

## **NOTICE OF INTENT TO MODIFY SOUTHERN WOOD PIEDMONT COMPANY'S POST-CLOSURE PERMIT AND TO APPROVE A CORRECTIVE ACTION REMEDY**

The Tennessee Department of Environment and Conservation's (TDEC) Division of Solid Waste Management (DSWM) proposes to modify Southern Wood Piedmont Company's (SWP) Post-Closure Permit, TNHW-123, by adding a final remedy for Area of Concern A, Chattanooga Creek. A Statement of Basis, which provides a justification for the final remedy is also being public noticed. This action follows the public meeting conducted by the facility on May 4, 2010, at the Bethlehem Community Center, 200 W. 38<sup>th</sup> Street, Chattanooga, TN. The public meeting addressed the final remedy for the portion of Chattanooga Creek that bisects the SWP property, which is located at 400 West 33<sup>rd</sup> Street, Chattanooga, TN 37406. Tennessee Rule 1200-01-11-.07(9)(c)5(iii)(IV) requires a public meeting prior to submitting Class 3 modifications. As required by Tennessee Rule 1200-01-11-.07(9)(c)5(iii)(V), the public notice of the meeting included the establishment of a 60-day comment period (April 8 through June 8, 2010). Only one member of the community attended the meeting. No comments were received at the meeting or during the 60-day comment period.

The purpose of the public meeting was to inform the community of SWP's April 7, 2010 modification request to incorporate the final remedy into their permit and to revise some of their current groundwater monitoring requirements. Final remedy for Area of Concern (AOC) A, Chattanooga Creek, follows a USEPA CERCLA cleanup of creosote contaminated creek sediments and creosote contamination from the stream banks. The contaminated sediments were excavated and shipped to an off-site permitted disposal facility in 2007. The creek remediation achieved all cleanup goals to the specified performance standards and is considered to be adequately protective of human health and the environment. As creosote residuals remain, this proposed post-closure permit modification requires SWP to place institutional controls (e.g. deed restrictions) that will prevent development in the wetlands and protect the vegetation along the creek. It also requires SWP to perform regular inspections to assure the institutional controls are maintained, and that creek waters remain unaffected. For verification, SWP will be required to perform semi-annual sampling and analysis of Chattanooga Creek. All other solid waste management units and areas of concern at the facility already have final remedy requirements incorporated into the permit.

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 to request a public hearing.

Copies of Southern Wood Piedmont Company's modification request, the draft permit, the fact sheet, the statement of basis and other supporting documentation are available for public inspection at the Hamilton County Bicentennial Library; 1001 Broad St.; Chattanooga, TN 37402 (423-757-5310). These materials 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 Ave.; Chattanooga, TN 37402; (423-634-5745) and at the TDEC Division of Solid Waste Management's Central Office; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; (615-532-0780).

