

**NOTICE OF PUBLIC HEARING AND INTENT TO MODIFY VELSICOL
CHEMICAL'S CORRECTIVE ACTION PERMIT AND TO APPROVE A FINAL
REMEDY**

The Tennessee Department of Environment and Conservation's (TDEC) Division of Solid Waste Management (DSWM) proposes to modify Velsicol Chemical LLC's Corrective Action Permit, TNHW-105, by adding a site-wide final remedy. A Statement of Basis, which provides a justification for the final remedy is also being public noticed. **A public hearing will be held at 5:30 p.m. on January 6, 2011 at the Bethlehem Community Center, 200 W. 38th Street, Chattanooga, TN 37410 (423-266-1384) to provide information about the permit and provide the public the opportunity to comment. From 5:30 to 6:00 p.m., prior to the formal portion of the hearing, which will start at 6:00 p.m., the public is welcomed to review and ask questions about the permitting materials.**

This action follows a public meeting conducted at the Bethlehem Community Center on February 17, 2009. The public meeting addressed the final remedy for the closed and recently demolished Velsicol facility, EPA ID: TND 06 131 4803. The site is located at 4902 Central Avenue, Chattanooga, TN 37406. The public notice of the meeting included the establishment of a 60-day comment period, January 16 through March 17, 2009. A follow-up meeting was held on March 12, 2009 after concern was voiced that some interested parties were unaware of the originally scheduled meeting. Comments received during the comment period and a Response to Comments are provided for public review as noted below.

The Statement of Basis (SB) contains summaries of: environmental investigation findings; completed and ongoing Interim Measures; and remedies selected for the solid waste management units (SWMUs) and areas of concern (AOCs) at the Velsicol site. The Final Remedy will consist of post-demolition site cover construction, including the long-term operation and maintenance of the capped site. The remedy will basically be to install a clean soil cover over contaminated soils and sediments, which will serve as a barrier to human exposure and for containment of the underlying contaminated soil.

As part of the final remedy, Velsicol shall continue groundwater and dense non-aqueous phase liquid (DNAPL) monitoring and recovery operations at the Reilly Tar Area and shall continue to perform groundwater monitoring and recovery at Piney Woods Spring. The remedy also includes provisions for site security, and inspection and reporting requirements.

The permit is proposed to be modified under the authority of the Tennessee Hazardous Waste Management Act of 1977, as amended, Tennessee Code Annotated, Section 68-212-101 et seq., and Rule Chapter 1200-01-11, Hazardous Waste Management. In accordance with Rule 1200-01-11-.07(9)(c)5(iii)(VII) and -.07(7)(e), this additional Notice of Intent also requires public notice of a 45-day comment period, beginning on the date of this publication, and the opportunity for the scheduled public hearing.

Available for public inspection are copies of the Draft Permit Modification, the Fact Sheet, the Statement of Basis, the Public Notice and a Response to Comments, which addresses comments received from the public at the above noted meetings and the pre-draft 60-day comment period. These materials may be reviewed at the South Chattanooga Branch Library, 925 W. 39th St.,

Chattanooga, Tennessee 37402 (423-757-5310) and are also available for public inspection during normal business hours, 8:00 a.m. to 4:30 p.m., Monday through Friday, except legal holidays, at the TDEC Chattanooga Environmental Field Office, Public Access Area, Chattanooga State Office Building, Suite 550, 540 McCallie Avenue, Chattanooga, TN 37402 (423-634-5745) or at DSWM's Central Office, 5th Floor, L & C Tower, 401 Church Street, Nashville, TN 37243-1535 (615-532-0780). Additional information can be viewed at the Bethlehem Community Center, 200 W. 38th Street, Chattanooga, TN 37410 (423-266-1384).

Any interested person, including the applicant, may submit written comments on DSWM's proposal by contacting: Mr. Roger Donovan; Division of Solid Waste Management; TDEC; 5th Floor, L & C Tower; 401 Church Street; Nashville, Tennessee 37243-1535 (615-532-0864) or e-mail to Roger.Donovan@tn.gov. **Comments must be received by 4:30 p.m., CST, Friday, January 21, 2011 to assure consideration.** After considering all public comments, the Division Director will issue a final permit decision and a Response to Comments.

When DSWM makes a final permit decision to either issue or deny the permit modification, notice will be given to the applicant and each person who has submitted written comments or requested notice of the final decision. The final permit decision shall become effective upon signing by the Director of DSWM.

Individuals with disabilities who wish to participate in these proceedings (or to review these filings) should contact the Tennessee Department of Environment and Conservation to discuss any auxiliary aids or services needed to facilitate such participation. Such contact may be in person, by writing, telephone, or other means and should be made no less than ten days prior to the **January 6, 2011 hearing**, to allow time to provide such aid or services. Contact the ADA Coordinator at 1-866-253-5827 for further information. Hearing impaired callers may use the Tennessee Relay Service (1-800-848-0298).

Persons who wish to be on DSWM's mailing list should request a Mailing List Request form by calling or writing: Public Participation Officer; Division of Solid Waste Management; TDEC; 5th Floor, L & C Tower; 401 Church St.; Nashville, TN 37243-1535; (615-532-0798) or e-mail solid.waste@tn.gov.

NOTICE ISSUED: December 7, 2010

FACT SHEET

INTENT TO MODIFY PERMIT TO DEFINE FINAL REMEDY REQUIREMENTS

Facility Name: Velsicol Chattanooga Site

Location: 4902 Central Avenue, Chattanooga, Tennessee 37410

Permit Number: TNHW-105

EPA ID Number: TND 06 131 4803

Permittee/Operator: Velsicol Chemical LLC

Owner: True Specialty LLC

Regulated Units: This corrective action hazardous waste management permit is to address remedial action at facility solid waste management units (SWMUs) and areas of concern (AOCs)

Facility Contact: Mr. Gary Hermann
Senior Environmental Projects Manager
Velsicol Chemical LLC, Memphis Environmental Center Inc.
1199 Warford St.
Memphis, TN 38108
Phone: 901-323-6226, ext. 120

Comment Period: **Begins: December 7, 2010**
Ends: January 21, 2011

Public Hearing: **January 6, 2011**
Open time for Questions and Answers: **5:30 p.m.**
Formal Hearing and Comment Period: **6:00 p.m.**
Bethlehem Community Center, 200 W. 38th Street, Chattanooga, TN

PURPOSE

This fact sheet is prepared pursuant to Tennessee Rule 1200-01-11-.07(7)(d) for the draft permit developed by the Tennessee Department of Environment and Conservation's (TDEC) Division of Solid Waste Management (DSWM). The purpose of this permitting process is to afford any interested persons the opportunity to evaluate the ability of the permittee to apply the applicable hazardous waste management (corrective action) requirements. The proposal is for the permit modification to be issued under the authority of the Tennessee Hazardous Waste Management Act of 1977, as amended, Tennessee Code Annotated, Section 68-212-101 et seq., and Rule Chapter 1200-01-11, Hazardous Waste Management. The permit modification is prepared in accordance with the provisions of Rule 1200-01-11-.07.

FACILITY DESCRIPTION

The Velsicol Chemical LLC site (Velsicol) is located approximately 3.5 miles south of downtown Chattanooga, in Hamilton County, Tennessee. The original manufacturing plant was constructed in 1948 by Tennessee Products Corporation as an expansion of its coke plant operations. In 1963, Velsicol purchased the plant site, including the Semi-Works Plant and the Change House areas. Velsicol subsequently purchased the Reilly Tar Area in 1971. Velsicol operated the facility to produce benzoic acid and its derivatives and chlorinated toluene-based products. Herbicides and insecticides were also produced and a ferro-alloy plant operated at the facility for several years. All manufacturing operations ceased in March of 2007 and the site has undergone demolition to remove the manufacturing equipment and most of the ancillary facilities. During the operational history of the site, waste materials were stored, treated and disposed of on-site. These past practices contaminated soil and groundwater, which require the continuation of ongoing remedial actions and the implementation of other corrective measures.

PERMIT HISTORY AND PROPOSED PERMIT MODIFICATION

The current hazardous waste permit, TNHW-105, was issued to Velsicol Chemical Corporation on September 28, 2001. The permit, effective until September 28, 2011, authorized the facility for container storage of hazardous wastes which were generated on-site. During 2005, the permit was modified to reflect a change of ownership from True Specialty Corporation to True Specialty LLC. On January 10, 2008, the permit was modified to reflect clean closure of the permitted hazardous waste container storage area, which occurred as the result of Velsicol ceasing manufacturing operations in March of 2007. Because of the need for continued corrective action at facility solid waste management units and areas of concern, the corrective action portion of the permit remains in effect. In October 2008, a permit modification was processed to change the name of the permittee to Velsicol Chemical LLC.

