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Alexander B. Grannis
Commissioner

May 13, 2010

Mr. John P. McAuliffe, P.E.
Program Director, Syracuse
Honeywell
301 Plainfield Road, Suite 330
Syracuse, NY 13212

Re: Onondaga Lake Bottom Subsite – Onondaga County, NY
Draft Onondaga Lake Sediment Consolidation Area (SCA) Civil and Geotechnical Final Design Submittal
January 2010

Dear Mr. McAuliffe:

We have received and reviewed the above-referenced document, which was transmitted by your January 21, 2009 letter to my attention, and we have enclosed comments that we generated based on our review of the document. Please provide us with a letter containing responses to our comments, as soon as possible, such that our comments can be appropriately addressed in the Sediment Consolidation Area (SCA) Civil and Geotechnical Final Design. In addition, please distribute the Draft Onondaga Lake Sediment Consolidation Area (SCA) Civil and Geotechnical Final Design Submittal, including a copy of this letter and the enclosed comments, to the various document repositories as discussed in the governing consent decree.

If you have any questions relating to our enclosed comments, or would like to set up a meeting to discuss the enclosed comments, please contact me 518-402-9768.

Sincerely,

Timothy J. Larson, P.E.
Project Manager

Encl.

ec: B. Israel, Esq, - Arnold & Porter
J. Gregg – NYSDEC
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Comments on the "Draft Onondaga Lake Sediment Consolidation Area (SCA) Civil and Geotechnical Final Design" Prepared by Parsons and Geosyntec Consultants for Honeywell, January 2010 and Draft Comments on Honeywell's Responses to NYSDEC Comments on the "Draft Onondaga Lake Sediment Consolidation Area (SCA) Civil and Geotechnical Initial Design Submittal"

General Comments

G.1. Comments associated with this design document only relate to the civil and design aspects of the SCA design itself and do not address any operational aspects of the SCA design (e.g. filling of Geotextile tubes, SCA effluent temporary storage basins, debris storage area, slurry pipeline, water treatment plant, etc.). Comments associated with the operational aspects of the SCA will be addressed through our comments on other design submittals such as those associated with the Sediment Management Design.

G.2. NYSDEC and Honeywell will need to discuss aspects of the operation of the SCA that may influence the SCA Civil and Geotechnical Design. NYSDEC needs a better understanding of the operation of the SCA before the SCA Civil and Geotechnical Design is finalized.

G.3 Response to Comment 4.7 – While the report describes the efficiency of the liner system, additional discussion must be provided on how groundwater will be protected at the site. It is suggested that a separate section of the report be written to discuss how the SCA is protective of the groundwater and meets the provisions in Part 360-2.14(a). The discussion should include, but not be limited to the permeability of the underlying Solvay Waste, depth to groundwater, groundwater monitoring network, efficiency of the liner system, liquids management system and the final cover system.

G.4. Response to Comment 5.2 – The Department believes it is appropriate to construct a test pad for the low permeability soil layer and requests a work plan be submitted to the Department for its review and approval detailing the test pad construction and CQA testing of the low permeability soil layer demonstrating its ability to reach the necessary permeability. Also, please provide the source of the clay to be used for the low permeability soil layer.

G.5. A drawing showing the surface water management plan must be provided for the final cover system ultimately selected.

G.6 The final design report should have the appropriate PE certification consistent with NYSDEC's DER-10 guidance.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Paragraph numbering typically includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

1. Page ES-3, Paragraph 1, Executive Summary. It is incorrectly stated that the ROD identified Wastebed 13 as the preferred SCA location. The FS report assumed that the SCA would be constructed on Wastebed 13 based on its capacity, as well as other factors. However, according to the ROD, "the actual Solvay wastebed location(s) on which the SCA(s) will be constructed will be determined during the remedial design and be based on an evaluation of the potential impacts on the local community, geotechnical stability of the wastebeds, SCA construction requirements, wastebed size, the means for transporting dredged materials to the SCA, costs, etc." Wastebed 13 was identified as the preferred location following completion of the siting evaluation in September 2006 as documented in NYSDEC's October 2006 Fact Sheet. The text should be revised accordingly.