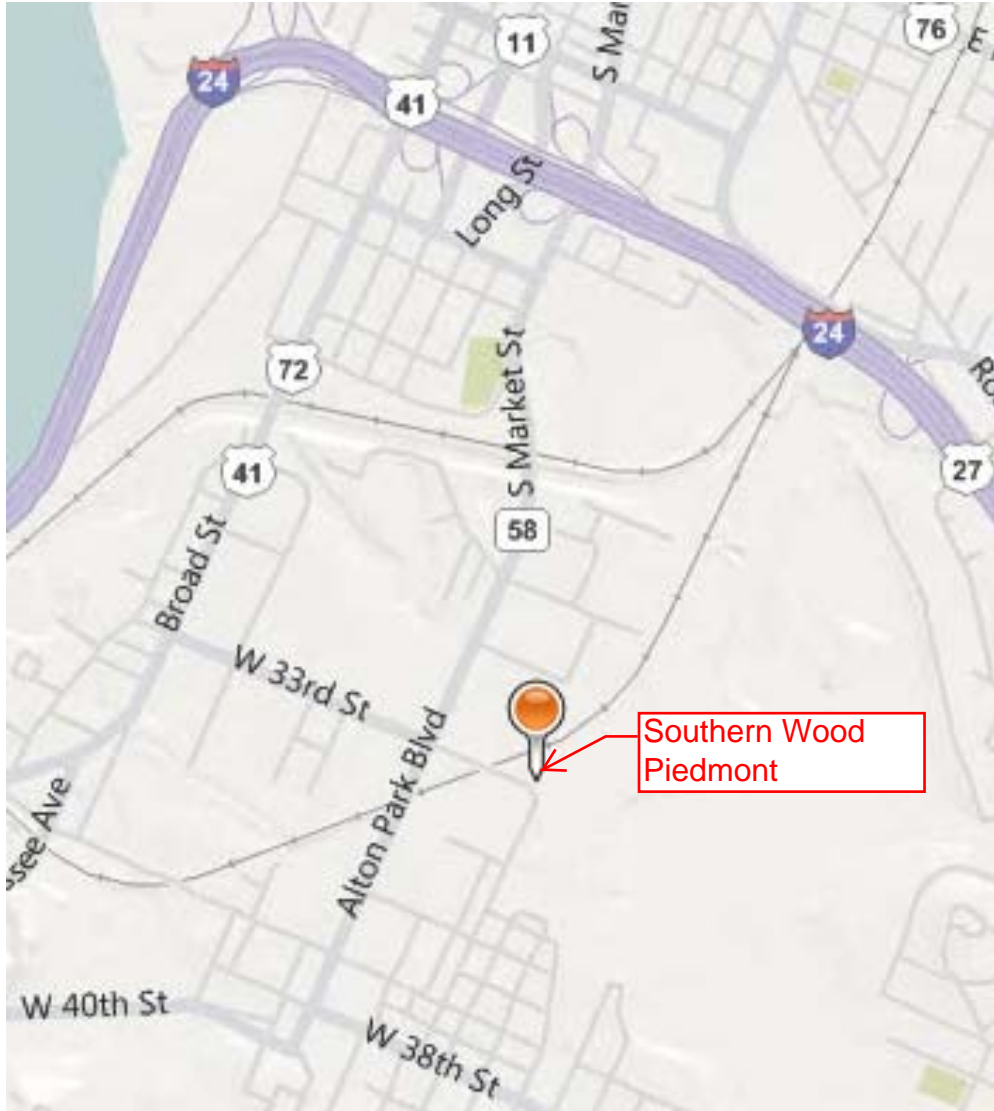
Any interested person may submit written comments on DSWM's proposal or request a public hearing by contacting: Clayton Bullington; Corrective Action Section; Division of Solid Waste Management; TDEC; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; (615-532-0859) or e-mail to [clayton.bullington@tn.gov](mailto:clayton.bullington@tn.gov). **The comments or request for a public hearing, under Rule 1200-01-11-.07(7)(f), must be received by 4:30 p.m., November 15, 2010**, to assure consideration. A request for a hearing requires a significant degree of public interest, shall be in writing, including the contact information of the requestor, and shall state the nature of the issues to be raised at the hearing. After considering all public comments received, the DSWM Director will issue a final permit decision and a Response to Comments.

TDEC is committed to principles of equal opportunity, equal access and affirmative action. Contact the EEO/AA Coordinator at 1-888-867-7455 or 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@state.tn.us](mailto:solid.waste@state.tn.us).

**NOTICE ISSUED: September 30, 2010**

Southern Wood Piedmont  
400 East 33rd Street  
Chattanooga, Hamilton Co.



## FACT SHEET

### **NOTICE OF INTENT TO MODIFY SOUTHERN WOOD PIEDMONT COMPANY'S POST CLOSURE PERMIT AND TO APPROVE A CORRECTIVE ACTION REMEDY**

