

Appendix C.2

Analysis of Impacts Associated with Erosion and Sedimentation at the Proposed Belleayre Resort



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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 – Subtask C.2, Deliverable No. 3 Analysis of Impacts Associated with Erosion and Sedimentation at the Proposed Belleayre Resort
EA Project No. 14112.01

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INTRODUCTION

This Technical Memorandum summarizes EA's Analysis of the Draft Environmental Impact Statement (DEIS) for the Belleayre Resort at Catskill Park (Belleayre Resort) relative to impacts associated with erosion and sedimentation (E&S). This review focused primarily on the adequacy of proposed E&S controls to ensure prevention of water quality degradation. Consistency with the New York Guidelines for Urban Erosion and Sediment Control (New York E&S Manual) and the New York State Stormwater Management Design Manual (NYSDEC 2001) was evaluated.

EROSION AND SEDIMENTATION ANALYSIS

The developer must obtain a State Pollutant Discharge Elimination System (SPDES) permit to construct the project because the total disturbed area of the project is greater than 1 acre. Stormwater management criteria, which must be met for New York State Department of Environmental Conservation (NYSDEC) review of this project, are established in the New York State Stormwater Management Design Manual (2001), related to the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-02-01) (2002). The stormwater discharges from the site are subject to SPDES permits for both the construction and the operational phases. The SPDES permits require development of a Stormwater Pollution Prevention Plan (SWPPP). The permit applications and proposed SWPPP are included in the DEIS. The maximum area of disturbance typically permitted under these regulations is 5 acres. The applicant, proceeding based on an oral exchange at a meeting with NYSDEC, has submitted plans showing up to 25 acres of disturbance.

Considering the extent of disturbance proposed during construction, it is essential that a rigorous E&S Control Plan be implemented in order to assure protection of surface water quality. This is of particular concern for the Big Indian and Belleayre Highlands portion of the project located in the Ashokan watershed because Ashokan Reservoir has been listed as a Section 303(d) impaired water by NYSDEC due to excessive loading of silt and sediment.

At such time as this project receives approval and is permitted by NYSDEC, the SWPPP will be subject to review, approval, and permitting by the New York City Department of Environmental Protection (NYCDEP) consistent with the *Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources* (Watershed Regulations) (NYCDEP 2002). Under this review the project will be required to comply with conditions of the Phase I General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-93-06).

Requirements for the SWPPP include compliance with the New York E&S Manual and the New York State Stormwater Management Design Manual. The DEIS, including a Draft Construction SWPPP, was evaluated to determine the adequacy of the proposed erosion and sediment control measures during construction.

The review of the E&S controls for the project focused on Chapter 3 of the DEIS; Figures 2-28 and 2-29; Figures 3-1 through 3-15 S; the LA Group Plan Sheets SD-1 through SD-15S; PH-1 through PH-3; CP-1 through CP-18; and Appendixes 9, 10, and 11.

SPECIFIC COMMENTS

Sediment Erosion

1. Table 3-1 of the DEIS indicates that a net cut will occur in Phase 1 of the development and net fill throughout the other phases. It is also stated in Section 3.2.3.C.8 of the DEIS that disturbed soil or soil stockpiles not worked on for a period of 14 consecutive days will be stabilized. The DEIS must provide a stockpile management plan for all stockpile areas showing the location of the proposed stockpile or stockpiles and the associated E&S controls which will be utilized. Stockpiles should be created only on relatively flat land employing E&S controls and filter strips between stockpiles and steep slopes. With the maximum disturbed surface allowance proposed to be increased from the regulatory standard of 5 acres to up to 25 acres, a more rigorous use of temporary stabilization, beyond hydroseeding with ryegrass and mulch, should be considered. The stockpile areas must be included in the tabulations of disturbed areas in each phase. A specific E&S Control Plan and SWPPP designs must be prepared for these areas.
2. The DEIS does not provide adequate information about E&S controls that are necessary for significant cut and fill associated with road construction across the head of Giggle Hollow between Big Indian Plateau and Belleayre Highlands. The proposed Giggle Hollow Road would be approximately 4,000 ft long approaching Giggle Hollow stream from the Big Indian Plateau; a continuous swale parallels the uphill side of the road for

this entire length, then discharging to Giggle Hollow stream. Road cuts and golf course fill for Fairway 16 will create a disturbance approximately 260 ft long on a slope of 60-70 percent along the Giggle Hollow Road. In addition, stormwater treatment was not provided at western portion of Big Indian site. Specifically, lodges 53 through 55 and portions of Fairways 16, 17, and 18 drain to a point directly above this access road with no controls. Flow control and velocity dissipation structures, swale dimensions and lining, and discharge structures should be detailed in the DEIS. This swale will capture and transport significantly more water to the head of Giggle Hollow stream than under pre-construction conditions. The DEIS should also provide complete and detailed analysis and design information for temporary and permanent erosion and sedimentation controls in these areas. Special construction sequencing must be developed to account for groundwater seeps likely to be exposed along road cuts and prevent erosion and transport of sediment into surface waters of the Ashokan watershed.