The purpose of this class 3 permit modification is to define the final corrective action requirements for the facility's solid waste management units (SWMUs) and areas of concern (AOCs). The proposed Final Remedy is generally described in Velsicol's August 8, 2008 "Revised Corrective Measures Study Report," which was approved by TDEC on October 20, 2008. Table 1 lists the SWMUs that are proposed to be classified in the permit as requiring no further action (NFA) under the Corrective Action Program. Table 2 lists the SWMUs and the one AOC that require implementation of a Corrective Action Remedy. None of the facility's SWMUs, nor the AOC, Site-Wide Groundwater, have been identified as requiring Confirmatory Sampling, a RCRA Facility Investigation, Interim Measures or a Corrective Measures Study. It is noted that for corrective action purposes, at the completion of the Phase III RFI: (1) several SWMUs were merged into larger, more comprehensive units; (2) certain SWMU names and boundaries were modified; and (3) new SWMUs were identified per the findings of that RFI. Former SWMU areas that are now encompassed in modified or new SWMU areas are listed in Table 3, which includes descriptions of the types of changes made.

Attached to this Fact Sheet is a Statement of Basis that explains the basis and recommendations for final remedy selection and remedy implementation. It provides summaries of the site's hydrogeologic/contaminant investigation, completed and ongoing interim remedial actions, a corrective measures study and the selected final remedy.

COMMENTS

Available for public inspection are copies of the Draft Permit Modification, the Fact Sheet, the Statement of Basis, the Public Notice and a Response to Comments, which addresses comments received from the public at the above noted meetings and the pre-draft 60-day comment period. These materials may be reviewed at the Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee 37402 (telephone 423-757-5310) and are also available for public inspection during normal business hours, 8:00 a.m. to 4:30 p.m., Monday through Friday, except legal holidays, at the TDEC Chattanooga Environmental Field Office, Public Access Area, Chattanooga State Office Building, Suite 550, 540 McCallie Avenue, Chattanooga, Tennessee 37402 (telephone 423-634-5745) or at DSWM's Central Office, 5th Floor, L & C Tower, 401 Church Street, Nashville, Tennessee 37243-1535 (615-532-0780).

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When DSWM makes a final permit decision to either issue or deny the permit modification, notice will be given to the applicant and each person who has submitted written comments or requested notice of the final decision. The final permit decision shall become effective upon signing by the Director of DSWM.

Individuals with disabilities who wish to participate in these proceedings (or to review these filings) should contact the Tennessee Department of Environment and Conservation to discuss any auxiliary aids or services needed to facilitate such participation. Such contact may be in person, by writing, telephone, or other means and should be made no less than ten days prior to the **January 6, 2011 hearing or the date such party intends to review such filings**, to allow time to provide such aid or services. Contact the ADA Coordinator at 1-866-253-5827 for further information. Hearing impaired callers may use the Tennessee Relay Service (1-800-848-0298).

Persons who wish to be on DSWM's mailing list should request a Mailing List Request form by calling or writing: Public Participation Officer; Division of Solid Waste Management; Tennessee Department of Environment and Conservation; 5th Floor, L & C Tower; 401 Church Street; Nashville, Tennessee 37243-1535; telephone 615-532-0798; or e-mail Solid.Waste@.tn.gov.

FACT SHEET TABLES

TABLE 1: PROPOSED NO FURTHER ACTION SOLID WASTE MANAGEMENT UNITS

Table 1 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require no further action under the corrective action conditions of this permit:				
SWMU/AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	No Further Action Documentation
2A	Laboratory Waste Disposal Pit	Located at the Semi Works Plant	Unknown-1990	Construction Completion Report for Removal Approved on 5/6/02
4	Abandoned Tank #1	Initially Stored Trichlorobenzene, Later Stored Wastewater From Decontamination Process	1965-1987	1990 RCRA Facility Assessment
5	Abandoned Tank #2	Initially Stored Methanol, Later Stored Wastewater From Decontamination Process	1965-1987	1990 RCRA Facility Assessment
6	Tank Foundation Area #1	20,000 Gallon tank Foundation, Handled 73% Caustics	1965-1980	1990 RCRA Facility Assessment
7	Tank Foundation Area #2	20,000 Gallon tank Foundation, Handled Methanol/Water Mixture	1965-1980	1990 RCRA Facility Assessment
11	Abandoned Tank #3	20,000 Gallon Tank, Handled Xylene	1965-1980	1990 RCRA Facility Assessment
12	Caustic Tank Foundation	20,000 Gallon Tank, Handled 50% Caustics	1965-1980	1990 RCRA Facility Assessment
13	Flute Dust Storage Area	Initially, Containment Area for Tank holding Methyl Chloride, Subsequently Stored Flute Dust	1965-2007 or earlier	1990 RCRA Facility Assessment
14	Abandoned Tank Storage Area	Containment Area for Tank Holding Dimethyl Amine	1965-2007 or earlier	1990 RCRA Facility Assessment
15	Caustic Unloading Area	Unloading Area for Caustics	1965-2007	Phase III RFI Report & Phase III RFI Report Re-Screening-DSWM approved on 2/20/08 & 8/25/08
16	Laydown Area South of pH Adjustment Basin	Storage Area	1965-2008	Phase III RFI Report Re-Screening-DSWM approved on 8/25/08
24	Solid Waste Pile/Sludge Bed	Storage Area for Activated Carbon	1982-2007 or earlier	1990 RCRA Facility Assessment
25	Benzoic Acid Residue Tank	10,000 Gallon Tank Used To Store Benzoic Acid and Benzoic Residues	1965-2007 or earlier	1990 RCRA Facility Assessment

Table 1 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require no further action under the corrective action conditions of this permit (cont):

SWMU/AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	No Further Action Documentation
27	J-1 Storage Tank	15,000 Gallon Storage Tank Permitted for Storage of D002 Waste	1964-2001	Clean Closure Certification Approved by the Division on 5/22/01
28	J-2 Storage Tank	25,000 Gallon Storage Tank Permitted for Storage of D001 Waste	1964-2000	Clean Closure Certification Approved by the Division on 7/18/00
29	J-3 Storage Tank	14,000 Gallon Storage Tank Permitted for Storage of D001 Waste	1964-2001	Clean Closure Certification Approved by the Division on 4/19/01
32	API Chlorinated Spill Separator	Received Plant Wastewaters Before Entering pH Adjustment Basin (SWMU #18)	1980-1998	1990 RCRA Facility Assessment
33	Former Benzoic Residue Stockpile Area	Stored Benzoic Acid and Scrap Benzoic Acid, Former Ferralloy Operation Area	1970-1972	Phase III RFI Report & Phase III RFI Report Re-Screening-DSWM approved on 2/20/08 & 8/25/08
35	Hazardous Waste Drum Storage Area	Permitted Hazardous Waste Drum Storage Area	1983-2007	Clean Closure Certification Approved by the Division on 7/31/07
36	Former Benzoic Acid Quench Pond		1970-1974	Construction Completion Report for Removal Approved on 5/6/02
38	Drainage Ditch for Impoundment #1		1976-1999	Construction Completion Report for Removal Approved on 5/23/02, Groundwater Being Handled Under Site-Wide Groundwater
43	J-305 Hazardous Waste Storage Tank	10,200 Gallon Storage Tank Permitted for Storage of K015 Waste	1979/1980-2001	Clean Closure Certification Approved by the Division on 3/13/01
46	Cooling Tower Basin	Concrete Containment Structure Left After Removal of the Tower	1949-1983	1990 RCRA Facility Assessment
65	Concrete Surface Water Collection Basin	40,000 Gallon Surface Water Collection Basin for Plant Wastewaters	1976-2007 or earlier	1990 RCRA Facility Assessment
66	API Separator	10,000 Gallon Separator, Handled Semi-Works Wastewaters	1976-2007 or earlier	1990 RCRA Facility Assessment

Table 1 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require no further action under the corrective action conditions of this permit (cont):

SWMU/AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	No Further Action Documentation
71	Reilly Tar Road	Asphalt Paved Roadway	Mid-1970s to present	SWMU Assessment Report Approved by Division 4/4/04
75	Building Debris Area	Debris Removed for Storm Water Storage Tanks	1973-1997	SWMU Assessment Report Approved by Division 4/4/04
76	Grinder Pump Sump Excavation		1971-1979	Phase III RFI Report & Phase III RFI Report Re-Screening-DSWM approved on 2/20/08 & 8/25/08
85	Underground Chemical Sewer	System Abandoned During 1997-1998 Sewer Replacement Program	Unknown-1998	SWMU Assessment Report Approved by Division 4/4/04

TABLE 2: PROPOSED FURTHER ACTION SOLID WASTE MANAGEMENT UNITS AND SITE-WIDE GROUNDWATER AREA OF CONCERN

Table 2 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require implementation of a Corrective Action Remedy:

SWMU/AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	Further Action Documentation
1/1A	Toluene Storage Tank / Former Landfill Pit		Unknown-2000	Corrective Measures Study Report-DSWM approved on 10/20/08
3	Construction Debris Storage Area	Storage Area for Construction Debris	1975-Present	Corrective Measures Study Report-DSWM approved on 10/20/08
3S	A/O Plant Area	Encompasses Toluene Spill Area, which was Formerly Identified as the SWMU 3S	1991-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
17	Contaminated Materials Pit	Storage Area for Sludges from Plant Wastewaters, Sludges Removed in 1980	Unknown-1980	Corrective Measures Study Report-DSWM approved on 10/20/08
18	Final pH Adjustment Basin	Received Plant Wastewater for pH Adjustment Before Discharge to POTW. Encompasses a portion of former SWMU 84	1964-2007	Corrective Measures Study Report-DSWM approved on 10/20/08

Note: Institutional controls include access restrictions, signage, and excavation restrictions. Please see the attached Statement of Basis for specific details.

