0080888

Attachment
09-ESQ-133

Hanford Facility RCRA Permit Modification Notification
Form 24590-PTF-PCN-ENV-06-017

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attached to: 0080888

Quarter Ending June 30, 2009 24590-PTF-PCN-ENV-06-017

Hanford Facility RCRA Permit Modification Notification Form

Part III, Operating Unit 10

Waste Treatment and Immobilization Plant

Index

Page 2 of 2: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Replace Mechanical Data Sheets for Pretreatment Facility Treated LAW Evaporator Inter- and After-Condensers in Appendix 8.6 of the Dangerous Waste Permit.

Submitted by Co-Operator:

D. A. Klein — 4/6/09 Date

Reviewed by ORP Program Office:

S. J. Olinger — 4/27/09 Date

Quarter Ending June 30, 2009

24590-PTF-PCN-ENV-06-017

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part:
Waste Treatment and Immobilization Plant	**Part III, Operating Unit 10**

Description of Modification:

The purpose of this Class 1 modification is to replace permit versions of Mechanical Data Sheets 24590-PTF-MED-TLP-P0002 and 24590-PTF-MED-TLP-P0003 with the current source documents.

The following Mechanical Data Sheets are being submitted to replace the permit versions currently in Appendix 8.6:

Appendix 8.6			
Replace:	24590-PTF-MED-TLP-P0002, Rev 0	With:	24590-PTF-MED-TLP-00002, Rev 4
Replace:	24590-PTF-MED-TLP-P0003, Rev 0	With:	24590-PTF-MED-TLP-00003, Rev 4

This modification requests Ecology approval and incorporation into the permit the specific changes to these Mechanical Data Sheets that incorporate updated descriptions and vendor design data that have been issued since the last revision of the permit version of the Mechanical Data Sheets. Revisions are the result of ongoing design (changes from vendor preliminary data to vendor detailed design). The following identifies the significant changes that have been revised on the attached Mechanical Data Sheets:

24590-PTF-MED-TLP-00002, Rev 4 and 24590-PTF-MED-TLP-00003, Rev 4

- Manufacturer name changed from Northwest Copper Works, Inc. to Graham Manufacturing.
- General Data was updated to incorporate data for flow type, heat exchanger duty, heat exchanger area, and delta temperature; quality level and seismic category were modified.
- Thermal/Hydraulic Data was updated to incorporate fluid quantities, temperatures, pressures, etc. for both shell side and tube side.
- Mechanical Data was updated to incorporate updated design temperatures, dimensions, and number of tubes.
- Material Data was updated to incorporate a revision to the shell, tube gasket, and bolting materials.
- Construction Data was updated to supply data on cross baffle type, tube support type and operating weights.
- Notes were updated to remove the provision to allow all welded construction on process side only, and to provide the reference for nozzle load estimates.
- Equipment Qualification Datasheet (EQD) was added.
- Seismic In-Structure Response Spectra (ISRS) were added.

The following is a list of outstanding change documents that have not been incorporated into this modification:
None

WAC 173-303-830 Modification Class:	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1 and A.3

Enter wording of WAC 173-303-830, Appendix I Modification citation:

A.1 - Administrative and informational changes.

A.3 - Equipment replacement or upgrading with functionally equivalent components (e.g., pipes, valves, pumps, conveyors, controls).

Modification Approved/Concur: ☐ Yes ☐ Denied (state reason below)

Reason for denial:

Reviewed by Ecology:

Ed Fredenburg Date

MECHANICAL DATA SHEET

SHELL AND TUBE HEAT EXCHANGER

PLANT ITEM No.
24590-PTF-ME-TLP-COND-00002

Data Sheet No.
24590-PTF-MED-TLP-00002

Project:	*RPP-WTP*	Description:	*Treated LAW Evaporator Inter-Condenser*
Project No:	*24590*	P&ID:	*24590-PTF-M6-TLP-00002*
Site:	*Hanford*	Process Data Sht:	*N/A*
Process flow diagram:	*24590-PTF-M5-V17T-00005*	Manufacturer Name	*Framatome ANP / Graham Manufacturing*

R11042838

General Data

Quality Level	*Q (9)*	TEMA (Class/Type)		*B*
Seismic Category	*SC-I*	Flow Type (Counter current, etc)		*8 PASS*
Design Code	*ASME VIII Div 1*	Heat Exchanger Duty	Btu/hr	*436,064*
Code Stamp	ISSUED BY	Heat Exchanger Area	ft^2	*50.7*
NB Registration	RPP-WTP PDC	ΔT (LMTD/Corrected LMTD)	°F	*59.8*

Thermal/Hydraulic Data

		Shell Side		Tube Side	
Fluid Name		*IN STEAM*	*OUT*	*IN Cooling Water*	*OUT*
Fluid Quantities: Total	lbm/hr	*448.3*		*32,500*	
Condensable Vapor (In/Out)		*404.6*	*6.4*	*	*
Liquid		*N/A*	*398.2*	*32,500*	*32,500*
Noncondensable		*43.7*	*43.7*	*N/A*	*N/A*
Temperature (In/Out)	°F	4 *	*90 * 4	*75.0*	4 *
Specific Gravity		*N/A*	*N/A*	*1.000*	*0.998*
Viscosity	Cp	*N/A*	*N/A*	*2.209*	*1.875*
Molecular Weight		*18.02*	*18.02*	*N/A*	*N/A*
Molecular Weight, Noncondensable		*29*	*29*	*N/A*	*N/A*
Specific Heat	Btu/lbm-°F	*N/A*	*N/A*	*1.000*	*0.999*
Thermal Conductivity	Btu/hr-ft-°F	*N/A*	*N/A*	*0.350*	*0.357*
Latent Heat	Btu/lbm @ °F	*N/A*		*N/A*	
Inlet pressure		*200 Torr*		4 *	
Tube side Velocity	ft/s	*N/A*		*3.2*	
Pressure Drop (Allowed)		*10 mm Hg*		*1.2 psi*	
Fouling Resistance (Min)	$hr\text{-}ft^2\text{-}°F/Btu$	*0.002*			

Mechanical Design Data

		Shell Side		Tube Side	
Design Pressure (Max/Min)	psig	*50*	*Full Vacuum*	*100*	*Full Vacuum*
Design Temperature (Max/Min)	°F	*378*	*0*	*150*	*0*
Corrosion Allowance	inch	*0.04*		*0.04*	
Erosion Allowance	inch	*N/A*		*N/A*	
Shell OD / ID		*8 5/8"*		Overall Dimensions (HxWxL) inch	*20 x 13-1/2 x 95-1/8*
Total No. of Tubes		*43*		Tube OD inch	*0.750*

Material Data

Shell	*SA 240 316L SS*	Shell Cover	*SA 240 316L SS*
Channel/Bonnet	*SA 240 316L SS*	Channel Cover	*SA 240 316L SS*
Tube	*SA 213 316L SS*	Floating Head Cover	*N/A*
Stationary Tube Sheet	*316L SS*	Floating Tube Sheet	*N/A*
Shell Side Gaskets	*N/A*	Tube Side Gaskets	*316 SS Spiral Wound w/ PTFE Filler*
Partition Seals	*N/A*	Baffles/Supports	*SA 240 316L SS*
Insulation	*N/A*	Forgings (Shell side)	*SA 182 F316L*
Bolting	*SA 193 B8M & SA 194 2HM*	Forgings (Channel)	*SA 182 F316L*

4

MECHANICAL DATA SHEET

SHELL AND TUBE HEAT EXCHANGER

PLANT ITEM No.
24590-PTF-ME-TLP-COND-00002

Data Sheet No.
24590-PTF-MED-TLP-00002

Construction Data *(To be determined by the supplier when not specified by the buyer)*

Cross Baffle Type	***Up & Over***	% Baffle Cut (Dia.)	*- - -*	Spacing (c/c) inch	*- - -*
Bypass Seal Arrangement	***N/A***	Longitudinal Seal Type	***N/A***	Expansion Joint Type	***N/A***
Inlet Nozzle ρV^2	*- - -*	Bundle Entrance ρV^2	*- - -*	Bundle Exit ρV^2	*- - -*
Tube Support Type	***Vertical Cut***	U-bend Support Type	***N/A***	Weight of Bundle lbf	*
Operating Weight lbf	***600***	Full of Water lbf	***680***	Empty Wieght lbf	***540***

Notes

**** To be determined by Seller.***

Notes:

(1) All welds are continuous to avoid crevices, weld surface finish is descaled as laid.
(2) Tube to tubesheet joint shall be strength welded.
(3) Graham size 8x6 BEM.
(4) Deleted.
4 ***(5) For Nozzle loads, see 24590-PTF-3PS-MEVV-T0001.***
(6) Deleted.
(7) Deleted.
(8) Deleted. 4
(9) Component will be manufactured to Bechtel quality level Q, which corresponds with Vendor quality level QL-2.
(10) Vendor design information is from document 24590-QL-POA-MEVV-00001-02-00056.
(11) Equipment cyclic data is from document 24590-QL-POA-MEVV-00001-04-03.
(12) Contents of this drawing are dangerous waste permit affecting. 4
(13) The physical design parameters shall be determined by the seller based on TEMA and HEI standards.
4 ***(14) Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.***

(Safety screening/evaluation required? ☒Yes ☐No If yes per 24590-WTP-GPP-SREG-002, E&NS signature required below.)

Rev.	Description	By	Checked	E&NS	Approved	Date
4	Updated to reflect WSGM analysis, 24590-PTF-U0N-W16T-00003 and incorporate DOE AEA note (14). * ADDED TO SHOW VALUES TO BE UPDATED	D. Tate	R. Rickenbach	B. Hall	J. Julyk	2/19/09
3	Incorporated Vendor Design and Equipment Qualification Data	R. Rickenbach	E. Le	S. Woolfolk	J. Julyk	07/14/2008
2	Incorporated Vendor Design	E. Le	R. Nowak	N/A	J. Julyk	04/04/2005
1	Updated Descrition	G. Butt	D. Reinemann	N/A	J. Julyk	03/22/2004
0	Issued for Procurement	E. Le	S. Shah	N/A	J. Julyk	04/30/2003

4

EQUIPMENT QUALIFICATION DATASHEET (EQD)

4

Equipment Identification

Component Tag Number	24590-PTF-ME-TLP-COND-00002	Safety Classification	☒ SC ☐ SS ☐ APC ☐ SDC ☐ SDS ☐ RRC Note 10 4
Manufacturer / Supplier	UST&D / AREVA NP, INC.		
Requisition Number	24590-QL-POA-MEVV-00001		
Model	TBD	Seismic Category	☒ SC-I ☐ SC-II ☐ SC-III ☐ SC-IV Note 10 4
Description (Include descriptive text [e.g., location, elevation])	Treated LAW Evaporator Inter-Condensor, room P-0325, Elevation 56'-0"		
Safety Function(s)	Confinement (ref. 1) 4		

Seismic Safety Function	☒ Yes ☐ No	Room Number(s): P-0325	
Maintenance Accessible	☒ Yes ☐ No	Method of Maintenance Access:	☐ Remote ☒ Hands On ☐ None
Seismic Operability Requirements: 4	☐ During Seismic Event 4	☐ After Seismic Event	
ITS Equipment Type:	☒ Passive Mechanical	☐ Active Mechanical	☐ Electrical

Equipment Environmental Qualification (EEQ) 4

Environment ☐ Mild ☒ Harsh	Hi Rad Service ☐ Yes ☒ No	Design Life (yrs) ☒ 40 ☐ Other ____
Contamination Class: C3		
Radiation Class: R3		

Parameter Type/Units	Parameter Value	Time Duration (number)	Time Units	WTP Document Number (BUYER)	Submittal Number (SELLER)
Normal					
Normal High Temperature (°F)	95	40	yrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
Normal Low Temperature (°F)	59	40	yrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
Normal High Relative Humidity (%RH)	100	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Low Relative Humidity (%RH)	10	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal High Pressure (in.-w.g.)	0	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Low Pressure (in.-w.g.)	-0.4	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Radiation Dose Rate (mR/hr)	10	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Vibration Magnitude (g)	N/A	N/A	N/A	N/A	Note 1
Vibration Frequency (Hz)	N/A	N/A	N/A	N/A	Note 1
Additional Normal Information:	See Note 2 for Pressure Units.				

4

Equipment Environmental Qualification (EEQ) *(continued)*

Parameter Type/Units	Parameter Value	Time Duration (number)	Time units	WTP Document Number (BUYER)	Submittal Number (SELLER)
Abnormal					
Abnormal High Temperature (°F)	126	8	hr/yr	24590-PTF-U0D-W16T-00001, Note 7 & 9 4	Note 1
Abnormal Low Temperature (°F)	59	8	hr/yr	24590-WTP-DB-01-001, Notes 7 & 8	Note 1
Abnormal High Relative Humidity (%RH)	100	24	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Low Relative Humidity (%RH)	2	22	hr/yr	24590-PTF-U0D-W16T-00001, Note 9 4	Note 1
Abnormal High Pressure (in.-w.g.)	4	8	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Low Pressure (in.-w.g.)	-7.3	8	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Radiation Dose Rate (mR/hr)	10, Note 3	0	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Wet Sprinkler System Present	YES	2	hr 4	24590-PTF-U0D-W16T-00001	Note 1
Additional Abnormal Information	See Note 2 for Pressure Units				
Design Basis Events (DBE)					
DBE High Temperature (°F)	128	1000	hrs	24590-PTF-U0D-W16T-00001, Note 7 & 9 4	Note 1
DBE Low Temperature (°F)	40	1000	hrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
DBE High Relative Humidity (%RH)	100	482	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Low Relative Humidity (%RH)	6	1000	hrs	24590-PTF-U0D-W16T-00001, Note 9 4	Note 1
DBE High Pressure (in.-w.g.)	4	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Low Pressure (in.-w.g.)	-7.3	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Radiation Dose Rate (mR/hr)	10 Note 3	0	hrs	24590-PTF-U0D-W16T-00001	Note 1
Flood Height (ft)	1.58	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
Submergence (ft)	0 Note 5	N/A	hrs	24590-PTF-U0D-W16T-00001 24590-QL-POA-MEVV-00001-01-00817 4	Note 1
Chemical/Spray Exposure	YES	12.5	hrs	24590-PTF-U0D-W16T-00001	Note 1
Additional DBE Information	See Note 2 for Pressure Units				

DBE Chemical Exposure Details	
DBE Chemical Types/Concentrations	Sodium Hydroxide, 5M

Interfaces (Electrical)	
Power Supply Voltage (VAC, VDC)	N/A
Power Supply Frequency (Hz)	N/A
Power Connection Method	N/A
I/O Signals to/from Equipment	N/A
I/O Connection Method	N/A

Interfaces (Mechanical)	
Mounting Configuration (orientation)	See dwg. 24590-QL-POA-MEVV-00001-01-00817
Mounting Method (bolts, welds, etc.)	Anchor Bolts, TLP-SKID-00001, 24590-PTF-DB-S13T-00056
Auxiliary Devices	N/A

Equipment Seismic Qualification (ESQ)

Parameter	Title	Reference/Document Number	Version / Revision	Remarks
WTP Seismic Design Specification (BUYER)	Engineering Specification for Seismic Qualification Criteria for Pressure Vessels	24590-WTP-3PS-MV00-T0002	002	N/A
Specified Seismic Load (BUYER)	Seismic Analysis of Pretreatment Building - WSGM In-Structure Response Spectre (ISRS) 4	24590-PTF-S0C-S15T-00057 4	00A 4	Calculation is not included in MR, see attached figures 37, 38, 40, 41 and 115 per CCN 185267. 4
Design Seismic Load (SELLER	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	
Qualification Method (SELLER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	
Qualification Report Number (SELLER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	
Submittal Number (BUYER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	

Notes and Additional Information

Notes:

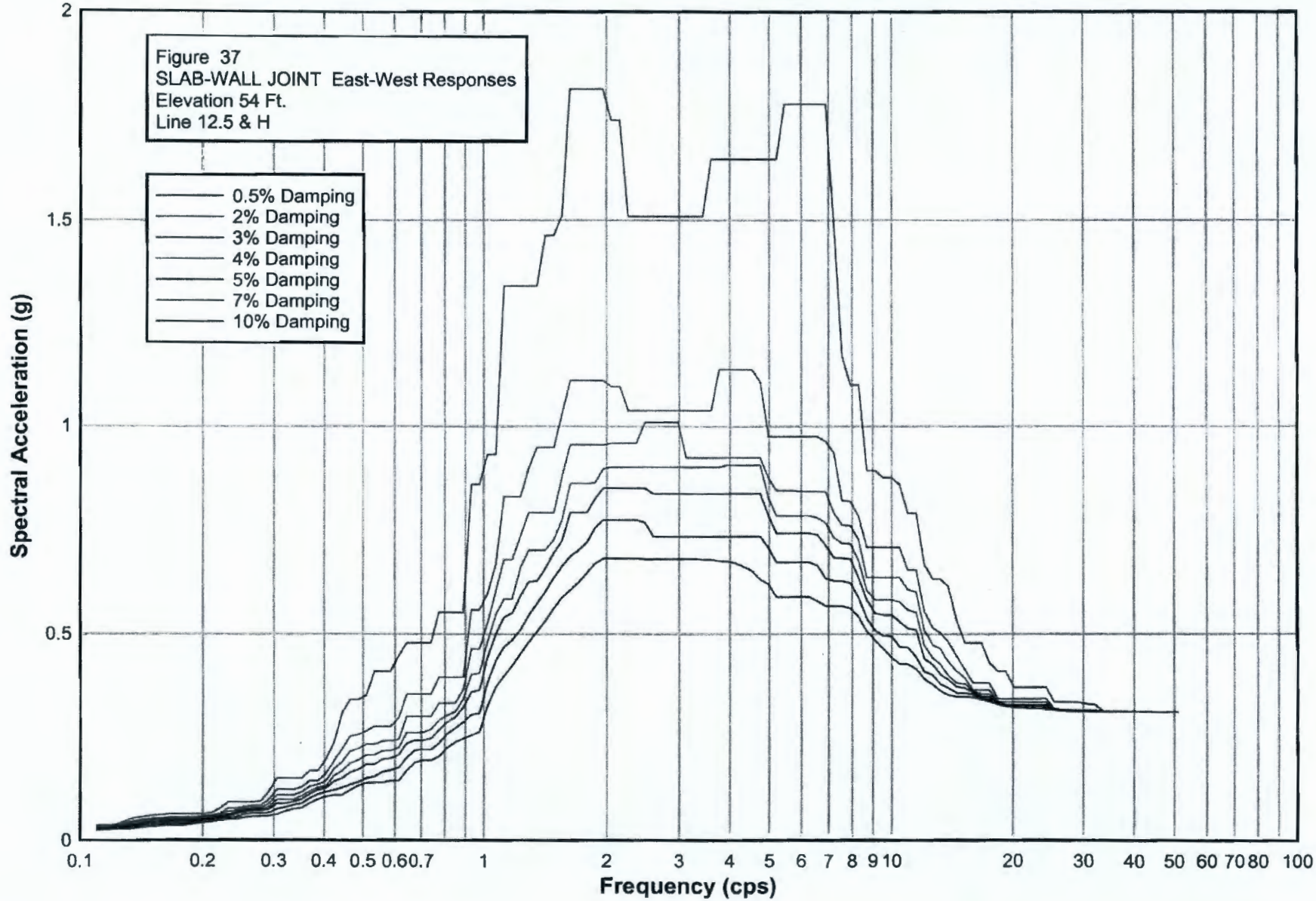
1. Data to be provided by SELLER through the submittal process as required on the G-321-E form.
2. Where pressure is given in inches of water column (in.-w.c.) in the source document, it is generally assumed that this is in reference to atmospheric pressure and is therefore equivalent to inches of water gage (in.-w.g.).
3. Abnormal and DBE radiation dose rates are set equal to normal dose rate and do not contribute to the total integrated dose.
4. The equipment qualification will be documented in accordance with the requirements in Appendix D of Engineering Specification for Environmental Qualification of Mechanical Equipment, document number 24590-WTP-3PS-G000-T0015 for the passive and active safety functions.
5. Submergence is determined from the lowest point of the vessel in relation to the flood height above the floor.
6. Environmental data given document 24590-PTF-U0D-W16T-00001 is for room environment only.
7. For application of AISC N690, the normal temperatures are not used. Abnormal temperatures shall be applied as Normal Operation Temperature, T_O, with seismic effects, E_S. The Design basis event temperature shall be applied as a Thermal Load generated by a postulated accident, T_A, without seismic effects, E_s or E_o.
8. Abnormal low temperature, as calculated in reference 2, is based on a Loss of Heating Accident (LOHA) which occurs when steam supply to the building is lost. Since the evaporators are run on steam, this would cause the evaporators to go off-line. Abnormal low temperature will be based on reference 3 at 59°F.
9. Parameter value used on data sheet has been previously established and determined more conservative than values 4 derived from the reference document noted.
10. For commercial reasons, safety and seismic classification may be higher than elsewhere documented, and therefore 4 conservative.

References:

1. 24590-WTP-WTP-PSAR-ESH-01-002-02, Rev. 04A, Preliminary documented safety analysis to support construction 4 authorization; PT facility specific information.
2. 24590-PTF-U0D-W16T-00001, Rev. 0, PTF Room Environment Datasheet.
3. 24590-WTP-DB-ENG-01-001, Rev. 1M, Basis of Design. 4
4. 24590-PTF-U0N-W16T-00001, Add data for room p-0427. Incorporate additional steam break analysis. 4
5. 24590-PTF-U0N-W16T-00003, Revised temperature & relative humidity data for PTF rooms. 4

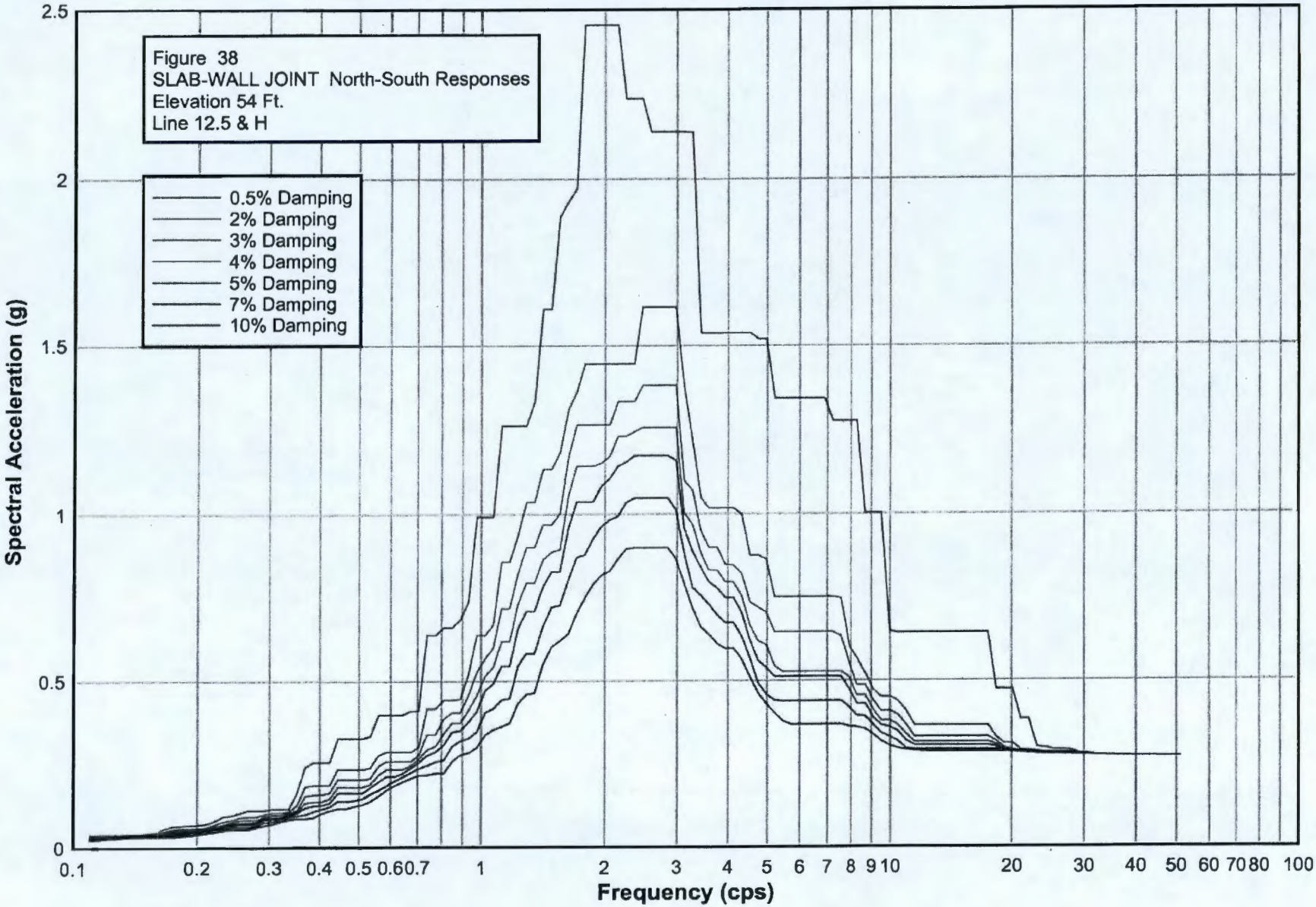
RPP-WTP Pretreatment Facility ISRS

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A 4



RPP-WTP Pretreatment Facility ISRS

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



RPP-WTP Pretreatment Facility ISRS

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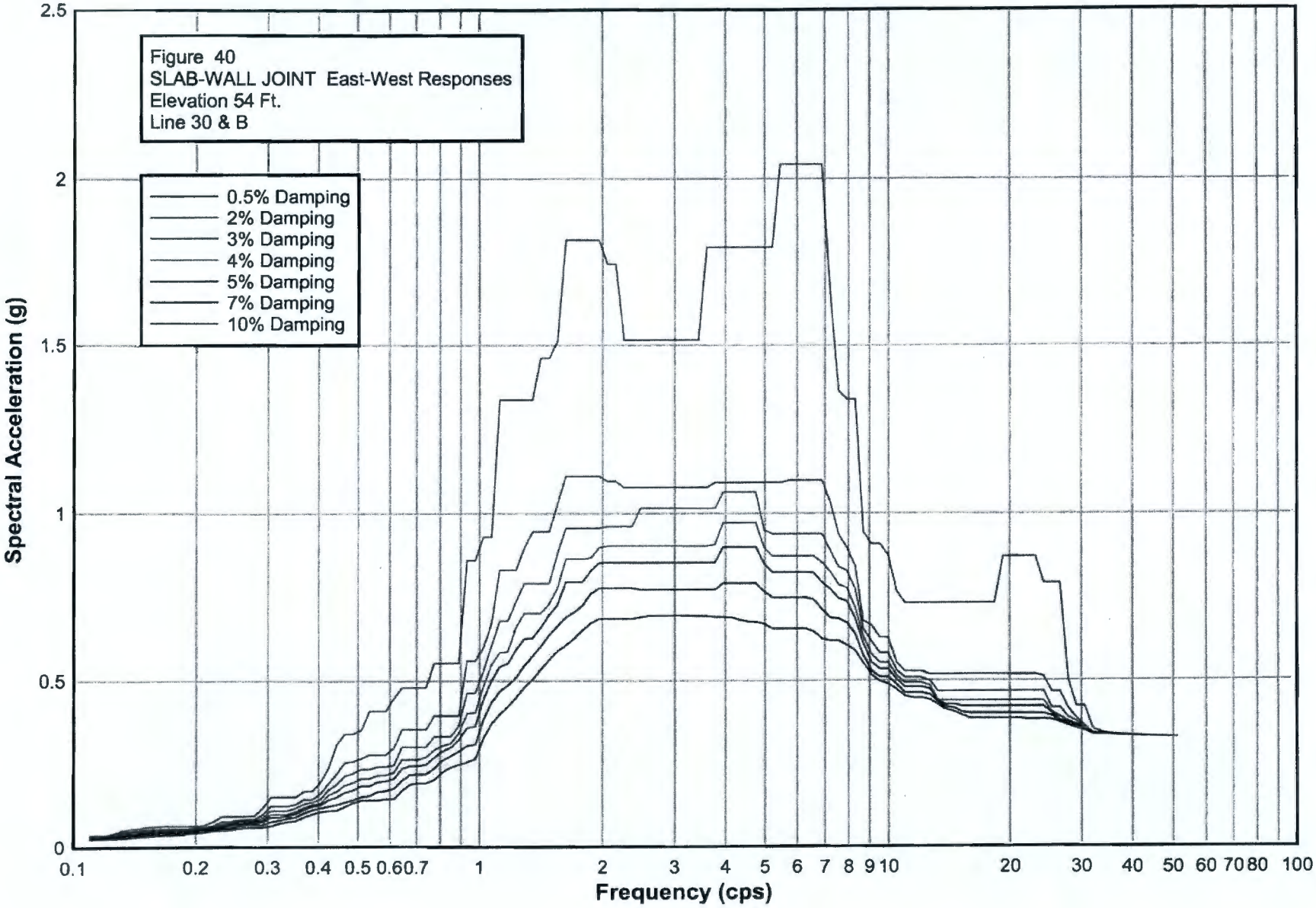
Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



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RPP-WTP Pretreatment Facility ISRS

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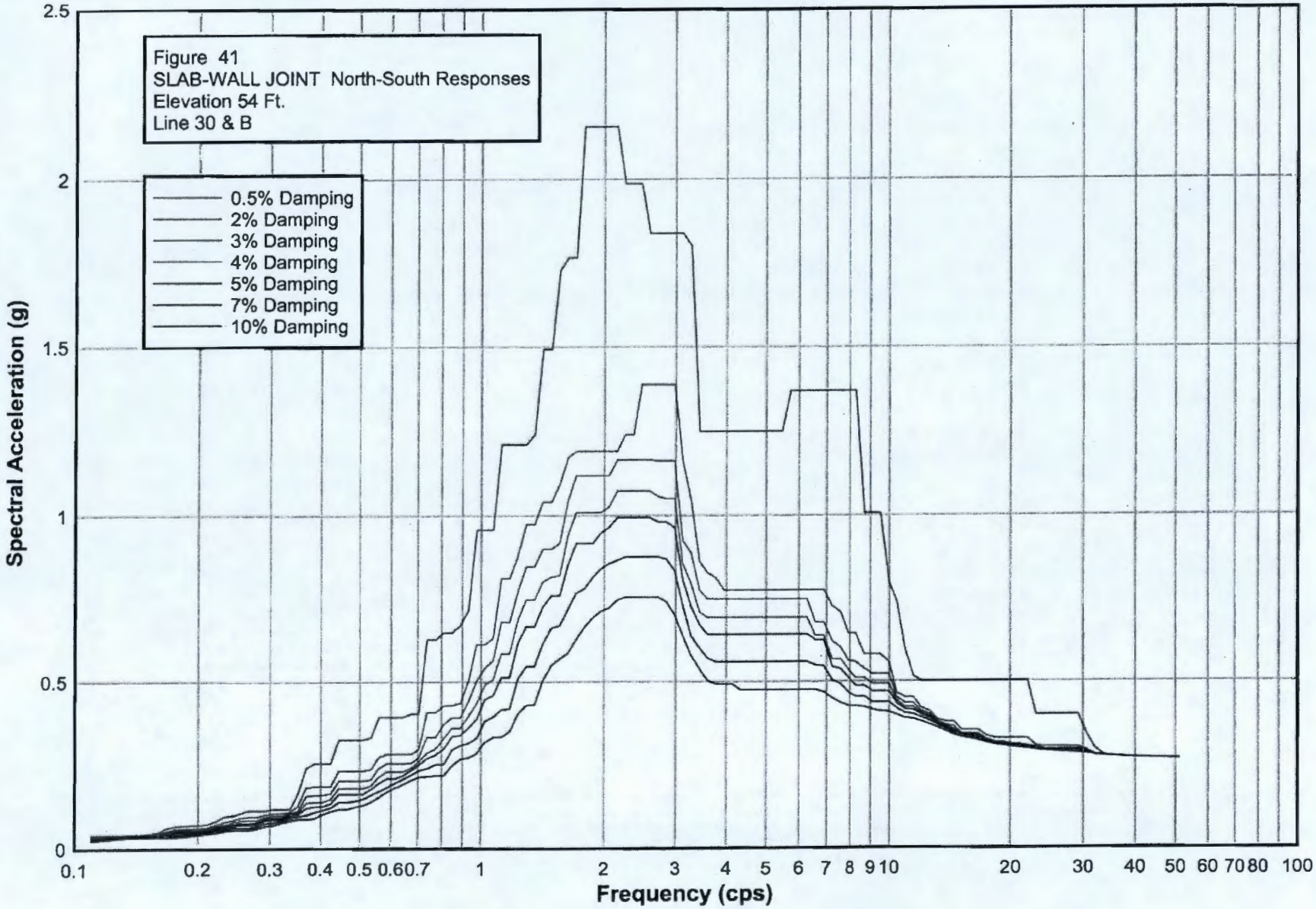
Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



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RPP-WTP Pretreatment Facility ISRS

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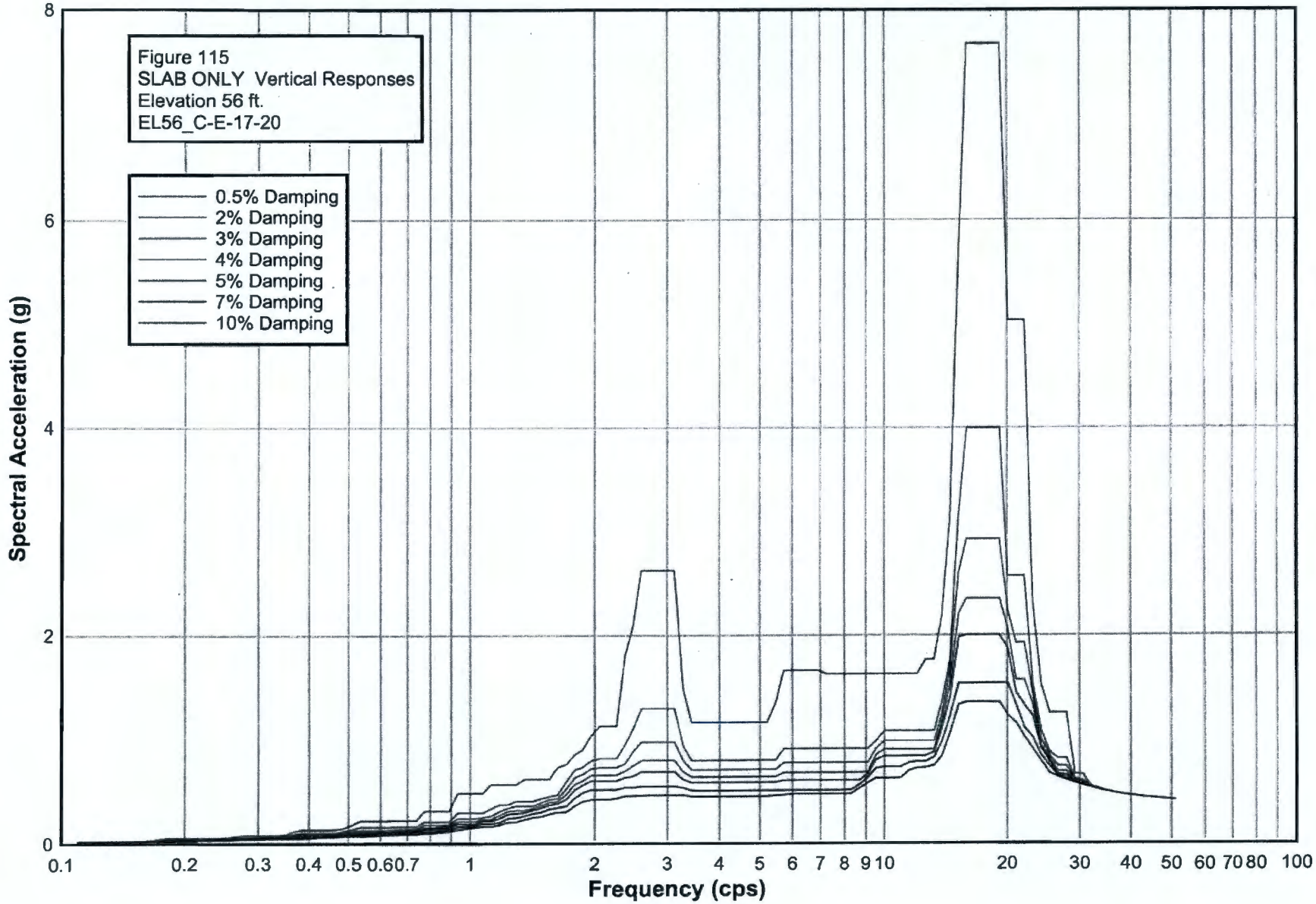
Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



