

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	07/29/02	
City:	Charleston	
County:	Charleston	
State:	SC	
Country:	USA	
Bodies of Water:	Ashley River	
US EPA Region:	IV	
Status (Active, Complete, or Monitoring Only):	Active	
Date On NPL:	1994	
ROD/ESD Date:	1998	
Operable Unit:	N/A	
Areas of Concern (length or acres):	Approximately 102 acres of commercial site bordered by a wetland tidal marsh, an intertidal zone, and the Ashley River tidal system.	
Other Characteristics of Water Body:	<p>The site is located in the neck area of northern Charleston, South Carolina, on the west side of the peninsula formed by the Ashley and Cooper Rivers. The Ashley River borders the site to the west and flows approximately 31 miles from its headwaters in the Cypress Swamp to Charleston Harbor and drains an estimated 350 square miles of marsh and low lands. The depth of natural channel ranges from 5.9 feet to 36 feet along the river's length, and is tidally influenced throughout its length (mean tidal range is 5.25 feet).</p> <p>Drainage occurs as either overland flow or through anthropogenic drainage ditches, referred to as the Milford Street drainage ditch, the Hagood Avenue drainage ditch, the Central drainage ditch, and the Braswell Street drainage ditch. Another unnamed ditch collects run-off from the former Ashepoo Phosphate/Fertilizer site and flows into the headwaters of the South Tidal Marsh.</p>	
Contaminants of Concern:	PAHs; pentachlorophenol; trace amounts of dioxin, lead, and arsenic	
Source of Contamination:	Wood treatment operation that began in the early 1900s and continued until 1977.	
Contaminated Area Physical Characteristics:	Two parcels: a 45-acre parcel where wood treatment occurred, and a 57-acre parcel south and adjacent to the first parcel owned by the Ashepoo Phosphate/Fertilizer Works. A barge canal was dredged on the Ashepoo property in 1984 that extended eastward approximately 1000 feet from the Ashley River. The construction of the canal reportedly resulted in an observed fish kill in the immediate vicinity of the Ashley River. EPA incorporated these 57 acres into the site boundaries to determine the environmental impact that the dredging operations had on the Ashley River and neighboring tidal marsh. The terrain is generally level, ranging in elevation from sea level to 20 feet on the peninsula with a flat slope of 0.004. The upland area of the site is surrounded by three distinct ecological zones: a wetland tidal marsh, an intertidal zone, and the Ashley River tidal system.	
Type of Regulatory Action:	Superfund. Final.	
Overall Status Summary:	According to the 1998 ROD: "The remedy selected in this ROD is the Final response action selected for the Site. EPA issued an Interim Action ROD in March 1995 to address potential short-term human health risks associated with exposure to surface water and sediments of the Hagood Avenue and Milford Street drainage ditches. This ROD selects a site-wide, multi-media response action to address surface/subsurface soil, sediments of drainage ditches, groundwater and NAPL, surface water, contaminant transport pathways, and sediments of the Ashley River,	

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name

KOPPERS (Charleston Plant)

ProjectID: 04-08

Last Updated:

07/29/02

Barge Canal, and North/South/Northwest Tidal Marshes. The major components of EPA's selected remedy for sediments are:"

- "Enhanced sedimentation (using pile barriers along a 1,500-foot strip) in the Ashley River;"
- "Placement of a protective cap over sediments of the 3.2 acre Barge Canal;"
- "Excavation of an estimated 0.25 and 1.50 acres of acutely toxic tidal marsh sediments in the North and South Tidal Marshes, respectively, followed by restoration/revegetation and off-site disposal in an approved hazardous waste landfill; and"
- "In-situ bioremediation [increasing the rate of biodegradation to address organics; phytoremediation to address inorganics] for sediments in the Northwest Tidal Marsh and portions of the South Tidal Marsh which did not demonstrate significant toxicity."

