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SEP 12 1995

S. C. Department of Health and Environmental  
Control - Industrial - Agriculture  
Wastewater Division

7 September 1995

SCANNED RECEIVED

Mr. Murali C. Koppa  
South Carolina Department of Health  
and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

SEP 19 1995

Div. of Waste Assessment &  
Emergency Response - Bureau of Solid  
& Hazardous Waste Management

Subject: Results of Bench-Scale Treatability Testing  
Wastewater Pond Sediments  
Laurens Ceramics Site, Laurens, SC

Dear Mr. Koppa:

In accordance with provisions of the approved Closure Plan for Wastewater Ponds at Plants 1 and 2 at the Laurens Ceramics Site in Laurens, South Carolina, this letter is being transmitted to the South Carolina Department of Health and Environmental Control (DHEC) to present the results of the stabilization treatability testing of pond sediments. The data indicate that a 15% Portland Cement Type I (PCI) (by weight) stabilization recipe will meet the performance requirements of the approved Closure Plan. This represents a revision of the PCI recipe previously estimated at 5% (by weight) in the Closure Plan.

Sample collection and bench-scale treatability testing of the pond sediments was conducted in August 1995 to confirm the stabilization recipe and to confirm that adequate stabilization would occur as described in the 2 June 1995 Addendum to Section 5 of the Closure Plan for Wastewater Ponds at Plants 1 and 2. The following discussion summarizes the results of stabilization treatability testing.

Sediment samples were collected from Plant 1, Pond 1 and Plant 2, Ponds 1 and 2. The sediment from the ponds was mixed with three formulations of PCI such that for each pond, two samples each of 5%, 10%, and 15% PCI by weight were produced. The mixed samples were allowed to cure for at least 7 days. The stabilized samples were subjected to nondestructive periodic penetrometer tests to measure relative strength gain during this period. The penetrometer readings are not equivalent to UCS measurements but are a useful qualitative measure of relative strength gain. After the seven day curing period, unconfined compressive strength (UCS) tests were performed on the stabilized samples. The desired UCS after at least seven days of curing is approximately  $25 \pm 5$  psi.



SCDHEC  
Attn: Mr. Murali C. Koppa

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It was found that the 15% PCI by weight stabilized samples consistently exceeded the desired UCS after seven days of curing. The penetrometer and UCS results for the 15% PCI stabilized samples are provided in Table 1.

One stabilized sediment sample (15% PCI) from each pond was subjected to the Toxicity Characteristic Leaching Procedure (TCLP) after successful strength testing. The leachate from the TCLP was analyzed for volatile organic compounds (VOCs) and metals to confirm that adequate stabilization had occurred. The TCLP results are summarized in Table 2. None of the leachates exceeded TCLP regulatory levels under the Resource Conservation and Recovery Act (RCRA).

In summary, based on the successful completion of treatability testing of the stabilized sediments, we plan to use the 15% PCI by weight formulation in the field for stabilization of the sediments in the Plant 1 and 2 ponds at the Laurens Ceramics Site. The "Standard Reporting Form for Construction Sites Disturbing 2 Acres or Less" will be filed with DHEC's Stormwater Section the week of 11 September. In order to meet the 3 month completion date indicated in the Closure Plan approval, we are scheduled to begin stabilization and closure activities during the week of 18 September. The Closure Plan approval indicated a possible site inspection by you prior to beginning construction. I will contact you during the week of 11 September to discuss possible dates if a visit is still desired.

If you have any questions, please call me at 610-701-3723.

Sincerely,

ROY F. WESTON, INC.

Michael H. Corbin, P.E.  
Technical Director

P.S.  
we don't have any problem of  
your date.  
9-22-95  
MHC

MHC/jkc  
cc: H. Seabrook - BS&HWM  
M. Falco - 3M  
J. Butler - GE  
T. Drew - WESTON  
A. Thomas - WESTON



**Table 1**

**Summary of Strength Data for 15% PCI (by Weight) Formulation  
Bench-Scale Treatability Testing, Laurens Ceramics Site**

<b>Day</b>	<b>Penetrometer Reading*</b>		
	<b>Plant 1, Pond 1</b>	<b>Plant 2, Pond 1</b>	<b>Plant 2, Pond 2</b>
<b>0 (initial)</b>	345	20	88
<b>1</b>	730	750	500
<b>3</b>	1860	1680	1170
<b>5</b>	2130	1860	1260
<b>7</b>	1950	2550	1320
	<b>UCS at Day 7 (psi)</b>		
	<b>Plant 1, Pond 1</b>	<b>Plant 2, Pond 1</b>	<b>Plant 2, Pond 2</b>
<b>Sample 1**</b>	57.4	32.8	24.5
<b>Sample 2</b>	52.4	29.5	26.7
<b>Average</b>	54.9	31.2	25.6

\* Average of triplicate measurement; readings in psi but are not equivalent to UCS.

\*\* Sample submitted for TCLP VOC and TCLP metals analyses.

**Table 2**

**Summary of TCLP Analytical Data for 15% PCI (by Weight) Formulation  
Bench-Scale Treatability Testing, Laurens Ceramics Site**

Parameter	VOC Data			TCLP Limit (mg/L)
	Plant 1, Pond 1 (mg/L)	Plant 2, Pond 1 (mg/L)	Plant 2, Pond 2 (mg/L)	
Vinyl Chloride	0.10 U	0.10 U	0.10 U	0.2
1,1-Dichloroethene	0.050 U	0.050 U	0.050 U	0.7
Chloroform	0.050 U	0.050 U	0.050 U	6.0
1,2-Dichloroethane	0.10 U	0.10 U	0.10 U	0.5
2-Butanone	0.050 U	0.050 U	0.050 U	200.0
Carbon Tetrachloride	0.050 U	0.050 U	0.050 U	0.5
Trichloroethene	0.050 U	0.050 U	0.050 U	0.5
Benzene	0.050 U	0.050 U	0.050 U	0.5
Tetrachloroethene	0.050 U	0.17	0.050 U	0.7
Chlorobenzene	0.050 U	0.050 U	0.050 U	100.0
Parameter	Metals Data			
	Plant 1, Pond 1 (mg/L)	Plant 2, Pond 1 (mg/L)	Plant 2, Pond 2 (mg/L)	
Silver	0.0061 U	0.0061 U	0.0061 U	5.0
Arsenic	0.0608 U	0.0608 U	0.0608 U	5.0
Barium	0.571	15.700	6.630	100.0
Cadmium	0.0030 U	0.0030 U	0.0030 U	1.0
Chromium	0.0149	0.0097 U	0.0097 U	5.0
Mercury	0.00010 U	0.00010 U	0.00010 U	0.2
Lead	0.286	0.0466 U	0.0466 U	5.0
Selenium	0.0908 U	0.0908 U	0.0908 U	1.0

U - Compound was not detected. The associated numerical value is the estimated quantitation limit.