
# STATEMENT OF BASIS

# CONTINENTAL AUTOMOTIVE SYSTEMS, INC., CULPEPER FACILITY (VAD030341077)

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Administrative Record – Index of Documents for Statement of Basis

## I. INTRODUCTION

The Virginia Department of Environmental Quality (DEQ) has prepared this Statement of Basis (SB) to solicit public comment on its proposed decision for the Continental Automotive Systems Inc. Facility (Continental) located at 13456 Lovers Lane, Culpeper, Virginia (Facility). DEQ's proposed decision consists of the following components: 1) perform in situ chemical oxidation of contaminants in groundwater, 2) continue the groundwater and indoor air monitoring programs, 3) ongoing compliance with the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action (Permit), and 4) maintain compliance with institutional controls (ICs) in the form of land use restrictions for SWMU 5 and final cover maintenance for SWMU 6. This SB highlights key information relied upon by DEQ in making its proposed decision.

The Facility is subject to EPA's Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq. (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have investigated and cleaned up any releases of hazardous waste and hazardous constituents that have occurred at their property. For permitted facilities, DEQ retains primary authority in Virginia for the Corrective Action Program.

The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which DEQ's proposed decision is based. See Section IX, Public Participation, for information on how you may review the AR.

## II. FACILITY BACKGROUND

The Continental Facility is an 89 acre property owned and operated by Continental Automotive Systems, Inc. located near the intersection of Lovers Lane and Industrial Road in Culpeper, Virginia. Operations at the Facility began in the 1970's, originally built by Westinghouse to manufacture wastewater treatment plant equipment. The Alfred Teves automotive manufacturing company purchased the Facility and began operations manufacturing automotive brake and suspension components in the spring of 1976. The Facility subsequently operated under the additional names ITT Teves and ITT Automotive. From approximately 1978 to 1982, the Koni Company concurrently operated a shock absorber manufacturing operation in the main building. In September 1998, the Facility was purchased by Continental of Germany and began operating under the name Continental Teves. The current name, Continental Automotive Systems, Inc., was adopted in 2010. A location map has been included as Figure 1 showing the location of the Facility.

The 240,000 square-foot building is used for industrial operations and consists of an office complex and facilities used for the manufacturing of brake components for automotive braking systems. The current primary operation is the machining of Antilock Braking System (ABS) junction blocks from aluminum billet material. The Facility has approximately 230 employees that work on site. There are three main structures that comprise the Facility, which include:

- Main Factory Structure (machining floor and office areas)
- Industrial Pre-Treatment Plant (wastewater treatment)
- Material/Flammables Storage Shed

The Facility is bounded by Lovers Lane to the north. US Highway 29 is located north of Lovers Lane, followed by a manufacturing facility and several residential neighborhoods. Areas to the west consist of light industrial facilities, commercial facilities, and agricultural land. The Facility is bounded by a heavy rail line to the east, followed by agricultural land, a business park, and residential properties. Agricultural land adjoins the Facility grounds to the south.

Potable water for the Facility is obtained from the Town of Culpeper, which receives its water from four aboveground reservoirs. All sanitary waste water from the Facility is discharged to the Town of Culpeper public sanitary sewer system. All process wastewater is treated at the onsite wastewater pretreatment plant before discharge to the municipal system. While no water supply wells are located on-site, several are located within one mile of the Facility boundaries. In accordance with the Town of Culpeper Comprehensive Plan, new residential or commercial development within the town boundaries will be served by municipal water supplies.

Historical hazardous waste generating activities conducted at the Facility included chrome plating, painting, degreasing, machining, and grinding. The waste from the treatment of chrome plating wastewaters were placed in a pretreatment lagoon and the two sludge drying beds (3 surface impoundments) which were classified as hazardous waste management units in accordance with the regulations promulgated under the authority of the RCRA. The sludges were classified as hazardous waste based on high concentrations of hexavalent chromium (waste codes D007 and F006). The surface impoundments also managed wastes derived from degreasing operations (F001) and constituents derived from spent paint solvents (F005 and D001).

Potential contaminant sources at the Facility may have been attributed to: historic releases and spills to the ground surface from impoundments, former drying beds, former oil/water separators, sumps at the Facility, former materials loading/unloading areas, former pits, former staging and/or storage areas, maintenance buildings, former treatment/degreasing areas, historic subsurface waste materials, and historic releases from underground utilities/flumes to the subsurface. On October 10, 2000, the Facility's Hazardous Waste Management Permit for the pretreatment lagoon and sludge drying beds was modified to include Site-Wide Corrective Action requirements in accordance with HSWA, which required investigation of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified at the Facility.

Based on historical investigations and cleanup activities to date, primary contaminants in groundwater or constituents of concern (COCs) include tetrachloroethylene (PCE) and its degradation compounds including trichloroethylene (TCE), cis-1,2-dichloroethylene (DCE), and vinyl chloride (VC). Secondary contaminants in groundwater include chromium. Further details regarding environmental investigations and cleanup activities are provided below and in documents contained in the AR.

## III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AND CLEANUP ACITIVIES

Based on a review of files maintained by the DEQ and EPA Region 3, a number of SWMUs and AOCs were identified at the Facility. A site layout map is included as Figure 2 showing the location of each SWMU and AOC and a monitoring well and boring location map is included as Figure 3. The following table lists each SWMU and AOC.

**SWMU and AOC Identification Table**

| Identification | SWMU and AOC Description |
|---|---|
| SWMU-1 | Former Closed Container Storage Area |
| SWMU-2 | Former Baghouse for Asbestos Removal |
| SWMU-3 | Former Oil-Water Separator for Old Henry System |
| SWMU-4 | Underground Pipes Carrying Acidic Wastewater |
| SWMU-5 | Closed Industrial Waste Management Units |
| SWMU-6 | Former On-site Sanitary Treatment Plant |
| SWMU-7 | Former Degreasing Areas |
| SWMU-8 | Evaporator 3,000-gallon Sump Area |
| SWMU-9 | Storage of Oily Waste in Roll-off |
| SWMU-10 | Former PCE Storage in Loading Dock |
| SWMU-11 | Storage of Aluminum |
| SWMU-12 | Original Closed Loop Sump System |
| SWMU-13 | Anodizing Sump Area |
| AOC-1 | Former Storage Yard and Shoe Lining Assembly |
| AOC-2 | Historic Storage Yard Spills |
| AOC-3 | Former Sandblasting Waste Storage/Disposal Area |
| AOC-4 | Former and Present Stormwater Drainage Ditches |
| AOC-5 | Loading Pad at Southwest Corner of Building |
| AOC-6 | Area Adjacent to Southeast Main Building |
| AOC-7 | Area Associated with Railroad Spur Line |
| AOC-8 | Area Located Northeast of Former Lagoons |
| AOC-9 | Area West-Northwest of Domestic Lagoon Location |
| AOC-10 | Original and Present Loading Dock Areas |

Based on investigation results it was determined that no further investigation or action was necessary at SWMUs 1, 2, 3, 4, 8, 9, 10, 11, 12, and 13 as well as AOCs 1, 2, 3, 4, 5, 6, 7, 8, and 9 in order to meet goals of the Corrective Action program. Environmental investigations and cleanup activities at the Facility have been focused on the following areas:

- SWMU-5 – Closed Industrial Waste Management Units
- SWMU-6 – Former On-site Sanitary Treatment Plant
- SWMU-7 – Former Degreasing Areas
- AOC-10 – Original and Present Loading Dock Areas

## A. RCRA Closure Activities and Permitting

The Facility submitted a RCRA Part A Operating Permit application to EPA in August 1980, and amended it in June 1981. EPA requested a Part B application and granted Interim Status in July 1981 for the operation of the wastewater treatment lagoon as a Land Disposal Unit (SWMU 6) that received chromium-plating and painting/degreasing wastewaters from 1980 to 1982, which required a Part B Permit or closure under RCRA. A closure plan for SWMU 6 was approved by EPA in May 1982. Extraction Procedure Toxicity Test (EP TOX) protocols were

utilized as a cleanup standard during the closure (for soils) of the pretreatment lagoon surface impoundment and the facility installed a final cover, which consists of controlled fill material of permeability less than the native subsoils compacted in lifts and six inches of top soil. On January 11, 1985, the Facility received approval for the certified clean closure of unsaturated soils at SWMU 6 and is required to maintain the final cover.