**Facility Name:** Southern Wood Piedmont Company

**Location:** 403 West 33<sup>rd</sup> Street  
Chattanooga, Hamilton County, Tennessee 37410

**Installation ID Number:** TND 003 327 400

**Permit Number:** TNHW-123

**Permit Type:** Post Closure and Corrective Action

**Facility Owner/Operator:** Southern Wood Piedmont Company  
PO Box 5447  
Spartanburg, SC 29304

**Facility Contact:** Mr. William P. Arrants  
PO Box 5447  
Spartanburg, SC 29304  
Phone: (864) 599-1070 ext 103

**Comment Period:** **Begins: September 30, 2010**  
**Ends: November 15, 2010**

### PURPOSE

This fact sheet is prepared pursuant to Tennessee Rule 1200-01-11-.07(7)(d) for the draft permit modification 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 person(s) the opportunity to evaluate the ability of the permittee to apply the applicable hazardous waste management requirements. The proposal is for modification of Southern Wood Piedmont Company's Post Closure Permit under the authority of the Tennessee Hazardous Waste Management Act of 1977, as amended, Tennessee Code Annotated, Section 68-212-101, et. seq. and Tennessee Rule Chapter 1200-01-11, Hazardous Waste Management. The permit modification is prepared in accordance with the provisions of Tennessee Rule 1200-01-11-.07. The modification will add the final remedy for Area of Concern A, Chattanooga Creek, to the permit. Since all other solid waste management units (SWMUs) and areas of concern (AOCs) already have permitted final remedies, upon modification approval, Southern Wood Piedmont Company's closed Chattanooga facility will have site-wide final remedy in place. The Statement of Basis with the recommended final remedial actions for Chattanooga Creek accompanies this Fact Sheet.

## **FACILITY DESCRIPTION**

Southern Wood Piedmont Company (SWP) is located at 403 West 33rd Street, Chattanooga, Tennessee, 37410. Wood treatment, storage, and wastewater treatment operations occurred at the SWP site between 1924 and 1988. The treating plant was located on a 77-acre fenced site along the west side of Chattanooga Creek. In 1986 and 1989, SWP acquired additional property adjacent to the plant and to the east of Chattanooga Creek so that the entire SWP property, including the original 77-acre plant site, is now 155 acres.

The former wood treating plant engaged in the treatment of railroad crossties with creosote. The wood, before creosote treating, was dried by natural air seasoning or artificial means. The artificial drying included steaming within the process cylinder, boultonizing, and vapor drying. After drying, the wood was pressure treated with creosote preservative and either shipped to the customer or stored on the plant site until sold.

All structures were demolished and removed from the property in 1988, except for the shop/office building, a storage tank and the groundwater treatment plant. All areas with visual surface contamination of creosote were removed. Parts of the site were regraded and a grass cover established. Since 1988, two remediation systems have been installed. These remediation systems include a groundwater/liquid creosote recovery trench, which is beneath the former drip track, and a groundwater intercept trench installed in the floodplain along Chattanooga Creek, downgradient of the former plant site.

SWP had one regulated hazardous waste management unit: a lined surface impoundment that was designed for wastewater treatment of creosote-contaminated water. It is now capped and under long-term care as a permitted post closure hazardous waste landfill. As part of the post closure permit reissuance in 2005, the remaining solid waste management units and areas of concern in the former operation areas of the facility were approved for final remedy. The remedy grouped those units with the regulated post closure unit into a single waste management area (WMA) for corrective action purposes. Final remedy approval for Chattanooga Creek was not pursued at that time, because of an ongoing CERCLA cleanup action. The permit deferred that decision in the permit, but required SWP to file reports and make a recommendation for final remedy when the CERCLA action was complete.

## **PROPOSED PERMIT MODIFICATION**

The purpose of the modification is to incorporate a final remedy for AOC A, Chattanooga Creek into SWP's post closure permit and to revise some of their current groundwater monitoring requirements. Issuance of the draft permit modification follows the public meeting conducted by the facility on May 4, 2010, at the Bethlehem Community Center, 200 W. 38<sup>th</sup> Street, Chattanooga, TN. The public meeting addressed the final remedy for the portion of Chattanooga Creek that bisects the SWP property, which is located at 400 West 33<sup>rd</sup> Street, Chattanooga, TN 37406. Tennessee Rule 1200-01-11-.07(9)(c)5(iii)(IV) requires a public meeting for Class 3 modifications. As required by Tennessee Rule 1200-01-11-.07(9)(c)5(iii)(V), the public notice of the meeting included the establishment of a 60-day comment period (April 8 through June 8, 2010). No comments were received at the meeting or during the 60-day comment period.

Final remedy for AOC A, follows a USEPA CERCLA cleanup of creosote contaminated creek sediments and creosote contamination from the stream banks. The contaminated media were excavated and shipped to an off-site permitted disposal facility in 2007. The creek remediation achieved all cleanup goals to the specified performance standards and is considered to be adequately protective of human health and the environment. As creosote residuals remain, the modification requires SWP to place institutional controls (e.g. deed restrictions) that will prevent development in the wetlands and protect the vegetation along the creek. It also requires SWP to perform regular inspections to assure the institutional controls are maintained, and that creek waters remain unaffected. For verification, SWP will be required to perform quarterly visual inspections and annual sampling and analyses of Chattanooga Creek. All other solid waste management units and areas of concern at the facility already have final remedy requirements incorporated into the permit. Other requested changes to the permit and the Division's responses are listed in the attached table. Also attached to this Fact Sheet is a Statement of Basis that explains the basis and recommendations for final remedy selection of AOC A at SWP.

