esopus Creek, etc. This is needed to estimate the variability in the RCs seasonally and over the long-term.

The water balance calculations in the DEIS relied on weather data from the Slide Mt. station. Slide Mt. has a similar elevation to the proposed Belleayre Resort, but receives from 20 to 50 percent more precipitation than Arkville (based on ±30-year average) or Belleayre Mountain that are closer to the site and may provide a more realistic estimate of runoff quantity and impact. A comparison of data from each of these gauges (see Appendix C.1) should be used to demonstrate the range of potential precipitation in the DEIS. This point is critical since it is the number upon which all other analyses in the water balance and subsequent stormwater management plan rely.

Subsurface Storm Flow Issues

Discussion of the impacts from subsurface stormflow is inadequate in the DEIS.
The DEIS (Section 3.2.1) repeatedly emphasizes the importance of infiltration as a mitigative measure. However, infiltrated water will still impact storm flow. In fact, it is well documented that subsurface storm flow is typically the dominant component of storm hydrographs in steep, forested hillslopes, i.e., those at Belleayre Mountain (the reader is directed to Hewlett and Hibbert 1965; Whipkey 1965; Weyman 1973; and Scanlon *et. al* 2000 for more information on subsurface storm flow on forested hillslopes). This subsurface storm flow component is important since it *has the ability to rapidly mobilize and transport nutrients and chemicals* within the soil to adjacent streams. This fact, coupled with the discussion in the DEIS (Section 3.1.2[A]), suggests that the effects from blasting may increase the transmissivity of the bedrock allowing subsurface stormflow to more rapidly mobilize and transport nutrients and chemicals to bedrock.

Water Quality

The following items are mentioned in the text, but not adequately detailed for further assessment of impacts to surface water quality:

1. Logging roads are mentioned in the DEIS, but no detail is given about road modifications/upgrades and erosion control measures that will be implemented during construction. As mentioned above, several existing logging roads observed onsite have caused extensive erosion of onsite stream channels, show signs of extensive erosion, or capture runoff and groundwater seeps and have become intermittent stream channels.

These conditions that have developed in conjunction with previous disturbances at the proposed project site demonstrate the very real potential for exacerbation of existing erosion problems, causing significant transport of sediments to the watershed as a result of the extensive disturbances that are part of the proposed Belleayre Resort project.

2. What are the potential impacts to water quality from winter road treatment (e.g., salt, deicer, etc.).

3. There are ***no data on infiltration capacity***, which is different than percolation. Infiltration capacity, or the maximum rate at which water can infiltrate into a soil, is a better indicator of what rainfall intensities will produce overland flow. One factor that influences the infiltration capacity of a soil is the soil surface characteristics. Obviously, a forested plateau and slopes covered with a thick layer of organic material will have a much different infiltration capacity than a mowed fairway. Any time that rainfall intensity exceeds the infiltration rate, overland flow will be produced.

4. A survey must be conducted to identify all permanent and intermittent watercourses onsite and discharging to offsite watercourses. NYCDEP staff is aware of several additional intermittent unnamed tributaries located on the Big Indian and Wildacres sites, which must be evaluated further to assess potential surface water impacts during the construction phase as well as a result of golf course turf management. NYCDEP has mapped several intermittent streams on the project site that drain wetland areas previously categorized as isolated. This information is being reviewed by the U.S. Army Corps of Engineers, New York District to reassess the jurisdictional status of these wetlands. If these wetlands are reclassified as waters of the United States, the area of wetland disturbance in the proposed project will exceed the 0.1 acres threshold for onsite mitigation and a U.S. Army Corps of Engineers Individual Permit would be required. These and other unmapped intermittent watercourses (as designated by NYCDEP) and wetlands must be shown on the site plans. Plans for disturbance or creation of impervious surfaces within 100 ft of these watercourses (as depicted by NYCDEP) and wetlands or piping, crossing, or diversion proposals should be included in the SWPPP to determine if modifications, variance, or mitigation will required.

