



**Perimeter Wall Stabilization (PWS) Segment 1B Test Parcel No. 31 (TP31)  
Completion Concurrence and Acceptance  
Kingston Perimeter Containment – Segment 1 (RDP-0113-E)**

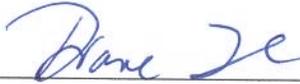
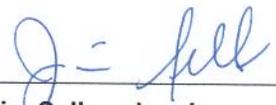
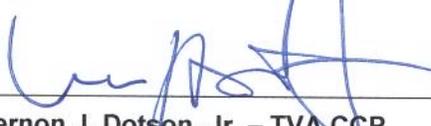
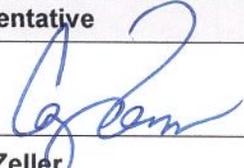
Stantec has reviewed the supporting QC documentation for the referenced Test Parcel with regards to the QC criteria of horizontal alignment, vertical alignment, rock embedment, uniformity to full depth, and unconfined compressive strength. The following table is a summary of the evaluation for each of these criteria and supporting documentation.

<b>Test Parcel No. 31 (TP31)</b>			
<b>QC Criteria</b>	<b>Referenced Specification</b>	<b>Documentation of Evaluation</b>	<b>Meets QC Criteria</b>
<b>Horizontal Alignment</b>	<b>Section 02650, Paragraph 4.4.2</b> "Maximum horizontal deviation of any Soil-Cement Panel shall not exceed 6 inches from the center location shown on the approved shop drawings."	<b>Approved Shop Drawings – Recommendation for Acceptance</b>	Yes
		<b>KRP Form 105 (latest revision)</b>	Yes
<b>Vertical Alignment</b>	<b>Section 02650, Paragraph 4.4.3</b> "Soil-Cement Panels shall be constructed to within +/- 1% of vertical (plumb)."	<b>KRP Form 105 (latest revision) – initial alignment</b>	Yes
		<b>Geo-Con Daily QC Report – maximum deviation</b>	Yes
<b>Rock Embedment</b>	<b>Section 02650, Paragraph 2.3.4</b> The Rock Embedment shall not be less than the minimum required depth of rock embedment along the full length of each Soil-Cement Panel. The minimum Rock Embedment is defined for each segment on the Profile Drawing. <b>Note:</b> For Segment 1, minimum rock embedment for a 3-foot wall is 2.7 feet, and for a 4-foot wall is 3.1 feet. <b>Note:</b> For Segment 1 between Baseline "A" Stations 175+00 and 179+50, minimum rock embedment for a 4-foot wall is 1.7-feet; based on field conditions, the QC Manager may require embedment of 3.1 feet when in a softer bedrock formation (FCN 37).	<b>KRP Form 105 (latest revision)</b>	Yes
<b>Uniformity to Full Depth</b>	<b>Section 02650, Paragraph 2.2.1</b> Absence of unmixed or unfixated ash, soil, and rock inclusions discovered by coring the completed wall. Any length of unrecovered core run shall be interpreted as indicating unmixed or unfixated inclusions. Walls shall have no continuous, unmixed or unfixated ash or soil fragments, or other discontinuity or deformity with any dimension exceeding half the effective thickness of the wall.	<b>S&amp;ME Drafted Core Logs</b>	Yes
		<b>S&amp;ME Core Photographs</b>	Yes
<b>Unconfined Compressive Strength (UCS) Results</b>	<b>Section 02650, Paragraph 2.2.3</b> For acceptance based on wet-grab specimens, Soil Cement Strength shall be either of the following:  (1) "the Adjusted Mean Strength shall be $\geq$ 280 psi, and the Adjusted Exceedance Fraction of tests above 185 psi shall be $\geq$ 90%," <b>OR</b> (2) "the Adjusted Mean Strength shall be $\geq$ 340 psi, and the Adjusted Exceedance Fraction of tests above 165 psi shall be $\geq$ 90%."	<b>S&amp;ME Wet-Grab Test Results</b>	Yes
		<b>QC Manager Calculations – Adjusted Mean Strength</b>	Yes



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Acceptance Concurrence:

Quality Control – Stantec	
 _____ <b>P. Brad Smiley, PE, CWI</b> Stantec PWS QC Manager	<u>1/30/2012</u> _____ Date
Tennessee Valley Authority (or Representative)	
 _____ <b>Diane F. Odom - Jacobs</b> KRP Quality Officer, Operations, Engineering, & Construction	<u>1/30/2012</u> _____ Date
 _____ <b>Jim Sells – Jacobs</b> Geo-Con Technical Contract Manager	<u>1-30-12</u> _____ Date
 _____ <b>Vernon J. Dotson, Jr. – TVA CCP</b> Stantec Technical Contract Manager	<u>2/2/12</u> _____ Date
EPA Representative	
 _____ <b>Craig Zeller</b> US EPA Remedial Project Manager	<u>3/07/12</u> _____ Date

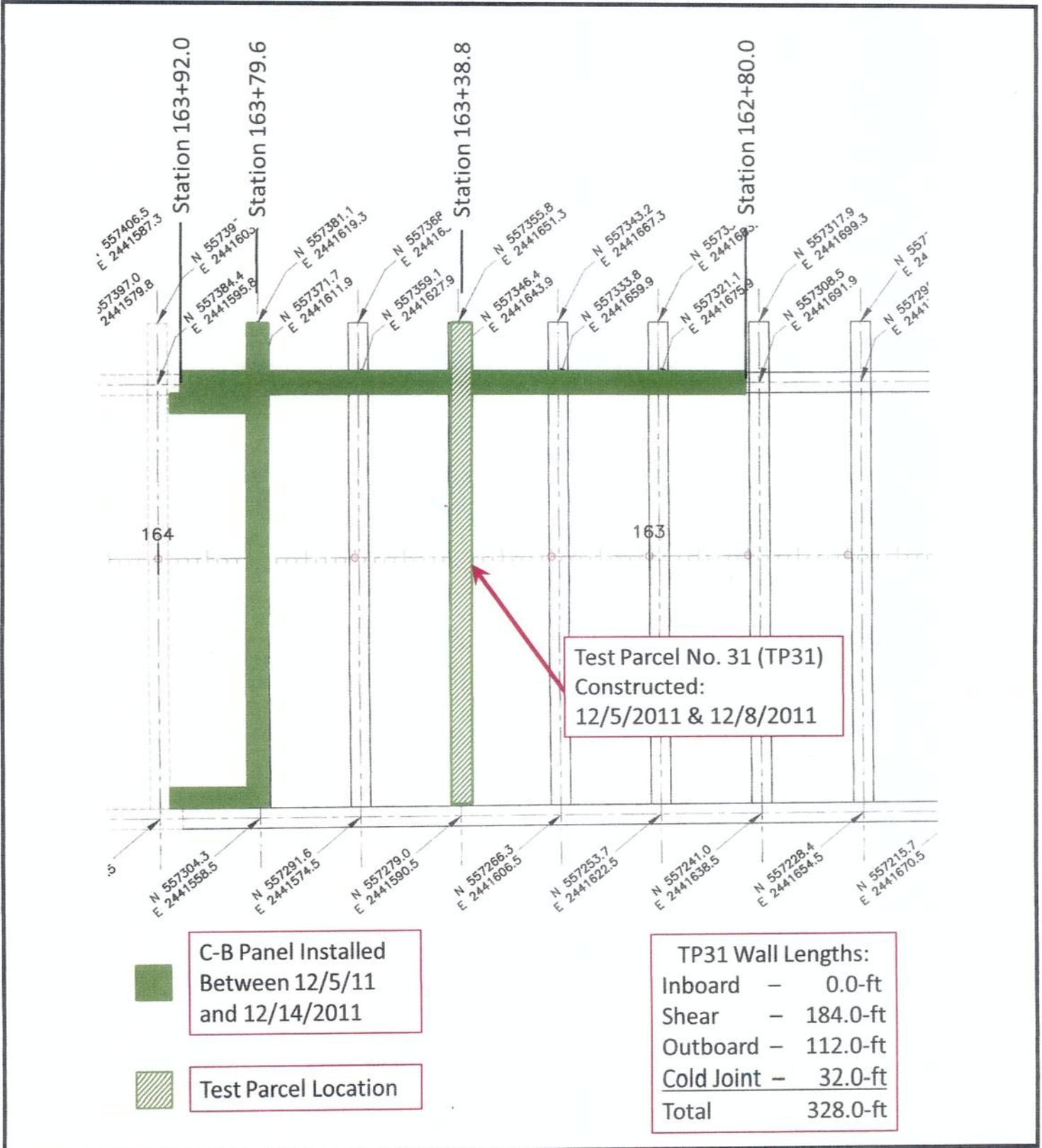
Enclosures:

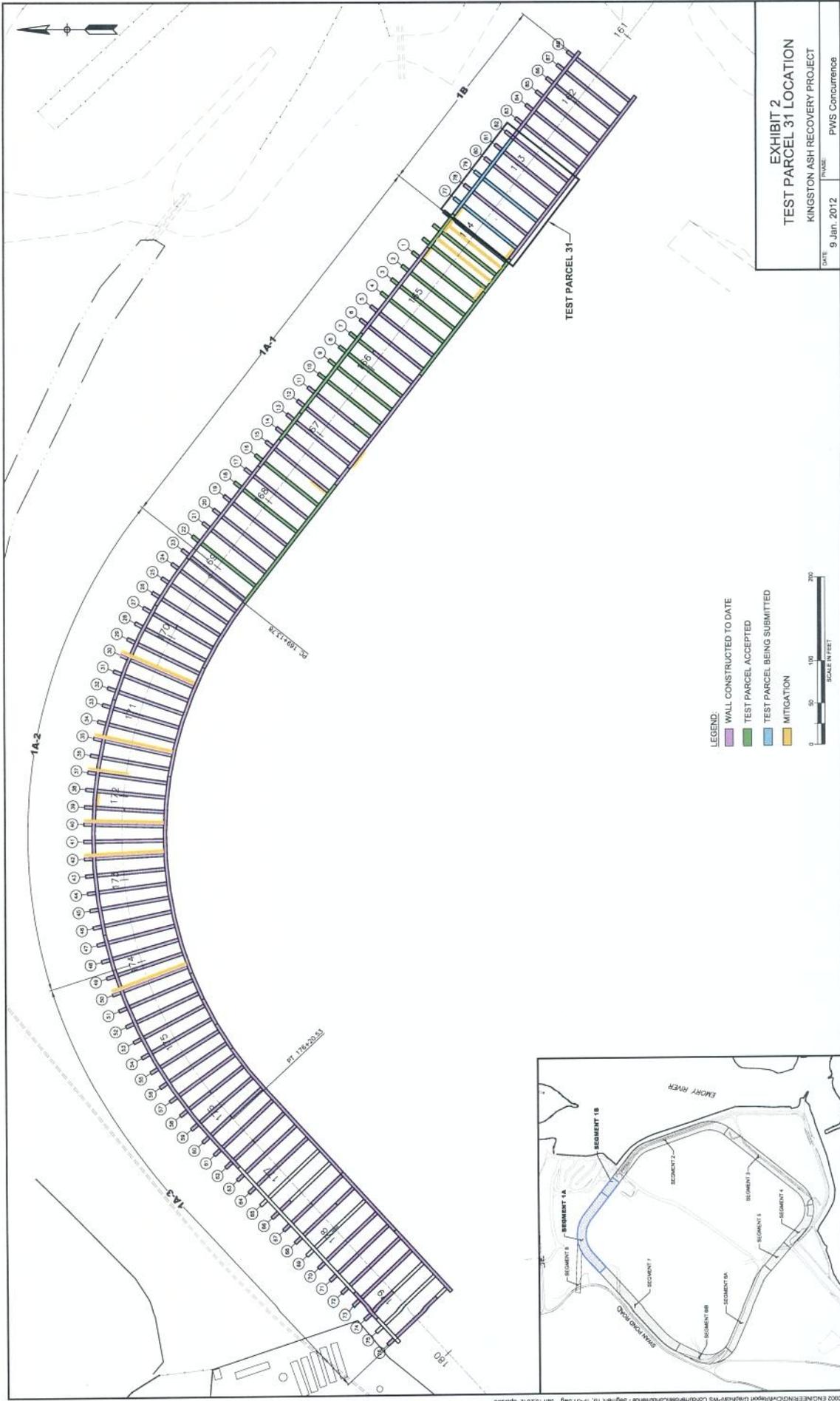
- Exhibit 1 - Test Parcel Acceptance
- Exhibit 2 - Test Parcel Location
- Exhibit 3 - Adjusted Strength Calculations
- Exhibit 4 - Approved Shop Drawings – Recommendation for Acceptance
- Exhibit 5 - KRP Form 105
- Exhibit 6 - Geo-Con Daily QC Report
- Exhibit 7 - S&ME Core Logs & Photographs
- Exhibit 8 - Unconfined Compressive Strength Results
- Exhibit 9 - 56-day Extension Justification (not required)
- Exhibit 10 - QC Assessment and Mitigation Documentation (not required)



