OFFICE MEMORANDUM

Date: March 5, 2008

To: Rashmi Patel

From: Curt Roebuck, CPG, CP

Subject: Mt. Pleasant State Police Post Project Summary

The MPSPP Site (Facility I.D. No. 00009503), formerly a Michigan State Police Post headquarters, is currently vacant. The site is located at 1011 North Mission Street in Mount Pleasant, Michigan (Figure 1), and is bounded on the east by Mission Street and Wendel's Furniture store, a United Parcel Service (UPS) facility to the west, a heavy equipment parts distributor to the north, and an Ace Hardware Store to the south (Figure 2). J.W. Filmore's Restaurant, which was formerly the site of a gasoline service station, is located south of Ace Hardware on the northwest corner of Mission and Pickard Street (Michigan State Highway M-20).

The surface topography near the site is relatively flat, with elevations ranging from 760 to 770 feet above mean sea level (amsl). The surface topography slopes gently from the southwest to the northeast near the site, but slopes regionally to the west-northwest toward the Chippewa River, which is approximately ½ mile west of the site. The Chippewa River flows to the northeast.

Previous investigations are summarized below and a listing of available reports is included:

UST Removal

A Confirmed Release (C-0960-92) was reported on June 16, 1992 by Testing Engineers & Consultants, Inc. (TEC). Two, 6,000-gallon underground storage tanks (USTs) that had been used to store unleaded gasoline were removed from the MPSPP Site on June 17, 1992. Approximately 150 cubic yards of contaminated soil were also excavated and disposed at a Type II landfill. Analytical results confirmed the presence of gasoline contaminants in the soil around the piping run. The quantity of the release is unknown and no free product was reported.

Remedial Investigation

In 1995, DLZ (formerly Snell Environmental Group, Inc. [SEG]) was retained by the MDMB to conduct a Remedial Investigation (RI) at the Site to assess the extent of impacted soil and groundwater. Thirteen soil borings and five monitoring wells were installed during the RI. The results of the investigation were presented in the *Remedial Investigation/Feasibility Study and Corrective Action Work Plan* (SEG, September 1995). The RI results confirmed the presence of groundwater contaminants at concentrations above the applicable contemporary Residential and Commercial I, Tier I, Risk Based Screening Levels (RBSLs) established by MDEQ under Part

213 of the Natural Resources and Environmental Protection Act, Michigan Public Act 451, as amended. Based on soil analytical results, it was estimated that contamination was also present in the capillary fringe in the former tank area, approximately 8 to 10 feet below grade surface (bgs). Benzene, toluene, ethylbenzene, and xylenes (BTEX) were identified as the parameters of concern for the remedial design and ongoing monitoring. Methyl tertiary-butyl ether (MTBE) was not detected in soil or groundwater samples during the RI.

A Feasibility Study, which evaluated several groundwater remediation alternatives, was included as part of the SEG RI Report. The recommended remediation alternative was groundwater extraction followed by air stripping and treatment of the effluent air with vapor phase carbon adsorption. With this alternative, treated groundwater would be amended with nutrients and oxygen and re-injected into the aquifer through an infiltration gallery, stimulating in-situ biodegradation of contaminants and flushing contaminants in the capillary fringe. To further delineate the horizontal and vertical extents of contamination and to aid in the design of the groundwater treatment system, one additional monitoring well was installed and five additional soil borings were drilled at the site in July and August 1996.

Groundwater Remediation

Haley & Aldrich (formerly Techna Corporation), of Plymouth, Michigan implemented the recommended alternative. The groundwater treatment system began operation on September 9, 1996. The system was shut down on November 12, 1996 due to iron plugging the air stripper, flow meter, and infiltration gallery. Haley & Aldrich installed an iron removal system to minimize iron precipitating in the air stripper diffuser tubes and the system was restarted in March 1998. The system operated on a regular basis from March 1998 through May 1999, when the system was shut down due to insufficient funding. Groundwater treatment resumed in March 2000 and continued through January 2001. The system operated intermittently from January 2001 through October 2001, with periodic shutdowns due to necessary system repairs and leakage from the infiltration gallery to the surface. The system was modified to include addition of muriatic acid to the treated groundwater prior to the infiltration gallery to alleviate plugging, which was likely due to an accumulation of biomass within the infiltration gallery.

Because of frequent failure of the infiltration gallery, the groundwater remediation system was permanently shut down in October 2001. A total of 5,081,566 gallons of groundwater were treated from September 1996 through October 2001. A detailed summary of the system operation and maintenance is included in the *1996-2001 Annual Performance Evaluation of Groundwater Remediation System Report* (DLZ, February 2002). Following system shutdown, groundwater samples were collected from the site monitoring wells in October 2001. All analytical results were below all contemporary MDEQ Generic Residential/Commercial I Cleanup Criteria (GRCC).

Supplemental Site Investigation

In the spring of 2002, DLZ conducted a Supplemental Site Investigation to determine whether the groundwater contaminant plume had migrated off-site at concentrations exceeding current applicable Part 213/Part 201 GRCC and to evaluate potential closure options. Four monitoring wells were installed as part of this investigation. The results of the investigation were presented

in a *Draft Supplemental Investigation Report* (DLZ, July 2002). The Supplemental Site Investigation results confirmed that groundwater contaminants, primarily BTEX, were present off-site to the west, on the UPS property and likely present on the commercial property across the UPS driveway to the north.