Groundwater

The presentation of the information is inadequate to assess the reliability of the conclusions in the DEIS (Section 3.3, Appendixes 7, 19, and 19A). The discussions presented in the DEIS do a poor job of summarizing these data and the basis for the conclusions made are not readily apparent. The data are generally presented piecemeal with little or no unifying references that would allow the reader to draw conclusions. A vast amount of information and key discussions on water supply are contained in the appendixes, sub-attachments, and sub-appendixes that are difficult to navigate. There is no one place within this document where all the information is summarized in a cohesive way. The groundwater resource discussions are presented in a piecemeal fashion so that it is not clear what the *overall* impacts of this development would be

on the groundwater resources of the region. The DEIS includes no geologic or hydrogeologic cross-sections that are essential to understanding the regional groundwater characteristics, surface water connections, and interactions with the offsite water resources.

Generally, maps and figures are inadequate. For example, well locations referenced in text are shown on Figure 3-16, but are not labeled with their respective designations. Therefore, it is not possible to determine where the referenced wells are located. The DEIS requires properly labeled maps showing the locations of these features. For example, it was not possible to determine the spatial relationship between the wells used for the pump tests at the Big Indian Plateau and those associated with the Pine Hill Water Supply. A hydrogeologic cross-section through this area is crucial in understanding the relationship of these crucial water supplies. Similar analysis should occur to evaluate the Fleischmanns' water supply located adjacent to Wildacres.

The DEIS lacks a unified discussion that takes into account the cumulative effects of withdrawals for the proposed development and the Belleayre Ski Center, the Pine Hill Water Company (Bonnie View Springs), and Fleischmanns' water supply. The write-up on groundwater included in Section 3 of the DEIS (approximately 7 pages of text) does not provide an overall assessment of this cumulative usage.

Pine Hill Water Company historically has had problems with water quality, and the adequacy of its water distribution system has been in dispute. Therefore, this DEIS requires a more thorough analysis and discussion on the proposed Belleayre Resort's potential impact on this critical water supply source. On a regional basis, how does the potential Belleayre Resort usage affect the overall water usage scenario? What alternate water supplies exist for Pine Hill? Does the proposed development hinder Pine Hill Water Company's ability to expand their water usage to meet *future* demand? Although the DEIS concluded that there was no impact to the Pine Hill Water Supply based on a 72-hour pump tests, a thorough understanding of the bedrock fracturing system is needed to establish that there will be no impact to this resource. Again, the report needs to include hydrogeologic cross-sections showing the relationship of the onsite wells to the Pine Hill Water Company springs and wells.

Big Indian Plateau

The eastern portion (Big Indian Plateau) will use wells RW-1, RW-2 (188,080 gpd), and Silo A (99,792 gpd) spring (backup only) for its water source. RW-1 will be used to fill the retention ponds for irrigation and RW-2 will be used for potable water supply to the proposed Belleayre Resort. These sources are upgradient of the Pine Hill Water Company water supply.

Section 3.2 states that the daily flow for the proposed non-potable uses will include irrigation water for the golf course fairways and putting greens but goes on to state the amount needed will "vary depending on weather conditions, particularly temperature and rainfall." Given the potential magnitude of this water supply, a more detailed assessment is warranted.

Pump tests were qualitative in nature. Long-term pumping projections were based solely on straight-line projections on semi-log plots. Residential wells measured during the pump test were hydraulically upgradient and in the opposite direction from the Pine Hill Water Supply. Only Residential Wells 3 and 4 are completed in bedrock. Residential Well 3 was artesian and, thus, was not monitored in a quantifiable way. Therefore, the conclusions on well yield and the effects of pumping on nearby bedrock water supplies are based *solely* on data collected from one upgradient bedrock well (Residential Well 4). This is critical, as the report concludes no adverse effects on this resource when the greatest drawdown (18 ft) was observed during the test occurred at this location.

The other wells monitored were overburden wells. There were no downgradient bedrock wells monitored between the pump test location and the Pine Hill Water Company supply wells. The Station well and the Pine Hill Water Company wells were monitored during the pump test. The Station and PH-1 wells were located 6,000 and 7,400 ft, respectively, away from the test wells. Therefore, a 6,000-ft data gap exists between the test location and the area of significant concern regarding potential impacts.

During simultaneous pumping of R1 and R2, Residential Well 4 had significant drawdown (18 ft) during the pump test although Residential Well 1 showed no effect and was less than half the distance away. These results are inconsistent with those determined during the R2 only pump test; the cause of this observation must be evaluated. This finding is significant as Residential Well 4 is located approximately 1,600 ft away from the pumping wells that, in turn, are located 6,000 ft from the Pine Hill Water Supply. Since no observation wells were located downgradient, it is not be possible to rule out a hydraulic connection to the Pine Hill Water Supply based on this test. Generally, the observation wells were aligned in a straight line so anisotropy (i.e., differences in aquifer conditions with direction of flow) could not be readily quantified. The orientation and connection of subsurface bedrock fractures is not discussed in the DEIS. The orientation of these fractures must be established especially in relationship to the downgradient Pine Hill Water Supply sources.

