August 15, 2011

Maryland Square Shopping Center, LLC
Herman Kishner Trust
c/o Mr. Tom Vandenburg
Dongell Lawrence Finney LLP
707 Wilshire Boulevard, Suite 4500
Los Angeles, California 90017

RE: **ADDENDUM TO THE DRAFT WORK PLAN FOR MITIGATION OF INDOOR AIR AND WELL WATER**
MARYLAND SQUARE PCE-SITE
3661 SOUTH MARYLAND PARKWAY
LAS VEGAS, NEVADA
FACILITY ID NO. H-000086

Dear Mr. Vandenburg:

Enclosed please find one copy of the Addendum to the Draft Work Plan for Mitigation of Indoor Air and Well Water dated June 28, 2001. The addendum addresses concerns regarding (1) the quality assurance and quality control (QA/QC) procedures for the proposed sampling and analysis of indoor air, and (2) a video survey of irrigation well PW -1 located on the golf course stated in the Nevada Division of Environmental Protection's (NDEP) letter, dated July 28, 2011, on the Draft Work Plan for Mitigation of Indoor Air and Well Water. In addition, the addendum discusses a plan to determine the vertical groundwater gradient in the vicinity of the golf course well. This addendum is being provided to the NDEP's Bureau of Corrective Action (BCA) in both hard copy and electronic Adobe Acrobat format on this date, August 15, 2011.

If you have questions or require additional information, please do not hesitate to contact me or Robert Manriquez, Program Manager, at 619.321.6748. Thank you for your time and consideration in this matter.

Regards,

Tamara Pelham
Project Manager
CEM No. 1537, Exp. Sept. 11, 2012
Class A 60505

Enclosure(s) (1) Addendum to the Draft Work Plan for Mitigation of Indoor Air and Well Water

Dist: 1/Addressee
1/NDEP, Carson City, NV, Attn: Ms. Mary Siders
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# ADDENDUM TO THE WORK PLAN
# FOR MITIGATION OF INDOOR AIR AND WELL WATER
## MARYLAND SQUARE PCE SITE
## 3661 SOUTH MARYLAND PARKWAY
## LAS VEGAS, NEVADA

SUBMITTED TO
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF CORRECTIVE ACTIOS
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CARSON CITY, NEVADA 89701-5249

PREPARED FOR
HERMAN KISHNER TRUST
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August 15, 2011

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## 1.0 INTRODUCTION AND BACKGROUND

The Work Plan for Mitigation of Indoor Air and Well Water (Tetra Tech 2011) describes the procedures that will be used to characterize, control, mitigate, and abate threats to human health via the vapor intrusion (VI) pathway. Two main components of the work plan are (1) to characterize breathing air inside residences over the tetrachloroethene (PCE) plume and to implement mitigation measures at homes with indoor air PCE concentrations that exceed the Nevada Division of Environmental Protection (NDEP) Interim Action Level for residential indoor air; and (2) complete delineation of the plume of PCE in groundwater. In response to this work plan, NDEP initially requested a schedule for implementation of the work (NDEP 20011a) and subsequently requested additional information on (1) the quality assurance and quality control (QA/QC) procedures for the proposed sampling and analysis of indoor air, and (2) a video survey of irrigation well PW -1 located on the golf course (NDEP 2011b).

This addendum is has been created to clarify the work plan and address NDEP's concerns, which were expressed in a letter dated July 28, 2011. Section 2 provides the standard operating procedure (SOP) for indoor air analysis, including a description of QA/QC procedures. Section 3 describes the video survey to be performed on the golf course irrigation well, PW-1, and Section 4 describes the methodology for calculating the vertical groundwater gradient and its seasonal fluctuations in the vicinity of the golf course.

## 2.0 SOP FOR ON-SITE INDOOR AIR ANALYSIS USING METHOD SW8021

This section provides the SOP for analysis of indoor air using Method SW8021. Hartman Environmental Geoscience or H&P Mobile Geochemistry will provide on-site mobile laboratory services. On-site analysis with Method SW8021 will be used for the analysis of grab samples of air collected during the first phase of indoor air sampling. The target analytes for air sampling will be:

- PCE,
- Trichloroethene (TCE),
- cis-1,2-Dichloroethene (cis-1,2-DCE), and
- trans-1,2-DCE.

### *2.1 Operating Conditions and Instrumentation*

Instrument: SRI 8610

Column: 20 meter MTX-1, 0.32 millimeter (mm) x 1.8 μ capillary

Carrier flow: Nitrogen at 15 milliliters per minute (mL/min)

Detectors: Electron Capture Detector (ECD)

Column oven: Isothermal at 90 degrees.

### *2.2 Standard Preparation*

Primary (Stock) standards: Made from certified vapor standards purchased from certified suppliers. Typical concentration: 1,000 part per billion by volume (ppbv)

Secondary (Working) Standards: Made by diluting primary standard into Tedlar bags with clean air or nitrogen. Typical concentrations are 5 ppbv, 50 ppbv, and 100 ppbv.

### *2.3 Initial Multi-Point Calibration Curve*

An initial calibration curve of a minimum of three points is performed:

- At the start of the project.
- When the gas chromatograph (GC) column or operating conditions have changed.
- When the daily mid-point calibration check cannot meet the requirements as specified below.

Calibration curves for each target component are prepared by analyzing low, mid, and high calibration standards covering the expected concentration range. The lowest standard concentration will not exceed 5 times the reporting limit for each compound.

A linearity check of the calibration curve for each compound is performed by computing a correlation coefficient and an average response factor. If a correlation coefficient of greater than 0.990 or a percent relative standard deviation (%RSD) of less than plus or minus 25 percent is obtained, an average response factor is used over the entire calibration range. If these linearity criteria are not obtained, quantitation for that analyte is performed using a calibration curve.