"The remedy selected for other site media being addressed by the remedial action are:"

- "Excavation of an estimated 12,000 tons of the most heavily impacted soil with subsequent off-site disposal in an approved hazardous waste landfill;"
- "Installation of an estimated 29.7 acre cap over lead-impacted soil and relatively less impacted soil to provide additional risk reduction;"
- "Reconstruction of an estimated 3,600 linear feet of on-site surface water drainage ditches; and"
- "Recovery of groundwater/NAPL via extraction wells at three source areas to remove/treat NAPL to the maximum extent practicable, contain non-restorable source areas, and contain/restore aqueous contaminant plumes."

Implementation of the remedy began in January 1999. Soil work, which included excavation, a soil cap, and reconstruction of onsite surface water drainage ditches, was completed in Summer 1999. Sediment excavation in the North Tidal Marsh was also completed during this time. Approximately one foot of sediment was excavated from a 1,300 ft long section of the marsh (0.85 acres) that resulted in a total removed volume of about 1,600 cy. The sediment was stabilized onsite, and then sent offsite for disposal. The remediated marsh area was then restored and revegetated.

By February 2002, about 20,000 tons of lead-containing soil and between 1,800 and 2,000 tons (approximately 2,500 cy) of upland drainage ditch sediment had been excavated. Ashley River near-shore sediments were capped and solidified in-place during 2001 (the original remedy of enhanced sedimentation was determined to be technically infeasible). An assessment was performed to evaluate the effectiveness of an in-situ bioremediation pilot project on South Tidal Marsh sediment in the Summer of 2001. Results of the project indicated that while the addition of fertilizer was found to lower PAH toxicity, other constituents were not addressed by the remedy and prompted the need for a more expeditious remedy. As a result, sediment exhibiting significant acute toxicity based on results from whole sediment acute toxicity tests will be excavated (about 1.5 acres of South Tidal Marsh). The design for the excavation work is anticipated to be completed by Spring 2002 and construction is targeted for Fall or Winter 2002. The remedial design for groundwater is anticipated by mid-2002. The ROD designated a 24-inch cap for the final component of the site, the barge canal. This remedy, however, is currently being reevaluated vs. natural sedimentation (at the request of the PRPs).

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	07/29/02	

Remedial Action Planned: ☒

Risk Assessment: ☒

Remedial Action Implemented: ☒

Status of Dredging ☐

PRPs: ☒

Contacts: ☒

References: ☒

Modeling: ☐

Fishing Advisory: ☐

Key Conditions: capping, commercial landfill, habitat/streambank restoration, more-harm-than-good, natural recovery, post monitoring, property access issues, solidification/stabilization, tidal fluctuations, wetlands

REMEDIAL ACTION PLANNED

Project Name	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	02/25/00	
Target Sediment Cleanup Standards (TSCS):	Undefined in ROD.	
How TSCS Established:		
Target Bank and Floodplain Cleanup Levels (if applicable):	N/A	
Other Target:	(Source: ROD, April 1998)	

"A weight of evidence approach was developed to derive Areas of Potential Ecological Concern (APECs) for the Ashley River, Barge Canal, and three tidal marsh areas neighboring the site. This protocol utilized the results of sediment samples and whole sediment acute toxicity testing on targeted benthic macroinvertebrate species generated during the RI field programs. The protocol is outlined below:

- "Within each area (Ashley River, Barge Canal, North/South/Northwest Tidal Marsh), results for sediment samples collected between 0 and 12 inches were compared to available relevant benchmarks for inorganics and PAHs (ER-M or draft EPA Sediment Quality Criteria). Inclusion of data from the six to 12 inch interval is considered adequately conservative because the majority of benthic macroinvertebrates are distributed in the upper 6 inches and thus have minimal potential exposure to lower depths;"
- "Locations where a constituent concentration exceeded the benchmark were assumed to be within the APEC;"
- "Locations where a constituent concentration was less than the benchmark were assumed to be outside the APEC;"
- "Locations with statistically significant mortality of targeted benthic macroinvertebrate species in acute toxicity tests were assumed to be within the APEC;"
- "Locations with a constituent concentration exceeding the benchmark but with a co-located toxicity test which revealed no statistically significant chronic toxicity relative to reference sites were assumed to be outside the APEC;" and
- "The edge of the marsh as denoted on habitat maps was used to delineate the extent of an APEC."