Table 2 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require implementation of a Corrective Action Remedy (cont):

SWMU/AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	Further Action Documentation
19	Impoundment #2	Unlined Impoundment for Storm Water Run-Off	1976-1998	Corrective Measures Study Report-DSWM approved on 10/20/08
20	Burner Pond	Unlined Impoundment for Emergency Treatment of Waste Water and Storm Water Run-Off	Unknown-1998	Corrective Measures Study Report-DSWM approved on 10/20/08
23	Incinerator Ground Area	Former Site of an Incinerator. Encompasses Former SWMU 83 and a portion of Former SWMU 84.	1969-1975	Corrective Measures Study Report-DSWM approved on 10/20/08
34	Hazardous Waste Dumpster	15 Cubic Yard Roll-Off Box Used to Store Contaminated Solid Waste	1984-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
35A	Hazardous Waste Drum Washing and Storage Area	Wash Area for Drums of Various Materials	1983-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
37	Impoundment #1	Unlined Impoundment for Storm Water Run-Off	1976-Present	Corrective Measures Study Report-DSWM approved on 10/20/08
39	Pitch Bay – Phenol Pond	Hardening Pond for Tar Derivatives/ Aerated Treatment for Phenols/Run-Off Pond for Reilly Tar	Unknown-1999	Asphalted and Paved as part of 1999 Interim Measures. Corrective Measures Study Report-DSWM approved on 10/20/08
40	Phenol Storage Tank/Basement	Raw Materials Storage Area for Coke Plant	Unknown-1999	Asphalted and Paved as part of 1999 Interim Measures. Corrective Measures Study Report-DSWM approved on 10/20/08
41	General Area of Reilly Tar Operation	Area Reportedly Contained Stills, Production, & Processing Equipment	Unknown to 1977/1978	Asphalted and Paved as part of 1999 Interim Measures. Corrective Measures Study Report-DSWM approved on 10/20/08

Note: Institutional controls include access restrictions, signage, and excavation restrictions. Please see the attached Statement of Basis for specific details.

Table 2 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require implementation of a Corrective Action Remedy (cont):

SWMU/ AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	Further Action Documentation
60	Old Neutralization Pit	Carried Waste Water to Spill Separator	1949-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
61	Ester Recovery Tanks	Two Tanks that Held Esters	1970-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
67	Crude Muriatic Acid Storage Area	Area was Used for Crude Muriatic Acid Storage in Three Above Ground Storage Tanks	1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
69A	Banvel Area	Includes 540 Waste Area and was Used to Store Non-Hazardous Chemically Contaminated Debris. Also Encompasses Former SWMUs 8 & 9.	Unknown-2008	Corrective Measures Study Report-DSWM approved on 10/20/08
70	B/P Sump Area	Sump was a Collection Area for Process Wastewaters	1980-1997	Corrective Measures Study Report-DSWM approved on 10/20/08
73	Acid Neutralization Pit	Limestone Lined Pit Used to Neutralize Crude Muriatic Acid	Mid-1970s-1980	Corrective Measures Study Report-DSWM approved on 10/20/08
78	GP Esters Plant Area	Encompasses Former SWMUs 68, 80, 81 and 86	Early 1960s-2008	Corrective Measures Study Report-DSWM approved on 10/20/08
79	Old Waste Incinerator Ground Area	Former Incinerator Location	Early 1960s- Early 1970s	Corrective Measures Study Report-DSWM approved on 10/20/08
82	Truck Parking Area	Area Used for Tanker and Truck Trailer Parking	1968-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
88	Railroad Tracks Spill Area	Hydrochloric Acid and Benzoyl Chloride Loading Area	1966-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
89	352 Plant Area	Benzophenone Production Area	Unknown-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
90	Toluene Storage Tanks	Toluene Storage Tanks Located in Concrete Lined Containment Area	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08

Note: Institutional controls include access restrictions, signage, and excavation restrictions. Please see the attached Statement of Basis for specific details.

Table 2 List of solid waste management units (SWMUs) and areas of concern (AOCs) that require implementation of a Corrective Action Remedy (cont):

SWMU/ AOC	SWMU/AOC Name	Unit Comment	Dates of Operation	Further Action Documentation
91	Toluene Railcar Unloading Area	Toluene Unloading Area	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
92	Boiler House Area	Encompasses Former SWMU 74 and Boiler House	Unknown-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
93	Expansion Plant Area	Encompasses former SWMUs 44, 69, 87 and Expansion Plant Location	Unknown-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
94	South Railcar Loading Area	Area South of SWMU 88	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
95	Railroad Ballast Between Splits 2 & 3	Railroad Tracks Used for Raw Materials and Finished Products Transportation	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
96	Railroad Ballast Between Splits 4 & 5	Railroad Tracks Used for Raw Materials and Finished Products Transportation	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
97	Railroad Ballast Between Splits 6 & 7	Railroad Tracks Used for Raw Materials and Finished Products Transportation	Prior to 1963-2007	Corrective Measures Study Report-DSWM approved on 10/20/08
AOC GW	Site-Wide Groundwater	Covers All Groundwater Monitoring and Remediation at the Site		Corrective Measures Study Report-DSWM approved on 10/20/08

Note: Institutional controls include access restrictions, signage, and excavation restrictions. Please see the attached Statement of Basis for specific details.

TABLE 3 - Summary of New SWMUs and SWMU Boundary Modifications

Phase III RFI Environmental Study Areas or Stand-Alone SWMUs	SWMU Action	SWMU Number & Name
ESA 2 - 352 Plant Area	New SWMU	SWMU 89 - 352 Plant Area
ESA 3 - Toluene Storage Tanks	New SWMU	SWMU 90 - Toluene Storage Tanks
ESA 4 - A/O Plant Area (Includes SWMU 3S)	Modified SWMU Boundary and Name	SWMU 3S - A/O Plant Area
ESA 5 - GP Esters Plant Area (Includes SWMUs 68, 78, 80, 81 & 86)	Modified SWMU Boundary and Name	SWMU 78 - GP Esters Plant Area
	Address as part of SWMU 78	SWMU 68 - D/E Control Room Area (has been assimilated into noted larger SWMU)
	Address as part of SWMU 78	SWMU 80 - Hot Oil Line Foundation #1 (has been assimilated into noted larger SWMU)
	Address as part of SWMU 78	SWMU 81 - Hot Oil Line Foundation #2 (has been assimilated into noted larger SWMU)
ESA 6 - Toluene Railcar Unloading Station	Address as part of SWMU 78	SWMU 86 - Seepage at Stormwater Ditch (has been assimilated into noted larger SWMU)
	New SWMU	SWMU 91 - Toluene Railcar Unloading Area
ESA 7 - Boiler House (Includes SWMUs 60, 61, 74 & 79)	New SWMU	SWMU 92 - Boiler House Area
	Modified SWMU Boundary	SWMU 60 - Old Neutralization Pit
	Modified SWMU Boundary	SWMU 61 - Ester Recovery Tanks
	Modified SWMU Boundary	SWMU 79 - Old Waste Incinerator Ground Area
ESA 8 - Container Storage Area (Includes SWMU 35A)	Address as part of SWMU 92	SWMU 74 - Fuel Oil Storage Area (has been assimilated into noted larger SWMU)
	Modified SWMU Boundary and Name	SWMU 35A - Hazardous Waste Drum Washing and Storage Area
ESA 9 - Hazardous Waste Storage Area (Includes SWMUs 18, 23, 83 & 84)	Modified SWMU Boundary	SWMU 18 - Final pH Adjustment Basin
	Modified SWMU Boundary	SWMU 23 - Incinerator Ground Area
	Address as part of SWMU 23	SWMU 83 - T-30 pH Adjustment Basin (has been assimilated into noted larger SWMU)
	Address as part of SWMUs 18 and 23	SWMU 84 - Wastewater Trench T-30 (has been assimilated into noted larger SWMUs)
ESA 10 - Benzoyl Chloride Plant Area (Includes SWMUs 44, 67, 69, 70, 87 & 88)	New SWMU	SWMU 93 - Expansion Plant Area
	New SWMU	SWMU 94 - South Railcar Loading Area
	Address as part of SWMU 93	SWMU 44 - Air Pollution Control Devices (has been assimilated into noted larger SWMU)
	No Change	SWMU 67 - Crude Muriatic Acid Storage Area
	Address as part of SWMU 93	SWMU 69 - Expansion Plant Cooling Tower (has been assimilated into noted larger SWMU)
	No Change	SWMU 70 - B/P Sump Area
	Address as part of SWMU 93	SWMU 87 - B50 Ester Pump Area (has been assimilated into noted larger SWMU)
	No Change	SWMU 88 - Railroad Tracks Spill Area
ESA 14 - Banvel Area (Includes SWMUs 3, 8, 9 & 69A)	Modified SWMU Boundary and Name	SWMU 69A - Banvel Area
	Modified SWMU Boundary	SWMU 3 - Construction Debris Storage Area
	Modified SWMU Boundary	SWMU 1/1A - Toluene Storage Tank (Former Landfill Pit)
	Address as part of SWMU 69A	SWMU 8 - Bottle Crushing Area (has been assimilated into noted larger SWMU)
ESA 16 - Facility-Wide Railroad Ballast	Address as part of SWMU 69A	SWMU 9 - Decontamination Unit (has been assimilated into noted larger SWMU)
	New SWMU	SWMU 95 - Railroad Ballast between Splits 2 & 3
	New SWMU	SWMU 96 - Railroad Ballast between Splits 4 & 5
SWMU 17 - Contaminated Material Pits (A & B)	New SWMU	SWMU 97 - Railroad Ballast between Splits 6 & 7
SWMU 73 - Acid Neutralization Pit	Modified SWMU Boundary and Name	SWMU 17 - Contaminated Material Pit
SWMU 82 - Truck Parking Area	Modified SWMU Boundary	SWMU 73 - Acid Neutralization Pit
All other SWMUS previously identified as being in Corrective Action Program	Modified SWMU Boundary	SWMU 82 - Truck Parking Area
	No Changes	