2. Page 4-5, Section 4.2.5. NYSDEC's Comment 4.3 on the SCA Civil and Geotechncial Initial Design Submittal (IDS) stated that *"The overall operational requirements of the SCA and geotextile tube placement process needs to be discussed in more detail in future design documents. These operational details need to be comprehensive such that they detail the day-to-day operational processes associated with: the hydraulic dredge delivery system; the proper filling and sequencing of the geotextile tubes; and other operations associated with monitoring and maintaining proper settlements, and placement of bulky or other materials in the areas of the SCA, as was discussed in our previous meetings."* Honeywell's response states that *"The overall operational requirements for the SCA will be submitted as part of other documents. For example, the Sediment Management Intermediate and Final Design documents will contain details regarding the hydraulic dredge delivery system, and Construction Work Plans will contain the description of the filling and sequencing of geotextile tubes and the pumping system to be used to transfer geotextile tube filtrate, consolidation water, and precipitation from the SCA to the Water Treatment Plant.*" Since these operational considerations, including the filling and sequencing of geotextile tubes, can have a significant impact on settlement and drainage, the revised SCA final design should include the statement in the response which should also state that the Construction Work Plan documenting these items will be submitted prior to or with the Sediment Management draft final design.

3. Page 4-8, Paragraph 2, Section 4.3.1.3. It is stated that the overall Wastebed 13 perimeter dike has an appropriate factor of safety resulting from the SCA. Although there is a reference to Appendix G, the text here should include a summary of the magnitude of the factors of safety for comparison to the target factors along with a discussion of the potential range in the factors of safety based on assumptions in the stability models (e.g., water level beneath the SCA, water level in the perimeter dikes, strength parameters of underlying soils/Solvay waste) and also due to potential increases in the height of the SCA for additional cover material.

4. Page 4-10., Section 4.3.3, Composite Liner and Liquids Management System Design – This section details the 18 inch minimum low permeability soil component of the liner system in the sump areas. The entire 18 inches should have a compacted permeability less than or equal to $1x10^{-6}$ cm/sec. In addition, due to the larger footprint of the sump area then that portrayed in previous submissions the sump areas should be augmented by a layer of GCL placed directly under the geomembrane in the sump areas [should be included in the sump liner design] (to elevation 430 limits).

5. Page 4-12, Paragraph 4, Section 4.3.4. The design of surface water management associated with SCA construction, operation, and post-closure will be addressed as part of the Sediment Management Design and the Stormwater Pollution Prevention Plan and therefore is not commented on as part of the SCA Civil and Geotechnical Design.

6. Page 5-1. Paragraph 4, Section 5.4. Although this summary discusses the general locations of the monitoring wells, the revised report should also include a summary of the monitoring (sampling) frequency during operations and post-closure along with a summary of the analytes. The text should also indicate how that data will be distributed to NYSDEC and the public along with any response actions and contingency measures in the event of significant increases in contaminant levels.

7. Appendix E, Drawing C-003 (Note 8) and Drawing C-019 – The purpose of the Temporary Liquid Conveyance Culverts needs to be discussed with NYSDEC as the culverts appear to be inappropriately based on either a storm water management approach or a geotextile tube drainage water management approach.

8. Appendix E, Drawing C-003. Note 7 indicates that the fill soil in the 1-acre test pad area should be removed. The note should also state that any instrumentation (e.g., settlement plates, piezometers, inclinometers) should also be removed so as not to impact the liner system.

9. Appendix E, What are the capacities of the sumps?

10. Appendix E, Drawing C-007. The text in the last two sentences in Honeywell's response to NYSDEC's Comment E.10 on the IDS related to trouble shooting and contingency measures prior to sediment placement should be included on the drawing or in the text of the report. In addition, there should be some discussion of the contingency in the event of instrument failure during sediment placement.

11. Appendix E, Drawing C-007. There is a broad area with flat bottom slopes (and top of low permeability liner slopes) in the Phase II cell between Profiler 1 and Profiler 2 that has no instrumentation. It should be explained how settlement of this area will be evaluated during construction and operations to insure proper drainage without slope reversal of the liner system.

12. Appendix E, Drawing C-007. To address NYSDEC's Comment G.3, four settlement inclinometers have been added. Since, as per Note 8, SI-G1 and SI-G2 would be demolished

during construction of the Phases II and III liners, respectively, an additional inclinometer should be added outside the berm to the east or south.

13. Appendix E, Drawing C-008. There appears to be a greater amount of settlement than what was shown in this drawing in the IDS. The reason(s) for this increased settlement should be discussed with NYSDEC.

14. Appendix E, Drawing C-009. In the anchor trench detail, the Department recommends welding the end of the sacrificial geomembrane to the end of the geomembrane liner in the anchor trench. By doing this, the infiltration of any liquid between the two geomembranes into the leachate collection system will be stopped.

15. Appendix E, Drawing C-009. In the Liner System Termination At Anchor Trench Detail, what measures will be taken to prevent or remedy soil liner damage from freezing during and after construction? What is the purpose of having exposed liner at the inside toe of the berm? Concerns exist regarding standing water, odors, and the integrity of the liner system.

