

STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Acting Administrator

January 6, 2011

Irwin Kishner
Herman Kishner Trust
294 Convention Center Drive
Las Vegas, NV 89109

Maryland Square Shopping Center, LLC
c/o Tim Swickard
Dongell Lawrence Finney LLP
770 L St., Suite 950
Sacramento, CA 95814

Subject: 3rd Quarter 2010, Groundwater Monitoring Report, Maryland Square Shopping Center
Facility: Al Phillips the Cleaner (former)
3661 S. Maryland Parkway
Las Vegas, Nevada
Facility ID: H-000086

Dear Mr. Kishner and Mr. Swickard:

The Nevada Division of Environmental Protection (NDEP) has reviewed the ***Groundwater Monitoring Report for 3rd Quarter 2010***, prepared by Tetra Tech EM, Inc. (Tetra Tech) on behalf of the Herman Kishner Trust (Trust) and Maryland Square Shopping Center, LLC (MSSC), and received electronically by the NDEP on October 22, 2010. The NDEP immediately requested revision to Figure 3, and finally received the revised hard copy on **December 21, 2010**. Specific comments are provided in **Attachment 1**.

NDEP Comments

The first six or seven paragraphs of Section 3 of the subject report compare data from the 3rd Quarter to data from the 2nd Quarter and to water-level data. The NDEP notes that quarter-to-quarter fluctuations in concentrations and water levels convey little useful information, and may actually be opposite to longer-term trends. For this reason, the NDEP discourages such comparisons, and instead encourages the use of statistical and graphical methods to evaluate data in the context of long-term variations and/or trends.

The third paragraph in Section 3.0 states that "*Figure 3 depicts the distribution of PCE rendered from 3rd Quarter data, extending a series of contour intervals down to a threshold value of 100 µg/L PCE.*" The most recent datum from each monitoring well should always be used to provide the best estimate of concentration contours for the entire PCE plume.

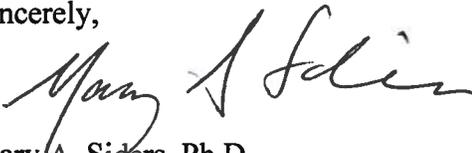
Results from the trend analysis (Mann-Kendall test) conducted by Tetra Tech show that concentrations of PCE are increasing (90% confidence level) in three wells (MW-5, MW-6, and MW-27), and decreasing in fourteen wells (90% confidence level).

NDEP Requirements

1. Please always draw concentration contours for the entire PCE plume, using the most recent datum from each well.
2. Please continue to conduct the statistical trend analysis and include results in the quarterly reports
3. Please do not include lengthy discussions comparing last-quarter-to-this-quarter variability in the data.
4. Please continue to provide electronic copies (pdf file) of all reports submitted to the NDEP, so that the NDEP can post these on the Maryland Square website: <http://www.ndep.nv.gov/pce/foia.htm>. Submittal of a "print-to-pdf" file is appreciated, because this generates a smaller file than does a scanned pdf file.
5. Unless a schedule modification is agreed to by the NDEP, please provide future quarterly reports on the following schedule:
 - a. Groundwater Monitoring Report for the Fourth Quarter, 2010 - **January 31, 2011**
 - b. Groundwater Monitoring Report for the First Quarter, 2011 - **April 28, 2011**
 - c. Groundwater Monitoring Report for the Second Quarter, 2011 - **July 28, 2011**
 - d. Groundwater Monitoring Report for the Third Quarter, 2011 - **October 28, 2011**

If you have any questions or require additional information regarding this letter, contact me by telephone at (775) 687-9496 or e-mail at msiders@ndep.nv.gov.