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PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0375	0.1098	0.0344	0.1098	0.0327	0.1098	0.0312	0.1098	0.0298	0.1098	0.0274	0.1098	0.0252
0.115	0.0375	0.115	0.0344	0.115	0.0327	0.115	0.0312	0.115	0.0299	0.115	0.0277	0.115	0.0258
0.1204	0.0375	0.1204	0.0344	0.1204	0.0331	0.1204	0.0322	0.1204	0.0312	0.1204	0.0294	0.1204	0.0269
0.1262	0.0431	0.1262	0.0397	0.1262	0.0378	0.1262	0.036	0.1262	0.0343	0.1262	0.0314	0.1262	0.0278
0.1322	0.0504	0.1322	0.045	0.1322	0.042	0.1322	0.0393	0.1322	0.0369	0.1322	0.0328	0.1322	0.0281
0.1385	0.056	0.1385	0.0489	0.1385	0.0449	0.1385	0.0414	0.1385	0.0384	0.1385	0.0344	0.1385	0.0303
0.1451	0.058	0.1451	0.0509	0.1451	0.0475	0.1451	0.0445	0.1451	0.0419	0.1451	0.0375	0.1451	0.0325
0.152	0.0616	0.152	0.0546	0.152	0.0506	0.152	0.0472	0.152	0.0442	0.152	0.0391	0.152	0.0338
0.1592	0.062	0.1592	0.0546	0.1592	0.0506	0.1592	0.0472	0.1592	0.0442	0.1592	0.0396	0.1592	0.0351
0.1668	0.064	0.1668	0.056	0.1668	0.0517	0.1668	0.0481	0.1668	0.0451	0.1668	0.0403	0.1668	0.0356
0.1748	0.064	0.1748	0.056	0.1748	0.0517	0.1748	0.0481	0.1748	0.0451	0.1748	0.0403	0.1748	0.0356
0.1831	0.064	0.1831	0.056	0.1831	0.0517	0.1831	0.0481	0.1831	0.0451	0.1831	0.0403	0.1831	0.0368
0.1918	0.0641	0.1918	0.0561	0.1918	0.0517	0.1918	0.0495	0.1918	0.0477	0.1918	0.0445	0.1918	0.0404
0.2009	0.0642	0.2009	0.0583	0.2009	0.0558	0.2009	0.0535	0.2009	0.0513	0.2009	0.0474	0.2009	0.0424
0.2105	0.0665	0.2105	0.0603	0.2105	0.0575	0.2105	0.0549	0.2105	0.0525	0.2105	0.049	0.2105	0.0448
0.2205	0.078	0.2205	0.0647	0.2205	0.062	0.2205	0.0595	0.2205	0.0573	0.2205	0.0533	0.2205	0.0484
0.231	0.0933	0.231	0.0774	0.231	0.0694	0.231	0.063	0.231	0.0598	0.231	0.0556	0.231	0.0503
0.242	0.0933	0.242	0.0774	0.242	0.0723	0.242	0.0678	0.242	0.0638	0.242	0.0567	0.242	0.0513
0.2535	0.0933	0.2535	0.0817	0.2535	0.0771	0.2535	0.0729	0.2535	0.0692	0.2535	0.0628	0.2535	0.0553
0.2656	0.0933	0.2656	0.0839	0.2656	0.0794	0.2656	0.0754	0.2656	0.0718	0.2656	0.0653	0.2656	0.0575
0.2783	0.0954	0.2783	0.0847	0.2783	0.0794	0.2783	0.0754	0.2783	0.0718	0.2783	0.0653	0.2783	0.058
0.2915	0.1187	0.2915	0.0987	0.2915	0.089	0.2915	0.0813	0.2915	0.0753	0.2915	0.0668	0.2915	0.0592
0.3054	0.1504	0.3054	0.1235	0.3054	0.1097	0.3054	0.0985	0.3054	0.0894	0.3054	0.0758	0.3054	0.0633
0.3199	0.1504	0.3199	0.1235	0.3199	0.1097	0.3199	0.0985	0.3199	0.0894	0.3199	0.0801	0.3199	0.0706
0.3352	0.1504	0.3352	0.1235	0.3352	0.1097	0.3352	0.0985	0.3352	0.0931	0.3352	0.0857	0.3352	0.0762
0.3511	0.1504	0.3511	0.1289	0.3511	0.1172	0.3511	0.107	0.3511	0.0997	0.3511	0.0894	0.3511	0.0786
0.3678	0.168	0.3678	0.1438	0.3678	0.1303	0.3678	0.1186	0.3678	0.1121	0.3678	0.1017	0.3678	0.0898
0.3853	0.168	0.3853	0.1438	0.3853	0.1346	0.3853	0.1279	0.3853	0.1219	0.3853	0.1115	0.3853	0.0992
0.4037	0.194	0.4037	0.1598	0.4037	0.1426	0.4037	0.1306	0.4037	0.1259	0.4037	0.117	0.4037	0.1054
0.4229	0.2368	0.4229	0.1906	0.4229	0.1721	0.4229	0.1558	0.4229	0.1416	0.4229	0.1217	0.4229	0.1092
0.4431	0.3088	0.4431	0.2193	0.4431	0.1881	0.4431	0.1671	0.4431	0.1496	0.4431	0.1273	0.4431	0.1097
0.4642	0.3417	0.4642	0.2524	0.4642	0.2138	0.4642	0.1852	0.4642	0.1637	0.4642	0.1345	0.4642	0.1211
0.4863	0.3417	0.4863	0.256	0.4863	0.2208	0.4863	0.1928	0.4863	0.1701	0.4863	0.1409	0.4863	0.1323
0.5094	0.3522	0.5094	0.2656	0.5094	0.2325	0.5094	0.2054	0.5094	0.1831	0.5094	0.1497	0.5094	0.1391

PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.4096	0.5337	0.2771	0.5337	0.2325	0.5337	0.2054	0.5337	0.1831	0.5337	0.1539	0.5337	0.1396
0.5591	0.4096	0.5591	0.2771	0.5591	0.2398	0.5591	0.2148	0.5591	0.1949	0.5591	0.1654	0.5591	0.1396
0.5857	0.4096	0.5857	0.2771	0.5857	0.2404	0.5857	0.2159	0.5857	0.1975	0.5857	0.1686	0.5857	0.1441
0.6136	0.4475	0.6136	0.2969	0.6136	0.2444	0.6136	0.2234	0.6136	0.2051	0.6136	0.1751	0.6136	0.1441
0.6428	0.478	0.6428	0.3547	0.6428	0.3006	0.6428	0.2612	0.6428	0.2347	0.6428	0.1988	0.6428	0.168
0.6734	0.478	0.6734	0.3547	0.6734	0.3006	0.6734	0.2612	0.6734	0.2413	0.6734	0.2165	0.6734	0.1872
0.7055	0.478	0.7055	0.3547	0.7055	0.3006	0.7055	0.2612	0.7055	0.2413	0.7055	0.2186	0.7055	0.1922
0.7391	0.478	0.7391	0.3547	0.7391	0.3006	0.7391	0.2692	0.7391	0.2463	0.7391	0.2186	0.7391	0.1922
0.7743	0.5518	0.7743	0.3958	0.7743	0.3332	0.7743	0.2918	0.7743	0.268	0.7743	0.2351	0.7743	0.2018
0.8111	0.5518	0.8111	0.3958	0.8111	0.3332	0.8111	0.3035	0.8111	0.2874	0.8111	0.2587	0.8111	0.2236
0.8497	0.5518	0.8497	0.3958	0.8497	0.3332	0.8497	0.3117	0.8497	0.2984	0.8497	0.2723	0.8497	0.2373
0.8902	0.5518	0.8902	0.3958	0.8902	0.3656	0.8902	0.3431	0.8902	0.3226	0.8902	0.2873	0.8902	0.2462
0.9326	0.8605	0.9326	0.5585	0.9326	0.4629	0.9326	0.4023	0.9326	0.3602	0.9326	0.3049	0.9326	0.2549
0.977	0.8605	0.977	0.5585	0.977	0.4629	0.977	0.4045	0.977	0.3644	0.977	0.3083	0.977	0.2637
1.0235	0.9315	1.0235	0.5965	1.0235	0.5261	1.0235	0.4814	1.0235	0.4436	1.0235	0.3837	1.0235	0.3277
1.0723	0.9315	1.0723	0.6685	1.0723	0.603	1.0723	0.5467	1.0723	0.4995	1.0723	0.4355	1.0723	0.3729
1.1233	1.3398	1.1233	0.8315	1.1233	0.6788	1.1233	0.5837	1.1233	0.5408	1.1233	0.4681	1.1233	0.3987
1.1768	1.3398	1.1768	0.8315	1.1768	0.6788	1.1768	0.5855	1.1768	0.5505	1.1768	0.4858	1.1768	0.4238
1.2328	1.3398	1.2328	0.8315	1.2328	0.7369	1.2328	0.6596	1.2328	0.5925	1.2328	0.5105	1.2328	0.452
1.2916	1.3398	1.2916	0.9002	1.2916	0.7926	1.2916	0.7024	1.2916	0.6263	1.2916	0.5455	1.2916	0.4806
1.353	1.3398	1.353	0.9485	1.353	0.7926	1.353	0.7024	1.353	0.6282	1.353	0.574	1.353	0.5058
1.4175	1.4626	1.4175	0.9485	1.4175	0.7926	1.4175	0.7024	1.4175	0.6579	1.4175	0.6026	1.4175	0.5321
1.485	1.4626	1.485	0.9485	1.485	0.7926	1.485	0.7282	1.485	0.6958	1.485	0.636	1.485	0.5624
1.5557	1.5113	1.5557	1.0297	1.5557	0.8797	1.5557	0.7754	1.5557	0.726	1.5557	0.6634	1.5557	0.5886
1.6298	1.8158	1.6298	1.1086	1.6298	0.9552	1.6298	0.8627	1.6298	0.7931	1.6298	0.6875	1.6298	0.6064
1.7074	1.8158	1.7074	1.1086	1.7074	0.9552	1.7074	0.8627	1.7074	0.7931	1.7074	0.7024	1.7074	0.6246
1.7887	1.8158	1.7887	1.1086	1.7887	0.9552	1.7887	0.8627	1.7887	0.7931	1.7887	0.7213	1.7887	0.6476
1.8738	1.8158	1.8738	1.1086	1.8738	0.9552	1.8738	0.8651	1.8738	0.8263	1.8738	0.7567	1.8738	0.6698
1.963	1.8158	1.963	1.1086	1.963	0.9552	1.963	0.8972	1.963	0.8525	1.963	0.7755	1.963	0.683
2.0565	1.7414	2.0565	1.0948	2.0565	0.9593	2.0565	0.9017	2.0565	0.8525	2.0565	0.7755	2.0565	0.683
2.1544	1.7414	2.1544	1.0948	2.1544	0.9593	2.1544	0.9017	2.1544	0.8525	2.1544	0.7755	2.1544	0.683
2.257	1.5091	2.257	1.0367	2.257	0.9593	2.257	0.9017	2.257	0.8525	2.257	0.7755	2.257	0.683
2.3645	1.5091	2.3645	1.0367	2.3645	0.9593	2.3645	0.9017	2.3645	0.8525	2.3645	0.7755	2.3645	0.683
2.4771	1.5091	2.4771	1.0367	2.4771	1.009	2.4771	0.9017	2.4771	0.852	2.4771	0.7697	2.4771	0.6811
2.595	1.5091	2.595	1.0367	2.595	1.009	2.595	0.9017	2.595	0.8387	2.595	0.7357	2.595	0.6811

PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	1.5091	2.7186	1.0367	2.7186	1.009	2.7186	0.9017	2.7186	0.8387	2.7186	0.7357	2.7186	0.6811
2.848	1.5091	2.848	1.0367	2.848	1.009	2.848	0.9017	2.848	0.8387	2.848	0.7357	2.848	0.6811
2.9836	1.5091	2.9836	1.0367	2.9836	1.009	2.9836	0.9017	2.9836	0.8387	2.9836	0.7357	2.9836	0.6811
3.1257	1.5091	3.1257	1.0367	3.1257	0.9237	3.1257	0.9017	3.1257	0.8387	3.1257	0.7357	3.1257	0.6811
3.2745	1.5091	3.2745	1.0367	3.2745	0.9237	3.2745	0.9017	3.2745	0.8387	3.2745	0.7357	3.2745	0.6811
3.4305	1.5091	3.4305	1.0367	3.4305	0.9237	3.4305	0.9017	3.4305	0.8387	3.4305	0.7357	3.4305	0.6801
3.5938	1.6472	3.5938	1.0367	3.5938	0.9237	3.5938	0.9017	3.5938	0.8387	3.5938	0.7357	3.5938	0.6801
3.7649	1.6472	3.7649	1.1356	3.7649	0.9237	3.7649	0.9017	3.7649	0.8387	3.7649	0.7357	3.7649	0.6766
3.9442	1.6472	3.9442	1.1356	3.9442	0.9237	3.9442	0.906	3.9442	0.8387	3.9442	0.7357	3.9442	0.6759
4.132	1.6472	4.132	1.1356	4.132	0.9237	4.132	0.906	4.132	0.8387	4.132	0.7357	4.132	0.6712
4.3288	1.6472	4.3288	1.1356	4.3288	0.9237	4.3288	0.906	4.3288	0.8387	4.3288	0.7357	4.3288	0.6626
4.5349	1.6472	4.5349	1.1356	4.5349	0.9237	4.5349	0.906	4.5349	0.8387	4.5349	0.7357	4.5349	0.6525
4.7508	1.6472	4.7508	1.1048	4.7508	0.9237	4.7508	0.906	4.7508	0.8387	4.7508	0.7357	4.7508	0.6316
4.977	1.6472	4.977	0.9746	4.977	0.8757	4.977	0.829	4.977	0.7851	4.977	0.7083	4.977	0.6206
5.214	1.6472	5.214	0.9746	5.214	0.8463	5.214	0.785	5.214	0.7434	5.214	0.6732	5.214	0.5898
5.4623	1.7798	5.4623	0.9746	5.4623	0.8463	5.4623	0.785	5.4623	0.7434	5.4623	0.6732	5.4623	0.5898
5.7224	1.7798	5.7224	0.9746	5.7224	0.8463	5.7224	0.785	5.7224	0.7434	5.7224	0.6732	5.7224	0.5898
5.9948	1.7798	5.9948	0.9746	5.9948	0.8438	5.9948	0.785	5.9948	0.7434	5.9948	0.6732	5.9948	0.5898
6.2803	1.7798	6.2803	0.9746	6.2803	0.8438	6.2803	0.785	6.2803	0.7434	6.2803	0.6732	6.2803	0.5898
6.5793	1.7798	6.5793	0.9746	6.5793	0.8438	6.5793	0.7804	6.5793	0.7393	6.5793	0.6657	6.5793	0.5795
6.8926	1.7798	6.8926	0.963	6.8926	0.8429	6.8926	0.7674	6.8926	0.7128	6.8926	0.6345	6.8926	0.5677
7.2208	1.4914	7.2208	0.935	7.2208	0.7922	7.2208	0.7331	7.2208	0.6844	7.2208	0.6283	7.2208	0.5677
7.5646	1.168	7.5646	0.822	7.5646	0.7632	7.5646	0.7188	7.5646	0.6833	7.5646	0.6283	7.5646	0.5677
7.9248	1.0987	7.9248	0.8201	7.9248	0.7623	7.9248	0.7176	7.9248	0.6811	7.9248	0.6237	7.9248	0.5627
8.3022	1.0987	8.3022	0.7845	8.3022	0.7283	8.3022	0.6777	8.3022	0.6364	8.3022	0.5884	8.3022	0.5417
8.6975	0.8935	8.6975	0.7092	8.6975	0.6368	8.6975	0.6061	8.6975	0.5819	8.6975	0.5373	8.6975	0.5059
9.1116	0.8935	9.1116	0.7092	9.1116	0.6368	9.1116	0.5827	9.1116	0.5505	9.1116	0.5085	9.1116	0.4846
9.5455	0.8763	9.5455	0.7092	9.5455	0.6368	9.5455	0.5827	9.5455	0.5459	9.5455	0.4951	9.5455	0.4643
10	0.8763	10	0.7092	10	0.6368	10	0.5827	10	0.5459	10	0.4934	10	0.4429
10.4762	0.8603	10.4762	0.7092	10.4762	0.6368	10.4762	0.5774	10.4762	0.5297	10.4762	0.4688	10.4762	0.4271
10.975	0.791	10.975	0.6543	10.975	0.6067	10.975	0.5582	10.975	0.5137	10.975	0.4674	10.975	0.4271
11.4976	0.791	11.4976	0.6543	11.4976	0.6014	11.4976	0.5519	11.4976	0.5094	11.4976	0.4435	11.4976	0.4142
12.045	0.6677	12.045	0.5543	12.045	0.5086	12.045	0.4716	12.045	0.4394	12.045	0.4081	12.045	0.3915
12.6186	0.6325	12.6186	0.5145	12.6186	0.4727	12.6186	0.4409	12.6186	0.4251	12.6186	0.4004	12.6186	0.3774
13.2194	0.6325	13.2194	0.5025	13.2194	0.4639	13.2194	0.4269	13.2194	0.4021	13.2194	0.379	13.2194	0.3634

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Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.6152	13.8489	0.4815	13.8489	0.433	13.8489	0.3995	13.8489	0.3896	13.8489	0.3705	13.8489	0.3527
14.5083	0.5318	14.5083	0.4455	14.5083	0.4096	14.5083	0.381	14.5083	0.3726	14.5083	0.3575	14.5083	0.3484
15.1991	0.4787	15.1991	0.4141	15.1991	0.3936	15.1991	0.3795	15.1991	0.3697	15.1991	0.3575	15.1991	0.3484
15.9228	0.4787	15.9228	0.3815	15.9228	0.3644	15.9228	0.3609	15.9228	0.358	15.9228	0.3528	15.9228	0.3467
16.681	0.4787	16.681	0.3815	16.681	0.3644	16.681	0.3544	16.681	0.3483	16.681	0.3439	16.681	0.3416
17.4753	0.4307	17.4753	0.3815	17.4753	0.3644	17.4753	0.3544	17.4753	0.3483	17.4753	0.3418	17.4753	0.337
18.3074	0.4095	18.3074	0.3431	18.3074	0.3367	18.3074	0.3354	18.3074	0.3336	18.3074	0.3315	18.3074	0.3305
19.1791	0.4095	19.1791	0.3431	19.1791	0.3349	19.1791	0.3293	19.1791	0.3262	19.1791	0.3251	19.1791	0.325
20.0923	0.3708	20.0923	0.3431	20.0923	0.3349	20.0923	0.3293	20.0923	0.3262	20.0923	0.3243	20.0923	0.323
21.049	0.3708	21.049	0.3431	21.049	0.3349	21.049	0.3293	21.049	0.3262	21.049	0.3236	21.049	0.3215
22.0513	0.3708	22.0513	0.3431	22.0513	0.3349	22.0513	0.3293	22.0513	0.3262	22.0513	0.323	22.0513	0.3199
23.1013	0.3708	23.1013	0.3431	23.1013	0.3349	23.1013	0.3293	23.1013	0.3262	23.1013	0.323	23.1013	0.3199
24.2013	0.3708	24.2013	0.3431	24.2013	0.3349	24.2013	0.3293	24.2013	0.3255	24.2013	0.3206	24.2013	0.3186
25.3536	0.3358	25.3536	0.3197	25.3536	0.3192	25.3536	0.3187	25.3536	0.3181	25.3536	0.317	25.3536	0.3164
26.5609	0.3358	26.5609	0.3169	26.5609	0.3159	26.5609	0.3158	26.5609	0.3158	26.5609	0.3155	26.5609	0.3148
27.8256	0.3358	27.8256	0.3169	27.8256	0.3159	27.8256	0.3153	27.8256	0.3149	27.8256	0.3143	27.8256	0.3137
29.1505	0.3358	29.1505	0.3165	29.1505	0.3153	29.1505	0.3142	29.1505	0.3137	29.1505	0.3132	29.1505	0.313
30.5386	0.3312	30.5386	0.3165	30.5386	0.3153	30.5386	0.3142	30.5386	0.3133	30.5386	0.3131	30.5386	0.313
31.9927	0.3297	31.9927	0.3163	31.9927	0.3146	31.9927	0.3138	31.9927	0.3132	31.9927	0.3131	31.9927	0.313
33.516	0.3144	33.516	0.3134	33.516	0.3133	33.516	0.3132	33.516	0.3132	33.516	0.3131	33.516	0.313
35.1119	0.3135	35.1119	0.3134	35.1119	0.3133	35.1119	0.3132	35.1119	0.3132	35.1119	0.3131	35.1119	0.313
36.7838	0.3134	36.7838	0.3133	36.7838	0.3132	36.7838	0.3132	36.7838	0.3132	36.7838	0.3131	36.7838	0.313
38.5353	0.3132	38.5353	0.3132	38.5353	0.3131	38.5353	0.3131	38.5353	0.3131	38.5353	0.3131	38.5353	0.313
40.3702	0.3131	40.3702	0.3131	40.3702	0.3131	40.3702	0.313	40.3702	0.313	40.3702	0.313	40.3702	0.3129
42.2924	0.313	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129
44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128
46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127
48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126
50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0405	0.1098	0.0365	0.1098	0.0342	0.1098	0.0322	0.1098	0.0303	0.1098	0.0272	0.1098	0.0235
0.115	0.0405	0.115	0.0365	0.115	0.0342	0.115	0.0322	0.115	0.0303	0.115	0.0272	0.115	0.0259
0.1204	0.0405	0.1204	0.0365	0.1204	0.0342	0.1204	0.0322	0.1204	0.031	0.1204	0.0297	0.1204	0.028
0.1262	0.0405	0.1262	0.0365	0.1262	0.0352	0.1262	0.0342	0.1262	0.0334	0.1262	0.0318	0.1262	0.0297
0.1322	0.0405	0.1322	0.0382	0.1322	0.037	0.1322	0.0359	0.1322	0.0349	0.1322	0.0333	0.1322	0.0316
0.1385	0.0411	0.1385	0.0392	0.1385	0.0382	0.1385	0.0372	0.1385	0.0363	0.1385	0.0348	0.1385	0.0328
0.1451	0.0417	0.1451	0.0398	0.1451	0.0387	0.1451	0.0377	0.1451	0.0368	0.1451	0.0352	0.1451	0.0332
0.152	0.0439	0.152	0.0401	0.152	0.0387	0.152	0.0377	0.152	0.0368	0.152	0.0352	0.152	0.0332
0.1592	0.0462	0.1592	0.0416	0.1592	0.0396	0.1592	0.0377	0.1592	0.0368	0.1592	0.0352	0.1592	0.0332
0.1668	0.0584	0.1668	0.0506	0.1668	0.0463	0.1668	0.0426	0.1668	0.0395	0.1668	0.0352	0.1668	0.0332
0.1748	0.0645	0.1748	0.0566	0.1748	0.0522	0.1748	0.0484	0.1748	0.045	0.1748	0.0394	0.1748	0.0332
0.1831	0.0668	0.1831	0.0583	0.1831	0.0541	0.1831	0.0504	0.1831	0.0471	0.1831	0.0415	0.1831	0.0354
0.1918	0.0678	0.1918	0.0586	0.1918	0.0543	0.1918	0.0507	0.1918	0.0474	0.1918	0.0418	0.1918	0.038
0.2009	0.0697	0.2009	0.0596	0.2009	0.0543	0.2009	0.0514	0.2009	0.0487	0.2009	0.0438	0.2009	0.0411
0.2105	0.0722	0.2105	0.062	0.2105	0.0582	0.2105	0.0547	0.2105	0.0516	0.2105	0.0482	0.2105	0.0446
0.2205	0.0819	0.2205	0.0709	0.2205	0.0651	0.2205	0.06	0.2205	0.0574	0.2205	0.0531	0.2205	0.0475
0.231	0.0959	0.231	0.0792	0.231	0.0703	0.231	0.0665	0.231	0.063	0.231	0.0578	0.231	0.0525
0.242	0.0984	0.242	0.0845	0.242	0.0774	0.242	0.0721	0.242	0.0681	0.242	0.0618	0.242	0.0551
0.2535	0.1059	0.2535	0.0913	0.2535	0.0833	0.2535	0.0763	0.2535	0.0702	0.2535	0.0618	0.2535	0.0551
0.2656	0.1138	0.2656	0.0944	0.2656	0.084	0.2656	0.0763	0.2656	0.0702	0.2656	0.0618	0.2656	0.0551
0.2783	0.1138	0.2783	0.0944	0.2783	0.084	0.2783	0.0779	0.2783	0.074	0.2783	0.0677	0.2783	0.0611
0.2915	0.1138	0.2915	0.1008	0.2915	0.0946	0.2915	0.0892	0.2915	0.0843	0.2915	0.0764	0.2915	0.0677
0.3054	0.1179	0.3054	0.1056	0.3054	0.0987	0.3054	0.0926	0.3054	0.0872	0.3054	0.0785	0.3054	0.0706
0.3199	0.1179	0.3199	0.1056	0.3199	0.0987	0.3199	0.0926	0.3199	0.0894	0.3199	0.0844	0.3199	0.0786
0.3352	0.1179	0.3352	0.1098	0.3352	0.1056	0.3352	0.1017	0.3352	0.0982	0.3352	0.0921	0.3352	0.0848
0.3511	0.1654	0.3511	0.129	0.3511	0.1133	0.3511	0.1075	0.3511	0.1035	0.3511	0.0964	0.3511	0.088
0.3678	0.2415	0.3678	0.1832	0.3678	0.1565	0.3678	0.1364	0.3678	0.1213	0.3678	0.1006	0.3678	0.088
0.3853	0.2549	0.3853	0.187	0.3853	0.1595	0.3853	0.1387	0.3853	0.1269	0.3853	0.1092	0.3853	0.091
0.4037	0.2549	0.4037	0.187	0.4037	0.1595	0.4037	0.1387	0.4037	0.1279	0.4037	0.1163	0.4037	0.1034
0.4229	0.2549	0.4229	0.187	0.4229	0.1651	0.4229	0.1485	0.4229	0.1344	0.4229	0.1233	0.4229	0.1111
0.4431	0.3288	0.4431	0.2339	0.4431	0.2038	0.4431	0.1813	0.4431	0.1641	0.4431	0.1399	0.4431	0.1181
0.4642	0.3288	0.4642	0.2339	0.4642	0.2038	0.4642	0.1813	0.4642	0.1641	0.4642	0.1399	0.4642	0.1181
0.4863	0.3288	0.4863	0.2339	0.4863	0.2038	0.4863	0.1813	0.4863	0.1641	0.4863	0.1421	0.4863	0.1246
0.5094	0.3288	0.5094	0.2339	0.5094	0.2038	0.5094	0.1813	0.5094	0.1641	0.5094	0.1472	0.5094	0.1295

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.3356	0.5337	0.2387	0.5337	0.2081	0.5337	0.19	0.5337	0.1796	0.5337	0.1614	0.5337	0.1401
0.5591	0.3997	0.5591	0.2762	0.5591	0.244	0.5591	0.2179	0.5591	0.1971	0.5591	0.1724	0.5591	0.1556
0.5857	0.3997	0.5857	0.2863	0.5857	0.2573	0.5857	0.2332	0.5857	0.2128	0.5857	0.1853	0.5857	0.1724
0.6136	0.3997	0.6136	0.2863	0.6136	0.2573	0.6136	0.2332	0.6136	0.2128	0.6136	0.1998	0.6136	0.1858
0.6428	0.3997	0.6428	0.2863	0.6428	0.2573	0.6428	0.2332	0.6428	0.2219	0.6428	0.2115	0.6428	0.1969
0.6734	0.411	0.6734	0.2863	0.6734	0.2574	0.6734	0.2449	0.6734	0.2378	0.6734	0.2244	0.6734	0.2072
0.7055	0.411	0.7055	0.301	0.7055	0.2757	0.7055	0.2638	0.7055	0.2534	0.7055	0.2357	0.7055	0.2156
0.7391	0.6367	0.7391	0.4169	0.7391	0.3404	0.7391	0.2927	0.7391	0.2746	0.7391	0.2445	0.7391	0.217
0.7743	0.6367	0.7743	0.4169	0.7743	0.3404	0.7743	0.3038	0.7743	0.2858	0.7743	0.2555	0.7743	0.2218
0.8111	0.6596	0.8111	0.4428	0.8111	0.386	0.8111	0.3422	0.8111	0.3081	0.8111	0.2598	0.8111	0.2218
0.8497	0.6596	0.8497	0.4428	0.8497	0.4051	0.8497	0.3738	0.8497	0.347	0.8497	0.3034	0.8497	0.256
0.8902	0.6828	0.8902	0.4451	0.8902	0.4051	0.8902	0.3738	0.8902	0.3511	0.8902	0.3194	0.8902	0.2761
0.9326	0.737	0.9326	0.5191	0.9326	0.4567	0.9326	0.411	0.9326	0.3766	0.9326	0.328	0.9326	0.2821
0.977	0.9914	0.977	0.6358	0.977	0.525	0.977	0.4553	0.977	0.408	0.977	0.3484	0.977	0.2994
1.0235	0.9914	1.0235	0.6358	1.0235	0.5662	1.0235	0.5139	1.0235	0.4702	1.0235	0.4041	1.0235	0.3384
1.0723	0.9914	1.0723	0.6668	1.0723	0.5976	1.0723	0.5399	1.0723	0.4914	1.0723	0.4166	1.0723	0.3541
1.1233	1.2606	1.1233	0.8561	1.1233	0.7168	1.1233	0.6174	1.1233	0.5433	1.1233	0.4431	1.1233	0.3633
1.1768	1.2606	1.1768	0.8561	1.1768	0.7168	1.1768	0.6174	1.1768	0.5433	1.1768	0.4467	1.1768	0.3729
1.2328	1.2606	1.2328	0.935	1.2328	0.8202	1.2328	0.7293	1.2328	0.6556	1.2328	0.5433	1.2328	0.4321
1.2916	1.2606	1.2916	1.0351	1.2916	0.8991	1.2916	0.793	1.2916	0.708	1.2916	0.5814	1.2916	0.4586
1.353	1.3319	1.353	1.0351	1.353	0.8991	1.353	0.793	1.353	0.708	1.353	0.5814	1.353	0.4631
1.4175	1.6092	1.4175	1.1325	1.4175	0.9683	1.4175	0.8621	1.4175	0.7817	1.4175	0.6627	1.4175	0.5486
1.485	1.6092	1.485	1.1325	1.485	0.9683	1.485	0.885	1.485	0.8264	1.485	0.7199	1.485	0.6006
1.5557	1.8872	1.5557	1.1818	1.5557	1.0008	1.5557	0.892	1.5557	0.8264	1.5557	0.7265	1.5557	0.6185
1.6298	1.9322	1.6298	1.3084	1.6298	1.1683	1.6298	1.0534	1.6298	0.9565	1.6298	0.8016	1.6298	0.6401
1.7074	1.9702	1.7074	1.3601	1.7074	1.2627	1.7074	1.1415	1.7074	1.0371	1.7074	0.8692	1.7074	0.7006
1.7887	2.4552	1.7887	1.4456	1.7887	1.2629	1.7887	1.1415	1.7887	1.0371	1.7887	0.8773	1.7887	0.7486
1.8738	2.4552	1.8738	1.4456	1.8738	1.2629	1.8738	1.1415	1.8738	1.0371	1.8738	0.9259	1.8738	0.788
1.963	2.4552	1.963	1.4456	1.963	1.2629	1.963	1.1498	1.963	1.0818	1.963	0.9626	1.963	0.8157
2.0565	2.4552	2.0565	1.4456	2.0565	1.2629	2.0565	1.1701	2.0565	1.1049	2.0565	0.9829	2.0565	0.8288
2.1544	2.4552	2.1544	1.4456	2.1544	1.3316	2.1544	1.2297	2.1544	1.1411	2.1544	0.9932	2.1544	0.8645
2.257	2.2367	2.257	1.4456	2.257	1.3316	2.257	1.2297	2.257	1.1534	2.257	1.0344	2.257	0.8939
2.3645	2.2367	2.3645	1.4456	2.3645	1.3316	2.3645	1.2422	2.3645	1.1724	2.3645	1.0471	2.3645	0.898
2.4771	2.2367	2.4771	1.6143	2.4771	1.3804	2.4771	1.2551	2.4771	1.1724	2.4771	1.0471	2.4771	0.898
2.595	2.138	2.595	1.6143	2.595	1.3804	2.595	1.2551	2.595	1.1724	2.595	1.0471	2.595	0.898

