



**Perimeter Wall Stabilization (PWS) Segment 1B Test Parcel No. 29 (TP29)
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.

Test Parcel No. 29 (TP29)			
QC Criteria	Referenced Specification	Documentation of Evaluation	Meets QC Criteria
Horizontal Alignment	Section 02650, Paragraph 4.4.2 “Maximum horizontal deviation of any Soil-Cement Panel shall not exceed 6 inches from the center location shown on the approved shop drawings.”	Approved Shop Drawings – Recommendation for Acceptance	Yes
		KRP Form 105 (latest revision)	Yes
Vertical Alignment	Section 02650, Paragraph 4.4.3 “Soil-Cement Panels shall be constructed to within +/- 1% of vertical (plumb).”	KRP Form 105 (latest revision) – initial alignment	Yes
		Geo-Con Daily QC Report – maximum deviation	Yes
Rock Embedment	Section 02650, Paragraph 2.3.4 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. Note: 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. Note: 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).	KRP Form 105 (latest revision)	Yes
Uniformity to Full Depth	Section 02650, Paragraph 2.2.1 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.	S&ME Drafted Core Logs	Yes
		S&ME Core Photographs	Yes
Unconfined Compressive Strength (UCS) Results	Section 02650, Paragraph 2.2.3 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%,” OR (2) “the Adjusted Mean Strength shall be \geq 340 psi, and the Adjusted Exceedance Fraction of tests above 165 psi shall be \geq 90%.”	S&ME Wet-Grab Test Results	Yes
		QC Manager Calculations – Adjusted Mean Strength	Yes



Perimeter Wall Stabilization (PWS) Segment 1B Test Parcel No. 29 (TP29)
Completion Concurrence and Acceptance
Kingston Perimeter Containment – Segment 1 (RDP-0113-E)

Acceptance Concurrence:

 01/11/2012

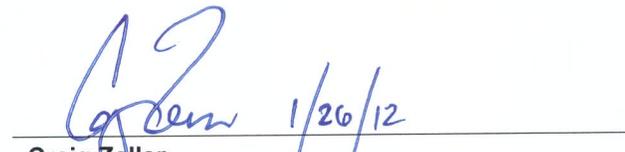
P. Brad Smiley, PE, CWI
Stantec PWS QC Manager