### *2.4 Continuing Calibration (Daily Mid-Point Calibration Check)*

Continuing calibration standards prepared from a traceable source are analyzed every 2 hours. The acceptable continuing calibration agreement is less than plus or minus 25 percent to the average response. When calibration checks fall outside this acceptable range, corrective action – consisting of verification of the standard or a new calibration – is performed by the on-site chemist.

### *2.5 Reporting Limits*

Reporting limits for this program are defined as 5 times lower than the lowest concentration standard of the calibration curve, as follows:

Table 1 - Reporting Limits for Method SW8021

| Compound | Detector | Report Limit |
|---|---|---|
| PCE | ECD | 5 µg/m$^3$ |
| TCE | ECD | 10 µg/m$^3$ |
| *cis*-1,2-DCE | ECD | 50 µg/m$^3$ |
| *trans*-1,2-DCE | ECD | 50 µg/m$^3$ |

Notes:

ECD Electron capture device
µg/m$^3$ Micrograms per cubic meter

### *2.6 Injection of Indoor Air Samples*

A 10 to 20 milliliter (mL) aliquot is flushed through a sample injection valve and a 1 mL aliquot is directly injected into the gas chromatograph.

### *2.7 Compound Identification and Quantification*

All compounds detected in samples are identified by chromatographic retention time and quantified using the average response factor from the active calibration curve. The analytical configuration provides the required compound separation.

### *2.8 Laboratory Data Logs*

The field chemist maintains injection and sample analysis records, including date and time of analysis, sampler's name, chemist's name, sample identification number, concentrations of compounds detected, calibration data, and any unusual conditions.

## *2.9 Analytical Quality Control*

### *2.9.1 Method Blanks*

Method blanks are performed at the start of each day by drawing clean air into a syringe or Tedlar bag and analyzing the sample. These blanks verify the sampling and analytical systems are free of contamination. Additional blanks are performed more often as appropriate, depending on the measured concentrations and at a minimum of 1 in every 20 samples analyzed. The results of all blank analyses are recorded in the data tables. If a blank shows a measurable amount of any target compound, the on-site chemist will investigate and identify the source and resolve the contamination problem before any further field samples are analyzed.

### *2.9.2 Laboratory Duplicate Samples*

Laboratory duplicate (repetitive) analysis of a sample is performed when inconsistent data are observed and at a minimum of 1 in every 20 samples analyzed.

### *2.9.3 Continuing Calibration (Daily Mid-point Calibration Check)*

As described above (Section 2.4), continuing calibration standards prepared from a traceable source are analyzed every 2 hours. The continuing calibration standard will include all compounds on the target analyte list.

# 3.0 VIDEO SURVEY OF THE GOLF COURSE WELL

A video survey of the well PW-1 will be conducted to (1) assess the condition of the well; (2) confirm the screen intervals in the well; and (3) confirm depth of the pump. Our review of the results of the video survey will help determine whether the well casing has been compromised, allowing contaminated groundwater to enter the well.

A video survey will be conducted using a camera with both downward and side view capability. The unit will be lowered into the well and a video image of the well casing will be recorded as the camera is lowered farther. The depth indicator on the camera system and the actual depth of the camera in the well will be checked with a measuring tape to make sure there is no discrepancy.

If video survey results do not provide strong evidence that well integrity has been compromised, use of several down-hole geophysical techniques will be considered, including (1) spinner logs under pumping and non-pumping conditions; (2) fluid resistivity and temperature logs under non-pumping conditions; and (3) a FloVision survey under non-pumping conditions. The data obtained by these methods will allow Tetra Tech to (1) evaluate passive vertical flow in the open well casing, and (2) determine whether mixing as a result of vertical flow may be caused by leaks in well casing. Other geophysical techniques may be considered to confirm the integrity of the well seal and the depth interval of gravel pack.

# 4.0 ANALYSIS OF VERTICAL GRADIENT IN THE VICINITY OF THE GOLF COURSE

The vertical gradients and the interaction between the shallow groundwater and the deep aquifer in the vicinity of the golf course well PW-1 will be evaluated as follows:

(1) Records of quarterly and annual pumping volume, duration, and static and dynamic water levels in well PW-1 will be obtained, if available. This information will be used to (1) estimate a period when groundwater levels in nearby shallow monitoring wells are likely to be influenced by pumping and irrigation, and (2) estimate approximate vertical gradients between shallow and deep aquifers under pumping and non-pumping scenarios.

(2) Using data from monitoring wells located at various distances from the source area along the central line of the PCE plume, seasonal changes in water levels in shallow groundwater will be evaluated to confirm (1) whether gradients in the vicinity of the golf course flatten during the summer in response to irrigation, and (2) whether any drawdown in shallow groundwater is likely as a result of pumping of the well PW-1.

The results of this evaluation may help explain the widening of the PCE plume in the vicinity of the golf course well and the observed seasonal effects of groundwater elevations and PCE concentrations in the vicinity of the irrigation well.

## 5.0 REFERENCES

Nevada Division of Environmental Protection (NDEP). 2011a. Letter on the Draft Work Plan for Mitigation of Indoor Air and Well Water (dated June 28, 2011). From: Ms. Mary Siders, NDEP. To Mr. Irwin Kishner and Mr. Tim Swickard. July 8.

NDEP. 2011b. Letter on the Draft Work Plan for Mitigation of Indoor Air and Well Water (dated June 28, 2011). From: Ms. Mary Siders, NDEP. To Mr. Irwin Kishner and Mr. Tim Swickard. July 28.

Tetra Tech EM Inc. 2011. *Draft Work Plan for Mitigation of Indoor Air and Well Water*, Maryland Square PCE Site. June 28.