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Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	2.138	2.7186	1.6143	2.7186	1.3804	2.7186	1.2551	2.7186	1.1724	2.7186	1.0471	2.7186	0.898
2.848	2.138	2.848	1.6143	2.848	1.3804	2.848	1.2551	2.848	1.1724	2.848	1.0471	2.848	0.898
2.9836	2.138	2.9836	1.6143	2.9836	1.3804	2.9836	1.2551	2.9836	1.1568	2.9836	1.0114	2.9836	0.8645
3.1257	2.138	3.1257	1.3773	3.1257	1.0982	3.1257	1.0035	3.1257	0.9573	3.1257	0.8829	3.1257	0.7931
3.2745	2.138	3.2745	1.2119	3.2745	1.0686	3.2745	0.9673	3.2745	0.886	3.2745	0.778	3.2745	0.7168
3.4305	1.5368	3.4305	1.0471	3.4305	0.9495	3.4305	0.8824	3.4305	0.8379	3.4305	0.7547	3.4305	0.6598
3.5938	1.5368	3.5938	1.0165	3.5938	0.898	3.5938	0.8299	3.5938	0.7946	3.5938	0.7273	3.5938	0.6376
3.7649	1.5368	3.7649	1.0165	3.7649	0.898	3.7649	0.8299	3.7649	0.7769	3.7649	0.6958	3.7649	0.6089
3.9442	1.5368	3.9442	1.0165	3.9442	0.8472	3.9442	0.7941	3.9442	0.7477	3.9442	0.6723	3.9442	0.5955
4.132	1.5368	4.132	1.0165	4.132	0.845	4.132	0.7941	4.132	0.7477	4.132	0.6723	4.132	0.5955
4.3288	1.5368	4.3288	0.9973	4.3288	0.8194	4.3288	0.7522	4.3288	0.7017	4.3288	0.6303	4.3288	0.5622
4.5349	1.5368	4.5349	0.8745	4.5349	0.7347	4.5349	0.6652	4.5349	0.6197	4.5349	0.5656	4.5349	0.5097
4.7508	1.518	4.7508	0.8745	4.7508	0.7183	4.7508	0.6169	4.7508	0.5587	4.7508	0.4909	4.7508	0.4618
4.977	1.518	4.977	0.8614	4.977	0.7025	4.977	0.6052	4.977	0.5367	4.977	0.4572	4.977	0.4284
5.214	1.3404	5.214	0.7497	5.214	0.6443	5.214	0.5421	5.214	0.5109	5.214	0.4398	5.214	0.4021
5.4623	1.3404	5.4623	0.7497	5.4623	0.6443	5.4623	0.5254	5.4623	0.5109	5.4623	0.438	5.4623	0.3783
5.7224	1.3404	5.7224	0.7497	5.7224	0.6443	5.7224	0.5254	5.7224	0.5109	5.7224	0.438	5.7224	0.3681
5.9948	1.3404	5.9948	0.7497	5.9948	0.6443	5.9948	0.5254	5.9948	0.5109	5.9948	0.438	5.9948	0.3681
6.2803	1.3404	6.2803	0.7497	6.2803	0.6443	6.2803	0.5254	6.2803	0.5109	6.2803	0.438	6.2803	0.3681
6.5793	1.3404	6.5793	0.7497	6.5793	0.6443	6.5793	0.5254	6.5793	0.5109	6.5793	0.438	6.5793	0.3681
6.8926	1.3404	6.8926	0.7497	6.8926	0.6443	6.8926	0.5254	6.8926	0.5109	6.8926	0.438	6.8926	0.3681
7.2208	1.274	7.2208	0.7497	7.2208	0.6443	7.2208	0.5254	7.2208	0.5109	7.2208	0.438	7.2208	0.3681
7.5646	1.274	7.5646	0.7455	7.5646	0.6309	7.5646	0.5254	7.5646	0.5092	7.5646	0.438	7.5646	0.3681
7.9248	1.274	7.9248	0.6003	7.9248	0.5494	7.9248	0.5064	7.9248	0.471	7.9248	0.4168	7.9248	0.3609
8.3022	1.274	8.3022	0.5659	8.3022	0.4849	8.3022	0.454	8.3022	0.4288	8.3022	0.394	8.3022	0.3594
8.6975	1.0027	8.6975	0.521	8.6975	0.4849	8.6975	0.454	8.6975	0.4288	8.6975	0.3913	8.6975	0.3536
9.1116	1.0027	9.1116	0.4701	9.1116	0.4386	9.1116	0.4105	9.1116	0.3865	9.1116	0.3654	9.1116	0.3376
9.5455	1.0027	9.5455	0.4494	9.5455	0.4069	9.5455	0.3794	9.5455	0.3652	9.5455	0.3418	9.5455	0.3167
10	0.6463	10	0.4494	10	0.4069	10	0.3794	10	0.3585	10	0.3293	10	0.3015
10.4762	0.6411	10.4762	0.4371	10.4762	0.3959	10.4762	0.3648	10.4762	0.347	10.4762	0.3169	10.4762	0.2936
10.975	0.6411	10.975	0.4085	10.975	0.3668	10.975	0.3387	10.975	0.3179	10.975	0.2923	10.975	0.2891
11.4976	0.6411	11.4976	0.3647	11.4976	0.3304	11.4976	0.3133	11.4976	0.3024	11.4976	0.2893	11.4976	0.2857
12.045	0.6411	12.045	0.3647	12.045	0.3304	12.045	0.3133	12.045	0.3024	12.045	0.2893	12.045	0.2839
12.6186	0.6411	12.6186	0.3647	12.6186	0.3304	12.6186	0.3133	12.6186	0.3024	12.6186	0.2893	12.6186	0.2831
13.2194	0.6411	13.2194	0.3647	13.2194	0.3304	13.2194	0.3133	13.2194	0.3024	13.2194	0.2893	13.2194	0.2831

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.6411	13.8489	0.3647	13.8489	0.3304	13.8489	0.3133	13.8489	0.3024	13.8489	0.2893	13.8489	0.2831
14.5083	0.6411	14.5083	0.3647	14.5083	0.3304	14.5083	0.3133	14.5083	0.3024	14.5083	0.2893	14.5083	0.2831
15.1991	0.6411	15.1991	0.3647	15.1991	0.3304	15.1991	0.3133	15.1991	0.3024	15.1991	0.2893	15.1991	0.2831
15.9228	0.6411	15.9228	0.3647	15.9228	0.3304	15.9228	0.3133	15.9228	0.3024	15.9228	0.2893	15.9228	0.2831
16.681	0.6411	16.681	0.3647	16.681	0.3304	16.681	0.3133	16.681	0.3024	16.681	0.2893	16.681	0.2831
17.4753	0.6411	17.4753	0.3647	17.4753	0.3304	17.4753	0.3133	17.4753	0.3024	17.4753	0.2893	17.4753	0.2831
18.3074	0.4714	18.3074	0.3284	18.3074	0.3152	18.3074	0.3052	18.3074	0.298	18.3074	0.2893	18.3074	0.2831
19.1791	0.4714	19.1791	0.3088	19.1791	0.2936	19.1791	0.2872	19.1791	0.2851	19.1791	0.2842	19.1791	0.2825
20.0923	0.4714	20.0923	0.3088	20.0923	0.2886	20.0923	0.2865	20.0923	0.2851	20.0923	0.2833	20.0923	0.2814
21.049	0.3824	21.049	0.2877	21.049	0.2842	21.049	0.2843	21.049	0.2836	21.049	0.2819	21.049	0.2801
22.0513	0.3824	22.0513	0.2873	22.0513	0.2834	22.0513	0.2816	22.0513	0.2806	22.0513	0.2795	22.0513	0.2783
23.1013	0.2973	23.1013	0.2832	23.1013	0.2814	23.1013	0.2802	23.1013	0.2793	23.1013	0.2779	23.1013	0.2765
24.2013	0.2947	24.2013	0.2805	24.2013	0.2788	24.2013	0.2776	24.2013	0.2768	24.2013	0.2763	24.2013	0.2756
25.3536	0.288	25.3536	0.2805	25.3536	0.2788	25.3536	0.2776	25.3536	0.2768	25.3536	0.2757	25.3536	0.2749
26.5609	0.288	26.5609	0.2805	26.5609	0.2788	26.5609	0.2776	26.5609	0.2768	26.5609	0.2757	26.5609	0.2747
27.8256	0.2867	27.8256	0.28	27.8256	0.2782	27.8256	0.2771	27.8256	0.2762	27.8256	0.2751	27.8256	0.2741
29.1505	0.2773	29.1505	0.2753	29.1505	0.2749	29.1505	0.2745	29.1505	0.2742	29.1505	0.2738	29.1505	0.2732
30.5386	0.2773	30.5386	0.2727	30.5386	0.2726	30.5386	0.2725	30.5386	0.2724	30.5386	0.2723	30.5386	0.2721
31.9927	0.2707	31.9927	0.271	31.9927	0.271	31.9927	0.2711	31.9927	0.2711	31.9927	0.2712	31.9927	0.2712
33.516	0.2707	33.516	0.2707	33.516	0.2706	33.516	0.2706	33.516	0.2706	33.516	0.2706	33.516	0.2706
35.1119	0.27	35.1119	0.27	35.1119	0.27	35.1119	0.2701	35.1119	0.2701	35.1119	0.2701	35.1119	0.2701
36.7838	0.2695	36.7838	0.2696	36.7838	0.2696	36.7838	0.2696	36.7838	0.2697	36.7838	0.2697	36.7838	0.2697
38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693
40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269
42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2688
44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685
46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683
48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681
50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0375	0.1098	0.0344	0.1098	0.0327	0.1098	0.0312	0.1098	0.0298	0.1098	0.0274	0.1098	0.0252
0.115	0.0375	0.115	0.0344	0.115	0.0327	0.115	0.0312	0.115	0.0299	0.115	0.0277	0.115	0.0258
0.1204	0.0375	0.1204	0.0344	0.1204	0.0331	0.1204	0.0322	0.1204	0.0312	0.1204	0.0294	0.1204	0.0269
0.1262	0.0431	0.1262	0.0397	0.1262	0.0378	0.1262	0.036	0.1262	0.0343	0.1262	0.0314	0.1262	0.0278
0.1322	0.0504	0.1322	0.045	0.1322	0.042	0.1322	0.0393	0.1322	0.0369	0.1322	0.0328	0.1322	0.0281
0.1385	0.056	0.1385	0.0489	0.1385	0.0449	0.1385	0.0414	0.1385	0.0384	0.1385	0.0345	0.1385	0.0303
0.1451	0.0581	0.1451	0.0509	0.1451	0.0475	0.1451	0.0445	0.1451	0.0419	0.1451	0.0375	0.1451	0.0326
0.152	0.0616	0.152	0.0546	0.152	0.0507	0.152	0.0472	0.152	0.0441	0.152	0.0391	0.152	0.0338
0.1592	0.062	0.1592	0.0546	0.1592	0.0507	0.1592	0.0472	0.1592	0.0442	0.1592	0.0397	0.1592	0.0351
0.1668	0.064	0.1668	0.0561	0.1668	0.0518	0.1668	0.0481	0.1668	0.0451	0.1668	0.0403	0.1668	0.0355
0.1748	0.064	0.1748	0.0561	0.1748	0.0518	0.1748	0.0481	0.1748	0.0451	0.1748	0.0403	0.1748	0.0355
0.1831	0.064	0.1831	0.0561	0.1831	0.0518	0.1831	0.0481	0.1831	0.0451	0.1831	0.0403	0.1831	0.0368
0.1918	0.0641	0.1918	0.0562	0.1918	0.0518	0.1918	0.0494	0.1918	0.0476	0.1918	0.0445	0.1918	0.0404
0.2009	0.0642	0.2009	0.0583	0.2009	0.0558	0.2009	0.0534	0.2009	0.0513	0.2009	0.0474	0.2009	0.0424
0.2105	0.0665	0.2105	0.0603	0.2105	0.0575	0.2105	0.0549	0.2105	0.0525	0.2105	0.049	0.2105	0.0449
0.2205	0.078	0.2205	0.0646	0.2205	0.0619	0.2205	0.0595	0.2205	0.0573	0.2205	0.0533	0.2205	0.0484
0.231	0.0933	0.231	0.0774	0.231	0.0694	0.231	0.063	0.231	0.0598	0.231	0.0556	0.231	0.0503
0.242	0.0933	0.242	0.0774	0.242	0.0722	0.242	0.0678	0.242	0.0637	0.242	0.0566	0.242	0.0512
0.2535	0.0933	0.2535	0.0817	0.2535	0.0771	0.2535	0.0729	0.2535	0.0692	0.2535	0.0628	0.2535	0.0552
0.2656	0.0933	0.2656	0.0839	0.2656	0.0794	0.2656	0.0754	0.2656	0.0717	0.2656	0.0653	0.2656	0.0575
0.2783	0.0953	0.2783	0.0846	0.2783	0.0794	0.2783	0.0754	0.2783	0.0717	0.2783	0.0653	0.2783	0.0581
0.2915	0.1186	0.2915	0.0985	0.2915	0.0889	0.2915	0.0814	0.2915	0.0754	0.2915	0.0668	0.2915	0.0594
0.3054	0.1503	0.3054	0.1233	0.3054	0.1096	0.3054	0.0984	0.3054	0.0894	0.3054	0.0758	0.3054	0.0632
0.3199	0.1503	0.3199	0.1233	0.3199	0.1096	0.3199	0.0984	0.3199	0.0894	0.3199	0.0802	0.3199	0.0706
0.3352	0.1503	0.3352	0.1233	0.3352	0.1096	0.3352	0.0984	0.3352	0.0932	0.3352	0.0857	0.3352	0.0762
0.3511	0.1503	0.3511	0.129	0.3511	0.1173	0.3511	0.107	0.3511	0.0997	0.3511	0.0894	0.3511	0.0786
0.3678	0.168	0.3678	0.1438	0.3678	0.1303	0.3678	0.1186	0.3678	0.1121	0.3678	0.1017	0.3678	0.0897
0.3853	0.168	0.3853	0.1438	0.3853	0.1345	0.3853	0.1278	0.3853	0.1218	0.3853	0.1114	0.3853	0.0992
0.4037	0.1939	0.4037	0.1599	0.4037	0.1426	0.4037	0.1306	0.4037	0.1259	0.4037	0.117	0.4037	0.1053
0.4229	0.2367	0.4229	0.1905	0.4229	0.172	0.4229	0.1557	0.4229	0.1416	0.4229	0.1217	0.4229	0.1092
0.4431	0.3089	0.4431	0.2194	0.4431	0.1882	0.4431	0.1671	0.4431	0.1496	0.4431	0.1274	0.4431	0.1099
0.4642	0.3417	0.4642	0.2524	0.4642	0.2138	0.4642	0.1852	0.4642	0.1637	0.4642	0.1345	0.4642	0.1215
0.4863	0.3417	0.4863	0.2561	0.4863	0.221	0.4863	0.1929	0.4863	0.1703	0.4863	0.1411	0.4863	0.1326
0.5094	0.3521	0.5094	0.2655	0.5094	0.2324	0.5094	0.2053	0.5094	0.1831	0.5094	0.15	0.5094	0.1394

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.4094	0.5337	0.277	0.5337	0.2324	0.5337	0.2053	0.5337	0.1831	0.5337	0.1539	0.5337	0.1399
0.5591	0.4094	0.5591	0.277	0.5591	0.2399	0.5591	0.2149	0.5591	0.195	0.5591	0.1656	0.5591	0.1399
0.5857	0.4094	0.5857	0.277	0.5857	0.2401	0.5857	0.2157	0.5857	0.1974	0.5857	0.1686	0.5857	0.144
0.6136	0.4473	0.6136	0.2968	0.6136	0.2443	0.6136	0.2233	0.6136	0.205	0.6136	0.175	0.6136	0.144
0.6428	0.478	0.6428	0.3546	0.6428	0.3004	0.6428	0.2612	0.6428	0.2347	0.6428	0.1989	0.6428	0.1683
0.6734	0.478	0.6734	0.3546	0.6734	0.3004	0.6734	0.2612	0.6734	0.2416	0.6734	0.2168	0.6734	0.1875
0.7055	0.478	0.7055	0.3546	0.7055	0.3004	0.7055	0.2612	0.7055	0.2416	0.7055	0.2187	0.7055	0.1922
0.7391	0.478	0.7391	0.3546	0.7391	0.3004	0.7391	0.2693	0.7391	0.2464	0.7391	0.2187	0.7391	0.1922
0.7743	0.5516	0.7743	0.3957	0.7743	0.3328	0.7743	0.2914	0.7743	0.2681	0.7743	0.2353	0.7743	0.2018
0.8111	0.5516	0.8111	0.3957	0.8111	0.3328	0.8111	0.3036	0.8111	0.2876	0.8111	0.2588	0.8111	0.2241
0.8497	0.5516	0.8497	0.3957	0.8497	0.3328	0.8497	0.312	0.8497	0.2986	0.8497	0.2726	0.8497	0.2377
0.8902	0.5516	0.8902	0.3957	0.8902	0.3658	0.8902	0.3432	0.8902	0.3226	0.8902	0.2872	0.8902	0.2459
0.9326	0.86	0.9326	0.5582	0.9326	0.4625	0.9326	0.4018	0.9326	0.3596	0.9326	0.3042	0.9326	0.2543
0.977	0.86	0.977	0.5582	0.977	0.4625	0.977	0.4042	0.977	0.3641	0.977	0.3081	0.977	0.2635
1.0235	0.9305	1.0235	0.596	1.0235	0.5259	1.0235	0.4813	1.0235	0.4435	1.0235	0.3836	1.0235	0.3273
1.0723	0.9305	1.0723	0.6681	1.0723	0.6026	1.0723	0.5463	1.0723	0.4991	1.0723	0.435	1.0723	0.3728
1.1233	1.3364	1.1233	0.8307	1.1233	0.678	1.1233	0.5832	1.1233	0.5403	1.1233	0.4675	1.1233	0.3994
1.1768	1.3364	1.1768	0.8307	1.1768	0.678	1.1768	0.5853	1.1768	0.5503	1.1768	0.486	1.1768	0.4233
1.2328	1.3364	1.2328	0.8307	1.2328	0.7352	1.2328	0.6585	1.2328	0.5916	1.2328	0.5089	1.2328	0.45
1.2916	1.3364	1.2916	0.8976	1.2916	0.7903	1.2916	0.7004	1.2916	0.6246	1.2916	0.5436	1.2916	0.479
1.353	1.3364	1.353	0.9456	1.353	0.7903	1.353	0.7004	1.353	0.6262	1.353	0.5719	1.353	0.5034
1.4175	1.4619	1.4175	0.9456	1.4175	0.7903	1.4175	0.7004	1.4175	0.6574	1.4175	0.6019	1.4175	0.5319
1.485	1.4619	1.485	0.9456	1.485	0.7903	1.485	0.7283	1.485	0.6958	1.485	0.6359	1.485	0.562
1.5557	1.5117	1.5557	1.0299	1.5557	0.8804	1.5557	0.7761	1.5557	0.7253	1.5557	0.6625	1.5557	0.5874
1.6298	1.815	1.6298	1.1102	1.6298	0.9568	1.6298	0.8641	1.6298	0.7943	1.6298	0.6883	1.6298	0.605
1.7074	1.815	1.7074	1.1102	1.7074	0.9568	1.7074	0.8641	1.7074	0.7943	1.7074	0.703	1.7074	0.6249
1.7887	1.815	1.7887	1.1102	1.7887	0.9568	1.7887	0.8641	1.7887	0.7943	1.7887	0.7234	1.7887	0.6496
1.8738	1.815	1.8738	1.1102	1.8738	0.9568	1.8738	0.8669	1.8738	0.8279	1.8738	0.7584	1.8738	0.6712
1.963	1.815	1.963	1.1102	1.963	0.9568	1.963	0.8979	1.963	0.8532	1.963	0.7761	1.963	0.6839
2.0565	1.7425	2.0565	1.0955	2.0565	0.961	2.0565	0.9033	2.0565	0.8536	2.0565	0.7761	2.0565	0.6839
2.1544	1.7425	2.1544	1.0955	2.1544	0.961	2.1544	0.9033	2.1544	0.8536	2.1544	0.7761	2.1544	0.6839
2.257	1.515	2.257	1.0774	2.257	0.961	2.257	0.9033	2.257	0.8536	2.257	0.7761	2.257	0.6839
2.3645	1.515	2.3645	1.0774	2.3645	0.961	2.3645	0.9033	2.3645	0.8536	2.3645	0.7761	2.3645	0.6839
2.4771	1.515	2.4771	1.0774	2.4771	1.0152	2.4771	0.9033	2.4771	0.8536	2.4771	0.7713	2.4771	0.6886
2.595	1.515	2.595	1.0774	2.595	1.0152	2.595	0.9033	2.595	0.8536	2.595	0.7713	2.595	0.6927

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	1.515	2.7186	1.0774	2.7186	1.0152	2.7186	0.9033	2.7186	0.8536	2.7186	0.7713	2.7186	0.6934
2.848	1.515	2.848	1.0774	2.848	1.0152	2.848	0.9033	2.848	0.8536	2.848	0.7713	2.848	0.6934
2.9836	1.515	2.9836	1.0774	2.9836	1.0152	2.9836	0.9033	2.9836	0.8536	2.9836	0.7713	2.9836	0.6934
3.1257	1.515	3.1257	1.0774	3.1257	1.0152	3.1257	0.9033	3.1257	0.8536	3.1257	0.7713	3.1257	0.6934
3.2745	1.515	3.2745	1.0774	3.2745	1.0152	3.2745	0.9033	3.2745	0.8536	3.2745	0.7713	3.2745	0.6934
3.4305	1.515	3.4305	1.0774	3.4305	1.0152	3.4305	0.9033	3.4305	0.8536	3.4305	0.7713	3.4305	0.692
3.5938	1.7924	3.5938	1.0774	3.5938	1.0152	3.5938	0.9033	3.5938	0.8536	3.5938	0.7713	3.5938	0.6916
3.7649	1.7924	3.7649	1.0921	3.7649	1.0152	3.7649	0.9076	3.7649	0.8536	3.7649	0.7713	3.7649	0.6893
3.9442	1.7924	3.9442	1.0921	3.9442	1.0628	3.9442	0.9721	3.9442	0.9001	3.9442	0.7901	3.9442	0.6893
4.132	1.7924	4.132	1.0921	4.132	1.0628	4.132	0.9721	4.132	0.9001	4.132	0.7901	4.132	0.6876
4.3288	1.7924	4.3288	1.0921	4.3288	1.0628	4.3288	0.9721	4.3288	0.9001	4.3288	0.7901	4.3288	0.6805
4.5349	1.7924	4.5349	1.0921	4.5349	1.0628	4.5349	0.9721	4.5349	0.9001	4.5349	0.7901	4.5349	0.676
4.7508	1.7924	4.7508	1.0921	4.7508	1.0628	4.7508	0.9721	4.7508	0.9001	4.7508	0.7901	4.7508	0.6736
4.977	1.7924	4.977	1.0921	4.977	0.9506	4.977	0.8979	4.977	0.8494	4.977	0.7652	4.977	0.6688
5.214	1.7924	5.214	1.0921	5.214	0.9383	5.214	0.8718	5.214	0.8233	5.214	0.7464	5.214	0.654
5.4623	2.0429	5.4623	1.0921	5.4623	0.9383	5.4623	0.8718	5.4623	0.8233	5.4623	0.7464	5.4623	0.654
5.7224	2.0429	5.7224	1.0974	5.7224	0.9383	5.7224	0.8718	5.7224	0.8233	5.7224	0.7464	5.7224	0.654
5.9948	2.0429	5.9948	1.0974	5.9948	0.9383	5.9948	0.8718	5.9948	0.8233	5.9948	0.7464	5.9948	0.654
6.2803	2.0429	6.2803	1.0974	6.2803	0.9383	6.2803	0.8718	6.2803	0.8233	6.2803	0.7464	6.2803	0.654
6.5793	2.0429	6.5793	1.0974	6.5793	0.9383	6.5793	0.8718	6.5793	0.8218	6.5793	0.7401	6.5793	0.6457
6.8926	2.0429	6.8926	1.0974	6.8926	0.9383	6.8926	0.852	6.8926	0.7921	6.8926	0.7107	6.8926	0.6236
7.2208	1.6443	7.2208	1.0312	7.2208	0.8872	7.2208	0.8236	7.2208	0.7712	7.2208	0.6856	7.2208	0.6178
7.5646	1.3629	7.5646	0.9367	7.5646	0.8389	7.5646	0.785	7.5646	0.7436	7.5646	0.6831	7.5646	0.6178
7.9248	1.3378	7.9248	0.8974	7.9248	0.827	7.9248	0.7757	7.9248	0.7347	7.9248	0.6707	7.9248	0.604
8.3022	1.3378	8.3022	0.8407	8.3022	0.7713	8.3022	0.7153	8.3022	0.6828	8.3022	0.6374	8.3022	0.5873
8.6975	0.9422	8.6975	0.6767	8.6975	0.6523	8.6975	0.6296	8.6975	0.6076	8.6975	0.5724	8.6975	0.5488
9.1116	0.9081	9.1116	0.6623	9.1116	0.6141	9.1116	0.5759	9.1116	0.551	9.1116	0.5261	9.1116	0.5145
9.5455	0.9081	9.5455	0.6266	9.5455	0.5795	9.5455	0.5505	9.5455	0.5315	9.5455	0.5085	9.5455	0.4961
10	0.8734	10	0.6266	10	0.5795	10	0.5505	10	0.5315	10	0.5083	10	0.4875
10.4762	0.7653	10.4762	0.5513	10.4762	0.528	10.4762	0.5125	10.4762	0.5017	10.4762	0.4862	10.4762	0.4714
10.975	0.7298	10.975	0.5252	10.975	0.5066	10.975	0.4911	10.975	0.479	10.975	0.4624	10.975	0.4529
11.4976	0.7298	11.4976	0.5252	11.4976	0.5066	11.4976	0.4911	11.4976	0.479	11.4976	0.4624	11.4976	0.4475
12.045	0.7298	12.045	0.5252	12.045	0.5066	12.045	0.4911	12.045	0.479	12.045	0.4624	12.045	0.4475
12.6186	0.7298	12.6186	0.516	12.6186	0.4966	12.6186	0.483	12.6186	0.4727	12.6186	0.4569	12.6186	0.4415
13.2194	0.7298	13.2194	0.516	13.2194	0.4659	13.2194	0.4393	13.2194	0.438	13.2194	0.4349	13.2194	0.4272

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.7298	13.8489	0.516	13.8489	0.4659	13.8489	0.4388	13.8489	0.4278	13.8489	0.4202	13.8489	0.4132
14.5083	0.7298	14.5083	0.516	14.5083	0.4659	14.5083	0.4388	14.5083	0.4278	14.5083	0.4164	14.5083	0.4056
15.1991	0.7298	15.1991	0.516	15.1991	0.4659	15.1991	0.4388	15.1991	0.4209	15.1991	0.4033	15.1991	0.3946
15.9228	0.7298	15.9228	0.516	15.9228	0.4659	15.9228	0.4388	15.9228	0.4209	15.9228	0.4007	15.9228	0.3861
16.681	0.7298	16.681	0.516	16.681	0.4659	16.681	0.4388	16.681	0.4209	16.681	0.4007	16.681	0.3861
17.4753	0.7298	17.4753	0.516	17.4753	0.4659	17.4753	0.4388	17.4753	0.4209	17.4753	0.4007	17.4753	0.3861
18.3074	0.7298	18.3074	0.516	18.3074	0.4659	18.3074	0.4388	18.3074	0.4209	18.3074	0.4007	18.3074	0.3861
19.1791	0.8702	19.1791	0.516	19.1791	0.4659	19.1791	0.4388	19.1791	0.4209	19.1791	0.4007	19.1791	0.3861
20.0923	0.8702	20.0923	0.516	20.0923	0.4659	20.0923	0.4388	20.0923	0.4209	20.0923	0.4007	20.0923	0.3861
21.049	0.8702	21.049	0.516	21.049	0.4659	21.049	0.4388	21.049	0.4209	21.049	0.4007	21.049	0.3861
22.0513	0.8702	22.0513	0.516	22.0513	0.4659	22.0513	0.4388	22.0513	0.4209	22.0513	0.4007	22.0513	0.3835
23.1013	0.8702	23.1013	0.516	23.1013	0.4659	23.1013	0.4388	23.1013	0.4209	23.1013	0.4007	23.1013	0.3835
24.2013	0.7893	24.2013	0.5103	24.2013	0.4659	24.2013	0.4388	24.2013	0.4209	24.2013	0.3995	24.2013	0.3835
25.3536	0.7893	25.3536	0.4648	25.3536	0.4175	25.3536	0.405	25.3536	0.4012	25.3536	0.3926	25.3536	0.3817
26.5609	0.7893	26.5609	0.4648	26.5609	0.4175	26.5609	0.3899	26.5609	0.38	26.5609	0.3779	26.5609	0.3729
27.8256	0.4998	27.8256	0.4141	27.8256	0.3879	27.8256	0.3762	27.8256	0.3726	27.8256	0.3682	27.8256	0.3643
29.1505	0.4217	29.1505	0.3866	29.1505	0.3763	29.1505	0.3678	29.1505	0.3612	29.1505	0.3558	29.1505	0.3554
30.5386	0.4217	30.5386	0.3633	30.5386	0.3554	30.5386	0.3517	30.5386	0.3499	30.5386	0.3485	30.5386	0.348
31.9927	0.3545	31.9927	0.3404	31.9927	0.3386	31.9927	0.3376	31.9927	0.3374	31.9927	0.3399	31.9927	0.3417
33.516	0.3442	33.516	0.3404	33.516	0.3386	33.516	0.3376	33.516	0.3371	33.516	0.3365	33.516	0.3379
35.1119	0.3392	35.1119	0.3385	35.1119	0.338	35.1119	0.3376	35.1119	0.3371	35.1119	0.3365	35.1119	0.3359
36.7838	0.3368	36.7838	0.3366	36.7838	0.3364	36.7838	0.3362	36.7838	0.336	36.7838	0.3356	36.7838	0.3352
38.5353	0.3351	38.5353	0.335	38.5353	0.3349	38.5353	0.3348	38.5353	0.3347	38.5353	0.3345	38.5353	0.3343
40.3702	0.3338	40.3702	0.3337	40.3702	0.3336	40.3702	0.3336	40.3702	0.3336	40.3702	0.3334	40.3702	0.3333
42.2924	0.3326	42.2924	0.3326	42.2924	0.3325	42.2924	0.3325	42.2924	0.3325	42.2924	0.3324	42.2924	0.3323
44.3062	0.3316	44.3062	0.3316	44.3062	0.3316	44.3062	0.3316	44.3062	0.3315	44.3062	0.3315	44.3062	0.3315
46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307
48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299
50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3292

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0404	0.1098	0.0365	0.1098	0.0342	0.1098	0.0321	0.1098	0.0303	0.1098	0.0271	0.1098	0.0235
0.115	0.0404	0.115	0.0365	0.115	0.0342	0.115	0.0321	0.115	0.0303	0.115	0.0271	0.115	0.0256
0.1204	0.0404	0.1204	0.0365	0.1204	0.0342	0.1204	0.0321	0.1204	0.0309	0.1204	0.0295	0.1204	0.0277
0.1262	0.0404	0.1262	0.0365	0.1262	0.0351	0.1262	0.0342	0.1262	0.0332	0.1262	0.0315	0.1262	0.0295
0.1322	0.0404	0.1322	0.0381	0.1322	0.0369	0.1322	0.0357	0.1322	0.0347	0.1322	0.0331	0.1322	0.0315
0.1385	0.0409	0.1385	0.039	0.1385	0.0379	0.1385	0.037	0.1385	0.0361	0.1385	0.0346	0.1385	0.0327
0.1451	0.0416	0.1451	0.0397	0.1451	0.0386	0.1451	0.0376	0.1451	0.0367	0.1451	0.0352	0.1451	0.0332
0.152	0.0439	0.152	0.0401	0.152	0.0386	0.152	0.0376	0.152	0.0367	0.152	0.0352	0.152	0.0332
0.1592	0.0462	0.1592	0.0416	0.1592	0.0395	0.1592	0.0376	0.1592	0.0367	0.1592	0.0352	0.1592	0.0332
0.1668	0.0584	0.1668	0.0505	0.1668	0.0462	0.1668	0.0426	0.1668	0.0394	0.1668	0.0352	0.1668	0.0332
0.1748	0.0644	0.1748	0.0566	0.1748	0.0521	0.1748	0.0483	0.1748	0.045	0.1748	0.0394	0.1748	0.0332
0.1831	0.0667	0.1831	0.0582	0.1831	0.0541	0.1831	0.0504	0.1831	0.047	0.1831	0.0414	0.1831	0.0353
0.1918	0.0678	0.1918	0.0585	0.1918	0.0542	0.1918	0.0506	0.1918	0.0473	0.1918	0.0417	0.1918	0.0379
0.2009	0.0697	0.2009	0.0595	0.2009	0.0542	0.2009	0.0511	0.2009	0.0484	0.2009	0.0434	0.2009	0.041
0.2105	0.0721	0.2105	0.0618	0.2105	0.0579	0.2105	0.0545	0.2105	0.0514	0.2105	0.0481	0.2105	0.0444
0.2205	0.0818	0.2205	0.0709	0.2205	0.0651	0.2205	0.0599	0.2205	0.0573	0.2205	0.053	0.2205	0.0474
0.231	0.0958	0.231	0.0791	0.231	0.0703	0.231	0.0666	0.231	0.0631	0.231	0.0572	0.231	0.0519
0.242	0.098	0.242	0.0843	0.242	0.0773	0.242	0.0714	0.242	0.0675	0.242	0.0613	0.242	0.0546
0.2535	0.1056	0.2535	0.091	0.2535	0.083	0.2535	0.0759	0.2535	0.0699	0.2535	0.0613	0.2535	0.0546
0.2656	0.1138	0.2656	0.0945	0.2656	0.0842	0.2656	0.0759	0.2656	0.0699	0.2656	0.0613	0.2656	0.0546
0.2783	0.1138	0.2783	0.0945	0.2783	0.0842	0.2783	0.0778	0.2783	0.0737	0.2783	0.067	0.2783	0.06
0.2915	0.1138	0.2915	0.1001	0.2915	0.0939	0.2915	0.0884	0.2915	0.0835	0.2915	0.0753	0.2915	0.0664
0.3054	0.1172	0.3054	0.1049	0.3054	0.0979	0.3054	0.0918	0.3054	0.0864	0.3054	0.0776	0.3054	0.0687
0.3199	0.1172	0.3199	0.1049	0.3199	0.0979	0.3199	0.0918	0.3199	0.0881	0.3199	0.0829	0.3199	0.0766
0.3352	0.1172	0.3352	0.1085	0.3352	0.1042	0.3352	0.1003	0.3352	0.0967	0.3352	0.0904	0.3352	0.083
0.3511	0.1645	0.3511	0.128	0.3511	0.1118	0.3511	0.1061	0.3511	0.102	0.3511	0.095	0.3511	0.0868
0.3678	0.2408	0.3678	0.1827	0.3678	0.1561	0.3678	0.1359	0.3678	0.1205	0.3678	0.0995	0.3678	0.0869
0.3853	0.2539	0.3853	0.1862	0.3853	0.1588	0.3853	0.138	0.3853	0.1255	0.3853	0.1079	0.3853	0.0897
0.4037	0.2539	0.4037	0.1862	0.4037	0.1588	0.4037	0.138	0.4037	0.1261	0.4037	0.1142	0.4037	0.102
0.4229	0.2539	0.4229	0.1862	0.4229	0.1641	0.4229	0.1478	0.4229	0.1338	0.4229	0.122	0.4229	0.1107
0.4431	0.3276	0.4431	0.2318	0.4431	0.2019	0.4431	0.1796	0.4431	0.1626	0.4431	0.1389	0.4431	0.1174
0.4642	0.3276	0.4642	0.2318	0.4642	0.2019	0.4642	0.1796	0.4642	0.1626	0.4642	0.1389	0.4642	0.1174
0.4863	0.3276	0.4863	0.2318	0.4863	0.2019	0.4863	0.1796	0.4863	0.1626	0.4863	0.1415	0.4863	0.1242
0.5094	0.3276	0.5094	0.2318	0.5094	0.2019	0.5094	0.1796	0.5094	0.1626	0.5094	0.1475	0.5094	0.1293
0.5337	0.3338	0.5337	0.2366	0.5337	0.2061	0.5337	0.1882	0.5337	0.1776	0.5337	0.1596	0.5337	0.1387
0.5591	0.3945	0.5591	0.2731	0.5591	0.2401	0.5591	0.2143	0.5591	0.1954	0.5591	0.171	0.5591	0.1533
0.5857	0.3945	0.5857	0.2819	0.5857	0.2531	0.5857	0.229	0.5857	0.2088	0.5857	0.1825	0.5857	0.1694