In 1989, the Facility submitted a closure plan for the former closed container storage area (SWMU 1) to EPA and DEQ in response to a request for a Part B application for its ongoing operation. The closure plan was approved and closure activities began, which consisted of container removal and general cleanup activities. In April 1990, DEQ approved the certified clean closure of SWMU 1. In addition to this in 1990, the Facility submitted a Post-Closure Care Permit (Permit) application and a revised Part A application for SWMU 6 and subsequently began performing Post-Closure Care activities.

In 1993 and in accordance with a Consent Order issued by EPA, the Facility was required to begin closure of the sludge drying beds (SWMU 5), which were associated with SWMU 6, and implement a RCRA Detection Groundwater Monitoring program for both SWMUs. A closure plan for SWMU 5 was submitted in 1995. Subsequently, a Post-closure Care Permit was issued to the Facility and on September 30, 1996, DEQ approved the Facility's certified clean closure of unsaturated soils at SWMU 5, which consisted of meeting RCRA clean closure performance standards for future industrial use. Therefore, the Facility filed a "Notice of Use Limitation" and survey plats showing the locations of SWMUs with the Facility's land deed restricting the SWMU 5 area to industrial use only. Since then SWMUs 5 and 6 have been managed as one unit under the Facility's Permit.

On October 10, 2000, the Facility's Permit was modified to incorporate requirements of the Site-Wide Corrective Action Program in accordance with HSWA. Since the Facility was required to conduct groundwater corrective action at the units based on results of initial groundwater detection and compliance monitoring, groundwater corrective action related to SWMU s 5 and 6 was deferred to the Site-Wide Corrective Action Program. Since then the groundwater monitoring program has been modified to monitor groundwater and remedial effectiveness site-wide and will continue until Corrective Action remedial goals are achieved.

B. Corrective Action Program Activities

On October 10, 2000, the Facility's Permit was modified to incorporate requirements of the Corrective Action Program in accordance with HSWA. The following is a summary of investigations, assessments, and cleanup activities that have been completed.

**1. RCRA Facility Investigation (RFI)**

In 2002, the Facility conducted field activities in accordance with an approved RFI Work Plan (dated 2001) in support of an RFI investigation. The RFI Report was developed and submitted to DEQ on April 21, 2003. The Report characterized the presence, magnitude, extent, direction, and rate of migration of releases of hazardous waste or hazardous constituents from each SWMU or AOC to soil, groundwater, surface water, sediment, and air. Based on RFI results, the Facility implemented Interim Measures (IMs) in 2003 and 2004, which included the installation of a multi-phase extraction system to address COCs in groundwater. IMs also included a Leading Edge Air Sparge System to address PCE observed in groundwater down

gradient in the southern portion of the Facility's property near the unnamed tributary. IM activities are discussed in further detail in Sections B.2 and B.3 below. During corrective action investigations, it was determined that, in addition to SWMUs 5 and 6, activities at SWMU 7 and AOC 10 contributed to groundwater contamination (see Section 4, Interior Investigations).

On April 18, 2008, DEQ requested that the Phase I RFI Report be revised to address comments issued by DEQ and include information provided by the Facility between 2004 and 2008 as separate submittals. Additionally, these revisions included updates to SWMUs and AOCs due to IM activities implemented since 2003. The revised RFI was submitted in June 2008. Based on data collected, the RFI concluded that soil, sediment, and surface water were not a media of concern. Since then, PCE including its degradation compounds and chromium in groundwater have been the focus of corrective measures at the Facility. Below is a summary of results of the quantitative risk assessment for human health and ecological risk assessments presented in the RFI and subsequent submittals.

Human Health Risk Assessment Summary

During the RFI process a human health risk assessment (HHRA) was completed to quantitatively assess soil, groundwater, surface water, and sediment media on the Facility's property. Sample results for all media were screened using EPA Region 3, conservative, risk based concentrations to identify constituents of potential concern (COPCs). Subsequently, identified COPCs, media, and exposure pathways were evaluated quantitatively for potential future unrestricted (residential) use of the property. Results of this evaluation were compared to EPA's acceptable risk range of 1E-06 to 1E-04 for carcinogenic compounds and a hazard index (HI) of 1 for non-carcinogenic compounds. Based on the results of the HHRA, groundwater was found to be the only media for which remedial measures were necessary in order to be protective of human health and the environment. The results are described briefly below.

HHRA results for soil indicated that concentrations of inorganics were found to be within naturally occurring background levels. Volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) were identified as COPCs during the screening level assessment and were evaluated quantitatively. In order to establish a risk range, the Facility quantitatively evaluated soil results using the inorganic results and without using inorganic results. Results indicated a risk range of 7.6E-08 to 8.5E-06, which is at or below EPA's acceptable risk. Results also indicated that only constituents having individual hazard quotients greater than 1 were iron, manganese, and vanadium, which are naturally occurring and are not considered a site COC.

Similar to soil, surface water and sediment samples were screened and quantitatively evaluated for potential risk to human health. Results indicated that potential risk from surface water and sediment was calculated at 1.03E-06 and 5.05E-06, respectively, which is within EPA's acceptable risk range. Hazard quotients calculated for surface water and sediment were 13 and 19, respectively, which are conservatively based on a child receptor and are due to the presence of manganese and iron in surface water and aluminum, iron, and manganese in sediment, which are naturally occurring and common for surface water and sediments. Hazard quotients calculated based on an adult receptor for surface water and sediment were 0.3 and 0.5, respectively, which is below an acceptable HI of 1. In addition, these constituents were consistently detected at similar concentrations in samples collected upstream, which represent background conditions, and downstream across Facility property. Based on this, no further

evaluation is necessary given that these inorganic constituents are naturally occurring and not considered site COCs.

During the RFI process, COCs identified in site wide groundwater at the Facility included PCE and its degradation compounds and chromium. Groundwater results indicated that PCE was detected above drinking water standards, namely Maximum Contaminant Levels (MCLs), in 33 of the 55 monitoring wells. The maximum concentration of PCE was 2,450 ug/l in MW-39, which is located west and adjacent to the Facility. Degradation compounds TCE, DCE, and VC including chromium were detected above MCLs in a limited number of monitoring wells indicating that PCE is the primary COC on-site. Based on this, HHRA results indicated that the overall risk to human health was calculated at 1.9E-03 and a hazard quotient of 47 under the most conservative of residential use scenarios, which are above EPA's acceptable risk ranges. Since the Facility is currently used for industrial purposes, the risk under the most conservative industrial use scenario was assessed. The results indicated that under the most conservative industrial scenario, risk was calculated at 1E-03 with a hazard quotient of 7.1. However, groundwater beneath the property is within the fractured bedrock and is not used for any purpose. Therefore there is no known risk from groundwater under the current use of the property and the Facility has no plans or intention to utilize groundwater from beneath the property in the future. However, DEQ's policy is to restore groundwater to its most beneficial use, which is drinking water. Therefore, DEQ has determined that corrective measures are necessary to be protective of human health and the environment and a groundwater use restriction will be imposed through the Facility's Permit.