16. Appendix E, Drawing C-009. It is not evident how and where NYSDEC's Comment E.7 on the IDS related to the perimeter berm height has been addressed. This should be discussed with NYSDEC.

17. Appendix E, Drawing C-009. For Detail 4, the geoxtile tube is shown at the edge of the top of the slope of the gravel drainage layer. In the prior version of this drawing (which was Detail 8 on Drawing C-009 in the IDS), the gravel drainage layer extended for 10 ft beyond the edge of the geotextile tubes. Presumably the reason for this change is the addition of a "sacrificial geomembrane."Although this addition is acceptable, it is recommended that the gravel drainage layer be shown extending for a distance of 10 ft beyond the edge of the geotextile tubes as is shown in Detail 5 on this drawing to provide additional protection in the event of a tube failure. Also, modifications to the base layer surrounding the tubes may be needed based on the operations plan for the geotextile tubes (e.g., methods of stacking tubes) which has not yet been provided to NYSDEC.

18. Appendix E, Drawing C-010. The 200 mil protective geomembrane should be welded to the geomembrane liner to prohibit water from getting under the 200 mil protective geomembrane.

19. Appendix E, Drawing C-010. In the Sump and Risers Detail, it is shown that the pumps will turn on when there is 7.5 feet of head on the liner. What is the reasoning behind having the pumps turn on with 7.5 feet of head? Also, with this much head on the liner, this is the most likely area for leakage to occur. Based up on the sump area as being the most likely area for leakage to occur, the Department will require a geosynthetic clay liner in the sump areas.

20. Appendix E, Drawing C-013. This drawing shows the conceptual top of the final cover. Since Wastebeds 9-15 will be closed consistent with Part 360, and Part 360 requires a 4% slope for the closure design, the final cover of the SCA needs to be compatible with this requirement. Please provide further justification for proposing less than a 4% closure slope,

including but not limited to, calculations for additional leachate generation, infiltration, and overall liquids management.

21. Appendix E, Drawing C-014. Plans for managing post closure runoff from the SCA needs to be discussed with NYSDEC such that the management of this runoff is consistent with the management of post closure runoff associated with the closure of Wastebed 13.

22. Appendix E, Drawing C-017. The leveling layer of the final cover system shall meet the requirements of part 360-2.13(k)(2)(iv). Please demonstrate if these requirements can be met. If the leveling layer it cannot meet these requirements, then a geotextile cushion should must be used.

23. Appendix E, Drawing C-019. Will the settlement of the liner system be affected by the filling of weir box #6 with a slurry fill as proposed?

24. Appendix E, Specifications, Site Clearance. As part of the site clearance activities, instrumentation within the footprint of the SCA (e.g., historic wells, settlement plates, inclinometers, piezometers) should also be removed such that they do not impact the placement or operation of the liner system.

25. Appendix E, Specifications, Section 02200 Earthwork, Sump Excavation. If the material excavated from the sump area is placed in an area outside of the area that will be used for SCA operations, then that area should be seeded after the material is placed.

26. Appendix E, Specifications, Section 02235 Protective Soil Layer and Section 02910 Vegetative Soil Layer. The specifications for the final cover, including the protective soil layer and vegetative soil layer, propose use of the Part 375 commercial soil cleanup objectives (SCOs). Since the end use of Wastebed 13 has not yet been determined, the unrestricted use or protection of ecological resources SCOs would be more appropriate criteria for cover material.

27. Appendix E, Specification 02235, Figure 1 and Figure 2. Based on Appendix L, the delineation between the acceptable and unacceptable zones is based on an assumed protective soil layer internal friction angle of 30 degrees. Assumptions made to determine this pass-fail boundary should be identified, with notation that the assumptions must be verified.

28. Appendix I. Evaluation of Hydraulic Performance for SCA Design, page 7, Results of Analysis – This section discusses the results of the consolidation water and infiltration reduction calculations. Please clarify what the sources of the consolidation water are and how they will be managed. If this will increase the flow to the existing leachate collection system, then the existing leachate collection system will have to be evaluated now and not as part of the closure of wastebeds #9-15 as stated.

29. Appendix J. Sump and Riser Calculations for SCA Design, page 10, Input Properties – This section details the calculated inflow rate for the SCA and refers to Appendix I for the calculations. It is not shown in Appendix I where a target inflow rate of 0.4 gal/min for post

closure conditions and 15 gal/min for after the fourth year of construction was calculated. These calculations must be shown.