Based on a preliminary review of the pump test data, an inflection or change in slope was noted in the graphical presentation of data from well R2. An inflection of this type indicates a change of well recharge conditions at a drawdown of approximately 40 ft. The DEIS should evaluate the significance of this change in well recharge. A similar inflection noted on the recovery data for this well reinforces the conclusion that significant changes in recharge characteristics of this well occur during active pumping. Again, hydrogeologic cross-sections depicting the overburden, location and depth of the wells monitored, and thickness of hydrogeologic units need to be developed. Well elevations may also be useful in understanding why Residential Well 3 is artesian. If no boundary conditions were encountered or suspected during the pump tests, then this must be clearly stated. A boundary effect can have serious impacts on well yield and, thus, must be further discussed and evaluated.

Wildacres Estate/Highmount Golf Club

The proposed Belleayre Resort plans to utilize the Village of Fleischmanns' excess water capacity to meet the potable water supply requirements of this development. The treated wastewater will be utilized for golf course irrigation. Although present, the current wells and springs are not considered a significant source of potable water but may be utilized to supplement the water supply. The Village of Fleischmanns' water supply requires upgrades although it is cited as the major source of potable water for the western (Wildacres/Highmount) portion. A more detailed discussion is warranted documenting the future anticipated needs of the Village of Fleischmanns. Does the Village have a master plan? What is the ultimate build-out? Will the proposed Belleayre Resort impose limits on growth in Fleischmanns by way of reducing excess water capacity? This is especially important because the Village of Fleischmanns will be constructing a wastewater treatment plant within the next 2 years. Many of the currently closed hotels and businesses are likely to re-open or expand and it is expected that the water usage will increase with new sewers and a wastewater treatment plant in place. The proposed 146,000 gpd State Pollutant Discharge Elimination System (SPDES) Permit for the proposed wastewater treatment plant includes flow from these closed facilities. This increase in water usage is not addressed in the DEIS.

Section 3.2 of the conceptual design report states that the daily utilization for the proposed non-potable flow will include irrigation water for the golf course fairways and putting greens but goes on to state the amount needed will "vary depending on weather conditions, particularly temperature and rainfall." Given the potential magnitude of this water utilization, a more detailed assessment is warranted.

The relationship between disposal of treated wastewater and golf course irrigation is not clear in the construction phasing for this project. It would appear that a significant need for irrigation to support establishment of the golf course turf would occur before any significant flow of effluent from the wastewater treatment plant will be available. The seasonal water demand for this golf course is not clearly described in the DEIS.

Additional Issues Related to Groundwater Resources

There was little if any discussion regarding the potential for excess supply of water to the irrigation ponds. No information on the stormwater management function of those ponds and the associated design of outfall structures for the irrigations ponds is provided in the DEIS, nor is there any discussion of how overflow will be handled from these ponds.

The pesticide Groundwater Monitoring Program and draft SPDES permits identify four existing wells that will be used for monitoring purposes. At least three of four are installed into bedrock 400-700 ft below the golf course. These well are inappropriate as groundwater monitoring locations for assessment of impacts to ecological receptors or quality of groundwater and surface water resources. It would be more appropriate to monitor runoff to surface waterbodies and infiltration to the shallow overburden as those would be the main migration pathways for ecological impacts and groundwater discharge to downgradient streams.

Blasting of approximately 374,600 yd^3 of material is proposed. The DEIS evaluation of blasting impacts (Section 3.1.2, A) relied solely on studies performed elsewhere where blasting was found to have a beneficial effect on groundwater supply. No site-specific information is provided in the DEIS and no comparison was made or literature cited for sites where blasting has had an adverse effect on groundwater supply/quality.

Water conservation measures and the anticipated degree of their effectiveness are integral assumptions for water usage analysis in the DEIS. Therefore, these measures must be specified and their efficiency evaluated; backup data to support assumptions of effectiveness should be provided.