Historical Data Review

In 2002, DLZ obtained historical data for the site from Environmental Data Resources, Inc. (EDR) to attempt to identify potential upgradient sources of contamination that were migrating onto the former MPSPP property. The EDR Radius Map Report identified nine leaking UST sites in the vicinity of the MPSPP Site.

In 2002, DLZ reviewed MDEQ files for the Total Petroleum, Inc. (TPI) gasoline station located at 815 North Mission Street, approximately 400 feet south (upgradient) of the site (Figure 2). Information in the MDEQ files indicated that several environmental response and investigation activities have occurred at the TPI Petroleum property, and that contaminated groundwater had migrated off the TPI Petroleum property in a northerly direction toward the site.

Remedial Investigation /Soil Delineation Study (RI/SD)

In the winter of 2002, DLZ conducted a RI/SD study to determine the extent of impacted soil remaining above the water table and to collect additional groundwater data to further characterize the distribution of contaminants in the aquifer. Twelve borings were installed as part of this investigation. The results of the investigation were presented in the *Draft Remedial Investigation/Soil Delineation Report* (DLZ, December 2002). Based on the RI/SD results, DLZ concluded that the quantity of impacted soil present in the vadose and smear zones associated with the former USTs was minimal. BTEX compounds were detected in groundwater samples collected from within, east of, and downgradient of the former UST tank basin in excess of the contemporary cleanup criteria. During initial investigative activities, MTBE was not detected in any soil or groundwater samples. However, MTBE was detected in groundwater within and downgradient of the former UST basin in borings advanced during the RI/SD. Additionally, MTBE was detected in several upgradient borings and one existing upgradient monitoring well, suggesting that contaminants from an upgradient source(s) was migrating onto the MPSPP property.

Project Summary 2004

In February 2004, MDMB and DLZ met to discuss how potential remedial/closure alternatives for the site would be impacted by a plume of contaminated groundwater originating from an upgradient source co-mingling with contaminated groundwater attributable to the site. Based on information provided by the MDEQ, MDMB and DLZ are responsible for providing sufficient information to the MDEQ to demonstrate that the site is being impacted by an upgradient source or MDEQ would recognize each individual party jointly and severally liable for remediation of the co-mingled plumes. DLZ conducted a historic and regulatory records review of possible upgradient sites of environmental concern in association with the MPSPP. Based on the presence of free product, groundwater contour maps indicating groundwater flow in a northerly direction, and monitoring well analytical results down gradient of the TPI Petroleum property

(up gradient of the Site), it appears the Site is being impacted by the TPI Petroleum property. Additionally, The TPI Petroleum 2001 Annual Site Status Report (Compliance, April 2002) indicates the J.W. Filmore's Restaurant property was formerly a retail gasoline station. Conversations by Compliance, Inc. with local residents indicated a retail gasoline station owned and operated by Hafer Oil Company existed on this property through approximately the mid-1960s. The TPI Petroleum report indicated aerial photographs on file at the Mt. Pleasant Department of Public Works depicts what appears to be a retail gasoline station on the J.W. Filmore's property.

Project Summary 2006

Two monitoring wells were installed and eight quarterly groundwater monitoring events, from February 2004 through April 2006 were conducted on the site to assess on-site migration of petroleum contamination from upgradient sources. Groundwater flow has historically been to the north and northwest. During the sampling events, groundwater flow varied from north-northeast to north-northwest. Laboratory results indicated that BTEX constituents comprise the highest contaminant concentrations in groundwater, followed by 1,2,4-trimethylbenzene (124TMB), 1,3,5-trimethylbenzene (135TMB), and MTBE. Other VOCs were also detected. Contaminant concentrations in groundwater exceeded Residential Drinking Water Criteria with the data suggesting an upgradient source of contamination.

Available Reports

Reports associated with investigative and remedial activities at the site since 1992 include:

- *20-Day Initial Abatement Report*, TEC.
- *45-Day Characterization Report and Work Plan*, TEC.
- *Specifications of Construction, Ground Water Remediation System*, SEG, August 1995.
- *Remedial Investigation/Feasibility Study and Corrective Action Work Plan*, SEG, September 1995.
- *Final Assessment Report*, SEG, October 1996.
- *1999 Annual Performance Evaluation of Ground Water Remediation System*, SEG, March 2000.
- *2000 Annual Performance Evaluation of Ground Water Remediation System*, DLZ, March 2001.
- *1996-2001 Annual Performance Evaluation of Ground Water Remediation System*, DLZ, February 2002.
- *Draft Supplemental Site Investigation Report*, DLZ, July 2002.
- *Draft Remedial Investigation/Soil Delineation Report*, DLZ, December 2002.
- *Draft Project Summary Report*, DLZ, August 2004.
- *Draft Project Summary Report*, DLZ, December 2006.

Schedule

Groundwater Sampling event	2/14/08
Laboratory Analysis of Samples	2/15 – 22/08
Closure Report Preparation	2/25 – 3/7/08
MDMB Review of Closure Report	3/10 – 14/08
Incorporate MDMB Comments	3/17 – 21/08
Submittal of Closure Report to MDEQ	3/21/08

CGR

cc: Sadi Rayyan, File

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