

### 3.0 ENVIRONMENTAL INVESTIGATIONS AND REGULATORY UPDATE

#### 3.1 Facility-Wide Investigations

Several phases of site characterization activities have been performed since January 1990. These activities have been reported in various documents including Ralston and Associates (1990), Engineering- Science (February 1992 and June 1992), and the U.S. Army Corp of Engineers (1998). Site characterizations published in 1992 and earlier were mandated by VDEQ Pollution Complaint cases PC1991-0912 and 1991-1974, which were closed in June 2001. As a result of these investigations, 20 groundwater monitoring wells, MW-1 to MW-21, were installed<sup>1</sup>. Groundwater elevation gauging and monitoring well sampling for TPH, BTEX, naphthalene, and MTBE at seven monitoring wells had been ongoing since 1990 on a quarterly schedule. Quarterly monitoring reports were submitted to VDEQ summarizing quarterly activities and results. At various discrete sampling times, dissolved lead<sup>2</sup> was also collected. Additional monitoring wells have been installed since 2001.

##### 3.1.1 RCRA Corrective Action Investigation

RCRA Corrective Action Investigation activities completed to date are summarized in **Table 1**. The activities have been conducted per the following USEPA-approved documents:

<i>Work Plan</i>		<i>EPA Approval</i>	<i>Results Report</i>	
• Delineation of Dissolved Benzene Plume Work Plan	Apr-2001	May-2001	Results of Site Investigation Activities and Annual Progress Report	Apr-2003
• RCRA Facility Investigation Work Plan Addendum	Jun-2002	Aug-2002		
• Additional Delineation and Interim Corrective Measures (ICM) Work Plan	Dec-2003	Jan-2004	Annual Progress Report	Apr-2004
• RCRA Corrective Measures Study Pilot Test Work Plan	Sep-2005 Revised Jun-2006	Jul-2006 (Comments Dec-2005)	RCRA Corrective Measures Study Pilot Test Work Plan Addendum	Sep-2006
• RCRA Corrective Measures Study Pilot Test Work Plan Addendum	Sep-2006	Oct-2006	RCRA Corrective Measures Pilot Study Work Plan Addendum Report	Feb-2007

<sup>1</sup> Well MW-2 was abandoned prior to December 1990 due to construction activities (ES, February 1992). Well MW-12 had been abandoned and subsequently replaced in January 2001 because the well was reported by site personnel to be dry and damaged. The original well was approximately 6.5 feet deep, while the replacement well is approximately 40 feet deep.

<sup>2</sup> Based on available previous site characterization reports, this lead was filtered in the laboratory.

<b>Work Plan</b>		<b>EPA Approval</b>	<b>Results Report</b>	
• Implementation Recommend for RCRA Corrective Measures Pilot Study Work Plan	Jun-2007	Jul-2007	Pilot Test Technology Implementation (iSOC® System Installation) Report	Aug-2007

The April 2001 Work Plan detailed work to be performed to delineate site-wide groundwater contamination in accordance with the FLA requirements; the fieldwork was completed in the fall of 2001 by the URS Corporation. The June 2002 Supplemental Work Plan outlined activities for additional delineation and documentation of groundwater conditions over time; the activities were completed in the second half of 2002. The results of the 2001 Work Plan and 2002 Supplemental Work Plan were detailed in the April 2003 Results of Site Investigation Activities and Annual Progress Report and indicated the following:

- Exceedances to USEPA Region III Risk-Based Concentration values for tap water occur for benzene, ethylbenzene, MTBE, benzo(b)fluoranthene, naphthalene, and total lead at various monitoring wells across the facility.
- Two historical source areas are present in the west portion of the facility as indicated by elevated concentrations of dissolved-phase benzene and MTBE in this area. The first source area is present in the vicinity of monitoring well MW-11 (loading rack area); the second source area is present near MW-3 and around wells MW-22, MW-28, MW-30, and MW-31.
- A third historical source area (unrelated to the two source areas mentioned above) is present in the east area of the facility based on low MTBE detections in wells MW-7 and MW-26 and occasional presence of free product (LNAPL) with a thickness of approximately 0.01 feet in well MW-21<sup>3</sup>.
- The extent and migration of the dissolved-phase constituents in the deeper groundwater are limited allowing for natural degradation processes to lower the concentrations to levels below health-based standards.
- Quarterly groundwater sampling and groundwater level gauging conducted since 1990 show a decreasing trend in the dissolved-phase plumes for benzene and MTBE.

Based on the above, the December 2003 Work Scope proposed (1) installation of three off-site wells to complete additional groundwater delineation in the southwest property boundary and (2) enhanced fluid recovery (EFR) events on a quarterly basis as an interim corrective measure. The off-site wells (OSW-3, OSW-4, and OSW-5) were installed in July 2004 as documented in 2004 Annual Progress Report. The EFR events were conducted in wells MW-11, MW-21, MW-5, MW-23, MW-28, MW-30 and MW-31 from the first quarter of 2004 through the third quarter of 2005. Results of the EFR events were provided in the

<sup>3</sup> Last measurable product thickness (0.01 feet) recorded on September 25, 2002; subsequently only a product-sheen has been observed in MW-21.