

RESPONSE TO COMMENTS

ADDENDUM NO. 2 TO ORDER NO. 99-74

**WASTE DISCHARGE REQUIREMENTS FOR THE
 SYCAMORE LANDFILL INC. A SUBSIDIARY
 OF ALLIED WASTE INDUSTRIES INC.
 SYCAMORE LANDFILL
 SAN DIEGO COUNTY**

The San Diego Water Board has the following responses to the Sycamore Landfill Inc. email dated April 16, 2013:

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| 1. | Discharge Specification B.29 | The design specifications call for a 16 oz geotextile as described in the tentative addendum. However, one supplier that is being considered cannot meet the required physical properties specified and will have to supply 18 oz material. Therefore, we request that the words "minimum nominal" be added before "16 ounce" in the table on page 5. | <p>The design specification included in Addendum No. 2 was based on the liner design, construction quality assurance plan, and project specifications provided in the August 2012 Design Report.</p> <p>The text of the Specification was modified to read as follows:</p> <p>"Two feet protective soil layer, 8 ounce nonwoven geotextile, 1 foot gravel LCRS layer, 16 <u>or 18</u> ounce geotextile, 60 mil HDPE (both sides textured), GCL, 40 mil HDPE (both sides textured), prepared subgrade.</p> |
| 2. | Discharge specification B.29.b | On page 6, paragraph 2.b it states, "On the sideslopes, this layer serves as the drainage layer of the sideslope LCRS and shall be placed 8 to 10 feet vertically up the sideslopes..." We request that, "serves as the draining layer of the sideslope LCRS and" be removed. Because of the slope, the preferential leachate flow on the side slopes will be the interface between the protective soil cover and waste fill. There is no need to define a minimum permeability for the side | <p>The language in this section is modified to read as follows:</p> <p>"On the sideslopes, this layer serves <u>enhances as</u> the draining layer <u>of leachate along</u> the sideslope LCRS and shall be placed 8 to 10 feet vertically up the sideslopes..."</p> |

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| | | slopes. | |
| 3. | Discharge Specification B.29.c | <p>On page 6, paragraph 2.c., the requirements for the protective soil layer include the following: “Be comprised of gravels, sands, clays, and/or silts and have a minimum average permeability of at least 1×10^{-4} cm/sec, but in no case shall the protective soil layer have a permeability of 1×10^{-5} cm/sec or less.”</p> <p>Assuming that the requirement is a minimum average permeability of 1×10^{-4} cm/sec with no permeability value greater than 1×10^{-5} cm/sec, we request that paragraph 2.c.iii. be changed to the following:</p> <p>“Be comprised of gravels, sands, clays and/or silts. The Basal Composite Liner System (BCLS) protective soil cover shall have a minimum average permeability of 1×10^{-4} cm/sec. In order to demonstrate compliance with this requirement, the discharger may calculate an effective permeability (weighted average based on area) of the protective soil cover if the discharger can demonstrate that specific measurable areas of the protective soil cover are composed of different permeabilities. The calculated effective permeability shall be a minimum of 1×10^{-4} cm/sec. In no case shall the protective soil layer have a permeability of less than 1×10^{-5} cm/sec.”</p> | <p>The requested modifications to Discharge Specification B.29.c were not incorporated into Addendum No. 2 to Order No. 99-74.</p> <p>The protective cover soil (PCS) described in Discharge Specification B.29.c. is a continuous layer comprising the uppermost layer of the liner system. The functions of the PCS are to provide a base for discharge of solid waste into the cell, provide protection to the underlying components of the composite liner system, and to convey leachate to the Leachate Collection and Removal System (LCRS). The soil characteristics and project specifications are the same regardless of whether the material is placed on top of the base liner system, or on top of the side slope liner system.</p> <p>Furthermore, the proposed use of a weighted average for calculating the permeability of the PCS materials is not appropriate as described in the following comments.</p> |

On April 23, 2013, San Diego Water Board staff posed clarifying questions to solicit supplemental information pertaining to the proposed use of a weighted average to calculate the average permeability for the protective cover soil materials intended for use in the Stage III-B expansion area. The following information was provided and was considered in determining whether or not modification of the Discharge Specifications in Addendum No. 2 is warranted:

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| <p>How many samples are proposed for use in calculating the weighted average?</p> | <p>The proposed number of samples for permeability testing: PCS – 1 per 10,000 cy of stockpiled material, but no less than 3 for any individual cell construction (for Stage III-B, this would be 3 samples). LCRS drainage media – 1 per 5,000 cy of material to be placed but no less than 3 for any individual cell construction (for Stage III-B this would be 3 samples).</p> | <p>A sampling frequency of one sample per 5,000 cubic yards of material may be a reasonable frequency for permeability testing of the PCS material if the variability is low. Otherwise additional samples may be necessary to adequately characterize the PCS material. By comparison, the consultant collected a minimum of 12 samples to characterize 24,000 cubic yards of PCS material at Las Pulgas Landfill. For the estimated volume of 29,000 cubic yards of PCS soil in Stage III-B, that would require five samples to be collected and analyzed for permeability.</p> <p>The CQA Plan should be modified to reflect the change in sampling frequency.</p> |
| <p>How are the samples proposed for use in the calculations going to be taken?</p> | <p>Samples will be obtained from stockpiled materials to be used for the construction.</p> | <p>Response noted.</p> |
| <p>How would the weighted average calculation be made?</p> | <p>The weighted average calculation based on area will be made as follows: $\text{Weighted Average} = [(A1 \times P1) + (A2 \times P2)] / (A1 + A2)$ Where: A1 = area of the PCS P1 = average permeability of the PCS (from laboratory tests) A2 = area of LCRS drainage media (area of the drainage media that will project through the 2-foot-thick PCS) P2 = average permeability of the LCRS drainage</p> | <p>The proposed use of a weighted average is not an appropriate methodology for determining the permeability of PCS materials and compliance with Discharge Specification 29.c in the Stage III-B expansion area.</p> <p>The parameters for calculating a weighted average as provided by the Discharger propose to combine the permeability of two distinctly different layers/components of the composite liner system, the LCRS gravel and the PCS soil materials to obtain an overall permeability for drainage layer materials.</p> |

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| | <p>media (from laboratory tests)</p> <p>For example, assume the following: A1 = 150,000 sf P1 = 3×10^{-5} cm/sec A2 = 5,000 sf P2 = 1×10^{-2} cm/sec</p> <p>For this example, $[(150,000 \times 3 \times 10^{-5}) + (5,000 \times 1 \times 10^{-2})] / (150,000 + 5,000) = 3.5 \times 10^{-4}$ cm/sec So for this example, it would meet the requirement of a minimum 1×10^{-4} cm/sec.</p> | <p>The proposed use of a weighted average incorporates two different liner components with very different functions: a) the LCRS gravel layer – functions to convey leachate collected by the LCRS to the sumps for removal and disposal, and b) the clayey-sand and gravel or “yellow fill”¹ of the PCS layer- functions as a cushion to protect the liner components from the overlying solid wastes and to convey leachate from the solid wastes into the LCRS. The results of the proposed weighted average calculation would thus erroneously average the estimated permeability of two distinctly different components of the liner system. As a result, the discharger should calculate a simple average of permeability results for the LCRS gravel separately from the PCS layer of the liner system.</p> <p>Discharge Specification B.29c is designed to ensure that the PCS materials have an average permeability that is significantly higher than the federal standards of 1×10^{-5} cm/sec for a “barrier layer.” According to laboratory test results for the PCS material (reported in Appendix F of the Design Report), the average permeability of the PCS material is 5.8×10^{-5} cm/sec with a standard deviation of +/- 4.5×10^{-5} cm/sec. According to the project specifications, the average permeability of the LCRS gravel will be 1×10^{-2} cm/sec.</p> <p>The Discharge Specification in Addendum No. 2 to Order No. 99-74 requires that the PCS material have an average permeability of 1×10^{-4} cm/sec; the same PCS specification was adopted by this Regional Board for the Las Pulgas Landfill in waste discharge requirements Order No. R9-2011-0039.</p> |

¹ “Yellow Fill” proposed for use in the PCS material as defined in the “Design Report for Stage III-B Liner, Sycamore Landfill, San Diego, California” dated August 2012 and revised January 2013.

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| | | <p>Similar to the PCS materials proposed for use at the Sycamore Landfill, the PCS materials proposed for use at the Las Pulgas Landfill had a high “fines” content, resulting in an overall lower permeability. That condition was corrected by importing coarser-grained materials for mixing with the finer-grained materials to provide a suitable permeability and ensure functionality of the PCS material.</p> |