STATEMENT OF BASIS

VELSICOL CHATTANOOGA SITE

This Statement of Basis (SB) contains summaries of: (1) environmental investigation findings; (2) completed and ongoing Interim Measures; and (3) remedies selected for the solid waste management units (SWMUs) and areas of concern (AOCs) at Velsicol's Chattanooga Site. This SB is part of the Fact Sheet that is being public noticed for review and comment as part of Tennessee's corrective action permitting process. The Fact Sheet provides details for public review and comment on the SB and the draft permit. Documents noted herein are listed in the References Section at the end of this SB.

SITE SETTING AND LOCATION

The Velsicol Chemical LLC site (Velsicol) is located approximately 3.5 miles south of downtown Chattanooga in Hamilton County at latitude 34 degrees, 59 minutes, 34 seconds north and longitude 85 degrees, 18 minutes, 50 seconds west. The site is composed of three parcels: (1) the main manufacturing plant parcel of approximately 36.5 acres that includes the former Reilly Tar Area; (2) the Semi-Works Plant parcel of approximately 4.4 acres that is across Central Avenue from the main plant site; and (3) the Change House parcel of approximately 4.1 acres that is separated from the other parcels by Central Avenue and a railroad right-of-way. The address of the Semi-Works Plant site is 4801 Central Avenue. The facility is bordered by industrial, open space and residential areas. The Tennessee Products Federal Superfund Site is adjacent to the north side of Velsicol and the Residue Hill Site is adjacent to the east side of the site. State and Federal environmental agencies have directed environmental remediation work at these sites.

GEOLOGIC SETTING AND HYDROGEOLOGY

Investigations conducted at the site indicate that the site is underlain, in descending order, by residual soils (silty clays), very thinly-interbedded calcareous silty shales, shaley limestone and fine sandy limestone of the Sequatchie Formation (western side of site) and thin to medium-bedded limestones, massive limestones, shaley limestone, dolomitic limestone and fossiliferous limestone of the Cathey's Formation (eastern side of site). Regionally, these two formations are low-yielding aquifers.

The uppermost aquifer beneath the site consists of two water-bearing zones: (1) the soil water-bearing zone; and (2) the fractured rock water-bearing zone, which occurs in the upper portion of rock where numerous fractures and severe weathering were observed. In general, the frequency of open fractures decreases with depth. Underlying the weathered rock water-bearing zone is the fresh rock zone, which consists of slightly weathered to fresh rock with few fractures. Groundwater flows from the western side of the site toward the northeast and southeast. On-site groundwater flow velocities in the soil and weathered rock water-bearing zones are about 36 and 170 feet per year, respectively. Groundwater flow in the rock water-bearing formations beneath the site is dominated by laminar diffuse flow. A small component of turbulent flow through conduits is also present. Piney Woods Spring serves as a natural discharge point for groundwater flowing off-site toward the southeast.

SUMMARY OF SITE EVALUATIONS AND INTERIM MEASURES

The U.S. Environmental Protection Agency and the Tennessee Department of Environment and Conservation's (TDEC) Division of Solid Waste Management (DSWM) completed a RCRA Facility Assessment (RFA) of the facility in 1990. Velsicol subsequently completed three phases of RCRA Facility Investigations (RFIs), two Interim Measures (IM) remedial construction projects, and a Corrective Measures Study (CMS) at the facility. Velsicol has also been performing IM environmental remediation operations and monitoring at the facility since 1996. A summary of corrective action activities at Velsicol follows.

1. A Phase I RCRA Facility Investigation was completed in 1994 (Ref. #1 and #2). This investigation found that contaminant releases to the soil and sediment had occurred at identified solid waste management units (SWMUs) and to groundwater. Dense non-aqueous phase liquids (DNAPLs) related to historic coal tar operations were found in soil and groundwater in the former Reilly Tar Area. Constituents of concern (COCs) across the site were found to include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and some metals. The soil, sediment and groundwater analytical results were compared to drinking water standards and soil screening levels and found to exceed those screening levels in certain areas and monitoring wells. Soil contaminants with a high frequency of occurrence and/or high concentrations relative to screening levels included the VOC benzene; the SVOCs benzo(a)anthracene and benzo(a)pyrene; the pesticide Lindane (as alpha-, beta-, and gamma-benzene hexachloride); and the metal chromium. Groundwater contaminants with frequent detections above drinking water standards included Lindane, heptachlor, toluene and bis(2-ethylhexyl)phthalate; and dicamba in the former Banvel production area (i.e., southwest portion of the main plant site). The SWMUs which had groundwater, soils or sediments that exceeded screening levels were identified for further action under the Corrective Action Program, with the initial focus being on the former Reilly Tar Area of the facility.

As noted in the Phase I RFI, the Velsicol site has a stormwater management system. It includes the surface impoundments at SWMUs 19 and 37 that were constructed in 1976. The system now includes a 1.5-million gallon stormwater storage tank and a lift station that were constructed in 1998. The impoundments have been generally taken out of service. This system captures stormwater runoff from the main manufacturing plant area, stores it for a specified time in accordance with the facility's Wastewater Discharge Permit No. 1010, and then discharges it at a controlled flow rate to the City of Chattanooga's municipal sewerage system (publicly owned treatment works or POTW) for treatment and disposal. Therefore, there is no surface water discharge from the main manufacturing plant area. The investigations also found that there is no potable use of groundwater in the vicinity of the facility.

The underground chemical sewer system, SWMU 85, which was investigated as part of the Phase I RFI and a subsequent evaluation, was determined by the U.S. Environmental Protection Agency in 1996 to require no further action. It is also noted that during 1997 and 1998, Velsicol replaced the underground wastewater and stormwater sewer lines with new, and mostly aboveground, sewer pipelines. The underground lines were flushed and sealed when abandoned. TDEC confirmed the no further action classification in 2004.

2. Reilly Tar Area investigations and remediation options selection evaluations for soil and the coal tar DNAPL were completed in 1995 (Ref. #3); and for groundwater, was completed in 1997 (Ref. #4). Operations to recover DNAPL were started in 1996. Reilly Tar Area Interim Measures, consisting of soil removal, construction of an asphalt cap and a ground water recovery and containment system, were completed in 1999 (Ref. #6). These features, along with operation of the groundwater and DNAPL recovery operations, address potential off-site migration of groundwater. Velsicol held public meetings in the neighborhood during June 1996 and December 1997 to provide information and to obtain community input during the development of the Interim Measures Plan. Velsicol has been operating the DNAPL recovery system on the Reilly Tar Area since 1996 and a groundwater recovery system since 1999 (Ref. #12).
3. A Phase II RFI of off-site groundwater and sediments, which included the findings of a 1997 dye tracer study of the bedrock hydrogeology, was completed in 1998 (Ref. #5). Information on the hydrogeologic conditions in the area of the facility, as developed from the Phase I and II RFIs, is summarized in the preceding section on Geologic Setting and Hydrogeology.
4. An investigation of SWMUs 1, 2A and 36 was completed in 1999 and corrective measures construction activities were completed in 2000 (Ref. #7). A public meeting for input regarding that project was held during January 2000. This IM project included excavation and off-site disposal of buried wastes.
5. In 2000, the U.S. Environmental Protection Agency verified, by way of an Environmental Indicator determination, that human exposures and migration of contaminated groundwater were under control at the facility.
6. An IM investigation of Piney Woods Spring area was completed in 2000. It led to implementation of an ongoing program for monitoring of the Southeast Trough Groundwater.
7. Other significant site investigation activities included a pre-design investigation of the stormwater impoundments in 2001 (Ref. #8); and surficial soil testing at four SWMUs in 2004 (Ref. #9).
8. A Phase III RFI was completed during 2007 (Ref. #10). The findings from that investigation and previous investigations were used to: (1) identify new SWMUs or AOCs; (2) to modify the existing SWMU boundaries; and (3) to merge certain adjacent and overlapping SWMUs into combined SWMUs for remedial purposes as detailed in Table 3 of the Fact Sheet. The soil test data was also re-screened against the U. S. Environmental Protection Agency's May 20, 2008 version of "Regional Screening Levels for Contaminants at Superfund Sites" (RSLs) for residential and industrial land use areas. This work resulted in the identification of 43 SWMUs that are being considered for final remedy decision by the DSWM's Corrective Action Program. The SWMU list and locations are shown on Figure 1. Ten SWMUs are proposed for no further action status and 33 SWMUs are recommended for implementation of a corrective action remedy.