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**Exhibit 1 - Test Parcel Acceptance**





**EXHIBIT 2**  
**TEST PARCEL 31 LOCATION**  
 KINGSTON ASH RECOVERY PROJECT  
 DATE 9 Jan. 2012  
 DRAWN PWS Concurrence

## Exhibit 3 - Adjusted Strength Calculations



**Stantec**

### Test Parcel Adjusted Strength Calculations

#### Test Parcel No. 31 (TP31)

- 1) The number of wet-grab cylinders which were tested for unconfined compressive strength, cured at an age of 29 days from Test Parcel TP31. 35 samples
  
- 2) The mean UCS value of this data set was determined to be the following: 336.0 psi
  
- 3) Fraction Exceeding 185 psi: 35 tests = 100.0%  
 Fraction Exceeding 165 psi: 35 tests = 100.0%
  
- 4) To compute the Inclusion Adjustment Fraction, the first 5-feet of the core hole and the penetration into rock are ignored, per Section 02650, Paragraph 1.4.39 of the Specifications.  
 Total Length of Core for Assessment = 121.5 -ft
  
- 5) In 0 5-foot core runs in the soil cement (each below a depth of 5-feet), the core recovery was less than 90% (core loss greater than 6-inches in each case). The total length of unrecovered core in these runs was computed to be: 0.0 -ft
  
- 6) 1 unmixed or unfixated soil inclusions, each one being more than half of the diameter of the core and longer than 6-inches, were discovered in the recovered core. The total length of these inclusions was computed to be: 0.6 -ft
  
- 7) The Inclusion Adjustment Fraction, as defined in the Section 02650, Paragraph 1.4.40 of the Specifications, is computed as follows:  
  

Inclusion Adjustment Fraction =	$\frac{\text{Total Core Loss (Step 5)} + \text{Total Length of Inclusions (Step 6)}}{\text{Total Length of Core (Step 4)}}$	
Inclusion Adjustment Fraction =	$\frac{0.0 + 0.6}{121.5} =$	0.0048
  
- 8) The Presumed Inclusion Strength is 10 psi, per Section 02650, Paragraph 1.4.41 of the Specifications.
  
- 9) The Adjusted Mean Strength, as defined in Section 02650, Paragraph 1.4.42, is computed as follows:  
  

Adjusted Mean Strength =	$(10 \text{ psi}) \times 0.0048 + 336.0 \times (1 - 0.0048) =$	334.4 psi
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- 10) The Adjusted Exceedance Fraction as defined in Section 02650, Paragraph 1.4.43 of the Specifications is computed as follows:  
  

Adjusted Exceedance Fraction (185psi)=	100.0%	x	( 1.0 - 0.0048 ) =	99.5%
Adjusted Exceedance Fraction (165psi)=	100.0%	x	( 1.0 - 0.0048 ) =	99.5%
  
- 11) Compare Results to Criteria in Section 02650, Paragraph 2.2.3 of the Specifications for Wet Grab samples.  
  

	Achieved	Criteria Set 1		Criteria Set 2	
		Limit	Pass?	Limit	Pass?
Adjusted Mean Strength (psi):	334.4	280	TRUE	340	FALSE
Adjusted Exceedance Fraction for <u>185</u> psi:	99.5%	90%	TRUE	90%	TRUE
Adjusted Exceedance Fraction for <u>165</u> psi:	99.5%				
The Test Parcel passes this set of criteria:		TRUE		FALSE	

Overall Criteria Pass:	TRUE
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- 12) From visual observations of retrieved core, are the requirements of Section 02650 Paragraph 2.2.1 of the Specifications met? TRUE

#### Conclusion

**The Adjusted Mean Strength and Adjusted Exceedance Fraction of the wet grab samples exceeds the limits provided in Section 02650, Paragraph 2.2.3 of the Specifications; therefore, the strength of this particular test parcel is found to meet the specified requirements.**