Environmental Sample Data References:

- **Sediment:**
- **Water:**
- **Fish:**

Estimated Target Volume:	<ul style="list-style-type: none">• Subaqueous cap (consisting of two feet of clean sediments) over 3.2-acre Barge Canal;• Removal of about 3,300 cy of the most toxic sediment from the North and South Tidal Marshes;• In-situ bioremediation in portions of the Northwest and Southwest Tidal Marshes. Methods
---------------------------------	---

REMEDIAL ACTION PLANNED

Project Name	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	02/25/00	
	<p>of bioremediation being considered are increasing the rate of biodegradation and phytoremediation to address organics and inorganics, respectively; and</p> <ul style="list-style-type: none">Enhanced sedimentation in a sector of the Ashley River. This will entail the use of 50 ft. long, 12 in. diameter timber pilings placed on two foot centers along a 1,500 foot strip of river bottom adjacent to the site which stretches from a sample point north of the site to a sample point south of the site. The installation of timber pilings is intended to increase the depositional nature of the area immediately downstream of the pilings, similar to the effect of a snow fence.	
Planned Disposal Method:	Off-site hazardous waste landfill.	
Estimated Calendar Time to Implement Remedy:	Fiscal year 1998	
Estimated Time to Implement Remedy:	18 months	
Estimated Cost to Implement Remedy:	Interim: \$3,060,000; Final: \$11,755,000	
Stated Remedial Action Objectives (and Source):	Source: ROD, April 1998: "The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy for this site utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The preference for treatment as a principal element is fulfilled through the recovery and treatment of impacted groundwater and NAPL, as well as in-situ bioremediation for the reduction of sediment concentrations in the Northwest and South Marshes."	
Measures of Success to be Used:	Groundwater and soil monitoring to ascertain migration of contaminants after remediation.	
Planned Monitoring and Restoration:	Reconstruction of an estimated 3,600 linear feet of on-site surface water drainage ditches; for NAPL contamination: contain non-restorable source areas and contain/restore aqueous contaminant plumes; enhanced sedimentation in the Ashley River to cover sediments present there, making them unavailable to biota; and restoration/revegetation of the North and South Tidal Marshes after excavation of acutely toxic sediments (off-site disposal). A five-year review of groundwater and soil sampling will be conducted after commencement of the remedial action.	
Agency Position on Sediment Removal (and Source):	Source: ROD, April 1998: "The nature and extent of impact to sediments of the Ashley River, Barge Canal and neighboring tidal marshes was initially determined by collection of sediment samples. This included the collection of sediment samples from the 0 to 6 inch interval and 6 to 12 inch interval at all established locations. Selected locations in the tidal marshes were also sampled to a depth of 3 feet to evaluate historical trends. Selected locations in the Ashley River and Barge Canal were sampled to depths of 18 feet below the sediment interface with a vibro-corer. . ."	
	Soil and Drainage Ditch Sediments:	
	". . . the greatest reduction of residual risk achieved per ton of soil removed occurs at the cleanup levels on the higher end of EPA's protective risk range (1x10 ⁻⁴ and 5x10 ⁻⁵). The soil which exceeds the more protective excavation levels contains relatively lower concentrations of constituents, therefore the incremental increase in volume of soil excavated is substantial when compared to additional risk reduction achieved. . . more protective levels . . . generally double and triple the tons of soil removed while providing a relatively smaller incremental benefit in risk	

REMEDIAL ACTION PLANNED

Project Name

KOPPERS (Charleston Plant)

ProjectID: 04-08

Last Updated:

02/25/00

reduction. For these reasons, EPA has selected the cleanup level in this ROD resulting in the removal of an estimated 12,000 tons of soil and ditch sediment."