Sincerely,



Mary A. Sjders, Ph.D.
Bureau of Corrective Actions
Nevada Division of Environmental Protection
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Enclosure (1)

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ATTACHMENT 1

3rd Quarter 2010, Groundwater Monitoring Report, Maryland Square Shopping Center

Specific Comments

1. Section 2.1 of the 3rd Quarter Report states that *“It should be noted that: (1) the NDEP no longer requires collection of groundwater samples at MW-11 because of the history of petroleum hydrocarbons in groundwater at that well location...”* However, the NDEP’s comment letter on the 2nd Quarter Report stated that *“During future monitoring events, please collect water-level measurements from all wells. In addition, as stated in, please collect groundwater samples annually from well MW-11 in the fourth quarter...”* and provided the following table:

Annual	MW-3, MW-7, MW-8, MW-10, MW-11, MW-12, MW-15, MW-16, MW-21, MW-22, MW-24
Semi-annual	MW-1, MW-2, MW-5, MW-6, MW-9, MW-13, MW-14, MW-17, MW-28, MW-29
Quarterly	MW-18, MW-19, MW-20, MW-23, MW-25, MW-26, MW-27, MW-30; MW-31; MW-32, MW-33

2. Table 1 in the 3rd Quarter Report lists well MW-21 as “not applicable” (NA); does this actually mean that the well was inaccessible at the time of sampling?
3. Table 3 in the 3rd Quarter Report compares the 3rd quarter data with the 2nd quarter data and includes a column indicating whether water levels rose or fell from the 2nd quarter to the 3rd quarter. The NDEP discourages such “quarter-to-quarter” comparisons of data from monitoring reports and has encouraged the use of statistical testing (e.g., Mann-Kendall Trend Test) to evaluate whether concentrations of contaminants are increasing or decreasing over time. If the intent of Table 3 is to put results for the latest quarter in context, it may be more instructive if these data are compared with the range of concentrations for each well,
4. The first paragraph on Page 10 compares 2nd quarter to 3rd quarter data, stating that *“This presentation is provided as a general reference to examine whether relationships are discernable between groundwater constituent concentrations and groundwater elevations.”* The NDEP notes that comparing concentration and water-level data for two consecutive quarters will not provide insight as to “discernable relationships,” and this sort of quarter-to-quarter comparisons should generally be redirected toward evaluation of longer-term trends and relationships. If a correlation between water level and concentration is mentioned, appropriate statistical analysis should be used to confirm or refute such speculations.
5. Section 3.0, Paragraph 2 states that *“Groundwater elevations tended to rise in the central source area at monitoring wells MW-5, 6, 13, and 17, compared to second quarter (June) 2010 data, but generally declined east of the Boulevard Mall, beneath the central and eastern portions of the residential neighborhood, and at monitored locations within the golf-course area (monitoring well locations MW-18, 19, 23, 25, 26, 27, 28, 29, 30, 31, 32, and 33). The relative shift between elevations within or near the source area versus downgradient monitoring locations was evident in a more pronounced 3rd quarter groundwater gradient of 0.0148 vertical foot per horizontal foot (’/’), with a flow direction generally toward the east (Figure 2), compared to the groundwater gradient of 0.0125 ’/’ observed in 2nd Quarter 2010.”*

Again, the NDEP notes that comparison of such data from two consecutive quarters conveys no long-term trends or other such information, and may actually be opposite to longer-term trends. For this

reason, the NDEP discourages such comparisons and instead, encourages the use of statistical and graphical methods to evaluate data.

6. Page 11, paragraph 4. The text states that “...it should be noted that contoured intervals representing 500 and 1,000 µg/L of PCE in groundwater neglect to consider reported PCE concentrations at MW-19 and MW-20, which were more than 50% lower than concentrations at these location in 2nd Quarter, 2010.”

Despite the above statement, the report offers no explanation for the lower concentrations of PCE in wells MW-19 and MW-20. In well MW-19, the concentration of PCE was the lowest ever measured (420 µg/L) for that well, and can be contrasted against the highest concentration (1,400 µg/L) and the average concentration (970 µg/L); yet, the text does not discuss this. A similar case is seen for the October 2010 sample collected from MW-20: this sample contained 340 µg/L PCE versus an average concentration of 1,250 µg/L and a maximum concentration of 2,500 µg/L. The literature contains descriptions of the variability in the vertical distribution of dissolved DNAPLs and the use of vertical profiling. Concentrations of dissolved solvents have been shown to vary by more than an order of magnitude within a few vertical feet (see EPA 2004, Table 5-1).

The anomalously low concentrations of PCE in some wells during the October 2010 sampling event suggest that vertical variability of dissolved PCE should be evaluated using multi-depth sampling. This characterization will be a necessary task when designing a remediation system for the contaminated groundwater.

