Bridgeton Stormwater Design Comments (4-23-13)

Please note that Bridgeton must meet all necessary requirements and receive approval from the Department's Water Protection Program (WPP) for any land disturbance permits, new outfalls etc.

1. The Stormwater Management Design report shall be signed and sealed by a registered professional engineer in Missouri.

2. Page 1-2 Introduction, states that the proposed temporary cap the total exposed temporary cover lined area will compromise 42 acres. Please clarify if extent is just new cap or combined existing with proposed.

3. Page 2-2, Table 1, the Total Drainage Area (acres) does not add up correctly, please verify the Total value.

4. Page 2-2, Section 2.1.1, states that the inlet culverts are CV-1 and CV-3 and the outlet culvert is CV-2. However, the plan sheets show the inlets as CV-1 and CV-2 and the outlet as CV-3. Please verify the naming of these culverts.

5. Page 2-2, Section 2.1.1, please provide any calculations or information on if the existing detention basin at Outfall 004 in the north section can handle additional flow and capacity, if applicable.

6. Page 2-2, Section 2.1.1, states "the channel is designed with a 0.20 % slope". This is an extremely shallow slope. Please address remedial actions to be taken if settlement occurs and water ponds in channel.

7. Page 2-2, Section 2.1.1 states "Both the proposed perimeter channel and north detention basin will be lined with a geomembrane.". Please identify the type of geomembrane used, such as if the geomembrane will be HDPE or EVOH, or if it will be smooth or textured?

8. Page 2-5, Section 2.1.4, with the culverts to the existing Outfall 003 being decommissioned, please state if future outfall testing locations will be moved to the old leachate pond and additional changes made, if applicable.

9. Page 2-5, Section 2.1.4, does not provide information or in depth detail about how stormwater management of Perimeter Channels (PCs), culverts, or drainage areas from the amphitheater or old landfill areas. Please provide this detail. In addition, show where the

amphitheater leachate tank stormwater structures will connect to the proposed system in applicable plan sheets.

10. Page 2-5, Section 2.1.4, please provide additional detail regarding the outlet culvert (CV-9), such as size and outlet erosion blanket/rip rap, if applicable.

11. Page 3-1 Conclusions, states "Contingency plans for on-site management of surface water which comes in contact with solid waste shall be specified." Please state in detail what these plans are.

12. Please provide a table in the narrative showing the dimensions, volumes, and detention times for the three proposed detention basins (north, east and southwest).

13. Please note the date of the survey used to calculate the stormwater slopes and results.

14. Appendix B Routing Diagram, please verify that the outlet culvert is CV-3 and not CV-2 as listed.

15. Appendix B Page 5, North Channels states sideslopes as 2:1 and is earth lined. Please clarify these components. (The narrative and plan sheets had previously stated 3:1 slopes and lined w/ FML). In addition, the current peak storage is 0.06' below the channel design, if HydroCAD data is modified, please verify that the 2' deep channel design can withhold the design flow.

16. Appendix D Page 6 and Appendix E Page 17, Reach 1R: South Toe Perimeter Channel uses a different channel design as shown in Detail 3/8. Please verify which design will be used and make any necessary corrections.

17. Appendix E Page 18, the current peak storage is 0.78' above the channels design. Please review this design and make any necessary corrections.

18. Figure 1, please show the locations of subcatchments 2S and 3S, as cited in Appendix E, Stormwater Calculations for the West/Southwest Drainage Area. In addition, please show the existing stormwater channels.

19. Figure 1 and Sheet 1 indicate that part of the settlement bowl is part of the North drainage area. Please verify how this section will flow to the north detention basin without major fill or regrading. If this is incorrectly shown, please verify the HydroCAD results for revised flow areas.

20. Sheet 1, please indicate the location of all five outfalls. Outfall #001 is not shown as described in the narrative.

21. Sheet 2 and applicable drawings, please indicate the approximate culvert inlet and outlet invert elevations.

22. Sheet 3, please indicate what the hatched box represents on the existing FML.

23. Sheet 5, please provide additional detail where CV-9 is discharging, such as a new outfall and either a lined or earthen channel.

24. Sheet 6, please explain the purpose of the low water stone surface.

25. Sheet 6, please revise the existing solid waste boundary and solid waste quarry high wall to accurately depict the legend symbols.

26. Sheet 6, please label the location and approximate extents of the existing detention basin.

27. Sheet 7 Detail 1, shows the side slopes as 2:1 while the narrative stated 3:1. Please clarify the correct slopes.

28. Sheet 7 Detail 2, please indicate where the Temporary North Channel Crossing will be located on applicable plan sheets.

29. Sheet 7 Detail 2, please indicate if there will be a “cushion” separating the twin culverts and the FML.

30. Please clarify the correct culvert designs. When comparing the culver schedule to the HydroCAD data, the following discrepancies were found:
    a) The schedule indicates the invert elevation and slope of CV-2 as 478.5’ and 12.5% respectively while the CAD used 473.5 and 3.75% respectively.
    b) The schedule indicates the slope of CV-5 is 0.2% while CAD used 0.1%.
    c) The schedule indicates the inlet elevation of CV-6 as 456.69 while CAD used 456.6.
    d) The schedule indicates the Size of CV-8 as 24” diameter while CAD used 30”.

31. Sheet 8 Details 1 and 5, please discuss in the narrative of when the Eyebrow Diversion Berms and Energy Dissipater for Concentrated Flow Areas will be used and show location on applicable plan sheets.

32. Sheet 8 Detail 2, please indicate on the applicable plan sheets where the Detention Basin Overflows will be located per basin and where they will flow to.

33. Sheet 8 Details 6, please verify if the two headers line notations are switched, and that the regrading will be leveling out benches/terraces and not creating them. Please revise this detail.

34. Sheets 2-6, please show the flow direction arrows for all areas, including sheet flow, channel flow, and additional areas outside of the landfill boundary.

35. On all applicable sheets, please add the orange fence line layer to the legend.

36. Please defend why on areas of the proposed and existing cap liner that the runoff changed to shallow concentrated flow rather than staying as sheet flow.

37. Appendix B Page 5, North Channels states sideslopes as 2:1 and is earth lined. Please clarify these components. (The narrative and plan sheets had previously stated 3:1 slopes and lined w/ FML)

38. Although a large portion of the "watershed" is impermeable, please state if the HydroCAD results for the storm event were calculated on a second day of a rain event to account for saturated conditions of the surrounding grassy areas to account for additional runoff.