Finally, based on the presence of VOCs in groundwater and their vicinity to the current buildings and structures on the property, the Facility evaluated indoor air. Air samples were collected from several locations within the main structure or manufacturing building. Indoor air samples were analyzed for the presence of VOCs. Results indicated that VOCs were either not detected above laboratory detection limits or were detected at concentrations below risk based indoor air screening levels. The Facility continues to monitor indoor air annually for the presence of VOCs. Monitoring data collected to date indicate that the site COCs are not present above applicable risk based standards in indoor air.

Ecological Risk Assessment Summary

During the RFI process a screening level ecological risk assessment (SLERA) was conducted using analytical data collected from surface soil, surface water, and sediment. During the assessment, aquatic habitats and terrestrial habitats were identified and appropriate data for related media were evaluated. Primarily for evaluation, the unnamed tributary located at the southern property boundary represented a potential aquatic habitat and storm water drainage features near the industrial portion of the facility were identified as potential terrestrial habitats. The exposure analyses for the aquatic habitats at the Facility indicated that the potential risks from COPCs were not likely for individual or populations of receptors of concern given that the unnamed tributary has occasionally been observed as intermittent. Therefore no further evaluation of the aquatic habitat was necessary. Surface soil at the Facility and from within the storm water drainage features (AOC 4) were used to evaluate the risk to the potential terrestrial habitats. Based on the screening level assessment results and assumed terrestrial food web interactions, lead and zinc were identified as COPCs within AOC 4.

In 2010 as a conservative measure based on results of the SLERA performed during the

RFI, a Step 3A ecological risk assessment (ERA) was performed on AOC-4. The results of the Step 3A assessment indicated that the presence of lead and zinc in surface soil within AOC-4 would not create an adverse impact to terrestrial community-level or population-level receptors. The majority of the detected values for both lead and zinc were below background and/or the NOAEL-based (No Observed Adverse Effect Level) ecological screening values protective of these receptors. Only zinc in one soil sample exceeded the LOAEL-based (Lowest Observed Adverse Effect Level) ecological screening value, which yielded a hazard quotient of 2.4. Given that the sample location is located adjacent to the pavement at the rear of the Facility, it is unlikely that this area is habitable and given the spatial limitations of the extent of zinc within AOC 4 the overall risk would be minimal. In addition, there is no longer any potential source for deposition of zinc due to manufacturing process changes and storm water permitting. Therefore it is anticipated that zinc concentrations in surface soil at that sampling location will attenuate over time. Based on this information, there is no unacceptable risk to the environment and no further evaluation is necessary.

Based on the conclusions of the RFI, the HHRA, and the ERA, groundwater at the Facility remains the only media requiring corrective measures. In addition, conclusions indicate that areas that have contributed to historical groundwater contamination at the Facility include SWMU 5, 6, 7, and AOC 10.

## 2. Interim Measure - Multi-Phase Extraction

In 2003, the Facility implemented an IM utilizing multi-phase extraction in an effort to address groundwater impacts from SWMUs 5 and 6 and eventual expansion to AOC 10. The multi-phase extraction system was a source-area IM designed to remove COCs from groundwater and to mitigate migration. The approach and management of the system was described in the 2003 *Interim Measures Project Management Plan* and the 2002 *Interim Measure Work Plan for Removal of Chromium from Groundwater*.

During the installation four extraction wells (EW-01 through EW-04) were installed as part of the system's network, monitoring well MW-18 was over drilled to create a deeper monitoring point, and the system's infrastructure was constructed. In addition, eight existing monitoring wells (MW-09, MW-20, MW-27, MW-28, MW-30, MW-35, MW-45, and MHW3) were modified to perform as extraction wells. During installation, all extraction well piping, except EW-04, was routed to one multi-phase extraction unit. EW-04 was specifically designed to remove chromium from groundwater and was routed through a separate multi-phase extraction unit.

In 2007, the Facility added extraction well EW-05 to the network to increase remedial efforts in the vicinity of AOC 10 and monitoring well MW-39, which historically had the highest groundwater VOC concentrations on-site. In addition, the two extraction units were reconfigured to include extraction wells EW-04, MHW3, MW-09, MW-45 routed to a mobile extraction unit (relocated near MHW3), and the remaining nine extraction wells routed to a stationary extraction unit located near the Facility's former wastewater pretreatment plant. Treatment media were consolidated from a carbon/resin mixture associated with the chromium removal to a granulated activated carbon-only media. The current system nomenclature is "Mobile" and "Stationary" Groundwater Extraction Units (GES). All extraction wells operated consistently from installation in 2003 until 2012. PCE concentrations began to exhibit asymptotic conditions at EW-05 and MW-39 in approximately 2009. This observation prompted

the implementation of a rebound study in the immediate vicinity of these wells in June 2012. Four extraction wells (EW-01, EW-02, EW-05, and MW-27) were shut-down in June 2012 as part of the MW-39 Rebound Study, which is discussed in further detail in Section B.6.

### 3. Interim Measure - Leading Edge Air Sparging System

In 2004, the Facility continued to address environmental impacts with the installation of the Leading Edge Air Sparging System (LEASS) trench adjacent to the unnamed tributary. The 204-foot long LEASS trench was installed in late 2004 in the southeastern portion of the property, approximately 50 feet up-gradient of the unnamed tributary. The sparge trench was designed as an IM to remove VOCs from groundwater prior to discharge to the unnamed tributary. Elevated concentrations of VOCs in surface water resulted in the implementation of these actions to protect human health and the environment from site COCs. Compressed air was pumped into the gravel trench through 39 injection points spaced throughout the trench and at varying depths. Operation of the air sparging trench was continuous from 2004 until June 2010, reducing VOC loading to the unnamed tributary and was successful in reducing VOC concentrations in down gradient portion of the property. Based on its success, operation of the LEASS system was suspended in 2010 due to limited continued effectiveness.

### 4. Interior Investigation - Nature and Extent Assessments

In 2009, the Facility performed an interior investigation of sub-slab soils in 2009 to assess potential soil and groundwater contamination under the main Facility building and any immediate threats to human health and the environment. Continental installed six shallow temporary points (TP-25, TP-26, TP-27, TP-28, TP-29, and TP-31) and three monitoring wells (MW-50, MW-51, and MW-52) within the main Facility building.

Sample results for soil indicated that cis-DCE was detected at 2 feet and 10 to 12 feet below ground surface (bgs) in boring TP-31 at concentrations of 0.977 and 1.09 milligrams per kilogram (mg/kg), which is below EPA Region 3 risk based RSLs for direct contact. No other VOCs were detected in soil above laboratory method detection limits. Groundwater from five interior monitoring wells and temporary points were sampled in October 2009. The remaining sampling locations did not have sufficient water for sampling. Results indicated that VOCs were detected in four of the five samples at concentrations below MCLs except for vinyl chloride. Vinyl chloride in MW-52 was detected at 3.3 micrograms per liter (ug/L), which exceeds its MCL of 2 ug/L.

Overall, the results of the interior investigations indicated limited to no soil contamination below the Facility in the areas investigated. Based on this data, it was determined that soil was not likely a contributing factor to groundwater contamination or an unacceptable risk to human health and the environment at the Facility. In addition, results indicated that groundwater collected as part of these investigations revealed that groundwater contamination below the Facility building did not appear to contain concentrations indicative of a source area.