7. Page 11, bulleted lists and text at bottom of page. The text continues to compare 2nd quarter versus 3rd quarter data. This entire discussion provides only poorly supported speculations that do not contribute to the understanding of the site.
8. Page 12, first and second paragraphs. The text again speculates on a correlation between water level and PCE concentrations, stating that:

“Although only a limited population of data were obtained for 3rd Quarter groundwater analysis, surmising a correlation between groundwater elevations and PCE concentrations may be justified. In particular, third quarter groundwater data seem to indicate a discernible relationship between solute concentration and groundwater elevation. Increased groundwater elevations (i.e. more groundwater available in the water column) may dilute the solute (PCE), while at locations where groundwater elevations decreased (i.e., less groundwater available in the water column), concentrations of solute (PCE) predominantly increased.”

“Although this relationship is reasonably supported by third quarter monitoring data, this observed correlation should not be considered conclusive due to the limited population of data currently available to assess. The validity of this correlation or perhaps others will be further examined during the comprehensive, 4th Quarter groundwater monitoring effort.”

A correlation between two variables cannot be determined using data from one sampling event, so the statement that “...this relationship is reasonably supported by third quarter monitoring data...” is perplexing. Furthermore, the statement that there are a “...limited population of data currently available to assess” is a false statement; there are **many** quarters of data available to test this hypothesis

(e.g., 20 quarters of data for well MW-19, 21 quarters of data available for well MW-20). This discussion of “limited data” was also a theme in the Corrective Action Plan (CAP) for Groundwater (currently in review by the NDEP), wherein it was apparent that **most of the currently available data had simply not been compiled, reviewed or evaluated.**

The NDEP conducted some quick calculations of the water-level and analytical data and found a generally positive correlation (i.e., higher water table, higher concentration of PCE) for wells MW-1, MW-2, MW-8, MW-13, MW-14, MW-20, MW-21, MW-23, MW-31. A generally negative correlation (i.e., higher water table, lower concentration of PCE) was seen for wells MW-4, MW-5 and MW-6. Some results showed no decided correlation (i.e., r^2 values of 0.25 or less): MW-3, MW-7, MW-9, MW-10, MW-12, MW-15, MW-17, MW-18, MW-19, MW-25, MW-26, and MW-32¹.

¹Note: The NDEP conducted simple linear regression for this quick evaluation and population distribution characteristics were not evaluated, so it may be that some of the assumptions of this parametric test were violated. Also, the statistical significance of these correlations was not calculated at a specific confidence level. However, for purposes of this discussion, these results suggest that the speculation stated in the 3rd Quarter report (i.e., an inverse relationship) is incorrect.

9. Mann-Kendall Statistical Analysis. This section provides a good description of the statistical test, including specifically stating the null hypothesis. For trend analysis, the NDEP generally accepts trends increasing or decreasing at 90% confidence level (i.e., $p = 0.10$), rather than 95% level (i.e., $p = 0.05$).

Figures and Tables

10. Figure 1, Site Map. This aerial photograph shows a blue outline labeled “Approximate Project Area;” however, the northern portion extends well north of the affected area. The boundary should be based on data from all local sites (e.g., Sears UST site; groundwater was nondetect for PCE); the wells recently evaluated by Boulevard Mall (nondetect for PCE; see report dated 12-09-09 in the on-line administrative record for the Maryland Square PCE Site at: <http://ndep.nv.gov/pce/foia.htm>); from wells installed for the Maryland Square site (e.g., northern monitoring wells MW-22 and MW-33, southern monitoring wells MW-24 and MW-16); and from recent data for the Dr. Clean site, which included nondetections for borings near Aztec and Oneida. The northern boundary of the “approximate project area” should be redrawn to better reflect these data. See marked-up figure at the end of this Attachment.
11. Table A3, Historical Field Water Quality Measurements. Just a note here about excessive significant figures: measurement of oxidation-reduction potential (ORP) is unlikely to be precise enough to warrant listing tenths of millivolts (mV). Likewise, temperature is unlikely to be measured precisely to hundredths of a degree.
12. Appendix C, Field Forms. Please verify that the least-contaminated wells are sampled first, before moving on to progressively more-contaminated wells.
13. Appendix D, Statistical Analysis Reports. The MAROS statistical tool provides the test statistic from the Mann-Kendall test and the confidence in the trend. Both of these are helpful in assessing the stability of concentrations over time.