## **COMMENTS**

Copies of Southern Wood Piedmont Company's modification request, the draft permit, the fact sheet, the statement of basis and other supporting documentation are available for public inspection at the Hamilton County Bicentennial Library; 1001 Broad St.; Chattanooga, TN 37402 (423-757-5310). These materials 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 Ave.; Chattanooga, TN 37402; (423-634-5745) and at the TDEC Division of Solid Waste Management's Central Office; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; (615-532-0780).

In accordance with Rule 1200-01-11-.07(9)(c)5(iii)(vii) and .07(7)(e), any interested person may submit written comments during the 45-day comment period on DSWM's proposal or request a public hearing by contacting: Clayton Bullington; Corrective Action Section; Division of Solid Waste Management; TDEC; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; (615-532-0859) or e-mail to [clayton.bullington@tn.gov](mailto:clayton.bullington@tn.gov). **The comments or request for a public hearing, under Rule 1200-01-11-.07(7)(f), must be received by 4:30 p.m., November 15, 2010,** to assure consideration. A request for a hearing requires a significant degree of public interest, shall be in writing, including the contact information of the requestor, and shall state the nature of the issues to be raised at the hearing. After considering all public comments received, the DSWM Director will issue a final permit decision and a Response to Comments.

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**Proposed Modifications to RCRA Post-Closure Care Permit TNHW-123  
Southern Wood Piedmont Company – Chattanooga, TN**

<b>Section</b>	<b>Page</b>	<b>Requested Change</b>	<b>Rationale</b>	<b>Response</b>
IV.D.3	IV-2	Change compliance demonstration period from three to two years.	System has been in active remediation for five years and will remain so for foreseeable future. At point of shutting down recovery system, there will be enough validated trend data to verify that groundwater concentrations will remain below the GWPS.	Change not made. Requirement of TN Rule 1200-1-11-.06(6)(g)3 specifically requires three years.
IV.E.3	IV-3	Change groundwater sampling frequency to annual from semi-annual for all wells but the C-7 cluster.	Four years of semi-annual monitoring have established minimal variability in groundwater concentrations. Only wells C-07 and C-07A exceed the GWPS. Annual groundwater sampling is adequate to evaluate compliance and will be consistent with the annual requirement for determining flow rates and directions in IV.E.2 and an annual report in II.D.2.	Change made.
IV.E.6	IV-3	Change statistical evaluation from semi-annually to annually.	To match sampling frequency	Change made.
IV.F.5	IV-4	Change schedule of Corrective Action Effectiveness Reports from semi-annual to annual.	To match proposed annual sampling events. Sampling would occur in October and the report would be submitted by March 1 <sup>st</sup> .	Change made.
Attachment 2, Condition 1	2-1	Delete 3 <sup>rd</sup> sentence. Change 4 <sup>th</sup> sentence to “The gate remains locked at all times.”	There is no longer an SWP employee on-site.	Changes made, but were to the 4 <sup>th</sup> and 5 <sup>th</sup> sentences.
Attachment 2, Condition 3	2-1	Change “Sonitrol” to “ADS”. Delete “after hours” and “sound level detectors for breaking glass and motion detectors”.	Current system	Changes made, but did not specify new company by name. Referenced only as private security system provider.
Attachment 2, Condition 4	2-1	Change “Sonitrol” to “ADS”.		Change made, but did not specify new company by name. Referenced only as private security system provider.