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.6136	0.3945	0.6136	0.2819	0.6136	0.2531	0.6136	0.229	0.6136	0.2088	0.6136	0.1962	0.6136	0.1818
0.6428	0.3945	0.6428	0.2819	0.6428	0.2531	0.6428	0.229	0.6428	0.2176	0.6428	0.2071	0.6428	0.1923
0.6734	0.4051	0.6734	0.2819	0.6734	0.2545	0.6734	0.2401	0.6734	0.2329	0.6734	0.2199	0.6734	0.2038
0.7055	0.4051	0.7055	0.2964	0.7055	0.271	0.7055	0.2595	0.7055	0.2495	0.7055	0.2325	0.7055	0.2132
0.7391	0.6253	0.7391	0.4092	0.7391	0.3339	0.7391	0.2852	0.7391	0.2678	0.7391	0.2386	0.7391	0.2148
0.7743	0.6253	0.7743	0.4092	0.7743	0.3339	0.7743	0.2977	0.7743	0.2799	0.7743	0.2506	0.7743	0.2178
0.8111	0.6459	0.8111	0.4284	0.8111	0.373	0.8111	0.3304	0.8111	0.2973	0.8111	0.2507	0.8111	0.2178
0.8497	0.6459	0.8497	0.4295	0.8497	0.3929	0.8497	0.3623	0.8497	0.3363	0.8497	0.2936	0.8497	0.2475
0.8902	0.6685	0.8902	0.436	0.8902	0.3929	0.8902	0.3623	0.8902	0.3395	0.8902	0.3086	0.8902	0.2662
0.9326	0.715	0.9326	0.5019	0.9326	0.4411	0.9326	0.3968	0.9326	0.3633	0.9326	0.3158	0.9326	0.2706
0.977	0.9571	0.977	0.6109	0.977	0.5027	0.977	0.4349	0.977	0.3889	0.977	0.3313	0.977	0.2835
1.0235	0.9571	1.0235	0.6109	1.0235	0.5406	1.0235	0.4899	1.0235	0.4478	1.0235	0.3835	1.0235	0.3191
1.0723	0.9571	1.0723	0.629	1.0723	0.5623	1.0723	0.5069	1.0723	0.4603	1.0723	0.3954	1.0723	0.3351
1.1233	1.2112	1.1233	0.8095	1.1233	0.677	1.1233	0.5824	1.1233	0.5124	1.1233	0.4175	1.1233	0.3358
1.1768	1.2112	1.1768	0.8095	1.1768	0.677	1.1768	0.5824	1.1768	0.5124	1.1768	0.42	1.1768	0.3516
1.2328	1.2112	1.2328	0.8776	1.2328	0.7698	1.2328	0.6846	1.2328	0.6149	1.2328	0.5095	1.2328	0.4049
1.2916	1.2112	1.2916	0.9725	1.2916	0.8448	1.2916	0.7451	1.2916	0.6651	1.2916	0.5458	1.2916	0.4303
1.353	1.2406	1.353	0.9725	1.353	0.8448	1.353	0.7451	1.353	0.6651	1.353	0.5458	1.353	0.4328
1.4175	1.4927	1.4175	1.0398	1.4175	0.8977	1.4175	0.7987	1.4175	0.7236	1.4175	0.6126	1.4175	0.5041
1.485	1.4927	1.485	1.0398	1.485	0.8977	1.485	0.8136	1.485	0.7581	1.485	0.6601	1.485	0.5488
1.5557	1.7257	1.5557	1.093	1.5557	0.9164	1.5557	0.8185	1.5557	0.7581	1.5557	0.6679	1.5557	0.5679
1.6298	1.7649	1.6298	1.1715	1.6298	1.0429	1.6298	0.9398	1.6298	0.8509	1.6298	0.7168	1.6298	0.5845
1.7074	1.7649	1.7074	1.1911	1.7074	1.1181	1.7074	1.0082	1.7074	0.9156	1.7074	0.7654	1.7074	0.6266
1.7887	2.1543	1.7887	1.1911	1.7887	1.1181	1.7887	1.0082	1.7887	0.9156	1.7887	0.7791	1.7887	0.663
1.8738	2.1543	1.8738	1.1911	1.8738	1.1181	1.8738	1.0082	1.8738	0.9156	1.8738	0.8133	1.8738	0.691
1.963	2.1543	1.963	1.1911	1.963	1.1181	1.963	1.0086	1.963	0.9469	1.963	0.8387	1.963	0.7107
2.0565	2.1543	2.0565	1.1911	2.0565	1.1181	2.0565	1.0239	2.0565	0.9641	2.0565	0.8545	2.0565	0.7208
2.1544	2.1543	2.1544	1.1911	2.1544	1.1641	2.1544	1.0719	2.1544	0.993	2.1544	0.8646	2.1544	0.7434
2.257	1.9859	2.257	1.2401	2.257	1.1641	2.257	1.0719	2.257	0.993	2.257	0.8753	2.257	0.7534
2.3645	1.9859	2.3645	1.2401	2.3645	1.1641	2.3645	1.0719	2.3645	0.993	2.3645	0.8753	2.3645	0.7534
2.4771	1.9859	2.4771	1.3882	2.4771	1.1641	2.4771	1.0719	2.4771	0.993	2.4771	0.8753	2.4771	0.7534
2.595	1.838	2.595	1.3882	2.595	1.1641	2.595	1.0719	2.595	0.993	2.595	0.8753	2.595	0.7534
2.7186	1.838	2.7186	1.3882	2.7186	1.1614	2.7186	1.0549	2.7186	0.9795	2.7186	0.8753	2.7186	0.7534
2.848	1.838	2.848	1.3882	2.848	1.1614	2.848	1.0498	2.848	0.9795	2.848	0.8675	2.848	0.7385
2.9836	1.838	2.9836	1.3882	2.9836	1.1614	2.9836	1.0498	2.9836	0.9618	2.9836	0.8311	2.9836	0.6992
3.1257	1.838	3.1257	1.1633	3.1257	0.9244	3.1257	0.8554	3.1257	0.8062	3.1257	0.728	3.1257	0.6366
3.2745	1.7993	3.2745	1.0437	3.2745	0.8857	3.2745	0.7926	3.2745	0.7237	3.2745	0.6347	3.2745	0.5767
3.4305	1.2506	3.4305	0.8608	3.4305	0.774	3.4305	0.7077	3.4305	0.6696	3.4305	0.5994	3.4305	0.5377

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
3.5938	1.2506	3.5938	0.826	3.5938	0.7467	3.5938	0.6903	3.5938	0.6397	3.5938	0.5691	3.5938	0.503
3.7649	1.2506	3.7649	0.8108	3.7649	0.7467	3.7649	0.6903	3.7649	0.6397	3.7649	0.5581	3.7649	0.4924
3.9442	1.2506	3.9442	0.7736	3.9442	0.7467	3.9442	0.6903	3.9442	0.6397	3.9442	0.5581	3.9442	0.4924
4.132	1.2506	4.132	0.7736	4.132	0.7467	4.132	0.6903	4.132	0.6397	4.132	0.5581	4.132	0.4924
4.3288	1.2506	4.3288	0.7736	4.3288	0.7467	4.3288	0.6903	4.3288	0.6397	4.3288	0.5581	4.3288	0.4759
4.5349	1.2506	4.5349	0.7736	4.5349	0.7467	4.5349	0.6903	4.5349	0.6397	4.5349	0.5581	4.5349	0.4759
4.7508	1.2506	4.7508	0.7736	4.7508	0.7467	4.7508	0.6903	4.7508	0.6397	4.7508	0.5581	4.7508	0.4759
4.977	1.2506	4.977	0.7736	4.977	0.7467	4.977	0.6903	4.977	0.6397	4.977	0.5581	4.977	0.4759
5.214	1.2506	5.214	0.7736	5.214	0.7467	5.214	0.6903	5.214	0.6397	5.214	0.5581	5.214	0.4759
5.4623	1.2506	5.4623	0.7736	5.4623	0.7467	5.4623	0.6903	5.4623	0.6397	5.4623	0.5581	5.4623	0.4759
5.7224	1.3691	5.7224	0.7736	5.7224	0.7467	5.7224	0.6903	5.7224	0.6397	5.7224	0.5581	5.7224	0.4759
5.9948	1.3691	5.9948	0.7736	5.9948	0.7467	5.9948	0.6903	5.9948	0.6397	5.9948	0.5581	5.9948	0.4759
6.2803	1.3691	6.2803	0.7736	6.2803	0.7467	6.2803	0.6903	6.2803	0.6397	6.2803	0.5581	6.2803	0.4759
6.5793	1.3691	6.5793	0.7736	6.5793	0.6755	6.5793	0.6357	6.5793	0.6231	6.5793	0.5476	6.5793	0.4759
6.8926	1.3691	6.8926	0.7736	6.8926	0.6755	6.8926	0.6357	6.8926	0.6231	6.8926	0.5452	6.8926	0.4683
7.2208	1.3691	7.2208	0.7253	7.2208	0.6201	7.2208	0.5644	7.2208	0.5427	7.2208	0.503	7.2208	0.4505
7.5646	1.3691	7.5646	0.7065	7.5646	0.6004	7.5646	0.5644	7.5646	0.5365	7.5646	0.4909	7.5646	0.436
7.9248	1.3691	7.9248	0.6416	7.9248	0.5598	7.9248	0.5335	7.9248	0.509	7.9248	0.4659	7.9248	0.4264
8.3022	1.3691	8.3022	0.6416	8.3022	0.556	8.3022	0.5083	8.3022	0.486	8.3022	0.454	8.3022	0.4264
8.6975	1.0067	8.6975	0.5785	8.6975	0.5365	8.6975	0.5083	8.6975	0.486	8.6975	0.454	8.6975	0.4229
9.1116	1.0067	9.1116	0.5785	9.1116	0.5203	9.1116	0.4913	9.1116	0.4686	9.1116	0.4364	9.1116	0.4147
9.5455	1.0067	9.5455	0.5785	9.5455	0.5203	9.5455	0.4913	9.5455	0.4686	9.5455	0.4364	9.5455	0.4101
10	0.7958	10	0.5553	10	0.5203	10	0.4913	10	0.4686	10	0.4364	10	0.4073
10.4762	0.7386	10.4762	0.4651	10.4762	0.4518	10.4762	0.4415	10.4762	0.4329	10.4762	0.4181	10.4762	0.3995
10.975	0.5938	10.975	0.4522	10.975	0.4338	10.975	0.4223	10.975	0.4154	10.975	0.4045	10.975	0.3897
11.4976	0.5139	11.4976	0.4522	11.4976	0.4338	11.4976	0.422	11.4976	0.4137	11.4976	0.4011	11.4976	0.3866
12.045	0.5	12.045	0.4195	12.045	0.4106	12.045	0.4049	12.045	0.4002	12.045	0.3914	12.045	0.3794
12.6186	0.5	12.6186	0.4087	12.6186	0.4008	12.6186	0.3948	12.6186	0.3897	12.6186	0.3812	12.6186	0.3706
13.2194	0.5	13.2194	0.3855	13.2194	0.3801	13.2194	0.3771	13.2194	0.3744	13.2194	0.3688	13.2194	0.3604
13.8489	0.5	13.8489	0.3777	13.8489	0.3691	13.8489	0.3663	13.8489	0.3634	13.8489	0.3575	13.8489	0.3497
14.5083	0.5	14.5083	0.3777	14.5083	0.3639	14.5083	0.3557	14.5083	0.3504	14.5083	0.3441	14.5083	0.3379
15.1991	0.5	15.1991	0.3523	15.1991	0.3413	15.1991	0.3407	15.1991	0.3396	15.1991	0.3366	15.1991	0.3315
15.9228	0.5	15.9228	0.3523	15.9228	0.3412	15.9228	0.3382	15.9228	0.3365	15.9228	0.3326	15.9228	0.3271
16.681	0.5	16.681	0.3523	16.681	0.3412	16.681	0.3355	16.681	0.3317	16.681	0.3266	16.681	0.3214
17.4753	0.5	17.4753	0.3351	17.4753	0.325	17.4753	0.321	17.4753	0.319	17.4753	0.3167	17.4753	0.3142
18.3074	0.5	18.3074	0.3274	18.3074	0.315	18.3074	0.3103	18.3074	0.3078	18.3074	0.3085	18.3074	0.3079
19.1791	0.5	19.1791	0.3274	19.1791	0.315	19.1791	0.3103	19.1791	0.3078	19.1791	0.3055	19.1791	0.3039
20.0923	0.5	20.0923	0.3274	20.0923	0.308	20.0923	0.3058	20.0923	0.3038	20.0923	0.302	20.0923	0.3007

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
21.049	0.5	21.049	0.3274	21.049	0.308	21.049	0.3058	21.049	0.3038	21.049	0.3009	21.049	0.2981
22.0513	0.5	22.0513	0.3274	22.0513	0.304	22.0513	0.3018	22.0513	0.3	22.0513	0.2973	22.0513	0.2949
23.1013	0.3991	23.1013	0.3036	23.1013	0.2994	23.1013	0.297	23.1013	0.2955	23.1013	0.2936	23.1013	0.2918
24.2013	0.3991	24.2013	0.3007	24.2013	0.294	24.2013	0.2912	24.2013	0.2902	24.2013	0.2896	24.2013	0.2887
25.3536	0.3991	25.3536	0.3007	25.3536	0.294	25.3536	0.2912	25.3536	0.2902	25.3536	0.2886	25.3536	0.2871
26.5609	0.3991	26.5609	0.3007	26.5609	0.294	26.5609	0.2907	26.5609	0.2888	26.5609	0.2868	26.5609	0.2852
27.8256	0.3991	27.8256	0.2989	27.8256	0.2931	27.8256	0.2896	27.8256	0.2872	27.8256	0.2843	27.8256	0.2831
29.1505	0.3991	29.1505	0.2989	29.1505	0.2931	29.1505	0.2896	29.1505	0.2872	29.1505	0.2843	29.1505	0.282
30.5386	0.3399	30.5386	0.2901	30.5386	0.2875	30.5386	0.2855	30.5386	0.284	30.5386	0.2817	30.5386	0.2796
31.9927	0.2956	31.9927	0.2753	31.9927	0.2743	31.9927	0.2755	31.9927	0.2761	31.9927	0.2765	31.9927	0.2762
33.516	0.2753	33.516	0.2729	33.516	0.2727	33.516	0.2728	33.516	0.2729	33.516	0.2732	33.516	0.2734
35.1119	0.2708	35.1119	0.2709	35.1119	0.271	35.1119	0.2711	35.1119	0.2711	35.1119	0.2712	35.1119	0.2714
36.7838	0.2688	36.7838	0.2691	36.7838	0.2692	36.7838	0.2693	36.7838	0.2694	36.7838	0.2696	36.7838	0.2697
38.5353	0.2675	38.5353	0.2677	38.5353	0.2679	38.5353	0.268	38.5353	0.268	38.5353	0.2682	38.5353	0.2684
40.3702	0.2666	40.3702	0.2668	40.3702	0.2669	40.3702	0.2669	40.3702	0.267	40.3702	0.2672	40.3702	0.2673
42.2924	0.2659	42.2924	0.266	42.2924	0.2661	42.2924	0.2661	42.2924	0.2662	42.2924	0.2663	42.2924	0.2664
44.3062	0.2653	44.3062	0.2654	44.3062	0.2654	44.3062	0.2654	44.3062	0.2655	44.3062	0.2655	44.3062	0.2657
46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2649	46.4159	0.265
48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2644
50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0291	0.1098	0.026	0.1098	0.0244	0.1098	0.023	0.1098	0.0221	0.1098	0.0214	0.1098	0.0205
0.115	0.0309	0.115	0.026	0.115	0.0244	0.115	0.0234	0.115	0.023	0.115	0.0222	0.115	0.0212
0.1204	0.0313	0.1204	0.0263	0.1204	0.0246	0.1204	0.0241	0.1204	0.0236	0.1204	0.0228	0.1204	0.0218
0.1262	0.0313	0.1262	0.0269	0.1262	0.0257	0.1262	0.0245	0.1262	0.024	0.1262	0.0233	0.1262	0.0224
0.1322	0.0313	0.1322	0.0271	0.1322	0.0258	0.1322	0.0248	0.1322	0.0244	0.1322	0.0236	0.1322	0.0226
0.1385	0.0313	0.1385	0.0277	0.1385	0.0265	0.1385	0.0255	0.1385	0.0246	0.1385	0.0236	0.1385	0.0226
0.1451	0.0316	0.1451	0.0295	0.1451	0.0283	0.1451	0.0271	0.1451	0.0261	0.1451	0.0241	0.1451	0.0226
0.152	0.032	0.152	0.0299	0.152	0.0286	0.152	0.0274	0.152	0.0262	0.152	0.0241	0.152	0.0226
0.1592	0.033	0.1592	0.0311	0.1592	0.0299	0.1592	0.0288	0.1592	0.0278	0.1592	0.0261	0.1592	0.0243
0.1668	0.0367	0.1668	0.0323	0.1668	0.0312	0.1668	0.0302	0.1668	0.0293	0.1668	0.0277	0.1668	0.0257
0.1748	0.0507	0.1748	0.0427	0.1748	0.0385	0.1748	0.035	0.1748	0.0321	0.1748	0.0285	0.1748	0.0265
0.1831	0.0586	0.1831	0.0493	0.1831	0.0442	0.1831	0.0399	0.1831	0.0362	0.1831	0.0305	0.1831	0.0266
0.1918	0.0586	0.1918	0.0493	0.1918	0.0442	0.1918	0.0399	0.1918	0.0362	0.1918	0.0305	0.1918	0.0269
0.2009	0.0586	0.2009	0.0493	0.2009	0.0442	0.2009	0.0399	0.2009	0.0362	0.2009	0.0326	0.2009	0.0299
0.2105	0.0586	0.2105	0.0493	0.2105	0.0442	0.2105	0.0401	0.2105	0.0386	0.2105	0.0361	0.2105	0.0327
0.2205	0.0586	0.2205	0.0493	0.2205	0.0454	0.2205	0.0427	0.2205	0.0409	0.2205	0.038	0.2205	0.0341
0.231	0.0586	0.231	0.0493	0.231	0.0457	0.231	0.0438	0.231	0.042	0.231	0.0388	0.231	0.0354
0.242	0.0586	0.242	0.0509	0.242	0.0486	0.242	0.0465	0.242	0.0445	0.242	0.041	0.242	0.0368
0.2535	0.0649	0.2535	0.0574	0.2535	0.0531	0.2535	0.0491	0.2535	0.0457	0.2535	0.041	0.2535	0.0371
0.2656	0.0731	0.2656	0.0586	0.2656	0.0536	0.2656	0.0491	0.2656	0.0457	0.2656	0.0424	0.2656	0.0401
0.2783	0.0817	0.2783	0.0599	0.2783	0.0536	0.2783	0.05	0.2783	0.0484	0.2783	0.0458	0.2783	0.0425
0.2915	0.0817	0.2915	0.0618	0.2915	0.0581	0.2915	0.0547	0.2915	0.0516	0.2915	0.0479	0.2915	0.0436
0.3054	0.0817	0.3054	0.0663	0.3054	0.0622	0.3054	0.0585	0.3054	0.0551	0.3054	0.0492	0.3054	0.045
0.3199	0.0817	0.3199	0.0701	0.3199	0.0659	0.3199	0.0623	0.3199	0.0589	0.3199	0.0536	0.3199	0.0474
0.3352	0.0873	0.3352	0.0767	0.3352	0.0709	0.3352	0.0662	0.3352	0.0629	0.3352	0.0571	0.3352	0.0501
0.3511	0.0906	0.3511	0.0806	0.3511	0.0749	0.3511	0.0698	0.3511	0.0653	0.3511	0.0577	0.3511	0.0502
0.3678	0.1215	0.3678	0.095	0.3678	0.0823	0.3678	0.0722	0.3678	0.0653	0.3678	0.0577	0.3678	0.0502
0.3853	0.1361	0.3853	0.1057	0.3853	0.0919	0.3853	0.0808	0.3853	0.0718	0.3853	0.0587	0.3853	0.0505
0.4037	0.1361	0.4037	0.1057	0.4037	0.0919	0.4037	0.0821	0.4037	0.0762	0.4037	0.0664	0.4037	0.0568
0.4229	0.1361	0.4229	0.1057	0.4229	0.0919	0.4229	0.0852	0.4229	0.0801	0.4229	0.0711	0.4229	0.0615
0.4431	0.1361	0.4431	0.1057	0.4431	0.0935	0.4431	0.0889	0.4431	0.0843	0.4431	0.0761	0.4431	0.0657
0.4642	0.1373	0.4642	0.1057	0.4642	0.0976	0.4642	0.0916	0.4642	0.086	0.4642	0.0763	0.4642	0.0674
0.4863	0.1479	0.4863	0.1238	0.4863	0.1108	0.4863	0.0997	0.4863	0.0904	0.4863	0.0827	0.4863	0.0733
0.5094	0.1814	0.5094	0.1384	0.5094	0.1218	0.5094	0.1085	0.5094	0.0977	0.5094	0.0867	0.5094	0.0754

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.2216	0.5337	0.1605	0.5337	0.1343	0.5337	0.1149	0.5337	0.1023	0.5337	0.0867	0.5337	0.0754
0.5591	0.2216	0.5591	0.1605	0.5591	0.1343	0.5591	0.1149	0.5591	0.1023	0.5591	0.088	0.5591	0.0754
0.5857	0.2216	0.5857	0.1605	0.5857	0.1343	0.5857	0.1149	0.5857	0.1023	0.5857	0.0937	0.5857	0.0821
0.6136	0.2216	0.6136	0.1605	0.6136	0.1343	0.6136	0.1178	0.6136	0.1111	0.6136	0.1003	0.6136	0.0874
0.6428	0.2257	0.6428	0.1621	0.6428	0.1356	0.6428	0.1179	0.6428	0.1131	0.6428	0.103	0.6428	0.0901
0.6734	0.2257	0.6734	0.1621	0.6734	0.1389	0.6734	0.1291	0.6734	0.1211	0.6734	0.1084	0.6734	0.0936
0.7055	0.2257	0.7055	0.1621	0.7055	0.1389	0.7055	0.1291	0.7055	0.1211	0.7055	0.1095	0.7055	0.0952
0.7391	0.2257	0.7391	0.1621	0.7391	0.1413	0.7391	0.1328	0.7391	0.1244	0.7391	0.1097	0.7391	0.0952
0.7743	0.3175	0.7743	0.2132	0.7743	0.1805	0.7743	0.1581	0.7743	0.1421	0.7743	0.1211	0.7743	0.1032
0.8111	0.3175	0.8111	0.2132	0.8111	0.1805	0.8111	0.1581	0.8111	0.1421	0.8111	0.1211	0.8111	0.1065
0.8497	0.3175	0.8497	0.2132	0.8497	0.1805	0.8497	0.166	0.8497	0.1535	0.8497	0.134	0.8497	0.1129
0.8902	0.3175	0.8902	0.2132	0.8902	0.1869	0.8902	0.1713	0.8902	0.1583	0.8902	0.1378	0.8902	0.1175
0.9326	0.4866	0.9326	0.2993	0.9326	0.2464	0.9326	0.215	0.9326	0.1926	0.9326	0.1632	0.9326	0.1377
0.977	0.4866	0.977	0.2993	0.977	0.2464	0.977	0.215	0.977	0.1926	0.977	0.1712	0.977	0.1493
1.0235	0.4866	1.0235	0.2993	1.0235	0.2464	1.0235	0.215	1.0235	0.1926	1.0235	0.1775	1.0235	0.1586
1.0723	0.4866	1.0723	0.2993	1.0723	0.2574	1.0723	0.2363	1.0723	0.2193	1.0723	0.1933	1.0723	0.1665
1.1233	0.5744	1.1233	0.3387	1.1233	0.2663	1.1233	0.2363	1.1233	0.2193	1.1233	0.1933	1.1233	0.1665
1.1768	0.5744	1.1768	0.3781	1.1768	0.3127	1.1768	0.2762	1.1768	0.247	1.1768	0.2076	1.1768	0.1828
1.2328	0.5744	1.2328	0.3801	1.2328	0.3429	1.2328	0.3128	1.2328	0.2874	1.2328	0.2483	1.2328	0.2091
1.2916	0.5744	1.2916	0.4124	1.2916	0.3638	1.2916	0.3237	1.2916	0.295	1.2916	0.2539	1.2916	0.2139
1.353	0.6253	1.353	0.4124	1.353	0.3638	1.353	0.3237	1.353	0.3026	1.353	0.2724	1.353	0.2369
1.4175	0.6253	1.4175	0.4124	1.4175	0.3638	1.4175	0.3419	1.4175	0.3245	1.4175	0.2933	1.4175	0.2571
1.485	0.6253	1.485	0.4371	1.485	0.3975	1.485	0.3717	1.485	0.3478	1.485	0.3068	1.485	0.2662
1.5557	0.6253	1.5557	0.456	1.5557	0.426	1.5557	0.3995	1.5557	0.376	1.5557	0.3358	1.5557	0.2887
1.6298	0.7362	1.6298	0.4726	1.6298	0.4349	1.6298	0.4101	1.6298	0.3877	1.6298	0.3499	1.6298	0.3051
1.7074	0.7659	1.7074	0.5983	1.7074	0.5291	1.7074	0.4732	1.7074	0.428	1.7074	0.3634	1.7074	0.3086
1.7887	0.8581	1.7887	0.7092	1.7887	0.635	1.7887	0.5721	1.7887	0.5184	1.7887	0.4408	1.7887	0.3653
1.8738	0.9071	1.8738	0.7382	1.8738	0.6675	1.8738	0.6084	1.8738	0.5648	1.8738	0.4905	1.8738	0.4072
1.963	1.0464	1.963	0.7997	1.963	0.7215	1.963	0.6607	1.963	0.6081	1.963	0.5225	1.963	0.4276
2.0565	1.1387	2.0565	0.8196	2.0565	0.732	2.0565	0.661	2.0565	0.6081	2.0565	0.5225	2.0565	0.4276
2.1544	1.1387	2.1544	0.8196	2.1544	0.732	2.1544	0.661	2.1544	0.6081	2.1544	0.5225	2.1544	0.4276
2.257	1.1387	2.257	0.8196	2.257	0.732	2.257	0.6622	2.257	0.6085	2.257	0.5225	2.257	0.439
2.3645	1.8015	2.3645	0.9555	2.3645	0.7668	2.3645	0.6987	2.3645	0.6389	2.3645	0.5434	2.3645	0.4598
2.4771	2.0921	2.4771	1.1123	2.4771	0.8901	2.4771	0.7484	2.4771	0.6503	2.4771	0.5434	2.4771	0.4618
2.595	2.6286	2.595	1.3049	2.595	0.9786	2.595	0.8001	2.595	0.6919	2.595	0.5515	2.595	0.4636

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	2.6286	2.7186	1.3049	2.7186	0.9786	2.7186	0.8001	2.7186	0.6919	2.7186	0.5515	2.7186	0.4669
2.848	2.6286	2.848	1.3049	2.848	0.9786	2.848	0.8001	2.848	0.6919	2.848	0.5515	2.848	0.4669
2.9836	2.6286	2.9836	1.3049	2.9836	0.9786	2.9836	0.8001	2.9836	0.6919	2.9836	0.5515	2.9836	0.4669
3.1257	2.6286	3.1257	1.3049	3.1257	0.9786	3.1257	0.8001	3.1257	0.6919	3.1257	0.5515	3.1257	0.4669
3.2745	1.4875	3.2745	0.9429	3.2745	0.7973	3.2745	0.6916	3.2745	0.6178	3.2745	0.5384	3.2745	0.4669
3.4305	1.1706	3.4305	0.7986	3.4305	0.7066	3.4305	0.6392	3.4305	0.589	3.4305	0.5099	3.4305	0.4525
3.5938	1.1706	3.5938	0.7986	3.5938	0.7066	3.5938	0.6392	3.5938	0.589	3.5938	0.5097	3.5938	0.4525
3.7649	1.1706	3.7649	0.7986	3.7649	0.7066	3.7649	0.6392	3.7649	0.589	3.7649	0.5097	3.7649	0.4525
3.9442	1.1706	3.9442	0.7986	3.9442	0.7066	3.9442	0.6392	3.9442	0.589	3.9442	0.5097	3.9442	0.4525
4.132	1.1706	4.132	0.7986	4.132	0.7066	4.132	0.6392	4.132	0.589	4.132	0.5097	4.132	0.4525
4.3288	1.1706	4.3288	0.7986	4.3288	0.7066	4.3288	0.6392	4.3288	0.589	4.3288	0.5097	4.3288	0.4525
4.5349	1.1706	4.5349	0.7986	4.5349	0.7066	4.5349	0.6392	4.5349	0.589	4.5349	0.5097	4.5349	0.4525
4.7508	1.1706	4.7508	0.7986	4.7508	0.7066	4.7508	0.6392	4.7508	0.589	4.7508	0.5097	4.7508	0.4525
4.977	1.1706	4.977	0.7986	4.977	0.7066	4.977	0.6392	4.977	0.589	4.977	0.5097	4.977	0.4525
5.214	1.1706	5.214	0.7986	5.214	0.7066	5.214	0.6392	5.214	0.589	5.214	0.5097	5.214	0.4525
5.4623	1.3551	5.4623	0.7986	5.4623	0.7066	5.4623	0.6392	5.4623	0.589	5.4623	0.5097	5.4623	0.4599
5.7224	1.6638	5.7224	0.9095	5.7224	0.7723	5.7224	0.6766	5.7224	0.6048	5.7224	0.5097	5.7224	0.4637
5.9948	1.6638	5.9948	0.9095	5.9948	0.7723	5.9948	0.6766	5.9948	0.6048	5.9948	0.5097	5.9948	0.4734
6.2803	1.6638	6.2803	0.9095	6.2803	0.7723	6.2803	0.6766	6.2803	0.6048	6.2803	0.5097	6.2803	0.4734
6.5793	1.6638	6.5793	0.9095	6.5793	0.7723	6.5793	0.6766	6.5793	0.6048	6.5793	0.5097	6.5793	0.4734
6.8926	1.6638	6.8926	0.9095	6.8926	0.7723	6.8926	0.6766	6.8926	0.6048	6.8926	0.5097	6.8926	0.4734
7.2208	1.6308	7.2208	0.9095	7.2208	0.7723	7.2208	0.6766	7.2208	0.6048	7.2208	0.5097	7.2208	0.4734
7.5646	1.6308	7.5646	0.9095	7.5646	0.7723	7.5646	0.6766	7.5646	0.6048	7.5646	0.5097	7.5646	0.4734
7.9248	1.6308	7.9248	0.9095	7.9248	0.7723	7.9248	0.6766	7.9248	0.6048	7.9248	0.5097	7.9248	0.4734
8.3022	1.6308	8.3022	0.9095	8.3022	0.7723	8.3022	0.6766	8.3022	0.6048	8.3022	0.5116	8.3022	0.4743
8.6975	1.6308	8.6975	0.9095	8.6975	0.7723	8.6975	0.6766	8.6975	0.6048	8.6975	0.5631	8.6975	0.528
9.1116	1.6308	9.1116	0.9095	9.1116	0.7723	9.1116	0.6822	9.1116	0.665	9.1116	0.6322	9.1116	0.5799
9.5455	1.6308	9.5455	0.9835	9.5455	0.9073	9.5455	0.848	9.5455	0.7987	9.5455	0.7177	9.5455	0.625
10	1.6308	10	1.0819	10	0.9829	10	0.9016	10	0.8346	10	0.7301	10	0.625
10.4762	1.6308	10.4762	1.0819	10.4762	0.9829	10.4762	0.9016	10.4762	0.8346	10.4762	0.7301	10.4762	0.625
10.975	1.6308	10.975	1.0819	10.975	0.9829	10.975	0.9016	10.975	0.8346	10.975	0.7301	10.975	0.6298
11.4976	1.6308	11.4976	1.0819	11.4976	0.9829	11.4976	0.9016	11.4976	0.8378	11.4976	0.7712	11.4976	0.6955
12.045	1.6308	12.045	1.0819	12.045	0.9829	12.045	0.9016	12.045	0.8378	12.045	0.7828	12.045	0.7206
12.6186	1.7655	12.6186	1.0819	12.6186	0.9829	12.6186	0.9016	12.6186	0.8378	12.6186	0.7828	12.6186	0.7274
13.2194	1.7655	13.2194	1.0819	13.2194	0.9829	13.2194	0.9016	13.2194	0.8748	13.2194	0.823	13.2194	0.7439

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	2.1962	13.8489	1.3794	13.8489	1.2634	13.8489	1.1839	13.8489	1.1151	13.8489	0.9858	13.8489	0.8419
14.5083	3.099	14.5083	1.7518	14.5083	1.6507	14.5083	1.5281	14.5083	1.3976	14.5083	1.2195	14.5083	1.0605
15.1991	5.721	15.1991	3.1594	15.1991	2.5932	15.1991	2.2035	15.1991	1.9756	15.1991	1.5418	15.1991	1.3364
15.9228	7.6802	15.9228	3.9908	15.9228	2.9281	15.9228	2.3497	15.9228	1.998	15.9228	1.5418	15.9228	1.3585
16.681	7.6802	16.681	3.9908	16.681	2.9281	16.681	2.3497	16.681	1.998	16.681	1.5418	16.681	1.3585
17.4753	7.6802	17.4753	3.9908	17.4753	2.9281	17.4753	2.3497	17.4753	1.998	17.4753	1.5418	17.4753	1.3585
18.3074	7.6802	18.3074	3.9908	18.3074	2.9281	18.3074	2.3497	18.3074	1.998	18.3074	1.5418	18.3074	1.3585
19.1791	7.6802	19.1791	3.9908	19.1791	2.9281	19.1791	2.3497	19.1791	1.998	19.1791	1.5418	19.1791	1.3585
20.0923	5.0233	20.0923	2.5698	20.0923	2.2318	20.0923	2.0531	20.0923	1.8683	20.0923	1.5418	20.0923	1.2323
21.049	5.0233	21.049	2.5698	21.049	1.9224	21.049	1.5699	21.049	1.4464	21.049	1.3294	21.049	1.1577
22.0513	5.0233	22.0513	2.5698	22.0513	1.9224	22.0513	1.5699	22.0513	1.3278	22.0513	1.1117	22.0513	1.0269
23.1013	2.3419	23.1013	1.5377	23.1013	1.433	23.1013	1.3325	23.1013	1.2262	23.1013	1.0197	23.1013	0.9065
24.2013	1.5293	24.2013	1.0859	24.2013	1.0006	24.2013	0.9426	24.2013	0.9155	24.2013	0.8472	24.2013	0.7881
25.3536	1.2574	25.3536	0.8767	25.3536	0.8421	25.3536	0.8119	25.3536	0.7853	25.3536	0.7362	25.3536	0.6758
26.5609	1.2574	26.5609	0.8155	26.5609	0.7384	26.5609	0.6923	26.5609	0.6671	26.5609	0.6573	26.5609	0.6403
27.8256	1.2574	27.8256	0.8155	27.8256	0.7384	27.8256	0.6884	27.8256	0.6534	27.8256	0.6229	27.8256	0.6093
29.1505	0.6647	29.1505	0.618	29.1505	0.6094	29.1505	0.5972	29.1505	0.5935	29.1505	0.5904	29.1505	0.5816
30.5386	0.6591	30.5386	0.6039	30.5386	0.5896	30.5386	0.581	30.5386	0.5752	30.5386	0.5671	30.5386	0.5581
31.9927	0.5376	31.9927	0.5492	31.9927	0.5493	31.9927	0.5479	31.9927	0.546	31.9927	0.5418	31.9927	0.5355
33.516	0.5125	33.516	0.5181	33.516	0.5192	33.516	0.5192	33.516	0.5188	33.516	0.5173	33.516	0.5142
35.1119	0.4954	35.1119	0.4964	35.1119	0.4969	35.1119	0.4972	35.1119	0.4973	35.1119	0.4971	35.1119	0.4958
36.7838	0.4806	36.7838	0.481	36.7838	0.4812	36.7838	0.4813	36.7838	0.4814	36.7838	0.4813	36.7838	0.4807
38.5353	0.468	38.5353	0.4683	38.5353	0.4684	38.5353	0.4684	38.5353	0.4685	38.5353	0.4684	38.5353	0.4681
40.3702	0.4573	40.3702	0.4574	40.3702	0.4575	40.3702	0.4575	40.3702	0.4576	40.3702	0.4575	40.3702	0.4574
42.2924	0.4479	42.2924	0.448	42.2924	0.448	42.2924	0.4481	42.2924	0.4481	42.2924	0.4481	42.2924	0.4481
44.3062	0.4396	44.3062	0.4396	44.3062	0.4397	44.3062	0.4397	44.3062	0.4397	44.3062	0.4398	44.3062	0.4398
46.4159	0.4321	46.4159	0.4321	46.4159	0.4322	46.4159	0.4322	46.4159	0.4322	46.4159	0.4323	46.4159	0.4325
48.626	0.4252	48.626	0.4252	48.626	0.4253	48.626	0.4253	48.626	0.4254	48.626	0.4255	48.626	0.4258
50.9414	0.4188	50.9414	0.4188	50.9414	0.4188	50.9414	0.4189	50.9414	0.4189	50.9414	0.4191	50.9414	0.4195

