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STATE OF ILLINOIS
Pollution Control Board

ILLINOIS POLLUTION CONTROL BOARD
August 8, 2013

IN THE MATTER OF:)
)
PETITION OF CATERPILLAR, INC. FOR) AS 13-5
AN ADJUSTED STANDARD FROM 35 ILL.) (Adjusted Standard)
ADM. CODE 620.410(a) and 817.106(a))
)



ORIGINAL

HEARING OFFICER ORDER

On June 27, 2013, Caterpillar, Inc. filed a petition for an adjusted standard from the Class I groundwater quality standard for Total Dissolved Solids for the on-site potentially usable waste landfill that receives foundry waste from the adjacent foundry located in Mapleton, Peoria County.

Caterpillar is directed to respond to the additional questions provided in Attachment A within 14 days.

IT IS SO ORDERED.

Carol Webb

Carol Webb
Hearing Officer
Illinois Pollution Control Board
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CERTIFICATE OF SERVICE

It is hereby certified that true copies of the foregoing order were mailed, first class, on August 8, 2013, to each of the persons on the attached service list.

It is hereby certified that a true copy of the foregoing order was hand delivered to the following on August 8, 2013:

John T. Therriault
 Illinois Pollution Control Board
 James R. Thompson Center
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 Chicago, Illinois 60601

Carol Webb

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 Hearing Officer
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Attachment A

817.416(e) Statistical analysis of groundwater monitoring data

1. Section 5.0 of Exh. 2 provides information on the statistical methods used. Additionally, Table 6.2 of Exh. 2 indicates the methods used from USEPA's ProUCL statistical software to calculate the Background Threshold Values (BTV). Table 6.2 indicates the BTV for Total Dissolved Solids (TDS) of 2539 mg/L is the Upper Tolerance Limit (UTL) based on normal approximation to the gamma distribution (Wilson-Hilferty - WH approximation). Exh. 2, Table 6.2.

(a) 35 Ill. Adm. Code 817.416(e) has some specific requirements for statistical analysis of groundwater monitoring data. Please elaborate on the information provided in Exh. 2 regarding the statistical analysis of the TDS groundwater monitoring data, specifically addressing whether the statistical analysis provided meets the requirements of 817.416(e).

(b) The ProUCL Version 4.1.00 Technical Guide (ProUCL Technical Guide), referenced in Exh. 2 at 33, states

Positively skewed environmental data can often be modeled by a gamma distribution. ProUCL software has two goodness-of-fit tests (Anderson-Darling test and Kolmogorov-Smirnov test) to test for gamma distribution. UTL obtained using normal approximation to the gamma distribution (Krishnamoorthy et. al., 2008) has been incorporated in ProUCL 4.00.05. Those approximations are based upon Wilson- Hilferty - WH (1931) and Hawkins-Wixley - HW (1986) approximations. ProUCL Technical Guide at 86.

(1) Please indicate how the TDS data was determined to have a gamma distribution.

(2) Please provide a printout from ProUCL of the input and output for the goodness-of-fit test(s) used to test the TDS data for gamma distribution.

(c) According to Exh. 2, the TDS BTV represents the statistical upper tolerance limits (UTL) calculated as the 95th percentile of background using a 99 percent confidence level. Exh. 2 at 30. Section 817.416(e)(6) allows, "Any other statistical test based on the distribution of the sampling data may be used, if it is demonstrated to meet the requirements of 35 Ill. Adm. Code 724.197(i)." Section 724.197(i)(4) requires

If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, must be proposed by the owner or operator

and approved by the Agency if the Agency finds these parameters to adequately protect human health and the environment.

Does the Agency approve of the 99 percent confidence level and 95th percentile population that was used in Exh. 2 to arrive at the BTV for TDS of 2539 mg/L?

(d) The ProUCL Technical Guide states,

ProUCL version 4.1 has a couple of simple outlier test procedures, such as the Dixon test and the Rosner test. ProUCL Technical Guide at vi.

- (1) Please indicate if the TDS data used to calculate the BTV for TDS was analyzed to determine if any of the data points, particularly the 3050 mg/l TDS value (Monitoring Well G113D, 4-7-2011), should be considered outliers.
- (2) If so, please provide a copy of the data sheets from the ProUCL runs showing input and output values. Please also indicate if any outliers were identified and if they were used in the calculation of the BTV for TDS.

2. Tables 6.1, 6.3 and 6.4 of Exh. 2 are the “Statistical Inter-Group Comparison Results”. The tables list the P-values from the WRS/Mann-Whitney Test and the Quantile Test. Footnote 1 of the tables states, “Quantile tests were performed manually...”, and Exh. 2 states that the Quantile Test “was carried out using spreadsheet calculations...” Exh. 2 at 31-32.

- (a) Please provide a copy of data sheets from the ProUCL runs for the WRS/Mann-Whitney Test showing the input and output values.
- (a) Please provide a copy of the spreadsheet calculations for the Quantile Test showing the input and output values and equations used.

35 Ill. Adm. Code 104.406(f)

3. Caterpillar’s proposed wording for an adjusted standard states,

Caterpillar will record and maintain in perpetuity in the property records an Environmental Land Use Control (“ELUC”) in accordance with 35 Ill. Admin Code 742.1010. The ELUC will prohibit the use of groundwater at the Mapleton Landfill for potable purposes. Pet. at 22.

35 ll. Adm. Code 742.1010 states in part,

- a) ...ELUCs are only effective when approved by the Agency in accordance with this Part...
- ...
- d) An ELUC submitted to the Agency must match the form and contain the same substance, except for variable elements (e.g., name of property owner), as the model in Appendix F and must contain the following elements:
 - ...
 - 8) Scaled site maps showing:
 - A) The legal boundary of the property to which the ELUC applies;
 - B) The horizontal and vertical extent of contaminants of concern above applicable remediation objectives for soil, groundwater, and soil gas to which the ELUC applies;
 - C) Any physical features to which an ELUC applies (e.g., engineered barriers, monitoring wells, caps, indoor inhalation building control technologies); and
 - D) The nature, location of the source, and direction of movement of the contaminants of concern;...

- (a) Has the Agency indicated whether it would approve and ELUC as specified by Caterpillar?
- (b) Would you please submit a copy of the ELUC Caterpillar intends to submit to the Agency? In the least, would you please submit the information required under 742.1010(d)(8)?

4. Exh. 2 states,

For TDS, and six other analytes (cadmium, chromium, iron, lead, manganese, and chloride) which all contribute to the TDS concentrations measured in the groundwater, the proportion of detected concentrations that were below the associated [maximum allowable leaching concentration] MALC was less than 95 percent in upgradient monitoring well samples (ranging from 33 percent for manganese to 92 percent for cadmium). Exh. 2 at 37.

Does Caterpillar also need relief for any of the other constituents besides TDS which have been found above the MALC?