RSLs were used as the basis to identify the SWMUs where corrective action is proposed. This is a very conservative approach because screening values are normally used to determine the need for more investigation; not to identify SWMUs for remedial action. Velsicol chose not to perform a formal risk assessment that often results in less stringent

clean-up requirements. The reason for this much more conservative approach is that a generally site-wide remedy is being proposed, which will eliminate the need for continued stormwater collection and discharge to the POTW.

9. As noted in Item 2, Velsicol has been operating a successful containment system for groundwater flowing toward the northeast since 1999 and a DNAPL recovery system since 1996 (Ref. #12). Groundwater recovered at well RW-1 is transferred into the stormwater collection system and discharged to the City of Chattanooga's sewerage system in accordance with the requirements of Velsicol's wastewater discharge permit. The DNAPL is disposed off-site as hazardous waste in accordance with RCRA (hazardous waste) requirements. Operation of the groundwater recovery system has been very effective in maintaining a hydraulic capture zone that encompasses all of the Reilly Tar Area and about 70 percent of the main plant site. In addition, the DNAPL recovery system has removed approximately 4,193 gallons (39,205 pounds) of coal tar from the environment.

Piney Woods Spring serves as a natural collection point for the groundwater that migrates toward the southeast, which is then conveyed directly to the City of Chattanooga's sewerage system by an underground pipeline. Groundwater conditions beneath the site and towards the southeast are evaluated and reported on an annual basis in the Southeast Trough Annual Groundwater Monitoring Reports (Ref. #11). The site investigations and monitoring results show that the system is effective in capturing contaminated groundwater emanating from the south side of the main plant site (i.e., the remainder of the site that is not impacted by the Reilly Tar Area Recovery well). The groundwater quality monitoring data also indicates that contaminant levels are generally decreasing and are at non-detectable concentrations in many samples.

CORRECTIVE MEASURES STUDY (CMS) AND REMEDY SELECTION:

A site-wide CMS was completed and submitted to TDEC on August 8, 2008 (Ref. #13). The CMS Report, which is summarized below, presents the development, evaluation and recommendations for implementing the Final Remedy for the site, including operation and maintenance requirements. The CMS Report was approved by TDEC on October 20, 2008.

Remedial action construction alternatives were developed and evaluated for thirty units (a portion of SWMU 1/1A and SWMUs 3, 3S, 17, 18, 19, 20, 23, 34, 35A, 37, 60, 61, 67, 69A, 70, 73, 78, 79, 82, 88, 89, 90, 91, 92, 93, 94, 95, 96 and 97). The asphalt cap is proposed to be maintained at three of the Reilly Tar Area units (SWMUs 39, 40 and 41). Six units were determined No Further Action (NFA) based on previous evaluations by TDEC (SWMUs 2A, 36, 38, 71, 75 and 85), and four units covered by the CMS Report were NFA because contaminant levels are below residential RSLs (SWMUs 15, 16, 33 and 76). Site-Wide Groundwater was designated AOC GW for groundwater monitoring and remediation of the entire site.

A range of alternatives was developed and evaluated in the CMS to arrive at the recommended Final Remedy plan. All of the alternatives included the following common elements:

- As described in the approved CMS Report, the planned site demolition work that was a necessary part of all the alternatives, has already been completed by Velsicol

- Soil cover to be installed (minimum of 12 inches deep) over non-SWMU areas so that stormwater collection, storage and discharge to the POTW would no longer be necessary and to avoid the creation of low areas between SWMUs that would impede drainage
- Continue interim measures groundwater and DNAPL monitoring and recovery operations at the Reilly Tar Area and groundwater monitoring and recovery at Piney Woods Spring
- Site security, inspections, repairs and other necessary maintenance
- Deed restrictions.

The following four alternatives were developed and evaluated:

1. Soil Cover Alternative

- a. Minimum 18 inches deep soil cover added over SWMU areas
- b. Visible marker used under the cover soil
- c. Imported soil tested to confirm acceptability
- d. Rough grading prior to marker and soil placement to achieve smooth land surface for stormwater drainage
- e. Sumps and basins will be filled, will use approved on-site material as available
- f. Holes made in concrete and asphalt for rainwater drainage
- g. Vegetated surface to control wind and stormwater erosion
- h. The area to be covered with soil is shown on Figure 2

2. Excavation with Off-Site Landfill Disposal Alternative

- a. Remove visibly contaminated soil in SWMU areas to maximum depth of 12-inches
- b. Remove concrete and asphalt as needed to reach underlying soil and dispose in a Sub-Title D Landfill
- c. Install minimum 18 inches of vegetated cover soil and related work elements as in Alternative 1

3. Excavation with On-Site Low Temperature Thermal Desorption (LTTD) Treatment Alternative

- a. Excavation depth and concrete and asphalt removal same as in Alternative 2
- b. Soil treated on-site by LTTD method and then returned to excavated areas
- c. Install minimum 18 inches of vegetated cover soil and related work elements as in Alternative 1

4. Asphalt Pavement Cover Alternative

- a. Similar to Soil Cover Alternative 1, except SWMU areas covered with 2 inches of asphalt over a gravel base
- b. Install stormwater detention basin(s) to control discharge rate to creeks

The alternatives were evaluated and compared on the basis of nine criteria as specified in Velsicol's hazardous waste management permit. A point system was used to facilitate the

comparison and to rank the alternatives as presented in the CMS Report. A summary of the evaluation follows:

- 1. Soil Cover Alternative: Rank No. 1 with 90 points.** This alternative was found to be fully protective of human health and the environment and equals or exceeds all other alternatives with respect to each of the nine evaluation criteria. This alternative was the most cost effective.
- 2. Excavation with Off-Site Landfill Disposal Alternative: Rank No. 3 with 77 points.** As compared to Alternative 1, this choice increased the risk of exposures and releases related to transportation to and disposal in a landfill. Also, this alternative would require a longer time frame to complete.
- 3. Excavation with On-Site Low Temperature Thermal Desorption (LTTD) Treatment Alternative: Rank No. 4 with 68 points.** There is an increased risk of exposures and releases related to LTTD treatment, as compared to Alternative 1, and this alternative has concerns related to technical feasibility of treatment effectiveness. It would require a longer time frame to complete and have the highest cost of all the alternatives.
- 4. Asphalt Pavement Cover Alternative: Rank No. 2 with 78 points.** There is concern for peak stormwater discharge rates with this remedy and it is more costly than Alternative 1.

Alternative 1, Soil Cover, was the selected Final Remedy based on the CMS evaluations.

CORRECTIVE ACTION FINAL REMEDY

The Final Remedy will consist of three primary elements: remedial construction, operation and maintenance, and supporting elements. Upon completion of the remedial construction work, the property is expected to be suitable for reuse or redevelopment, possibly as a brownfield site.

Remedial Construction: Since the planned demolition work at the Velsicol facility is complete, construction may begin when the permit modification and the Remediation Construction Plan are approved. The primary method of remediation will be to install a clean soil cover over contaminated soils and sediments. This soil cover will serve as a barrier to human exposure and for containment of the underlying contaminated soil. The areas to be covered are indicated on Figure 2, which totals approximately 32 acres. The coverage area encompasses all of the identified solid waste management unit areas, as indicated on Figure 1. The coverage area also encompasses much of the area outside of the identified SWMUs. These additional areas are included to facilitate stormwater drainage. The following areas are not planned to be covered with barrier soil:

- The Reilly Tar Area because the asphalt cap will be maintained as an element of the Final Remedy.
- The Reilly Tar Access Road, SWMU 71, because it is asphalt paved and has been previously designated by DSWM as not requiring any further corrective measures.
- The CTC building, which includes the offices built in 1993, the adjoining laboratory building, and the parking area in front of those buildings, because these areas are not planned to be demolished.

- The portion of the wooded hill area at the south side of the Velsicol property, as indicated on Figure 2, is not identified for remediation for the following reasons: (1) it has not been used for manufacturing operations; (2) it contains no SWMUs; (3) it is elevated with respect to the adjacent plant site lands; and (4) installation of a soil cover would require removal of the natural woodlands.
- The area of electrical power substations that must be kept in service to power the Reilly Tar Area groundwater recovery well and to power the CTC and laboratory buildings.
- The undeveloped and vegetated lawn portions of the Semi-Works Plant area, as indicated on Figure 2.