MECHANICAL DATA SHEET

SHELL AND TUBE HEAT EXCHANGER

PLANT ITEM No.
24590-PTF-ME-TLP-COND-00003
Data Sheet No.
24590-PTF-MED-TLP-00003

Project:	*RPP-WTP*	Description:	*Treated LAW Evaporator After-Condenser*
Project No:	*24590*	P&ID:	*24590-PTF-M6-TLP-00002*
Site:	*Hanford*	Process Data Sht:	*N/A*
Process flow diagram:	*24590-PTF-M5-V17T-00005*	Manufacturer Name	*Framatome ANP / Graham Manufacturing*

R11042837

General Data

Quality Level	*Q (9)*	TEMA (Class/Type)		*B*
Seismic Category	*SC-I*	Flow Type (Counter current, etc)		*8 PASS*
Design Code	*ASME VIII Div 1*	Heat Exchanger Duty	Btu/hr	*167,838*
Code Stamp	*Yes*	Heat Exchanger Area	ft^2	*14.9*
NB Registration	*Yes*	ΔT (LMTD/Corrected LMTD)	°F	*111.0*

ISSUED BY
RPP-WTP PDC

Thermal/Hydraulic Data

		Shell Side		Tube Side	
Fluid Name		*IN STEAM*	*OUT*	*IN Cooling Water*	*OUT*
Fluid Quantities: Total	lbm/hr	*200.4*		*15,000*	
Condensable Vapor (In/Out)		*156.7*	*3.4*	*N/A*	*N/A*
Liquid		*N/A*	*153.3*	*15,000*	*15,000*
Noncondensable		*43.7*	*43.7*	*N/A*	*N/A*
Temperature (In/Out)	°F	4 *	*120.0*	*75.0*	4 *
Specific Gravity		*N/A*	*N/A*	*1.000*	*0.999*
Viscosity	Cp	*N/A*	*N/A*	*2.209*	*1.924*
Molecular Weight		*18.02*	*18.02*	*N/A*	*N/A*
Molecular Weight, Noncondensable		*29*	*29*	*N/A*	*N/A*
Specific Heat	Btu/lbm-°F	*N/A*	*N/A*	*1.000*	*0.999*
Thermal Conductivity	Btu/hr-ft-°F	*N/A*	*	*0.350*	*0.356*
Latent Heat	Btu/lbm @ °F	*N/A*		*N/A*	
Inlet pressure		*810.0 Torr*		4 *	
Tube side Velocity	ft/s	*N/A*		*3.4*	
Pressure Drop (Allowed)		*25 mm Hg*		*0.8 psi*	
Fouling Resistance (Min)	$hr\text{-}ft^2\text{-}°F/Btu$	*0.0020*			

Mechanical Design Data

		Shell Side		Tube Side	
Design Pressure (Max/Min)	psig	*50*	*Full Vacuum*	*100*	*Full Vacuum*
Design Temperature (Max/Min)	°F	*378*	*0*	*150*	*0*
Corrosion Allowance	inch	*0.04*		*0.04*	
Erosion Allowance	inch	*N/A*		*N/A*	
Shell OD / ID		*6 5/8"*		Overall Dimensions (HxWxL) inch	*18 x 11 x 69*
Total No. of Tubes		*19*		Tube OD inch	*0.750*

Material Data

Shell	*SA 312, SA 182 316L SS*	Shell Cover	*N/A*
Channel/Bonnet	*SA 312, SA 182, SA 403 316L SS*	Channel Cover	*316L SS*
Tube	*SA 213 316L SS (SMLS)*	Floating Head Cover	*N/A*
Stationary Tube Sheet	*SA 240 316L SS*	Floating Tube Sheet	*N/A*
Shell Side Gaskets	*N/A*	Tube Side Gaskets	*316 SS Spiral Wound w/ PTFE Filler*
Partition Seals	*N/A*	Baffles/Supports	*SA 240 316L SS*
Insulation	*N/A*	Forgings (Shell side)	*SA 182 F316L*
Bolting	*SA 193 B8M & SA 194 2HM*	Forgings (Channel)	*SA 182 F316L*

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MECHANICAL DATA SHEET

SHELL AND TUBE HEAT EXCHANGER

PLANT ITEM No.
24590-PTF-ME-TLP-COND-00003

Data Sheet No.
24590-PTF-MED-TLP-00003

Construction Data *(To be determined by the supplier when not specified by the buyer)*

Cross Baffle Type	***Up & Over***	% Baffle Cut (Dia.)	*- - -*	Spacing (c/c) inch	*- - -*
Bypass Seal Arrangement	***N/A***	Longitudinal Seal Type	***N/A***	Expansion Joint Type	***N/A***
Inlet Nozzle ρV^2	*- - -*	Bundle Entrance ρV^2	*- - -*	Bundle Exit ρV^2	*- - -*
Tube Support Type	***Vertical Cut***	U-bend Support Type	***N/A***	Weight of Bundle lbf	*
Operating Weight lbf	***330***	Full of Water lbf	***360***	Empty Wieght lbf	***300***

Notes

**** To be determined by Seller.***

Notes:

(1) All welds are continuous to avoid crevices, weld surface finish is descaled as laid.
(2) Tube to tubesheet joint shall be strength welded.
(3) Graham size 6x4 BEM. 4
(4) Deleted.
4 ***(5) For Nozzle loads, see 24590-PTF-3PS-MEVV-T0001.***
(6) Deleted.
(7) Deleted.
(8) Deleted. 4
(9) Component will be manufactured to Bechtel quality level Q, which corresponds with Vendor quality level QL-2.
(10) Vendor design information is from document 24590-QL-POA-MEVV-00001-02-00056.
(11) Equipment cyclic data is from document 24590-QL-POA-MEVV-00001-04-03.
(12) Contents of this drawing are dangerous waste permit affecting.
(13) The physical design parameters shall be determined by the seller based on TEMA and HEI standards.
(14) Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only. 4

(Safety screening/evaluation required? ☒Yes ☐No If yes per 24590-WTP-GPP-SREG-002, E&NS signature required below.)

Rev.	Description	By	Checked	E&NS	Approved	Date
4	Updated to reflect WSGM analysis, 24590-PTF-U0N-W16T-00003 and incorporate DOE AEA note (14). * ADDED TO SHOW VALUES TO BE UPDATED	D. Tate	R. Rickenbach	B. Hall	J. Julyk	2/19/09
3	Updated Quality Level and Incorporated Equipment Qualification Data	R. Rickenbach	E. Le	S. Woolfolk	J. Julyk	07/14/2008
2	Incorporated Vendor Design	E. Le	R. Nowak	N/A	J. Julyk	04/04/2005
1	Updated Descrition	G. Butt	D. Reinemann	N/A	J. Julyk	03/22/2004
0	Issued for Procurement	E. Le	S. Shah	N/A	J. Julyk	04/30/2003

4

EQUIPMENT QUALIFICATION DATASHEET (EQD)

Equipment Identification

Component Tag Number	24590-PTF-ME-TLP-COND-00003	Safety Classification	☒ SC ☐ SS ☐ APC ☐ SDC ☐ SDS ☐ RRC Note 10 4
Manufacturer / Supplier	UST&D / AREVA NP, INC.		
Requisition Number	24590-QL-POA-MEVV-00001		
Model	N/A	Seismic Category	☒ SC-I ☐ SC-II ☐ SC-III ☐ SC-IV Note 10 4
Description (Include descriptive text [e.g., location, elevation])	Treated LAW Evaporator After-Condensor, room P-0325, Elevation 56'-0"		
Safety Function(s)	Confinement (ref. 1) 4		

Seismic Safety Function	☒ Yes ☐ No	Room Number(s): P-0325	
Maintenance Accessible	☒ Yes ☐ No	Method of Maintenance Access:	☐ Remote ☒ Hands On ☐ None
Seismic Operability Requirements: 4	☐ During Seismic Event 4	☐ After Seismic Event	
ITS Equipment Type:	☒ Passive Mechanical	☐ Active Mechanical	☐ Electrical

Equipment Environmental Qualification (EEQ) 4

Environment ☐ Mild ☒ Harsh Contamination Class: C3 Radiation Class: R3	Hi Rad Service ☐ Yes ☒ No	Design Life (yrs) ☒ 40 ☒ Other 4 Design life to include 7,001,950 normal process expansion cycles.

Parameter Type/Units	Parameter Value	Time Duration (number)	Time Units	WTP Document Number (BUYER)	Submittal Number (SELLER)
Normal					
Normal High Temperature (°F)	95	40	yrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
Normal Low Temperature (°F)	59	40	yrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
Normal High Relative Humidity (%RH)	100	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Low Relative Humidity (%RH)	10	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal High Pressure (in.-w.g.)	0	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Low Pressure (in.-w.g.)	-0.4	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Normal Radiation Dose Rate (mR/hr)	10	40	yrs	24590-PTF-U0D-W16T-00001	Note 1
Vibration Magnitude (g)	N/A	N/A	N/A	N/A	Note 1
Vibration Frequency (Hz)	N/A	N/A	N/A	N/A	Note 1
Additional Normal Information:	See Note 2 for Pressure Units.				

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Equipment Environmental Qualification (EEQ) *(continued)*

Parameter Type/Units	Parameter Value	Time Duration (number)	Time units	WTP Document Number (BUYER)	Submittal Number (SELLER)
Abnormal					
Abnormal High Temperature (°F)	126	8	hr/yr	24590-PTF-U0D-W16T-00001, Note 7 & 9 4	Note 1
Abnormal Low Temperature (°F)	59	8	hr/yr	24590-WTP-DB-01-001, Notes 7 & 8	Note 1
Abnormal High Relative Humidity (%RH)	100	24	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Low Relative Humidity (%RH)	2	22	hr/yr	24590-PTF-U0D-W16T-00001, Note 9 4	Note 1
Abnormal High Pressure (in.-w.g.)	4	8	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Low Pressure (in.-w.g.)	-7.3	8	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Abnormal Radiation Dose Rate (mR/hr)	10 Note 3	0	hr/yr	24590-PTF-U0D-W16T-00001	Note 1
Wet Sprinkler System Present	YES	2	hr. 4	24590-PTF-U0D-W16T-00001	Note 1
Additional Abnormal Information	See Note 2 for Pressure Units				
Design Basis Events (DBE)					
DBE High Temperature (°F)	128	1000	hrs	24590-PTF-U0D-W16T-00001, Note 7 & 9 4	Note 1
DBE Low Temperature (°F)	40	1000	hrs	24590-PTF-U0D-W16T-00001, Note 7	Note 1
DBE High Relative Humidity (%RH)	100	482	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Low Relative Humidity (%RH)	6	1000	hrs	24590-PTF-U0D-W16T-00001, Note 9 4	Note 1
DBE High Pressure (in.-w.g.)	4	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Low Pressure (in.-w.g.)	-7.3	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
DBE Radiation Dose Rate (mR/hr)	10 Note 3	0	hrs	24590-PTF-U0D-W16T-00001	Note 1
Flood Height (ft)	1.58	1000	hrs	24590-PTF-U0D-W16T-00001	Note 1
Submergence (ft)	0 Note 5	N/A	hrs	24590-PTF-U0D-W16T-00001 24590-QL-POA-MEVV-00001-01-00817 4	Note 1
Chemical/Spray Exposure	YES	12.5	hrs	24590-PTF-U0D-W16T-00001	Note 1
Additional DBE Information	See Note 2 for Pressure Units				

DBE Chemical Exposure Details	
DBE Chemical Types/Concentrations	Sodium Hydroxide, 5M

Interfaces (Electrical)	
Power Supply Voltage (VAC, VDC)	N/A
Power Supply Frequency (Hz)	N/A
Power Connection Method	N/A
I/O Signals to/from Equipment	N/A
I/O Connection Method	N/A

Interfaces (Mechanical)	
Mounting Configuration (orientation)	See dwg. 24590-QL-POA-MEVV-00001-01-00817
Mounting Method (bolts, welds, etc.)	Anchor Bolts, TLP-SKID-00001, 24590-PTF-DB-S13T-00056
Auxiliary Devices	N/A

Equipment Seismic Qualification (ESQ)

Parameter	Title	Reference/Document Number	Version / Revision	Remarks
WTP Seismic Design Specification (BUYER)	Engineering Specification for Seismic Qualification Criteria for Pressure Vessels	24590-WTP-3PS-MV00-T0002	002	N/A
Specified Seismic Load (BUYER)	Seismic Analysis of Pretreatment Building - WSGM In-Structure Response Spectre (ISRS) 4	24590-PTF-S0C-S15T-00057 4	00A 4	Calculation is not included in MR, see attached figures 37, 38, 40, 41 and 115 per CCN 185267. 4
Design Seismic Load (SELLER	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	N/A
Qualification Method (SELLER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	N/A
Qualification Report Number (SELLER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	N/A
Submittal Number (BUYER)	Calculation - HEP 1 FEP and TLP Condenser Skids Seismic Qualification	24590-QL-POA-MEVV-00001-04-00027	00D	N/A

Notes and Additional Information

Notes:

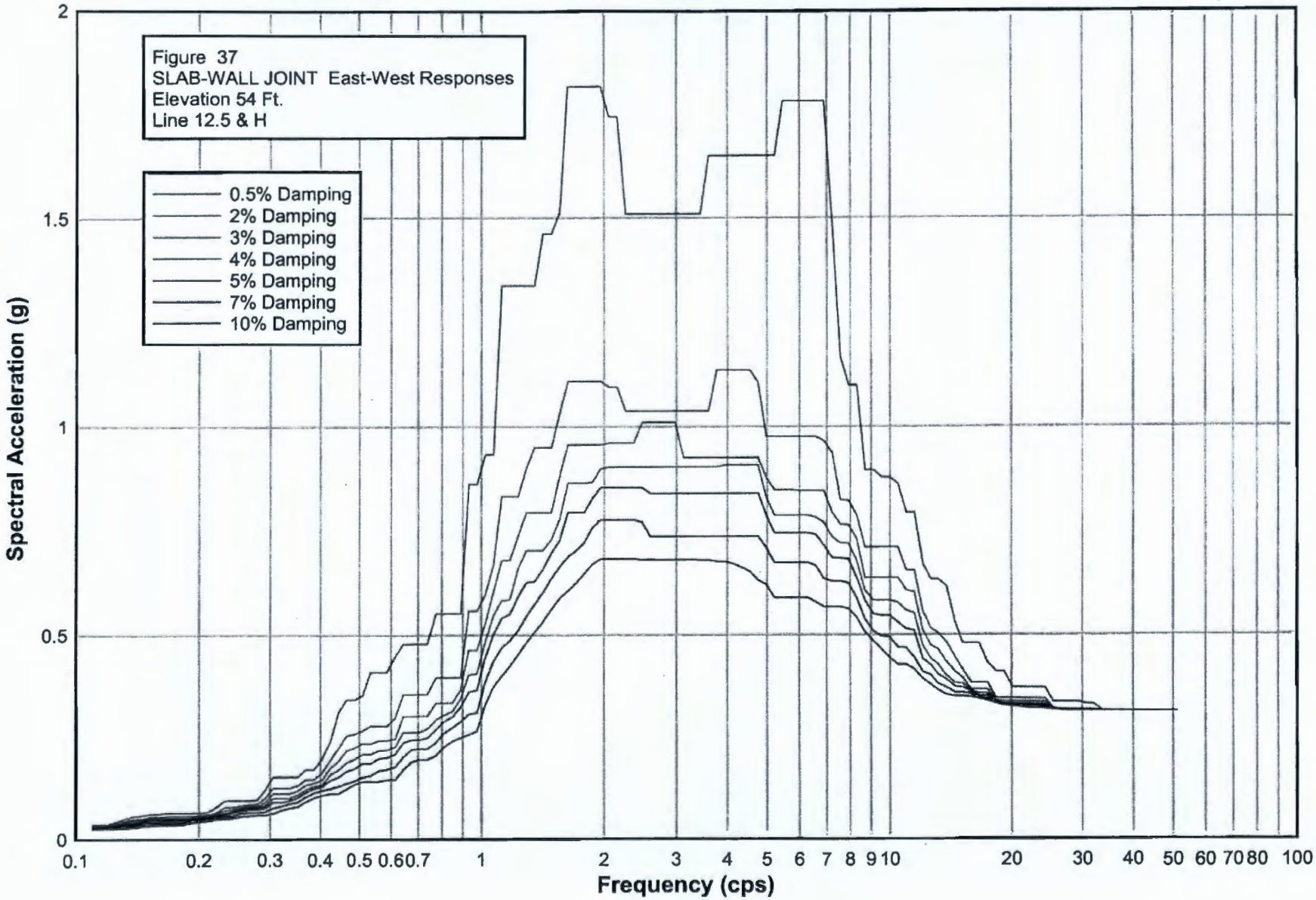
1. Data to be provided by SELLER through the submittal process as required on the G-321-E form.
2. Where pressure is given in inches of water column (in.-w.c.) in the source document, it is generally assumed that this is in reference to atmospheric pressure and is therefore equivalent to inches of water gage (in.-w.g.).
3. Abnormal and DBE radiation dose rates are set equal to normal dose rate and do not contribute to the total integrated dose.
4. The equipment qualification will be documented in accordance with the requirements in Appendix D of Engineering Specification for Environmental Qualification of Mechanical Equipment, document number 24590-WTP-3PS-G000-T0015 for the passive and active safety functions.
5. Submergence is determined from the lowest point of the vessel in relation to the flood height above the floor.
6. Environmental data given document 24590-PTF-U0D-W16T-00001 is for room environment only.
7. For application of AISC N690, the normal temperatures are not used. Abnormal temperatures shall be applied as Normal Operation Temperature, T_O, with seismic effects, E_S. The Design basis event temperature shall be applied as a Thermal Load generated by a postulated accident, T_A, without seismic effects, E_s or E_o.
8. Abnormal low temperature, as calculated in reference 2, is based on a Loss of Heating Accident (LOHA) which occurs when steam supply to the building is lost. Since the evaporators are run on steam, this would cause the evaporators to go off-line. Abnormal low temperature will be based on reference 3 at 59°F.
9. Parameter value used on data sheet has been previously established and determined more conservative than values derived from the reference document noted. 4
10. For commercial reasons, safety and seismic classification may be higher than elsewhere documented, and therefore conservative. 4

References:

1. 24590-WTP-PSAR-ESH-01-002-02, Rev. 04A, Preliminary documented safety analysis to support construction authorization; PT facility specific information. 4
2. 24590-PTF-U0D-W16T-00001, Rev. 0, PTF Room Environment Datasheet.
3. 24590-WTP-DB-ENG-01-001, Rev. 1M, Basis of Design. 4
4. 24590-PTF-U0N-W16T-00001, Add data for room p-0427. Incorporate additional steam break analysis. 4
5. 24590-PTF-U0N-W16T-00003, Revised temperature & relative humidity data for PTF rooms. 4

RPP-WTP Pretreatment Facility ISRS

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A 4



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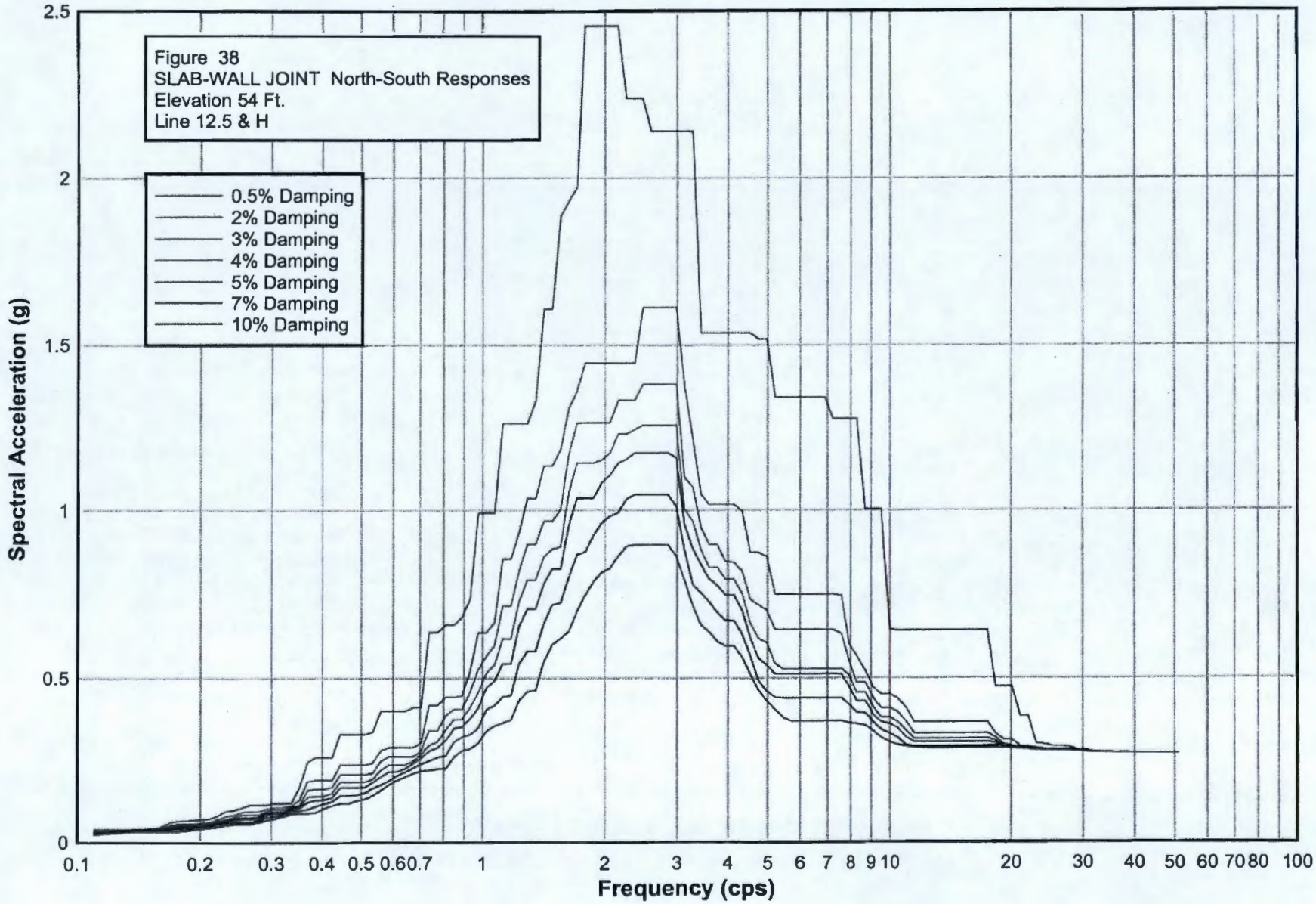
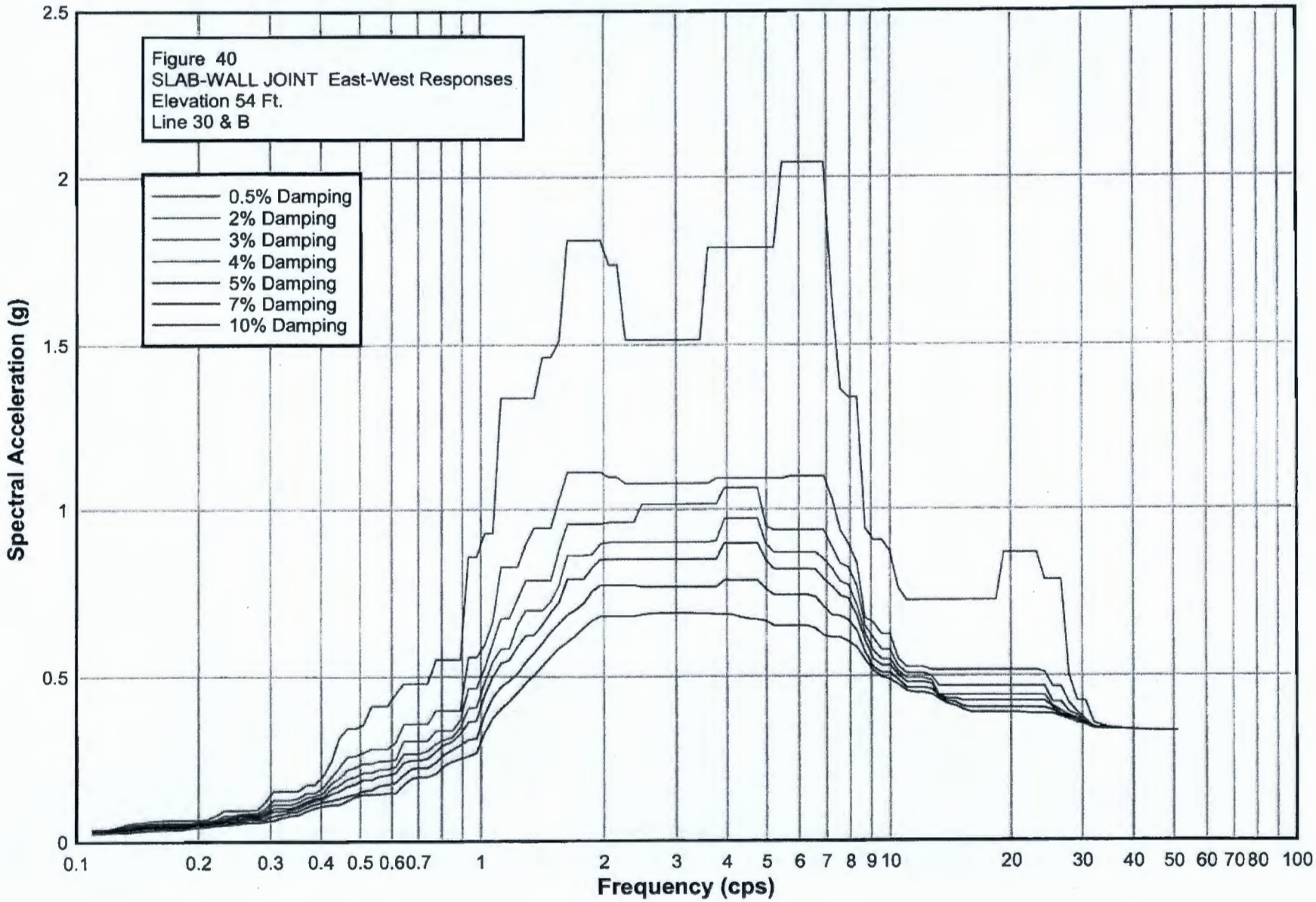
RPP-WTP Pretreatment Facility ISRS

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



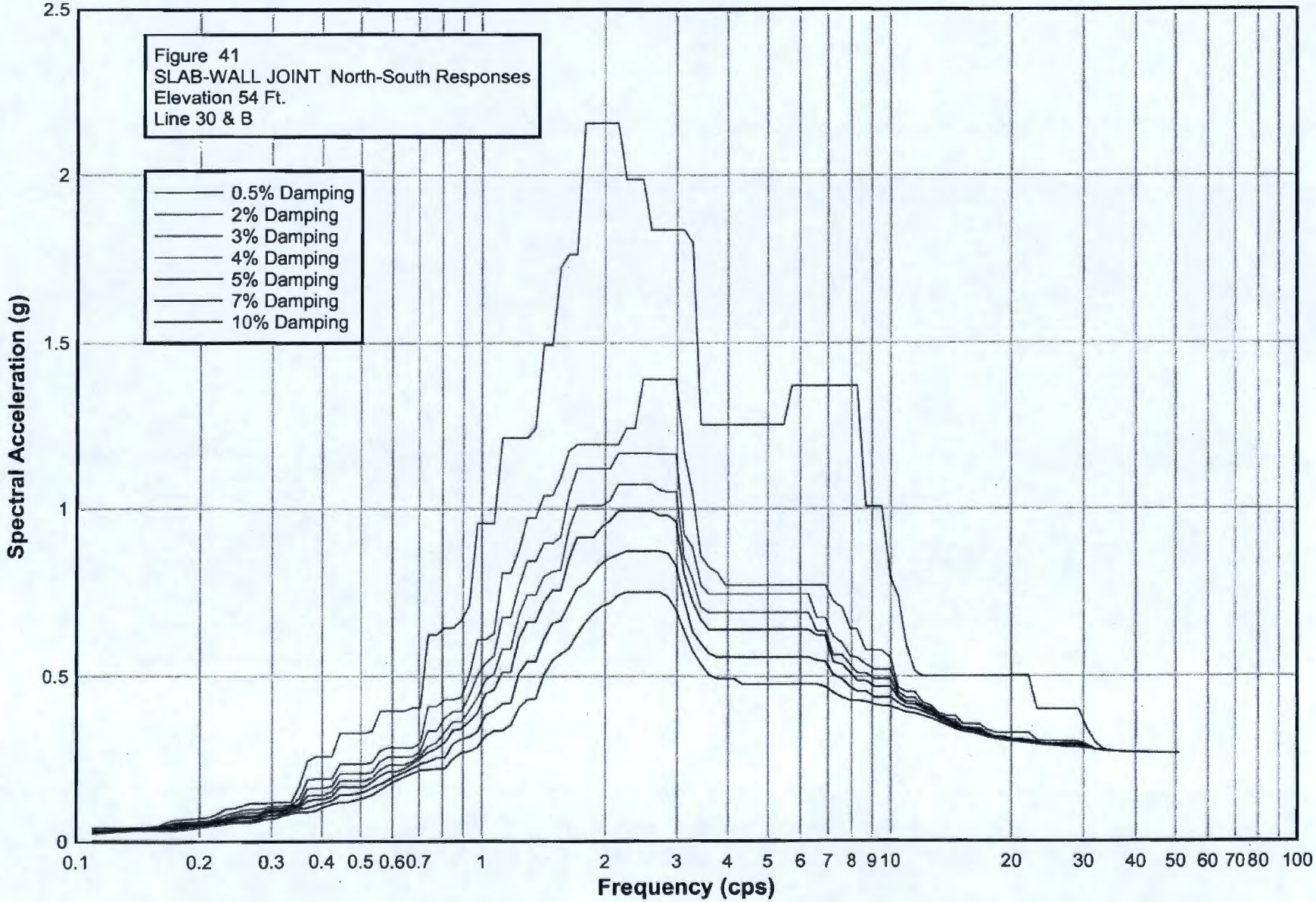
RPP-WTP Pretreatment Facility ISRS

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



RPP-WTP Pretreatment Facility ISRS

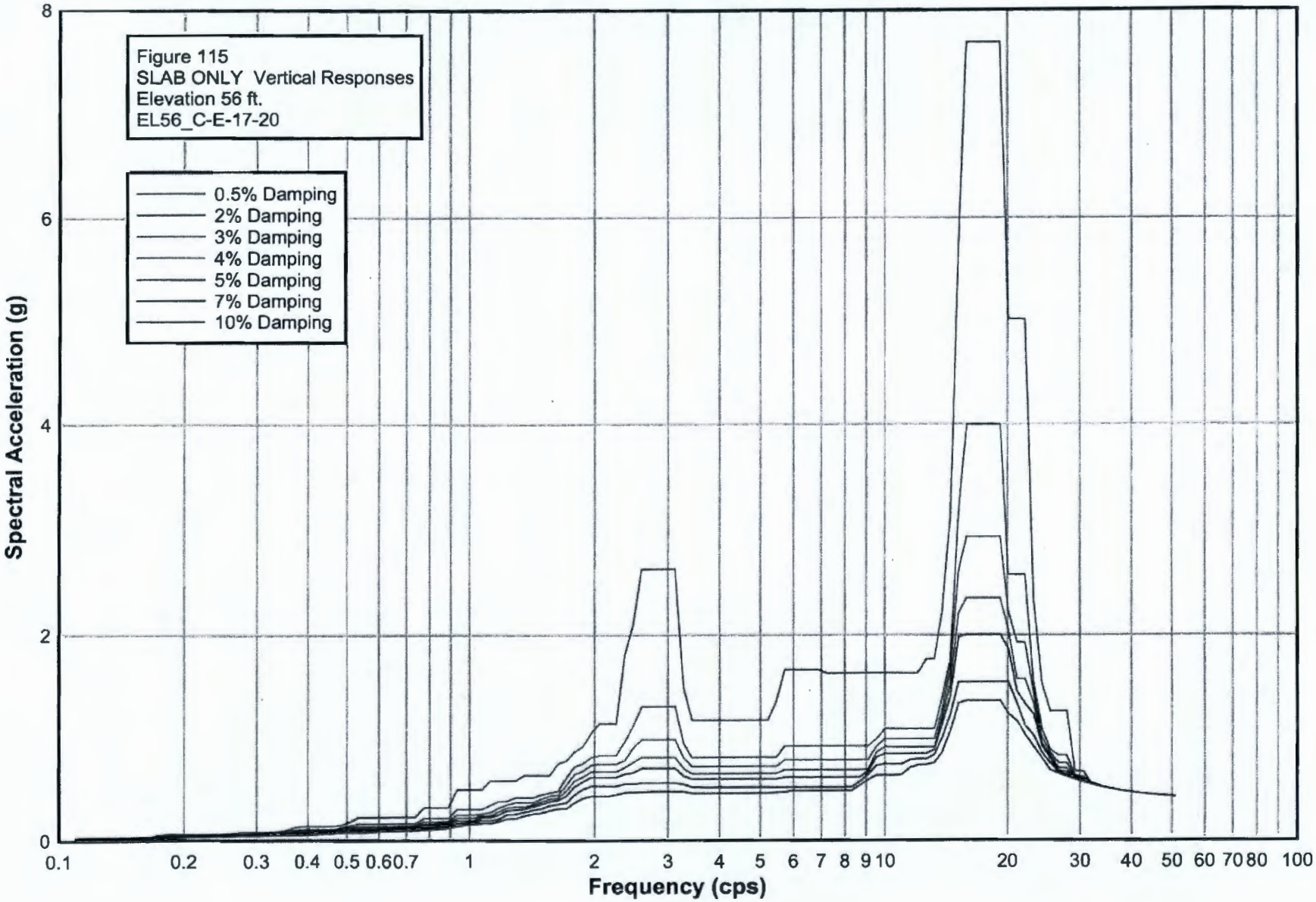
Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