There is 120 million gal of usage (in a 5-month season) for the snowmaking activities at the Belleayre Ski Center. This water is withdrawn from Pine Hill Lake (capacity 27 million gal) at a maximum rate of 4,000 gpm. The water drawdown in Pine Hill Lake was characterized to be less than 2 ft based on a conversation with the Superintendent of the Belleayre Ski Center and has not been confirmed from operational records. The conclusion that this "clearly suggests that the recharge rate for the reservoir from combined springs and creek sources is adequate to accommodate the Ski Center's draw" needs further evaluation and supporting data. Questions as to whether a 2-ft drop is significant and whether increased withdrawals from the new development will aggravate this drop and to what extent have not been addressed.

Terrestrial and Aquatic Ecology

The seasonal timing and low frequency of the avian surveys conducted does not provide good seasonal species composition data for the site of the proposed Belleayre Resort. Spring is generally designated to be the months of March, April, and May; Summer as June, July, and August. However, spring migration can continue through the early part of June. In New York State, nesting and rearing of young occurs through June, July, and early August with most species fledging their young by August (New York State Breeding Bird Atlas [Andrle and Carroll 1988]). Because the surveys conducted for the project only occurred in May and early June, it would be difficult to ascertain many resident species in the project area from migrants moving through on their way further north. Random search provides basic information on species present during the survey; however, at least for some species of concern, additional time in the field targeting specific microhabitat would have helped support the assumptions presented in the DEIS.

Percent of avian species by habitat should also be presented to reflect the percent of each specified cover type in the project area to more specifically relate species to habitat available and indicate the relative importance of various habitat types.

The discussion of effects of forested landscape vs. fragmented landscape on American redstart that then segues into a discussion of 3,000-ft elevations and the larger context of the regional landscape is weak and incoherent. Bicknell's thrush, blackpoll warbler, and other higher elevation species are not likely to be significantly affected by the project; American redstart nest below 3,000 ft. It cannot be concluded with any certainty that the fragmentation of the forested

area within in the footprint of the project will not impact the neotropical and other breeding bird species that would nest in the area. Many, if not most, of the species listed on the observed species list (particularly the Summer list) are neotropical migrants that utilize the forest interior for nesting (Terres 1991). It should be acknowledged that some fragmentation of the forest would occur and could potentially disturb or displace some avian nesting species.

Avian species of special concern (rare, threatened, and endangered) are identified from scoping sessions held prior to the DEIS preparations. Habitat does exist at the project site, however, no individuals of species noted (red-shouldered hawk, Cooper's hawk) were observed. The infrequency of field visits conducted for the DEIS does not provide enough data to determine presence/absence or residence of the species. The NYSDEC has indicated that there is indeed appropriate habitat at the project site. The DEIS should document the amount and distribution of the appropriate habitat cover on the site and within the development footprint.

Bull's Birds of New York State (Levine 1998) notes that there has been a decided increase in nesting red-shouldered hawks in more heavily wooded upland regions statewide even though the species is generally more closely associated with moist hardwood forests, bottomlands, and mixed coniferous-deciduous forests noted by Johnsgard (1990). Bull's Birds of New York State (1998) and the New York State Breeding Bird Atlas (1988) both note that Cooper's hawk is widespread, but uncommon in the state as a breeding species. Bull's (1998) further notes the species can be easily overlooked in the woods and the Atlas notes that Cooper's hawk nests are difficult to locate. More frequent visits over the various seasons would have provided more accurate information for evaluating residence and possible nesting of Cooper's hawk.

Aquatic resources received cursory attention in the DEIS, considering the significance of fishery resources in the region and that aquatic biota can provide a direct indication of local as well as regional changes in watershed land use and water quality and quantity. Aside from a species list, no analysis of the results of the NYCDEP invertebrate sampling program is provided to adequately document existing baseline conditions in surface waters onsite and downstream.

NYSDEC electrofishing survey methods have a very targeted objective to provide data for population management decisions related to the trout stocking program and stream classification decisions. As such, the primary emphasis is on the collection of information related to density and age structure of trout populations; capture efficiency for other fish species may be less than adequate for the purpose of an ecological impact assessment.