During past operations at the Facility, three degreasing areas (SWMU-7) were used to wash machined brake castings using Techno-Chemie parts washers. The washers used hot PCE and lanolin and had integral distillation and recovery equipment for reclaiming and reusing the solvent. The 2009 evaluation of the soils and groundwater surrounding the former degreasing areas indicated low concentrations of COCs in soils and groundwater as stated above. However,

an assessment of groundwater at TP-31 was not completed due to insufficient water volume in the shallow well. In March 2010, sufficient water was present in TP-31 and the Facility collected a sample. Based on the results, the Facility conducted a source area investigation (Western Source Area) and subsequent in situ chemical oxidation. The following section discusses these activities in detail.

## 5. Interim Measure - Western Source Area In-Situ Chemical Oxidation (ISCO)

An assessment of groundwater at TP-31 was not completed during the interior investigation due to the absence of sufficient water volume. A sufficient amount of water was available for sampling in the temporary point in March 2010. Based on initial laboratory analytical results, TP-31 was over drilled, deepened an additional 38 feet and converted into a permanent 52 foot deep monitoring well (MW-50). Subsequently, MW-50 was redeveloped and sampled for VOCs. Sample results indicated concentrations of cis-DCE at 22,500 µg/L and vinyl chloride at 1,500 µg/L. These concentrations were the highest recorded at the Facility and indicate a potential source area. Therefore, this area is considered the Western Source Area.

In January 2011 in support of completing a Corrective Measures Study (CMS), the Facility conducted an additional investigation by installing six interior monitoring wells in order to characterize the western source area. Groundwater samples collected from these wells were analyzed for COCs and a down-hole packer study was performed to determine potential inter and intra-well connectivity between the monitoring wells. Based on this information, the foot print of the source area was defined and COC concentration levels were evaluated with results of the down-hole packer study. Based on the results of these activities, the Facility implemented an in-situ chemical oxidation (ISCO) pilot test utilizing sodium permanganate in 2011 within the western source area in support of the CMS. The Facility performed an initial ISCO injection in June 2011 and a follow on injection in December 2011. In June 2011, approximately 3,000 pounds of sodium permanganate were pressure-injected into wells MW-50, CMS-01, CMS-04, and CMS-05 at 10% to 20% solution concentrations. In December 2011, a second injection of sodium permanganate occurred by gravity-injecting approximately 3,060 pounds of sodium permanganate into each well at a 20% solution concentration.

CMS wells located in the treatment area and the wells surrounding the treatment area (MW-31, MW-36, MW-37, MW-38, MW-50, TP-28, and TP-29) have been routinely monitored post-injection to determine the concentrations of COCs including total organic carbon in the treated groundwater, assess interconnectivity of the bedrock fractures, and observe general response to treatment within and down gradient of the source area. Overall, the results and observations of the pilot scale ISCO injections indicate that the oxidant reduced the levels of COCs in groundwater within the western source area. VOCs have been reduced to below MCLs, which is over a 98% reduction in concentrations. While chromium concentrations in this area initially increased due to mobilization, data indicate that chromium concentrations have decreased over the course of 2012 and 2013. Currently, groundwater conditions remain influenced by unreacted oxidant. Therefore, groundwater monitoring will continue to monitor conditions as the oxidant is exhausted.

Based on this information, ISCO utilizing sodium permanganate has been successful at reducing VOC concentrations within the western source area. As part of the proposed final

remedy, the Facility will continue to monitor groundwater conditions and perform injections as necessary based on the monitoring data.

### 6. MW-39 Area Rebound Study and Characterization

In June 2012, the Facility initiated a Rebound Study in the southeastern portion of the Facility near MW-39 (referenced as the eastern source area in the CMS), the exterior monitoring well having the highest historical concentrations of PCE. While no defined source had been located in this area, MW-39 data indicated that a potential source may be proximal or hydraulically connected to this location. Multi-phase extraction historically has been an effective remedy within this area having reduced PCE concentrations by approximately 98% between 2006 and 2013. However, given the effectiveness of multi-phase extraction in reducing PCE concentrations at MW-39 and EW-05, concentrations remained above the MCL of 5 ug/L in several monitoring wells near the eastern portion of the Facility. Based on this, the Facility began addressing this area in support of the 2012 CMS by implementing a rebound study within the area and subsequent source investigation.

The rebound study was implemented on June 26, 2012 via shut-down of the multi-phase extraction operation at four extraction wells (EW-01, EW-02, EW-05, and MW-27). Transducers were set in each in advance of the shut-down to record groundwater elevation and barometric pressure data at regular intervals. The Facility monitored COC concentrations and groundwater parameters at extraction and monitoring wells EW-01, EW-02, EW-05, MW-27, MW-39, TP-26, MHW-4, P-1, MW-01, MW-02, MW-03, MW-18, MW-19, and MW-51. These activities continued for one calendar year. Results indicated that PCE concentration rebound was not observed at the wells within the area.

Based on the results of the rebound study, four new interior monitoring wells (CMS-07, CMS-08, CMS-09, and CMS-10) and three new exterior monitoring wells (CMS-11, CMS-12, and MW-53) were installed near the southeastern corner of the Facility main building to further characterize any potential source within the vicinity. Sample results collected in August 2013 from these wells indicate that no substantial concentrations of COCs were detected in any of these wells indicating that the area surrounding MW-39 and EW-05 was the original source of the highest PCE concentrations. In addition, this indicates that PCE concentrations have been successfully decreased by multi-phase extraction. Based on this and the success of ISCO in the western source area, the Facility plans to implement ISCO utilizing sodium permanganate to further reduce PCE concentrations in this area.

## C. Current Conditions

Currently, the contaminant plume, which mainly consists of PCE, is contained on site. The plume extends from the western source area and from the MW-39 or eastern source area to the south where COCs from the two areas converge and continue to extend south to the LEASS trench where the plume terminus has been delineated. Figure 4 is included showing the PCE contaminant plume in groundwater.

The Facility currently implements a semi-annual groundwater monitoring program site wide at twenty three monitoring locations, which includes groundwater monitoring wells in background locations up gradient of the source areas, within the source areas, locations cross gradient and down gradient of the source areas, points within the LEASS trench, and sentinel

wells located down gradient of the plume terminus. Based on the spring 2013 semi-annual sampling event, PCE was observed at concentrations exceeding the MCLs in thirteen of the twenty three monitoring wells sampled. TCE and vinyl chloride were observed at concentrations exceeding MCLs at one monitoring well location and chromium was observed above its MCL in two monitoring well locations. The Facility continues to monitor ISCO treatment within the western source area and intends to continue treatment efforts as part of the final remedy until remedial goals are met or treatment becomes ineffective. In addition, the Facility completed characterization efforts in the MW-39 area and intends to implement ISCO treatment within this area as part of the final remedy.

## IV. CORRECTIVE ACTION OBJECTIVES

### A. Soils

Based on previous cleanup endpoints at SWMUs 5 and 6 and the results of the quantitative risk assessment in the Facility's RFI Report, DEQ has determined that corrective measures for Facility soils are not necessary to be protective of human health and the environment under industrial use of the property. Therefore, DEQ's Corrective Action Objective for Facility soils is to control exposure to any hazardous constituents remaining in the subsurface by requiring the compliance with and maintenance of existing land use controls at the Facility.

Existing land use controls include 1) a residential land use restriction at the SWMU 5 area (closed sludge drying beds), which is implemented through a "Notice of Use Limitation" and associated metes and bounds description and survey plats filed with the Facility's land deed at the Circuit Court of Culpeper County on October 19, 1998, and 2) maintenance of the final cover at SWMU 6 (former on-site sanitary treatment plant or waste water lagoon), which is implemented through post-closure requirements of the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action.