RPP-WTP Pretreatment Facility ISRS

4

Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A



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PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0375	0.1098	0.0344	0.1098	0.0327	0.1098	0.0312	0.1098	0.0298	0.1098	0.0274	0.1098	0.0252
0.115	0.0375	0.115	0.0344	0.115	0.0327	0.115	0.0312	0.115	0.0299	0.115	0.0277	0.115	0.0258
0.1204	0.0375	0.1204	0.0344	0.1204	0.0331	0.1204	0.0322	0.1204	0.0312	0.1204	0.0294	0.1204	0.0269
0.1262	0.0431	0.1262	0.0397	0.1262	0.0378	0.1262	0.036	0.1262	0.0343	0.1262	0.0314	0.1262	0.0278
0.1322	0.0504	0.1322	0.045	0.1322	0.042	0.1322	0.0393	0.1322	0.0369	0.1322	0.0328	0.1322	0.0281
0.1385	0.056	0.1385	0.0489	0.1385	0.0449	0.1385	0.0414	0.1385	0.0384	0.1385	0.0344	0.1385	0.0303
0.1451	0.058	0.1451	0.0509	0.1451	0.0475	0.1451	0.0445	0.1451	0.0419	0.1451	0.0375	0.1451	0.0325
0.152	0.0616	0.152	0.0546	0.152	0.0506	0.152	0.0472	0.152	0.0442	0.152	0.0391	0.152	0.0338
0.1592	0.062	0.1592	0.0546	0.1592	0.0506	0.1592	0.0472	0.1592	0.0442	0.1592	0.0396	0.1592	0.0351
0.1668	0.064	0.1668	0.056	0.1668	0.0517	0.1668	0.0481	0.1668	0.0451	0.1668	0.0403	0.1668	0.0356
0.1748	0.064	0.1748	0.056	0.1748	0.0517	0.1748	0.0481	0.1748	0.0451	0.1748	0.0403	0.1748	0.0356
0.1831	0.064	0.1831	0.056	0.1831	0.0517	0.1831	0.0481	0.1831	0.0451	0.1831	0.0403	0.1831	0.0368
0.1918	0.0641	0.1918	0.0561	0.1918	0.0517	0.1918	0.0495	0.1918	0.0477	0.1918	0.0445	0.1918	0.0404
0.2009	0.0642	0.2009	0.0583	0.2009	0.0558	0.2009	0.0535	0.2009	0.0513	0.2009	0.0474	0.2009	0.0424
0.2105	0.0665	0.2105	0.0603	0.2105	0.0575	0.2105	0.0549	0.2105	0.0525	0.2105	0.049	0.2105	0.0448
0.2205	0.078	0.2205	0.0647	0.2205	0.062	0.2205	0.0595	0.2205	0.0573	0.2205	0.0533	0.2205	0.0484
0.231	0.0933	0.231	0.0774	0.231	0.0694	0.231	0.063	0.231	0.0598	0.231	0.0556	0.231	0.0503
0.242	0.0933	0.242	0.0774	0.242	0.0723	0.242	0.0678	0.242	0.0638	0.242	0.0567	0.242	0.0513
0.2535	0.0933	0.2535	0.0817	0.2535	0.0771	0.2535	0.0729	0.2535	0.0692	0.2535	0.0628	0.2535	0.0553
0.2656	0.0933	0.2656	0.0839	0.2656	0.0794	0.2656	0.0754	0.2656	0.0718	0.2656	0.0653	0.2656	0.0575
0.2783	0.0954	0.2783	0.0847	0.2783	0.0794	0.2783	0.0754	0.2783	0.0718	0.2783	0.0653	0.2783	0.058
0.2915	0.1187	0.2915	0.0987	0.2915	0.089	0.2915	0.0813	0.2915	0.0753	0.2915	0.0668	0.2915	0.0592
0.3054	0.1504	0.3054	0.1235	0.3054	0.1097	0.3054	0.0985	0.3054	0.0894	0.3054	0.0758	0.3054	0.0633
0.3199	0.1504	0.3199	0.1235	0.3199	0.1097	0.3199	0.0985	0.3199	0.0894	0.3199	0.0801	0.3199	0.0706
0.3352	0.1504	0.3352	0.1235	0.3352	0.1097	0.3352	0.0985	0.3352	0.0931	0.3352	0.0857	0.3352	0.0762
0.3511	0.1504	0.3511	0.1289	0.3511	0.1172	0.3511	0.107	0.3511	0.0997	0.3511	0.0894	0.3511	0.0786
0.3678	0.168	0.3678	0.1438	0.3678	0.1303	0.3678	0.1186	0.3678	0.1121	0.3678	0.1017	0.3678	0.0898
0.3853	0.168	0.3853	0.1438	0.3853	0.1346	0.3853	0.1279	0.3853	0.1219	0.3853	0.1115	0.3853	0.0992
0.4037	0.194	0.4037	0.1598	0.4037	0.1426	0.4037	0.1306	0.4037	0.1259	0.4037	0.117	0.4037	0.1054
0.4229	0.2368	0.4229	0.1906	0.4229	0.1721	0.4229	0.1558	0.4229	0.1416	0.4229	0.1217	0.4229	0.1092
0.4431	0.3088	0.4431	0.2193	0.4431	0.1881	0.4431	0.1671	0.4431	0.1496	0.4431	0.1273	0.4431	0.1097
0.4642	0.3417	0.4642	0.2524	0.4642	0.2138	0.4642	0.1852	0.4642	0.1637	0.4642	0.1345	0.4642	0.1211
0.4863	0.3417	0.4863	0.256	0.4863	0.2208	0.4863	0.1928	0.4863	0.1701	0.4863	0.1409	0.4863	0.1323
0.5094	0.3522	0.5094	0.2656	0.5094	0.2325	0.5094	0.2054	0.5094	0.1831	0.5094	0.1497	0.5094	0.1391

PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.4096	0.5337	0.2771	0.5337	0.2325	0.5337	0.2054	0.5337	0.1831	0.5337	0.1539	0.5337	0.1396
0.5591	0.4096	0.5591	0.2771	0.5591	0.2398	0.5591	0.2148	0.5591	0.1949	0.5591	0.1654	0.5591	0.1396
0.5857	0.4096	0.5857	0.2771	0.5857	0.2404	0.5857	0.2159	0.5857	0.1975	0.5857	0.1686	0.5857	0.1441
0.6136	0.4475	0.6136	0.2969	0.6136	0.2444	0.6136	0.2234	0.6136	0.2051	0.6136	0.1751	0.6136	0.1441
0.6428	0.478	0.6428	0.3547	0.6428	0.3006	0.6428	0.2612	0.6428	0.2347	0.6428	0.1988	0.6428	0.168
0.6734	0.478	0.6734	0.3547	0.6734	0.3006	0.6734	0.2612	0.6734	0.2413	0.6734	0.2165	0.6734	0.1872
0.7055	0.478	0.7055	0.3547	0.7055	0.3006	0.7055	0.2612	0.7055	0.2413	0.7055	0.2186	0.7055	0.1922
0.7391	0.478	0.7391	0.3547	0.7391	0.3006	0.7391	0.2692	0.7391	0.2463	0.7391	0.2186	0.7391	0.1922
0.7743	0.5518	0.7743	0.3958	0.7743	0.3332	0.7743	0.2918	0.7743	0.268	0.7743	0.2351	0.7743	0.2018
0.8111	0.5518	0.8111	0.3958	0.8111	0.3332	0.8111	0.3035	0.8111	0.2874	0.8111	0.2587	0.8111	0.2236
0.8497	0.5518	0.8497	0.3958	0.8497	0.3332	0.8497	0.3117	0.8497	0.2984	0.8497	0.2723	0.8497	0.2373
0.8902	0.5518	0.8902	0.3958	0.8902	0.3656	0.8902	0.3431	0.8902	0.3226	0.8902	0.2873	0.8902	0.2462
0.9326	0.8605	0.9326	0.5585	0.9326	0.4629	0.9326	0.4023	0.9326	0.3602	0.9326	0.3049	0.9326	0.2549
0.977	0.8605	0.977	0.5585	0.977	0.4629	0.977	0.4045	0.977	0.3644	0.977	0.3083	0.977	0.2637
1.0235	0.9315	1.0235	0.5965	1.0235	0.5261	1.0235	0.4814	1.0235	0.4436	1.0235	0.3837	1.0235	0.3277
1.0723	0.9315	1.0723	0.6685	1.0723	0.603	1.0723	0.5467	1.0723	0.4995	1.0723	0.4355	1.0723	0.3729
1.1233	1.3398	1.1233	0.8315	1.1233	0.6788	1.1233	0.5837	1.1233	0.5408	1.1233	0.4681	1.1233	0.3987
1.1768	1.3398	1.1768	0.8315	1.1768	0.6788	1.1768	0.5855	1.1768	0.5505	1.1768	0.4858	1.1768	0.4238
1.2328	1.3398	1.2328	0.8315	1.2328	0.7369	1.2328	0.6596	1.2328	0.5925	1.2328	0.5105	1.2328	0.452
1.2916	1.3398	1.2916	0.9002	1.2916	0.7926	1.2916	0.7024	1.2916	0.6263	1.2916	0.5455	1.2916	0.4806
1.353	1.3398	1.353	0.9485	1.353	0.7926	1.353	0.7024	1.353	0.6282	1.353	0.574	1.353	0.5058
1.4175	1.4626	1.4175	0.9485	1.4175	0.7926	1.4175	0.7024	1.4175	0.6579	1.4175	0.6026	1.4175	0.5321
1.485	1.4626	1.485	0.9485	1.485	0.7926	1.485	0.7282	1.485	0.6958	1.485	0.636	1.485	0.5624
1.5557	1.5113	1.5557	1.0297	1.5557	0.8797	1.5557	0.7754	1.5557	0.726	1.5557	0.6634	1.5557	0.5886
1.6298	1.8158	1.6298	1.1086	1.6298	0.9552	1.6298	0.8627	1.6298	0.7931	1.6298	0.6875	1.6298	0.6064
1.7074	1.8158	1.7074	1.1086	1.7074	0.9552	1.7074	0.8627	1.7074	0.7931	1.7074	0.7024	1.7074	0.6246
1.7887	1.8158	1.7887	1.1086	1.7887	0.9552	1.7887	0.8627	1.7887	0.7931	1.7887	0.7213	1.7887	0.6476
1.8738	1.8158	1.8738	1.1086	1.8738	0.9552	1.8738	0.8651	1.8738	0.8263	1.8738	0.7567	1.8738	0.6698
1.963	1.8158	1.963	1.1086	1.963	0.9552	1.963	0.8972	1.963	0.8525	1.963	0.7755	1.963	0.683
2.0565	1.7414	2.0565	1.0948	2.0565	0.9593	2.0565	0.9017	2.0565	0.8525	2.0565	0.7755	2.0565	0.683
2.1544	1.7414	2.1544	1.0948	2.1544	0.9593	2.1544	0.9017	2.1544	0.8525	2.1544	0.7755	2.1544	0.683
2.257	1.5091	2.257	1.0367	2.257	0.9593	2.257	0.9017	2.257	0.8525	2.257	0.7755	2.257	0.683
2.3645	1.5091	2.3645	1.0367	2.3645	0.9593	2.3645	0.9017	2.3645	0.8525	2.3645	0.7755	2.3645	0.683
2.4771	1.5091	2.4771	1.0367	2.4771	1.009	2.4771	0.9017	2.4771	0.852	2.4771	0.7697	2.4771	0.6811
2.595	1.5091	2.595	1.0367	2.595	1.009	2.595	0.9017	2.595	0.8387	2.595	0.7357	2.595	0.6811

PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	1.5091	2.7186	1.0367	2.7186	1.009	2.7186	0.9017	2.7186	0.8387	2.7186	0.7357	2.7186	0.6811
2.848	1.5091	2.848	1.0367	2.848	1.009	2.848	0.9017	2.848	0.8387	2.848	0.7357	2.848	0.6811
2.9836	1.5091	2.9836	1.0367	2.9836	1.009	2.9836	0.9017	2.9836	0.8387	2.9836	0.7357	2.9836	0.6811
3.1257	1.5091	3.1257	1.0367	3.1257	0.9237	3.1257	0.9017	3.1257	0.8387	3.1257	0.7357	3.1257	0.6811
3.2745	1.5091	3.2745	1.0367	3.2745	0.9237	3.2745	0.9017	3.2745	0.8387	3.2745	0.7357	3.2745	0.6811
3.4305	1.5091	3.4305	1.0367	3.4305	0.9237	3.4305	0.9017	3.4305	0.8387	3.4305	0.7357	3.4305	0.6801
3.5938	1.6472	3.5938	1.0367	3.5938	0.9237	3.5938	0.9017	3.5938	0.8387	3.5938	0.7357	3.5938	0.6801
3.7649	1.6472	3.7649	1.1356	3.7649	0.9237	3.7649	0.9017	3.7649	0.8387	3.7649	0.7357	3.7649	0.6766
3.9442	1.6472	3.9442	1.1356	3.9442	0.9237	3.9442	0.906	3.9442	0.8387	3.9442	0.7357	3.9442	0.6759
4.132	1.6472	4.132	1.1356	4.132	0.9237	4.132	0.906	4.132	0.8387	4.132	0.7357	4.132	0.6712
4.3288	1.6472	4.3288	1.1356	4.3288	0.9237	4.3288	0.906	4.3288	0.8387	4.3288	0.7357	4.3288	0.6626
4.5349	1.6472	4.5349	1.1356	4.5349	0.9237	4.5349	0.906	4.5349	0.8387	4.5349	0.7357	4.5349	0.6525
4.7508	1.6472	4.7508	1.1048	4.7508	0.9237	4.7508	0.906	4.7508	0.8387	4.7508	0.7357	4.7508	0.6316
4.977	1.6472	4.977	0.9746	4.977	0.8757	4.977	0.829	4.977	0.7851	4.977	0.7083	4.977	0.6206
5.214	1.6472	5.214	0.9746	5.214	0.8463	5.214	0.785	5.214	0.7434	5.214	0.6732	5.214	0.5898
5.4623	1.7798	5.4623	0.9746	5.4623	0.8463	5.4623	0.785	5.4623	0.7434	5.4623	0.6732	5.4623	0.5898
5.7224	1.7798	5.7224	0.9746	5.7224	0.8463	5.7224	0.785	5.7224	0.7434	5.7224	0.6732	5.7224	0.5898
5.9948	1.7798	5.9948	0.9746	5.9948	0.8438	5.9948	0.785	5.9948	0.7434	5.9948	0.6732	5.9948	0.5898
6.2803	1.7798	6.2803	0.9746	6.2803	0.8438	6.2803	0.785	6.2803	0.7434	6.2803	0.6732	6.2803	0.5898
6.5793	1.7798	6.5793	0.9746	6.5793	0.8438	6.5793	0.7804	6.5793	0.7393	6.5793	0.6657	6.5793	0.5795
6.8926	1.7798	6.8926	0.963	6.8926	0.8429	6.8926	0.7674	6.8926	0.7128	6.8926	0.6345	6.8926	0.5677
7.2208	1.4914	7.2208	0.935	7.2208	0.7922	7.2208	0.7331	7.2208	0.6844	7.2208	0.6283	7.2208	0.5677
7.5646	1.168	7.5646	0.822	7.5646	0.7632	7.5646	0.7188	7.5646	0.6833	7.5646	0.6283	7.5646	0.5677
7.9248	1.0987	7.9248	0.8201	7.9248	0.7623	7.9248	0.7176	7.9248	0.6811	7.9248	0.6237	7.9248	0.5627
8.3022	1.0987	8.3022	0.7845	8.3022	0.7283	8.3022	0.6777	8.3022	0.6364	8.3022	0.5884	8.3022	0.5417
8.6975	0.8935	8.6975	0.7092	8.6975	0.6368	8.6975	0.6061	8.6975	0.5819	8.6975	0.5373	8.6975	0.5059
9.1116	0.8935	9.1116	0.7092	9.1116	0.6368	9.1116	0.5827	9.1116	0.5505	9.1116	0.5085	9.1116	0.4846
9.5455	0.8763	9.5455	0.7092	9.5455	0.6368	9.5455	0.5827	9.5455	0.5459	9.5455	0.4951	9.5455	0.4643
10	0.8763	10	0.7092	10	0.6368	10	0.5827	10	0.5459	10	0.4934	10	0.4429
10.4762	0.8603	10.4762	0.7092	10.4762	0.6368	10.4762	0.5774	10.4762	0.5297	10.4762	0.4688	10.4762	0.4271
10.975	0.791	10.975	0.6543	10.975	0.6067	10.975	0.5582	10.975	0.5137	10.975	0.4674	10.975	0.4271
11.4976	0.791	11.4976	0.6543	11.4976	0.6014	11.4976	0.5519	11.4976	0.5094	11.4976	0.4435	11.4976	0.4142
12.045	0.6677	12.045	0.5543	12.045	0.5086	12.045	0.4716	12.045	0.4394	12.045	0.4081	12.045	0.3915
12.6186	0.6325	12.6186	0.5145	12.6186	0.4727	12.6186	0.4409	12.6186	0.4251	12.6186	0.4004	12.6186	0.3774
13.2194	0.6325	13.2194	0.5025	13.2194	0.4639	13.2194	0.4269	13.2194	0.4021	13.2194	0.379	13.2194	0.3634

PTWW037.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 37 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.6152	13.8489	0.4815	13.8489	0.433	13.8489	0.3995	13.8489	0.3896	13.8489	0.3705	13.8489	0.3527
14.5083	0.5318	14.5083	0.4455	14.5083	0.4096	14.5083	0.381	14.5083	0.3726	14.5083	0.3575	14.5083	0.3484
15.1991	0.4787	15.1991	0.4141	15.1991	0.3936	15.1991	0.3795	15.1991	0.3697	15.1991	0.3575	15.1991	0.3484
15.9228	0.4787	15.9228	0.3815	15.9228	0.3644	15.9228	0.3609	15.9228	0.358	15.9228	0.3528	15.9228	0.3467
16.681	0.4787	16.681	0.3815	16.681	0.3644	16.681	0.3544	16.681	0.3483	16.681	0.3439	16.681	0.3416
17.4753	0.4307	17.4753	0.3815	17.4753	0.3644	17.4753	0.3544	17.4753	0.3483	17.4753	0.3418	17.4753	0.337
18.3074	0.4095	18.3074	0.3431	18.3074	0.3367	18.3074	0.3354	18.3074	0.3336	18.3074	0.3315	18.3074	0.3305
19.1791	0.4095	19.1791	0.3431	19.1791	0.3349	19.1791	0.3293	19.1791	0.3262	19.1791	0.3251	19.1791	0.325
20.0923	0.3708	20.0923	0.3431	20.0923	0.3349	20.0923	0.3293	20.0923	0.3262	20.0923	0.3243	20.0923	0.323
21.049	0.3708	21.049	0.3431	21.049	0.3349	21.049	0.3293	21.049	0.3262	21.049	0.3236	21.049	0.3215
22.0513	0.3708	22.0513	0.3431	22.0513	0.3349	22.0513	0.3293	22.0513	0.3262	22.0513	0.323	22.0513	0.3199
23.1013	0.3708	23.1013	0.3431	23.1013	0.3349	23.1013	0.3293	23.1013	0.3262	23.1013	0.323	23.1013	0.3199
24.2013	0.3708	24.2013	0.3431	24.2013	0.3349	24.2013	0.3293	24.2013	0.3255	24.2013	0.3206	24.2013	0.3186
25.3536	0.3358	25.3536	0.3197	25.3536	0.3192	25.3536	0.3187	25.3536	0.3181	25.3536	0.317	25.3536	0.3164
26.5609	0.3358	26.5609	0.3169	26.5609	0.3159	26.5609	0.3158	26.5609	0.3158	26.5609	0.3155	26.5609	0.3148
27.8256	0.3358	27.8256	0.3169	27.8256	0.3159	27.8256	0.3153	27.8256	0.3149	27.8256	0.3143	27.8256	0.3137
29.1505	0.3358	29.1505	0.3165	29.1505	0.3153	29.1505	0.3142	29.1505	0.3137	29.1505	0.3132	29.1505	0.313
30.5386	0.3312	30.5386	0.3165	30.5386	0.3153	30.5386	0.3142	30.5386	0.3133	30.5386	0.3131	30.5386	0.313
31.9927	0.3297	31.9927	0.3163	31.9927	0.3146	31.9927	0.3138	31.9927	0.3132	31.9927	0.3131	31.9927	0.313
33.516	0.3144	33.516	0.3134	33.516	0.3133	33.516	0.3132	33.516	0.3132	33.516	0.3131	33.516	0.313
35.1119	0.3135	35.1119	0.3134	35.1119	0.3133	35.1119	0.3132	35.1119	0.3132	35.1119	0.3131	35.1119	0.313
36.7838	0.3134	36.7838	0.3133	36.7838	0.3132	36.7838	0.3132	36.7838	0.3132	36.7838	0.3131	36.7838	0.313
38.5353	0.3132	38.5353	0.3132	38.5353	0.3131	38.5353	0.3131	38.5353	0.3131	38.5353	0.3131	38.5353	0.313
40.3702	0.3131	40.3702	0.3131	40.3702	0.3131	40.3702	0.313	40.3702	0.313	40.3702	0.313	40.3702	0.3129
42.2924	0.313	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129	42.2924	0.3129
44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128	44.3062	0.3128
46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127	46.4159	0.3127
48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126	48.626	0.3126
50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125	50.9414	0.3125

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0405	0.1098	0.0365	0.1098	0.0342	0.1098	0.0322	0.1098	0.0303	0.1098	0.0272	0.1098	0.0235
0.115	0.0405	0.115	0.0365	0.115	0.0342	0.115	0.0322	0.115	0.0303	0.115	0.0272	0.115	0.0259
0.1204	0.0405	0.1204	0.0365	0.1204	0.0342	0.1204	0.0322	0.1204	0.031	0.1204	0.0297	0.1204	0.028
0.1262	0.0405	0.1262	0.0365	0.1262	0.0352	0.1262	0.0342	0.1262	0.0334	0.1262	0.0318	0.1262	0.0297
0.1322	0.0405	0.1322	0.0382	0.1322	0.037	0.1322	0.0359	0.1322	0.0349	0.1322	0.0333	0.1322	0.0316
0.1385	0.0411	0.1385	0.0392	0.1385	0.0382	0.1385	0.0372	0.1385	0.0363	0.1385	0.0348	0.1385	0.0328
0.1451	0.0417	0.1451	0.0398	0.1451	0.0387	0.1451	0.0377	0.1451	0.0368	0.1451	0.0352	0.1451	0.0332
0.152	0.0439	0.152	0.0401	0.152	0.0387	0.152	0.0377	0.152	0.0368	0.152	0.0352	0.152	0.0332
0.1592	0.0462	0.1592	0.0416	0.1592	0.0396	0.1592	0.0377	0.1592	0.0368	0.1592	0.0352	0.1592	0.0332
0.1668	0.0584	0.1668	0.0506	0.1668	0.0463	0.1668	0.0426	0.1668	0.0395	0.1668	0.0352	0.1668	0.0332
0.1748	0.0645	0.1748	0.0566	0.1748	0.0522	0.1748	0.0484	0.1748	0.045	0.1748	0.0394	0.1748	0.0332
0.1831	0.0668	0.1831	0.0583	0.1831	0.0541	0.1831	0.0504	0.1831	0.0471	0.1831	0.0415	0.1831	0.0354
0.1918	0.0678	0.1918	0.0586	0.1918	0.0543	0.1918	0.0507	0.1918	0.0474	0.1918	0.0418	0.1918	0.038
0.2009	0.0697	0.2009	0.0596	0.2009	0.0543	0.2009	0.0514	0.2009	0.0487	0.2009	0.0438	0.2009	0.0411
0.2105	0.0722	0.2105	0.062	0.2105	0.0582	0.2105	0.0547	0.2105	0.0516	0.2105	0.0482	0.2105	0.0446
0.2205	0.0819	0.2205	0.0709	0.2205	0.0651	0.2205	0.06	0.2205	0.0574	0.2205	0.0531	0.2205	0.0475
0.231	0.0959	0.231	0.0792	0.231	0.0703	0.231	0.0665	0.231	0.063	0.231	0.0578	0.231	0.0525
0.242	0.0984	0.242	0.0845	0.242	0.0774	0.242	0.0721	0.242	0.0681	0.242	0.0618	0.242	0.0551
0.2535	0.1059	0.2535	0.0913	0.2535	0.0833	0.2535	0.0763	0.2535	0.0702	0.2535	0.0618	0.2535	0.0551
0.2656	0.1138	0.2656	0.0944	0.2656	0.084	0.2656	0.0763	0.2656	0.0702	0.2656	0.0618	0.2656	0.0551
0.2783	0.1138	0.2783	0.0944	0.2783	0.084	0.2783	0.0779	0.2783	0.074	0.2783	0.0677	0.2783	0.0611
0.2915	0.1138	0.2915	0.1008	0.2915	0.0946	0.2915	0.0892	0.2915	0.0843	0.2915	0.0764	0.2915	0.0677
0.3054	0.1179	0.3054	0.1056	0.3054	0.0987	0.3054	0.0926	0.3054	0.0872	0.3054	0.0785	0.3054	0.0706
0.3199	0.1179	0.3199	0.1056	0.3199	0.0987	0.3199	0.0926	0.3199	0.0894	0.3199	0.0844	0.3199	0.0786
0.3352	0.1179	0.3352	0.1098	0.3352	0.1056	0.3352	0.1017	0.3352	0.0982	0.3352	0.0921	0.3352	0.0848
0.3511	0.1654	0.3511	0.129	0.3511	0.1133	0.3511	0.1075	0.3511	0.1035	0.3511	0.0964	0.3511	0.088
0.3678	0.2415	0.3678	0.1832	0.3678	0.1565	0.3678	0.1364	0.3678	0.1213	0.3678	0.1006	0.3678	0.088
0.3853	0.2549	0.3853	0.187	0.3853	0.1595	0.3853	0.1387	0.3853	0.1269	0.3853	0.1092	0.3853	0.091
0.4037	0.2549	0.4037	0.187	0.4037	0.1595	0.4037	0.1387	0.4037	0.1279	0.4037	0.1163	0.4037	0.1034
0.4229	0.2549	0.4229	0.187	0.4229	0.1651	0.4229	0.1485	0.4229	0.1344	0.4229	0.1233	0.4229	0.1111
0.4431	0.3288	0.4431	0.2339	0.4431	0.2038	0.4431	0.1813	0.4431	0.1641	0.4431	0.1399	0.4431	0.1181
0.4642	0.3288	0.4642	0.2339	0.4642	0.2038	0.4642	0.1813	0.4642	0.1641	0.4642	0.1399	0.4642	0.1181
0.4863	0.3288	0.4863	0.2339	0.4863	0.2038	0.4863	0.1813	0.4863	0.1641	0.4863	0.1421	0.4863	0.1246
0.5094	0.3288	0.5094	0.2339	0.5094	0.2038	0.5094	0.1813	0.5094	0.1641	0.5094	0.1472	0.5094	0.1295

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.3356	0.5337	0.2387	0.5337	0.2081	0.5337	0.19	0.5337	0.1796	0.5337	0.1614	0.5337	0.1401
0.5591	0.3997	0.5591	0.2762	0.5591	0.244	0.5591	0.2179	0.5591	0.1971	0.5591	0.1724	0.5591	0.1556
0.5857	0.3997	0.5857	0.2863	0.5857	0.2573	0.5857	0.2332	0.5857	0.2128	0.5857	0.1853	0.5857	0.1724
0.6136	0.3997	0.6136	0.2863	0.6136	0.2573	0.6136	0.2332	0.6136	0.2128	0.6136	0.1998	0.6136	0.1858
0.6428	0.3997	0.6428	0.2863	0.6428	0.2573	0.6428	0.2332	0.6428	0.2219	0.6428	0.2115	0.6428	0.1969
0.6734	0.411	0.6734	0.2863	0.6734	0.2574	0.6734	0.2449	0.6734	0.2378	0.6734	0.2244	0.6734	0.2072
0.7055	0.411	0.7055	0.301	0.7055	0.2757	0.7055	0.2638	0.7055	0.2534	0.7055	0.2357	0.7055	0.2156
0.7391	0.6367	0.7391	0.4169	0.7391	0.3404	0.7391	0.2927	0.7391	0.2746	0.7391	0.2445	0.7391	0.217
0.7743	0.6367	0.7743	0.4169	0.7743	0.3404	0.7743	0.3038	0.7743	0.2858	0.7743	0.2555	0.7743	0.2218
0.8111	0.6596	0.8111	0.4428	0.8111	0.386	0.8111	0.3422	0.8111	0.3081	0.8111	0.2598	0.8111	0.2218
0.8497	0.6596	0.8497	0.4428	0.8497	0.4051	0.8497	0.3738	0.8497	0.347	0.8497	0.3034	0.8497	0.256
0.8902	0.6828	0.8902	0.4451	0.8902	0.4051	0.8902	0.3738	0.8902	0.3511	0.8902	0.3194	0.8902	0.2761
0.9326	0.737	0.9326	0.5191	0.9326	0.4567	0.9326	0.411	0.9326	0.3766	0.9326	0.328	0.9326	0.2821
0.977	0.9914	0.977	0.6358	0.977	0.525	0.977	0.4553	0.977	0.408	0.977	0.3484	0.977	0.2994
1.0235	0.9914	1.0235	0.6358	1.0235	0.5662	1.0235	0.5139	1.0235	0.4702	1.0235	0.4041	1.0235	0.3384
1.0723	0.9914	1.0723	0.6668	1.0723	0.5976	1.0723	0.5399	1.0723	0.4914	1.0723	0.4166	1.0723	0.3541
1.1233	1.2606	1.1233	0.8561	1.1233	0.7168	1.1233	0.6174	1.1233	0.5433	1.1233	0.4431	1.1233	0.3633
1.1768	1.2606	1.1768	0.8561	1.1768	0.7168	1.1768	0.6174	1.1768	0.5433	1.1768	0.4467	1.1768	0.3729
1.2328	1.2606	1.2328	0.935	1.2328	0.8202	1.2328	0.7293	1.2328	0.6556	1.2328	0.5433	1.2328	0.4321
1.2916	1.2606	1.2916	1.0351	1.2916	0.8991	1.2916	0.793	1.2916	0.708	1.2916	0.5814	1.2916	0.4586
1.353	1.3319	1.353	1.0351	1.353	0.8991	1.353	0.793	1.353	0.708	1.353	0.5814	1.353	0.4631
1.4175	1.6092	1.4175	1.1325	1.4175	0.9683	1.4175	0.8621	1.4175	0.7817	1.4175	0.6627	1.4175	0.5486
1.485	1.6092	1.485	1.1325	1.485	0.9683	1.485	0.885	1.485	0.8264	1.485	0.7199	1.485	0.6006
1.5557	1.8872	1.5557	1.1818	1.5557	1.0008	1.5557	0.892	1.5557	0.8264	1.5557	0.7265	1.5557	0.6185
1.6298	1.9322	1.6298	1.3084	1.6298	1.1683	1.6298	1.0534	1.6298	0.9565	1.6298	0.8016	1.6298	0.6401
1.7074	1.9702	1.7074	1.3601	1.7074	1.2627	1.7074	1.1415	1.7074	1.0371	1.7074	0.8692	1.7074	0.7006
1.7887	2.4552	1.7887	1.4456	1.7887	1.2629	1.7887	1.1415	1.7887	1.0371	1.7887	0.8773	1.7887	0.7486
1.8738	2.4552	1.8738	1.4456	1.8738	1.2629	1.8738	1.1415	1.8738	1.0371	1.8738	0.9259	1.8738	0.788
1.963	2.4552	1.963	1.4456	1.963	1.2629	1.963	1.1498	1.963	1.0818	1.963	0.9626	1.963	0.8157
2.0565	2.4552	2.0565	1.4456	2.0565	1.2629	2.0565	1.1701	2.0565	1.1049	2.0565	0.9829	2.0565	0.8288
2.1544	2.4552	2.1544	1.4456	2.1544	1.3316	2.1544	1.2297	2.1544	1.1411	2.1544	0.9932	2.1544	0.8645
2.257	2.2367	2.257	1.4456	2.257	1.3316	2.257	1.2297	2.257	1.1534	2.257	1.0344	2.257	0.8939
2.3645	2.2367	2.3645	1.4456	2.3645	1.3316	2.3645	1.2422	2.3645	1.1724	2.3645	1.0471	2.3645	0.898
2.4771	2.2367	2.4771	1.6143	2.4771	1.3804	2.4771	1.2551	2.4771	1.1724	2.4771	1.0471	2.4771	0.898
2.595	2.138	2.595	1.6143	2.595	1.3804	2.595	1.2551	2.595	1.1724	2.595	1.0471	2.595	0.898

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	2.138	2.7186	1.6143	2.7186	1.3804	2.7186	1.2551	2.7186	1.1724	2.7186	1.0471	2.7186	0.898
2.848	2.138	2.848	1.6143	2.848	1.3804	2.848	1.2551	2.848	1.1724	2.848	1.0471	2.848	0.898
2.9836	2.138	2.9836	1.6143	2.9836	1.3804	2.9836	1.2551	2.9836	1.1568	2.9836	1.0114	2.9836	0.8645
3.1257	2.138	3.1257	1.3773	3.1257	1.0982	3.1257	1.0035	3.1257	0.9573	3.1257	0.8829	3.1257	0.7931
3.2745	2.138	3.2745	1.2119	3.2745	1.0686	3.2745	0.9673	3.2745	0.886	3.2745	0.778	3.2745	0.7168
3.4305	1.5368	3.4305	1.0471	3.4305	0.9495	3.4305	0.8824	3.4305	0.8379	3.4305	0.7547	3.4305	0.6598
3.5938	1.5368	3.5938	1.0165	3.5938	0.898	3.5938	0.8299	3.5938	0.7946	3.5938	0.7273	3.5938	0.6376
3.7649	1.5368	3.7649	1.0165	3.7649	0.898	3.7649	0.8299	3.7649	0.7769	3.7649	0.6958	3.7649	0.6089
3.9442	1.5368	3.9442	1.0165	3.9442	0.8472	3.9442	0.7941	3.9442	0.7477	3.9442	0.6723	3.9442	0.5955
4.132	1.5368	4.132	1.0165	4.132	0.845	4.132	0.7941	4.132	0.7477	4.132	0.6723	4.132	0.5955
4.3288	1.5368	4.3288	0.9973	4.3288	0.8194	4.3288	0.7522	4.3288	0.7017	4.3288	0.6303	4.3288	0.5622
4.5349	1.5368	4.5349	0.8745	4.5349	0.7347	4.5349	0.6652	4.5349	0.6197	4.5349	0.5656	4.5349	0.5097
4.7508	1.518	4.7508	0.8745	4.7508	0.7183	4.7508	0.6169	4.7508	0.5587	4.7508	0.4909	4.7508	0.4618
4.977	1.518	4.977	0.8614	4.977	0.7025	4.977	0.6052	4.977	0.5367	4.977	0.4572	4.977	0.4284
5.214	1.3404	5.214	0.7497	5.214	0.6443	5.214	0.5421	5.214	0.5109	5.214	0.4398	5.214	0.4021
5.4623	1.3404	5.4623	0.7497	5.4623	0.6443	5.4623	0.5254	5.4623	0.5109	5.4623	0.438	5.4623	0.3783
5.7224	1.3404	5.7224	0.7497	5.7224	0.6443	5.7224	0.5254	5.7224	0.5109	5.7224	0.438	5.7224	0.3681
5.9948	1.3404	5.9948	0.7497	5.9948	0.6443	5.9948	0.5254	5.9948	0.5109	5.9948	0.438	5.9948	0.3681
6.2803	1.3404	6.2803	0.7497	6.2803	0.6443	6.2803	0.5254	6.2803	0.5109	6.2803	0.438	6.2803	0.3681
6.5793	1.3404	6.5793	0.7497	6.5793	0.6443	6.5793	0.5254	6.5793	0.5109	6.5793	0.438	6.5793	0.3681
6.8926	1.3404	6.8926	0.7497	6.8926	0.6443	6.8926	0.5254	6.8926	0.5109	6.8926	0.438	6.8926	0.3681
7.2208	1.274	7.2208	0.7497	7.2208	0.6443	7.2208	0.5254	7.2208	0.5109	7.2208	0.438	7.2208	0.3681
7.5646	1.274	7.5646	0.7455	7.5646	0.6309	7.5646	0.5254	7.5646	0.5092	7.5646	0.438	7.5646	0.3681
7.9248	1.274	7.9248	0.6003	7.9248	0.5494	7.9248	0.5064	7.9248	0.471	7.9248	0.4168	7.9248	0.3609
8.3022	1.274	8.3022	0.5659	8.3022	0.4849	8.3022	0.454	8.3022	0.4288	8.3022	0.394	8.3022	0.3594
8.6975	1.0027	8.6975	0.521	8.6975	0.4849	8.6975	0.454	8.6975	0.4288	8.6975	0.3913	8.6975	0.3536
9.1116	1.0027	9.1116	0.4701	9.1116	0.4386	9.1116	0.4105	9.1116	0.3865	9.1116	0.3654	9.1116	0.3376
9.5455	1.0027	9.5455	0.4494	9.5455	0.4069	9.5455	0.3794	9.5455	0.3652	9.5455	0.3418	9.5455	0.3167
10	0.6463	10	0.4494	10	0.4069	10	0.3794	10	0.3585	10	0.3293	10	0.3015
10.4762	0.6411	10.4762	0.4371	10.4762	0.3959	10.4762	0.3648	10.4762	0.347	10.4762	0.3169	10.4762	0.2936
10.975	0.6411	10.975	0.4085	10.975	0.3668	10.975	0.3387	10.975	0.3179	10.975	0.2923	10.975	0.2891
11.4976	0.6411	11.4976	0.3647	11.4976	0.3304	11.4976	0.3133	11.4976	0.3024	11.4976	0.2893	11.4976	0.2857
12.045	0.6411	12.045	0.3647	12.045	0.3304	12.045	0.3133	12.045	0.3024	12.045	0.2893	12.045	0.2839
12.6186	0.6411	12.6186	0.3647	12.6186	0.3304	12.6186	0.3133	12.6186	0.3024	12.6186	0.2893	12.6186	0.2831
13.2194	0.6411	13.2194	0.3647	13.2194	0.3304	13.2194	0.3133	13.2194	0.3024	13.2194	0.2893	13.2194	0.2831