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Southern Wood Piedmont Company – Chattanooga, TN**

<b>Section</b>	<b>Page</b>	<b>Requested Change</b>	<b>Rationale</b>	<b>Response</b>
Attachment 3, Section 1	3-1	Delete Parts (c) through (h). Change inspection frequency to semi-annually.	Not related to operation or maintenance of regulated units. Five years of inspections have shown the SWMUs remain in good condition.	Changes made. Part (i) is now Part (c). Also removed or revised the relevant inspection forms.
Attachment 3, Section 2	3-1	Change inspection frequency to semi-annually.	Five years of inspections have shown the SWMUs remain in good condition.	Change made.
Attachment 5, Section 4.a	5-1	Change inspection frequency for HWMU final cover to semi-annual from quarterly.	Five years of inspections have shown that the cover and run-on/off control system remain in good condition. The potential for differential settlement has passed. Regular mowing prevents woody plant infiltration.	Change made.
Attachment 5, Section 4.c	5-1	Change inspection frequency for groundwater monitoring and corrective action systems to semi-annual from quarterly.	Five years of inspections have shown that the systems remain in good condition and require minimal maintenance.	Change made.
Attachment 5, Section 8	5-3	Change address to “403 W. 33 <sup>rd</sup> Street”.		Change made.
Table 6A-1	6A-2	Remove arsenic from GWPS.	Chromate copper arsenate was not used for wood treating at the facility. Not found above GWPS. Only detected in one well during October 2009 sampling event (C-36).	Change made.
Table 6A-1	6A-2	Remove chromium from GWPS.	Chromate copper arsenate was not used for wood treating at the facility. Never detected in groundwater.	Change made.
Table 6A-1	6A-2	Remove sulfide from GWPS.	Not detected in last eight sampling events.	Change made.
Attachment 6C, Section 2	6C-4	Allow use of low-flow sampling techniques as described by EPA Region 4 SESD Procedure 301-R1.	Minimize sampling costs and IDW and be consistent with current sampling science.	Change made, but did not revise sampling plan. Noted option on page 6C-1.

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Southern Wood Piedmont Company – Chattanooga, TN**

<b>Section</b>	<b>Page</b>	<b>Requested Change</b>	<b>Rationale</b>	<b>Response</b>
Attachment 6C, Section 3	6C-5	Change semi-annual sampling to annual.	Per IV.E.3	Change made.
Attachment 6C, Section 3	6C-5	Change Table 2 to Table 6C-2	Match other tables	Change made.
Attachment 6C, Section 4.2)	6C-6	Change Table 1 to Table 6C-1	Match other tables	Change made. Also changed Figure 1 to Figure 6C-1 on page 6C-6.
Attachment 6C, Section 4.2)	6C-6	Change “SW-846, Third Edition” to “SW-846, Latest Edition”	Better identification	Change made.
Attachment 6C, Section 4.4)	6C-6	Change gloves to “Nitrile”.		Change made.
Attachment 6C, Section 4.16) (new)	6C-7	Add “A dedicated steel tagline may be used to measure DNAPL thickness.”	Currently being used.	Change made.
Attachment 6C, Section 5.2.13	6C-9	Delete “if the well is being sampled”.		Change made.
Attachment 6C, Section 5.3.3)	6C-9	Replace “string, tape or monofilament” with “steel tagline”.	Currently being used.	Change made.
Attachment 6C, Section 5.3.4)	6C-9	Delete the Note.		Change made.
Attachment 6C, Section 5.4.5)	6C-10	Change to “Clean the dedicated bailers”		Change made.
Attachment 6C, Section 6.2.2)	6C-13	Delete Items 4 and 5, Total Metals and Sulfide	Per IV.E.3	Changes made.
Attachment 6C, Section 7.4.2)	6C-15	Delete Item 2, Sample Log Number		Change made.