Ashley River, Barge Canal, and North/South/Northwest Tidal Marsh Sediments:

"A weight of evidence approach was developed to derive Areas of Potential Ecological Concern (APECs) for the Ashley River, Barge Canal, and three tidal marsh areas neighboring the site. This protocol utilized the results of sediment samples and whole sediment acute toxicity programs. Sediments that demonstrated significant acute toxicity to the selected indicator species were evaluated for potential removal (i.e., active remediation - dredging, excavation). Areas which did not demonstrate sediment toxicity, but did contain sediment concentrations above relevant benchmarks were evaluated for remediation by less intrusive measures (i.e., capping, enhanced sedimentation, bioremediation, natural attenuation)."

"This approach to remediation in defined APECs affords the benefits of physically removing sediments shown to cause toxicity in site-specific studies, while protectively managing other less impacted sediments in-situ without completely disrupting the function and habitat of these ecosystems."

RISK ASSESSMENT

<i>Project Name</i>	<i><u>KOPPERS (Charleston Plant)</u></i>	<i>ProjectID:</i> 04-08
<i>Last Updated:</i>	02/15/00	

<i>RA Type:</i>	Baseline Human Health & Ecological; Public Health
<i>RA Status:</i>	Complete
<i>RA Objectives:</i>	The human health and ecological baseline risk assessment process provides the basis for taking action and identifies contaminants and the exposure pathways that need to be addressed by the remedial action. It estimates what risks the site poses if no action were taken.
<i>Company Performing RA:</i>	EPA
<i>RA Reference Report:</i>	ROD, April 1998
<i>RA Summary and Conclusions:</i>	See "Agency Position on Sediment Removal" in Report 02 (Remedial Action Planned)

REMEDIAL ACTION IMPLEMENTED

Project Name:	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	07/29/02	
Physical Target:	For soil and drainage ditch sediments: NAPL to 5 x 10 ⁻⁵ : 73 ppb [B(a)P-TE]; Dioxin: 1.5 ppb; and Lead: 1,150 ppm	
Goals:	To achieve the above concentration limits through excavation with off-site disposal, groundwater extraction and treatment, on-site capping of less acutely toxic soils and sediments, and in-situ bioremediation and natural attenuation for sediments of less toxic impact.	
Primary Contractor:	Dames & Moore	
Other Contractors:	Sevenson Environmental Services	
Generic Remediation Method:	Dry excavation; capping.	
Equipment:	Trackhoe and traditional earthmoving equipment for sediment, soil removal, and capping. Low ground pressure marsh buggies for moving materials. A marsh buggy integral with an excavator with tines and pneumatic hose system attached to a cement batch plant, for application and mixing of cement into sediments during placement of the solidified cap. A barge and crane system to complete capping of near-shore sediments in the Ashley River.	
Material Handling:	Stockpiled on site and mixed with stabilizers (kiln dust to aid in drying), then trucked offsite for disposal. Nearshore sediments in the Ashley River were covered with a cap consisting of a geomembrane fabric overlain with 12 inches of sand. Placement was performed initially using land-based equipment (marsh buggies). The contractor was only able to achieve a maximum placement rate of 700 square feet per day using this method. The contractor switched to use of a barge-mounted crane for cap placement, increasing the placement rate to about 2,500 square feet per day. Areas of the cap subject to scour or wave action were armored with rock. Sediments that were co-located with in-water structures (e.g., boat slip, dock) were capped by in-situ solidification of the top one to two feet of sediment.	
Volume Removed:	By February 2002, about 20,000 tons of lead-impacted soil and drainage ditch sediment. The sediments comprised between 1,800 and 2,000 tons (approximately 2,500 cy) of the total volume removed. An additional 1,600 cy of sediment were also removed from the North Tidal Marsh.	
Calendar Time:	January 1999 to May 2002 (in progress)	
Time To Implement:	40 months so far (in progress)	
Total Cost:	Estimated \$15 million (in progress). For two completed areas specifically: \$1.124 million (\$700/cy) for North Tidal Marsh; \$2.721 million for Ashley River sand cap and solidification.	
Dredging Cost:	N/A	
Disposal of Sediment:	Offsite Subtitle C landfill for sediment removed from the North Tidal Marsh; onsite disposal under a cap for sediment to be removed from the South Tidal Marsh.	
Volume of Water:		
Method of Water Treatment:	Into an equalization tank, then to a flocculation unit with polymer treatment/DAF; skim and polish prior to discharge to a local POTW.	
Water Discharge Limit:		