PTWW038.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 38 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 12.5 H

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.6411	13.8489	0.3647	13.8489	0.3304	13.8489	0.3133	13.8489	0.3024	13.8489	0.2893	13.8489	0.2831
14.5083	0.6411	14.5083	0.3647	14.5083	0.3304	14.5083	0.3133	14.5083	0.3024	14.5083	0.2893	14.5083	0.2831
15.1991	0.6411	15.1991	0.3647	15.1991	0.3304	15.1991	0.3133	15.1991	0.3024	15.1991	0.2893	15.1991	0.2831
15.9228	0.6411	15.9228	0.3647	15.9228	0.3304	15.9228	0.3133	15.9228	0.3024	15.9228	0.2893	15.9228	0.2831
16.681	0.6411	16.681	0.3647	16.681	0.3304	16.681	0.3133	16.681	0.3024	16.681	0.2893	16.681	0.2831
17.4753	0.6411	17.4753	0.3647	17.4753	0.3304	17.4753	0.3133	17.4753	0.3024	17.4753	0.2893	17.4753	0.2831
18.3074	0.4714	18.3074	0.3284	18.3074	0.3152	18.3074	0.3052	18.3074	0.298	18.3074	0.2893	18.3074	0.2831
19.1791	0.4714	19.1791	0.3088	19.1791	0.2936	19.1791	0.2872	19.1791	0.2851	19.1791	0.2842	19.1791	0.2825
20.0923	0.4714	20.0923	0.3088	20.0923	0.2886	20.0923	0.2865	20.0923	0.2851	20.0923	0.2833	20.0923	0.2814
21.049	0.3824	21.049	0.2877	21.049	0.2842	21.049	0.2843	21.049	0.2836	21.049	0.2819	21.049	0.2801
22.0513	0.3824	22.0513	0.2873	22.0513	0.2834	22.0513	0.2816	22.0513	0.2806	22.0513	0.2795	22.0513	0.2783
23.1013	0.2973	23.1013	0.2832	23.1013	0.2814	23.1013	0.2802	23.1013	0.2793	23.1013	0.2779	23.1013	0.2765
24.2013	0.2947	24.2013	0.2805	24.2013	0.2788	24.2013	0.2776	24.2013	0.2768	24.2013	0.2763	24.2013	0.2756
25.3536	0.288	25.3536	0.2805	25.3536	0.2788	25.3536	0.2776	25.3536	0.2768	25.3536	0.2757	25.3536	0.2749
26.5609	0.288	26.5609	0.2805	26.5609	0.2788	26.5609	0.2776	26.5609	0.2768	26.5609	0.2757	26.5609	0.2747
27.8256	0.2867	27.8256	0.28	27.8256	0.2782	27.8256	0.2771	27.8256	0.2762	27.8256	0.2751	27.8256	0.2741
29.1505	0.2773	29.1505	0.2753	29.1505	0.2749	29.1505	0.2745	29.1505	0.2742	29.1505	0.2738	29.1505	0.2732
30.5386	0.2773	30.5386	0.2727	30.5386	0.2726	30.5386	0.2725	30.5386	0.2724	30.5386	0.2723	30.5386	0.2721
31.9927	0.2707	31.9927	0.271	31.9927	0.271	31.9927	0.2711	31.9927	0.2711	31.9927	0.2712	31.9927	0.2712
33.516	0.2707	33.516	0.2707	33.516	0.2706	33.516	0.2706	33.516	0.2706	33.516	0.2706	33.516	0.2706
35.1119	0.27	35.1119	0.27	35.1119	0.27	35.1119	0.2701	35.1119	0.2701	35.1119	0.2701	35.1119	0.2701
36.7838	0.2695	36.7838	0.2696	36.7838	0.2696	36.7838	0.2696	36.7838	0.2697	36.7838	0.2697	36.7838	0.2697
38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693	38.5353	0.2693
40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269	40.3702	0.269
42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2687	42.2924	0.2688
44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685	44.3062	0.2685
46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683	46.4159	0.2683
48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681	48.626	0.2681
50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679	50.9414	0.2679

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping Freq.	0.50% Accel.	Freq.	2% Accel.	Freq.	3% Accel.	Freq.	4% Accel.	Freq.	5% Accel.	Freq.	7% Accel.	Freq.	10% Accel.
0.1098	0.0375	0.1098	0.0344	0.1098	0.0327	0.1098	0.0312	0.1098	0.0298	0.1098	0.0274	0.1098	0.0252
0.115	0.0375	0.115	0.0344	0.115	0.0327	0.115	0.0312	0.115	0.0299	0.115	0.0277	0.115	0.0258
0.1204	0.0375	0.1204	0.0344	0.1204	0.0331	0.1204	0.0322	0.1204	0.0312	0.1204	0.0294	0.1204	0.0269
0.1262	0.0431	0.1262	0.0397	0.1262	0.0378	0.1262	0.036	0.1262	0.0343	0.1262	0.0314	0.1262	0.0278
0.1322	0.0504	0.1322	0.045	0.1322	0.042	0.1322	0.0393	0.1322	0.0369	0.1322	0.0328	0.1322	0.0281
0.1385	0.056	0.1385	0.0489	0.1385	0.0449	0.1385	0.0414	0.1385	0.0384	0.1385	0.0345	0.1385	0.0303
0.1451	0.0581	0.1451	0.0509	0.1451	0.0475	0.1451	0.0445	0.1451	0.0419	0.1451	0.0375	0.1451	0.0326
0.152	0.0616	0.152	0.0546	0.152	0.0507	0.152	0.0472	0.152	0.0441	0.152	0.0391	0.152	0.0338
0.1592	0.062	0.1592	0.0546	0.1592	0.0507	0.1592	0.0472	0.1592	0.0442	0.1592	0.0397	0.1592	0.0351
0.1668	0.064	0.1668	0.0561	0.1668	0.0518	0.1668	0.0481	0.1668	0.0451	0.1668	0.0403	0.1668	0.0355
0.1748	0.064	0.1748	0.0561	0.1748	0.0518	0.1748	0.0481	0.1748	0.0451	0.1748	0.0403	0.1748	0.0355
0.1831	0.064	0.1831	0.0561	0.1831	0.0518	0.1831	0.0481	0.1831	0.0451	0.1831	0.0403	0.1831	0.0368
0.1918	0.0641	0.1918	0.0562	0.1918	0.0518	0.1918	0.0494	0.1918	0.0476	0.1918	0.0445	0.1918	0.0404
0.2009	0.0642	0.2009	0.0583	0.2009	0.0558	0.2009	0.0534	0.2009	0.0513	0.2009	0.0474	0.2009	0.0424
0.2105	0.0665	0.2105	0.0603	0.2105	0.0575	0.2105	0.0549	0.2105	0.0525	0.2105	0.049	0.2105	0.0449
0.2205	0.078	0.2205	0.0646	0.2205	0.0619	0.2205	0.0595	0.2205	0.0573	0.2205	0.0533	0.2205	0.0484
0.231	0.0933	0.231	0.0774	0.231	0.0694	0.231	0.063	0.231	0.0598	0.231	0.0556	0.231	0.0503
0.242	0.0933	0.242	0.0774	0.242	0.0722	0.242	0.0678	0.242	0.0637	0.242	0.0566	0.242	0.0512
0.2535	0.0933	0.2535	0.0817	0.2535	0.0771	0.2535	0.0729	0.2535	0.0692	0.2535	0.0628	0.2535	0.0552
0.2656	0.0933	0.2656	0.0839	0.2656	0.0794	0.2656	0.0754	0.2656	0.0717	0.2656	0.0653	0.2656	0.0575
0.2783	0.0953	0.2783	0.0846	0.2783	0.0794	0.2783	0.0754	0.2783	0.0717	0.2783	0.0653	0.2783	0.0581
0.2915	0.1186	0.2915	0.0985	0.2915	0.0889	0.2915	0.0814	0.2915	0.0754	0.2915	0.0668	0.2915	0.0594
0.3054	0.1503	0.3054	0.1233	0.3054	0.1096	0.3054	0.0984	0.3054	0.0894	0.3054	0.0758	0.3054	0.0632
0.3199	0.1503	0.3199	0.1233	0.3199	0.1096	0.3199	0.0984	0.3199	0.0894	0.3199	0.0802	0.3199	0.0706
0.3352	0.1503	0.3352	0.1233	0.3352	0.1096	0.3352	0.0984	0.3352	0.0932	0.3352	0.0857	0.3352	0.0762
0.3511	0.1503	0.3511	0.129	0.3511	0.1173	0.3511	0.107	0.3511	0.0997	0.3511	0.0894	0.3511	0.0786
0.3678	0.168	0.3678	0.1438	0.3678	0.1303	0.3678	0.1186	0.3678	0.1121	0.3678	0.1017	0.3678	0.0897
0.3853	0.168	0.3853	0.1438	0.3853	0.1345	0.3853	0.1278	0.3853	0.1218	0.3853	0.1114	0.3853	0.0992
0.4037	0.1939	0.4037	0.1599	0.4037	0.1426	0.4037	0.1306	0.4037	0.1259	0.4037	0.117	0.4037	0.1053
0.4229	0.2367	0.4229	0.1905	0.4229	0.172	0.4229	0.1557	0.4229	0.1416	0.4229	0.1217	0.4229	0.1092
0.4431	0.3089	0.4431	0.2194	0.4431	0.1882	0.4431	0.1671	0.4431	0.1496	0.4431	0.1274	0.4431	0.1099
0.4642	0.3417	0.4642	0.2524	0.4642	0.2138	0.4642	0.1852	0.4642	0.1637	0.4642	0.1345	0.4642	0.1215
0.4863	0.3417	0.4863	0.2561	0.4863	0.221	0.4863	0.1929	0.4863	0.1703	0.4863	0.1411	0.4863	0.1326
0.5094	0.3521	0.5094	0.2655	0.5094	0.2324	0.5094	0.2053	0.5094	0.1831	0.5094	0.15	0.5094	0.1394

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.5337	0.4094	0.5337	0.277	0.5337	0.2324	0.5337	0.2053	0.5337	0.1831	0.5337	0.1539	0.5337	0.1399
0.5591	0.4094	0.5591	0.277	0.5591	0.2399	0.5591	0.2149	0.5591	0.195	0.5591	0.1656	0.5591	0.1399
0.5857	0.4094	0.5857	0.277	0.5857	0.2401	0.5857	0.2157	0.5857	0.1974	0.5857	0.1686	0.5857	0.144
0.6136	0.4473	0.6136	0.2968	0.6136	0.2443	0.6136	0.2233	0.6136	0.205	0.6136	0.175	0.6136	0.144
0.6428	0.478	0.6428	0.3546	0.6428	0.3004	0.6428	0.2612	0.6428	0.2347	0.6428	0.1989	0.6428	0.1683
0.6734	0.478	0.6734	0.3546	0.6734	0.3004	0.6734	0.2612	0.6734	0.2416	0.6734	0.2168	0.6734	0.1875
0.7055	0.478	0.7055	0.3546	0.7055	0.3004	0.7055	0.2612	0.7055	0.2416	0.7055	0.2187	0.7055	0.1922
0.7391	0.478	0.7391	0.3546	0.7391	0.3004	0.7391	0.2693	0.7391	0.2464	0.7391	0.2187	0.7391	0.1922
0.7743	0.5516	0.7743	0.3957	0.7743	0.3328	0.7743	0.2914	0.7743	0.2681	0.7743	0.2353	0.7743	0.2018
0.8111	0.5516	0.8111	0.3957	0.8111	0.3328	0.8111	0.3036	0.8111	0.2876	0.8111	0.2588	0.8111	0.2241
0.8497	0.5516	0.8497	0.3957	0.8497	0.3328	0.8497	0.312	0.8497	0.2986	0.8497	0.2726	0.8497	0.2377
0.8902	0.5516	0.8902	0.3957	0.8902	0.3658	0.8902	0.3432	0.8902	0.3226	0.8902	0.2872	0.8902	0.2459
0.9326	0.86	0.9326	0.5582	0.9326	0.4625	0.9326	0.4018	0.9326	0.3596	0.9326	0.3042	0.9326	0.2543
0.977	0.86	0.977	0.5582	0.977	0.4625	0.977	0.4042	0.977	0.3641	0.977	0.3081	0.977	0.2635
1.0235	0.9305	1.0235	0.596	1.0235	0.5259	1.0235	0.4813	1.0235	0.4435	1.0235	0.3836	1.0235	0.3273
1.0723	0.9305	1.0723	0.6681	1.0723	0.6026	1.0723	0.5463	1.0723	0.4991	1.0723	0.435	1.0723	0.3728
1.1233	1.3364	1.1233	0.8307	1.1233	0.678	1.1233	0.5832	1.1233	0.5403	1.1233	0.4675	1.1233	0.3994
1.1768	1.3364	1.1768	0.8307	1.1768	0.678	1.1768	0.5853	1.1768	0.5503	1.1768	0.486	1.1768	0.4233
1.2328	1.3364	1.2328	0.8307	1.2328	0.7352	1.2328	0.6585	1.2328	0.5916	1.2328	0.5089	1.2328	0.45
1.2916	1.3364	1.2916	0.8976	1.2916	0.7903	1.2916	0.7004	1.2916	0.6246	1.2916	0.5436	1.2916	0.479
1.353	1.3364	1.353	0.9456	1.353	0.7903	1.353	0.7004	1.353	0.6262	1.353	0.5719	1.353	0.5034
1.4175	1.4619	1.4175	0.9456	1.4175	0.7903	1.4175	0.7004	1.4175	0.6574	1.4175	0.6019	1.4175	0.5319
1.485	1.4619	1.485	0.9456	1.485	0.7903	1.485	0.7283	1.485	0.6958	1.485	0.6359	1.485	0.562
1.5557	1.5117	1.5557	1.0299	1.5557	0.8804	1.5557	0.7761	1.5557	0.7253	1.5557	0.6625	1.5557	0.5874
1.6298	1.815	1.6298	1.1102	1.6298	0.9568	1.6298	0.8641	1.6298	0.7943	1.6298	0.6883	1.6298	0.605
1.7074	1.815	1.7074	1.1102	1.7074	0.9568	1.7074	0.8641	1.7074	0.7943	1.7074	0.703	1.7074	0.6249
1.7887	1.815	1.7887	1.1102	1.7887	0.9568	1.7887	0.8641	1.7887	0.7943	1.7887	0.7234	1.7887	0.6496
1.8738	1.815	1.8738	1.1102	1.8738	0.9568	1.8738	0.8669	1.8738	0.8279	1.8738	0.7584	1.8738	0.6712
1.963	1.815	1.963	1.1102	1.963	0.9568	1.963	0.8979	1.963	0.8532	1.963	0.7761	1.963	0.6839
2.0565	1.7425	2.0565	1.0955	2.0565	0.961	2.0565	0.9033	2.0565	0.8536	2.0565	0.7761	2.0565	0.6839
2.1544	1.7425	2.1544	1.0955	2.1544	0.961	2.1544	0.9033	2.1544	0.8536	2.1544	0.7761	2.1544	0.6839
2.257	1.515	2.257	1.0774	2.257	0.961	2.257	0.9033	2.257	0.8536	2.257	0.7761	2.257	0.6839
2.3645	1.515	2.3645	1.0774	2.3645	0.961	2.3645	0.9033	2.3645	0.8536	2.3645	0.7761	2.3645	0.6839
2.4771	1.515	2.4771	1.0774	2.4771	1.0152	2.4771	0.9033	2.4771	0.8536	2.4771	0.7713	2.4771	0.6886
2.595	1.515	2.595	1.0774	2.595	1.0152	2.595	0.9033	2.595	0.8536	2.595	0.7713	2.595	0.6927

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Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	1.515	2.7186	1.0774	2.7186	1.0152	2.7186	0.9033	2.7186	0.8536	2.7186	0.7713	2.7186	0.6934
2.848	1.515	2.848	1.0774	2.848	1.0152	2.848	0.9033	2.848	0.8536	2.848	0.7713	2.848	0.6934
2.9836	1.515	2.9836	1.0774	2.9836	1.0152	2.9836	0.9033	2.9836	0.8536	2.9836	0.7713	2.9836	0.6934
3.1257	1.515	3.1257	1.0774	3.1257	1.0152	3.1257	0.9033	3.1257	0.8536	3.1257	0.7713	3.1257	0.6934
3.2745	1.515	3.2745	1.0774	3.2745	1.0152	3.2745	0.9033	3.2745	0.8536	3.2745	0.7713	3.2745	0.6934
3.4305	1.515	3.4305	1.0774	3.4305	1.0152	3.4305	0.9033	3.4305	0.8536	3.4305	0.7713	3.4305	0.692
3.5938	1.7924	3.5938	1.0774	3.5938	1.0152	3.5938	0.9033	3.5938	0.8536	3.5938	0.7713	3.5938	0.6916
3.7649	1.7924	3.7649	1.0921	3.7649	1.0152	3.7649	0.9076	3.7649	0.8536	3.7649	0.7713	3.7649	0.6893
3.9442	1.7924	3.9442	1.0921	3.9442	1.0628	3.9442	0.9721	3.9442	0.9001	3.9442	0.7901	3.9442	0.6893
4.132	1.7924	4.132	1.0921	4.132	1.0628	4.132	0.9721	4.132	0.9001	4.132	0.7901	4.132	0.6876
4.3288	1.7924	4.3288	1.0921	4.3288	1.0628	4.3288	0.9721	4.3288	0.9001	4.3288	0.7901	4.3288	0.6805
4.5349	1.7924	4.5349	1.0921	4.5349	1.0628	4.5349	0.9721	4.5349	0.9001	4.5349	0.7901	4.5349	0.676
4.7508	1.7924	4.7508	1.0921	4.7508	1.0628	4.7508	0.9721	4.7508	0.9001	4.7508	0.7901	4.7508	0.6736
4.977	1.7924	4.977	1.0921	4.977	0.9506	4.977	0.8979	4.977	0.8494	4.977	0.7652	4.977	0.6688
5.214	1.7924	5.214	1.0921	5.214	0.9383	5.214	0.8718	5.214	0.8233	5.214	0.7464	5.214	0.654
5.4623	2.0429	5.4623	1.0921	5.4623	0.9383	5.4623	0.8718	5.4623	0.8233	5.4623	0.7464	5.4623	0.654
5.7224	2.0429	5.7224	1.0974	5.7224	0.9383	5.7224	0.8718	5.7224	0.8233	5.7224	0.7464	5.7224	0.654
5.9948	2.0429	5.9948	1.0974	5.9948	0.9383	5.9948	0.8718	5.9948	0.8233	5.9948	0.7464	5.9948	0.654
6.2803	2.0429	6.2803	1.0974	6.2803	0.9383	6.2803	0.8718	6.2803	0.8233	6.2803	0.7464	6.2803	0.654
6.5793	2.0429	6.5793	1.0974	6.5793	0.9383	6.5793	0.8718	6.5793	0.8218	6.5793	0.7401	6.5793	0.6457
6.8926	2.0429	6.8926	1.0974	6.8926	0.9383	6.8926	0.852	6.8926	0.7921	6.8926	0.7107	6.8926	0.6236
7.2208	1.6443	7.2208	1.0312	7.2208	0.8872	7.2208	0.8236	7.2208	0.7712	7.2208	0.6856	7.2208	0.6178
7.5646	1.3629	7.5646	0.9367	7.5646	0.8389	7.5646	0.785	7.5646	0.7436	7.5646	0.6831	7.5646	0.6178
7.9248	1.3378	7.9248	0.8974	7.9248	0.827	7.9248	0.7757	7.9248	0.7347	7.9248	0.6707	7.9248	0.604
8.3022	1.3378	8.3022	0.8407	8.3022	0.7713	8.3022	0.7153	8.3022	0.6828	8.3022	0.6374	8.3022	0.5873
8.6975	0.9422	8.6975	0.6767	8.6975	0.6523	8.6975	0.6296	8.6975	0.6076	8.6975	0.5724	8.6975	0.5488
9.1116	0.9081	9.1116	0.6623	9.1116	0.6141	9.1116	0.5759	9.1116	0.551	9.1116	0.5261	9.1116	0.5145
9.5455	0.9081	9.5455	0.6266	9.5455	0.5795	9.5455	0.5505	9.5455	0.5315	9.5455	0.5085	9.5455	0.4961
10	0.8734	10	0.6266	10	0.5795	10	0.5505	10	0.5315	10	0.5083	10	0.4875
10.4762	0.7653	10.4762	0.5513	10.4762	0.528	10.4762	0.5125	10.4762	0.5017	10.4762	0.4862	10.4762	0.4714
10.975	0.7298	10.975	0.5252	10.975	0.5066	10.975	0.4911	10.975	0.479	10.975	0.4624	10.975	0.4529
11.4976	0.7298	11.4976	0.5252	11.4976	0.5066	11.4976	0.4911	11.4976	0.479	11.4976	0.4624	11.4976	0.4475
12.045	0.7298	12.045	0.5252	12.045	0.5066	12.045	0.4911	12.045	0.479	12.045	0.4624	12.045	0.4475
12.6186	0.7298	12.6186	0.516	12.6186	0.4966	12.6186	0.483	12.6186	0.4727	12.6186	0.4569	12.6186	0.4415
13.2194	0.7298	13.2194	0.516	13.2194	0.4659	13.2194	0.4393	13.2194	0.438	13.2194	0.4349	13.2194	0.4272

PTWW040.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 40 ~ SLAB-WALL JOINT East-West Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	0.7298	13.8489	0.516	13.8489	0.4659	13.8489	0.4388	13.8489	0.4278	13.8489	0.4202	13.8489	0.4132
14.5083	0.7298	14.5083	0.516	14.5083	0.4659	14.5083	0.4388	14.5083	0.4278	14.5083	0.4164	14.5083	0.4056
15.1991	0.7298	15.1991	0.516	15.1991	0.4659	15.1991	0.4388	15.1991	0.4209	15.1991	0.4033	15.1991	0.3946
15.9228	0.7298	15.9228	0.516	15.9228	0.4659	15.9228	0.4388	15.9228	0.4209	15.9228	0.4007	15.9228	0.3861
16.681	0.7298	16.681	0.516	16.681	0.4659	16.681	0.4388	16.681	0.4209	16.681	0.4007	16.681	0.3861
17.4753	0.7298	17.4753	0.516	17.4753	0.4659	17.4753	0.4388	17.4753	0.4209	17.4753	0.4007	17.4753	0.3861
18.3074	0.7298	18.3074	0.516	18.3074	0.4659	18.3074	0.4388	18.3074	0.4209	18.3074	0.4007	18.3074	0.3861
19.1791	0.8702	19.1791	0.516	19.1791	0.4659	19.1791	0.4388	19.1791	0.4209	19.1791	0.4007	19.1791	0.3861
20.0923	0.8702	20.0923	0.516	20.0923	0.4659	20.0923	0.4388	20.0923	0.4209	20.0923	0.4007	20.0923	0.3861
21.049	0.8702	21.049	0.516	21.049	0.4659	21.049	0.4388	21.049	0.4209	21.049	0.4007	21.049	0.3861
22.0513	0.8702	22.0513	0.516	22.0513	0.4659	22.0513	0.4388	22.0513	0.4209	22.0513	0.4007	22.0513	0.3835
23.1013	0.8702	23.1013	0.516	23.1013	0.4659	23.1013	0.4388	23.1013	0.4209	23.1013	0.4007	23.1013	0.3835
24.2013	0.7893	24.2013	0.5103	24.2013	0.4659	24.2013	0.4388	24.2013	0.4209	24.2013	0.3995	24.2013	0.3835
25.3536	0.7893	25.3536	0.4648	25.3536	0.4175	25.3536	0.405	25.3536	0.4012	25.3536	0.3926	25.3536	0.3817
26.5609	0.7893	26.5609	0.4648	26.5609	0.4175	26.5609	0.3899	26.5609	0.38	26.5609	0.3779	26.5609	0.3729
27.8256	0.4998	27.8256	0.4141	27.8256	0.3879	27.8256	0.3762	27.8256	0.3726	27.8256	0.3682	27.8256	0.3643
29.1505	0.4217	29.1505	0.3866	29.1505	0.3763	29.1505	0.3678	29.1505	0.3612	29.1505	0.3558	29.1505	0.3554
30.5386	0.4217	30.5386	0.3633	30.5386	0.3554	30.5386	0.3517	30.5386	0.3499	30.5386	0.3485	30.5386	0.348
31.9927	0.3545	31.9927	0.3404	31.9927	0.3386	31.9927	0.3376	31.9927	0.3374	31.9927	0.3399	31.9927	0.3417
33.516	0.3442	33.516	0.3404	33.516	0.3386	33.516	0.3376	33.516	0.3371	33.516	0.3365	33.516	0.3379
35.1119	0.3392	35.1119	0.3385	35.1119	0.338	35.1119	0.3376	35.1119	0.3371	35.1119	0.3365	35.1119	0.3359
36.7838	0.3368	36.7838	0.3366	36.7838	0.3364	36.7838	0.3362	36.7838	0.336	36.7838	0.3356	36.7838	0.3352
38.5353	0.3351	38.5353	0.335	38.5353	0.3349	38.5353	0.3348	38.5353	0.3347	38.5353	0.3345	38.5353	0.3343
40.3702	0.3338	40.3702	0.3337	40.3702	0.3336	40.3702	0.3336	40.3702	0.3336	40.3702	0.3334	40.3702	0.3333
42.2924	0.3326	42.2924	0.3326	42.2924	0.3325	42.2924	0.3325	42.2924	0.3325	42.2924	0.3324	42.2924	0.3323
44.3062	0.3316	44.3062	0.3316	44.3062	0.3316	44.3062	0.3316	44.3062	0.3315	44.3062	0.3315	44.3062	0.3315
46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307	46.4159	0.3307
48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299	48.626	0.3299
50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3291	50.9414	0.3292

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping Freq.	0.50% Accel.	Freq.	2% Accel.	Freq.	3% Accel.	Freq.	4% Accel.	Freq.	5% Accel.	Freq.	7% Accel.	Freq.	10% Accel.
0.1098	0.0404	0.1098	0.0365	0.1098	0.0342	0.1098	0.0321	0.1098	0.0303	0.1098	0.0271	0.1098	0.0235
0.115	0.0404	0.115	0.0365	0.115	0.0342	0.115	0.0321	0.115	0.0303	0.115	0.0271	0.115	0.0256
0.1204	0.0404	0.1204	0.0365	0.1204	0.0342	0.1204	0.0321	0.1204	0.0309	0.1204	0.0295	0.1204	0.0277
0.1262	0.0404	0.1262	0.0365	0.1262	0.0351	0.1262	0.0342	0.1262	0.0332	0.1262	0.0315	0.1262	0.0295
0.1322	0.0404	0.1322	0.0381	0.1322	0.0369	0.1322	0.0357	0.1322	0.0347	0.1322	0.0331	0.1322	0.0315
0.1385	0.0409	0.1385	0.039	0.1385	0.0379	0.1385	0.037	0.1385	0.0361	0.1385	0.0346	0.1385	0.0327
0.1451	0.0416	0.1451	0.0397	0.1451	0.0386	0.1451	0.0376	0.1451	0.0367	0.1451	0.0352	0.1451	0.0332
0.152	0.0439	0.152	0.0401	0.152	0.0386	0.152	0.0376	0.152	0.0367	0.152	0.0352	0.152	0.0332
0.1592	0.0462	0.1592	0.0416	0.1592	0.0395	0.1592	0.0376	0.1592	0.0367	0.1592	0.0352	0.1592	0.0332
0.1668	0.0584	0.1668	0.0505	0.1668	0.0462	0.1668	0.0426	0.1668	0.0394	0.1668	0.0352	0.1668	0.0332
0.1748	0.0644	0.1748	0.0566	0.1748	0.0521	0.1748	0.0483	0.1748	0.045	0.1748	0.0394	0.1748	0.0332
0.1831	0.0667	0.1831	0.0582	0.1831	0.0541	0.1831	0.0504	0.1831	0.047	0.1831	0.0414	0.1831	0.0353
0.1918	0.0678	0.1918	0.0585	0.1918	0.0542	0.1918	0.0506	0.1918	0.0473	0.1918	0.0417	0.1918	0.0379
0.2009	0.0697	0.2009	0.0595	0.2009	0.0542	0.2009	0.0511	0.2009	0.0484	0.2009	0.0434	0.2009	0.041
0.2105	0.0721	0.2105	0.0618	0.2105	0.0579	0.2105	0.0545	0.2105	0.0514	0.2105	0.0481	0.2105	0.0444
0.2205	0.0818	0.2205	0.0709	0.2205	0.0651	0.2205	0.0599	0.2205	0.0573	0.2205	0.053	0.2205	0.0474
0.231	0.0958	0.231	0.0791	0.231	0.0703	0.231	0.0666	0.231	0.0631	0.231	0.0572	0.231	0.0519
0.242	0.098	0.242	0.0843	0.242	0.0773	0.242	0.0714	0.242	0.0675	0.242	0.0613	0.242	0.0546
0.2535	0.1056	0.2535	0.091	0.2535	0.083	0.2535	0.0759	0.2535	0.0699	0.2535	0.0613	0.2535	0.0546
0.2656	0.1138	0.2656	0.0945	0.2656	0.0842	0.2656	0.0759	0.2656	0.0699	0.2656	0.0613	0.2656	0.0546
0.2783	0.1138	0.2783	0.0945	0.2783	0.0842	0.2783	0.0778	0.2783	0.0737	0.2783	0.067	0.2783	0.06
0.2915	0.1138	0.2915	0.1001	0.2915	0.0939	0.2915	0.0884	0.2915	0.0835	0.2915	0.0753	0.2915	0.0664
0.3054	0.1172	0.3054	0.1049	0.3054	0.0979	0.3054	0.0918	0.3054	0.0864	0.3054	0.0776	0.3054	0.0687
0.3199	0.1172	0.3199	0.1049	0.3199	0.0979	0.3199	0.0918	0.3199	0.0881	0.3199	0.0829	0.3199	0.0766
0.3352	0.1172	0.3352	0.1085	0.3352	0.1042	0.3352	0.1003	0.3352	0.0967	0.3352	0.0904	0.3352	0.083
0.3511	0.1645	0.3511	0.128	0.3511	0.1118	0.3511	0.1061	0.3511	0.102	0.3511	0.095	0.3511	0.0868
0.3678	0.2408	0.3678	0.1827	0.3678	0.1561	0.3678	0.1359	0.3678	0.1205	0.3678	0.0995	0.3678	0.0869
0.3853	0.2539	0.3853	0.1862	0.3853	0.1588	0.3853	0.138	0.3853	0.1255	0.3853	0.1079	0.3853	0.0897
0.4037	0.2539	0.4037	0.1862	0.4037	0.1588	0.4037	0.138	0.4037	0.1261	0.4037	0.1142	0.4037	0.102
0.4229	0.2539	0.4229	0.1862	0.4229	0.1641	0.4229	0.1478	0.4229	0.1338	0.4229	0.122	0.4229	0.1107
0.4431	0.3276	0.4431	0.2318	0.4431	0.2019	0.4431	0.1796	0.4431	0.1626	0.4431	0.1389	0.4431	0.1174
0.4642	0.3276	0.4642	0.2318	0.4642	0.2019	0.4642	0.1796	0.4642	0.1626	0.4642	0.1389	0.4642	0.1174
0.4863	0.3276	0.4863	0.2318	0.4863	0.2019	0.4863	0.1796	0.4863	0.1626	0.4863	0.1415	0.4863	0.1242
0.5094	0.3276	0.5094	0.2318	0.5094	0.2019	0.5094	0.1796	0.5094	0.1626	0.5094	0.1475	0.5094	0.1293
0.5337	0.3338	0.5337	0.2366	0.5337	0.2061	0.5337	0.1882	0.5337	0.1776	0.5337	0.1596	0.5337	0.1387
0.5591	0.3945	0.5591	0.2731	0.5591	0.2401	0.5591	0.2143	0.5591	0.1954	0.5591	0.171	0.5591	0.1533
0.5857	0.3945	0.5857	0.2819	0.5857	0.2531	0.5857	0.229	0.5857	0.2088	0.5857	0.1825	0.5857	0.1694