Several of the streams that cross the project site or are immediately downstream of the project are presently classified for trout spawning or have been recommended for future reclassification to that designation. Considering that naturally reproducing trout populations may be present in this aquatic habitat, it would be appropriate to conduct a more detailed evaluation of fish and aquatic invertebrate communities and habitat conditions in those streams to establish baseline conditions against which to monitor future changes/impacts. Surveys should document the food chain that supports the trout populations at the top of the trophic structure, including aquatic invertebrates and forage fish. In particular, trout spawning habitat can be significantly impacted as a result of deposition of fine sediments and embedding of coarse gravel riffle habitat.

Representative reaches of streams downstream of the proposed Belleayre Resort should be characterized as to substrate conditions in order to document existing potential spawning habitat. This information would also provide a baseline against which to measure potential sedimentation from runoff of suspended sediment from the site during construction. In addition, the fluvial geomorphology of watercourses must be evaluated in areas where clear-cuts of the riparian area are proposed for fairway development. This aspect of the project may affect bank erosion and thermal impacts that can degrade trout habitat onsite and offsite.

The discussion of wetland habitat onsite is presented solely in terms of state and federal jurisdictional wetlands. While this may be appropriate for determining permitting requirements and the need for avoidance, protection, and mitigation, it is not appropriate for an assessment of environmental impact to aquatic and terrestrial resources that may result from the proposed Belleayre Resort. The environmental assessment must take into account the relative individual functions and local significance of smaller, more unique habitat areas within the project boundaries rather than diluting their importance relative to the spatial dominance of the mixed deciduous forest cover. Given that several wetlands classified as isolated in the DEIS may be re-evaluated as waters of the United States, the amount of fill proposed for jurisdictional wetlands in the DEIS will increase above the 0.1 acre threshold for a U.S. Army Corps of Engineers Individual Permit and onsite mitigation. Considering the size of the Belleayre Resort property, there should be adequate opportunity to avoid impacts to small jurisdictional as well as isolated wetlands. Since most of the undeveloped land in the proposed Belleayre Resort has steep slopes and cannot feasibly be developed, there is probably minimal opportunity for onsite mitigation if wetland impacts are not avoided.

AIR QUALITY AND TRAFFIC PATTERNS

Air Quality Analysis

Throughout the air quality analysis, the 1998 air quality data were used. It is recommended that the conclusions of the analysis reflect recent data. The 2002/2003 monitoring data are available on the U.S. Environmental Protection Agency's Air Quality System database that is accessible through the Airdata Website (www.epa.gov/air/data). Furthermore, the 1999 county-wide emissions of all the criteria pollutants, segregated by source type and facility name, are available on the U.S. Environmental Protection Agency's National Emission Inventory system database that is also accessible through the Airdata website. To better characterize the affected environment, the DEIS could have shown the monitored air quality data as well as the county-wide emissions data along with National Ambient Air Quality Standards.

These existing data could have been the baseline data against which all subsequent impact levels could be compared. Furthermore, the scoping document requires the inclusion of the summary of the existing local climate and air quality data in the DEIS.

In terms of air quality, this project presents two levels of impacts: the short-term construction-phase impacts and the operation-phase impacts. It is imperative that the impact/effect analysis of the construction phase and the operational phase of the proposed projects be conducted and

presented separately in the DEIS. The extended construction phase may adversely affect air quality in the vicinity of the resort particularly from the extended use of diesel construction equipment and vehicles and operation of the rock crusher plant. For instance, based on the total land area that would be disturbed and the duration of construction, the total suspended particulate emissions may be high in the vicinity of the project area. In addition, these total suspended particulate emissions may be transported to long distance locations during periods of favorable meteorological conditions.

The air quality analysis presented the impact of the construction activity through the estimation of emissions of three construction equipment scenarios and the atmospheric dispersion modeling of these emissions. The impacts of the other construction equipment were not provided nor were their cumulative effects. The characteristics and approximate numbers of the project construction equipment may be obtained from similar construction projects or typical literature data. The National Institute of Building Sciences databases, for instance, would be very good resources to explore.

It is recommended that the construction-phase emissions be quantified, including emissions from land disturbance (particulate only), construction equipment, and construction traffic. The operation-phase emissions should also be quantified, including emissions from traffic (both roadway and parking lots) and other sources such as wastewater treatment plants (i.e., odor), furnaces, woodstoves, and golf club maintenance equipment (non-road sources). These emissions could be totaled and compared to the existing county total to infer if adverse impacts would occur. Since most of the internal traffic during operation will be shuttle bus traffic and associated satellite parking lots, it would have been useful to know their percent contribution to the air quality impacts.