**Proposed Modifications to RCRA Post-Closure Care Permit TNHW-123  
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<b>Section</b>	<b>Page</b>	<b>Requested Change</b>	<b>Rationale</b>	<b>Response</b>
Tables 6C-1, 6C-2, 6C-3	6C-16, 6C-17	Delete arsenic from parameters to be analyzed	Not found above GWPS. Only detected in one well during October 2009 sampling event (C-36).	Change made.
Tables 6C-1, 6C-2, 6C-3	6C-16, 6C-17	Delete chromium from parameters to be analyzed	Never detected in groundwater.	Change made.
Tables 6C-1, 6C-2, 6C-3	6C-16, 6C-17	Delete sulfide from parameters to be analyzed	Not detected in last eight sampling events.	Change made.
Attachment 7F, Condition II.2	7F-1	Change frequency for inspections of SWMUs and AOCs from quarterly to semi-annual inspections	Five years of inspections have shown the SWMUs remain in good condition. Semi-annual inspections will be consistent with inspection requirements for AOC A, Chattanooga Creek.	All changes requested to Attachment 7F, were made. They were included by replacing the entire Attachment 7F as part of the modification. The revised Attachment 7F added institutional controls , surface water sampling and inspection requirements for AOC A to the already required institutional controls and groundwater monitoring requirements for all the other facility SWMUs and AOCs. Chattanooga Creek inspections were changed from the requested semi-annual to quarterly by the State.
Attachment 7F, Condition II.5	7F-2	Delete requirement for groundwater classification	Groundwater classification is no longer needed with institutional controls, active remediation, and ACLs.	
Attachment 7F, Condition III.1	7F-2	Delete requirement for groundwater classification	Groundwater classification is no longer needed with institutional controls, active remediation, and ACLs.	
Attachment 7F, Condition III.2	7F-2	Delete requirement	Already completed	
Attachment 7F, Condition III.3	7F-2	Delete requirement	Already completed	
Attachment 7F, Condition IV	7F-2	Delete requirement	Replace with new permit language regarding surface water sampling and inspections	
Subparagraph I.D.9(a)	I-6	State-initiated modification to change sampling guidance from EPA Region 4's <u>Environmental Investigations Standard Operating Procedures and Quality Assurance Manual</u> (EISOPQAM), to USEPA, Region 4, Science and Ecosystem Support Division's (SESD) <u>Field Branches Quality System and Technical Procedures</u>		
Subparagraph I.D.9(b) and Attachment 3, Condition 3	I-6	State-initiated modification to change retention time for monitoring records from three (3) to five (5) years.		

## **STATEMENT OF BASIS**

AOC A - Chattanooga Creek  
Southern Wood Piedmont Company  
EPA ID Number: TND003327400

### **INTRODUCTION**

The Tennessee Department of Environment and Conservation (TDEC), Division of Solid Waste Management is issuing this Statement of Basis as part of its public participation responsibilities under the Tennessee Hazardous Waste Management Act, as amended, and its corrective action authority as granted by the U.S. Environmental Protection Agency's (EPA) Hazardous and Solid Waste Amendments Act (HSWA). A Statement of Basis (SB) summarizes the nature and extent of releases from Solid Waste Management Units and Areas of Concern located at a facility. The SB recommends remedies for those releases identified during the corrective action process and is designed to facilitate public participation in the remedy selection process.

This SB for Southern Wood Piedmont Company's Chattanooga facility explains the proposed remedy for AOC A, Chattanooga Creek. TDEC will finalize the selection of final remedy for the facility only after the public comment period has ended and the information submitted during this time has been reviewed and considered. This document is an attachment to the Fact Sheet, *Notice of Intent to Modify Southern Wood Piedmont Company's Post Closure Permit and to Approve a Corrective Action Remedy*. The Fact Sheet contains a description of the facility and the procedure for interested persons to provide comments on this SB and the draft permit modification. This SB summarizes information that can be found in greater detail in the documents contained in the facility administrative record.

TDEC may modify the proposed remedy or select another remedy based on new information or public comment. Therefore, the public is encouraged to review the facility administrative record and comment on the draft remedy selection.

### **PROPOSED REMEDY**

To assist in restoring and preserving the CERCLA cleanup of Chattanooga Creek, the proposed remedy for Chattanooga Creek requires implementation of the following institutional controls:

1. Natural restoration of the woodland wetlands is required for Southern Wood Piedmont's (SWP) lowland area. Access roads built in that area during Chattanooga Creek Cleanup Committee's (4C's) removal of contaminated sediments, destroyed a large swath of vegetation along the creek. SWP shall maintain institutional controls (ICs) that will protect and promote the long-term growth of the original and recently established vegetation along the banks of Chattanooga Creek for the entire reach that is owned by SWP. This includes both banks of the Oxbow and all lands within the creek's breached oxbow meander.
2. SWP shall restrict development in the PAH-contaminated lowlands along the creek, to include any digging, production-well drilling or other intrusive activities, such as recreational bike or walking paths. Exceptions, such as for utility construction or remedial actions that may not require permit modification, shall only be allowed with written

approval by the Commissioner. Regular maintenance or repair of the existing groundwater recovery system will not require written approval. Within one hundred twenty days of the effective date of the permit modification, the SWP shall file Commissioner approved activity-specific deed restrictions with the local zoning authority.