### B. Groundwater

DEQ's policy is to restore groundwater so that it may be used for its most beneficial use if necessary, which is drinking water. Therefore, DEQ has determined that MCLs for contaminants are protective of human health and the environment for individual contaminants at this Facility. DEQ's Corrective Action Objectives for Facility groundwater are the following:

1. To control exposure to the hazardous constituents in the groundwater by requiring the compliance with a groundwater use restriction at the Facility as long as groundwater MCLs are exceeded. This restriction will be imposed by the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action.

2. To reduce concentrations of the following hazardous constituents in groundwater until drinking water standards, namely MCLs, are met. In addition to active remediation utilizing ISCO, ongoing groundwater monitoring will be continued in support of this objective.

**Constituents and Standards**

| Constituent | Standard (ug/l) | Source |
|---|---|---|
| Tetrachloroethylene (PCE) | 5 | MCL |
| Trichloroethylene (TCE) | 5 | MCL |
| Cis 1,2-Dichloroethylene (DCE) | 70 | MCL |
| Vinyl Chloride | 2 | MCL |
| Chromium | 100 | MCL |

C. Indoor Air

DEQ's Corrective Action Objectives for indoor air are the following:

1. To continue the indoor air monitoring program within the main manufacturing building to demonstrate continued compliance with applicable indoor air standards. The indoor air monitoring program will continue until site-related VOCs in groundwater beneath or within 100 feet of the Facility are at or below MCLs and can be maintained without active remediation.

2. To control exposure to volatile hazardous constituents in indoor air by requiring the use of vapor mitigation in or beneath new, totally enclosed structures designed for occupation within 100 feet of the foot print of groundwater having site-related VOCs identified above protective levels (MCLs) unless it's demonstrated to DEQ that it's not necessary to protect human health.

## V. SUMMARY OF PROPOSED REMEDY

A. Summary

Under this proposed remedy, DEQ is requiring the following actions:

1. Continue remedial efforts utilizing ISCO to reduce hazardous constituents in groundwater within the western source area and to implement ISCO injections within the MW-39 source area. Active remediation will continue until MCLs for hazardous constituents have been met or until it has been demonstrated that ISCO treatments are no longer effective. Monitored natural attenuation or long term monitoring may be implemented in the event of this occurrence.

2. Continue the groundwater monitoring program to confirm reductions in hazardous constituents within the source areas and to monitor attenuation and/or dissipation of hazardous constituents down gradient of the source areas. In the event ISCO treatment becomes ineffective prior to meeting MCLs, the monitoring program will continue to be implemented to confirm ongoing natural attenuation and/or dissipation of the hazardous constituents.

3. Maintain compliance with a groundwater use restriction that will be imposed by the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action.

4. There are currently no unacceptable risks to human health due to vapor intrusion from VOCs in indoor air because concentrations do not indicate an unacceptable risk or

because there are no building structures currently located above the contaminant plume. To minimize potential occupant exposure to site-related VOCs, DEQ's proposed remedy requires that the facility;

a. Continue the indoor air monitoring program until volatile hazardous constituents in groundwater within 100 feet of the facility have been reduced and are maintained at or below MCLs, which are the remedial cleanup goals for groundwater; and

b. In the event that buildings designed for occupation are constructed on other parts of the Site, implement and maintain an institutional control to include the following land use restriction:

"A vapor intrusion control system, the design of which shall be approved in advance by DEQ, shall be installed in each new structure constructed above the contaminated groundwater plume or within 100-foot around the perimeter of the contaminated groundwater plume, unless it is demonstrated to DEQ that vapor intrusion does not pose a threat to human health and DEQ provides prior written approval that no vapor intrusion control system is needed."

5. Maintain compliance with existing institutional controls including maintenance of the final cover for SWMU 6 required by the Facility's Permit and compliance with the residential land use restriction for SWMU 5 implemented through the Facility's "Notice of Use Limitation" filed with the land deed at the Circuit Court of Culpeper County.

B. Implementation

DEQ proposes to implement the remedy through the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action. Therefore, DEQ does not anticipate any regulatory constraints in implementing its remedy. In addition, the Facility is required to develop a Corrective Measures Implementation (CMI) Plan for Department approval that will provide the basis for continued remedy implementation, remedy operations and maintenance, groundwater and indoor air monitoring, evaluation of remedial effectiveness, and compliance with institutional controls.

C. Reporting Requirements

Compliance with and effectiveness of the proposed remedies at the Facility in reducing contaminant concentrations and restoring the groundwater to MCLs shall be evaluated and included in semi-annual groundwater monitoring reports that are required by the Facility's Permit. Upon approval of the Facility's CMI Plan and remedy implementation, the Facility will continue to demonstrate compliance with and effectiveness of the proposed remedies in semi-annual CMI Reports.

## VI. EVALUATION OF DEQ'S PROPOSED DECISION

This section provides a description of the criteria DEQ used to evaluate the proposed decision consistent with EPA guidance. The criteria are applied in two phases. In the first phase, DEQ evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, DEQ then evaluates seven balancing criteria to determine which proposed decision alternative provides the best relative combination of attributes.

A. Threshold Criteria

**1. Protect Human Health and the Environment**

This proposed remedy protects human health and the environment from exposure to hazardous constituents in groundwater, indoor air, and in subsurface soil at SWMU 5. DEQ's proposed decision meets this standard for current and anticipated land use. Based on the results of investigations and cleanup activities all known sources of contamination have been characterized and have been or are currently being addressed.

The property is currently used as an industrial facility consisting of a main manufacturing building containing manufacturing areas and administrative offices. The property also includes paved parking lots, a shipping dock, and large undeveloped, wooded areas. Potable water is supplied to the property by Culpeper's municipal water supply system and declining concentrations of hazardous constituents due to the implementation of the ISCO has been demonstrated. Required by this remedy, groundwater use for purposes other than environmental testing will be restricted via the Facility's Permit and the groundwater monitoring and indoor air monitoring programs will be continued. Since the Facility already maintains institutional controls requiring maintenance of the final cover at SWMU 6 and restricting residential land use at SWMU 5, no other institutional controls or corrective measures are necessary to be protective of human health and the environment for soil. The Facility is required to maintain the institutional controls and continue the monitoring programs until remedial cleanup goals are achieved to ensure protection of human health and the environment.

**2. Achieve Media Cleanup Objectives**

DEQ's proposed remedy meets the appropriate cleanup objectives based on current and reasonable anticipated future land use and water resource use(s). The current use of the property is industrial and the reasonable anticipated future use of the property is industrial. The Facility already maintains institutional controls requiring maintenance of the final cover at SWMU 6 and restricting residential land use at SWMU 5. Therefore, no additional institutional controls or corrective measures are necessary to protect human health and the environment for soil.

For groundwater, a limited number of VOCs and metals are still above remedial cleanup goals (MCLs). The following are cleanup standards for these constituents:

**Constituents and Standards**

| Constituent | Standard (ug/l) | Source |
|---|---|---|
| Tetrachlorethylene (PCE) | 5 | MCL |
| Trichloroethylene (TCE) | 5 | MCL |
| Cis 1,2-Dichlorethylene (DCE) | 70 | MCL |
| Vinyl Chloride | 2 | MCL |
| Chromium | 100 | MCL |

However, potable water is supplied to the Facility by Culpeper's municipal system. Groundwater beneath the property is not used for any purpose other than environmental testing and its use will be restricted as part of this remedy via the Facility's Permit. Institutional controls restricting the use of groundwater at the Facility will remain in place and groundwater monitoring will continue until cleanup standards for these constituents have been met. In addition, the indoor air monitoring program for site-related VOCs will be continued. Groundwater data, remedial effectiveness data, and indoor air monitoring data will be evaluated semi-annually to ensure that contaminants continue to decline in groundwater and that the remedy remains protective.

