



SUSANA MARTINEZ  
Governor

JOHN A. SANCHEZ  
Lieutenant Governor

NEW MEXICO ENTERED  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
Phone (505) 476-6000 Fax (505) 476-6030  
[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)



RYAN FLYNN  
Cabinet Secretary-Designate

BUTCH TONGATE  
Deputy Secretary

THOMAS SKIBITSKI  
Acting Director  
Resource Protection Division

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

May 8, 2013

Randy Schmaltz  
Environmental Manager  
Western Refining, Southwest, Inc.  
Bloomfield Refinery  
P.O. Box 159  
Bloomfield, New Mexico 87413

**RE: DISAPPROVAL  
INVESTIGATION REPORT  
BACKGROUND CONCENTRATIONS (JULY 2012)  
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY  
EPA ID# NMD089416416  
HWB-WRB-12-005**

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) has received Western Refining Southwest, Inc., Bloomfield Refinery's (Western) *Investigation Report, Background Concentrations* (Report) dated July 2012. NMED has reviewed the Report and hereby issues this disapproval with the following comments.

**Comment 1**

In NMED's November 19, 2010 Notice of Disapproval (NOD) letter for the *Investigation Work Plan for Determination of Background Concentrations*, Western was required to collect

additional background samples to provide sufficient representation of the variability of the soils across the site because the initial proposed sampling grid was too small. In the Report, Western expanded their proposed sampling grid and collected additional soil samples in the vicinity of the background monitoring wells; one monitoring well was located directly adjacent to the proposed background sampling grid and the location of the other monitoring well is in the far eastern portion of the refinery property. Western states that the lithology and soil type are similar across the entire site; however, it is still not clear as to whether the background samples are capturing natural variation in background metal concentrations across the site. In addition, the sampling locations may not have yielded independent samples due to their close proximity. Failure to characterize the full extent of soil variability is conservative from a regulatory standpoint but may ultimately cause Western to retain metals as potential contaminants that may be reflective of natural background. This potential failure to capture the full range of background concentrations does not prevent Western from moving forward with field work and analyses, but Western may be required to expand upon the background dataset at some time in the future.

#### **Comment 2**

In Section 3.1 (Soil Boring, Monitoring Well Installation and Sample Calculation), page 7, paragraph 2, Western states that "other soil samples collected at the background monitoring well locations [i.e., BCK-9 (54-56'), BCK-10 (5-6'), and BCK-10 (40-42')] were inadvertently not analyzed for [total petroleum hydrocarbons (TPH)]." Western must ensure all required analytes and chemical parameters are analyzed for each sampling investigation and reported in all future reports. In addition, all field personnel involved in future investigations must be aware of analytical requirements proposed in approved work plans and directions provided in NMED's letters. No response required.

#### **Comment 3**

In Section 4.1 (Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment), *BCK-9*, page 12, paragraph 2, Western states, "[a] stiff clay was logged from 54 feet to 59 feet bgs, with gravel in the sample from 58 to 59 feet. The gravel interval continued from 59 feet to 73.5 where a clay/shale was encountered that continued to the termination depth of 79 feet." All numerical values must be defined with units of measure in this Report and all future reports and work plans.

#### **Comment 4**

In Section 5.1 (Soil Background Concentrations), page 18, paragraph 2, Western replaced arsenic and fluoride non-detect results with one-half the sample quantitation limit (SQL) which is depicted in Table 3 (Soil Analytical Results and Statistical Summary), and substituted these values in the 95% upper tolerance limit (UTL) calculations. The report indicates that this

R. Schmaltz  
May 8, 2013  
Page 3 of 6

methodology is consistent with EPA's most recent guidance (EPA, 2009); however, this is not an acceptable method for processing non-detects. The most current EPA guidance (EPA, 2010) states "that the detection limit (DL)/2 method (with non-detects replaced by DL/2) does not perform well (e.g., Singh, Maichle, and Lee (EPA 2006)) even when the percentage of non-detects is only 5%-10%. It is strongly suggested to avoid the use of DL/2 method for estimation and hypothesis testing approaches used in various environmental applications." NMED recommends regression on order statistics (ROS), where "a regression line is fit to the normal scores of the order statistics for the uncensored observations and then to fill in values extrapolated from the straight line for the observations below the detection limit." In addition, NMED does not recommend using the DL/2 method for risk assessments. Revise Table 3 by utilizing the ROS method to calculate the 95% UTL. Discuss the revised results in the appropriate sections of the revised Report.

References:

EPA 2010, Singh, A., Maichle, R.W. and N. Armbya. ProUCL Version 4.1 User Guide Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041.

EPA 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA/530/R-09/007.

EPA 2006, Singh, A., Maichle, R.W. and S. Lee 2006. On the Computation of a 95% Upper Confidence Limit of the Unknown Population Mean Based Upon Data Sets with Below Detection Limit Observations. EPA/600/R-06/022.

**Comment 5**

In Section 5.1 (Soil Background Concentrations), page 19, paragraph 2 describes how the "j-flagged" data was not utilized to calculate the 95% UTL. Data which are qualified as "J" are estimated values with an undetermined bias. The impact of a "J" validation code has minimal impact on data usability. These estimated values (estimated high or low) must be treated for statistical purposes as valid measurements. Revise Table 3 (Soil Analytical Results and Statistical Summary) to calculate the 95% UTL for mercury and molybdenum and discuss the results in the appropriate sections of the Report. J-qualified data must be considered valuable measurements for all future reports and assessments.