3. SWP shall inspect the banks and the waters of their portion of Chattanooga Creek for any exposure of non-aqueous phase liquid (oily material) or sheen that may be leaching from their property or from upstream locations. Inspections shall be performed during periods of low flow, and at least quarterly. Inspections shall also follow any event that can reasonably be determined to have possibly damaged the Aquablok® stabilized creek banks. If an inspection or any other circumstance occurs in which the facility identifies a possible release, SWP shall (1) clearly mark the suspected source area, (2) locate any affected areas on an appropriately scaled map, and (3) immediately notify the Division by telephone.
4. SWP shall annually sample Chattanooga Creek at the upstream and downstream boundaries of their property. The samples from each event shall be analyzed for PAHs and statistically compared to determine if the facility property is impacting Chattanooga Creek. Analytical data shall also be evaluated for long-term trends. The statistical analysis shall be performed within sixty days of SWP's receipt of the analytical results.

The basis of the proposed final remedy for AOC A, which consists of that portion of Chattanooga Creek located within Southern Wood Piedmont Company's property boundary, is as follows:

1. Reforestation of the cleared areas along the creek will assist in establishing and maintaining long-term bank stability for the remediated stream channel. Erosion along this stretch of Chattanooga Creek is controlled by the low gradient and the Tennessee River dams located up and down river of the creek confluence. Migration of meanders in the oxbow area is also inhibited by the oxbow channel's breach, which did not exist at the time of contaminant deposition. The breach does not completely cut off flow around the oxbow channel; some flow continues through the oxbow, including minor contributions from the surrounding swamplands.
2. The non-aqueous phase liquid (NAPL) did not migrate into the banks from the creek. It was flowing in the creek along with sediments and debris until they were deposited in areas of very low stream velocity, i.e., the inside of meander bends. As the creek cut further into the outside of the bends, the width of the depositional sides increased. The deposits that filled the space on the accumulation side of the meander bends consisted of a basal gravel bar, which graded upward to include sand, silt and clay. Throughout the depositional column, debris and NAPL being transported from upstream were deposited along with the alluvium. The viscous NAPL tends to attenuate to the finer alluvium. However, the permeable basal gravel could allow for mobility of NAPL if a continuing source existed.
3. The feasibility study for Chattanooga Creek determined that only the sediments in the creek posed a threat to human health. No other media required remedial action. 4C's cleanup was limited to visual polycyclic aromatic hydrocarbon (PAH) contamination with a maximum removal of 3 feet of the existing creek bank. This left PAHs in the wider depositional areas of the creek and in the floodplain alluvium. 4C's remedy achieved all cleanup goals to the specified performance standards and is considered to be adequately protective of human health and the environment. However, an ecological chronic risk from PAH-contaminated

sediments may still remain in the remediated channel sediments, including that from continuing creek channel and floodplain source areas upstream of SWP property.

4. The remnant, non-aqueous phase liquid (NAPL) is only mobile in cut banks, as occurred and as documented during the dredging phase of 4C's cleanup. Prior to dredging, no releases to the creek were noted. NAPL is only found in the depositional areas of the oxbow's creek meanders, not the areas where natural stream erosion is taking place.
5. Only limited NAPL removal from the soil and/or sediment overburden is achievable by means other than dig-and-haul. Other on-site attempts of NAPL removal from the overburden/bedrock interface by SWP have had little success. The dense NAPL is heavier than water and investigations have shown that the movement of this material in the overburden is essentially vertical from the source, attenuating to the soil as it moves in a column until it reaches an impermeable barrier. At that point, if a continuing source is available, horizontal movement can occur and the dense NAPL will pool in low areas of the barrier. Attempts to recover this NAPL from areas with similar deposits by installing trenches with sumps to collect and remove the NAPL from low areas at the overburden/bedrock interface have been unsuccessful.
6. An attempt to excavate any remnant NAPL left in place behind the restored channel will destabilize the reconstructed banks. The oxbow is already recovering from 4C's channel dredging activities, as evidenced by herons, ducks, reptiles and amphibians returning to the oxbow channel.
7. During the 1990s, SWP successfully performed voluntary NAPL removal from the shallow, high-conductivity fractured rock aquifer beneath the Oxbow. Open borehole wells were used as sumps for accumulation of NAPL. For seven years, on a monthly, and then a quarterly basis as accumulations waned, the NAPL was pumped from the wells. In 2000, when the accumulations had dwindled to the point that recovery of NAPL was insignificant, SWP ceased further recovery activities.