**3. Remediating the Source of Releases**

In all proposed decisions, DEQ and EPA seek to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Since 1982, the Facility has identified all potential and/or known sources of releases and has removed or mitigated impacts from those releases. These activities have been completed in accordance with various regulatory program requirements. The two remaining PCE source areas in groundwater are the last of the known sources of hazardous constituents at the Facility and are being addressed under Corrective Action by this remedy.

B. Balancing/Evaluation Criteria

**1. Long-Term Effectiveness**

The proposed remedy will maintain protection of human health and the environment over time by reducing concentrations of hazardous constituents in groundwater and controlling exposure to hazardous constituents in groundwater, soil at SWMU 5, and indoor air. DEQ's proposed decision requires implementation of ISCO within the two source areas to decrease concentrations of hazardous constituents in groundwater and compliance with institutional controls which are protective in the short-term as well as in the long-term. Institutional controls are implemented through the Facility's Permit for Site-Wide Corrective Action and the "Notice of Use Limitation" filed with the Facility's land deed. Groundwater and indoor air monitoring will continue periodically to ensure that the remedy remains effective and that contaminant levels continue to decline and do not leave the property.

**2. Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents**

The reduction of toxicity, mobility, and volume of hazardous constituents at the majority of SWMUs and AOCs at the Facility has already been achieved by previous cleanup activities summarized above in accordance with the Virginia Solid and Hazardous Waste Management Regulations for unit closure. DEQ's proposed remedy utilizing ISCO will further achieve reduction of toxicity, mobility, and volume of hazardous constituents in groundwater by oxidizing volatile organic compounds in situ using sodium permanganate at the sources. As the contaminant mass is depleted in the source areas, contaminants in groundwater down gradient are expected to attenuate/dissipate over time.

**3. Short-Term Effectiveness**

DEQ's proposed decision does not involve any activities, such as construction or

excavation that would pose short-term risks to workers, residents, and the environment. DEQ's decision involves the periodic handling of sodium permanganate, a moderately aggressive oxidant, during periods of injection to the groundwater as part of ISCO implementation. However, the handling and management of this product will be completed by authorized personnel only in accordance with manufacturer specifications and protocols and a Health and Safety Plan developed by the Facility. In response to oxidant injections, rapid decreases in hazardous constituents are anticipated with longer periods observed for decreases in levels downgradient of the source area treatment zones.

### 4. Implementability

DEQ's proposed decision is readily implementable. The Facility's oxidant injection points have already been installed during previous characterization activities in both source areas and two injection events have already taken place within the western source area during pilot testing of the remedy. In addition, the Facility's groundwater monitoring program was implemented in 1993 and in 2006 it was modified for site-wide groundwater monitoring. The Facility's air monitoring program is also already in place as are institutional controls associated with SWMUs 5 and 6. The groundwater use restriction will be imposed through the Facility's Permit, which will be modified to incorporate the final remedy and institutional controls following community acceptance.

### 5. Cost

DEQ's proposed decision is cost effective. Given that capital costs associated with institutional controls, characterization, and pilot testing have already been executed, on-going costs for remedy implementation are limited to periodic ICSO injections, operation and maintenance of the groundwater monitoring and indoor air monitoring programs, and general operation and maintenance of the remedy and Permit for Site-Wide Corrective Action.

### 6. Community Acceptance

DEQ will evaluate community acceptance of the proposed decision during the public comment period, which will last sixty (60) calendar days. DEQ's final decision will be described in the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action, which will be modified to include facets of the final remedy.

### 7. State/Support Agency Acceptance

DEQ coordinated with EPA on its proposed remedy. In addition, DEQ will evaluate EPA's acceptance of the proposed remedy during the public comment period. DEQ's final decision will be described in the Facility's Hazardous Waste Management Permit for Site-Wide Corrective Action, which will be modified to include facets of the final remedy.

## VII. ENVIRONMENTAL INDICATORS

Under the Government Performance and Results Act, EPA set national objectives to measure progress toward meeting the nation's major environmental goals. For Corrective Action, EPA evaluates two key environmental indicators for each facility: 1) current human exposures under control and 2) migration of contaminated groundwater under control. The

Facility met these indicators on October 1, 2002.

## VIII. FINANCIAL ASSURANCE

The Facility is already providing financial assurance for continued groundwater monitoring and investigation activities required by the Facility's Permit. Required by the Permit, updated cost estimates for DEQ's final decision are required and will be the basis for financial responsibility of the implementation and operation and maintenance of the final remedy.

## IX. PUBLIC PARTICIPATION

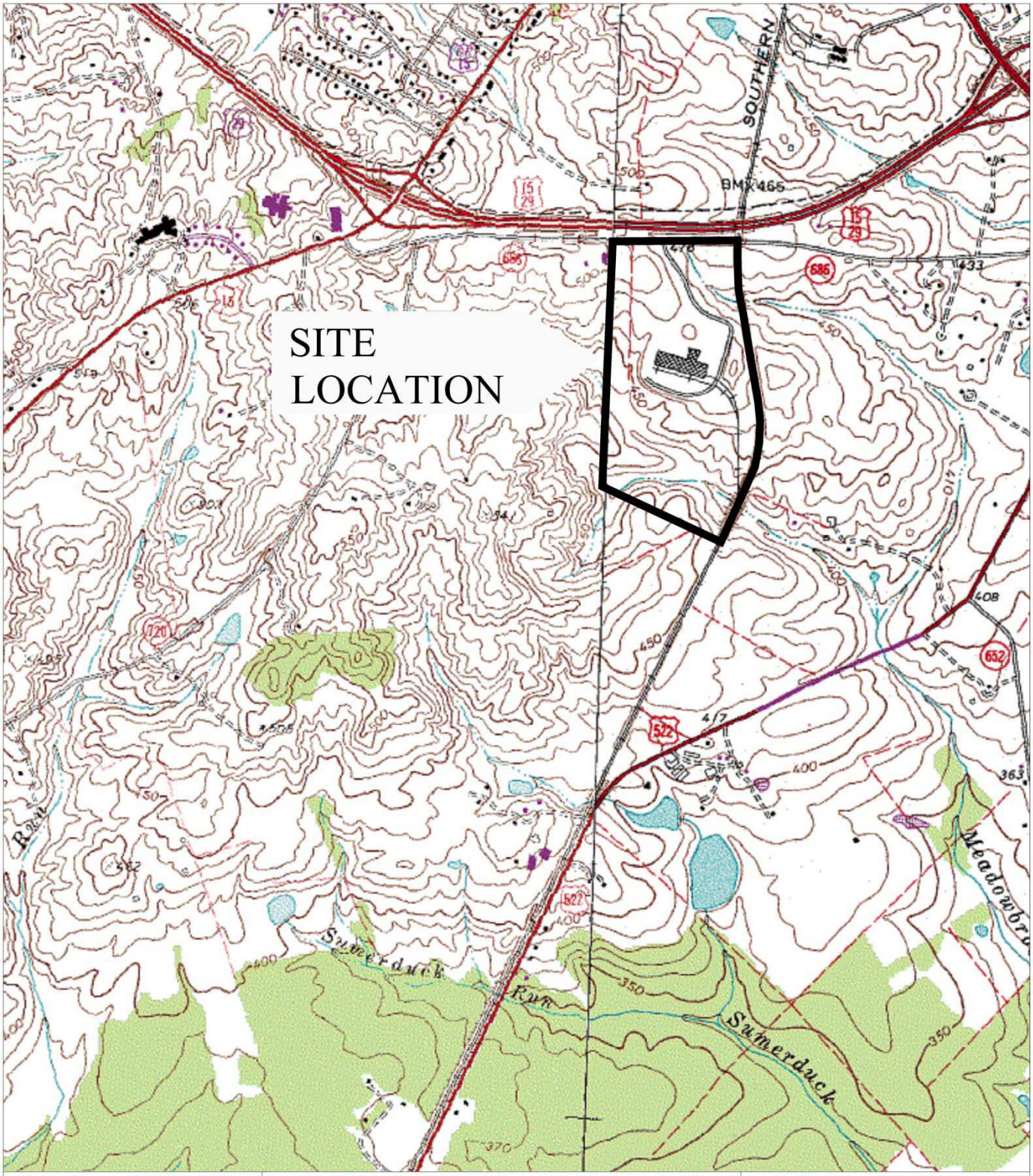
Before DEQ makes a final decision on its proposal for the Facility, the public may participate in the decision selection process by reviewing this SB and documents contained in the Administrative Record for the Facility. The Administrative Record contains all information considered by DEQ in reaching this proposed decision. Interested parties are encouraged to review the Administrative Record and comment on DEQ's proposed decision.