After the permit modification approval, the first step will be to rough grade the land to prepare it for placement of the barrier soil. Details of the rough grading methods and requirements follow:

- The land will be rough graded to generally match the intended slope and shape of the finished surface, and at an elevation that allows for achievement of the designed final grades after placement of the required minimum thickness of barrier soil.
- Holes will be knocked or drilled through all concrete and asphalt paved areas, sumps and trench bottoms to allow infiltrating precipitation to drain into the underlying soil.
- Sumps and trenches and other low areas will be filled with soil, gravel, or processed concrete or brick material to match surrounding rough-grading surface elevations, i.e., elevations prior to barrier soil placement.
- Concrete or brick that remains onsite after demolition may be processed and used to fill sumps, trenches or low areas. Otherwise, such material will be disposed off-site in a suitable solid waste landfill.
- Most aboveground tank support saddles, building foundation walls, containment dikes/curbs and similar small surface-area concrete features that remain after the demolition work, and that extend above the planned final barrier soil surface, will be cut down so that they do not extend above the planned final surface grade
- Any open underground drainage pipe system inlets or manholes that are discovered after completion of the Demolition Phase will be filled with gravel. Most of the underground sewer system, which was abandoned when the system was upgraded in the late 1990's, was flushed and plugged at that time.
- The rough and final graded surfaces will be sloped to drain most stormwater from the site by way of its northeast and southeast corners. This will be similar to the natural drainage patterns that existed before the current stormwater containment system improvements.
- After pumping to remove collected rainwater, the stormwater impoundments, SWMUs 19, 20 and 37, will be backfilled to raise the land elevation to the planned rough grade elevation. The water will be discharged to the City of Chattanooga's sewer system. Soil material that is available in three on-site stockpiles (see locations indicated on Figure 2) will be supplemented with imported soil to complete the rough grade backfill.

The soil barrier will be installed after completion of the rough grading step. Details of the soil barrier installation methods and requirements follow:

- Prior to the placement of the cover soil, a marker will be placed over all of the rough-graded soil surface areas to indicate the depth of the clean cover soil. Orange plastic construction fencing, or similar materials that will be long lasting and visible if uncovered, will be used as the marker. Where the barrier soil is to be placed directly over concrete or asphalt surfaces, the concrete or asphalt may serve as the marker.
- A minimum 18-inch thick soil cover will be installed over all SWMU areas and a minimum 12-inch thick soil cover will be installed over non-SWMU areas, except that the thickness may be reduced in limited areas where the land to be covered abuts site boundaries and/or certain site features such that the final surface grade must be transitioned to match adjacent land surface elevations.
- The soil material will be suitable for establishing and maintaining vegetation. The minimum soil thickness of 18 inches is designed to provide an adequate root zone depth over concrete or asphalt paved areas to support vegetation without the need for irrigation. This 18-inch requirement over concrete or asphalt paving applies regardless of whether it is a SMWU area or a non-SWMU area. In non-SWMU areas over soil, the 12-inch minimum will apply because underlying soil will extend the available root zone depth.
- Imported soil will be tested to confirm that it does not exceed Regional Screening Levels for residential land use or regional background levels for metals, if they exceed the RSLs.
- Erosion control measures, such as rip-rap, concrete drainageways, and other methods, will be installed if and where necessary to maintain the barrier soil.
- The barrier soil will be compacted during placement to minimize settlement and ponding.
- Visual monitoring will be performed to determine the need for dust control during the rough grading and barrier soil installation work. Watering will be used as the primary means of dust control.
- Ground cover vegetation will be established to protect the barrier soil from wind and stormwater erosion. The specific vegetation requirements will be specified by a qualified consultant and described in the Remedial Construction Plan.

Operation and Maintenance: The Final Remedy will include the following operations:

- Groundwater monitoring will be performed as described in Table 4 and in accordance with the criteria presented in the “Sampling and Analysis Procedures” (dated February 10, 2010 [Ref. #15] and as approved by DSWM on March 22, 2010). The seven wells on the Tennessee Products Site will be monitored as long as those wells are maintained by the well owner(s). The other wells noted on Table 4 will be maintained by Velsicol. The locations of all of the wells are shown on Figure 3 and details on their construction are provided in Ref. #17.
- Monitoring well MW-17, which is on Velsicol property, will be maintained for potential future use. Monitoring wells RW-NW and RW-SE will be properly abandoned during the remedial construction phase. Prior to well closure, a specific plugging and abandonment plan will be provided to DSWM for approval as part of the Remediation Construction.

- Groundwater recovered at RW-1, will be discharged to the City of Chattanooga’s municipal sewerage system under Velsicol’s wastewater discharge permit.
- Dense non-aqueous phase liquid (DNAPL) monitoring and recovery shall continue at the Reilly Tar Area. In accordance with the permit, DNAPL monitoring and recovery operations at Wells P-9, P-11, P-13 and MW-13 shall be performed at least monthly. Based on system performance, the DSWM may require Velsicol to increase the frequency.
- The asphalt cap will be inspected quarterly and maintenance will be performed as necessary to maintain the integrity of the asphalt. The cap covers approximately 12,500 square yards and consists of a 4-inch base course and 2-inch surface course over a crushed stone sub-base. The extent of the asphalt cap is shown on Figure 2. During periods of high summer temperatures, inspection frequency shall increase to semimonthly or as determined necessary by DSWM. As coal tar has been noted to seep through the cap in several spots, the increase in inspection frequency will facilitate timely repairs to limit any potential exposure. Any occurrence of coal tar noted during an inspection or at other times, shall be immediately removed by shoveling into an appropriate container for disposal as a hazardous waste.
- The soil barrier and its vegetated cover will be inspected quarterly and maintenance work will be performed as necessary to minimize erosion and make repairs to maintain the cover. Routine maintenance will include mowing and control of noxious weeds.
- A fence with locked gates and “DANGER, NO TRESPASSING, AUTHORIZED PERSONNEL ONLY” signage will be maintained around the main plant site to control access. Contact information will be provided at the front gate. The Final Remedy construction work will include the installation of fencing on the property line between Velsicol’s property and the adjacent Residue Hill Site. The security fence will provide a minimum 6-foot tall barrier with three strands of barbed wire and the signage will be installed every 100 feet. All monitoring wells will be secured with locking covers or caps and inspected quarterly.
- Velsicol shall perform all facility inspections as defined in the proposed corrective action permit modification and shall retain copies of those inspections for a minimum of five years to document that timely inspections were performed.
- Velsicol shall submit, on an annual basis, a report that contains: (1) groundwater and DNAPL monitoring results; (2) a summary of groundwater and DNAPL recovery operations; (3) a summary of asphalt cap condition inspections and maintenance; (4) a brief summary on barrier soil and vegetation condition based on the inspections and maintenance activities performed; and (5) a summary of any problems or major maintenance requirements concerning site security. The annual report by Velsicol shall also assure the Commissioner that the ongoing corrective action activities are adequate to meet the goal of providing protection to human health and the environment. At any time Velsicol can reasonably determine that these goals are not being met, the facility shall include recommendations for correction.

**Table 4
Final Remedy Monitoring Requirements**

Monitoring Point	Intended Use in Monitoring Program	Monitoring Schedule			
		Water Levels	GW Quality	Analyses	DNAPL
Wells Screened in Soil					
Tennessee Products:					
MW3-17	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW6-14	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW7-SH	Site-wide potentiometric monitoring	Semi-annual	--	--	--
Velsicol:					
MW-10	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-12	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-14	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-16	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-18	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-20	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-22	Southeast Trough monitoring; potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--
MW-24	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-26	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-28	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-29	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-30	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-32	Reilly Tar aquifer restoration monitoring; potentiometric monitoring	Semi-annual	Annual	SVOC	--
MW-34	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-36	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-37	Southeast Trough monitoring; potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--
P-14	Site-wide potentiometric monitoring	Semi-annual	--	--	--
Wells Screened in Rock					
Tennessee Products:					
MW3-IN	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW3-112	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW6-73	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW7-IN	Site-wide potentiometric monitoring	Semi-annual	--	--	--
Velsicol:					
RW-1	GW recovery; aquifer restoration and potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--
MW-11	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-13	DNAPL monitoring and recovery	--	--	--	Monthly
MW-15	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-19	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-21	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-23	Southeast Trough monitoring; potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--
MW-25	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-27	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-31	Site-wide potentiometric monitoring	Semi-annual	--	--	--
MW-33	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-35	Reilly Tar aquifer restoration monitoring; potentiometric monitoring;	Semi-annual	Annual	SVOC	--
MW-38	Southeast Trough monitoring; potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--
P-1	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-2	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-3	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-5	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-6	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-7	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-8	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-9	DNAPL monitoring and recovery; Site-wide potentiometric monitoring	Semi-annual	--	--	Monthly
P-10	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-11	DNAPL monitoring and recovery; Site-wide potentiometric monitoring	Semi-annual	--	--	Monthly
P-12	Site-wide potentiometric monitoring	Semi-annual	--	--	--
P-13	DNAPL monitoring and recovery; Site-wide potentiometric monitoring	Semi-annual	--	--	Monthly
P-15	Site-wide potentiometric monitoring	Semi-annual	--	--	--
Other Monitoring Points					
Piney Woods Spring	Southeast Trough monitoring	--	Annual	VOC, SVOC	--
PW-3	Southeast Trough monitoring; potentiometric monitoring	Semi-annual	Annual	VOC, SVOC	--

Supporting Elements: The Final Remedy includes land use restrictions as an institutional control. Velsicol will record a “Notice of Land Use Restrictions” with the Hamilton County Register of Deeds for the main manufacturing plant property (36.543 acre tract) and the Semi-Works Plant property (4.363 acre tract). The proposed deed restrictions are as follows:

- The groundwater contained in or under the Velsicol property cannot be used as a source for potable water and no potable water wells shall be installed on the property. Any other groundwater use will require DSWM approval.
- Prior to any invasive activity that would make contact with or remove soils from under the marker, DSWM must be notified in writing with a demonstration made to the satisfaction of DSWM that any such invasive activity or soil removal will be performed in such a way as to not pose a danger to public health, safety, or the environment. Any approval granted by DSWM for the restricted activity shall be in writing, must contain reference to the Deed Notice, and shall be filed with the Hamilton County Register of Deeds. Soil sampling and environmental testing approved by DSWM can also be used to demonstrate that the invasive activity will not pose a danger to public health, safety, or the environment. DSWM approval to perform soil sampling for environmental testing does not require a filing with the Register of Deeds.
- The permitted uses on the Property are commercial and/or industrial. Prohibited uses include dwellings, homes, apartments and schools.
- The Land Use Restrictions will not apply to the 4.056 acre tract of the Bath House/Parking Area.