30. Appendix L, Page 2, List of parameters. The symbol for water depth above the slope toe is listed as t^*_w. Elsewhere in this section it is listed as t*. Consistent units should be used.

31. Appendix L, Page 2, Paragraph 3, Material Properties. It is indicated that the proposed cover will include an LDPE geomembrane. This should be LLDPE.

32. Appendix L, Page 10, Figure 1. The parameter t* (depth of water at toe of slope) should be illustrated.

33. Appendix L, Page 11, Figure 2. The significance of the shading in the figure is unclear (or the shading is incorrectly shown).

34. Appendix L, Page 11, Figure 2. The delineation between the acceptable and unacceptable zones is based on an assumed protective soil layer internal friction angle of 30 degrees and will presumably vary if this friction angle varies. Assumptions used to determine this pass-fail boundary should be identified on the figure.

35. Appendix L, Page 12, Figure 3. The significance of the unshaded strip in the figure is unclear (or the shading is incorrectly shown).

36. Appendix L, Page 12, Figure 3. The delineation between the acceptable and unacceptable zones is based on an assumed protective soil layer internal friction angle of 30 degrees and will presumably vary if this friction angle varies. Assumptions used to determine this pass-fail boundary should be identified on the figure.

37. Appendix M. Construction Quality Assurance Plan, Tables A-1 and A-2 – These two tables detail the conformance testing and performance testing requirements for the low permeability soil layer. The conformance testing and performance testing requirements shall meet the requirements of Part 360-2.13(j)(3). Please demonstrate and clearly indicate how these requirements will be met.

38. Appendix M, Table A-2. Performance testing for the low permeability soil should be per lift (e.g., in-situ density and moisture content tests should be performed at a rate of 9 tests per acre per lift).

39. Appendix M, Section 4.4 Leak Location Survey. There is one issue that needs to be better defined with respect to the leak location testing. The issue is that in the newly designed sump areas, where the depth of the drainage layer may be as great as 6-8 feet, it may be in the liner systems best interest to require leak location testing upon the placement of 2 feet of the drainage area. The specification for leak location testing appears to require leak location testing after placement of the entire drainage blanket - in the sump areas this may result in 8' of stone being placed and upon leaks being detected it will be very difficult to excavate all of this material and place it in this area without causing point loads and added stress to the liner

system. Therefore, it may be more practical to require leak location testing after 2 feet of stone being placed, since this should represent a good working platform for placement of the additional material in the sump areas where more stone is needed to be placed.

40. Appendix N, Page 2, Bullet 3, Contingency Plan. The contingency plan addresses response actions in the event of unexpected monitoring results. Contingency planning should also address response actions in the event of instrument malfunction.

41. Appendix N, Page 4, Paragraph 3, Section 2.3 Surveying and Settlement Model Calibration. A 50' × 50' survey grid is proposed for use in calibrating the settlement model. Because the foundation will compress as the clay liner and gravel drainage layer are placed, it is unclear how the proposed survey data will be used to establish compression settlement of the foundation soils unless the actual thickness of the clay and gravel are measured at each survey point.

42. Appendix N, Page 8, Paragraph 4, Section 3.4.1 Measurement of Settlement. See previous comment.

43. Appendix N, Page 8, Paragraph 4, Section 3.4.1 Measurement of Settlement. It is understood that the proposed settlement profilers will be used to measure compression settlement of the SOLW and also to evaluate the drainage system to insure that significant grade reversal of the base liner does not occur. Because some settlement of the profilers will already have occurred prior to completion of construction of the (Phase I) low permeability soil liner (and also subsequent phases), the proposed procedure for using the profilers to evaluate slope reversal in the drainage layer should be discussed.

44. Appendix N, Page 9, Paragraph 1. It is indicated that the settlement profilers will be measured bi-weekly during construction and operation of the SCA. To avoid confusion, it is suggested that this term be defined; i.e., twice per week vs once every other week. (We assume twice per week.)

45. Appendix N, Page 11, Contingency Plan. Contingency planning should also address response actions in the event of instrument malfunction.

46. Appendix N, Page 11, Paragraph 2, Contingency Plan. Contingency planning should include installation of temporary sumps/pumps in affected areas with grade reversal, to the extent practicable.

47. Appendix N. NYSDEC's Comment M.2 on the IDS was acknowledged in Honeywell's response but not adequately addressed. The comment should be addressed in the final design. ("*Procedures should be included to describe how the instrumentation data will be used to modify operations in real time to maintain positive drainage and minimize risk of drainage system slope reversal and local ponding. In addition, procedures should be included to describe how the data will be used to verify slope stability, and, if necessary, enhance slope stability.*")