The public comment period will last sixty (60) calendar days from the date the notice is published in a local newspaper. Comments may be submitted by mail, fax, e-mail, or phone to Mr. Brett Fisher at the address listed below.

Virginia Department of Environmental Quality
629 East Main Street
P.O. Box 1105
Richmond, VA 23219
Contact: Brett Fisher
Phone: (804) 698-4219
Fax: (804) 698-4234
Email: brett.fisher@deq.virginia.gov

DEQ will make a final decision after considering all comments, consistent with the applicable RCRA requirements and regulations. If the decision is substantially unchanged from the one in this Statement of Basis, DEQ will issue a final decision and inform all persons who submitted written comments or requested notice of DEQ's final determination. If the final decision is significantly different from the one proposed, DEQ will issue a public notice explaining the new decision and will reopen the comment period.

# FIGURES




APEX

**Legend**

MN
GN
9 1/2° 32 MILS
1°49' 32 MILS

VIRGINIA

QUADRANGLE LOCATION

UTM GRID AND 1999 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Title:

# Facility Site Location Map

| | | | | |
|---|---|---|---|---|
| Drawn By:Source: USGS Culpeper Quadrangle | Job #: 10858.075 | Scale: NTS | Date: 2 09 2012 | Rev: 1 |
| Approved By: AOE | Filename: \figure1.dwg | | Figure number: 1 | |

N

0 150 300
FEET

**Areas of Concern (AOC) / Solid Waste Management Units (SWMU)**
**(RED Denotes Currently "Open" AOCs and SWMUs)**

| | |
|---|---|
| **AOC-1** | Former Storage Yard and Shoe Lining Assembly |
| **AOC-2** | Old Storage Yard Spills Associated with Handling Material, etc. |
| **AOC-3** | Former Small Sandblasting Waste Storage/Disposal Area in Machine Shop |
| **AOC-4** | Former and Present Drainage Ditches Associated with Stormwater Runoff |
| **AOC-5** | Loading Pad Area at the Southwest Corner of the Main Building Upgradient from the Surface Impoundment |
| **AOC-6** | Area Adjacent to Southeast Side of Main Building, Upgradient of Wastewater Treatment/Former Lagoon Area |
| **AOC-7** | **Area Between and Adjacent to Split in Railway Spur Line, Across from SE Corner of Main Building** |
| **AOC-8** | Area Located NW (upgradient) of Former Lagoons |
| **AOC-9** | **Area West-Northwest of the Former Domestic Lagoon Locations** |
| **AOC-10** | Loading Dock Area at the Southeast Corner of the Main Building |
| **SWMU-1** | Former Closed Container Storage Area |
| **SWMU-2** | Former Baghouse-for Asbestos Removal |
| **SWMU-3** | Former Oil/water Separator at Former Henry System |
| **SWMU-4** | Underground Pipes Carrying Acidic Wastewater to Pretreatment Plant |
| **SWMU-5** | Present Industrial Waste Management Units |
| **SWMU-6** | Former On-site Sanitary Treatment Plant |
| **SWMU-7** | Former Degreasing Areas |
| **SWMU-8** | **Evaporator 3,000 Gallon Sump Area** |
| **SWMU-9** | Storage of Oily Sludge Waste in Roll-off Container "back of building" |
| **SWMU-10** | **Former PCE Storage in Loading Dock Area** |
| **SWMU-11** | **Storage of Aluminum Chips for Recycling in Large Containers** |
| **SWMU-12** | Original Closed-loop Sump System in Milling Area |
| **SWMU-13** | Sump Collecting Drippings from Anodizing Ar |