Velsicol plans to explore with the TDEC Division of Water Pollution Control the feasibility of obtaining an exclusion from NPDES Storm Water Permitting (i.e. submit a No Exposure Certification) for the Velsicol property based on site conditions expected at the completion of the remedial construction work (i.e. installation of the soil barrier). If this approach is deemed infeasible, Velsicol will submit a Notice of Intent (NOI) for stormwater discharges associated with industrial activity under a Tennessee Multi-Sector General Permit (TMSGP) and will implement the requirements of that permit.

The following Remedial Project Documentation shall be provided to DSWM:

- A Remediation Construction Plan shall be presented to DSWM for review and approval before Velsicol’s remedial contractor begins construction work on the Site.
- A Health and Safety Plan (H&SP), as prepared by the remedial contractor, shall be provided to DSWM before construction work begins on the Site.
- A Corrective Measures Construction Completion Report shall be presented to DSWM for review and approval after completion of the construction work.

Project Schedule: Remedial construction will begin as soon as the permit modification and the construction plan are approved. Submittal of the Remediation Construction Plan and the implementation of the plan shall proceed in a timely manner, with all construction activities completed within two years of plan approval. The Construction Completion Report will be submitted to DSWM two months after completion of the remedial construction work.

Implementation of the remedial construction work will depend on negotiations with the City of Chattanooga for a modified wastewater discharge permit. Corrective Action Program operations, maintenance and monitoring will continue during the remedial construction work.

FINANACIAL ASSURANCE FOR CORRECTIVE ACTION FINAL REMEDY

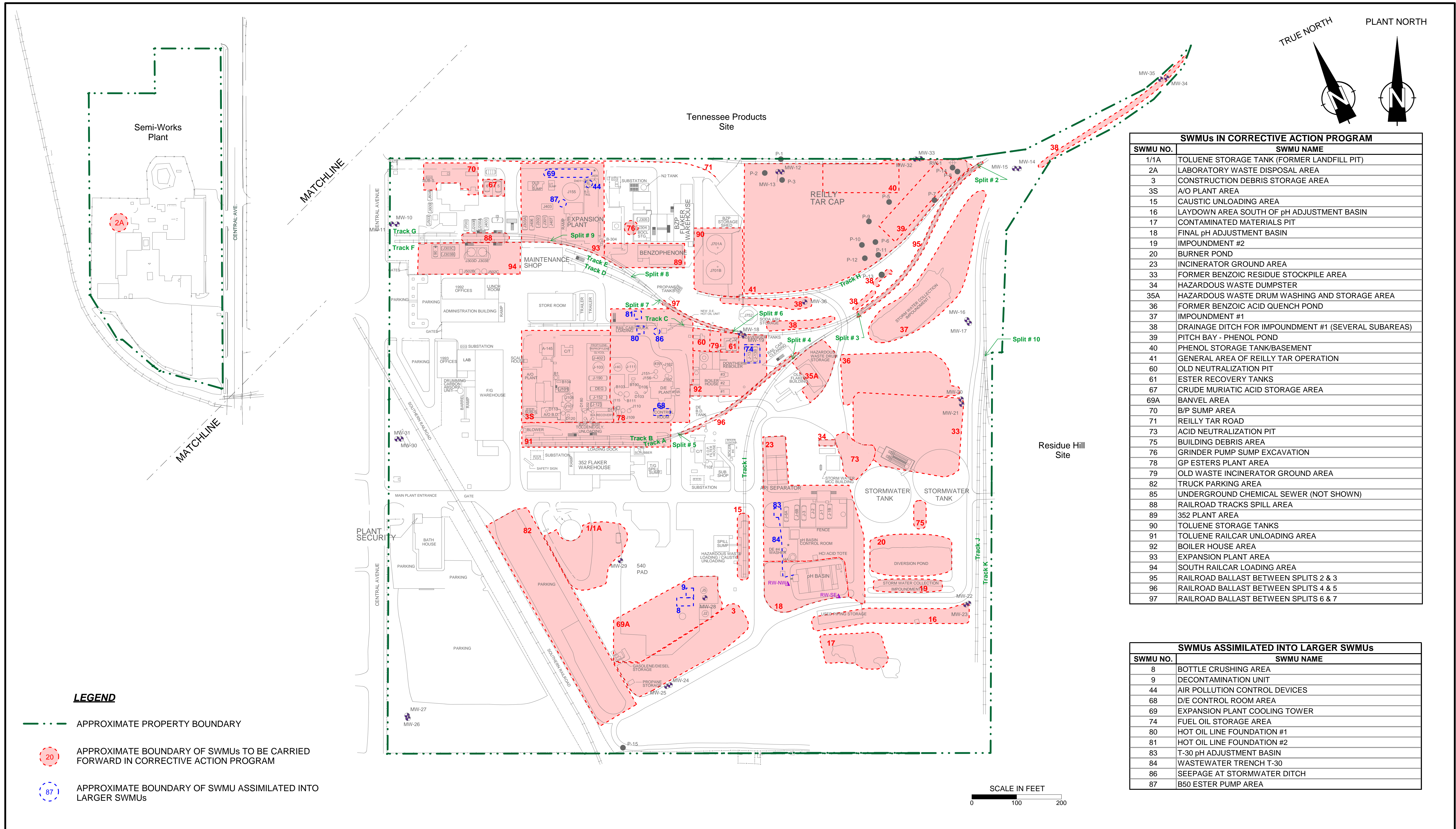
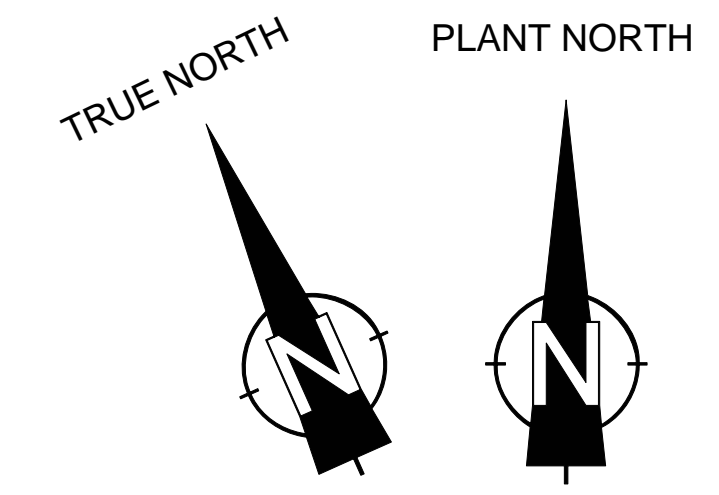
Within one hundred twenty (120) calendar days of permit modification to incorporate the final remedy, Velsicol shall demonstrate financial assurance for long-term implementation of the approved remedy.

REFERENCES

The following is a list of relevant reports and correspondence regarding the site conditions, completed Interim Measures remedial action construction work, ongoing environmental operations, the Corrective Measures Study and Velsicol's Application for Permit Modification. Copies of these documents have been made available for review by the public at an Information Repository at the Bethlehem Community Center in Chattanooga. They are also available at the Central TDEC Office in Nashville and at the TDEC Field Office in Chattanooga.

1. Phase I RFI Report, January 1994.
2. Addendum to Phase I RFI Report, June 1994.
3. Interim Measures Option Selection Report for Soil and DNAPL at Reilly Tar Area, September 1995 and revisions.
4. Ground-Water Interim Measures Option Selection Report at Reilly Tar Area, September 1997 and revisions.
5. Phase II RFI Report, May 1998.
6. Interim Measures Construction Completion Report for Former Reilly Tar Area, January 2000.
7. Corrective Measures Construction Completion Report for Stabilization Measures at SWMUs 1, 2A and 36, October 2000.
8. SWMUs 19, 20 and 37 Pre-design Investigation Report, May 2001.
9. SWMUs 15, 23, 73, 78 and 82 Testing Report, May 2004.
10. Phase III RFI Report, November 2007.
11. South East Trough 2010 Annual Groundwater Monitoring Report, June 2010.
12. Semi-Annual Interim Measures Performance Report #28 for Reilly Tar Area, Oct. 2010.
13. Corrective Measures Study (CMS) Report, August 8, 2008 (as revised).
14. Other Correspondence referenced herein, as follows:
 - DSWM letter to Velsicol regarding approval of Corrective Measures Construction Completion Report for Stabilization Measures, SWMUs 1, 2A and 36, dated May 6, 2002.