REMEDIAL ACTION IMPLEMENTED

Project Name:	<u>KOPPERS (Charleston Plant)</u>	ProjectID: 04-08
Last Updated:	07/29/02	
Air Monitoring During Remediation:	Yes; no specifics available.	
Water Monitoring During Remediation:	Yes; no specifics available.	
Outcome:	<p>Between January and May 12, 1999, 2,500 cy of sediment were excavated from upland drainage ditches and disposed of in an offsite hazardous waste landfill at a cost of \$1.4 million (\$550/cy). These costs were inclusive of design, field work, disposal, transport, equipment, materials, and professional services. The May 12, 1999 deadline (to comply with a technology waiver obtained two years prior and which expired on that date) for the removal of all sediments from the site was met.</p> <p>The marsh area remedy specified a three-phase remedial approach that included excavation of the most toxic sediments, application of oxygen-releasing compounds and fertilizer to increase biodegradation of contaminants, and capping of marginally toxic sediments in the Barge Canal with two feet of clean sediments to bring the subtidal canal up to grade and institute reclamation to marsh conditions. Remedies have been implemented in both the North Tidal Marsh and Ashley River. Approximately 1,600 cy of the most contaminated sediments (based on acute toxicity tests) were removed from the North Tidal Marsh in early 1999 and disposed in an offsite hazardous waste landfill. The use of enhanced sedimentation as a remedy in the Ashley River was determined to be technically infeasible. The remedy was changed to an engineered cap that was installed in 2001. A geomembrane and sand cap was installed over about two-thirds of the targeted nearshore sediments in the Ashley River. Areas of the cap subject to wave action or scour were reinforced with stone. The remaining nearshore sediment was located in an area in which the property owner did not want to change the river bottom depth due to existing boat slips and docks. The resolution was to cap the underlying contaminated sediment by in-situ solidification of the top one to two feet of sediment using cement. Solidification was performed during periods of low tide when target sediment was exposed.</p> <p>Implementation of a pilot bioremediation project (using fertilizer) in the South Tidal Marsh was completed in Summer 2001 and results indicated that while the fertilizer demonstrated the ability to reduce PAH toxicity, other constituents not affected by the bioremediation prompted the need for a more expeditious remedy. Excavation has therefore been selected as the method of remediation for 1.5 acres of the most highly contaminated sediment in South Tidal Marsh. Excavation will likely take place in the Fall or Winter of 2002.</p> <p>Remedy issues remaining:</p> <ul style="list-style-type: none">• The 2 ½ acre Ashepoo Fertilizer site is still in the process of remediation (Beazer has been named the PRP; however, the former owner is performing the remediation);• The remedy selected by the ROD for the Barge Canal, a 24-inch sand cap, is currently being reevaluated vs. natural deposition (at the request of the PRPs); and• Groundwater remediation. <p>Restoration and Post-Monitoring: Monitoring planned for groundwater, soil, and air. Ditches and Tidal Marsh habitat will be restored.</p> <p>Site-Specific Difficulties:</p> <ul style="list-style-type: none">• Tidal Marsh restoration is difficult and efficient recovery of NAPL is problematic as it binds to in-situ material.	