3. E&S controls are not adequate in areas where temporary construction sediment ponds will be pumped out and in areas proposed for level spreader discharges from stormwater control structures. The DEIS states, “...*forested buffers, ranging from 700 to 2,000 feet offer important and tangible stream protection as well as other erosion and sediment control measures.*” Natural, vegetated buffers and constructed vegetated filter strips are useful tools for watershed protection. However, use of undisturbed, forested land is not an acceptable S&E control measure, particularly on steep slopes. Eroded sediments can be carried through forested buffers to adjacent watercourses, particularly where pre-development stream channels exist as throughout this site, creating an ongoing source of suspended sediments to those watercourses. Appropriate E&S control structures should be implemented in these locations to prevent transport and deposition of sediments into adjacent forested buffers.
4. The DEIS must state that if any erosion control Best Management Practices fail to operate as designed, remedial measures would be implemented immediately. A protocol must be proposed for routine and rigorous inspection of Best Management Practices, implementation of stop work orders and corrective measures, and notification of NYCDEP and NYSDEC enforcement staff. Examples of potential remedial measures and appropriate applications should be provided in the E&S Control Plan.
5. It is essential that the wastewater treatment plant outfall pipes be designed to prevent erosion of receiving water banks and beds. Designs for outfall pipes from the wastewater treatment plant (refer to Figures 3-15, E2, E3, and E4) should include supporting calculations that show that the wastewater treatment plant effluent entering the stream from the 6-in. diameter pipe will pass over the riprap and be lower than erosive velocity when exiting. Also, based on slope of bank, the rock outlet protection may not meet New York standards for E&S (refer to Rock Outlet Protection Detail of New York E&S Manual). The design should consider additional velocity dissipaters or relocation of the end of the discharge pipe.

6. The DEIS proposes a pump and treat system using Chitosan to reduce turbidity in construction stormwater ponds prior to discharge. We would recommend bench-scale testing specifically enlisting the proposed application technique to demonstrate the effectiveness of Chitosan for the site soil types at the proposed Belleayre Resort. Tobiason et al. (2001) reported on a comparative study on the use of Chitosan and chemical polymers for turbidity reduction from construction sites. The Chitosan product was found to be ineffective in that study. Tobiason et al. examined direct spray application of the control materials to the exposed soil surface to prevent/minimize mobilization of fine soil particles in runoff. The application methods differ from those proposed for the Belleayre Resort construction, therefore, this study may not be directly applicable to the Belleayre Resort. Proposed application methods and rates must be specified in the SWPPP.
7. Each potential generic E&S control technology is associated with a appropriate range of slopes for application in the chart on Drawing CP-16 in the DEIS. The slopes labeled on the LA Group Plan Sheets SD-1 through SD-15S do not correspond to specific slope ranges shown in the chart on Drawing CP-16. The proposed E&S technology for a given location is not readily apparent by comparing the Plan Sheets SD-1 through SD-15S with the chart on CP-16. It cannot be determined whether the applicant is proposing appropriate technologies for the observed slopes at a given location. The DEIS should identify the specific E&S control technology(ies) proposed for each location. This will assure that the technologies proposed are adequate to prevent and control erosion and sedimentation on the steep slopes throughout the construction period at the proposed Belleayre Resort.

Other Construction Related Issues

1. Appendix 10 states that the annual phosphorus export from the project site will increase from 0.14 kg per acre to 0.23 kg per acre during construction (3 years). In fact, NYCDEP's data from Giggle Hollow shows a growing season phosphorus export coefficient of 0.028 kg/ac/yr (table in Appendix C.1). Although it is stated in the DEIS that phosphorus export will return to near pre-development levels using stormwater controls during operational phases, this statement accepts that even the applicant's own high estimate of pre-construction loads will not be achieved by the post-construction control program (Appendix C.1). The net increase in phosphorus loading during both construction and operational phases is not in compliance with guidance for stormwater permitting in the NYCDEP watersheds and must be mitigated completely. This unmitigated impact must be realistically described and analyzed as to its significance pursuant to State Environmental Quality Review Act.

2. Sections 2.3.1.A and 2.3.1.B of the DEIS also state that crushed stone generated in one construction phase will be stockpiled in areas scheduled for construction in subsequent phases. Stockpiles placed outside of the ongoing construction (disturbed) area should be included in the calculations for areas of disturbance. Again, the DEIS should include a stockpile management plan for these stockpiles (i.e., locations, tree clearing, E&S controls).
3. Section 3.3.2.C.3 of the DEIS indicates that centerline clearing (Step 2) will be performed before construction access and perimeter control is established (Step 3). Perimeter E&S control should be established before disruption of the ground surface begins. Recommend switching Steps 2 and 3.
4. Gravel/sand check dams are detailed on Sheet CP-18, but because of steep slopes and long runs, rock check dams are the only option appropriate for control of erosion in concentrated flow conditions. Temporary gravel/sand control structures can be subject to washout and cause erosion from flow diversion under stormflow conditions and are not in accordance with the New York E&S Manual. The DEIS does provide for rock check dams at some locations and must be designed to replace all proposed gravel/sand control structures.
5. The DEIS must specify the controls for dust from all construction activities (i.e., hauling, grading, blasting, etc.) throughout the site in addition to those for the rock-crusher and the concrete batch plant as discussed in Section 3.2.2.D.
6. On the SD Drawings, hatch patterns (diagonal lines) need to be identified. An example location is Reach 200 to Design Point 1 on Drawing SD-1.

REFERENCES CITED

New York Guidelines for Urban Erosion and Sediment Control (NY E&S Manual). 1997.

New York City Department of Environmental Protection (NYCDEP). 2002. Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of The New York City Water Supply and Its Sources, May 1997. Modified 30 June.

New York State Department of Environmental Conservation (NYSDEC). 2001. New York State Stormwater Management Design Manual.

Tobiason, S., D. Jenkins, E. Molash, and S. Rush. 2001. Polymer use and testing for erosion control on construction sites. Erosion Control (January/February), http://www.forester.net/ec_0101_polymer.html.