- DSWM letter to Velsicol regarding approval of Corrective Measures Construction Completion Report for SWMUs 38, 39, 40 and 41, dated May 23, 2002.
 - DSWM letter to Velsicol regarding Solid Waste Management Unit Assessment Reports, dated April 4, 2004.
 - DSWM letter to Velsicol regarding approval of Revised Phase III RFI Report, dated February 20, 2008.
 - Velsicol letter to DSWM regarding RFI Data Re-Screening Using USEPA Regional Criteria, dated July 30, 2008.
 - DSWM letter to Velsicol regarding RFI Data Re-Screening Using USEPA Regional Criteria, August 25, 2008.
 - DSWM letter to Velsicol regarding approval of Revised Corrective Measures Study Report, October 20, 2008.
15. Sampling and Analyses Procedures, February 10, 2010.
16. Velsicol's January 14, 2009 Application for Class 3 Permit Modification.
17. Supplemental Information – Monitoring and Extraction Well Details, Velsicol letter to DSWM January 23, 2009.

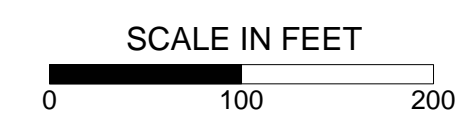


LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF SWMUs TO BE CARRIED FORWARD IN CORRECTIVE ACTION PROGRAM
- APPROXIMATE BOUNDARY OF SWMU ASSIMILATED INTO LARGER SWMUs

SWMUs IN CORRECTIVE ACTION PROGRAM	
SWMU NO.	SWMU NAME
1/1A	TOLUENE STORAGE TANK (FORMER LANDFILL PIT)
2A	LABORATORY WASTE DISPOSAL AREA
3	CONSTRUCTION DEBRIS STORAGE AREA
3S	A/O PLANT AREA
15	CAUSTIC UNLOADING AREA
16	LAYDOWN AREA SOUTH OF pH ADJUSTMENT BASIN
17	CONTAMINATED MATERIALS PIT
18	FINAL pH ADJUSTMENT BASIN
19	IMPOUNDMENT #2
20	BURNER POND
23	INCINERATOR GROUND AREA
33	FORMER BENZOIC RESIDUE STOCKPILE AREA
34	HAZARDOUS WASTE DUMPSTER
35A	HAZARDOUS WASTE DRUM WASHING AND STORAGE AREA
36	FORMER BENZOIC ACID QUENCH POND
37	IMPOUNDMENT #1
38	DRAINAGE DITCH FOR IMPOUNDMENT #1 (SEVERAL SUBAREAS)
39	PITCH BAY - PHENOL POND
40	PHENOL STORAGE TANK/BASEMENT
41	GENERAL AREA OF REILLY TAR OPERATION
60	OLD NEUTRALIZATION PIT
61	ESTER RECOVERY TANKS
67	CRUDE MURIATIC ACID STORAGE AREA
69A	BANVEL AREA
70	B/P SUMP AREA
71	REILLY TAR ROAD
73	ACID NEUTRALIZATION PIT
75	BUILDING DEBRIS AREA
76	GRINDER PUMP SUMP EXCAVATION
78	GP ESTERS PLANT AREA
79	OLD WASTE INCINERATOR GROUND AREA
82	TRUCK PARKING AREA
85	UNDERGROUND CHEMICAL SEWER (NOT SHOWN)
88	RAILROAD TRACKS SPILL AREA
89	352 PLANT AREA
90	TOLUENE STORAGE TANKS
91	TOLUENE RAILCAR UNLOADING AREA
92	BOILER HOUSE AREA
93	EXPANSION PLANT AREA
94	SOUTH RAILCAR LOADING AREA
95	RAILROAD BALLAST BETWEEN SPLITS 2 & 3
96	RAILROAD BALLAST BETWEEN SPLITS 4 & 5
97	RAILROAD BALLAST BETWEEN SPLITS 6 & 7

SWMUs ASSIMILATED INTO LARGER SWMUs	
SWMU NO.	SWMU NAME
8	BOTTLE CRUSHING AREA
9	DECONTAMINATION UNIT
44	AIR POLLUTION CONTROL DEVICES
68	D/E CONTROL ROOM AREA
69	EXPANSION PLANT COOLING TOWER
74	FUEL OIL STORAGE AREA
80	HOT OIL LINE FOUNDATION #1
81	HOT OIL LINE FOUNDATION #2
83	T-30 pH ADJUSTMENT BASIN
84	WASTEWATER TRENCH T-30
86	SEEPAGE AT STORMWATER DITCH
87	B50 ESTER PUMP AREA



REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED
J. RICKER

DRAWN
J. RICKER

CHECKED
N. KENNEL

IN CHARGE
N. KENNEL

DATE
NOVEMBER 30, 2010

VELSICOL CHEMICAL LLC
CHATTANOOGA, TENNESSEE

PREMIER
ENVIRONMENTAL SERVICES, INC.

SITE PLAN WITH SWMU LOCATIONS

SCALE AS SHOWN

PROJECT 206057-0010

FIGURE NO. **1**

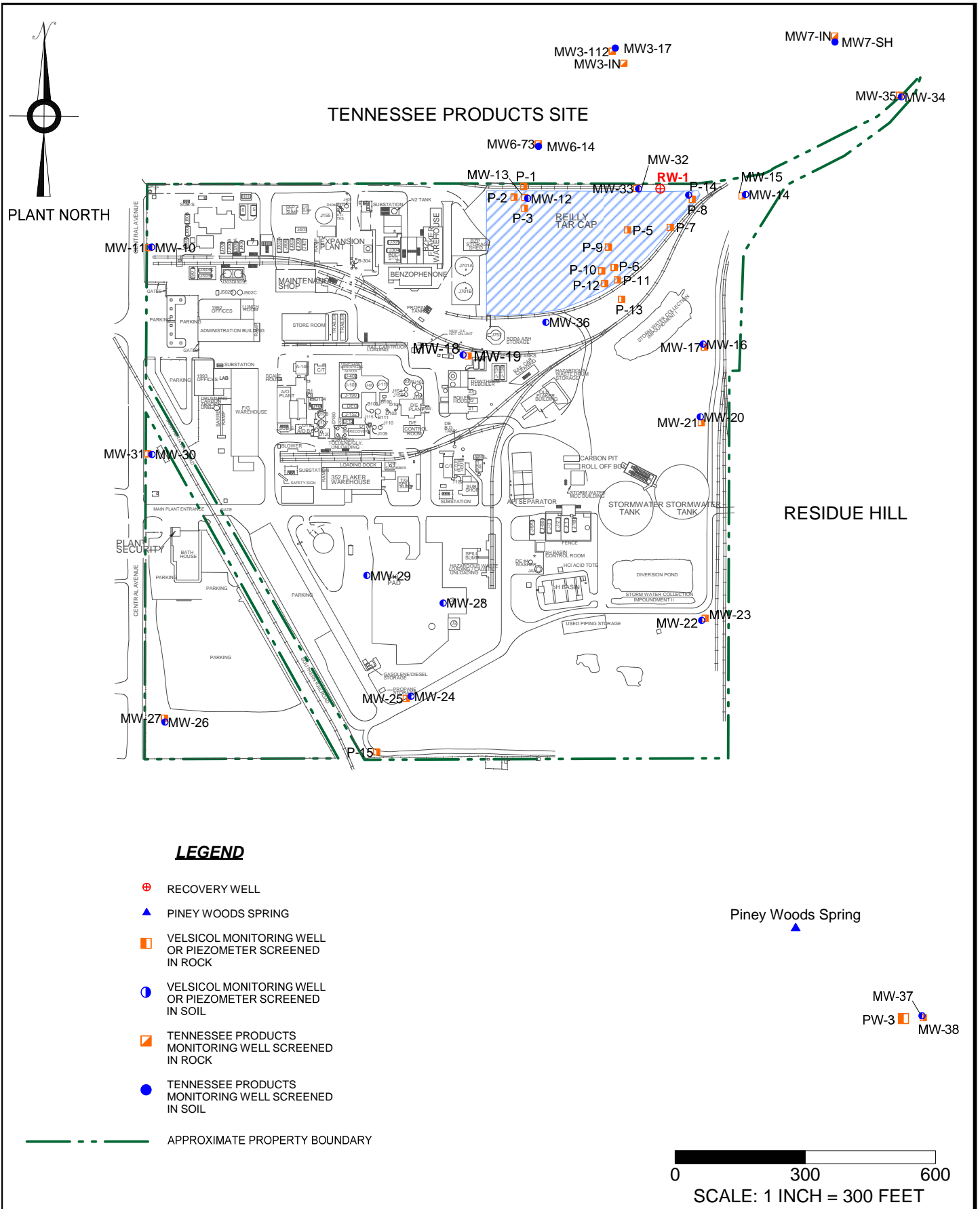


FIGURE 3. WELL LOCATIONS