REMEDIAL ACTION IMPLEMENTED

Project Name: KOPPERS (Charleston Plant)

ProjectID: 04-08

Last Updated: 07/29/02

- Results of a pilot bioremediation project indicated that the addition of oxygen releasing compounds and fertilizer to South Tidal Marsh sediments reduced PAH toxicity, but that other constituents were less affected by the treatment. As a result, South Tidal Marsh sediment will be removed by excavation in lieu of the originally proposed bioremediation remedy.
- The originally proposed enhanced sedimentation for the Ashley River was found to be technically infeasible. An engineered cap was installed instead.
- Installation of the sand cap over near-shore river sediment using land-based equipment was inefficient. Specific difficulties, described in Reference G-40, included: “difficult fabric placement,” “marsh buggy buoyancy problems,” “serious low-tide work restrictions,” “damage to previously placed work,” and “production rate less than 700 square feet per day.”

Monitoring Data

References:

- *Sediment*
- *Water:*
- *Fish:*

POTENTIALLY RESPONSIBLE PARTIES

Project Name ***KOPPERS (Charleston Plant)***

ProjectID: 04-08

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **KOPPERS (Charleston Plant)**

ProjectID: 04-08

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name **KOPPERS (Charleston Plant)**

ProjectID: 04-08

Reference Type: A

ReferenceID: 405

Title: **Record of Decision: Koppers Company, Inc. (Charleston Plant)**

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region IV

Preparer/Author Address: Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Prepared For: General Public

Date Published: April 29, 1998

Key Words and Phrases:

Reference Type: A

ReferenceID: 516

Title: **Superfund Proposed Plan Fact Sheet, Koppers Co., Inc. (Charleston Plant) NPL Site, Charleston, Charleston County, South Carolina, March 1997**

Location: BBL

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region IV

Preparer/Author Address: Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Prepared For: General Public

Date Published: May 1997

Key Words and Phrases:

Reference Type: A

ReferenceID: 1069

Title: **Administrative Record (3 CD ROM Set)**

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region IV

Preparer/Author Address:

Prepared For: Distribution

Date Published: July 1999

Key Words and Phrases:

REFERENCES

Project Name **KOPPERS (Charleston Plant)**

ProjectID: 04-08

Reference Type: C

ReferenceID: 536

Title: **RI/FS to start in Charleston**

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: February 19, 1992

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 537

Title: **PRP to bid Koppers interim groundwater fix**

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: March 1, 1996

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 538

Title: **\$12M Koppers Cleanup Ready to Go; Soil, Groundwater,
Sediment in the Mix**

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: January 8, 1999

**Key Words and
Phrases:**

REFERENCES

Project Name **KOPPERS (Charleston Plant)**

ProjectID: 04-08

Reference Type: C

ReferenceID: 564

Title: ***Rest of Sediment Dredging at Koppers Waits for PRP's Bioremediation Tests***

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: April 21, 2000

**Key Words and
Phrases:**

Reference Type: E

ReferenceID: 172

Title: ***Varied Sediment Remediation Approaches, Beazer East, Inc., Charleston, SC (one article in Reference E-168)***

Location: AEM

Category: Site Update

Prepared by/Author: Michael Slenska, Environmental Manager

**Preparer/Author
Address:** Hanson Building Materials America

Prepared For: BBL Sediment Management Seminar 2002

Date Published: February 7-8, 2002

**Key Words and
Phrases:**

Reference Type: G

ReferenceID: 40

Title: ***Varied Sediment Remediation Approaches - - Beazer East, Inc., Charleston, SC (CD-ROM)***

Location: AEM

Category: Site Update

Prepared by/Author: Michael Slenska, Environmental Manager

**Preparer/Author
Address:** Hanson Building Materials America (Beazer East, Inc.)
One Oxford Centre, Suite 3000
Pittsburgh, PA 15219-6401

Prepared For: BBL Sediment Management Seminar

Date Published: February 2002

**Key Words and
Phrases:**