 01-11-2012

Diane Odom
KRP Quality Officer, Operations, Engineering
& Construction

 1-11-12

Jim Sells
TVA-Jacobs Technical Contract Manager

 1/26/12

Craig Zeller
US EPA Representative

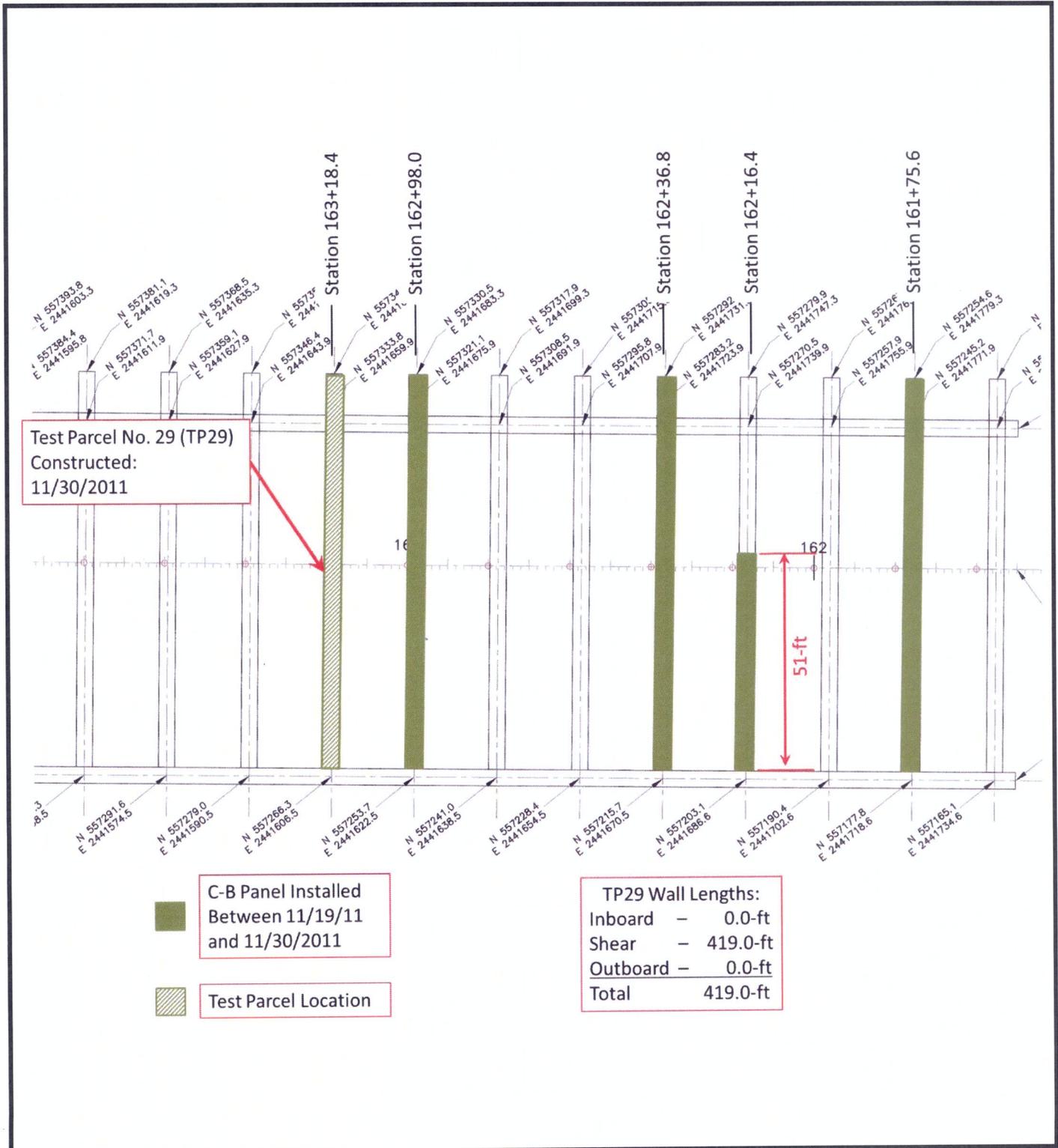
Enclosures:

- 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)



**Perimeter Wall Stabilization (PWS) Segment 1B Test Parcel No. 29 (TP29)
Completion Concurrence and Acceptance
Kingston Perimeter Containment – Segment 1 (RDP-0113-E)**