If adverse impact occurs, it is necessary to classify the level of effect in order to define the appropriate level of mitigation. Therefore, the definition of threshold criteria (negligible, minor, moderate, major impact) against which to determine if an adverse impact occurs would have been beneficial. It would also be important to know the duration and frequency of impacts.

Traffic Impact Study

The analysis needs to be expanded to include the short-term impacts of the construction phase of the project since the vehicle mix (i.e., presence of many heavy-duty vehicles), trip, and road types would be very different from those of the traffic during operation of the resort. In fact, the vehicle mix would prompt consideration of PM_{10} in the air quality analysis.

The effect at selected intersections in the Towns of Middletown and Shandakan should be analyzed since it is concluded in the DEIS that the region will grow economically as a result of the presence of the resort and that local vendors would benefit from the resort's visitors. Therefore, traffic will undoubtedly increase in these towns.

EA suggests that information about traffic volume be expressed on a per hour basis. The per minute basis is meaningless as the traffic flow is not steady. It is also imperative that the references relative to the assumptions used in the analyses be detailed (e.g., 3 percent increase per year in background traffic; 50 percent of the peak hour trips generated by the resort will be to and from Belleayre Ski Center).

STORMWATER, EROSION AND SEDIMENTATION, AND WASTEWATER

A preliminary review of the adequacy and age of the data used in preparation of the DEIS for the Belleayre Resort at Catskill Park project was conducted. This preliminary review focused on the stormwater, erosion and sedimentation, and wastewater aspects of the project.

Permits

All relevant permits and approvals pertaining to stormwater, erosion and sedimentation, and wastewater appear to have been identified and listed. In addition, drafts of some of the necessary submittals have been prepared and are included in Appendix 2. As the Big Indian and Wildacres portions of the project site fall within different NYSDEC regions, the draft State Pollutant Discharge Elimination permits should be reviewed for consistency among Special Conditions, monitoring, and discharge limit requirements. Other permit applications, however, have yet to be prepared. For example, those for the Ulster County Health Department and Ulster County Bridges and Highways Department have yet to be prepared, but will be completed as part of the development process. Therefore, data review of these permits may be completed at that time. The Stormwater Pollution Prevention Plan has not been submitted to NYCDEP for review and approval at this time. In addition, NYCDEP has not had an opportunity to provide a jurisdictional determination regarding the scope of the regulatory requirements under the Watershed Regulations. Although NYCDEP has not been requested to make a jurisdictional determination for watercourses, they have had an opportunity to map intermittent watercourses at both the Big Indian and Wildacres sites that drain/flow through wetlands classified as isolated in the DEIS. NYCDEP has provided a map of these watercourses to the U.S. Army Corps of Engineers for a jurisdictional review of the status of these wetlands. The DEIS does not accurately identify the entire scope of regulatory jurisdiction applicable to the project (in particular that held by the NYCDEP), nor does it identify the relevant land use restrictions contained in the Watershed Regulations.

Erosion and Sedimentation

DEIS Page 3-45 states that during construction, "*Each sediment basin will be dewatered after storm events using an environmentally-friendly flocculent treatment to reduce turbidity levels…prior to diffuse discharge into adjacent undisturbed areas.*" This presents a problem in that detention basins are needed most in the spring, during times when the ground is saturated and the soil storage capacity is minimal. The proposal to treat and pump out the temporary detention basins between storm events is not an adequate control for construction runoff, particularly during seasonal periods of peak precipitation (see Appendix C.2). Extended periods of heavy precipitation or short intervals between storms may not provide adequate time for

settling, treatment, and discharge of stormwater from the detention ponds. This may risk uncontrolled overflow from the ponds or the necessity to pump untreated water from the ponds to provide capacity. In addition, discharge of construction phase stormwater to adjacent undisturbed forested slopes via level spreaders and filter socks is likely to cause deposition and erosion of sediments in these forested areas and possible transport to adjacent natural drainage channels.

Temporary sediment basins should not be emptied in preparation for impending storm events as proposed (Appendix 1, Page 3-28; Appendix 11, Pages 16 and 19; also Appendix 11, Page 31). This practice will cause scour and resuspension of previously trapped material. Each pond must always retain the minimum design water level necessary to assure velocity dissipation and provide an environment that allows settling of fine construction-related sediment.

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