NOTE: AOC 4 - DRAINAGE DITCHES

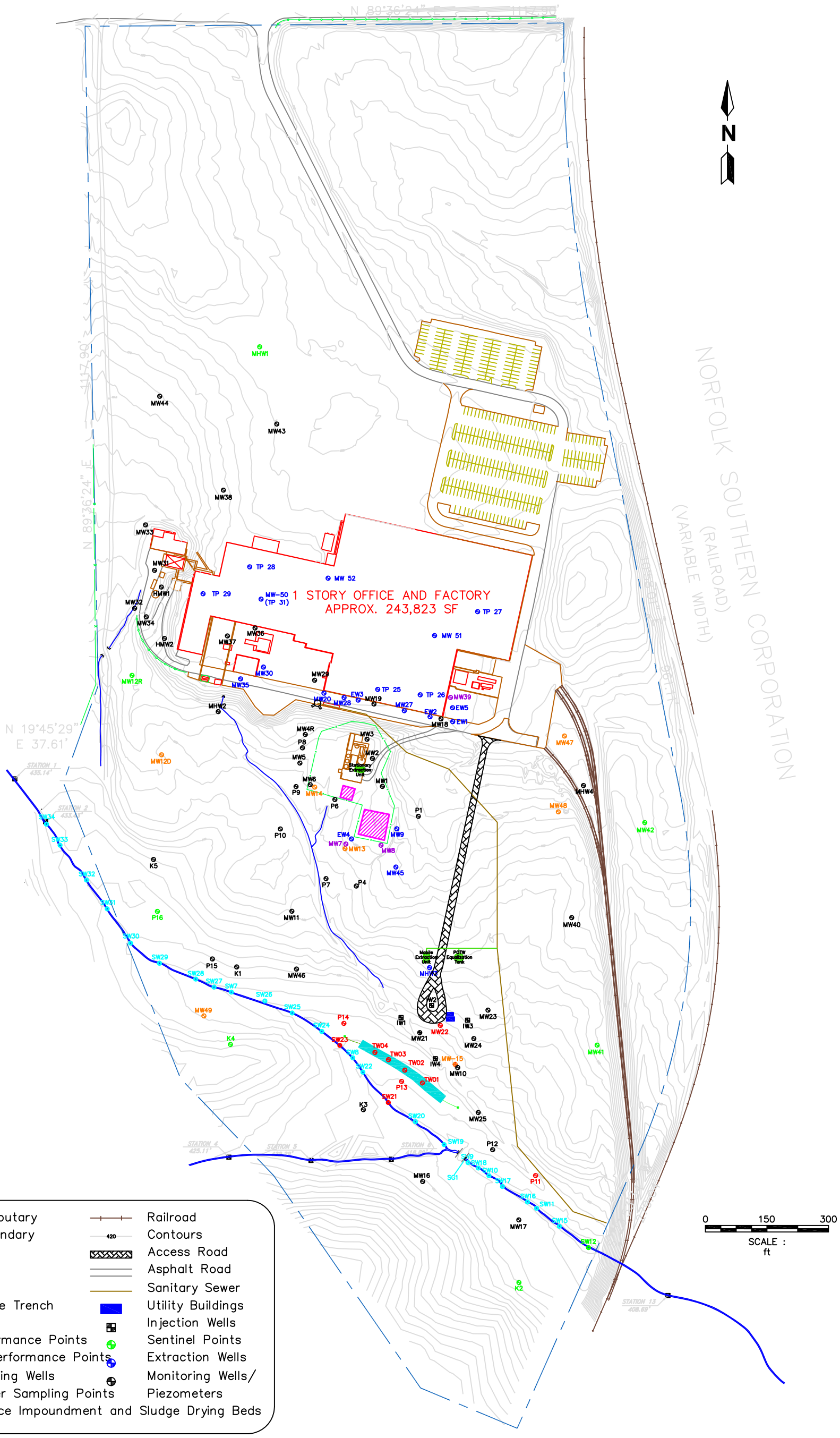

APEX
8854 RIXLEW LANE
MANASSAS, VIRGINIA 20109
TELEPHONE: (703) 396-6730
FACSIMILE: (703) 396-6743


Figure 2
AOC/SWMU Location Map
Culpeper, Virginia

| | | |
|---|---|---|
| Project Title: CONTINENTAL 13456 LOVERS LANE CULPEPER, VIRGINIA 22701 | | |
| Date: 12/13/2012 | Drawn By: CLS | Project Number: 10858.073 |
| CAD File: AOC-SWMU Location Map | Scale: N.T.S. | Client: CONTINENTAL |

# LOVERS LANE – ROUTE 686

(60' WIDE – D.B. 231, PG.124)




## LEGEND

- Unnamed Tributary
- Property Boundary
- Fence
- Guard Rail
- Swale/Ditch
- LEASS Sparge Trench
- Barrier Wall
- LEASS Performance Points
- Extraction Performance Points
- Deep Monitoring Wells
- Surface Water Sampling Points
- Closed Surface Impoundment and Sludge Drying Beds
- Railroad
- Contours
- Access Road
- Asphalt Road
- Sanitary Sewer
- Utility Buildings
- Injection Wells
- Sentinel Points
- Extraction Wells
- Monitoring Wells/ Piezometers


APEX

8854 RIXLEW LANE
MANASSAS, VIRGINIA 20109
TELEPHONE: (703) 396-6730
FACSIMILE: (703) 396-6743


# FIGURE 3

## FACILITY DETAIL MAP
## CULPEPER, VIRGINIA

| | | | |
|---|---|---|---|
| Date: October 2, 2012 | Project Title: CONTINENTAL TEVES, 13456 LOVERS LANE, CULPEPER, VA 22701 | | |
| Drawn By: CLS | | | |
| Project Number: 10858.073 | CAD File: Facility Detail Map | Scale: As Shown | Client: Continental |

# LOVERS LANE – ROUTE 686

(60' WIDE – D.B. 231, PG.124)

N

EXCEEDANCES

N 89°36'24" E 1114.90'

1117.96' N 89°36'24" E

N 19°45'29" E 37.61'

1 STORY OFFICE AND FACTORY
APPROX. 243,823 SQFT

NORFOLK SOUTHERN CORPORATION
(RAILROAD)
(VARIABLE WIDTH)

MW38 MW31 MW32 12.9µg/L MW12R MW37 MW36 MW35 MW30 5.9µg/L MW51

TP28 CMS02 CMS04 TP29 CMS05 CMS03 MW50 (TP31) CMS01 CMS06

MW20 MW28 EW03 MW19 MW27 11.1µg/L 40.3µg/L EW02 MW18 EW01 TP26 47.3µg/L MW39 EW05 179µg/L

MW03 12.3µg/L MW02 35.7µg/L Stationary Extraction Unit MW01 16.7µg/L

MHW1 MW44 MW43 MW52 TP25 TP27 P8 P9 P6 P10 P7 P4 P1 12.0µg/L

EW04 MW07 MW09 32.0µg/L MW08 32.3µg/L MW45 9.8µg/L

6.0µg/L MHW4 MW42

P16

North Fork

Mobile Extraction Unit POTW Equalization Tank MHW3 29.6µg/L

MW22 13.2µg/L

43.6µg/L P13

MW41

South Fork

18.6µg/L P11

Unnamed Tributary

SW12

K2

0 150 300

SCALE : ft

DATA LEGEND

PCE 2012 EXCEEDANCES (5.0 g/L)

LEGEND

- Unnamed Tributary
- Property Boundary
- Fence
- Guard Rail
- Swale/Ditch
- LEASS Sparge Trench
- Barrier Wall
- Closed Surface Impoundment and Sludge Drying Beds
- Sampling Locations
- Railroad
- Contours
- Access Road
- Asphalt Road
- Sanitary Sewer
- Utility Buildings
- Injection Wells

APEX
8854 RIXLEW LANE
MANASSAS, VIRGINIA 20109
TELEPHONE: (703) 396–6730
FACSIMILE: (703) 396–6743

FIGURE 4
TETRACHLOROETHYLENE (PCE)
Exceedence Isoconcentration Map
(Upper Water Bearing Zone)
October, 2012
CULPEPER, VIRGINIA

| | | | |
|---|---|---|---|
| Date: November 16, 2012 | Project Title: CONTINENTAL 13456 LOVERS LANE CULPEPER, VA 22701 | | |
| Drawn By: BL | | | |
| Project Number: 10858.073 | CAD File: Shallow Wells – PCE | Scale: As Shown | Client: Continental |

# ATTACHMENT 1

# Administrative Record

# Index of Documents for Statement of Basis

Continental Automotive Systems, Inc.
13456 Loves Lane
Culpeper, VA
EPA ID#: VAD030341077

ADMINISTRATIVE RECORD
Index of Documents for STATEMENT OF BASIS

This index includes documents that the Virginia Department of Environmental Quality (VDEQ) relied upon to develop and propose the final remedy selection determination described in the Statement of Basis. These documents were prepared for the Continental Automotive Systems, Inc. facility and are listed chronologically by document date.

1. Closure Approval, waste water treatment lagoon (SWMU 6), prepared by Virginia Department of Health, January 11, 1985
2. Consent Agreement, prepared by EPA, November 18, 1993
3. Notice of Use Limitation, Deed Notation, October 19, 1998
4. Indoor Air Sampling and Analysis Plan, prepared by Apex Environmental, Inc., November 2003
5. Operation and Maintenance Manuals, Source Area Removal System and Chromium Removal System, prepared by Apex Environmental, Inc., December 2003
6. Operation and Maintenance Manual, Leading Edge Air Sparge System, prepared by Apex Environmental, Inc., June 22, 2005
7. Groundwater Monitoring Plan, prepared by Apex Environmental, Inc., November 7, 2006
8. RCRA Facility Investigation Report, prepared by Apex Environmental, Inc., June 19, 2008
9. Technical Memorandum: Ecological Risk Assessment – Step 3a Assessment of AOC 4: Former and Present Drainage Ditches Associated with Stormwater Runoff, Appendix A of initial Corrective Measures Study, APEX Companies, LLC, September 2010
10. Pilot Study CMS Monitoring Point Installation, Analysis, and Summary Report, prepared by Apex Environmental, Inc., March 2011
11. Rebound Study Work Plan – MW-39 Area, prepared by Apex Environmental, Inc., May 4, 2012
12. Corrective Measures Study, prepared by Apex Environmental, Inc., December 2012
13. 2012 Annual Post-Closure Permit Groundwater Sampling Report, prepared by Apex Environmental, Inc., February 26, 2013
14. Work Plan for CMS Implementation, ESA CMS Well Drilling, Testing, and Construction, prepared by Apex Environmental, Inc., June 21, 2013
15. Semi-Annual January through June 2013 Post-Closure Permit Groundwater Sampling Report, prepared by Apex Environmental, Inc., October 2013