Exhibit 1 - Test Parcel Acceptance



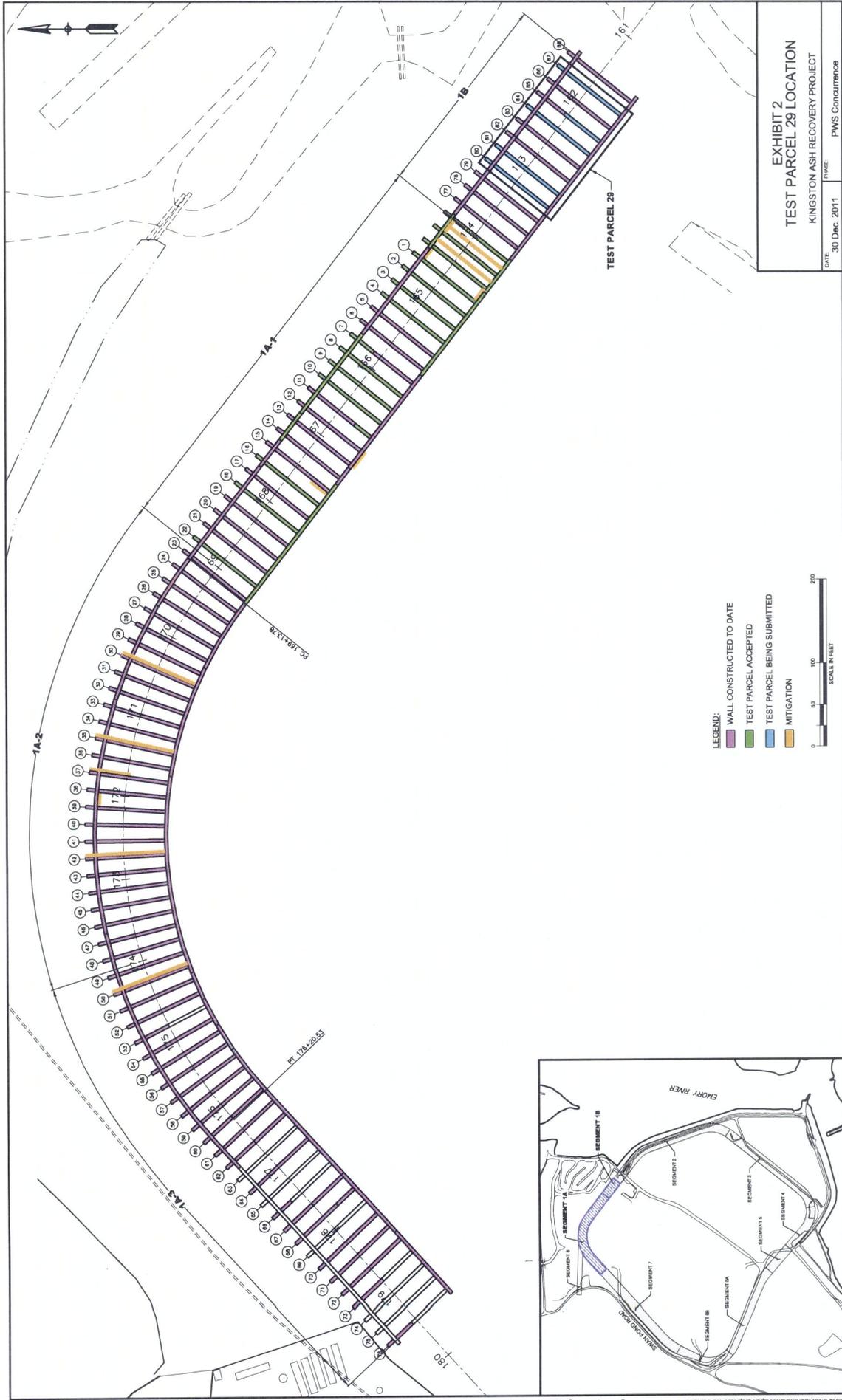


EXHIBIT 2
TEST PARCEL 29 LOCATION
 KINGSTON ASH RECOVERY PROJECT

DATE: 30 Dec. 2011
 PHASE: PWS Concurrence

Exhibit 3 - Adjusted Strength Calculations



Stantec

Test Parcel Adjusted Strength Calculations

Test Parcel No. 29 (TP29)

- 1) The number of wet-grab cylinders which were tested for unconfined compressive strength, cured at an age of 28 days from Test Parcel TP29. 25 samples

- 2) The mean UCS value of this data set was determined to be the following: 364.0 psi

- 3) Fraction Exceeding 185 psi: 25 tests = 100.0%
 Fraction Exceeding 165 psi: 25 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 = 119.3 -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) 0 unmixed or unfixed 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: 0.0 -ft

- 7) The Inclusion Adjustment Fraction, as defined in the Section 02650, Paragraph 1.4.40 of the Specifications, is computed as follows:

$$\text{Inclusion Adjustment Fraction} = \frac{\text{Total Core Loss (Step 5)} + \text{Total Length of Inclusions (Step 6)}}{\text{Total Length of Core (Step 4)}}$$

$$\text{Inclusion Adjustment Fraction} = \frac{0.0 + 0.0}{119.3} = 0.0000$$

- 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:

$$\text{Adjusted Mean Strength} = (10 \text{ psi}) \times 0.0000 + 364.0 \times (1 - 0.0000) = 364.0 \text{ psi}$$

- 10) The Adjusted Exceedence Fraction as defined in Section 02650, Paragraph 1.4.43 of the Specifications is computed as follows:

$$\begin{aligned} \text{Adjusted Exceedence Fraction (185psi)} &= 100.0\% \times (1.0 - 0.0000) = 100.0\% \\ \text{Adjusted Exceedence Fraction (165psi)} &= 100.0\% \times (1.0 - 0.0000) = 100.0\% \end{aligned}$$

- 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):	364.0	280	TRUE	340	TRUE
Adjusted Exceedence Fraction for 185 psi:	100.0%	90%	TRUE	90%	TRUE
Adjusted Exceedence Fraction for 165 psi:	100.0%				
The Test Parcel passes this set of criteria:		TRUE		TRUE	

Overall Criteria Pass: TRUE

- 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 Exceedence 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.