**Comment 6**

In Section 5.1 (Soil Background Concentrations), page 19, paragraph 3, Western stated that the software program ProUCL Version 4.00.05 was used to calculate the 95% UTL. Since the Report was submitted in July 2012, ProUCL Version 4.1 (2010) should have been utilized.

ProUCL Version 4.1 has had several updates and additions that may affect the UTL calculations, although it is unlikely that use of the most current version would significantly affect the results of the UTL calculations. Use ProUCL Version 4.1 to recalculate the 95% UTL in Table 3 (Soil Analytical Results and Statistical Summary) and resubmit the revised table. In addition, discuss the results in the appropriate sections of the Report and in future reports, utilize the most currently available version of ProUCL.

### Comment 7

The following comments are for Table 3 (Soil Analytical Results and Statistical Summary).

- a. In Table 3, the maximum SQL for arsenic (5.0 milligrams per kilogram, mg/kg) is fairly elevated compared to the NMED residential risk-based screening level (3.9 mg/kg). In future sampling events, NMED recommends that the selected analytical laboratory's methods be reviewed to ensure that the method chosen will be sufficient to detect concentrations below the screening levels.
- b. In Table 3, the 95% UTLs are higher than the maximum detected concentrations for many analytes (e.g., aluminum, arsenic, chromium, cobalt, copper, fluoride, iron, manganese, nickel, vanadium, and zinc). While it is statistically possible for UTLs to be greater than the maximum detected concentrations, the values used for background comparison must not be greater than the maximum detected concentrations. In instances where the statistically-based UTL is greater than the maximum detected concentration, the maximum concentration must be used as the background reference value. Revise the table accordingly.
- c. In Table 3, there were eight detected observations greater than the SQL out of eighteen samples collected for chloride but summary statistics and the 95% UTL were not calculated. There are sufficient numbers of detected observations to calculate a background comparison value. Revise the table and Appendix H (Statistical Evaluation) to include a 95% UTL for chloride.
- d. In Table 3, the SQL does not match the reporting limit or the detection limit. Explain why either limit is used as the SQL and include a footnote summarizing the reasoning in the revised table.
- e. In Table 3, the column labeled "Boron," in the row labeled "Minimum SQL" the value 0.1 mg/kg is reported. In the SQL column, the minimum SQL reported is 0.14 mg/kg. Review the table to ensure that all values are reported correctly.

- f. A separate table was not provided in the Report to summarize the final background comparison values that were used for point-by-point comparisons. While Table 3 displays the summary statistics and calculated 95% UTLs, there is no listing of the final values chosen as the background comparison values. Include an additional table in the Report that summarizes the final background comparison values that were selected and utilized for site-to-background comparisons.

**Comment 8**

Figures 3 (Background Monitoring Well Locations) and 9 (Background Soil Sample Locations) depict the sample locations for the background monitoring wells and background sample grid for eight of the ten background soil sample locations. Revise Figure 9 to include the background soil sample grid and background sample location BCK-9 (MW-BCK1).

**Comment 9**

In Appendix B (Survey Data), *Exhibit "B"*, Point 5117, the "Descriptor" column describes "3-8 APPROX". Explain why "APPROX" is listed with 3-8.

**Comment 10**

In Appendix D (Boring Logs), Sheet 4 of 4 is missing for Well BK-10 (MW-BCK-2). Provide the missing page with the revised Report.

**Comment 11**

The following comments are for Appendix F (Quality Assurance/Quality Control Review).

- a. In Table A-2 (Qualified Data) in the Comments column, "Qualified" is misspelled in several of the comments.
- b. In Table A-3 (Field Duplicate Summary), the table summarizes the inorganic sample results and relative percent difference (RPD) calculations. Explain why RPD calculations are reported for chloride, fluoride, and sulfate when the BK-7 (0-0.5') sample and field duplicate results are reported as non-detect.

**Comment 12**

The *Investigation Report Background Concentrations* does not include the proposed methodology that will be applied during the site-to-background comparisons. For future assessments, ensure that the site-to-background comparisons and statistical tests that will be

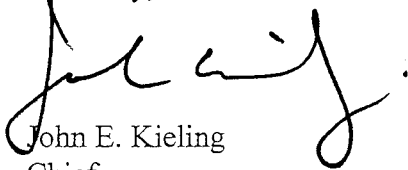
R. Schmaltz  
May 8, 2013  
Page 6 of 6

utilized during the site-attribution analyses are consistent with the methodologies outlined in the most current NMED guidance "Risk Assessment Guidance for Site Investigations and Remediation."

Western must address all comments contained in this Disapproval and submit a revised Report to NMED by **August 2, 2013**. The revised Report must be submitted with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. In addition, an electronic version of the revised Report must be submitted that identifies where all changes were made in red-line strikeout format.

If you have any questions regarding this letter, please contact Leona Tsinnajinnie of my staff at (505) 476-6057.

Sincerely,



John E. Kieling  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
N. Dhawan, NMED HWB  
L. Tsinnajinnie, NMED HWB  
C. Chavez, OCD  
A. Hains, Western Refining Company, El Paso, Texas  
K. Robinson, Western Refining Company, Bloomfield, New Mexico

File: HWB-WRB-12-005 and Reading 2013