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.6136	0.3945	0.6136	0.2819	0.6136	0.2531	0.6136	0.229	0.6136	0.2088	0.6136	0.1962	0.6136	0.1818
0.6428	0.3945	0.6428	0.2819	0.6428	0.2531	0.6428	0.229	0.6428	0.2176	0.6428	0.2071	0.6428	0.1923
0.6734	0.4051	0.6734	0.2819	0.6734	0.2545	0.6734	0.2401	0.6734	0.2329	0.6734	0.2199	0.6734	0.2038
0.7055	0.4051	0.7055	0.2964	0.7055	0.271	0.7055	0.2595	0.7055	0.2495	0.7055	0.2325	0.7055	0.2132
0.7391	0.6253	0.7391	0.4092	0.7391	0.3339	0.7391	0.2852	0.7391	0.2678	0.7391	0.2386	0.7391	0.2148
0.7743	0.6253	0.7743	0.4092	0.7743	0.3339	0.7743	0.2977	0.7743	0.2799	0.7743	0.2506	0.7743	0.2178
0.8111	0.6459	0.8111	0.4284	0.8111	0.373	0.8111	0.3304	0.8111	0.2973	0.8111	0.2507	0.8111	0.2178
0.8497	0.6459	0.8497	0.4295	0.8497	0.3929	0.8497	0.3623	0.8497	0.3363	0.8497	0.2936	0.8497	0.2475
0.8902	0.6685	0.8902	0.436	0.8902	0.3929	0.8902	0.3623	0.8902	0.3395	0.8902	0.3086	0.8902	0.2662
0.9326	0.715	0.9326	0.5019	0.9326	0.4411	0.9326	0.3968	0.9326	0.3633	0.9326	0.3158	0.9326	0.2706
0.977	0.9571	0.977	0.6109	0.977	0.5027	0.977	0.4349	0.977	0.3889	0.977	0.3313	0.977	0.2835
1.0235	0.9571	1.0235	0.6109	1.0235	0.5406	1.0235	0.4899	1.0235	0.4478	1.0235	0.3835	1.0235	0.3191
1.0723	0.9571	1.0723	0.629	1.0723	0.5623	1.0723	0.5069	1.0723	0.4603	1.0723	0.3954	1.0723	0.3351
1.1233	1.2112	1.1233	0.8095	1.1233	0.677	1.1233	0.5824	1.1233	0.5124	1.1233	0.4175	1.1233	0.3358
1.1768	1.2112	1.1768	0.8095	1.1768	0.677	1.1768	0.5824	1.1768	0.5124	1.1768	0.42	1.1768	0.3516
1.2328	1.2112	1.2328	0.8776	1.2328	0.7698	1.2328	0.6846	1.2328	0.6149	1.2328	0.5095	1.2328	0.4049
1.2916	1.2112	1.2916	0.9725	1.2916	0.8448	1.2916	0.7451	1.2916	0.6651	1.2916	0.5458	1.2916	0.4303
1.353	1.2406	1.353	0.9725	1.353	0.8448	1.353	0.7451	1.353	0.6651	1.353	0.5458	1.353	0.4328
1.4175	1.4927	1.4175	1.0398	1.4175	0.8977	1.4175	0.7987	1.4175	0.7236	1.4175	0.6126	1.4175	0.5041
1.485	1.4927	1.485	1.0398	1.485	0.8977	1.485	0.8136	1.485	0.7581	1.485	0.6601	1.485	0.5488
1.5557	1.7257	1.5557	1.093	1.5557	0.9164	1.5557	0.8185	1.5557	0.7581	1.5557	0.6679	1.5557	0.5679
1.6298	1.7649	1.6298	1.1715	1.6298	1.0429	1.6298	0.9398	1.6298	0.8509	1.6298	0.7168	1.6298	0.5845
1.7074	1.7649	1.7074	1.1911	1.7074	1.1181	1.7074	1.0082	1.7074	0.9156	1.7074	0.7654	1.7074	0.6266
1.7887	2.1543	1.7887	1.1911	1.7887	1.1181	1.7887	1.0082	1.7887	0.9156	1.7887	0.7791	1.7887	0.663
1.8738	2.1543	1.8738	1.1911	1.8738	1.1181	1.8738	1.0082	1.8738	0.9156	1.8738	0.8133	1.8738	0.691
1.963	2.1543	1.963	1.1911	1.963	1.1181	1.963	1.0086	1.963	0.9469	1.963	0.8387	1.963	0.7107
2.0565	2.1543	2.0565	1.1911	2.0565	1.1181	2.0565	1.0239	2.0565	0.9641	2.0565	0.8545	2.0565	0.7208
2.1544	2.1543	2.1544	1.1911	2.1544	1.1641	2.1544	1.0719	2.1544	0.993	2.1544	0.8646	2.1544	0.7434
2.257	1.9859	2.257	1.2401	2.257	1.1641	2.257	1.0719	2.257	0.993	2.257	0.8753	2.257	0.7534
2.3645	1.9859	2.3645	1.2401	2.3645	1.1641	2.3645	1.0719	2.3645	0.993	2.3645	0.8753	2.3645	0.7534
2.4771	1.9859	2.4771	1.3882	2.4771	1.1641	2.4771	1.0719	2.4771	0.993	2.4771	0.8753	2.4771	0.7534
2.595	1.838	2.595	1.3882	2.595	1.1641	2.595	1.0719	2.595	0.993	2.595	0.8753	2.595	0.7534
2.7186	1.838	2.7186	1.3882	2.7186	1.1614	2.7186	1.0549	2.7186	0.9795	2.7186	0.8753	2.7186	0.7534
2.848	1.838	2.848	1.3882	2.848	1.1614	2.848	1.0498	2.848	0.9795	2.848	0.8675	2.848	0.7385
2.9836	1.838	2.9836	1.3882	2.9836	1.1614	2.9836	1.0498	2.9836	0.9618	2.9836	0.8311	2.9836	0.6992
3.1257	1.838	3.1257	1.1633	3.1257	0.9244	3.1257	0.8554	3.1257	0.8062	3.1257	0.728	3.1257	0.6366
3.2745	1.7993	3.2745	1.0437	3.2745	0.8857	3.2745	0.7926	3.2745	0.7237	3.2745	0.6347	3.2745	0.5767
3.4305	1.2506	3.4305	0.8608	3.4305	0.774	3.4305	0.7077	3.4305	0.6696	3.4305	0.5994	3.4305	0.5377

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
3.5938	1.2506	3.5938	0.826	3.5938	0.7467	3.5938	0.6903	3.5938	0.6397	3.5938	0.5691	3.5938	0.503
3.7649	1.2506	3.7649	0.8108	3.7649	0.7467	3.7649	0.6903	3.7649	0.6397	3.7649	0.5581	3.7649	0.4924
3.9442	1.2506	3.9442	0.7736	3.9442	0.7467	3.9442	0.6903	3.9442	0.6397	3.9442	0.5581	3.9442	0.4924
4.132	1.2506	4.132	0.7736	4.132	0.7467	4.132	0.6903	4.132	0.6397	4.132	0.5581	4.132	0.4924
4.3288	1.2506	4.3288	0.7736	4.3288	0.7467	4.3288	0.6903	4.3288	0.6397	4.3288	0.5581	4.3288	0.4759
4.5349	1.2506	4.5349	0.7736	4.5349	0.7467	4.5349	0.6903	4.5349	0.6397	4.5349	0.5581	4.5349	0.4759
4.7508	1.2506	4.7508	0.7736	4.7508	0.7467	4.7508	0.6903	4.7508	0.6397	4.7508	0.5581	4.7508	0.4759
4.977	1.2506	4.977	0.7736	4.977	0.7467	4.977	0.6903	4.977	0.6397	4.977	0.5581	4.977	0.4759
5.214	1.2506	5.214	0.7736	5.214	0.7467	5.214	0.6903	5.214	0.6397	5.214	0.5581	5.214	0.4759
5.4623	1.2506	5.4623	0.7736	5.4623	0.7467	5.4623	0.6903	5.4623	0.6397	5.4623	0.5581	5.4623	0.4759
5.7224	1.3691	5.7224	0.7736	5.7224	0.7467	5.7224	0.6903	5.7224	0.6397	5.7224	0.5581	5.7224	0.4759
5.9948	1.3691	5.9948	0.7736	5.9948	0.7467	5.9948	0.6903	5.9948	0.6397	5.9948	0.5581	5.9948	0.4759
6.2803	1.3691	6.2803	0.7736	6.2803	0.7467	6.2803	0.6903	6.2803	0.6397	6.2803	0.5581	6.2803	0.4759
6.5793	1.3691	6.5793	0.7736	6.5793	0.6755	6.5793	0.6357	6.5793	0.6231	6.5793	0.5476	6.5793	0.4759
6.8926	1.3691	6.8926	0.7736	6.8926	0.6755	6.8926	0.6357	6.8926	0.6231	6.8926	0.5452	6.8926	0.4683
7.2208	1.3691	7.2208	0.7253	7.2208	0.6201	7.2208	0.5644	7.2208	0.5427	7.2208	0.503	7.2208	0.4505
7.5646	1.3691	7.5646	0.7065	7.5646	0.6004	7.5646	0.5644	7.5646	0.5365	7.5646	0.4909	7.5646	0.436
7.9248	1.3691	7.9248	0.6416	7.9248	0.5598	7.9248	0.5335	7.9248	0.509	7.9248	0.4659	7.9248	0.4264
8.3022	1.3691	8.3022	0.6416	8.3022	0.556	8.3022	0.5083	8.3022	0.486	8.3022	0.454	8.3022	0.4264
8.6975	1.0067	8.6975	0.5785	8.6975	0.5365	8.6975	0.5083	8.6975	0.486	8.6975	0.454	8.6975	0.4229
9.1116	1.0067	9.1116	0.5785	9.1116	0.5203	9.1116	0.4913	9.1116	0.4686	9.1116	0.4364	9.1116	0.4147
9.5455	1.0067	9.5455	0.5785	9.5455	0.5203	9.5455	0.4913	9.5455	0.4686	9.5455	0.4364	9.5455	0.4101
10	0.7958	10	0.5553	10	0.5203	10	0.4913	10	0.4686	10	0.4364	10	0.4073
10.4762	0.7386	10.4762	0.4651	10.4762	0.4518	10.4762	0.4415	10.4762	0.4329	10.4762	0.4181	10.4762	0.3995
10.975	0.5938	10.975	0.4522	10.975	0.4338	10.975	0.4223	10.975	0.4154	10.975	0.4045	10.975	0.3897
11.4976	0.5139	11.4976	0.4522	11.4976	0.4338	11.4976	0.422	11.4976	0.4137	11.4976	0.4011	11.4976	0.3866
12.045	0.5	12.045	0.4195	12.045	0.4106	12.045	0.4049	12.045	0.4002	12.045	0.3914	12.045	0.3794
12.6186	0.5	12.6186	0.4087	12.6186	0.4008	12.6186	0.3948	12.6186	0.3897	12.6186	0.3812	12.6186	0.3706
13.2194	0.5	13.2194	0.3855	13.2194	0.3801	13.2194	0.3771	13.2194	0.3744	13.2194	0.3688	13.2194	0.3604
13.8489	0.5	13.8489	0.3777	13.8489	0.3691	13.8489	0.3663	13.8489	0.3634	13.8489	0.3575	13.8489	0.3497
14.5083	0.5	14.5083	0.3777	14.5083	0.3639	14.5083	0.3557	14.5083	0.3504	14.5083	0.3441	14.5083	0.3379
15.1991	0.5	15.1991	0.3523	15.1991	0.3413	15.1991	0.3407	15.1991	0.3396	15.1991	0.3366	15.1991	0.3315
15.9228	0.5	15.9228	0.3523	15.9228	0.3412	15.9228	0.3382	15.9228	0.3365	15.9228	0.3326	15.9228	0.3271
16.681	0.5	16.681	0.3523	16.681	0.3412	16.681	0.3355	16.681	0.3317	16.681	0.3266	16.681	0.3214
17.4753	0.5	17.4753	0.3351	17.4753	0.325	17.4753	0.321	17.4753	0.319	17.4753	0.3167	17.4753	0.3142
18.3074	0.5	18.3074	0.3274	18.3074	0.315	18.3074	0.3103	18.3074	0.3078	18.3074	0.3085	18.3074	0.3079
19.1791	0.5	19.1791	0.3274	19.1791	0.315	19.1791	0.3103	19.1791	0.3078	19.1791	0.3055	19.1791	0.3039
20.0923	0.5	20.0923	0.3274	20.0923	0.308	20.0923	0.3058	20.0923	0.3038	20.0923	0.302	20.0923	0.3007

PTWW041.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 41 ~ SLAB-WALL JOINT North-South Responses ~ Elevation 54 Ft. ~ Line 30 B

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
21.049	0.5	21.049	0.3274	21.049	0.308	21.049	0.3058	21.049	0.3038	21.049	0.3009	21.049	0.2981
22.0513	0.5	22.0513	0.3274	22.0513	0.304	22.0513	0.3018	22.0513	0.3	22.0513	0.2973	22.0513	0.2949
23.1013	0.3991	23.1013	0.3036	23.1013	0.2994	23.1013	0.297	23.1013	0.2955	23.1013	0.2936	23.1013	0.2918
24.2013	0.3991	24.2013	0.3007	24.2013	0.294	24.2013	0.2912	24.2013	0.2902	24.2013	0.2896	24.2013	0.2887
25.3536	0.3991	25.3536	0.3007	25.3536	0.294	25.3536	0.2912	25.3536	0.2902	25.3536	0.2886	25.3536	0.2871
26.5609	0.3991	26.5609	0.3007	26.5609	0.294	26.5609	0.2907	26.5609	0.2888	26.5609	0.2868	26.5609	0.2852
27.8256	0.3991	27.8256	0.2989	27.8256	0.2931	27.8256	0.2896	27.8256	0.2872	27.8256	0.2843	27.8256	0.2831
29.1505	0.3991	29.1505	0.2989	29.1505	0.2931	29.1505	0.2896	29.1505	0.2872	29.1505	0.2843	29.1505	0.282
30.5386	0.3399	30.5386	0.2901	30.5386	0.2875	30.5386	0.2855	30.5386	0.284	30.5386	0.2817	30.5386	0.2796
31.9927	0.2956	31.9927	0.2753	31.9927	0.2743	31.9927	0.2755	31.9927	0.2761	31.9927	0.2765	31.9927	0.2762
33.516	0.2753	33.516	0.2729	33.516	0.2727	33.516	0.2728	33.516	0.2729	33.516	0.2732	33.516	0.2734
35.1119	0.2708	35.1119	0.2709	35.1119	0.271	35.1119	0.2711	35.1119	0.2711	35.1119	0.2712	35.1119	0.2714
36.7838	0.2688	36.7838	0.2691	36.7838	0.2692	36.7838	0.2693	36.7838	0.2694	36.7838	0.2696	36.7838	0.2697
38.5353	0.2675	38.5353	0.2677	38.5353	0.2679	38.5353	0.268	38.5353	0.268	38.5353	0.2682	38.5353	0.2684
40.3702	0.2666	40.3702	0.2668	40.3702	0.2669	40.3702	0.2669	40.3702	0.267	40.3702	0.2672	40.3702	0.2673
42.2924	0.2659	42.2924	0.266	42.2924	0.2661	42.2924	0.2661	42.2924	0.2662	42.2924	0.2663	42.2924	0.2664
44.3062	0.2653	44.3062	0.2654	44.3062	0.2654	44.3062	0.2654	44.3062	0.2655	44.3062	0.2655	44.3062	0.2657
46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2648	46.4159	0.2649	46.4159	0.265
48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2643	48.626	0.2644
50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638	50.9414	0.2638

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
0.1098	0.0291	0.1098	0.026	0.1098	0.0244	0.1098	0.023	0.1098	0.0221	0.1098	0.0214	0.1098	0.0205
0.115	0.0309	0.115	0.026	0.115	0.0244	0.115	0.0234	0.115	0.023	0.115	0.0222	0.115	0.0212
0.1204	0.0313	0.1204	0.0263	0.1204	0.0246	0.1204	0.0241	0.1204	0.0236	0.1204	0.0228	0.1204	0.0218
0.1262	0.0313	0.1262	0.0269	0.1262	0.0257	0.1262	0.0245	0.1262	0.024	0.1262	0.0233	0.1262	0.0224
0.1322	0.0313	0.1322	0.0271	0.1322	0.0258	0.1322	0.0248	0.1322	0.0244	0.1322	0.0236	0.1322	0.0226
0.1385	0.0313	0.1385	0.0277	0.1385	0.0265	0.1385	0.0255	0.1385	0.0246	0.1385	0.0236	0.1385	0.0226
0.1451	0.0316	0.1451	0.0295	0.1451	0.0283	0.1451	0.0271	0.1451	0.0261	0.1451	0.0241	0.1451	0.0226
0.152	0.032	0.152	0.0299	0.152	0.0286	0.152	0.0274	0.152	0.0262	0.152	0.0241	0.152	0.0226
0.1592	0.033	0.1592	0.0311	0.1592	0.0299	0.1592	0.0288	0.1592	0.0278	0.1592	0.0261	0.1592	0.0243
0.1668	0.0367	0.1668	0.0323	0.1668	0.0312	0.1668	0.0302	0.1668	0.0293	0.1668	0.0277	0.1668	0.0257
0.1748	0.0507	0.1748	0.0427	0.1748	0.0385	0.1748	0.035	0.1748	0.0321	0.1748	0.0285	0.1748	0.0265
0.1831	0.0586	0.1831	0.0493	0.1831	0.0442	0.1831	0.0399	0.1831	0.0362	0.1831	0.0305	0.1831	0.0266
0.1918	0.0586	0.1918	0.0493	0.1918	0.0442	0.1918	0.0399	0.1918	0.0362	0.1918	0.0305	0.1918	0.0269
0.2009	0.0586	0.2009	0.0493	0.2009	0.0442	0.2009	0.0399	0.2009	0.0362	0.2009	0.0326	0.2009	0.0299
0.2105	0.0586	0.2105	0.0493	0.2105	0.0442	0.2105	0.0401	0.2105	0.0386	0.2105	0.0361	0.2105	0.0327
0.2205	0.0586	0.2205	0.0493	0.2205	0.0454	0.2205	0.0427	0.2205	0.0409	0.2205	0.038	0.2205	0.0341
0.231	0.0586	0.231	0.0493	0.231	0.0457	0.231	0.0438	0.231	0.042	0.231	0.0388	0.231	0.0354
0.242	0.0586	0.242	0.0509	0.242	0.0486	0.242	0.0465	0.242	0.0445	0.242	0.041	0.242	0.0368
0.2535	0.0649	0.2535	0.0574	0.2535	0.0531	0.2535	0.0491	0.2535	0.0457	0.2535	0.041	0.2535	0.0371
0.2656	0.0731	0.2656	0.0586	0.2656	0.0536	0.2656	0.0491	0.2656	0.0457	0.2656	0.0424	0.2656	0.0401
0.2783	0.0817	0.2783	0.0599	0.2783	0.0536	0.2783	0.05	0.2783	0.0484	0.2783	0.0458	0.2783	0.0425
0.2915	0.0817	0.2915	0.0618	0.2915	0.0581	0.2915	0.0547	0.2915	0.0516	0.2915	0.0479	0.2915	0.0436
0.3054	0.0817	0.3054	0.0663	0.3054	0.0622	0.3054	0.0585	0.3054	0.0551	0.3054	0.0492	0.3054	0.045
0.3199	0.0817	0.3199	0.0701	0.3199	0.0659	0.3199	0.0623	0.3199	0.0589	0.3199	0.0536	0.3199	0.0474
0.3352	0.0873	0.3352	0.0767	0.3352	0.0709	0.3352	0.0662	0.3352	0.0629	0.3352	0.0571	0.3352	0.0501
0.3511	0.0906	0.3511	0.0806	0.3511	0.0749	0.3511	0.0698	0.3511	0.0653	0.3511	0.0577	0.3511	0.0502
0.3678	0.1215	0.3678	0.095	0.3678	0.0823	0.3678	0.0722	0.3678	0.0653	0.3678	0.0577	0.3678	0.0502
0.3853	0.1361	0.3853	0.1057	0.3853	0.0919	0.3853	0.0808	0.3853	0.0718	0.3853	0.0587	0.3853	0.0505
0.4037	0.1361	0.4037	0.1057	0.4037	0.0919	0.4037	0.0821	0.4037	0.0762	0.4037	0.0664	0.4037	0.0568
0.4229	0.1361	0.4229	0.1057	0.4229	0.0919	0.4229	0.0852	0.4229	0.0801	0.4229	0.0711	0.4229	0.0615
0.4431	0.1361	0.4431	0.1057	0.4431	0.0935	0.4431	0.0889	0.4431	0.0843	0.4431	0.0761	0.4431	0.0657
0.4642	0.1373	0.4642	0.1057	0.4642	0.0976	0.4642	0.0916	0.4642	0.086	0.4642	0.0763	0.4642	0.0674
0.4863	0.1479	0.4863	0.1238	0.4863	0.1108	0.4863	0.0997	0.4863	0.0904	0.4863	0.0827	0.4863	0.0733
0.5094	0.1814	0.5094	0.1384	0.5094	0.1218	0.5094	0.1085	0.5094	0.0977	0.5094	0.0867	0.5094	0.0754

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping Freq.	0.50% Accel.	Freq.	2% Accel.	Freq.	3% Accel.	Freq.	4% Accel.	Freq.	5% Accel.	Freq.	7% Accel.	Freq.	10% Accel.
0.5337	0.2216	0.5337	0.1605	0.5337	0.1343	0.5337	0.1149	0.5337	0.1023	0.5337	0.0867	0.5337	0.0754
0.5591	0.2216	0.5591	0.1605	0.5591	0.1343	0.5591	0.1149	0.5591	0.1023	0.5591	0.088	0.5591	0.0754
0.5857	0.2216	0.5857	0.1605	0.5857	0.1343	0.5857	0.1149	0.5857	0.1023	0.5857	0.0937	0.5857	0.0821
0.6136	0.2216	0.6136	0.1605	0.6136	0.1343	0.6136	0.1178	0.6136	0.1111	0.6136	0.1003	0.6136	0.0874
0.6428	0.2257	0.6428	0.1621	0.6428	0.1356	0.6428	0.1179	0.6428	0.1131	0.6428	0.103	0.6428	0.0901
0.6734	0.2257	0.6734	0.1621	0.6734	0.1389	0.6734	0.1291	0.6734	0.1211	0.6734	0.1084	0.6734	0.0936
0.7055	0.2257	0.7055	0.1621	0.7055	0.1389	0.7055	0.1291	0.7055	0.1211	0.7055	0.1095	0.7055	0.0952
0.7391	0.2257	0.7391	0.1621	0.7391	0.1413	0.7391	0.1328	0.7391	0.1244	0.7391	0.1097	0.7391	0.0952
0.7743	0.3175	0.7743	0.2132	0.7743	0.1805	0.7743	0.1581	0.7743	0.1421	0.7743	0.1211	0.7743	0.1032
0.8111	0.3175	0.8111	0.2132	0.8111	0.1805	0.8111	0.1581	0.8111	0.1421	0.8111	0.1211	0.8111	0.1065
0.8497	0.3175	0.8497	0.2132	0.8497	0.1805	0.8497	0.166	0.8497	0.1535	0.8497	0.134	0.8497	0.1129
0.8902	0.3175	0.8902	0.2132	0.8902	0.1869	0.8902	0.1713	0.8902	0.1583	0.8902	0.1378	0.8902	0.1175
0.9326	0.4866	0.9326	0.2993	0.9326	0.2464	0.9326	0.215	0.9326	0.1926	0.9326	0.1632	0.9326	0.1377
0.977	0.4866	0.977	0.2993	0.977	0.2464	0.977	0.215	0.977	0.1926	0.977	0.1712	0.977	0.1493
1.0235	0.4866	1.0235	0.2993	1.0235	0.2464	1.0235	0.215	1.0235	0.1926	1.0235	0.1775	1.0235	0.1586
1.0723	0.4866	1.0723	0.2993	1.0723	0.2574	1.0723	0.2363	1.0723	0.2193	1.0723	0.1933	1.0723	0.1665
1.1233	0.5744	1.1233	0.3387	1.1233	0.2663	1.1233	0.2363	1.1233	0.2193	1.1233	0.1933	1.1233	0.1665
1.1768	0.5744	1.1768	0.3781	1.1768	0.3127	1.1768	0.2762	1.1768	0.247	1.1768	0.2076	1.1768	0.1828
1.2328	0.5744	1.2328	0.3801	1.2328	0.3429	1.2328	0.3128	1.2328	0.2874	1.2328	0.2483	1.2328	0.2091
1.2916	0.5744	1.2916	0.4124	1.2916	0.3638	1.2916	0.3237	1.2916	0.295	1.2916	0.2539	1.2916	0.2139
1.353	0.6253	1.353	0.4124	1.353	0.3638	1.353	0.3237	1.353	0.3026	1.353	0.2724	1.353	0.2369
1.4175	0.6253	1.4175	0.4124	1.4175	0.3638	1.4175	0.3419	1.4175	0.3245	1.4175	0.2933	1.4175	0.2571
1.485	0.6253	1.485	0.4371	1.485	0.3975	1.485	0.3717	1.485	0.3478	1.485	0.3068	1.485	0.2662
1.5557	0.6253	1.5557	0.456	1.5557	0.426	1.5557	0.3995	1.5557	0.376	1.5557	0.3358	1.5557	0.2887
1.6298	0.7362	1.6298	0.4726	1.6298	0.4349	1.6298	0.4101	1.6298	0.3877	1.6298	0.3499	1.6298	0.3051
1.7074	0.7659	1.7074	0.5983	1.7074	0.5291	1.7074	0.4732	1.7074	0.428	1.7074	0.3634	1.7074	0.3086
1.7887	0.8581	1.7887	0.7092	1.7887	0.635	1.7887	0.5721	1.7887	0.5184	1.7887	0.4408	1.7887	0.3653
1.8738	0.9071	1.8738	0.7382	1.8738	0.6675	1.8738	0.6084	1.8738	0.5648	1.8738	0.4905	1.8738	0.4072
1.963	1.0464	1.963	0.7997	1.963	0.7215	1.963	0.6607	1.963	0.6081	1.963	0.5225	1.963	0.4276
2.0565	1.1387	2.0565	0.8196	2.0565	0.732	2.0565	0.661	2.0565	0.6081	2.0565	0.5225	2.0565	0.4276
2.1544	1.1387	2.1544	0.8196	2.1544	0.732	2.1544	0.661	2.1544	0.6081	2.1544	0.5225	2.1544	0.4276
2.257	1.1387	2.257	0.8196	2.257	0.732	2.257	0.6622	2.257	0.6085	2.257	0.5225	2.257	0.439
2.3645	1.8015	2.3645	0.9555	2.3645	0.7668	2.3645	0.6987	2.3645	0.6389	2.3645	0.5434	2.3645	0.4598
2.4771	2.0921	2.4771	1.1123	2.4771	0.8901	2.4771	0.7484	2.4771	0.6503	2.4771	0.5434	2.4771	0.4618
2.595	2.6286	2.595	1.3049	2.595	0.9786	2.595	0.8001	2.595	0.6919	2.595	0.5515	2.595	0.4636

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
2.7186	2.6286	2.7186	1.3049	2.7186	0.9786	2.7186	0.8001	2.7186	0.6919	2.7186	0.5515	2.7186	0.4669
2.848	2.6286	2.848	1.3049	2.848	0.9786	2.848	0.8001	2.848	0.6919	2.848	0.5515	2.848	0.4669
2.9836	2.6286	2.9836	1.3049	2.9836	0.9786	2.9836	0.8001	2.9836	0.6919	2.9836	0.5515	2.9836	0.4669
3.1257	2.6286	3.1257	1.3049	3.1257	0.9786	3.1257	0.8001	3.1257	0.6919	3.1257	0.5515	3.1257	0.4669
3.2745	1.4875	3.2745	0.9429	3.2745	0.7973	3.2745	0.6916	3.2745	0.6178	3.2745	0.5384	3.2745	0.4669
3.4305	1.1706	3.4305	0.7986	3.4305	0.7066	3.4305	0.6392	3.4305	0.589	3.4305	0.5099	3.4305	0.4525
3.5938	1.1706	3.5938	0.7986	3.5938	0.7066	3.5938	0.6392	3.5938	0.589	3.5938	0.5097	3.5938	0.4525
3.7649	1.1706	3.7649	0.7986	3.7649	0.7066	3.7649	0.6392	3.7649	0.589	3.7649	0.5097	3.7649	0.4525
3.9442	1.1706	3.9442	0.7986	3.9442	0.7066	3.9442	0.6392	3.9442	0.589	3.9442	0.5097	3.9442	0.4525
4.132	1.1706	4.132	0.7986	4.132	0.7066	4.132	0.6392	4.132	0.589	4.132	0.5097	4.132	0.4525
4.3288	1.1706	4.3288	0.7986	4.3288	0.7066	4.3288	0.6392	4.3288	0.589	4.3288	0.5097	4.3288	0.4525
4.5349	1.1706	4.5349	0.7986	4.5349	0.7066	4.5349	0.6392	4.5349	0.589	4.5349	0.5097	4.5349	0.4525
4.7508	1.1706	4.7508	0.7986	4.7508	0.7066	4.7508	0.6392	4.7508	0.589	4.7508	0.5097	4.7508	0.4525
4.977	1.1706	4.977	0.7986	4.977	0.7066	4.977	0.6392	4.977	0.589	4.977	0.5097	4.977	0.4525
5.214	1.1706	5.214	0.7986	5.214	0.7066	5.214	0.6392	5.214	0.589	5.214	0.5097	5.214	0.4525
5.4623	1.3551	5.4623	0.7986	5.4623	0.7066	5.4623	0.6392	5.4623	0.589	5.4623	0.5097	5.4623	0.4599
5.7224	1.6638	5.7224	0.9095	5.7224	0.7723	5.7224	0.6766	5.7224	0.6048	5.7224	0.5097	5.7224	0.4637
5.9948	1.6638	5.9948	0.9095	5.9948	0.7723	5.9948	0.6766	5.9948	0.6048	5.9948	0.5097	5.9948	0.4734
6.2803	1.6638	6.2803	0.9095	6.2803	0.7723	6.2803	0.6766	6.2803	0.6048	6.2803	0.5097	6.2803	0.4734
6.5793	1.6638	6.5793	0.9095	6.5793	0.7723	6.5793	0.6766	6.5793	0.6048	6.5793	0.5097	6.5793	0.4734
6.8926	1.6638	6.8926	0.9095	6.8926	0.7723	6.8926	0.6766	6.8926	0.6048	6.8926	0.5097	6.8926	0.4734
7.2208	1.6308	7.2208	0.9095	7.2208	0.7723	7.2208	0.6766	7.2208	0.6048	7.2208	0.5097	7.2208	0.4734
7.5646	1.6308	7.5646	0.9095	7.5646	0.7723	7.5646	0.6766	7.5646	0.6048	7.5646	0.5097	7.5646	0.4734
7.9248	1.6308	7.9248	0.9095	7.9248	0.7723	7.9248	0.6766	7.9248	0.6048	7.9248	0.5097	7.9248	0.4734
8.3022	1.6308	8.3022	0.9095	8.3022	0.7723	8.3022	0.6766	8.3022	0.6048	8.3022	0.5116	8.3022	0.4743
8.6975	1.6308	8.6975	0.9095	8.6975	0.7723	8.6975	0.6766	8.6975	0.6048	8.6975	0.5631	8.6975	0.528
9.1116	1.6308	9.1116	0.9095	9.1116	0.7723	9.1116	0.6822	9.1116	0.665	9.1116	0.6322	9.1116	0.5799
9.5455	1.6308	9.5455	0.9835	9.5455	0.9073	9.5455	0.848	9.5455	0.7987	9.5455	0.7177	9.5455	0.625
10	1.6308	10	1.0819	10	0.9829	10	0.9016	10	0.8346	10	0.7301	10	0.625
10.4762	1.6308	10.4762	1.0819	10.4762	0.9829	10.4762	0.9016	10.4762	0.8346	10.4762	0.7301	10.4762	0.625
10.975	1.6308	10.975	1.0819	10.975	0.9829	10.975	0.9016	10.975	0.8346	10.975	0.7301	10.975	0.6298
11.4976	1.6308	11.4976	1.0819	11.4976	0.9829	11.4976	0.9016	11.4976	0.8378	11.4976	0.7712	11.4976	0.6955
12.045	1.6308	12.045	1.0819	12.045	0.9829	12.045	0.9016	12.045	0.8378	12.045	0.7828	12.045	0.7206
12.6186	1.7655	12.6186	1.0819	12.6186	0.9829	12.6186	0.9016	12.6186	0.8378	12.6186	0.7828	12.6186	0.7274
13.2194	1.7655	13.2194	1.0819	13.2194	0.9829	13.2194	0.9016	13.2194	0.8748	13.2194	0.823	13.2194	0.7439

PTWW115.grf ~ RPP-WTP Pretreatment Facility ISRS ~ Calc No.: 24590-PTF-S0C-S15T-00057, Rev. A ~ Frequency (cps) ~ Spectral Acceleration (g) ~ Figure 115 ~ SLAB ONLY Vertical Responses ~ Elevation 56 ft. ~ EL56_C-E-17-20

Damping	0.50%		2%		3%		4%		5%		7%		10%
Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.	Freq.	Accel.
13.8489	2.1962	13.8489	1.3794	13.8489	1.2634	13.8489	1.1839	13.8489	1.1151	13.8489	0.9858	13.8489	0.8419
14.5083	3.099	14.5083	1.7518	14.5083	1.6507	14.5083	1.5281	14.5083	1.3976	14.5083	1.2195	14.5083	1.0605
15.1991	5.721	15.1991	3.1594	15.1991	2.5932	15.1991	2.2035	15.1991	1.9756	15.1991	1.5418	15.1991	1.3364
15.9228	7.6802	15.9228	3.9908	15.9228	2.9281	15.9228	2.3497	15.9228	1.998	15.9228	1.5418	15.9228	1.3585
16.681	7.6802	16.681	3.9908	16.681	2.9281	16.681	2.3497	16.681	1.998	16.681	1.5418	16.681	1.3585
17.4753	7.6802	17.4753	3.9908	17.4753	2.9281	17.4753	2.3497	17.4753	1.998	17.4753	1.5418	17.4753	1.3585
18.3074	7.6802	18.3074	3.9908	18.3074	2.9281	18.3074	2.3497	18.3074	1.998	18.3074	1.5418	18.3074	1.3585
19.1791	7.6802	19.1791	3.9908	19.1791	2.9281	19.1791	2.3497	19.1791	1.998	19.1791	1.5418	19.1791	1.3585
20.0923	5.0233	20.0923	2.5698	20.0923	2.2318	20.0923	2.0531	20.0923	1.8683	20.0923	1.5418	20.0923	1.2323
21.049	5.0233	21.049	2.5698	21.049	1.9224	21.049	1.5699	21.049	1.4464	21.049	1.3294	21.049	1.1577
22.0513	5.0233	22.0513	2.5698	22.0513	1.9224	22.0513	1.5699	22.0513	1.3278	22.0513	1.1117	22.0513	1.0269
23.1013	2.3419	23.1013	1.5377	23.1013	1.433	23.1013	1.3325	23.1013	1.2262	23.1013	1.0197	23.1013	0.9065
24.2013	1.5293	24.2013	1.0859	24.2013	1.0006	24.2013	0.9426	24.2013	0.9155	24.2013	0.8472	24.2013	0.7881
25.3536	1.2574	25.3536	0.8767	25.3536	0.8421	25.3536	0.8119	25.3536	0.7853	25.3536	0.7362	25.3536	0.6758
26.5609	1.2574	26.5609	0.8155	26.5609	0.7384	26.5609	0.6923	26.5609	0.6671	26.5609	0.6573	26.5609	0.6403
27.8256	1.2574	27.8256	0.8155	27.8256	0.7384	27.8256	0.6884	27.8256	0.6534	27.8256	0.6229	27.8256	0.6093
29.1505	0.6647	29.1505	0.618	29.1505	0.6094	29.1505	0.5972	29.1505	0.5935	29.1505	0.5904	29.1505	0.5816
30.5386	0.6591	30.5386	0.6039	30.5386	0.5896	30.5386	0.581	30.5386	0.5752	30.5386	0.5671	30.5386	0.5581
31.9927	0.5376	31.9927	0.5492	31.9927	0.5493	31.9927	0.5479	31.9927	0.546	31.9927	0.5418	31.9927	0.5355
33.516	0.5125	33.516	0.5181	33.516	0.5192	33.516	0.5192	33.516	0.5188	33.516	0.5173	33.516	0.5142
35.1119	0.4954	35.1119	0.4964	35.1119	0.4969	35.1119	0.4972	35.1119	0.4973	35.1119	0.4971	35.1119	0.4958
36.7838	0.4806	36.7838	0.481	36.7838	0.4812	36.7838	0.4813	36.7838	0.4814	36.7838	0.4813	36.7838	0.4807
38.5353	0.468	38.5353	0.4683	38.5353	0.4684	38.5353	0.4684	38.5353	0.4685	38.5353	0.4684	38.5353	0.4681
40.3702	0.4573	40.3702	0.4574	40.3702	0.4575	40.3702	0.4575	40.3702	0.4576	40.3702	0.4575	40.3702	0.4574
42.2924	0.4479	42.2924	0.448	42.2924	0.448	42.2924	0.4481	42.2924	0.4481	42.2924	0.4481	42.2924	0.4481
44.3062	0.4396	44.3062	0.4396	44.3062	0.4397	44.3062	0.4397	44.3062	0.4397	44.3062	0.4398	44.3062	0.4398
46.4159	0.4321	46.4159	0.4321	46.4159	0.4322	46.4159	0.4322	46.4159	0.4322	46.4159	0.4323	46.4159	0.4325
48.626	0.4252	48.626	0.4252	48.626	0.4253	48.626	0.4253	48.626	0.4254	48.626	0.4255	48.626	0.4258
50.9414	0.4188	50.9414	0.4188	50.9414	0.4188	50.9414	0.4189	50.9414	0.4189	50.9414	0.4191	50.9414	0.4195